



# DEVELOPER GUIDE

# FOXIT PDF SDK

For Web

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# Foxit PDF SDK for Web Overview

Foxit PDF SDK for Web is a lightweight powerful PDF library for web applications developed taking all advantages of Foxit's signature core rendering engine. Using the SDK, developers can deploy and customize a complete PDF viewer to display, annotate, fill forms and sign documents in a web browser. Integrating Foxit PDF SDK for Web into a zero-footprint web application allows end users to view PDF documents on any type of device without installing anything.

## **Why Foxit PDF SDK for Web is your choice**

Foxit is a leading software provider of solutions for reading, editing, creating, organizing, and securing PDF documents. Foxit PDF SDK for Web is a cross-platform solution for PDF online viewing. Foxit PDF SDK for Web enterprise edition has been chosen by many of the world's leading firms for integration into their solutions. Customers choose this product for the following reasons:

### **Fully customizable**

Developers can easily design a unique style for their Foxit PDF SDK for Web user interface, making it consistent to their own branding and other web applications.

### **Easy to integrate**

Developers can easily integrate Foxit PDF SDK for Web by referring to the product's knowledge base and writing a small amount of code to display and edit PDF files. The web-based pdf viewer also provides a large amount of interfaces to connect users and user data.

### **Standard and consistent annotation data**

The annotations in Foxit PDF SDK for Web are consistent when viewing and editing in other applications, as well as following industry-leading professional standards for quality and compliance.

### **Powered by Foxit's high fidelity rendering PDF engine**

The core technology of Foxit PDF SDK for Web is based on Foxit's PDF engine, which is trusted by a large number of well-known companies. Foxit's powerful engine makes document viewing fast and consistent in all environments.

In addition, Foxit's products are offered with the full support of our dedicated support engineers if support and maintenance options are purchased. Updates are released on a regular basis. Foxit PDF

SDK for Web is the most cost-effective choice if you want to develop a cross-platform web PDF document viewer.

## Audience and Scope

This document is primarily intended for developers who need to integrate the Foxit PDF SDK for Web into their web applications. It includes the direct reference examples as well as custom front-end APIs for customization.

## Your Web Application

Foxit PDF SDK for Web provides a solution that enables a web viewer to interact with PDFs seamlessly without any plugins or local applications. Developers should prepare a PDF hosting server like Nginx, Apache or the HTTP server in Node.js platform and do the usual configuration before using Foxit PDF SDK for Web.

## Browser Support

Foxit PDF SDK for Web currently supports all modern browsers. From version 9.0, Internet Explorer browser is no longer supported.

## Evaluation

Foxit PDF SDK for Web allows users to download the trial version to evaluate the SDK. The trial version is the same as the standard version except for the 15-day limitation for free trial and the trial watermarks in the generated pages. After the evaluation period expires, customers should contact the Foxit sales team and purchase licenses to continue using Foxit PDF SDK for Web.

## License

Developers are required to purchase licenses to use Foxit PDF SDK for Web in their solutions. Licenses grant users permission to release their applications based on Foxit PDF SDK for Web. However, users are prohibited to distribute any documents, sample codes, or source codes in the released packages of Foxit PDF SDK for Web to any third party without the permission from Foxit Software Incorporated.

# Getting Started

## Understanding the Package Structure

### Package Introduction

Before version **10.0**, Foxit PDF SDK for Web provides three packages as follows:

- Light package: FoxitPDFSDKForWeb\_9\_XXX\_NoFonts.zip (excludes font resources)
- Standard package: FoxitPDFSDKForWeb\_9\_XXX.zip (includes font resources)
- Full package: FoxitPDFSDKForWeb\_9\_XXX\_Full.zip (includes font resources, document comparison, advanced editor and dynamic XFA)

If you already have the font resources or only want to use online fonts, you can choose the light package if you don't want to make any changes to the font library and don't care about the size of the package, choose the standard package. If you want some advanced features, such as document comparison, advanced editor or dynamic XFA, choose the full package.

Starting from version **10.0**, Foxit PDF SDK for Web only provides a full package, with separate authorized features loaded according to the license, and adds 3D feature.

- Full package: FoxitPDFSDKForWeb\_10\_XXX.zip

The package contains the following folder structure:

Folder/File	Description
<b>docs:</b>	Contains API reference documents and Foxit PDF SDK for Web's developer guide.  <b>Note:</b> Our HTML developer guide is built using VuePress, which does not support double-click to open directly. It requires starting an HTTP server and accessing it through a web browser. Additionally, it includes some runnable examples that need WebPDFRWorker.js enabled which must run in an environment that supports an HTTP server to function correctly.
<b>examples:</b>	A series of demos and examples of how to take advantage of all Foxit PDF SDK for Web features.

<b>external</b>	Font resources.
<b>lib</b>	Foxit PDF SDK for Web core libraries.
<b>server</b>	http-server and the Node.js scripts for a series of server-based utility applications to use in the viewer.
<b>legal.txt</b>	Legal and copyright information.
<b>package.json</b>	Project description file.

The "lib" folder's file structure is provided as follows:

jr-engine	Front-end rendering engine.
locales	Internationalized entries data for using the viewer in different languages. Every language is placed in a different directory with its own label.
PDFViewCtrl	Plugins for the PDFViewCtrl library.
stamps	Stamps resources, image files and templates.
assets	Contains the template resource files needed by the document comparison function, currently only included in the full package.
uix-addons	All plugins for the UIExtensions project.
PDFViewCtrl.css	CSS file for the PDFViewCtrl viewer UI style.
PDFViewCtrl.full.js	Complete script file for the PDFViewCtrl viewer library.
PDFViewCtrl.js	Script file for the PDFViewCtrl viewer library without third-party libraries.
PDFViewCtrl.polyfills.js	Browser-adapted polyfill script file for the PDFViewCtrl viewer library.
PDFViewCtrl.vendor.js	Third-party libraries script used by PDFViewCtrl (See the lists later).
preload-jr-worker.js	Worker script for loading resources of JS engine in parallel to the UI for improving the viewer loading speed.
UIExtension.css	The default CSS file of the UI.
UIExtension.dark-variable.css	The style file for dark theme.
UIExtension.vw.css	The CSS file using vmin unit.
UIExtension.full.js	Complete script file for the UIExtension full-featured viewer library.
UIExtension.js	Script file for the UIExtension viewer library without third-party libraries
UIExtension.polyfills.js	Browser-adapted polyfill script file for the UIExtensions viewer library.
UIExtension.vendor.js	Third-party libraries script used by UIExtension (See the lists later).

WebPDFJRWorker.js	Script files running in the Web Worker, which are used for calling the front-end rendering engine.
WebPDFSRWorker.js	Script files running in the Web Worker, which are used for calling the server rendering engine.
*.d.ts	"*.d.ts" files are used to provide TypeScript (version 3.3 or higher) with type information about APIs written in JavaScript. The purpose is to enable IDEs to recognize it and provide us with code hints, as well as perform static type checking during compilation, providing convenience while ensuring the accuracy of calling APIs.

## **Basic Features and Separately Authorized Features**

### **Basic Features:**

- View
- Bookmark
- Annotation
- Form
- Security
- Signature

### **Separately Authorized Features:**

- Redact
- Advanced Edit (Adv Edit)
- Compare
- Dynamic XFA
- 3D

## **Static Library and Dynamic Library**

Before version 10.0, the underlying library used in Foxit PDF SDK for Web is a static library.

From version 10.0, the underlying library used in Foxit PDF SDK for Web is a dynamic library.

### **Division of Dynamic Library Modules**

From version 10.0, the dynamic library modules are divided into main module and side module.

Main module:

- g sdk.wasm

Side module: (Lazy loading)

- compare.wasm
- pageeditor.wasm
- touchup.wasm
- xfa.wasm
- 3d.wasm
- lr.wasm
- Pageformat.wasm
- docprocess.wasm

<b>Module Name</b>	<b>Functionality</b>	<b>Dependencies</b>
g sdk.wasm	Wrappers features authorized by the Standard license and Redact.	pageformat.wasm lr.wasm docprocess.wasm
compare.wasm	The Overlay Compare feature, authorized by the Compare license.	lr.wasm
pageeditor.wasm	The Paragraph-based editor (Advanced Editor), authorized by the AdvEditor license.	lr.wasm
touchup.wasm	The EditText and AddText of Advanced editor, authorized by the AdvEditor license.	lr.wasm
xfa.wasm	The dynamic XFA form, authorized by the XFA license.	lr.wasm
3d.wasm	The PDF 3D feature, authorized by the 3D license.	none
lr.wasm	The Layout Recognition engine module provides fundamental support for high-level features. It gets loaded when the related modules depending upon are triggered.	none
Pageformat.wasm	This module gets loaded when the main module is triggered. It provides fundamental codes for the Header&Footer and Watermark features.	none
docprocess.wasm	This module gets loaded when the main module is triggered. It provides fundamental codes for processing article box and web links on the text.	none

## Package.json

Foxit PDF SDK for Web provides a package.json file to help developers quickly deploy and use the SDK, and make it easy to integrate into their project. The content is as follows:

```
{  
  "name": "@foxitsoftware/foxit-pdf-sdk-for-web-library",  
  "version": "10.0.0",  
  "description": "Foxit pdf sdk for web.",  
  "author": "Foxit Software Inc.",  
  "main": "./lib/UIExtension.full.js",  
  "types": "./lib/UIExtension.full.d.ts",  
  "typings": "./lib/UIExtension.full.d.ts",  
  "scripts": {  
    "start": "concurrently --kill-others \"npm run start-http-server\" \"npm run start-snapshot-server\"",  
    "start-snapshot-server": "node ./server/snapshot/src/index -p 3002",  
    "start-http-server": "node ./server/index"  
  },  
  "license": "Commercial",  
  "devDependencies": {  
    "boxen": "^4.1.0",  
    "chalk": "^2.4.1",  
    "concurrently": "^8.2.2",  
    "http-proxy-middleware": "^3.0.0",  
    "koa": "^2.7.0",  
    "koa-body": "^4.0.4",  
    "koa-body-parser": "^1.1.2",  
    "koa-cors": "0.0.16",  
    "koa-router": "^7.4.0",  
    "koa-serve-list": "^1.0.1",  
    "koa-static": "^5.0.0",  
    "koa2-connect": "^1.0.2",  
    "lru-cache": "^4.1.3",  
    "raw-body": "^2.3.3",  
    "require-dir": "^1.0.0",  
    "serve-handler": "^6.0.2",  
    "sockjs": "^0.3.21",  
    "ws": "^7.3.1"  
  },  
  "dependencies": {  
    "@csstools/normalize.css": "^10.1.0",  
    "@types/hammerjs": "^2.0.36",  
    "@types/jquery": "^3.3.29",  
    "bootstrap-datepicker": "^1.9.0",  
  }  
}
```

```
"core-js": "3.35.1",
"dayjs": "^1.11.1",
"dayjs-plugin-utc": "^0.1.2",
"dialog-polyfill": "^0.4.10",
"dom4": "^2.1.4",
"es6-promise": "^4.2.5",
"eventemitter3": "^3.1.0",
"fast-printf": "^1.6.9",
"flatpickr": "4.6.9",
"hammerjs": "^2.0.8",
"human-format": "^0.11.0",
"i18next": "^23.8.1",
"i18next-chained-backend": "^4.6.2",
"i18next-localstorage-backend": "^4.2.0",
"i18next-xhr-backend": "^3.2.2",
"jquery": "^3.4.1",
"jquery-contextmenu": "^2.7.1",
"jszip": "^3.7.1",
"lodash": "^4.17.21",
"papaparse": "^5.4.1",
"print-area": "^0.1.4",
"punycode": "^2.1.1",
"sortablejs": "~1.9.0",
"whatwg-fetch": "^3.0.0"
},
"resolutions": {
  "jquery": "^3.4.1",
  "core-js": "3.35.1",
  "qs": ">=6.0.4"
},
"overrides": {
  "jquery": "^3.4.1",
  "core-js": "3.35.1",
  "qs": ">=6.0.4"
},
"serve": {
  "port": 8080,
  "public": "/",
  "proxy": {
    "target": "http://127.0.0.1:3002",
    "changeOrigin": true
  }
},
"files": [
```

```
"lib",
"server",
"legal.txt",
"locales_changelog.txt",
"MigrationNode.txt",
"ReleaseNote.txt"
]
}
```

## The third-party libraries used in Foxit PDF SDK for Web

Foxit PDF SDK for Web provides its script files in two versions: the full version script that includes the third-party libraries, and the regular script without any third-party libraries. If your project already uses the dependencies included in the SDK's third-party libraries, you don't need to re-install them.

### The **PDFViewCtrl.full.js** script contains:

PDFViewCtrl.full.js	Complete script file for the PDFViewCtrl viewer library.
PDFViewCtrl.polyfills.js	Browser-adapted polyfill script file for the PDFViewCtrl viewer library.
PDFViewCtrl.vendor.js	Third-party libraries script used by PDFViewCtrl (See the list of vendors below this section).
PDFViewCtrl.js	Script file for the PDFViewCtrl viewer library without third-party libraries.

So, **PDFViewCtrl.polyfills.js + PDFViewCtrl.vendor.js + PDFViewCtrl.js = PDFViewCtrl.full.js**.

Essentially, the two scripts below are the same thing:

- 1) <script src="../FoxitPDFSDKForWeb/lib/PDFViewCtrl.full.js"></script>
- 2) <script src="../FoxitPDFSDKForWeb/lib/ PDFViewCtrl.polyfills.js"></script>
 <script src="../FoxitPDFSDKForWeb/lib/PDFViewCtrl.vendor.js"></script>
 <script src="../FoxitPDFSDKForWeb/lib/PDFViewCtrl.js"></script>

The third-party libraries contained in **PDFViewCtrl.vendor.js** are outlined below:

```
jquery
i18next
i18next-chained-backend
i18next-localstorage-backend
i18next-xhr-backend
jquery-contextmenu
```

```
dialog-polyfill
hammerjs
eventemitter3
```

**The UIExtension.full.js script contains:**

- |                          |  |
|--------------------------|--|
| UIExtension.full.js      | Complete script file for the UIExtension viewer library.                                       |
| UIExtension.polyfills.js | Browser-adapted polyfill script file for the UIExtension viewer library.                       |
| UIExtension.vendor.js    | Third-party libraries script used by UIExtension (See the list of vendors below this section). |
| UIExtension.js           | Script file for the UIExtension viewer library without third-party libraries.                  |

So, **UIExtension.polyfills.js + UIExtension.vendor.js + UIExtension.js = UIExtension.full.js**.

Essentially, the two scripts below are the same thing:

- ```
1) <script src="../FoxitPDFSDKForWeb/lib/UIExtension.full.js"></script>

2) <script src="../FoxitPDFSDKForWeb/lib/UIExtension.polyfills.js"></script>
<script src="../FoxitPDFSDKForWeb/lib/UIExtension.vendor.js"></script>
<script src="../FoxitPDFSDKForWeb/lib/UIExtension.js"></script>
```

The third-party libraries contained in **UIExtension.vendor.js** are outlined below:

```
jquery
i18next
i18next-chained-backend
i18next-localstorage-backend
i18next-xhr-backend
dialog-polyfill
hammerjs
eventemitter3
spectrum-colorpicker
file-saver
```

## Quickly Run Examples

Foxit PDF SDK for Web comes with a lot of example projects and files for building the viewer and/or implementing additional functionality. These examples are provided in the examples folder of Foxit PDF SDK for Web. To run them, initialize your (local) web server, open your browser and add the localhost (<https://localhost:port>) or corresponding IP number URL. The directory list of files will be displayed and you can choose which sample to use.

To quickly get a web server running on your local system, you can use node.js [http-server](#):

```
http-server
```

Additionally, you can append the '-o' command to open directly in your browser window:

```
http-server -o
```

You can also use Python's [SimpleHTTPServer](#) module:

```
python -m http.server 8000
```

You may want to refer to [Set up local server](#) for more information.

See also

- [Start Http Server using Nginx](#)
- [Start Http Server using Nodejs](#)

## Integration

This section will help you to quickly get started with using Foxit PDF SDK for Web to build a simple web PDF viewer and a full-featured PDF viewer with step-by-step instructions provided.

### Preparations

#### Create a new web project

- 1) Create a new directory as a project folder, such as "D:/test\_web".
- 2) Copy the "**lib**", "**server**", and "**external**" (if you need to use the font resources) folders, as well as the "**package.json**" file from Foxit PDF SDK for Web package to "D:/test\_web".
- 3) Copy a PDF file (for example, the demo guide in the "docs" folder) to "D:/test\_web".
- 4) Create a html file (index.html) in the "D:/test\_web" folder. Then the directory structure is:

```
test_web
```

```
+-- lib          (copy from the Foxit PDF SDK for Web package)
+-- server       (copy from the Foxit PDF SDK for Web package)
+-- package.json (copy from the Foxit PDF SDK for Web package)
+-- index.html
```

**The whole content of the index.html is:**

```
<html>
<head>
  <meta charset="utf-8">
  <style>
    .fv__ui-tab-nav li span {
      color: #636363;
    }
    .flex-row {
      display: flex;
      flex-direction: row;
    }
  </style>
  <!-- ignore other unimportant code -->
</head>
<body>
</body>
</html>
```

## Integrate the basic webViewer into your project

This section will describe how to integrate the basic webViewer sample using PDFViewCtrl based on the above created project. Just follow the steps below:

- 1) Add styles (/lib/PDFViewCtrl.css) to the <head> tag of the HTML page:

```
<link rel="stylesheet" type="text/css" href=".//lib/PDFViewCtrl.css">
```

- 2) Import the "PDFViewCtrl.full.js" library found in the "lib" folder:

```
<script src=".//lib/PDFViewCtrl.full.js"></script>
```

- 3) In the HTML <body> tag, add the <div> elements as the web viewer container:

```
<div id="pdf-viewer"></div>
```

- 4) Initialize PDFViewCtrl:

```
<script>
  var licenseSN = "Your license SN";
  var licenseKey = "Your license Key";
</script>
<script>
  var PDFViewer = PDFViewCtrl.PDFViewer;
```

```
var pdfViewer = new PDFViewer({
    libPath: './lib', // the library path of Web SDK.
    jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey,
    }
});
pdfViewer.init('#pdf-viewer'); // the div (id="pdf-viewer")
<script>
```

**Note:** The trial values of **licenseSN** and **licenseKey** can be found in the `examples/license-key.js` file of Foxit PDF SDK for Web package.

- 5) Open a PDF document:

```
// modify the file path as your need.
fetch('/FoxitPDFSDKforWeb_DemoGuide.pdf').then(function(response) {
    response.arrayBuffer().then(function(buffer) {
        pdfViewer.openPDFByFile(buffer);
    })
})
```

The above steps are the key points of integrating the simple demo to your created project using PDFViewCtrl. After finishing it, refresh your browser ([<index.html>](#)).

Now, in this simple web PDF viewer, you can zoom in/out the PDF document by right-clicking anywhere on the page to select the zoom in or zoom out options.

The whole content of the **index.html** is:

```
<html>
<head>
    <meta charset="utf-8">
    <link rel="stylesheet" type="text/css" href="./lib/PDFViewCtrl.css">

    <!-- You can delete the following style because it doesn't work in this project -->
    <style>
        .fv__ui-tab-nav li span {
            color: #636363;
        }
        .flex-row {
            display: flex;
            flex-direction: row;
        }
    </style>
    <!-- ignore other unimportant code -->
</head>
<body>
    <div id="pdf-viewer"></div>
    <script src="./lib/PDFViewCtrl.full.js"></script>
```

```
<script>
    var licenseSN = "Your license SN";
    var licenseKey = "Your license Key";
</script>
<script>
    var PDFViewer = PDFViewCtrl.PDFViewer;
    var pdfViewer = new PDFViewer({
        libPath: './lib', // the library path of Web SDK.
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey,
        }
    });
    pdfViewer.init('#pdf-viewer'); // the div (id="pdf-viewer")

    // modify the file path as your need.
    fetch('/FoxitPDFSDKforWeb_DemoGuide.pdf').then(function (response) {
        response.arrayBuffer().then(function (buffer) {
            pdfViewer.openPDFByFile(buffer);
        })
    })
</script>
</body>
</html>
```

## Integrate the complete webViewer into your project

The previous section introduces how to integrate the basic webViewer sample using PDFViewCtrl, which is just a simple web PDF viewer. In this section, we will show you how to integrate the advanced webViewer using UIExtension based on the [Preparations](#). Follow the steps below:

- 1) Add styles (/lib/UIExtension.css) to the <head> tag of the HTML page.

```
<link rel="stylesheet" type="text/css" href="./lib/UIExtension.css">
```

- 2) Import the "UIExtension.full.js" library found in the "lib" folder:

```
<script src="./lib/UIExtension.full.js"></script>
```

- 3) In the HTML <body> tag, add the <div> elements as the webViewer container:

```
<div id="pdf-ui"></div>
```

- 4) Initialize UIExtension:

```
<script>
    var licenseSN = "Your license SN";
    var licenseKey = "Your license Key";
</script>
```

```
<script>
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: './lib', // the library path of web sdk.
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: '#pdf-ui' // the div (id="pdf-ui").
  });
</script>
```

**Note:** The trial values of **licenseSN** and **licenseKey** can be found in the `examples/license-key.js` file of Foxit PDF SDK for Web package.

- 5) Open a PDF document:

```
// modify the file path as your need.
fetch('/FoxitPDFSDKforWeb_DemoGuide.pdf').then(function(response) {
  response.arrayBuffer().then(function(buffer) {
    pdfui.openPDFByFile(buffer);
  })
})
```

The above steps are the key points of integrating the advanced webViewer to your created project using UIExtension. After finishing it, refresh your browser ([<index.html>](#)).

Now, it is a full-featured web PDF viewer, you can view/edit/comment/protect the PDF document as desired.

The whole content of the **index.html** is:

```
<html>
<head>
  <meta charset="utf-8">
  <link rel="stylesheet" type="text/css" href="./lib/UIExtension.css">
  <style>
    .fv__ui-tab-nav li span {
      color: #636363;
    }
    .flex-row {
      display: flex;
      flex-direction: row;
    }
  </style>
  <!-- ignore other unimportant code -->
</head>
<body>
  <div id="pdf-ui"></div>
```

```
<script src="./lib/UIExtension.full.js"></script>
<script>
    var licenseSN = "Your license SN";
    var licenseKey = "Your license Key";
</script>
<script>
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: './lib', // the library path of web sdk.
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: '#pdf-ui' // the div (id="pdf-ui").
    });

    // modify the file path as your need.
    fetch('/FoxitPDFSDKforWeb_DemoGuide.pdf').then(function (response) {
        response.arrayBuffer().then(function (buffer) {
            pdfui.openPDFByFile(buffer);
        })
    })

</script>
</body>
</html>
```

## Integration Modes

### Integrate as a Global Variable

You can integrate the Foxit PDF SDK for Web to your project as a global variable:

```
<script src="./lib/PDFViewCtrl.full.js"></script>
var PDFViewer = PDFViewCtrl.PDFViewer;
var pdfViewer = new PDFViewer(...)
```

For a working example, check out the complete\_WebViewer demo in the "examples/UIExtension" folder."

### Integrate as module

For more integration modes, you may want to check our working examples in the "examples/UIExtension/integrate-as-module/" directory.

# Example

## Example Projects

### UIExtension

#### [Complete webViewer](#)

It is a ready-to-go application that you can run directly or integrate into your project with full features provided by Foxit PDF SDK for Web. This application uses the full-featured package "UIExtension.full.js" for the PDF view and document parsing.

Source folder: /examples/UIExtension/complete\_webViewer.

#### [Integration Examples](#)

These examples walk you through integrating Foxit PDF SDK for Web as an es-module, amd or commonJS module. For a global variable integration sample, refer to the code on /examples/UIExtension/complete\_webViewer/index.html

Source folder: /examples/UIExtension/integrate-as-module.

#### [Customize Global Annotation Properties](#)

Provide an example to show how to set default annotation properties by using either of the constructor option or the function.

Source folder: /examples/UIExtension/default\_annot\_config.

#### [Customize Tooltips Example](#)

Provide an example to show how to customize tooltips on sidebar and toolbar.

Source folder: /examples/UIExtension/tooltip.

#### [Asynchronous/Synchronous annotation loading](#)

This demo shows how the annotations in a PDF can be automatically loading in both options, async and synchronous by using the 'lazy' property on the '<commentlist-sidebar-panel>' tag to true or false.

Source folder: /examples/UIExtension/commentlist-loadmode.

### **Customize Text Selection**

This demo provides an example to show how to create a custom controller for text selection.

Source folder: /examples/UIExtension/custom-text-selection-tool.

### **Customize Annotations Pop-up**

The default behavior of double clicking an annotation in webViewer is to trigger the comment panel. This demo guides you how to change the default event by adding the pop-up layer and overwriting the onDoubleTap event.

Source folder: /examples/UIExtension/custom\_annotations\_popup.

### **Customize User Interface**

Provide code examples to show how to customize user interface. One introduces a non-adaptive sample for PC browser, the other guides how to set up adaptivity for across browsers. webViewer detects the 'navigator.userAgent' in browser when initializing and determines the UI layout accordingly – PC or mobile.

Source folder: /examples/UIExtension/custom\_appearance.

### **Customize Layout by Templates**

Provide examples to show the built-in templates in UIExtension and the reference methods. This example is suitable for users who need to fine-tune the template.

Source folder: /examples/UIExtension/layout\_templates.

### **Customize Components by Fragments**

Provide examples to show how to modify components and set up components configuration by using fragments.

Source folder: /examples/UIExtension/fragment\_usage.

### **Annotation Data Migration Example**

Provide an example to show how to migrate annotations JSON data from v6 to v7 to avoid data lost.

Source folder: /examples/UIExtension/migrateAnnotData.

### **PWA Example**

Provide an example to show how to implement a progressive web app

Source folder: /examples/UIExtension/pwa.

### **UI Widgets Examples**

These are examples referenced by UIExtension.components.widget in API Reference. Each sample shows the usage of a component (including how to pass parameters, event binding, and so on).

Source folder: /examples/UIExtension/tutorials/widgets.

### **Addon Usage Examples**

With this example, you will learn how to merge addons and reference the merged-add.js in your code.

Source folder: /examples/UIExtension/use-merged-addon.

### **Webpack Scaffold Project**

This project provides an open-source code of UI addon for customization.

[Go to Project Page](#)

### **Customize Annotation Tooltip Example**

Annotation Tooltip refers to a floating box that appears when the user hovers the mouse over an annotation. This demo demonstrates how to customize the Annotation Tooltip with the AnnotTooltip parameter, including how to display content, specify the position of the floating box, and show or hide it.

Source folder: /examples/UIExtension/custom\_annotations\_tooltip/index.html

### **Set the Identity Information for a Digital Stamp**

This demo demonstrates how to set the identity information using the `setIdentityInfo` interface of the `DigitalStampUIXAddon`.

Source folder: /examples/UIExtension/custom-digital-identity

### **Preset Custom Fonts**

This demo demonstrates how to configure and load custom fonts, and ultimately reflect them in the opened document.

Source folder: /examples/UIExtension/custom-font/index.html

### **Customize Area Measurement Tool**

This demo demonstrates how to customize a StateHandler that can create measurement rectangle area tool.

Source folder: /examples/UIExtension/custom-measurement/index.js

### **Customize Progress Bar**

This demo demonstrates how to customize a progress bar which can update progress information before opening a document or after closing a document.

Source folder: /examples/UIExtension/custom-percentage-process/index.html

### **Customize to Create Redact tool**

This demo demonstrates how to customize a StateHandler to select text on the page and create a Redact based on the selected text rectangle box.

Source folder: /examples/UIExtension/custom-redaction/index.js

### **Signature Process Example**

This demo demonstrates the complete signature process, including loading preset images, drawing a signature image, signing, and verifying and so on.

Source folder: /examples/UIExtension/custom-signature-flow/index.js

## **PDFViewCtrl**

### **Basic webViewer**

It is a basic webViewer that demonstrates how to call Foxit PDF SDK for Web API to load a PDF document, and zoom in/out the document. This demo uses the "PDFViewCtrl.full.js" package in the "lib" folder.

Source folder: /examples/PDFViewCtrl/basic\_webViewer.

### **Overwrite PDFPageRendering Example**

Provide an example to show how to add a custom UI to the nodes of each PDF page by overwriting the PDFPageRendering class, such as a UI of adding a loading dynamic figure or a similar progress bar.

Source folder: /examples/PDFViewCtrl/override-rendering.

### **Preload Worker Example**

Provide an example to show how to load the worker scripts of the JR engine in advance, to get performance benefit of reducing initializing time.

Source folder: /examples/PDFViewCtrl/preload-worker.

### **Asynchronous Loading Example**

Provide an example to show how to async opening files from URL.

Source folder: /examples/PDFViewCtrl/url.

### **Offline Example**

This example demonstrates how to register the "service-worker.js" found in the "examples/PDFViewCtrl/service-worker" folder to better cache the core dependency files "g sdk.js" and font files in a browser supported by the service worker, in order to speed up the reloading time or use the offline mode.

Source folder: /examples/PDFViewCtrl/service-worker.

### **Inline DIV Example**

This example renders the simple UI of Foxit PDF SDK for Web to a div container with a specified size.

Source folder: /examples/PDFViewCtrl/div.

### **FileOpen Plugin Example**

Provide an example for opening a fileOpen protection file.

Source folder: /examples/PDFViewCtrl/fileopen.

### **Page Layout Rewriting Example**

This example shows how to create a single view page layout and navigate page by up and down arrow keys without scrolling feature. By this example, you will learn how to register and inherit IViewMode to implement your own layout and customize navigating page postures.

Source folder: /examples/PDFViewCtrl/view-mode.

### **Document Password Re-encryption Example**

Provide an example to show how to open a document with password re-encryption. The password re-encryption node.js example can be found at ... \server\encrypt-password.

Source folder: /examples/PDFViewCtrl/encrypt-password.

### **Page Manipulation Example**

Provide an example to show how to manipulate pages.

Source folder: /examples/PDFViewCtrl/ppo.

### **Form Widgets Adding Example**

Provide an example for creating supported form widgets.

Source folder: /examples/PDFViewCtrl/add-form-fields.

### **Annotation Creating Example**

Provide examples to show how to inherit a StateHandler class of link, screen and textMarkup annotation to implement the annotation creating class.

Source folder: /examples/PDFViewCtrl/create-annot.

### **License Validation Tool**

Provide a tool for verifying license validation.

Source folder: /examples/PDFViewCtrl/check-license.

### **Screen Reader Example**

Provide an example to show how to read the content of a PDF document for a screen reader.

Source folder: /examples/PDFViewCtrl/accessibility/read-content/index.html

### **Customize PageCustomRender Example**

This demo demonstrates how to control whether a page is rendered by customizing PageCustomRender, and how to insert custom content into the DOM node of the PDF page to be rendered.

Source folder: /examples/PDFViewCtrl/load-before-rendering/index.html

### **Multiple instances**

This demo demonstrates how to create multiple instances of PDFViewer on the same page based on PDFViewCtrl.

Source folder: /examples/PDFViewCtrl/multiple-case/index.html

### **Compare image pixel differences**

This demo is developed based on React, which demonstrates how to use APIs to calculate and display the pixel differences of PDF pages.

Source folder: /examples/PDFViewCtrl/overlay-comparison/

**Note:** Unlike other demos, this demo needs to be compiled by yourself before running. For specific instructions, please refer to </examples/PDFViewCtrl/overlay-comparison/README.md>

### **Text search**

This demo demonstrates how to use the PDFDoc.getTextSearch interface to search for text content and display search results.

Source folder: /examples/PDFViewCtrl/text-search/

## **HTTP Server Configuration Examples**

### **Start Http Server using Nginx**

Using Windows as an example, assume that [Nginx](#) was installed on your system already. When you have Nginx server running, you can directly modify the 'nginx.conf' in the conf directory, here we directly modify the configuration file to make webViewer run. Please follows the steps below:

- 1) Download Foxit PDF SDK for Web package, unzip it to a folder.
- 2) Locate to the Nginx/conf folder, open the nginx.conf file, add the following listening information:

```
server {  
    listen 8080;  
    server_name 127.0.0.1;  
  
    location / {  
        alias "gotopath/FoxitPDFSDKForWeb/";  
        charset utf8;  
        index index.html;  
    }  
}
```

- 3) Restart Nginx server, now you can access the webViewer at

Complete webViewer address:

`http://localhost:8080/examples/UIExtension/complete_webViewer/`

Basic webViewer address:

`http://localhost:8080/examples/PDFViewCtrl/basic_webViewer/`

**Note:** You can run the webViewer according to the above configuration, but at that time the snapshot feature cannot work correctly. The snapshot cannot be cached to clipboard, so that you cannot paste it to the location as desired. Please follow the steps below to build the snapshot server:

- 1) Install node.js 9.0 or higher, if it is already installed, skip it.
- 2) In a command prompt, navigate to the root directory of Foxit PDF SDK for Web.
- 3) Type `npm install` to install the required dependencies.
- 4) Type `npm run start-snapshot-server` to start the snapshot server (the default port is 3002).

**Note:** If you want to specify the port for snapshot server as desired, you can change it in the "**server/snapshot/package.json**" file of Foxit PDF SDK for Web package. To find the default port 3002, and change it as you wish:

- 5) Configure Nginx reverse proxy in nginx.conf:

```
server {  
    listen 8080;  
    server_name 127.0.0.1;  
  
    location / {  
        alias "gotopath/FoxitPDFSDKForWeb/";  
        charset utf8;  
        index index.html;  
    }  
  
    location ~ ^/snapshot/(.+)$ {  
        proxy_pass http://127.0.0.1:3002/snapshot/$1$is_args$args;  
        proxy_redirect off;  
  
        proxy_request_buffering on;  
  
        proxy_set_header Host $host;  
        proxy_set_header X-Real-IP $remote_addr;  
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;  
    }  
}
```

- 6) Restart Nginx server, and refresh your browser, the snapshot feature should work correctly.

### **Start Http Server using Nodejs**

Assume that [Node.js](#) 9.0 or higher is available on your system already. Then follow the steps below to run the webViewer:

- 1) Download Foxit PDF SDK for Web package, unzip it, navigate to the root folder and execute to install dependencies:

```
npm install
```

- 2) Run the web server with the command below:

```
npm start
```

- 3) The webViewer can be assessed with the following address:

Complete webViewer address:

[http://localhost:8080/examples/UIExtension/complete\\_webViewer/](http://localhost:8080/examples/UIExtension/complete_webViewer/)

Basic webViewer address:

[http://localhost:8080/examples/PDFViewCtrl/basic\\_webViewer/](http://localhost:8080/examples/PDFViewCtrl/basic_webViewer/)

**Note:** Using this method, you do not need to configure the proxy, the snapshot feature can be used normally. If you want to specify the ports for http-server and snapshot server as desired, you can change the two ports in the **package.json** file of Foxit PDF SDK for Web package.

To change the port for http-server and snapshot server, find the default port 8080 and 3002 as below, and change it as you wish:

```
"serve": {  
  "port": 8080,  
  "public": "/",  
  "proxy": {  
    "target": "http://127.0.0.1:3002",  
    "changeOrigin": true  
  }  
}
```

### **Scaffold Demo**

This is a scaffold demo for UIExtension, including an open-source UI addon. It shows how to customize UI and how to use declaration file. The demo can be accessed at [./examples/UIExtension/scaffoldDemo](#).

## How to run this demo

### Setup library

Execute command `npm run setup` in the demo root folder.

This setup would:

- Add the `lib` directory to the dependency list as a local npm repository..
- install all npm package that needed.

### Run Demo

Execute command: `npm start`

### Source code

The structure of `src` folder:

addons.js	--- shows how to use foxit addons.
index.js	--- entry.
\addonExample	--- an addon example.
addon.info.json	--- addon entry file, which specified all related file in an addon.
index.css	--- style sheet
index.js	--- addon script entry. DON'T modify it's file name.
\locales	--- i18n files
en-US.json	
zh-CN.json	
\stateHandlers	--- State Handler Classes which extend IStateHandler
addTextField.js	
\templates	
custom-dialog.art	--- Art template for customized dialog.
tab-template.art	--- Art template for customized tool bar.

### Entry file

The `src/addonExample/index.js` file is the script entry of addon. View [source file](#) for more details.

# Features

## Digital Signature

In this section, you will learn about the general steps to sign and verify signature, related signature APIs, ways to interact with the digital signature, and the test signature service routes we provided.

### Steps to sign and verify digital signature on PDF

To sign and verify a digital signature on PDF, you should go over the following procedures:

- Sign Document
  1. Generate a file stream which contains signature's byteRange. You may refer to PDF Reference 1.7+ for details.
  2. Calculate the message digest of the content covered by signature's byteRange. This can be implemented by calling `PDFUI.registerSignHandler(signerInfo)` or `PDFDoc.sign(signerInfo,digestSignHandler)`.
  3. Get signedData by signing the digest using certification. This can be implemented by calling `PDFUI.registerSignHandler(signerInfo)` or `PDFDoc.sign(signerInfo,digestSignHandler)`.
  4. Write the signedData into the file stream. The signedData's position is specified in byteRange.
- Verify signature
  1. Get the original(unmodified) file content, the byteRange of signature, the signed data and signer.
  2. Calculate the message digest of the content covered by signature's byteRange. This can be implemented by calling `PDFUI.setVerifyHandler(verifyFunction)` or `PDFDoc.verifySignature(signatureField, verifyHandler)`.
  3. Verify the digest and signed data, and output the verified state result which includes information about document changes, issuer and timestamp status, ect.. This can be implemented by calling `PDFUI.setVerifyHandler(verifyFunction)` or `PDFDoc.verifySignature(signatureField, verifyHandler)`.

## Related digital signature APIs

### **PDFUI.registerSignHandler(signerInfo)**

Currently, Foxit PDF SDK for Web supports two formats of signature filter: adbe.pkcs7.detached and adbe.pkcs7.sha1.

The digest algorithms supported by adbe.pkcs7.detached are: 'sha1', 'sha256', and 'sha384'.

The digest algorithm supported by adbe.pkcs7.sha1 is: 'sha1'.

This method is used to register signer data. Here are the examples code:

Use adbe.pkcs7.detached and sha256:

```
pdfui.registerSignHandler({
  filter: "Adobe.PPKLite",
  subfilter: "adbe.pkcs7.detached",
  flag: 0x100,
  distinguishName: "e=foxit@foxitsoftware.cn",
  location: "FZ",
  reason: "Test",
  signer: "web sdk",
  showTime: true,
  sign: (setting, plainContent) => {
    return requestData("post", "http://localhost:7777/digest_and_sign", "arraybuffer", {
      subfilter: setting.subfilter,
      md: "sha256", // "sha1", "sha256", "sha384"
      plain: plainContent,
    });
  },
});
```

Use adbe.pkcs7.sha1 and sha1:

```
pdfui.registerSignHandler({
  filter: "Adobe.PPKLite",
  subfilter: "adbe.pkcs7.sha1",
  flag: 0x100,
  distinguishName: "support@foxitsoftware.com",
  location: "FZ",
  reason: "Test",
  signer: "web sdk",
  sign: (signInfo, plainContent) => {
    //sign handler which complete the signing action, return a Promise with signed data;
    //function getDigest() and sign() should be completed by user.
    let digest = getDigest(plainContent); //plainContent is a Blob data
    let signData = sign(digest);
    return Promise.resolve(signData);
});
```

```
},  
});
```

#### ***PDFUI.setVerifyHandler(verifyFunction)***

This method is used to set verification handler which will be called when a signature is being verified. Verification handler returns a verifying result state called Signature\_State. Here is the example code:

```
pdfui.setVerifyHandler((signatureField, plainBuffer, signedData) => {  
    //function getDigest() and verify() should be completed by user.  
    let digest = getDigest(plainBuffer);  
    let verifiedStatus = verify(  
        signatureField.getFilter(),  
        signatureField.getSubfilter(),  
        signatureField.getSigner(),  
        digest,  
        signedData  
    );  
    return Promise.resolve(verifiedStatus);  
});
```

#### ***PDFDoc.sign(signInfo,digestSignHandler)***

This method is used to sign the document. A message digest and sign function are required. Here is the example code:

```
/**  
 * @returns {Blob} - File stream of signed document.  
 */  
const signResult= await pdfdoc.sign(signInfo, plainContent) => {  
    //function getSignData() should be completed by developer.  
    return Promise.resolve(getSignData(signInfo,plainContent)) // plainContent is a Blob data.  
};
```

#### ***PDFDoc.verifySignature(signatureField, verifyHandler)***

This method is used to verify the signature. A callback function is required. Here is the example code:

```
/**  
 * @returns {number} - Signature state.  
 */  
var result = await singedPDF.verifySignature(  
    pdfform.getField("Signature_0"),  
    function verify(signatureField, plainBuffer, signedData, hasDataOutOfScope) {  
        //function verifySignData() should be completed by developer.  
        let signInfo = {  
            byteRange: signatureField.getByteRange(),  
            filter: signatureField.getFilter(),  
            subfilter: signatureField.getSubfilter(),  
            signer: signatureField.getSigner()  
        };  
        return Promise.resolve(signInfo);  
    }  
);
```

```
    signer: signatureField.getSigner(),
    filter: signatureField.getFilter(),
    subfilter: signatureField.getSubfilter(),
  };
  return Promise.resolve(verifySignData(signInfo, buffer));
}
);
```

### **PDFSignature Class**

- PDFSignature.isSigned() - Check if the current signature is signed or not.
- PDFSignature.getByteRange() - Get byte range which specifies scope of file stream of current signature.
- PDFSignature.getFilter() - Get the current signature filter.
- PDFSignature.getSubfilter() - Get the current signature subfilter.

### **Interact with the digital signature feature**

You can try our signature workflow by the way of using API or UI. This workflow is based on the Node.js backend which can be accessed at `./server/pkcs7` in our package.

#### ***Method 1 Programmatically place a signature on the current document***

- Run `https://webviewer-demo.foxitsoftware.com/` with starting a service.
- Run the following code on the console. A signature field will be automatically created and a digital signature will be placed on it.
- A signed document will be downloaded and reopened in your viewer. You can click on the signature field to verify it.

```
// this code example assumes you are running the signature service on a local host and using the default port
// 7777.
var pdfviewer = await pdfui.getPDFViewer();
var pdfdoc = await pdfviewer.getCurrentPDFDoc();
var signInfo = {
  filter: "Adobe.PPKLite",
  subfilter: "adbe.pkcs7.sha1",
  rect: { left: 10, bottom: 10, right: 300, top: 300 },
  pageIndex: 0,
  flag: 511,
  signer: "signer",
  reason: "reason",
  email: "email",
  distinguishName: "distinguishName",
```

```
location: "loc",
text: "text",
};

const signResult = await pdfdoc.sign(signInfo, (signInfo, plainContent) => {
    return requestData(
        "post",
        "http://127.0.0.1:7777/digest_and_sign",
        "arraybuffer",
        { plain: plainContent}
    );
});

// open the signed PDF
const singedPDF = await pdfviewer.openPDFByFile(signResult);
var pdfform = await singedPDF.loadPDFForm();
var verify = (signatureField, plainBuffer, signedData, hasDataOutOfScope) => {
    return requestData("post", "http://127.0.0.1:7777/verify", "text", {
        filter: signatureField.getFilter(),
        subfilter: signatureField.getSubfilter(),
        signer: signatureField.getSigner(),
        plainContent: new Blob([plainBuffer]),
        signedData: new Blob([signedData]),
    });
};

var result = singedPDF.verifySignature(pdfform.getField("Signature_0"), verify);
```

### **Method 2 Place a signature from the UI**

Let's use our online viewer <https://webviewer-demo.foxitsoftware.com/> to experience how it works.

- Preparation
  - Open <https://webviewer-demo.foxitsoftware.com/> on your browser.
- Add and sign a signature
  1. Click the signature button in the Form tab to switch to the addSignatureStateHandler.
  2. Click to draw a rectangle field on the page.
  3. Click Hand tool or press Esc key to switch to the handStateHandler.
  4. Set the sign information on the pop-up box and click Ok to sign it. The signed document will be downloaded and re-opened automatically.
- Verify signature
  - Click the signed signature field with the hand tool to verify it. A prompt box will be pop-up reporting the verifying result.

**Note:** To make this signature workflow work, we have referenced the following callback code in the index.html file of the complete\_webViewer, and run a signature service on our backend.

```
//the variable `origin` refers to the service http address where your signature service is running.
//signature handlers
var requestData = (type, url, responseType, body) => {
    return new Promise((res, rej) => {
        var xmlhttp = new XMLHttpRequest();
        xmlhttp.open(type, url);

        xmlhttp.responseType = responseType || "arraybuffer";
        let formData = new FormData();
        if (body) {
            for (let key in body) {
                if (body[key] instanceof Blob) {
                    formData.append(key, body[key], key);
                } else {
                    formData.append(key, body[key]);
                }
            }
        }
        xmlhttp.onload = (e) => {
            let status = xmlhttp.status;
            if ((status >= 200 && status < 300) || status === 304) {
                res(xmlhttp.response);
            }
        };
        xmlhttp.send(body ? formData : null);
    });
};

//set signature information and function. This function can be called to register different algorithm and
information for signing
//the api `/digest_and_sign` is used to calculate the digest and return the signed data
pdfui.registerSignHandler({
    filter: "Adobe.PPKLite",
    subfilter: "adbe.pkcs7.sha1",
    flag: 0x100,
    distinguishName: "e=foxit@foxitsoftware.cn",
    location: "FZ",
    reason: "Test",
    signer: "web sdk",
    showTime: true,
    sign: (setting, plainContent) => {
        return requestData("post", "origin", "arraybuffer", {
            plain: plainContent,
        });
    },
});

//set signature verification function
//the api /verify is used to verify the state of signature
pdfui.setVerifyHandler((signatureField, plainBuffer, signedData) => {
    return requestData("post", "origin", "text", {
        filter: signatureField.getFilter(),
        subfilter: signatureField.getSubfilter(),
    });
});
```

```

signer: signatureField.getSigner(),
plainContent: new Blob([plainBuffer]),
signedData: new Blob([signedData]),
});
});

```

## About signature HTTP service

If you don't have backend signature service available, you can use the following HTTP service routes which we provide for the test purpose.

[http://webviewer-demo.foxitsoftware.com/signature/digest\\_and\\_sign](http://webviewer-demo.foxitsoftware.com/signature/digest_and_sign)

<http://webviewer-demo.foxitsoftware.com/signature/verify>

## Import and Export

### Annotation

The Annotation supports three types of files to import/export data: XFDF, FDF and JSON. The following table lists what annotations currently don't support to import/export.

File Type	If all annots support	What not support
XFDF/FDF	Mostly	Screen Image, Link, Sound
JSON	Mostly	Screen Image, Link, Sound

### API

The following table list APIs that Foxit PDF SDK for Web provides to import/export data file.

Method	XFDF/FDF	JSON	JSON
Import	PDFDoc.importAnnotsFromFDF()	PDFDoc.importAnnotsFromJSON(annotsJson)	PDFPage.addAnnot(annotationJson)
Export	PDFDoc.exportAnnotsToFDF()	PDFDoc.exportAnnotsToJSON()	Annot.exportToJson()

It is recommended to use a corresponding method to import and export data. For example,

If `PDFDoc.exportAnnotsToJSON()` is called to export data, then it would better the `PDFDoc.importAnnotsFromJSON(annotsJson)` is used to import.

**Note:** Adding exported JSON data to the document via the `PDFPage.addAnnot` method can lead to loss of binary data streams for some annotations, such as Stamp and fileAttachment. This is because the `PDFPage.addAnnot` method does not support JSON data that contains binary streams. Therefore, if the data exported by `PDFDoc.exportAnnotsToJSON` contains binary streams, then it cannot be passed to the `PDFPage.addAnnot` method.

```
var pdfViewer = await pdfui.getPDFViewer();
var test = {ExportDataFile:'http://pathToSourceFile.pdf',ImportDatafile:'http://pathToTargetFile.pdf'};
var resp = await fetch(test.ExportDataFile);
var file = await resp.blob();

var pdfdoc = await pdfViewer.openPDFByFile(file);
var annotJson = await pdfdoc.exportAnnotsToJSON();
var newResp = await fetch(test.ImportDatafile);
var newFile = await newResp.blob()

var newPdfdoc = await pdfViewer.openPDFByFile(newFile);
for(var i=0;i<annotJson.length;i++){
    var newPage = await newPdfdoc.getPageByIndex(annotJson[i].page);
    var newAnnot = await newPage.addAnnot(annotJson[i]);
}
```

## Form

The Form supports three standard types of files to import/export data: XFDF, FDF and XML.

### API

The following table list APIs that Foxit PDF SDK for Web provides to import/export data file.

- `PDFDoc.exportFormToFile(fileType)`
- `PDFDoc.importFormFromFile(file, isXML)`

## Stamp and Customization

Foxit PDF SDK for Web provides a wide range of stamp features that users can implement with the APIs and default icons. This section will walk you through how manage stamps and add a stamp into PDF.

### Default stamp list

Foxit PDF SDK for web provides a default stamp list in Viewer as follows:

```
{  
    "stamp": {
```

```

"Static": {
    "Approved": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Completed": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Confidential": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Draft": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Revised": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Emergency": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Expired": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Final": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Received": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Reviewed": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    }
},
"SignHere": {
    "Accepted": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    },
    "Initial": {
        "url": "xxx://url.url",
        "fileType": "pdf"
    }
},

```

```

        "Rejected": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        },
        "SignHere": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        },
        "Witness": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        }
    },
    "Dynamic": {
        "Approved": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        },
        "Confidential": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        },
        "Received": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        },
        "Reviewed": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        },
        "Revised": {
            "url": "xxx://url.url",
            "fileType": "pdf"
        }
    }
}

```

## Manage Stamp list

The default stamp list doesn't allow changes. However, you can create your own stamps to replace the default ones, and then edit them. The first step is to make a PDF and corresponding svg file. You can refer to the examples in `lib\stamps\en-US\DynamicStamps` folder.

### ***Create a custom stamp list***

A custom stamp list can be predefined by calling the API `pdfViewer.initAnnotationIcons()` and loaded into the viewer. Once the following code runs, the default stamp list will be overwritten.

```
var initIcons = {
```

```
MyCategory1: {  
    StampName1: {  
        filetype: "jpg",  
        url: "http://stamp.jpg"  
    }  
},  
MyCategory2: {  
    StampName2: {  
        fileType: "png",  
        url: "stamp.png"  
    }  
},  
...  
};  
var pdfViewer = await pdfui.getPDFViewer();  
await pdfViewer.initAnnotationIcons({ stamp: initIcons });
```

### **Remove custom stamps**

```
//remove a stamp with the category and name as 'MyCategory1' and 'StampName1' from you stamp list  
var pdfViewer = await pdfui.getPDFViewer();  
await pdfViewer.removeAnnotationIcon('stamp','MyCategory1','StampName1')
```

```
//clear the whole stamp list  
var pdfViewer = await pdfui.getPDFViewer();  
await pdfViewer.removeAnnotationIcon('stamp','','StampName1')
```

```
//clear all stamps under 'MyCategory1'  
var pdfViewer = await pdfui.getPDFViewer();  
await pdfViewer.removeAnnotationIcon('stamp','MyCategory1','')
```

### **Add a new custom stamp**

```
var icons = {  
    annotType: "stamp",  
    fileType: "png",  
    url: "http://stamp.png",  
    // width:80,  
    // height:30,  
    category: "MyCategory",  
    name: "MyStamp"  
};  
var pdfViewer = await pdfui.getPDFViewer();  
await pdfViewer.addAnnotationIcon(icons);
```

## About the stamp category and name

Stamps are organized by category and name. To find out what stamps already exist in your list, the easy way is to check the category and name information by calling `pdfui.getAnnotationIcons()`. Here are code samples.

### ***Get the stamp category and name***

```
//list all available stamps  
await pdfui.getAnnotationIcons("stamp", false);  
  
//list only custom stamps  
await pdfui.getAnnotationIcons("stamp", true);
```

You also execute the following code to output the existing stamps.

```
var allIcons = pdfui.getAnnotationIcons("stamp", false);  
var iconNames = [];  
for (var categoryKey in allIcons) {  
    var category = allIcons[categoryKey];  
    for (var name in category) {  
        iconNames.push({  
            category: categoryKey,  
            name  
        });  
    }  
}  
console.log(iconNames);
```

## Add a stamp onto page in Viewer

The stamp list can be found by dropping down the stamp tool under Comment tab in Viewer. You can click a stamp icon and place it to a desired place on the page.

If you want to create a custom stamp and add it onto page, follow the steps below:

1. In Advanced Web Viewer, drop down the stamp tool under Comment tab, select `Custom Stamps`.
2. In the pop-up `Create Custom Stamp` dialog box, click `File -> Browse...` and choose an image file, or click `File -> Enter File URL`, input the URL address where the PDF and svg files are stored.
3. Fill in the category, name, width and height, as well as choose a type from drop-down menu to create a stamp. Then, the created stamp will appear in the Stamp list.
4. Click the created stamp icon and place it to a desired place on the page.

## Add a custom stamp onto page by API

Before calling the `PDFPage.addAnnot` to add a custom stamp which doesn't exist in your stamp list, you should call `PDFViewer.addAnnotationIcon()` to add it into stamp list. If not doing this, the stamp appearance will display incorrectly on the page.

```
var icons = {  
    annotType: "stamp",  
    fileType: "png",  
    url: "http://stamp.png",  
    // width:80,  
    // height:30,  
    category: "MyCategory",  
    name: "MyStamp"  
};  
  
var stamp = {  
    type:'stamp',  
    rect:{left:0,bottom:0,right:200,top:100},  
    icon:'MyStamp',  
    iconCategory:'MyCategory'  
};  
  
var pdfViewer = await pdfui.getPDFViewer();  
var pdfDoc = await pdfViewer.getCurrentPDFDoc();  
var page = await pdfDoc.getPageByIndex(0);  
  
await pdfViewer.addAnnotationIcon(icons);  
await page.addAnnot(stamp)
```

If you only want to add a new stamp onto the page without adding the stamp icon in your stamp list of your viewer, you can run the following code:

```
pdfpage.addAnnot({  
    type: PDFViewCtrl.PDF.annots.constant.Annot_Type.stamp,  
    rect: { left: 0, right: 300, top: 450, bottom: 0 },  
    iconInfo: {  
        annotType: PDFViewCtrl.PDF.annots.constant.Annot_Type.stamp,  
        category: "category",  
        name: "name",  
        fileType: "pdf",  
        url: "http://path/file.pdf"  
    }  
});
```

## Set the default tool to a particular stamp in Viewer

Use the PDFUI constructor option to define a stamp as the default tool handler:

```
pdfui = new UIExtension.PDFUI({
    customs: {
        defaultStateHandler: PDFViewCtrl.STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_STAMP
            handlerParams: {
                category: 'SignHere',
                name: 'SignHere'
            }
    };
})
```

Use the API StateHandlerManager.switchTo() to set default tool:

```
pdfui.getStateHandlerManager().then(handlerManager =>
    handlerManager.switchTo(
        PDFViewCtrl.STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_STAMP,
        {
            category: "SignHere",
            name: "SignHere"
            url: "http://xxx/xx.png", // or "blob:http://xxxxx"
            showUrl: "http://xxx/xx.png", // or "blob:http://xxxxx"
            fileType:'png',
            width: 80,
            height: 30,
        }
    );
);
```

## Related APIs

APIs	Description
PDFViewer.initAnnotationIcons(icons)	Initialize the icon of the annotation (after setting, the default icon will not be displayed)
PDFViewer.addAnnotationIcon(icon)	Add a single icon
PDFViewer.removeAnnotationIcon(type,category, name)	Remove a single icon
PDFUI.getAnnotationIcons(annotType,onlyCustimized)	Get custom icon
StateHandlerManager.switchTo(name,params)	Switch to addStampStateHandler
PDFViewer.setFormatOfDynamicStamp(seperator ,timeFormat)	Set the format of dynamic information

APIs	Description
PDFPage.addAnnot(json)	Add stamp with specifying the existing icon as the style of stamp

## Custom Speech Synthesizer

The speech synthesizer is a text-to-speech service that is used to convert text into sounds that approximate the sound of human speech. It can work with the Read Aloud feature to provide a powerful text-to-speech function which can read aloud page contents.

Depending on the speech technology, the sounds generated may be somewhat stilted and artificial sounding, or sound very much like the voice of a real person.

To better demonstrate how you could use different text-to-speech technology with our Foxit PDF SDK for Web, we take browser native [Web Speech API](#) as an example in the following section `Customize PDFTextToSpeechSynthesis`, and use the Google cloud [text-to-speech API](#) in the section of `Integrating 3rd Party TTS Service`.

### Speech Synthesizer APIs

#### PDFTextToSpeechSynthesis Interface Specification

```
interface PDFTextToSpeechSynthesis {
    status: PDFTextToSpeechSynthesisStatus;
    supported(): boolean;
    pause(): void;
    resume(): void;
    stop():void;
    play(utterances: IterableIterator<Promise<PDFTextToSpeechUtterance>>, options?: ReadAloudOptions): Promise<void>;
    updateOptions(options: Partial<ReadAloudOptions>): void;
}
```

#### 1. `status` Properties

The `status` enumerates the current reading aloud state. It can be defined as below:

```
enum PDFTextToSpeechSynthesisStatus {
    playing, paused, stopped,
}
```

The default value is `stopped`.

#### 2. `supported():boolean` Method

This method is used to detect if the `PDFTextToSpeechSynthesis` is supported in your current client environment. If there is a 3rd party speech service running in the background, you only need to check if `HTML<audio>` is supported on your client side.

Note: The client here could either be a browser, or something others such as Electron, Apache Cordova, etc.

#### **Code Example:**

```
class CustomPDFTextToSpeechSynthesis {  
    supported(): boolean {  
        return typeof window.HTMLAudioElement === 'function';  
    }  
    // .... other methods  
}
```

#### 3. `pause()`, `resume` and `stop()` Methods

These methods are used to control the state of reading aloud. Through these methods, the `PDFTextToSpeechSynthesis` can manage the voice media to pause, resume, stop, and specify the `status` property.

#### 4. `updateOptions(options: Partial<ReadAloudOptions>)` Method

This method is used to update the `PDFTextToSpeechSynthesis` in the reading aloud state, such as change the voice volume.

#### 5. `play(utterances: IterableIterator<Promise<PDFTextToSpeechUtterance>>, options?: ReadAloudOptions): Promise<void>` Method

##### Parameter Description:

1. `utterances`: This is an `IterableIterator` that contains the content of the text to be read as well as the page number and coordinate information, which can be used with `for...of` to iterate.
2. `options`: This is an optional parameter that contains the speed, pitch, volume of the playback and the 'external' parameter, where 'external' is the parameter object passed to the third party speech synthesizer service.

## **Customize PDFTextToSpeechSynthesis**

### **Method 1: Implement PDFTextToSpeechSynthesis interface**

Notice: This demo only supports in Chrome, Firefox, Chromium Edge.

```
<html>
```

```
</html>
<script>
  const PDFTextToSpeechSynthesisStatus =
UIExtension.PDFViewCtrl.readAloud.PDFTextToSpeechSynthesisStatus;
  class CustomPDFTextToSpeechSynthesis {
    constructor() {
      this.playingOptions = {};
      this.status = PDFTextToSpeechSynthesisStatus.stopped;
    }
    supported() {
      return typeof window.speechSynthesis !== 'undefined';
    }
    pause() {
      this.status = PDFTextToSpeechSynthesisStatus.paused;
      window.speechSynthesis.pause();
    }
    resume() {
      this.status = PDFTextToSpeechSynthesisStatus.playing;
      window.speechSynthesis.resume();
    }
    stop() {
      this.status = PDFTextToSpeechSynthesisStatus.stopped;
      window.speechSynthesis.cancel();
    }
    /**
     * @param {IterableIterator<Promise<PDFTextToSpeechUtterance>>} utterances
     * @param {ReadAloudOptions} options
     *
     */
    async play(utterances, options) {
      for await (const utterance of utterances) {
        const nativeSpeechUtterance = new window.SpeechSynthesisUtterance(utterance.text);
        const { pitch, rate, volume } = Object.assign(
          {}, this.playingOptions, options || {}
        );
        if(typeof pitch === 'number') {
          nativeSpeechUtterance.pitch = pitch;
        }
        if(typeof rate === 'number') {
          nativeSpeechUtterance.rate = rate;
        }
        if(typeof volume === 'number') {
          nativeSpeechUtterance.volume = volume;
        }
        await new Promise((resolve, reject) => {
          nativeSpeechUtterance.onend = resolve;
          nativeSpeechUtterance.onabort = resolve;
          nativeSpeechUtterance.onerror = reject;
          speechSynthesis.speak(nativeSpeechUtterance);
        });
      }
    }
  }
}
```

```

    }
    updateOptions(options) {
        Object.assign(this.playingOptions, options);
    }
}
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.ribbon,
    addons: [
        libPath + '/uix-addons/read-aloud'
    ]
});
pdfui.getReadAloudService().then(function(service) {
    service.setSpeechSynthesis(new CustomPDFTextToSpeechSynthesis());
});

</script>

```

#### Method 2: Use **AbstractPDFTextToSpeechSynthesis** to customize the speech synthesizer

```

<html>
</html>
<script>
    const PDFTextToSpeechSynthesisStatus =
UIExtension.PDFViewCtrl.readAloud.PDFTextToSpeechSynthesisStatus;
    const AbstractPDFTextToSpeechSynthesis =
UIExtension.PDFViewCtrl.readAloud.AbstractPDFTextToSpeechSynthesis;
    const CustomPDFTextToSpeechSynthesis = AbstractPDFTextToSpeechSynthesis.extend({
        init(){},
        supported() {
            return typeof window.speechSynthesis !== 'undefined';
        },
        doPause() {
            window.speechSynthesis.pause();
        },
        doResume() {
            window.speechSynthesis.resume();
        },
        doStop() {
            window.speechSynthesis.cancel();
        },
        /**
         * @param {string} text

```

```

* @param {ReadAloudOptions | undefined} options
*/
async speakText(text, options) {
    const nativeSpeechUtterance = new window.SpeechSynthesisUtterance(utterance.text);
    const { pitch, rate, volume } = Object.assign(
        {}, this.playingOptions, options || {}
    );
    if(typeof pitch === 'number') {
        nativeSpeechUtterance.pitch = pitch;
    }
    if(typeof rate === 'number') {
        nativeSpeechUtterance.rate = rate;
    }
    if(typeof volume === 'number') {
        nativeSpeechUtterance.volume = volume;
    }
    await new Promise((resolve, reject) => {
        nativeSpeechUtterance.onend = resolve;
        nativeSpeechUtterance.onabort = resolve;
        nativeSpeechUtterance.onerror = reject;
        speechSynthesis.speak(nativeSpeechUtterance);
    });
}
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        },
        renderTo: document.body,
        appearance: UIExtension.appearances.ribbon,
        addons: [
            libPath + '/uix-addons/read-aloud'
        ]
    };
    pdfui.getReadAloudService().then(function(service) {
        service.setSpeechSynthesis(new CustomPDFTextToSpeechSynthesis());
    });
}

</script>

```

### The Difference of **PDFTextToSpeechSynthesis** and **AbstractPDFTextToSpeechSynthesis**

The Method 1 customizes speech synthesizer by implementing the interface **PDFTextToSpeechSynthesis**. It needs to manually manage state changes as well as iterate the list of 'utterances' by `for await...of`. Each item in the 'Utterance' list is a text block obtained from **PDFPage**. In some cases, the text block may just contain a part of a word or sentence, which requires merging

text blocks to build up a complete word and sentence for better speech synthesizing. This merging operation can be completed in the `play()` method.

The Method 2 customizes speech synthesizer by inheriting the `AbstractPDFTextToSpeechSynthesis` abstract class. It doesn't require to manually manage state and iterate utterances list, but needs correctly call `window.SpeechSynthesisUtterance` to generate speech and play the voice based on the received text and parameters. These received text blocks will be automatically merged by `AbstractPDFTextToSpeechSynthesis`. However currently it is tough to guarantee that all the combined text blocks in different language environments would comprise complete words or sentences, as such if you are strict with reading correctness with each sentence and word, you are recommended to use Method 1.

## Integrate with 3rd Party TTS Service

We take [@google-cloud/text-to-speech](#) as an example in this section.

### Server

To start with Google Cloud Text-to-Speech server library with favorite programming language, refer to <https://cloud.google.com/text-to-speech/docs/quickstarts>.

### Client

```
var readAloud = UIExtension.PDFViewCtrl.readAloud;
var PDFTextToSpeechSynthesisStatus = readAloud.PDFTextToSpeechSynthesisStatus;
var AbstractPDFTextToSpeechSynthesis = readAloud.AbstractPDFTextToSpeechSynthesis;
var SPEECH_SYNTHESIS_URL = '<server url>'; // the server API address

var ThirdpartyPDFTextToSpeechSynthesis = AbstractPDFTextToSpeechSynthesis.extend({
  init: function() {
    this.audioElement = null;
  },
  supported: function() {
    return typeof window.HTMLAudioElement === 'function' && document.createElement('audio') instanceof
window.HTMLAudioElement;
  },
  doPause: function() {
    if(this.audioElement) {
      this.audioElement.pause();
    }
  },
  doStop: function() {
    if(this.audioElement) {
      this.audioElement.pause();
      this.audioElement.currentTime = 0;
      this.audioElement = null;
    }
  },
  doResume: function() {
```

```

        if(this.audioElement) {
            this.audioElement.play();
        }
    },
    onCurrentPlayingOptionsUpdated: function() {
        if(!this.audioElement) {
            return;
        }
        var options = this.currentPlayingOptions;
        if (this.status === PDFTextToSpeechSynthesisStatus.playing) {
            if(options.volume >= 0 && options.volume <= 1) {
                this.audioElement.volume = options.volume;
            }
        }
    },
    speakText: function(text, options) {
        var audioElement = document.createElement('audio');
        this.audioElement = audioElement;
        if(options.volume >= 0 && options.volume <= 1) {
            audioElement.volume = options.volume;
        }
        return this.speechSynthesis(text, options).then(function(src) {
            return new Promise(function(resolve, reject) {
                audioElement.src = src;
                audioElement.onended = function() {
                    resolve();
                };
                audioElement.onabort = function() {
                    resolve();
                };
                audioElement.onerror = function(e) {
                    reject(e);
                };
                audioElement.play();
            }).finally(function() {
                URL.revokeObjectURL(src);
            });
        });
    },
    // If the server API request method or parameter form is not consistent with the following implementation, it
    // will need to be adjusted accordingly.
    speechSynthesis: function(text, options) {
        var url = SPEECH_SYNTHESIS_URL + '?' + this.buildURIQueries(text, options);
        return fetch(url).then(function(response) {
            if(response.status >= 400) {
                return response.json().then(function(json) {
                    return Promise.reject(JSON.parse(json).error);
                });
            }
            return response.blob();
        }).then(function (blob) {

```

```

        return URL.createObjectURL(blob);
    });
},
buildURIQueries: function(text, options) {
    var queries = [
        'text=' + encodeURIComponent(text)
    ];
    if(!options) {
        return queries.join('&');
    }
    if(typeof options.rate === 'number') {
        queries.push('rate=' + options.rate );
    }
    if(typeof options.spitch === 'number') {
        queries.push('spitch=' + options.spitch);
    }
    if(typeof options.lang === 'string') {
        queries.push('lang=' + encodeURIComponent(options.lang));
    }
    if(typeof options.voice === 'string') {
        queries.push('voice=' + encodeURIComponent(options.voice));
    }
    if(typeof options.external !== 'undefined') {
        queries.push('external=' + encodeURIComponent(JSON.stringify(options.external)));
    }
    return queries.join('&');
}
);

```

### Use the custom speech synthesizer:

```

pdfui.getReadAloudService().then(function(service) {
    service.set(new ThirdpartyPDFTextToSpeechSynthesis());
});

```

## Snapshot Tool

### API

#### *Capture screenshot image*

```

const pageRender = pdfViewer.getPDFPageRender(pageIndex);
pageRender.getSnapshot(left, top, width, height).then(imageBlob => {
    // Get the image stream.
});

```

#### *Capture screenshot image of the specified page*

```

pdfViewer.takeSnapshot(pageIndex, left, top, width, height).then(imageBlob=>{
    // Get the image stream.
});

```

```
});
```

### ***Copy image data to clipboard***

```
pdfViewer.copySnapshot(imageBlob).then(function(){
    // Succeed to Copy image data to clipboard.
});
```

## **Image storage service**

### ***The API for image storage service***

#### **The API for uploading images**

```
pdfViewer.uploadImage(imageBlob).then(function(imgURL){
    // Succeed to upload image blob data to the snapshot server.
});
```

request method: POST, request address: `/snapshot/upload?filefield={}`, BODY is the image stream,  
return: `/snapshot/image/{imageid}`

#### **The API for downloading images**

request method: GET, request address: `/snapshot/image/{imageid}`

### ***Customize image storage service***

Foxit PDF SDK for Web provides a built-in image storage service implementation, allowing you to modify the image uploading behavior by configuring specific parameters, as demonstrated below:

```
new PDFViewer({
    snapshotServer: new SnapshotServer({
        // The API for uploading images.
        uploadSnapshotAPIPath: 'snapshot/upload',
        // Parse the contents that responds from the server, and parse it to an image URL. The default
        implementation is return resp.

        // Assuming that the server returns {success: true, data: {url: '/snapshot/image/xxx'}}, then you need to
        implement it as follow:
        render: function(resp) {
            return resp;
        }
    })
})
```

If you need to customize additional features, such as adding custom request headers, pre-request permission validation, and more, you can implement your own SnapshotServer object:

```
new PDFViewer({
    snapshotServer: {
```

```
render() {
  return _;
},
uploadImage(imageBlob) {
  return fetch(`/snapshot/upload/?filefield=file`, {
    method: 'POST',
    headers: {
      'Content-Type': 'multipart/form-data',
      'X-File-Name': 'snapshot.png'
    },
    body: imageBlob
  }).then(response => {
    return response.text();
  })
}
}
```

## Example

```
// If you need to upload images to a specified server, then you need to create a custom image storage service.
const SnapshotServer = PDFViewCtrl.SnapshotServer;
const pdfui = new PDFUI({
  ...
  viewerOptions: {
    snapshotServer: new SnapshotServer({
      origin: location.origin,
      uploadSnapshotAPIPath: 'snapshot/upload',
      payloadFieldName: 'file',
      method: 'POST',
      render: function(resp) {
        return resp;
      }
    })
    ...
  }
})
var pdfviewer = await pdfui.getPDFViewer();
// Capture a screenshot of a specified area on a designated page.
var imageBlob = await pdfviewer.takeSnapshot(0, 0, 0, 200, 200);
// Upload images to a specified server.
var uploadResult = await pdfviewer.uploadImage(imageBlob);
// Capture the image and copy it to the clipboard.
var copyResult = await pdfviewer.copySnapshot(uploadResult);
```

## Compare PDFs by overlaying PDF pages

Starting from version 9.0.0, Foxit PDF SDK for Web provides APIs to support comparing PDFs by overlaying PDF pages, and then generate a new comparison result image which can intuitively display the differences between the two PDF pages.

### A Simple Example

In this section, a simple example will be provided to show you how to compare PDFs by overlaying PDF pages. It includes: open document, create document, get PDF page, compare pages, generate result page, and export the result document.

First, initialize a blank project, and then the subsequent operations will be done based on this project.

```
const libPath = window.top.location.origin + '/lib';
const pdfViewer = new PDFViewCtrl.PDFViewer({
    libPath: libPath,
    jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
    }
});
pdfViewer.init(document.body);
```

### Load the documents that need to be compared

```
async function loadFiles() {
    const sourcePDFDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/test-doc1.pdf'
        }
    });
    const targetPDFDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/test-doc2.pdf'
        }
    });
    return { sourcePDFDoc, targetPDFDoc };
}
```

Foxit PDF SDK for Web provides two ways to load documents:

1. [loadPDFDocByHttpRangeRequest](#): using this API, you can asynchronously load PDF documents as required from remote.

2. [loadPDFDocByFile](#): using this API, you can load the file stream in the memory, or select files on the hard disk via `<input type="file">`.

The purpose of loading documents is that you can edit and read the documents without rendering them. Here is just for demonstration, so we use this method. In an actual project, you can also do further operations by getting the current opened document ([PDFViewer.getCurrentPDFDoc](#)).

### Create a blank document

The blank document will be used to save the comparison result.

```
function createBlankDoc() {  
    return pdfViewer.createNewDoc();  
}
```

### Get the bitmaps of the pages that need to be compared

```
async function getPageBitmaps(loaderFiles) {  
    const { sourcePDFDoc, targetPDFDoc } = loaderFiles;  
  
    const sourcePage = await sourcePDFDoc.getPageByIndex(0);  
    const sourceBitmap = await sourcePage.render(1);  
  
    const targetPage = await targetPDFDoc.getPageByIndex(0);  
    const targetBitmap = await targetPage.render(1);  
  
    return { sourceBitmap, targetBitmap };  
}
```

If you need to use other options (for example scale and rotation), please input parameters (scale, rotate) in the `render` method, and refer to the [PDFPage.render](#) interface in the API Reference.

### Start to compare documents

```
function comparePageBitmap(sourceBitmap, targetBitmap) {  
    const DiffColor = PDFViewCtrl.overlayComparison.DiffColor;  
    const service = pdfViewer.getOverlayComparisonService();  
    const resultCanvas = service.compareImageData({  
        sourceBitmap,  
        targetBitmap,  
        combinePixelsOptions: {  
            showDiffColor: true,  
            sourceDiffColor: DiffColor.RED,  
            targetDiffColor: DiffColor.BLUE,  
            sourceOpacity: 0xFF,  
            targetOpacity: 0xFF  
        },  
        transformation: {  
            translateX: 0,  
            translateY: 0  
        }  
    });  
}
```

```
        translateY: 0,
        rotate: 2 / 180 * Math.PI
    }
});

return new Promise(resolve => {
    resultCanvas.toBlob(blob => {
        const fr = new FileReader();
        fr.onloadend = () => {
            resolve({
                buffer: fr.result,
                width: resultCanvas.width,
                height: resultCanvas.height
            });
        };
        fr.readAsArrayBuffer(blob);
    });
});
```

**Note:**

1. The differences between the documents will be marked only when `shouldShowDiff` is set to `true`.
  2. `sourceDiffColor` and `targetDiffColor` do not support all colors, you must select one of the colors in the `DiffColor` enumeration.
  3. The value range of `sourceOpacity` and `targetOpacity` is `0~0xFF`.

**Insert the comparison result into the PDF page**

```
async function insertResultIntoNewDoc(newDoc, resultImageData) {
  const page = await newDoc.getPageByIndex(0);

  // resultImageData is the return object of the comparePageBitmap function mentioned in the above example.
  // Convert the unit of width and height from pixel to point.
  const newPasswordWidth = resultImageData.width / 4 * 3;
  const newPasswordHeight = resultImageData.height / 4 * 3;
  // Reset the size of PDF page to make it the same size as the comparison image.
  await page.setPageSize(newPasswordWidth, newPasswordHeight);
  // Last, insert it into the PDF page as a PDF image object.
  await page.addImage(resultImageData.buffer, {
    left: 0,
    right: newPasswordWidth,
    bottom: 0,
    top: newPasswordHeight
  });
}
```

## Export the result document

```
async function exportResultPDFDocFile(newDoc) {
    return newDoc.getFile();
}
```

[PDFDoc.getFile](#) interface will return the blob object of the document. You can use the general method to download this file stream or open the document by [PDFDoc.openPDFDocByFile](#) interface to see the effect.

## The final effect

Integrate all the above code, the final effect is as follows, please click run button to run the example:

**Why Foxit PDF SDK for Web is your choice**

**Fully customizable**  
Developers can easily design a unique style for their Foxit PDF SDK for Web user interface, making it consistent to their own branding and other web applications.

**Easy to integrate**  
Developers can easily integrate Foxit PDF SDK for Web by referring to the product's knowledge base and writing a small amount of code to display and edit PDF files. The web-based pdf viewer also provides a large amount of interfaces to connect users and user data.

**Standard and consistent annotation data**  
The annotations in Foxit PDF SDK for Web are consistent when viewing and editing in other applications, as well as following industry-leading professional standards for quality and compliance.

**Powered by Foxit's highly reliable rendering PDF engine**  
The core technology of Foxit PDF SDK for Web is based on Foxit's PDF engine, which is trusted by a large number of well-known companies. Foxit's powerful engine makes document viewing fast and consistent in all environments.

```
<html>
</html>
<script>
const libPath = window.top.location.origin + '/lib';
const pdfViewer = new PDFViewCtrl.PDFViewer({
    libPath: libPath,
    jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
    }
});
pdfViewer.init(document.body);
```

```
(async () => {
    const loadedFiles = await loadFiles();
    const newDoc = await createBlankDoc();

    const { sourceBitmap, targetBitmap } = await getPageBitmaps(loadedFiles);
    const resultImageData = await comparePageBitmap(sourceBitmap, targetBitmap);

    await pdfViewer.zoomTo(1);

    await insertResultIntoNewDoc(newDoc, resultImageData);
})()

async function loadFiles() {
    const sourcePDFDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/test-doc1.pdf'
        }
    });
    const targetPDFDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/test-doc2.pdf'
        }
    });
    return { sourcePDFDoc, targetPDFDoc };
}
function createBlankDoc() {
    return pdfViewer.createNewDoc();
}
async function getPageBitmaps(loadedFiles) {
    const { sourcePDFDoc, targetPDFDoc } = loadedFiles;

    const sourcePage = await sourcePDFDoc.getPageByIndex(0);
    const sourceBitmap = await sourcePage.render(1);

    const targetPage = await targetPDFDoc.getPageByIndex(0);
    const targetBitmap = await targetPage.render(1);

    return { sourceBitmap, targetBitmap };
}
function comparePageBitmap(sourceBitmap, targetBitmap) {
    const DiffColor = PDFViewCtrl.overlayComparison.DiffColor;
    const service = pdfViewer.getOverlayComparisonService();
    const resultCanvas = service.compareImageData({
        sourceBitmap,
        targetBitmap,
        combinePixelsOptions: {
            showDiffColor: true,
            sourceDiffColor: DiffColor.RED,
            targetDiffColor: DiffColor.BLUE,
            sourceOpacity: 0xFF,
            targetOpacity: 0xFF
        },
    });
}
```

```
        transformation: {
            translateX: 0,
            translateY: 0,
            rotate: 2 / 180 * Math.PI
        }
    });
    return new Promise(resolve => {
        resultCanvas.toBlob(blob => {
            const fr = new FileReader();
            fr.onloadend = () => {
                resolve({
                    buffer: fr.result,
                    width: resultCanvas.width,
                    height: resultCanvas.height
                });
            };
            fr.readAsArrayBuffer(blob);
        });
    })
}
async function insertResultIntoNewDoc(newDoc, resultImageData) {
    const page = await newDoc.getPageByIndex(0);

    const nextPageWidth = resultImageData.width / 4 * 3;
    const nextPageHeight = resultImageData.height / 4 * 3;
    await page.setPageSize(nextPageWidth, nextPageHeight);
    await page.addImage(resultImageData.buffer, {
        left: 0,
        right: nextPageWidth,
        bottom: 0,
        top: nextPageHeight
    });
}
async function exportResultPDFDocFile(newDoc) {
    return newDoc.getFile();
}
</script>
```

**Note:**

To minimize the interference of irrelevant code and make the code more intuitive, the above example is written using ESNext syntax. Please use a modern browser to open the developer guide document and run the example. If you need to be compatible with older browsers, please use JavaScript transpiler such as babel in your project.

## Compare PDF Files

Starting from version 8.5.0, Foxit PDF SDK for Web provides APIs to compare PDF files in the full package, which can compare the differences between text, annotations, page objects (images, paths), and watermarks in two PDF files. In general, to compare PDF files using the APIs, first input two different documents, then return a result document with detailed difference information, finally open the result document to intuitively see the difference information. Following will explain the usage of the APIs in detail.

### APIs Preview

<https://developers.foxit.com/developer-hub/document/developer-guide-pdf-sdk-web>

### A Simple Example

In this section, we will show you how to compare two documents and control the content display in the result document. The following example will be done based on a created `PDFViewer` instance.

#### Load documents

Before you start, load two documents using `PDFViewer.loadPDFDocByFile` or `PDFViewer.loadPDFDocByHttpRequest`. These two APIs are used to load PDF documents, and then return a `PDFDoc` object, without rendering documents on the view.

```
const baseDoc = await pdfViewer.loadPDFDocByHttpRequest({
  range: {
    url: '/assets/compare-base.pdf'
  }
});
const otherDoc = await pdfViewer.loadPDFDocByHttpRequest({
  range: {
    url: '/assets/compare-other.pdf'
  }
});
```

#### Start to compare documents

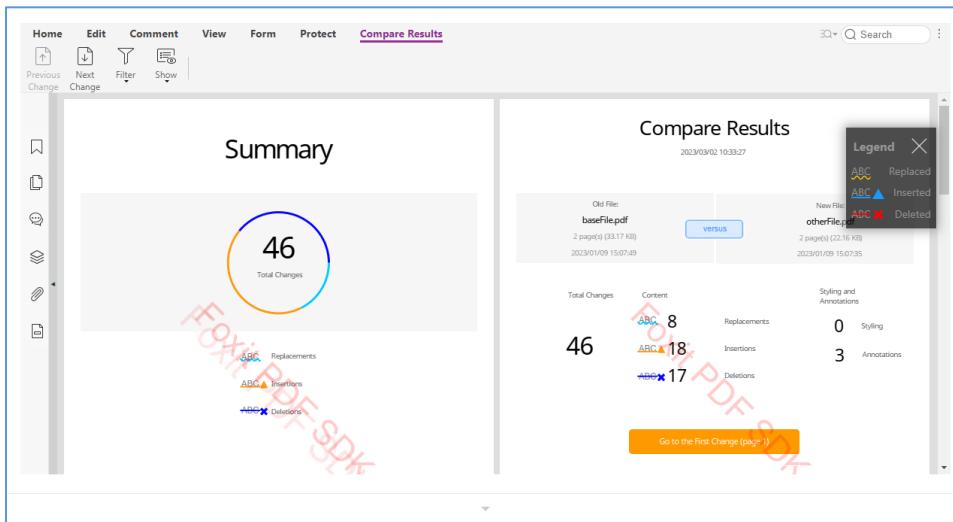
After loading the documents, you just need to get the id values of the documents through `PDFDoc.getId`, and then you can start to compare documents.

```
const baseDocId = baseDoc.getId();
const otherDocId = otherDoc.getId();

const comparedDoc = await pdfViewer.compareDocuments(
  baseDocId,
  otherDocId,
  {
```

```
// The file name of baseDoc, which will be displayed in the result document.
baseFileName: 'baseFile.pdf',
// The file name of otherDoc, which will be displayed in the result document.
otherFileName: 'otherFile.pdf',
// The file name of the result document.
resultFileName: pdfViewer.i18n.t('comparison:resultFileName') || 'The result of comparison.pdf'
}
);
```

Preview of the effect:



```
<script>
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            fontPath: 'http://webpdf.foxitsoftware.com/webfonts',
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive,
    addons: libPath + '/uix-addons/allInOne.js'
});
(async function() {
    const pdfViewer = await pdfui.getPDFViewer();
    const baseDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/compare-base.pdf'
        }
    });
    const otherDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
```

```

        url: '/assets/compare-other.pdf'
    }
});
const baseDocId = baseDoc.getId();
const otherDocId = otherDoc.getId();

const comparedDoc = await pdfViewer.compareDocuments(
    baseDocId,
    otherDocId,
    {
        baseFileName: 'baseFile.pdf',
        otherFileName: 'otherFile.pdf',
        resultFileName: pdfViewer.i18n.t('comparison:resultFileName') || 'The result of comparison.pdf'
    }
);
const comparedDocFile = await comparedDoc.getFile();
pdfui.openPDFByFile(comparedDocFile);
})()
</script>

```

## The Parameters of compareDocuments method

### Page range

You can specify the page range of the two documents to be compared through the following two parameters:

```

pdfViewer.compareDocuments(
    baseDocId,
    otherDocId,
    {
        // ...
        basePageRange: {
            from: 0,
            end: 2
        },
        otherPageRange: {
            from: 1,
            end: 3
        },
        options: {
            // ...
        }
    }
)

```

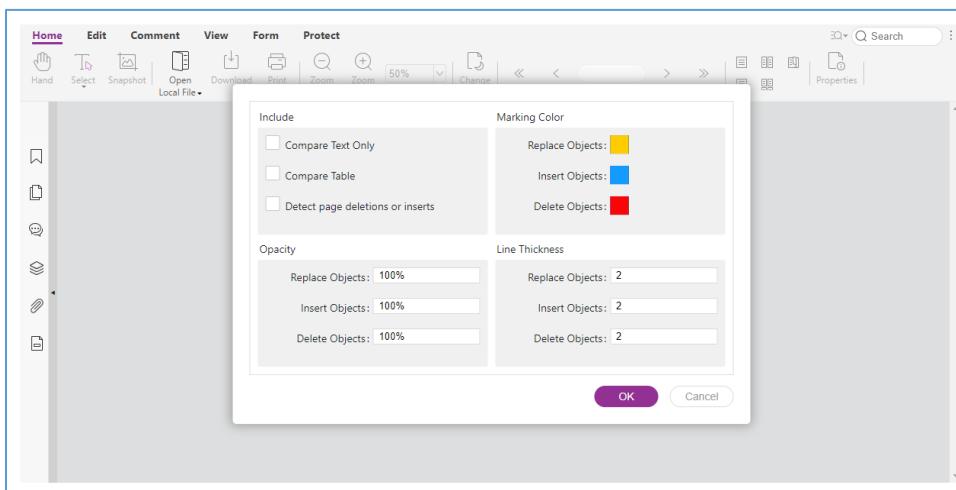
Both `basePageRange` and `otherPageRange` objects should include `from` and `end` properties which represent the starting and ending page indexes of the pages to be compared. In the above example code, the final pages to be compared are: `baseDoc: [0, 1, 2]`, `otherDoc: [1, 2, 3]`. Please note that the number of pages specified in the `basePageRange` and `otherPageRange` should be same

## options parameters

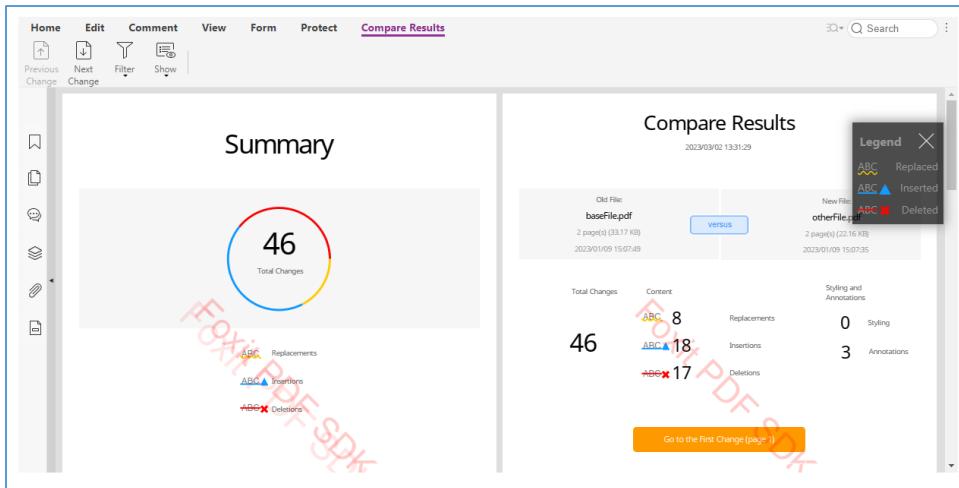
options are used to specify the objects that need to be compared and the comparison method. The parameters are explained as follows:

```
// Whether to compare tables, default is false, which means not to compare.
compareTable: false,
// Whether to detect page deletions and insertions, default is false, which means not to detect.
detectPage: false,
// The width of the outline border of the marker, and the unit is point.
lineThickness: {
    delete: 2,
    insert: 2,
    replace: 2
},
// This parameter is used to set the marker color for different types of differences. The format of marker color
is 0xRRGGBB without transparent channel, and the transparency needs to be specified in opacity.
markingColor: {
    delete: 0xfa0505,
    insert: 0x149bff,
    replace: 0xffcc00
},
// This parameter is used to set the transparency of different types of differences.
opacity: {
    delete: 100,
    insert: 100,
    replace: 100
},
// Whether only to compare text differences. If the value is true, only compare the text differences, otherwise
compare the annotations, page oobjects (include text), and so on.
textOnly: false
```

Following is an example with using the above parameters:



Click **OK** on the pop-up dialog.



```

<script>
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            fontPath: 'http://webpdf.foxitsoftware.com/webfonts',
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive,
    addons: libPath + '/uix-addons/allInOne.js'
});
class ComparisonOptionsLayerComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `
        <layer class="center fv__ui-comparison-options-dialog" @var.dialog="$component" style="width: 680px"
append-to="body">
            <layer-view class="fv__ui-comparison-dialog-body">
                <div class="fv__ui-layout-row">
                    <div class="fv__ui-layout-col-1">
                        <fieldset class="fv__ui-comparison-fieldset">
                            <legend>comparison:options-dialog.include</legend>
                            <div class="fv__ui-comparison-fieldset-content">
                                <form-group label="comparison:options-dialog.compareTextOnly" direction="rtl">
                                    <checkbox @model="dialog.currentOptions.textOnly"
name="compareTextOnly"></checkbox>
                                </form-group>
                                <form-group label="comparison:options-dialog.compareTable" direction="rtl">
                                    <checkbox @model="dialog.currentOptions.compareTable"
name="compareTable"></checkbox>
                                </form-group>
                                <form-group label="comparison:options-dialog.detectPage" direction="rtl">

```

```

        <checkbox @model="dialog.currentOptions.detectPage"
name="detectPageDeletionsOrInserts"></checkbox>
        </form-group>
    </div>
</fieldset>
</div>
<div class="fv__ui-layout-col-1">
    <fieldset class="fv__ui-comparison-fieldset">
        <legend>comparison:options-dialog.markingColor</legend>
        <div class="fv__ui-comparison-fieldset-content">
            <form-group label="comparison:options-dialog.replaceObjects">
                <inline-color-picker name="fv--comparison-options-replace-marking-color"
@model="dialog.currentOptions.markingColor.replace | comparison:color"></inline-color-picker>
            </form-group>
            <form-group label="comparison:options-dialog.insertObjects">
                <inline-color-picker name="fv--comparison-options-insert-marking-color"
@model="dialog.currentOptions.markingColor.insert | comparison:color"></inline-color-picker>
            </form-group>
            <form-group label="comparison:options-dialog.deleteObjects">
                <inline-color-picker name="fv--comparison-options-delete-marking-color"
@model="dialog.currentOptions.markingColor.delete | comparison:color"></inline-color-picker>
            </form-group>
        </div>
    </fieldset>
</div>
<div class="fv__ui-layout-row">
    <div class="fv__ui-layout-col-1">
        <fieldset class="fv__ui-comparison-fieldset">
            <legend>comparison:options-dialog.opacity</legend>
            <div class="fv__ui-comparison-fieldset-content fv__ui-comparison-options-checkbox-list">
                <form-group label="comparison:options-dialog.replaceObjects">
                    <number type="number" min="0" max="100" step="1" suffix="%"
@model="dialog.currentOptions.opacity.replace" name="fv--comparison-options-replace-opacity-
replace"></number>
                </form-group>
                <form-group label="comparison:options-dialog.insertObjects">
                    <number type="number" min="0" max="100" step="1" suffix="%"
@model="dialog.currentOptions.opacity.insert" name="fv--comparison-options-replace-opacity-
insert"></number>
                </form-group>
                <form-group label="comparison:options-dialog.deleteObjects">
                    <number type="number" min="0" max="100" step="1" suffix="%"
@model="dialog.currentOptions.opacity.delete" name="fv--comparison-options-replace-opacity-
delete"></number>
                </form-group>
            </div>
        </fieldset>
    </div>
    <div class="fv__ui-layout-col-1">
        <fieldset class="fv__ui-comparison-fieldset">

```

```

<legend>comparison:options-dialog.lineThickness</legend>
<div class="fv__ui-comparison-fieldset-content fv__ui-comparison-options-checkbox-list">
    <form-group label="comparison:options-dialog.replaceObjects">
        <number type="number" min="1" max="12" step="1"
@model="dialog.currentOptions.lineThickness.replace" name="fv--comparison-options-replace-lineThickness-
replace"></number>
    </form-group>
    <form-group label="comparison:options-dialog.insertObjects">
        <number type="number" min="1" max="12" step="1"
@model="dialog.currentOptions.lineThickness.insert" name="fv--comparison-options-replace-lineThickness-
insert"></number>
    </form-group>
    <form-group label="comparison:options-dialog.deleteObjects">
        <number type="number" min="1" max="12" step="1"
@model="dialog.currentOptions.lineThickness.delete" name="fv--comparison-options-replace-lineThickness-
delete"></number>
    </form-group>
</div>
</fieldset>
</div>
</layer-view>
<div class="fv__ui-comparison-dialog-footer fv__ui-layout-row">
    <div class="fv__ui-layout-col-1 fv__ui-comparison-footer-buttons">
        <xbutton text="dialog.ok" class="fv__ui-dialog-button fv__ui-dialog-ok-button" name="fv__ui-
dialog-ok-button" @on.click="dialog.ok()"></xbutton>
        <xbutton text="dialog.cancel" class="fv__ui-dialog-button fv__ui-dialog-cancel-button"
name="fv__ui-dialog-cancel-button" @on.click="dialog.cancel()" @cannotBeDisabled></xbutton>
    </div>
</div>
</layer>
`}

}) {
    static getName() {
        return 'comparison-options-layer'
    }
    currentOptions = this.getDefaultOptions();

getDefaultOptions() {
    return {
        compareTable: false,
        detectPage: false,
        lineThickness: {
            delete: 2,
            insert: 2,
            replace: 2
        },
        markingColor: {
            delete: 0xfa0505,
            insert: 0x149bff,
            replace: 0xffcc00
        }
    }
}

```

```
        },
        opacity: {
            delete: 100,
            insert: 100,
            replace: 100
        },
        textOnly: false
    );
}
onOk(callback) {
    this.onOkCallback = callback;
}
ok() {
    if(typeof this.onOkCallback == 'function') {
        this.onOkCallback(this.currentOptions);
    }
    this.hide();
    this.currentOptions = this.getDefaultOptions();
}
cancel() {
    this.hide();
    this.currentOptions = this.getDefaultOptions();
}
}

UIExtension.modular.root().registerComponent(ComparisonOptionsLayerComponent);

(async function() {
    const root = await pdfui.getRootComponent();
    root.append('<comparison-options-layer visible>');

    const pdfViewer = await pdfui.getPDFViewer();
    const baseDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/compare-base.pdf'
        }
    });
    const otherDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/compare-other.pdf'
        }
    });
    const baseDocId = baseDoc.getId();
    const otherDocId = otherDoc.getId();

    const optionsLayer = root.querySelector('@comparison-options-layer');
    optionsLayer.onOk(async options => {
        const comparedDoc = await pdfViewer.compareDocuments(
            baseDocId,
            otherDocId,
        {
            
```

```

        baseFileName: 'baseFile.pdf',
        otherFileName: 'otherFile.pdf',
        resultFileName: pdfViewer.i18n.t('comparison:resultFileName') || 'The result of comparison.pdf',
        options: options
    }
);
console.log(options);
const comparedDocFile = await comparedDoc.getFile();
pdfui.openPDFByFile(comparedDocFile);
});
})()
</script>

```

### The progress of comparing documents

When the documents that need to be compared are large, it will take more time to generate the result document. At this time, the fourth parameter of the `compareDocuments` method can accept a callback function to get the processing progress information:

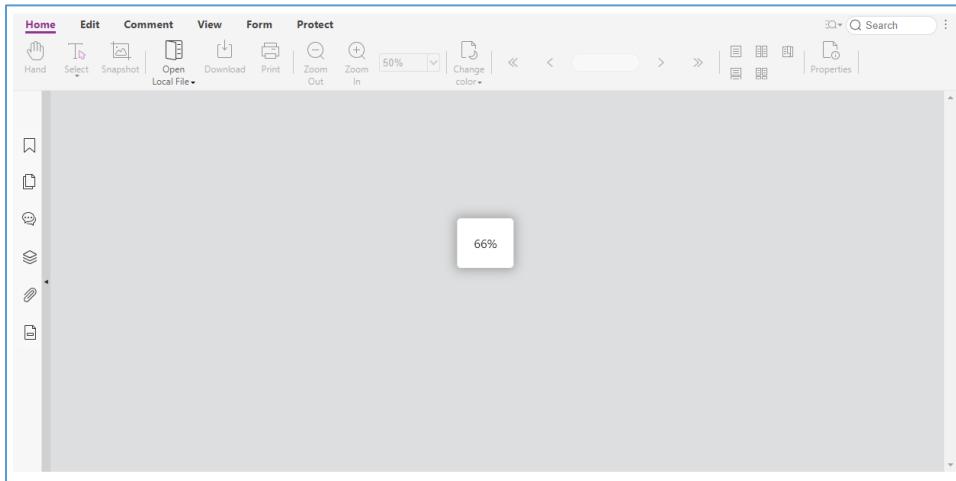
```

pdfViewer.compareDocuments(
    baseDocId,
    otherDocId,
    {
        ...
    },
    (currentRate) => {
        console.log(currentRate);
    }
)

```

The range of values for `currentRate` is from 0 to 100. You can use this value to update the progress bar on the UI.

An example with progress bar:



```
<script>
```

```

const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            fontPath: 'http://webpdf.foxitsoftware.com/webfonts',
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive,
    addons: libPath + '/uix-addons/allInOne.js'
});
class ProgressBarComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<layer class="center" visible @var.self="$component">
        @{self.currentRate + '%'}
    </layer>`
}) {
    static getName() {
        return 'progress-bar-layer'
    }
    currentRate = 0;
    setCurrentRate(rate) {
        this.currentRate = rate;
        this.digest();
        if(rate >= 100) {
            setTimeout(() => {
                this.hide();
            }, 500);
        }
    }
}
UIExtension.modular.root().registerComponent(ProgressBarComponent);

(async function() {
    const pdfViewer = await pdfui.getPDFViewer();
    const baseDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/compare-base.pdf'
        }
    });
    const otherDoc = await pdfViewer.loadPDFDocByHttpRangeRequest({
        range: {
            url: '/assets/compare-other.pdf'
        }
    });
    const baseDocId = baseDoc.getId();
    const otherDocId = otherDoc.getId();
})

```

```

const rootComponent = await pdfui.getRootComponent();
rootComponent.append('<progress-bar-layer>');

const comparedDoc = await pdfViewer.compareDocuments(
    baseDocId,
    otherDocId,
    {
        baseFileName: 'baseFile.pdf',
        otherFileName: 'otherFile.pdf',
        resultFileName: pdfViewer.i18n.t('comparison:resultFileName') || 'The result of comparison.pdf'
    },
    currentRate => {
        rootComponent.querySelector('@progress-bar-layer').setCurrentRate(currentRate);
    }
);
const comparedDocFile = await comparedDoc.getFile();
pdfui.openPDFByFile(comparedDocFile);
})()
</script>
{
    "iframeOptions": {
        "style": "height: 600px"
    }
}

```

### Determine whether a document is a comparison result document

The dictionary information of the PDF file generated by the `PDFViewer.compareDocuments` interface can be used to determine whether a document is a comparison result document. In the SDK, it uses `PDFDoc.isCompareDoc()` method.

```

pdfViewer.eventEmitter.on(PDFViewCtrl.ViewerEvent.openFileSuccess, doc => {
    doc.isCompareDoc();
})

```

Below is a typical dictionary information for a comparison result document. the `/PiecelInfo` at the end of the object (1 0) points to the (244 0) object, that is, points to the dictionary entry of `/ComparePDF`. So, you can determine whether a document is a comparison result document with this information.

```

1 0 obj
<</AcroForm 110 0 R/Pages 2 0 R/ViewerPreferences <<>>/OCProperties <</OCGs [62 0 R 63 0 R 64 0 R 65 0 R
66 0 R 67 0 R 68 0 R]/D <</Order [62 0 R 63 0 R 64 0 R 65 0 R 66 0 R 67 0 R 68 0 R]/ON [62 0 R 63 0 R 64 0 R]/OFF
[65 0 R 66 0 R 67 0 R 68 0 R]>>>/Names 367 0 R/PageLayout(TwoColumnLeft)/Type/Catalog/PiecelInfo 244 0
R>>
endobj
...
244 0 obj
<</ComparePDF 235 0 R>>
endobj

```

```
...
235 0 obj
<</Private 236 0 R>>
endobj
236 0 obj
<</Differences 237 0 R>>
endobj
237 0 obj
<</Nums [1 238 0 R 2 239 0 R 3 240 0 R 4 241 0 R 5 242 0 R 6 243 0 R]>>
endobj
...
...
```

## Customize Dynamic Stamps

### Differences between dynamic stamps and standard stamps

Type	Dependencies	Files that need to be prepared	Support to set
Dynamic stamps	The uix-addons/customer-dynamic-stamp is required. By default, this addon is included in AllInOne.js. If you are not using AllInOne.js, ensure that this addon is referenced in the PDFUI initialization.	image	Support to set background image, text, font, color and its position
Standard stamps	none	PDF and svg	image

### The process for creating a custom dynamic stamp

We provide a default dynamic stamp operation process in the Complete WebViewer (hereinafter referred to as UI). You can experience this feature by clicking Comment-> Create-> Create Dynamic Stamp. The logical flow of this implementation is as follows:

1. The UI provides a background image preprocessed by the frontend by default.
2. After the user inputs the required category, name and text of the dynamic stamp, the UI will transfer this data to the PDF Data layer.
3. According to the data received from the step #1 and step #2, the PDF Data layer draws preprocessed image and generates a text form field, updates the form field data in real time, exports the images, and sends them to the UI layer as an icon of the stamp list.

4. When the user selects the dynamic stamp icon created in step #3 from the stamp list and then clicks on the page to create stamp, the stamp data will be synchronized with the PDF data layer, which indicates that the dynamic stamp has been created successfully.

## Create a custom dynamic stamp

### Create a custom dynamic stamp through UI

Users can create a custom dynamic stamp directly by clicking comment-> Create-> Create Dynamic Stamp on the UI. Among them, the background image of the dynamic stamp can be passed in and managed by the user through the interfaces. The following code shows how to manage the background image of dynamic stamp by importing or deleting operations and so on.

```
// Get the dropdown component of custom dynamic stamp template
const templates = await pdfui.getComponentByName("stamp-templates");
// Import the dropdown button and its callback function through append method
templates.append("<dropdown-button name='test' url='xxx.png'>test</dropdown-button>", [
  {
    target: 'test',
    config: {
      // Set the callback function
      callback: async function () {
        // Get the dialog component of custom dynamic stamp
        const dialog = await pdfui.getComponentByName("fv--custom-dynamic-stamp-dialog")
        // Set the corresponding template information
        dialog.controller.selectTemplate({ name: 'test', url: "xxx.png" })
      }
    }
])
```

### Create a custom dynamic stamp through APIs

Add a custom dynamic stamp

```
var param = [
  {
    category:'category',
    name:'MyStamp',
    fileData:'http://stamp.png',
    field:{
      textType:PDFViewCtrl.PDF.constant.STAMP_TEXT_TYPE.CUSTOM_TEXT,
      value:'custom text',
      font:{
        name:'Helvetica',
        color:0,
      },
      rect:{
        left:0,
        right:30,
        top:30,
      }
    }
]
```

```
        bottom:0,  
    }  
},  
}  
]  
// Add a custom dynamic stamp  
pdfui.callAddonAPI('CustomDynamicStamp', 'setDynamicStamp',[param])
```

Remove a custom dynamic stamp

```
var param = [{  
    category:'stamp',//The directory of the dynamic stamp  
    names:[  
        'MyStamp', //The name of the dynamic stamp  
    ]  
}]  
// Remove a custom dynamic stamp  
pdfui.callAddonAPI('CustomDynamicStamp', 'removeDynamicStamp',[param])
```

Get all custom dynamic stamps

```
// Get dynamic stamps  
pdfui.callAddonAPI('CustomDynamicStamp', 'getDynamicStamp')
```

## The Edit Modules in Foxit PDF SDK for Web

Before version **10.0**, Foxit PDF SDK for Web provides three types of packages: Light package (excludes font resources), Standard package (includes font resources) and Full package (includes font resources and Document Comparison). Light/Standard package uses a same Edit module, and Full package uses an advanced Edit module. In order to distinguish these two Edit modules, the Edit module of the Light/Standard package will be named **Std Edit**, and the Edit module of the Full package will be named **Adv Edit**.

Starting from version **10.0**, Foxit PDF SDK for Web only provides a full package.

The Full package uses Adv Edit by default, and it also includes the Std Edit module. Users can switch them based on their needs. The Adv Edit has more advantages in terms of interaction, but it needs license permissions, otherwise it will not be able to use.

The core features of Std Edit support editing based on PDF content object (text object, image object and shape object). Users can add PDF content objects and modify the font style (font, font size, and color) of the text objects.

The core features of Adv Edit not only support the editing based on PDF content, but also support text block editing. On the basis of the Std Edit, more features have been added.

1. Text block editing:
  - Font style, alignment, bullets, line/word spacing, character scale, and so on
  - Join and split
2. Search and Replace text
3. Shape object:
  - Preset path object
  - Create shading object
  - Edit the properties of the shape object

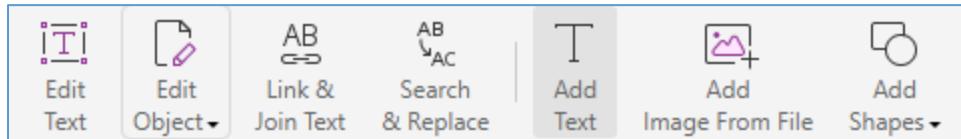
Following is a comparison of the two modules.

### UI comparison

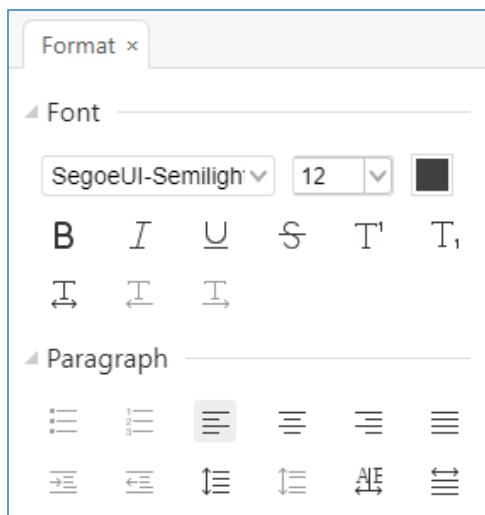
The ribbon under Edit Tab of **Std Edit**:



The ribbon under Edit Tab of **Adv Edit**:



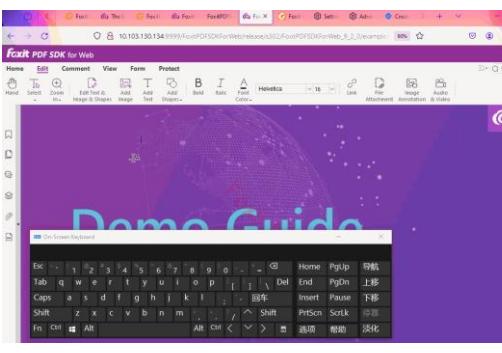
The ribbon of the right panel of **Adv Edit**:



Adv Edit not only has all the features of the Std Edit, but also provides more other features. For example, text style/level/transformation, paragraph-related functions, and shape style, etc.

## Feature comparison

Features	Std Edit	Adv Edit
License Permission	Standard	Require a separate Adv Edit module license to be included in the SDK license
UI Components	1. <code>&lt;edit-pageobjects:edit-all-objects-button&gt;</code> : Used to edit the currently supported page objects in PDF pages. 2. <code>&lt;add-image-ribbon-button&gt;</code> : Used to add image objects to PDF pages. 3. <code>&lt;edit-text-object:add-text-ribbon-button&gt;</code> : Used to add text objects to PDF pages. 4. <code>&lt;edit-pageobjects:path-objects-ribbon-dropdown&gt;</code> : Used to create different types of path objects, including Line Path, Rectangle Path, Circle Path, RoundRect Path. 5. <code>&lt;edit-text-object:text-bold-style-ribbon-button&gt;</code> : Used to switch the currently edited text object to bold style. It depends on the <code>&lt;edit-text-object:add-text-ribbon-button&gt;</code> component. 6. <code>&lt;edit-text-object:text-italic-style-ribbon-button&gt;</code> : Used to switch the currently edited text object to	1. <code>&lt;page-editor:edit-text&gt;</code> : Used to edit text objects in PDF pages. It depends on the <code>&lt;sidebar-right&gt;</code> component, and supports setting Font and Paragraph. 2. <code>&lt;page-editor:edit-object-ribbon-dropdown&gt;</code> : Used to edit different types of page objects, including Text, Image, Shape and Shading. It depends on the <code>&lt;sidebar-right&gt;</code> component. <ul style="list-style-type: none"> <li>Text object supports setting Font, Paragraph, Split, Effect and Arrange.</li> <li>Image object supports setting Effect and Arrange.</li> <li>Shape object supports setting Shape Style, Effect and Arrange.</li> <li>Shading object supports setting Shading Style, Effect and Arrange.</li> </ul>

	<p>italic/normal style. It depends on the &lt;edit-text-object:add-text-ribbon-button&gt; component.</p> <p>7. &lt;edit-text-object:font-color-picker&gt;: Used to set the text color of the currently edited text object. It depends on the &lt;edit-text-object:add-text-ribbon-button&gt; component.</p> <p>8. &lt;edit-text-object:font-style-dropdown&gt;: Used to set the font style and size of the currently edited text object. It depends on the &lt;edit-text-object:add-text-ribbon-button&gt; component.</p>	<p>3. &lt;page-editor:join-split&gt;: Used to merge or split text objects in PDF pages.</p> <p>4. &lt;find-replace:find-replace-button&gt;: Used to find or replace text objects in PDF pages.</p> <p>5. &lt;page-editor:add-text-button&gt;: Used to add text objects to PDF pages. It depends on the &lt;sidebar-right&gt; component, and supports setting Font and Paragraph.</p> <p>6. &lt;page-editor:add-image-button&gt;: Used to add image objects to PDF pages.</p> <p>7. &lt;page-editor:add-shapes-ribbon-dropdown&gt;: Used to add different types of shape objects in PDF pages, including Line/Rectangle/RoundRect/Ellipse/Polyline/Polygon /Polybezier/Curve Path, and Rectangle/RoundRect/Ellipse/Polyline/PolygonPoly bezier/Curve Shading.</p>
Undo/Redo Feature	<p>Only AddText supports undo/redo functionality.</p> <ul style="list-style-type: none"> <li>Since it uses the browser's undo/redo functionality, make sure the cursor is in the field when undoing or redoing.</li> </ul>  	<p>The advanced editor leverages our built-in addon manager to manage undo/redo functionality. The responsible addon is UIExtension &gt; addons &gt; UndoRedoAddon.</p>
Addon	<p>path-objects text-object</p>	<p>Advanced_edit: Page_Editor find-replace PageEditorAddon</p>
Class	<p>PDF &gt; GraphicsObject PDF &gt; PathObject PDF &gt; TextObject</p>	N/A

## How to switch to the standard editor in the Full package

For the Full package, it uses advanced editor by default, if you don't have a license for advanced editor and want to enable the standard editor, you can refer to the following two methods.

**Method 1:** modify the Edit module to be displayed through the fragments parameter when initializing PDFUI object

```
fragments: [
    {
        target: 'adv-edit-tab-group-mode',
        action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
        template: `

<group name="edit-tab-group-mode" retain-count="3">
    <edit-pageobjects:edit-all-objects-button @async></edit-pageobjects:edit-all-objects-button>
    <add-image-ribbon-button></add-image-ribbon-button>
    <edit-text-object:add-text-ribbon-button @async></edit-text-object:add-text-ribbon-button>
    <edit-pageobjects:path-objects-ribbon-dropdown @async></edit-pageobjects:path-objects-ribbon-
dropdown>
</group>
`,

    },
    {
        target: 'edit-tab-group-editor',
        action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
        template: `

<group name="edit-tab-group-font" retain-count="5" @require-modules="edit-text-object">
    <edit-text-object:text-bold-style-ribbon-button></edit-text-object:text-bold-style-ribbon-button>
    <edit-text-object:text-italic-style-ribbon-button></edit-text-object:text-italic-style-ribbon-button>
    <edit-text-object:font-color-picker></edit-text-object:font-color-picker>
    <edit-text-object:font-style-dropdown></edit-text-object:font-style-dropdown>
</group>
`,

    }
]
```

For more information about fragments, please refer to <https://webviewer-demo.foxitsoftware.com/docs/developer-guide/ui-extension/basics/fragments.html>.

**Method 2:** switch the Edit module through the interface of the Component object

```
// Get the advEditTabGroupMode component that is the editing functionality of the Adv Edit.
var advEditTabGroupMode = await pdfui.getComponentByName("adv-edit-tab-group-mode");
// Remove the obtained advEditTabGroupMode component.
advEditTabGroupMode.remove();
// Get the advEditTabGroupEditor component that is the editing functionality of the Adv Edit.
var advEditTabGroupEditor = await pdfui.getComponentByName("edit-tab-group-editor");
// Remove the obtained advEditTabGroupEditor component.
advEditTabGroupEditor.remove();
```

```
// Get the first editTabGroupHand component under the Edit tab that contains the hand function.
var editTabGroupHand = await pdfui.getComponentByName("edit-tab-group-hand");
// Insert the target Edit module after the editTabGroupHand component.
editTabGroupHand.after(`

    <group name="edit-tab-group-font" retain-count="5"> //group component
        <edit-text-object:text-bold-style-ribbon-button></edit-text-object:text-bold-style-ribbon-
button> //text-object Bold component
        <edit-text-object:text-italic-style-ribbon-button></edit-text-object:text-italic-style-ribbon-
button> //text-object Italic components
        <edit-text-object:font-color-picker></edit-text-object:font-color-picker> //text object Color
component
        <edit-text-object:font-style-dropdown></edit-text-object:font-style-dropdown> //text object Font
Name and Size components
    </group>
`)

editTabGroupHand.after(`

    <group name="edit-tab-group-mode" retain-count="3"> //group component
        <edit-pageobjects:edit-all-objects-button @async></edit-pageobjects:edit-all-objects-button> //The
component of editing graphic objects
        <add-image-ribbon-button></add-image-ribbon-button> //The component of adding image graphic
object
        <edit-text-object:add-text-ribbon-button @async></edit-text-object:add-text-ribbon-button> //The
component of adding text graphic object
        <edit-pageobjects:path-objects-ribbon-dropdown @async></edit-pageobjects:path-objects-ribbon-
dropdown> //The component of adding path graphic object
    </group>
`)
```

## AnnotationAuthorityManager

Before formally introducing how to use the AnnotationAuthorityManager utility class, let's first understand the types of annotation permissions and how to set them.

### Types of Annotation Permissions

There are three types of annotation permissions:

1. PDF annotation permissions: Restrictions on the operations of annotation within the PDF document itself. You can use the [User Permissions](#) (for global) or [Annot Flags](#) (for a single annotation) to set it. The settings for PDF annotation permissions will be written into the document, thus changing the document.
2. View annotation permissions: Restrictions on the operations of annotation from the view layer. The settings for view annotation permissions only affect the application and are not written into the document, so that it will not change the document.

3. Interactive annotation permissions: The intersection of PDF annotation permissions and view annotation permissions is called interactive annotation permissions. After loading a PDF document, users will have restrictions on their actions towards annotations based on the interactive annotation permissions.

#### ***The method for setting annotation permissions***

Foxit PDF SDK for Web provides four ways to set annotation permissions as follows:

1. Set view annotation permissions through the PDFViewer constructor. For example, [\[options.customs.getDocPermissions=\(doc:PDFDoc\)=>-1\]](#) and [\[options.customs.getAnnotPermissions=\(annot:Annot\)=>Promise.resolve\(\)\]](#).
2. Set view annotation permissions dynamically in real-time using the AnnotationAuthorityManager utility class. See [setAnnotPermissionCallback](#).
3. Set PDF annotation permissions globally through the [PDFDoc::setPasswordAndPermission](#) interface.
4. Set PDF annotation permissions for a single annotation through the [Annot:setFlags](#) interface.

#### **The Usage of AnnotationAuthorityManager**

You can update interactive annotation permissions by setting PDF annotation permissions or view annotation permissions. In some scenarios, you may not want to modify the original document and only want to control the user's operation permissions on annotations at the application layer. In this case, you can use the AnnotationAuthorityManager utility class to set the view annotation permissions for annotations in real-time and then update the interactive annotation permissions.

**Note:** When the application layer updates the interactive annotation permissions, Foxit PDF SDK for Web internally takes the intersection of the view annotation permissions set by the application layer and the PDF annotation permissions to determine the final interactive permissions that users have on annotations.

#### ***Timing for updating interactive annotation permissions***

The following example code demonstrates how users can passively or actively update the interactive annotation permissions.

1. Update the interactive annotation permissions passively

Before opening a document, users can set permissions first using [setAnnotPermissionCallback](#), [\[options.customs.getDocPermissions=\(doc:PDFDoc\)=>-1\]](#), and [\[options.customs.getAnnotPermissions=\(annot:Annot\)=>Promise.resolve\(\)\]](#). After the document is opened, the SDK will update the interactive annotation permissions automatically, and users do not need to set them again.

**Note:** Here, "passive update" means that the SDK will automatically update the interactive annotation permissions after the document is opened, without the need for the user to manually call an interface to update them.

```
// There are two ways to set the view annotation permissions before the document is opened:

// The first method is to set the view annotation permissions based on the annotation information when
constructing the PDFViewer object
const pdfui = new PDFUI({
    viewerOptions: {
        customs: {
            // Set the view annotation permissions
            getAnnotPermissions:function(annot){
                const ANNOTATION_PERMISSION = UIExtension.PDFViewCtrl.constants.ANNOTATION_PERMISSION
                // Set to have all the view annotation permissions
                return Promise.resolve([ANNOTATION_PERMISSION.fully]);
            }
        }
    }
})

// The second method is to set the view annotation permissions through the AnnotationAuthorityManager
manager
const pdfViewer = await pdfui.getPDFViewer();
// Get the AnnotationAuthorityManager manager.
const annotAuthMgr = pdfViewer.getAnnotAuthorityManager();
// Set the view annotation permissions
annotAuthMgr.setAnnotPermissionCallback(function(annot) {
    // Set to have no operation permissions
    return Promise.resolve([]);
})

// When opening a PDF document, the SDK will read the view annotation permissions that you set, and then
update the interactive annotation permissions automatically.
pdfui.openPDFByHttpRangeRequest('http:xxx');
```

## 2. Update the interactive annotation permissions actively

After the document is opened, users can dynamically set permissions and then actively update interactive annotation permissions using [updateAll\(\)](#) or [update\(\)](#) method.

```
// Open a document
```

```

pdfui.openPDFByHttpRangeRequest('http:xxx');

// Set the view annotation permissions through the AnnotationAuthorityManager manager
const pdfViewer = await pdfui.getPDFViewer();
// Get the AnnotationAuthorityManager manager
const annotAuthMgr = pdfViewer.getAnnotAuthorityManager();
// Set the view annotation permissions
annotAuthMgr.setAnnotPermissionCallback(function(annot) {
    // Set to have no operation permissions for all annotations
    return Promise.resolve([]);
})

// Need to manually update the interactive permissions of all annotations, otherwise the view annotation
permissions you set will not take effect immediately
await annotAuthMgr.updateAll();

```

In actual projects, users can use [PDFViewer.getCurrentPDFDoc](#) to get the current document object and verify whether the current document is open. If the value is null, it means the document is not open.

#### ***Usage scenarios of view annotation permissions***

In practical scenarios, different view annotation permissions may need to be set. Currently, there are mainly four types. The following example is based on a pre-created [AnnotationAuthorityManager](#) instance.

##### 1. No permissions

```

// Set the view annotation permissions
annotAuthMgr.setAnnotPermissionCallback(function(annot) {
    // Set to have no operation permissions for all annotations
    return Promise.resolve([]);
})

```

##### 2. Combined permissions

```

const ANNOTATION_PERMISSION = UIExtension.PDFViewCtrl.constants.ANNOTATION_PERMISSION
// Set the view annotation permissions
annotAuthMgr.setAnnotPermissionCallback(function(annot) {
    // Set the permission of all annotations to be able to modify properties and behaviors, and to be able
    to delete/move/rotate/scale
    return
Promise.resolve([ANNOTATION_PERMISSION.adjustable,ANNOTATION_PERMISSION.deletable,ANNOTATIO
N_PERMISSION.modifiable]);
})

```

##### 3. All permissions

```

const ANNOTATION_PERMISSION = UIExtension.PDFViewCtrl.constants.ANNOTATION_PERMISSION

```

```
// Set the view annotation permissions  
annotAuthMgr.setAnnotPermissionCallback(function(annot) {  
    // Set to have all the view annotation permissions  
    return Promise.resolve([ANNOTATION_PERMISSION.fully]);  
})
```

#### 4. Ignorable permissions

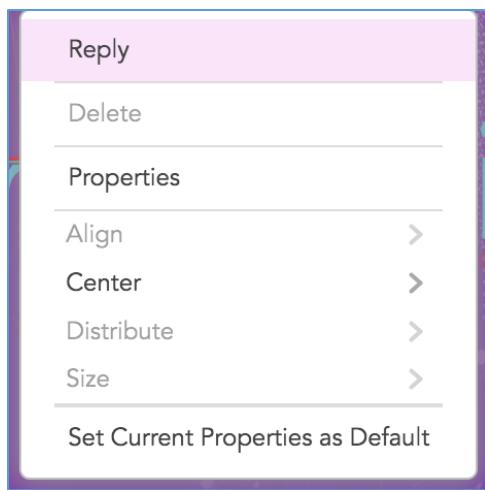
```
// Set the view annotation permissions  
annotAuthMgr.setAnnotPermissionCallback(function(annot) {  
    // Set the permissions for all annotations to be ignorable  
    return null;  
})
```

#### ***Usage scenarios of interactive annotation permissions***

Example 1: Set the view annotation permissions which does not allow to delete specified annotations

```
const pdfViewer = await pdfui.getPDFViewer();  
// Get the AnnotationAuthorityManager manager  
const annotAuthMgr = pdfViewer.getAnnotAuthorityManager();  
// Get the annotationRender of a specified attachment type on a specified page  
const fileAnnotRender = pdfViewer.getAnnotRender(0,'name');  
// Get the annotation of a specified attachment type on a specified page  
const fileAnnot = fileAnnotRender.getAnnot();  
const ANNOTATION_PERMISSION = PDFViewCtrl.constants.ANNOTATION_PERMISSION  
// Set the view annotation permissions  
annotAuthMgr.setAnnotPermissionCallback(function(annot) {  
    // Set a specific file annotation to have no permission to be deleted  
    if(annot.getObjectNumber() === fileAnnot.getObjectNumber()){  
        return  
    }  
    Promise.resolve(Object.keys(ANNOTATION_PERMISSION).filter(per=>per!==ANNOTATION_PERMISSION.deletable && per!==ANNOTATION_PERMISSION.fully));  
})  
  
// Update the interactive annotation permissions for the specified annotation  
await annotAuthMgr.update(fileAnnot);
```

After executing the above code, users will not be able to delete the annotation with the specified name.

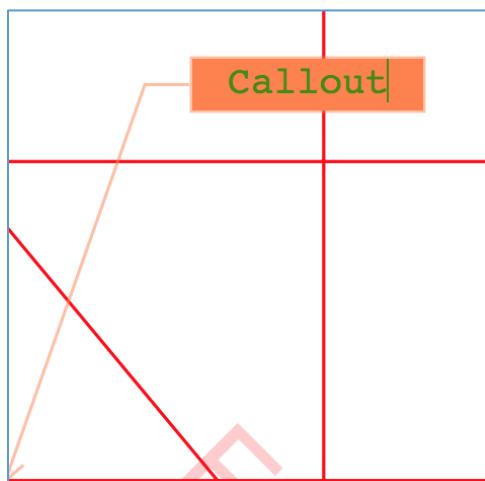


Example 2: Set the view annotation permissions to allow editing the callout content

```
const pdfViewer = await pdfui.getPDFViewer();
// Get the AnnotationAuthorityManager manager
const annotAuthMgr = pdfViewer.getAnnotAuthorityManager();
const ANNOTATION_PERMISSION = PDFViewCtrl.constants.ANNOTATION_PERMISSION
// Set the view annotation permissions
annotAuthMgr.setAnnotPermissionCallback(function(annot) {
    // Set the callout-type annotation to have editing permission.
    if(annot.getIntent() === 'FreeTextCallout'){
        return Promise.resolve([ANNOTATION_PERMISSION.editable]);
    }
})

// Update the interactive annotation permissions for all the annotations
await annotAuthMgr.updateAll();
```

After executing the above code, users will be able to edit the FreeText objects with the type of callout.



Example 3: Validate PDF annotation permissions and view annotation permissions on a custom component

The following code will demonstrate how to validate annotation permission on a newly added custom component.

```
var pdfui = new PDFUI({
    // Customize a new component to delete annotations
    fragments: [{  
        target: 'hand-tool',
        template: '<xbutton class="fv__ui-toolbar-show-text-button" name="cus-delete-button">button behind of hand-tool</xbutton>',
        action: UIExtension.UIConsts.FRAGMENT_ACTION.AFTER,
        config: [{  
            target: 'cus-delete-button',
            callback: PDFViewCtrl.shared.createClass({  
                mounted: function() {  
                    this.permissionHandler();  
                },
                permissionHandler(){  
                    const Events = UIExtension.UIEvents;  
                    let permissionHandler = async ()=>{  
                        const docRender = await pdfui.getPDFDocRender()  
                        // Get PDF annotation permissions  
                        const userPermission = docRender.getUserPermission().getValue();  
                        const {AnnotForm} = UIExtension.PDFViewCtrl.Consts.PDFDocPermission;  
                        this.hasAnnotForm = (userPermission & AnnotForm) === AnnotForm;  
                        // Whether to disable this component  
                        this.component[this.hasAnnotForm?'enable':'disable']();  
                    }  
                    this.addDestroyHook(  
                        pdfui.addViewEventListner(Events.openFileSuccess,permissionHandler)  
                        pdfui.addViewEventListner(Events.permissionChanged,permissionHandler)  
                        pdfui.addViewEventListner(Events.activeAnnotation,async annotRender=>{  
                            // Get the active annotation  
                            const annot = annotRender.getAnnot();  
                            const pdfViewer = await pdfui.getPDFViewer();  
                            // Get AnnotationAuthorityManager manager  
                            const annotAuthMgr = pdfViewer.getAnnotAuthorityManager();  
                            // Get the view annotation permissions of a specified annotation.  
                            const annotPermission = await annotAuthMgr.getPermission(annot);  
                            // Get the value which indicates whether the annotation can be deleted  
                            const isDeleteable = annotPermission.isDeletable();  
                            // Whether to disable this component  
                            this.component[isDeleteable&&this.hasAnnotForm?'enable':'disable']();  
                        })  
                    );  
                }  
            }, UIExtension.Controller)
        }]
})
```

```
  }];
});
```

### **Restrictions on view annotation permissions**

Currently, the restrictions on view annotation permissions are:

1. The Redaction Apply function does not support setting interactive annotation permissions.
2. AnnotationAuthorityManager does not support Form Widgets.

## **PDFViewer Multiple Instances**

### **Concept Explanation**

- **Multiple Instances:** The ability to create and manage multiple independent PDFViewer instances within the same web page without using iframes or similar methods. Each instance can load, display, and manipulate separate PDF documents without interfering with each other.
- **PDFViewer:** It is an important entry class in the Foxit PDF SDK for Web. It instantiates this class to render PDF documents using the Foxit PDF SDK for Web.

### **Limitations in Previous Versions**

Prior to version 9.0.0, only one instance of PDFViewer was supported for creation and usage, which restricted developers from simultaneously loading and displaying multiple PDF documents (although this could be achieved through iframes, iframes also have many disadvantages and are no longer recommended). After upgrading and improving, starting from version 9.0.0, multiple instances are supported.

### **How to Implement PDFViewer Multiple Instances**

To implement multiple PDFViewer instances, it is necessary to create multiple DOM instances beforehand. Each PDFViewer instance needs to be rendered within a specified DOM node. Here is a simplified code example:

```
var PDFViewer = PDFViewCtrl.PDFViewer;

function createPDFViewer(containerId) {
    var eContainer = document.getElementById(containerId);
    var pdfViewer = new PDFViewer({
        libPath: '../../lib',
        jr: {
            licenseSN: licenseSN,
```

```

        licenseKey: licenseKey,
    },
    customs: {
        ScrollWrap: PDFViewCtrl.CustomScrollWrap
    }
});

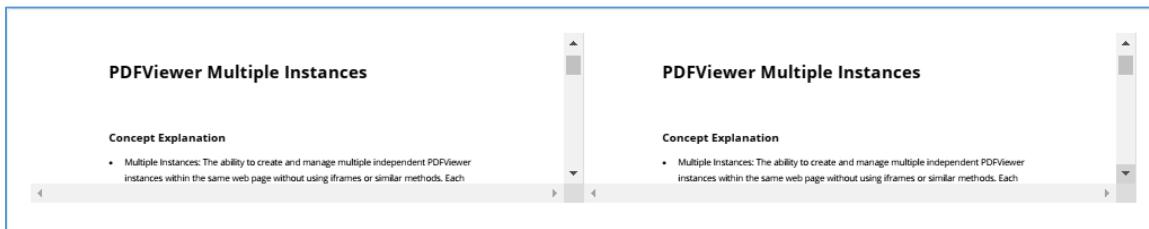
var eSelectPDFFile = eContainer.querySelector('[name=select-pdf-file]');
var eRenderTo = eContainer.querySelector('.pdf-viewer');

pdfViewer.init(eRenderTo);
return pdfViewer;
}

```

For the complete code example, please refer to the example in the Full package:  
[examples/PDFViewCtrl/multiple-case](#).

Here is a runnable example. Click the [run](#) button to preview the effect:



```

<html>
<div class="foxit-web-pdf-app" id="pdf-app-0">
    <div class="pdf-viewer-container">
        <div class="pdf-viewer"></div>
    </div>
</div>
<div class="foxit-web-pdf-app" id="pdf-app-1">
    <div class="pdf-viewer-container">
        <div class="pdf-viewer"></div>
    </div>
</div>
</html>
<script>
    const libPath = window.top.location.origin + '/lib';
    var PDFViewer = PDFViewCtrl.PDFViewer;
    function createPDFViewer(containerId) {
        var eContainer = document.getElementById(containerId);
        var pdfViewer = new PDFViewer({
            libPath: libPath,
            jr: {
                fontPath: 'http://webpdf.foxitsoftware.com/webfonts',
                licenseSN: licenseSN,
                licenseKey: licenseKey,
        },
```

```
customs: {
    ScrollWrap: PDFViewCtrl.CustomScrollWrap
}
});

var eSelectPDFFile = eContainer.querySelector('[name=select-pdf-file]');
var eRenderTo = eContainer.querySelector('.pdf-viewer');

pdfViewer.init(eRenderTo);
return pdfViewer;
}

var viewer1 = createPDFViewer('pdf-app-0');
var viewer2 = createPDFViewer('pdf-app-1');
viewer1.openPDFByHttpRangeRequest({
    range: {
        url: getAssetPath("/assets/1-feature-example_default-setup.pdf"),
    },
},
{ fileName: "1-feature-example_default-setup.pdf" });
viewer2.openPDFByHttpRangeRequest({
    range: {
        url: getAssetPath("/assets/PDFViewer_Multiple_Instances.pdf"),
    },
},
{ fileName: "PDFViewer_Multiple_Instances.pdf" });

function getAssetPath(filePath) {
    var pathname = window.top.location.pathname;
    if(pathname.indexOf('/docs/developer-guide') === 0) {
        return ('/docs/developer-guide/' + filePath).replace('//', '/');
    }
    return filePath;
}

function getAssetPath(filePath) {
    var pathname = window.top.location.pathname;
    if(pathname.indexOf('/docs/developer-guide') === 0) {
        return ('/docs/developer-guide/' + filePath).replace('//', '/');
    }
    return filePath;
}
</script>
<style>
body {
    display: flex;
    overflow: hidden;
    flex-direction: row;
}
.foxit-web-pdf-app {
    display: flex;
    flex-direction: column;
```

```
flex: 1;
height: 100vh;
min-width: 50vw;
border-right: 1px solid #ddd;
box-sizing: border-box;
position: relative;
}
.pdf-viewer-container {
  flex: 1;
  overflow: scroll;
  min-width: 0;
}
.fv_viewer-single-view-mode .fv_pdf-view-mode-item {
  --facing-margin: 0;
}
.continuous-view-mode .fv_pdf-view-mode-item.fv_pdf-view-mode-item.fv_pdf-view-mode-item {
  --facing-margin: auto;
  margin-top: 8px;
}
</style>
```

## Application Scenarios for Multiple Instances

Simultaneously reviewing multiple case files in the legal field or comparing multiple related research papers in academic research. You can refer to the example [/examples/PDFViewCtrl/overlay-comparison](#) in the Full package.

## Customize StorageDriver

This section will introduce how to customize a StorageDriver, along with related API information and example code.

### Overview

StorageDriver is an interface used for storing and managing data. It is concerned with how data should be stored, deleted, and partitioned. By customizing a StorageDriver, you can implement operations such as reading, writing, and deleting data, and also listen for data changes.

### API Reference

#### StorageContext Class

```
class StorageContext {
  public id: string;
  public feature: string;
}
```

The `StorageContext` class represents the storage context used to identify stored data and features.

### **PDFViewerStorageContext Class**

```
class PDFViewerStorageContext extends StorageContext {  
    public pdfViewer: PDFViewer;  
}
```

The `PDFViewerStorageContext` class extends the `StorageContext` class and represents the storage context of a `PDFViewer`. It contains an instance of `PDFViewer`, which allows us to access information such as the current document and current page. By appropriately combining this information, data can be stored in partitioned manner.

### **PDFViewer Interface**

```
interface PDFViewer {  
    getInstanceId(): string;  
}
```

Starting from version 9.1.0, the `PDFViewer` interface has added a method called `getInstanceId()`, which is used to retrieve the instance ID of a `PDFViewer`. When there are multiple instances of `PDFViewer`, it is important to ensure that their IDs are unique in order to partition the data storage for different `PDFViewer` instances.

### **PDFViewerConstructor Interface**

```
interface PDFViewerConstructor {  
    new(options: {  
        instanceId: string;  
        customs: {  
            storageDriver: StorageDriver;  
        }  
    }): PDFViewer;  
}
```

The `PDFViewerConstructor` interface describes the constructor information for creating a `PDFViewer` instance. Starting from version 9.1.0, this constructor adds an `options` object containing the properties `instanceId` and `customs` as parameters. The `customs` property includes a `StorageDriver` instance used for storing and managing data. By passing a custom `StorageDriver` instance via `custom.storageDriver` to `PDFViewer`, you can achieve custom storage functionality.

### **StorageDriver Interface**

```
interface StorageDriver {  
    public getAll(context: StorageContext): Promise<Record<string, any>>;  
    public get<T>(context: StorageContext, key: string): Promise<T | null>;  
    public set<T>(context: StorageContext, key: string, value: T): Promise<void>;  
}
```

```
public removeAll(context: StorageContext): Promise<void>;
public remove(context: StorageContext, key: string): Promise<void>;
public onChange<T>(callback: (event: StorageDriverChangeEvent<T>) => void): Function;
public onRemove(callback: (event: StorageDriverRemoveEvent) => void): Function;
}
```

The `StorageDriver` is an interface that defines a set of methods for storing and managing data. You can customize `StorageDriver` by implementing these methods.

- `getAll(context: StorageContext): Promise<Record<string, any>>`: Retrieves all data in the specified context.
- `get<T>(context: StorageContext, key: string): Promise<T | null>`: Retrieves the data with the specified key in the specified context.
- `set<T>(context: StorageContext, key: string, value: T): Promise<void>`: Sets the data with the specified key in the specified context.
- `removeAll(context: StorageContext): Promise<void>`: Removes all data in the specified context.
- `remove(context: StorageContext, key: string): Promise<void>`: Removes the data with the specified key in the specified context.
- `onChange<T>(callback: (event: StorageDriverChangeEvent<T>) => void): Function`: Registers a callback function to listen for data change events.
- `onRemove(callback: (event: StorageDriverRemoveEvent) => void): Function`: Registers a callback function to listen for data removal events.

### **StorageDriverChangeEvent Interface**

```
interface StorageDriverChangeEvent<T> {
  public context: StorageContext;
  public key: string;
  public oldValue: T;
  public newValue: T;
}
```

The `StorageDriverChangeEvent` interface represents an event object for data changes. It contains information such as the context, key, old value, and new value. After a data change occurs, callback function can receive this object.

### **StorageDriverRemoveEvent Interface**

```
interface StorageDriverRemoveEvent {
  public context: StorageContext;
  public key: string;
}
```

The `StorageDriverRemoveEvent` class represents an event for data removal. It contains information such as the context and key. After a data removal event occurs, callback function can receive this object.

## Customize StorageDriver

To customize a `StorageDriver`, you need to create a subclass that implements the `StorageDriver` interface and implement its methods.

Following is an example of a custom `StorageDriver` based on `sessionStorage` implementation:

```
class MyStorageDriver extends StorageDriver {
    // Use a third-party library, https://www.npmjs.com/package/eventemitter3, to implement event distribution
    private readonly eventEmitter = new EventEmitter();
    // Generate a storage space name based on the context information, primarily for partitioning data
    private getSpace(context: StorageContext): string {
        const instanceId = context.id;
        return [instanceId, context.feature].join('.');
    }
    async getAll(context: StorageContext): Promise<Record<string, any>> {
        const space = this.getSpace(context);
        const keys = this.getSpaceKeys(context);
        return keys.reduce((result, completeKey) => {
            const key = completeKey.slice(space.length + 1);
            const rawData = sessionStorage.getItem(completeKey);
            result[key] = rawData ? JSON.parse(rawData) : null;
            return result;
        }, {});
    }
    async get<T>(context: StorageContext, key: string): Promise<T | null> {
        const storageKey = this.generateUniqueKey(context, key);
        const valueStr = sessionStorage.getItem(storageKey);
        if (valueStr) {
            return JSON.parse(valueStr) as T;
        } else {
            return null as T;
        }
    }
    async set<T>(context: StorageContext, key: string, value: T): Promise<void> {
        const storageKey = this.generateUniqueKey(context, key);
        const oldValueJSON = sessionStorage.getItem(storageKey);
        const oldValue = oldValueJSON ? JSON.parse(oldValueJSON) : undefined;
        const newValue = JSON.stringify(value);
        if (oldValueJSON === newValue) {
            return;
        }
        sessionStorage.setItem(storageKey, newValue);
        this.emitChangeEvent({
            context,
```

```

        key,
        oldValue,
        newValue: value
    });
}

async removeAll(context: StorageContext): Promise<void> {
    const keys = this.getSpaceKeys(context);
    keys.forEach(key => {
        const oldValue = sessionStorage.getItem(key);
        sessionStorage.removeItem(key);
        const newValue = sessionStorage.getItem(key);
        if (newValue !== oldValue) {
            this.emitRemoveEvent({
                context,
                key
            } as StorageDriverRemoveEvent);
        }
    });
}

async remove(context: StorageContext, key: string): Promise<void> {
    const storageKey = this.generateUniqueKey(context, key);
    const oldValue = sessionStorage.getItem(storageKey);
    sessionStorage.removeItem(storageKey);
    const newValue =

    sessionStorage.getItem(storageKey);
    if (newValue !== oldValue) {
        this.emitRemoveEvent({
            context,
            key
        });
    }
}

onChange<T>(callback: (event: StorageDriverChangeEvent<T>) => void): () => void {
    return this.addEventListener<T>('change', callback);
}

onRemove(callback: (event: StorageDriverRemoveEvent) => void): () => void {
    return this.addEventListener('remove', callback);
}

private addEventListener<T>(event: 'change' | 'remove', callback: (event: any) => void) {
    const listener = e => {
        callback(e);
    };
    this.eventEmitter.addListener(event, listener);
    return () => {
        this.eventEmitter.removeListener(event, listener);
    };
}

// Generate a unique index based on the namespace and key
private generateUniqueKey(context: StorageContext, key: string) {

```

```

const space = this.getSpace(context);
return [space, key].join('.');
}
// Get all key-value pairs stored under the namespace
private getSpaceKeys(context: StorageContext): string[] {
    const space = this.getSpace(context);
    const prefix = space + ':';
    return Array(sessionStorage.length)
        .fill(0)
        .map((_, index) => sessionStorage.key(index))
        .filter(it => !!it)
        .filter(it => it!.indexOf(prefix) === 0) as string[];
}
// Trigger a data change event when data changes
private emitChangeEvent<T>(event: StorageDriverChangeEvent<T>) {
    this.eventEmitter.emit('change', event);
}
// Trigger a data removal event when data is deleted
private emitRemoveEvent<T>(event: StorageDriverRemoveEvent) {
    this.eventEmitter.emit('remove', event);
}
}

```

You can customize `StorageDriver` according to your specific needs. During the implementation process, you can use techniques such as asynchronous operations and database queries to achieve data storage and management.

## Use Custom StorageDriver

To use a custom `StorageDriver`, you need to create a `PDFViewer` instance and pass the custom `StorageDriver` as a parameter to the constructor.

Following is an example of using a custom `StorageDriver`:

```

const storageDriver = new MyStorageDriver();

const pdfViewer = new PDFViewer({
    instanceId: 'pdf-viewer-1',
    customs: {
        storageDriver: storageDriver
    }
});

```

When creating a `PDFViewer` instance, pass the custom `StorageDriver` to the `customs` property. `PDFViewer` will use this `StorageDriver` instance to store and manage data.

## ViewerUI

Viewer UI defines methods for creating and displaying user interface components, which can be called by PDFViewCtrl or UIExtension. With Viewer UI, we can customize various UI elements, such as context menus, alert dialogs, loading overlays, and more.

The interface declaration of Viewer UI can be found in the [API Reference](#). Within the SDK, there are two sets of Viewer UI available: [TinyViewerUI](#) for PDFViewCtrl and [XViewerUI](#) for UIExtension.

In actual applications, we can choose either of the two built-in Viewer UI based on whether we are using PDFViewCtrl or UIExtension.

### List of Methods defined in IViewer

1. `createContextMenu(key, anchor, config)`: Creates a context menu component and registers a context event. This method can be overridden to customize the context menu. The parameters are explained below:

- o key: any type, represents the owner of the context menu instance, which can be the name of [StateHandler](#) or an instance of [AnnotComponent](#).
- o anchor: HTMLElement, the HTML element used to respond to the context event.
- o config: object, configuration options.
  - config.selector: string, the CSS selector for the element that triggers this menu. This element should be the anchor or its child element.
  - config.items: array, contains the configuration of default menu items. Refer to [jQuery contextmenu plugin documentation](#).
  - config.items[].nameI18nKey: string, i18n key for the menu item's localized text.

Return Value: `IContextMenu | undefined`, the context menu component, including show/hide and destroy APIs. Returning `undefined` means the context menu for the specified target will not be shown.

2. `alert(message)`: Displays an alert dialog with optional content and an OK button, and then returns a completed Promise after the dialog is closed.

- o message: string, the message for the alert dialog, using the i18next.js translation format.

Return Value: `Promise<void>`

3. `confirm(message)`: Displays a modal dialog with an optional message and two buttons (OK and Cancel), and then returns a Promise. The Promise will be resolved if the user clicks OK, and it will be rejected if the user clicks Cancel.

- `message: string`, the message for the confirmation dialog, using the i18next.js translation format.

Return Value: `Promise<void>`

4. `prompt(defaultValue, message, title)`: Displays a dialog with optional messages, prompting the user to enter some text.

- `defaultValue: string`, the default value to be displayed in the text input box.
- `message: string`, the text to display to the user.
- `title: string`, the title of the prompt dialog.

Return Value: `Promise<string>`, returns a Promise that resolves with the user's input value when the dialog is closed.

5. `promptPassword(defaultValue, message, title)`: Displays a dialog with optional messages, prompting the user to enter a password.

- `defaultValue: string`, the default password to be displayed in the password input box.
- `message: string`, the text to display to the user.
- `title: string`, the title of the prompt dialog.

Return Value: `Promise<string>`, returns a Promise that resolves with the user's input value when the dialog is closed.

6. `loading(coverOn)`: Displays a loading overlay to indicate the loading state of a page or component.

- `coverOn: HTMLElement`, the target element to cover.

Return Value: `Function`, a function that can be called to close the loading overlay.

7. `createTextSelectionTooltip(pageRender)`: Creates a tooltip component that is displayed when the user selects text.

- `pageRender: PDFPageRender`.

Return Value: `IFloatingTooltip`

## Usage

Typically, we may only need to override certain methods in the Viewer UI, such as overriding the alert dialog. In that case, we can achieve this by inheriting the built-in Viewer UI of the SDK:

```
class CustomViewerUI extends UIExtension.XViewerUI {  
    alert(message) {  
        // Here we can display our custom alert dialog. Let's simply print the content to the console.  
        console.log('alert:', message);  
        return Promise.resolve();  
    }  
}  
  
new PDFUI({  
    viewerOptions: {  
        viewerUI: new CustomViewerUI()  
    }  
})
```

To implement a custom Viewer UI at the PDFViewCtrl level, the process is similar:

```
class CustomViewerUI extends PDFViewCtrl.viewerui.TinyViewerUI {  
    alert(message) {  
        // Here we can display our custom alert dialog. Let's simply print the content to the console.  
        console.log('alert:', message);  
        return Promise.resolve();  
    }  
}  
new PDFViewer({  
    viewerUI: new CustomViewerUI()  
})
```

For more examples, you can refer to the content in these two documents:

1. [Annot contextmenu customization](#)
2. [Page contextmenu customization](#)

## Progress Bar Component

### Overview

Starting from version 9.1.0, Foxit PDF SDK for Web provides APIs to control and customize the progress bar.

### API preview

The PDFUI constructor has added the parameter `customs.progress`, which can be used to customize the progress bar.

[https://webviewer-](https://webviewer-d демо.foxit.com/docs/api_reference/html/class_p_d_f_u_i.html#aab77ea8e42199d4a8dfe80859)

[demo.foxit.com/docs/api\\_reference/html/class\\_p\\_d\\_f\\_u\\_i.html#aab77ea8e42199d4a8dfe80859](https://webviewer-d демо.foxit.com/docs/api_reference/html/class_p_d_f_u_i.html#aab77ea8e42199d4a8dfe80859)  
[22dca07](https://webviewer-d 22dca07)

PDFViewer has added the `registerProgressListener` method, which can be used to register a progress bar listener.

[https://webviewer-](https://webviewer-d Demo.foxit.com/docs/api_reference/html/class_p_d_f_viewer.html#ac920795c9397bd637e2a60)

[demo.foxit.com/docs/api\\_reference/html/class\\_p\\_d\\_f\\_viewer.html#ac920795c9397bd637e2a60](https://webviewer-d Demo.foxit.com/docs/api_reference/html/class_p_d_f_viewer.html#ac920795c9397bd637e2a60)  
[9ad8e958c6](https://webviewer-d 9ad8e958c6)

PDFViewCtrl has exported the `ProgressComponent` class, which can be obtained through `PDFViewCtrl.viewerui.ProgressComponent`.

[https://webviewer-d Demo.foxit.com/docs/api\\_reference/html/class\\_progress\\_component.html](https://webviewer-d Demo.foxit.com/docs/api_reference/html/class_progress_component.html)

### Affected scope

When one of the following actions is performed, the default progress bar will be displayed:

1. `PDFDoc.sign`
2. `PDFDoc.addWatermark`
3. Action: Run Form Recognition on the UI
4. `PDFViewer.print`
5. `PDFViewer.printEx`
6. `PDFDoc.addPagingSealSignature`

## How to use

**Using the `customs.progress` parameter in the `PDFUI` constructor**

```
<body>
  <!-- ... -->
  <div id="pdf-ui"></div>
  <div id="progress-bar"></div>
  <!-- ... -->
</body>
```

```
var progressBar = document.getElementById('progress-bar');
var pdfui = new PDFUI({
  // ...
  customs: {
    progress: class Progress {
      updateProgress(progress, status) {
        progressBar.innerText = `${progress}%`;
      }
      show(coverOn) {
        progressBar.style.display = 'block';
        progressBar.innerText = '0%';
      }
      hide() {
        progressBar.style.display = 'none';
      }
    },
    // ...
  });
});
```

```
/* ... */
#progress-bar {
  display: none;
  position: absolute;
  inset: 0;
  text-align: center;
  line-height: 100vh;
  z-index: 9999;
  background: rgba(255, 255, 255, 0.6);
  font-size: 24px;
}
/* ... */
```

**Using `PDFViewer.registerProgressListener`**

```
<body>
  <!-- ... -->
  <div id="pdf-viewer"></div>
  <div id="progress-bar"></div>
```

```
<!-- ... -->
</body>
```

```
var pdfViewer = new PDFViewer({
    // ...
});
pdfViewer.init('#pdf-viewer');
var progressBar = document.getElementById('progress-bar');
pdfViewer.registerProgressHandler(function (type,value,status) {
    if (status === PDFViewCtrl.constants.PROGRESS_STATUS.PROGRESSING) {
        progressBar.style.display = 'block';
        progressBar.innerHTML = value + '%';
    } else {
        progressBar.style.display = 'none';
    }
});
```

```
/* ... */
#progress-bar {
    display: none;
    position: absolute;
    inset: 0;
    text-align: center;
    line-height: 100vh;
    z-index: 9999;
    background: rgba(255, 255, 255, 0.6);
    font-size: 24px;
}
/* ... */
```

### ***Using PDFViewCtrl.viewerui.ProgressComponent***

Example1:

```
// Create an instance of ProgressComponent at an appropriate time
let progressComponent = new PDFViewCtrl.viewerui.ProgressComponent();
progressComponent.show(document.body);
progressComponent.updateProgress(20, PDFViewCtrl.constants.PROGRESS_STATUS.PROGRESSING);
// End with success
// progressComponent.updateProgress(null, PDFViewCtrl.constants.PROGRESS_STATUS.SUCCESS);
// End with failure
// progressComponent.updateProgress(null, PDFViewCtrl.constants.PROGRESS_STATUS.FAIL);
```

Example2:

```
// Create an instance of ProgressComponent at an appropriate time
let progressComponent = new PDFViewCtrl.viewerui.ProgressComponent();
progressComponent.show(document.body);
progressComponent.updateProgress({current: 1, total: 4},
PDFViewCtrl.constants.PROGRESS_STATUS.PROGRESSING);
// End with success
```

```
// progressComponent.updateProgress(null, PDFViewCtrl.constants.PROGRESS_STATUS.SUCCESS);  
// End with failure  
// progressComponent.updateProgress(null, PDFViewCtrl.constants.PROGRESS_STATUS.FAIL);
```

## Collaboration

From version 8.5.2, the built-in collaboration solution has been replaced by the new web collaboration add-on which can help developers easily integrate real-time document collaboration into their web applications, please refer to the [developer guide](#) for more information.

# Best Practice

Foxit PDF SDK for Web runs in a browser sandbox in a network environment. Choosing a correct website operation scheme and Foxit PDF SDK for Web configuration can make Foxit PDF SDK for Web run faster. The following section give references on website operation optimization and Foxit PDF SDK for Web configuration.

## Website assets optimization

### Gzip and Brotli compression

Compression is a way to shrink the assets size and reduce the downloading time. The following table shows the compressed size using `gzip` and `brotli` on `UIExtension.css` and `UIExtension.full.js`.

File	Original size	Gzip	Brotli
UIExtension.css	1.2M	213kb	156kb
UIExtension.full.js	2.6M	534kb	443kb

**NOTE:** Although the brotli compression algorithm provided by Google is superior to gzip in compression ratio. But brotli is not natively supported by all browsers, such as Microsoft's IE. Decompression of brotli in IE requires the use of a JavaScript engine. This time-consuming process offsets the advantages of Brotli and consumes website loading performance.

### Cache

Caching resource files can avoid downloading the same assets again and again. The `/lib` library in the SDK and the font files in `/external` are recommended for front-end caching. To learn more, check out [Google](#) and [Mozilla](#) for HTTP cache.

## Foxit PDF SDK for Web configuration

### Read only

If the following scenario is your current needs, it is recommended that you load the Foxit PDF SDK for Web read-only to improve rendering performance.

Applicable scenario:

- complex PDF documents generated by CAD
- page rendering speed is high preference
- no page editing requirements

#### Code Example:

```
<script src="path/to/UIExtension.full.js"></script>
<script src="path/to/allInOne.js"></script>
<script>
    var pdfui = new UIExtension.PDFUI({
        ...
        viewerOptions: {
            customs: {
                getDocPermissions: function () {
                    return 0;// 0 means ReadOnly
                }
            }
        ...
    })
</script>
```

or

```
<script src="path/to/PDFViewCtrl.full.js"></script>
<script>
    var pdfviewer = new PDFViewCtrl.PDFViewer({
        ...
        customs: {
            getDocPermissions: function () {
                return 0;// 0 means ReadOnly
            }
        ...
    })
</script>
```

## Brotli compression

The core of Foxit PDF SDK for Web is the wasm/asm module compiled by emscripten. The module size is 8M / 13M, and the loading time varies depending on the browser performance. These two modules are compressed using Brotli by default. But Brotli is not natively supported by all browsers, such as Microsoft's IE, click [here](#) to see the browser support for Brotli. Decompressing brotli in IE needs to use the browser's JavaScript engine. This process takes time, and may offset the advantages of Brotli and then result a performance penalty.

It is recommended that you select the most suitable configuration by enabling and disabling Brotli in your test environment.

### Code Example:

```
<script src="path/to/UIExtension.full.js"></script>
<script src="path/to/allInOne.js"></script>
<script>
    var pdfui = new UIExtension.PDFUI({
        ...
        viewerOptions: {
            jr: {
                brotli: {
                    core:false, // the default value is true which means to enable brotli, false means no brotli
                    compression
                }
            }
        ...
    })
</script>
```

or

```
<script src="path/to/PDFViewCtrl.full.js"></script>
<script>
    var pdfviewer = new PDFViewCtrl.PDFViewer({
        ...
        jr: {
            brotli: {
                core:false, // the default value is true which means to enable brotli, false means no brotli compression
            }
        }
        ...
    })
</script>
```

## Preload webassembly artifacts

Starting from version 7.1.1, Foxit PDF SDK for Web provides a script file called "preload-jr-worker.js" to load webWorker scripts and wasm/asm in advance, this can greatly save document rendering time.

### Code Example:

```
<body>
  <div id="pdf-ui"></div>
  <script>
    var licenseSN = "Your license SN";
    var licenseKey = "Your license Key";
  </script>

  <!-- Add the preload-jr-worker.js-->
  <script src="./lib/preload-jr-worker.js"></script>
  <script>
    var readyWorker = preloadJrWorker({
      workerPath: './lib/',
      enginePath: './lib/jr-engine/gsdk',
      fontPath: './external/brotli',
      licenseSN: licenseSN,
      licenseKey: licenseKey
    })
  </script>

  <script src="./lib/UIExtension.full.js"></script>
  <script>

    var pdfui = new UIExtension.PDFUI({
      viewerOptions: {
        libPath: './lib', // the library path of web sdk.
        jr: {
          readyWorker: readyWorker,
        }
      },
      renderTo: '#pdf-ui', // the div (id="pdf-ui").
      appearance: UIExtension.appearances.adaptive,
      addons: [
        ...
      ]
    });
    ...
  </script>
```

## Tiling size

**Note:** Starting from version 8.5, the Web SDK no longer uses the tileSize rendering mode. The following content is only applicable to the versions prior to 8.5.

Foxit PDF SDK for Web performs raster scan when rendering the page. If the currently rendered page layout is too large, the rendering speed of the page will be extremely slow. It is recommended that you enable tileSize rendering mode when opening this large page layout. Currently, the supported tileSize range is 500-3000px. In our internal comprehensive test, the rendering speed is optimal with the tileSize being set as 1200px. But it may vary with your document complex. You can set different tileSize such as 200, 3600, and etc. in your test environment according to the needs of the actual scenario to obtain the most suitable configuration scheme.

Applicable scenario:

- Complex documents with large page layout

### Code Example:

```
<script src="path/to/UIExtension.full.js"></script>
<script src="path/to/allInOne.js"></script>
<script>
  var pdfui = new UIExtension.PDFUI({
    ...
    viewerOptions: {
      tileSize:1200,
      ...
    }
  ...
})
</script>
```

or

```
<script src="path/to/PDFViewCtrl.full.js"></script>
<script>
  var pdfviewer = new PDFViewCtrl.PDFViewer({
    ...
    tileSize:1200,
    ...
  })
</script>
```

## **Zoom**

Foxit PDF SDK for Web opens PDF with fitWidth by default for desktop, and with actual scale by default for mobile. For mobile, if you display the pages in fitWidth mode, showing or hiding the left toolbar will cause the PDF pages to be re-rendered as the viewport size changes, which will affect the performance. To circumvent this problem, it is recommended to display the pages in actual scale.

## **Rendering mode**

Starting in version 8.5, the option annotRenderingMode has been deprecated. By default, Foxit PDF SDK for Web uses the native mode (using WebAssembly as the rendering engine) to render annotations and form controls. The native render has been significantly optimized to ensure the rendering quality and speed, so the canvas rendering is no longer required.

## **Document loading**

### **Synchronous loading**

Synchronous loading is to first obtain the complete binary stream of the file for loading, which is a compromised way of memory and performance. For documents between 50M and 500M, this method is recommended.

#### **Code Example:**

```
<script src="path/to/UIExtension.full.js"></script>
<script src="path/to/allInOne.js"></script>
<script>
  var pdfui = new UIExtension.PDFUI({...})
  var blob = getBlob();
  pdfui.openPDFByFile(blob)
</script>
```

### **Asynchronous loading**

Asynchronous loading does not require a complete file stream, only the required part is obtained during loading. When the file is too large (greater than 500MB) and cannot be put in memory at all, or when you only need to request part of the document at a time, it is recommended to load the document in this way to get a good performance experience.

#### **Code Example:**

```
<script src="path/to/UIExtension.full.js"></script>
```

```
<script>
  var pdfui = new UIExtension.PDFUI({...})
  pdfui.openPDFByHttpRangeRequest({
    range:{
      url:'../../../../docs/FoxitPDFSDKforWeb_DemoGuide.pdf',
    }
  })
</script>
```

### Loading document from memory arrayBuffer

Loading from arrayBuffer is to store the entire file stream to and load from in wasm/asm memory. For small local documents (less than 500MB), or when the entire document stream can be obtained in a short time, it is recommended to load in this way. This method has the advantages of high reading efficiency and fast loading speed. To enable this method, pass in the callback function getLoadingMode() at the time of constructing the PDFUI. When it returns 1, it means that it is loaded from memory arrayBuffer.

#### Code Example:

```
<script src="path/to/UIExtension.full.js"></script>
<script>
  var pdfui = new UIExtension.PDFUI({
    ...
    customs:{
      getLoadingMode:function(file){return 1}
    }
    ...
  })
</script>
```

If you have implemented your own file open control, you can use the following method to load:

```
var pdfui = new UIExtension.PDFUI({...})
...//event bind context
{
  var arrayBuffer=getArrayBuffer();
  pdfui.openPDFByFile(arrayBuffer);
}
...
```

# I18n Entries Resources Management

## Explanation

- SDK: Foxit PDF SDK for Web.
- Addon: The addon features in the uix-addons directory of Foxit PDF SDK for Web.
- Entries: Defined in the JSON configuration file and placed in a directory named after the language code based on the language type.
- Application layer: The upper layer architecture developed by the SDK interface.

## Overview

This section provides some details about the management of i18n entries resources. It includes:

- SDK entries resources file, namespace management
- How to add a new language
- How to rewrite some existing entries
- Customize the entries of Addon

## SDK I18n Entries Resource Management

### The directory structure and the role of the file

In the SDK release package, internationalized entries are placed in the 'lib/locales/' directory and sorted by language code. Create the sub-directories based on the language code:

```
lib/locales
    ├── en-US
    ├── ja-JP
    └── zh-CN
```

In the language code directory, there are '`ui_.json`' and '`viewer_.json`' files. If application layer is developed based on PDFViewCtrl library, it only relies on the '`viewer_.json`' entry file; if application layer is developed based on UIExtension library, it relies on both the '`ui_.json`' and '`viewer_.json`' files.

## The directory of the custom entry file

If the default entries of SDK cannot meet the needs of the application layer, so that you need to rewrite the entries, or add new languages. In this case, it is recommended that developers should create a new directory at the application layer to store the custom entries.

The structure of the created directory should be consistent with the entries directory structure of the SDK release package, and the name of the entries file must be `ui_.json` and `viewer_.json`, for example:

```
/custom/locales
  ├── en-US
  │   ├── ui_.json
  │   └── viewer_.json
  ├── ja-JP
  │   ├── ui_.json
  │   └── viewer_.json
  └── zh-CN
      ├── ui_.json
      └── viewer_.json
```

After determining the entry directory path, specify the entry path when constructing a `PDFUI` or `PDFViewer` instance:

Based on `PDFViewCtrl`:

```
new PDFViewer({
  i18nOptions: {
    absolutePath: '/custom/locales/'
  }
})
```

Based on `UIExtension`:

```
new PDFUI({
  i18n: {
    absolutePath: '/custom/locales'
  },
})
```

## Verify the configuration in developer environment

1. Clear your browser caches to ensure the latest i18N resources will be loaded.
2. Refresh your browser, open the Network panel in DevTools, and check if the `ui_.json` or `viewer_.json` request url points your custom language path. If so, it means success.

## Add new languages

Based on the above method of customizing the entry file directory, for adding new languages, you should only add the language code directory in the `/custom/locales/` directory, and then write the entry file for the corresponding language according to the `en-US` entry.

Taking `ko-KR` for example, after adding new entry, the directory structure will look like:

```
/custom/locales
  |--- en-US
  |   |--- ui_.json
  |   |--- viewer_.json
  |--- ja-JP
  |   |--- ui_.json
  |   |--- viewer_.json
  |--- ko-KR
  |   |--- ui_.json
  |   |--- viewer_.json
  |--- zh-CN
  |   |--- ui_.json
  |   |--- viewer_.json
```

After finishing adding new languages, you can specify the default language when initializing the library:

Based on `PDFViewCtrl`:

```
const pdfViewer = new PDFViewer({
  i18nOptions: {
    initOption: {
      lng: 'ko-KR'
    }
  }
})
```

Based on `UIExtension`:

```
const pdfui = new PDFUI({
  i18n: {
    lng: 'ko-KR'
  }
})
```

In addition, you can switch languages dynamically:

```
pdfViewer.changeLanguage('ko-KR');
pdfui.changeLanguage('ko-KR');
```

## Rewrite some of the entries

If most of the SDK entries can meet the requirements of the application layer, and just need to do some minor modification, then you can use the functions [addResources](#) and [addResourceBundle](#) of [i18next.js](#) to overwrite the entries.

Based on PDFViewCtrl:

```
pdfViewer.i18n.addResource('en-US', 'viewer_', 'contextmenu.hand.zoomin', 'Custom Zoom in');
pdfViewer.i18n.addResources('en-US', 'viewer_', {
  'contextmenu.hand.zoomin': 'Custom Zoom in',
  'contextmenu.hand.zoomout': 'Custom Zoom out'
});
pdfViewer.i18n.addResourceBundle('en-US', 'viewer_', {
  contextmenu: {
    hand: {
      zoomin: 'Custom Zoom in',
      zoomout: 'Custom Zoom out'
    }
  }
}, true, true);
```

Based on UIExtension:

```
pdfui.waitForInitialization().then(() => {
  pdfui.i18n.addResource('en-US', 'ui_', 'contextmenu.tools.handTool', 'Custom Hand Tool');
  pdfui.i18n.addResources('en-US', 'ui_', {
    'contextmenu.tools.handTool': 'Custom Hand Tool',
    'contextmenu.tools.selectAnnotation': 'Custom Select Annotation Tool'
  });
  pdfui.i18n.addResourceBundle('en-US', 'ui_', {
    contextmenu: {
      tools: {
        handTool: 'Custom Hand Tool',
        selectAnnotation: 'Custom Select Annotation Tool'
      }
    }
  }, true, true);
  // make the above configuration work on the interface.
  pdfui.getRootComponent().then(root => {
    root.localize();
  });
})
```

## Customize the entries of Addon

For Addon, please refer to this section [Introduction to addons](#).

The following table lists all Addons and the corresponding entries namespaces:

Addon	i18n namespace
edit-graphics	ega
export-form	export
file-property	file-property
form-designer	form-designer
h-continuous	h-continuous
h-facing	h-facing
h-single	h-single
import-form	import
print	print
recognition-form	recognition-form
text-object	edit-text
thumbnail	thumbnail

When adding/overwriting the entries, you can use the namespaces in the above table to add/overwrite the entries of a specific addon, as follows:

```
pdfui.waitForInitialization().then(() => {
  pdfui.i18n.addResourceBundle('en-US', 'print', {
    dialog: {
      cancel: 'custom cancel'
    }
  }, true, true);
  pdfui.getRootComponent().then(root => {
    root.localize();
  });
})
```

For more details about the addon entries, you can refer to the `uix-addons/{addon-name}/locales/en-US.json` file in the SDK release package.

# Font

## Strategy and Usage of the New Font in Foxit PDF SDK for Web

### Background

Foxit PDF SDK for Web enables users to use custom third-party fonts. However, when the underlying engine lacks font information, font matching rules may lead to incorrect font usage. To address this, Foxit PDF SDK for Web must furnish the font information list supported by the frontend to the underlying engine. This ensures that the engine can correctly match and utilize the corresponding fonts during font rendering.

### How to configure a font information file

Foxit PDF SDK for Web provides a configuration parameter called `fontInfoPath` which allows users to customize the font information list based on their requirements. Users can refer to the example below for specific usage.

### How to generate a font information list file

Foxit PDF SDK for Web provides a font information generation tool (located in the `/server/gen-font-info` folder of the package) to create a font information list file.

This file primarily includes the font information, such as family name, sub-family name, face index, postscript name, code page, and etc.

### How to use

- Foxit PDF SDK for Web provides some open-source fonts available in the `/external` folder of the package. Therefore, Foxit PDF SDK for Web will generate a font information file named "**fileInfo.csv**" based on these open-source fonts.
- If users need to use custom fonts, they can generate a new font information file, such as "**fileInfoNew.csv**". Alternatively, they can also append their custom font information to the existing "**fileInfo.csv**" file.

- It is necessary to use `PDFView.setJFontMap` in combination with this font strategy.

## Example

```
const pdfui = new PDFUI({
  viewerOptions: {
    jr: {
      fontPath: '../external/brotli',
      fontInfoPath: '../external/brotli/fontInfo.csv', // Set the path for the font information file.
      licenseSN,
      licenseKey,
      brotli: {
        core: false
      },
    },
    customs: {
    },
    appearance,
    renderTo: '#pdf-ui',
    fragments: [],
    addons: []
  });
// Add custom fonts
var fontMaps = [
  {
    nameMatches: [/Arial/i],
    glyphs: [
      {
        // bold: -1,
        flags: -1,
        url: 'http://<hostname>/unitTest/font/ARIAL.TTF'
      }
    ],
    charsets: [0]
  }
]
pdfui.getPDFViewer().then(function (viewer) {
  viewer.setJFontMap(fontMaps)
})
```

## Note

In the **Hand** mode, when directly copying rich text from a browser and pasting it into PDFViewer, Foxit PDF SDK for Web will add it as a Typewriter annotation. However, most of the fonts copied from browsers are often system fonts, such as "-apple-system", "BlinkMacSystemFont", "Segoe UI", "Roboto", "Oxygen", "Ubuntu", "Fira Sans", "Droid Sans", "Helvetica Neue", "sans-serif". It is recommended to specify a specific font based on the system platform when using this feature, so

that the font engine of Foxit PDF SDK for Web can better recognize it. Otherwise, the font engine won't know what font is being used at the application layer, potentially resulting in the inability to display the copied and pasted content correctly.

Therefore, when using this feature, Foxit PDF SDK for Web defaults to using the "Dengxian Light" font on Windows platform and the "PingFangSC" font on Mac platform. The application layer needs to follow the process of loading third-party fonts to incorporate the necessary fonts.

## Generate a CSV file with font information

### Usage

To execute the following command in the `gen-font-info` directory:

```
npm install
node index.js <input-path> [output-path] [output-override=true]
```

### Explanation of the parameters

- `input-path`: The path of font file. It supports the following formats:
  1. Font file URL, which returns a font file with the `content-type` set to `application/octet-stream`.
  2. Font list URL, which returns a font list with the `content-type` set to `application/json`, formatted as `["font-a-url", "font-b-url", ...]`.
  3. Local font file path, which supports both absolute path and relative path.
  4. Local font folder path, which will traverse all font files in this folder including subfolders. It supports both absolute path and relative path.
- `output-path`: Generated CSV file path, default is `fontInfo.csv` in the current directory.
- `output-override`: Whether to overwrite the existing CSV file, default is `true`. If set to `false`, new font information will be appended to the existing CSV file.

### Example

#### Example of font file URL

```
node index.js http://localhost:8080/fonts/Bradhitc_M.ttf ./fontInfo.csv
```

#### Example of font list URL

```
node index.js http://localhost:8080/fonts.json ./fontInfo.csv
```

### **Example of local font file path**

```
# Relative path  
node index.js ./fonts/arial.ttf ./fontInfo.csv  
node index.js ./fonts ./fontInfo.csv  
# Absolute path  
# win  
node index.js D:\fonts\Bradhitc_M.ttf E:\fontInfo.csv  
node index.js D:\fonts E:\fontInfo.csv  
# linux, mac  
node index.js /home/fonts/Bradhitc_M.ttf /home/fontInfo.csv  
node index.js /home/fonts /home/fontInfo.csv
```

### **Example of output-override**

```
node index.js /home/fonts /home/fontInfo.csv false  
node index.js /home/fonts false
```

# Technique

## Enter and Exit Browser Fullscreen Mode

Most browsers have implemented the fullscreen feature for web pages and provide keyboard shortcuts, usually F11 and Esc keys. In addition to keyboard shortcuts, W3C has also defined two APIs for fullscreen. With these APIs, we can control the fullscreen display of web pages using JavaScript.

### Fullscreen API

In the W3C standard, the methods are as follows:

Enter fullscreen: [Element.requestFullscreen](#)

Exit fullscreen: [Document.exitFullscreen](#)

Element in current fullscreen mode: [Document.fullscreenElement](#)

However, the methods required to be used in some versions of browsers are different. Refer to the table below:

Feature	webkit	Gecko(Firefox)	IE11
Enter fullscreen	webkitRequestFullScreen	mozRequestFullScreen	msRequestFullScreen
Exit fullscreen	webkitExitFullscreen	mozCancelFullScreen	msExitFullscreen
Element in current fullscreen mode	webkitFullscreenElement or (webkitCurrentFullScreenElement, mobile safari)	mozFullScreenElement	msFullscreenElement

Although W3C has defined the standard for the fullscreen API, it is not well supported in various browsers. Therefore, it is necessary to perform compatibility processing when using it.

## Compatibility Encapsulation

1. Enter fullscreen

```
function requestFullscreen() {
    const html = document.documentElement;
    const rfs = html.requestFullscreen || html.mozRequestFullScreen || html.webkitRequestFullScreen ||
    html.msRequestFullscreen;
    return rfs.call(html);
}
```

2. Exit fullscreen

```
function exitFullscreen() {
    const efs = document.exitFullscreen || document.mozCancelFullScreen ||
    document.webkitExitFullscreen || document.msExitFullscreen;
    return efs.call(document);
}
```

3. Get the element in current fullscreen mode

```
function getFullscreenElement() {
    return document.fullscreenElement || document.webkitFullscreenElement ||
    document.webkitCurrentFullScreenElement || document.mozFullScreenElement ||
    document.msFullscreenElement;
}
```

## Check if it is in fullscreen mode

Since the `Document.fullscreen` property has been deprecated, according to the MDN documentation, we can determine if it is in fullscreen mode by checking if `Document.fullscreenElement` is equal to `null`.

```
function isFullscreen() {
    return getFullscreenElement() !== null;
}
```

However, according to [can I use](#), although `fullscreenElement` can be obtained with different prefixes, its compatibility is still not satisfactory. In scenarios with higher compatibility requirements, the [Screen API](#) can be used as an additional means to determine if it is in fullscreen mode.

```
function isFullscreen() {
    const fullscreenElement = getFullscreenElement();
    if (fullscreenElement === undefined) {
        return window.innerWidth === screen.availWidth && window.innerHeight === screen.availHeight;
    }
    return fullscreenElement !== null;
}
```

## Event Listening

After entering and exiting fullscreen mode, the browser will trigger the `fullscreenchange` event.

Related non-standard events include:

- `webkitfullscreenchange`
- `mozfullscreenchange`
- `MSFullscreenChange`

According to the information provided on [can I use](#), the compatibility of the `fullscreenchange` event is not very good. For improved compatibility across various browsers and devices, Foxit PDF SDK for Web offers the `UIEvents.fullscreenchange` event.

Here's an example of how to listen for the `fullscreenchange` event using the `addUIEventListener` function provided by the PDFUI library:

```
pdfui.addUIEventListener(UIExtension.UIEvents.fullscreenchange, isFullscreen => {
    // do something here
})
```

Note that before using the `UIEvents.fullscreenchange` event, you need to make sure that the `fullscreen` addon is loaded during the PDFUI initialization, or use `AllInOne.js` or `AllInOne.mobile.js`. For more details, please refer to the [Addon Introduction](#) section.

Alternatively, you can choose not to use the provided event and instead use the `resize` event to achieve the same result as `fullscreenchange`. The specific approach is as follows:

```
let _isFullscreen = isFullscreen(); // Refer to the "Checking if in fullscreen" section
window.addEventListener('resize', () => {
    const currentIsFullscreen = isFullscreen();
    if(currentIsFullscreen !== _isFullscreen) {
        // This code block is executed when the fullscreen mode changes, which is equivalent to fullscreenchange
    }
    _isFullscreen = currentIsFullscreen;
})
```

Both approaches allow you to perform certain actions when the fullscreen mode changes in the browser. Choose the one that suits your needs and browser compatibility requirements.

## Upgrade Guide for Bookmark APIs

This guide is intended to help developers upgrade from an older version of the Bookmark APIs to the newest version. Starting from version 10.0.0, we have refactored the Bookmark APIs, which

provides more powerful features and performance improvements. Next, we will further discuss which old Bookmark APIs are being deprecated and how to migrate to the new APIs.

### **Confirm the current version of the API in use**

If your application was developed based on versions prior to 10.0.0, when upgrading to versions after 10.0.0, please note that you will need to search for relevant API calls in your code, or check if the old bookmark component has been used in your component templates. The names of the old APIs and components will be listed subsequently.

### **Deprecated APIs**

The table below lists the deprecated bookmark APIs and alternative solutions.

Old API	Description	Alternative API
<code>PDFDoc.getRootBookmark</code>	Get the root bookmark of the document, this method will load all bookmarks in the document at once	<a href="#"><u>BookmarkDataService.getFirstLevelBookmarks</u></a>
<code>PDFDoc.createRootBookmark</code>	Create the root bookmark of the document. The new version will automatically create the root bookmark, making it unnecessary to create via an interface	none
<code>PDFBookmark.insertBookmark</code>	Insert a new bookmark at the specified location	<a href="#"><u>BookmarkDataService.addBookmark</u></a> , <a href="#"><u>BookmarkUIService.addBookmark</u></a>
<code>PDFBookmark.setProperty</code>	Set the properties of the bookmark	<a href="#"><u>BookmarkDataService.renameBookmark</u></a> , <a href="#"><u>BookmarkDataService.setColor</u></a> , <a href="#"><u>BookmarkDataService.setFontStyle</u></a> , <a href="#"><u>BookmarkDataService.setDestination</u></a> , <a href="#"><u>BookmarkUIService.renameBookmark</u></a> , <a href="#"><u>BookmarkUIService.setColor</u></a> , <a href="#"><u>BookmarkUIService.setFontStyle</u></a> , <a href="#"><u>BookmarkUIService.setDestination</u></a>

Old API	Description	Alternative API
PDFBookmark.remove	Remove a specified bookmark	<a href="#">BookmarkDataService.deleteBookmark</a> , <a href="#">BookmarkUIService.deleteBookmark</a>
PDF.constant.DataEvents.bookmarkAdded	Triggered when bookmark has been added	<a href="#">BookmarkDataService.onBookmarkAdded</a>
PDF.constant.DataEvents.bookmarkUpdated	Triggered when bookmark has been updated	<a href="#">BookmarkDataService.onBookmarkPropertiesUpdated</a>
PDF.constant.DataEvents.bookmarkRemoved	Triggered when bookmark has been removed	<a href="#">BookmarkDataService.onBookmarkRemoved</a>

Below are the deprecated bookmark UIExtension components and their alternatives:

Old Component	Description	Alternative Component
<bookmark-sidebar-panel>	Sidebar bookmark panel component	<bookmark-v2:sidebar-panel>
<bookmark-contextmenu>	Bookmark contextmenu component	<bookmark-v2:bookmark-contextmenu>

When these old components are replaced with new ones, the previously registered bookmark events will not be triggered. At this time, it is necessary to replace the registration method of these events. Examples will be provided later to illustrate.

If your application requires a custom bookmark UI, please refer to [Customize bookmark](#).

## Example

The following will provide examples to demonstrate how to use the new bookmark APIs to replace the old ones, as well as compare the differences between the two versions.

### ***Example 1 - Listen to the event of adding a bookmark***

This example demonstrates how to listen to the event of adding a bookmark, and modify the properties of the bookmark through the instance of [BookmarkDataService](#).

```
<html>
  <div id="pdf-ui"></div>
</html>
<style>
html{
  overflow:hidden;
}
body {
  height: 100vh;
}
#pdf-ui {
  position: relative;
  top: 50px;
}
</style>

<script>
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: '#pdf-ui',
  appearance: UIExtension.appearances.adaptive,
  addons: []
});
pdfui.getBookmarkDataService().then(bookmarkDataService => {
  bookmarkDataService.onBookmarkAdded((event) => {
    bookmarkDataService.setColor(event.bookmarkId, '#FF0000');
    bookmarkDataService.setFontStyle(event.bookmarkId, {
      bold: true,
      italic: true
    });
  })
})
</script>
```

After running the above example and opening a document, then adding a new bookmark through the bookmark panel, you will find that the font color of the new bookmark is set to red, and the font style is set to bold and italic.

For versions 9.\* and earlier, bookmark events are registered in the following way:

```
pdfui.addViewerEventListerner(PDFViewCtrl.ViewerEvents.bookmarkAdded, bookmark => {
  // Here operates the bookmark object
```

```
})
```

### **Example 2 - Get the nodes of bookmark tree**

In versions 9.\* and earlier, bookmarks were loaded into memory all at once and inserted into the DOM tree, loading speed could be slow, even to the point of lag, when there were many bookmarks. After refactoring, bookmarks are loaded and rendered based on the number of bookmarks visible to the user, which speeds up the loading process. Furthermore, bookmarks are rendered through the [TreeComponent](#) component, reserving some space for user customization. The following example shows how to get the nodes of the bookmark tree and modify the node styles:

```
<html>
  <div id="pdf-ui"></div>
</html>
<style>
html{
  overflow:hidden;
}
body {
  height: 100vh;
}
#pdf-ui {
  position: relative;
  top: 50px;
}
</style>

<script>
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: '#pdf-ui',
  appearance: UIExtension.appearances.adaptive,
  addons: []
});
(async () => {
  const rootComponent = await pdfui.getRootComponent();
  const bookmarkTreeComponent = rootComponent.querySelector('@bookmark-v2:bookmark-tree');
  const treeComponent = bookmarkTreeComponent.getTree()
  treeComponent.on('create-tree-node', treeNode => {
    const titleElement = treeNode.element.querySelector('.fv__ui-tree-node-title');
    titleElement.style.cssText += 'font-family: system-ui, --apple-system, BlinkMacSystemFont;';
  })
})
```

```
    })
})()

</script>
```

Unlike the old version, all DOM nodes of the old bookmarks can be obtained through `querySelector` once the bookmarks were loaded. However, the new version requires listening to the `create-tree-node` event to get these nodes.

### **Example 3 - Support for undo/redo**

In version 10.0.0, a [\*\*BookmarkUIService\*\*](#) instance is provided, which is available only when the application layer is based on the implementation of UIExtension. It offers the same API as [\*\*BookmarkDataService\*\*](#), but supports undo/redo operations.

```
<html>
  <div id="pdf-ui"></div>
</html>
<style>
html{
  overflow:hidden;
}
body {
  height: 100vh;
}
#pdf-ui {
  position: relative;
  top: 50px;
}
</style>

<script>
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: '#pdf-ui',
  appearance: UIExtension.appearances.adaptive,
  addons: [
    libPath + '/uix-addons/undo-redo'
  ]
});
(async () => {


```

```
// Create a custom menu item component.
class HighlightBookmarkContextMenuItem extends UIExtension.SeniorComponentFactory.createSuperClass({
    // Listen to the click event through the @on.click directive.
    template: `<contextmenu-item @on.click="$component.onClick()">Highlight it</contextmenu-item>`
}) {
    static getName() {
        return 'highlight-bookmark-contextmenu-item';
    }
    async onClick() {
        const treeNode = this.parent.getCurrentTarget();
        const nodeData = treeNode.getData();
        const bookmarkData = nodeData.data;
        const bookmarkId = bookmarkData.id;
        const bookmarkUIService = pdfui.getBookmarkUIService();
        await bookmarkUIService.setColor(bookmarkId, '#FF0000', bookmarkData.color);
    }
}
const module = UIExtension.modular.module('custom', []);
module.registerComponent(HighlightBookmarkContextMenuItem);
const rootComponent = await pdfui.getRootComponent();
// Get the bookmark contextmenu instance.
const bookmarkContextMenu = rootComponent.querySelector('@bookmark-v2:bookmark-contextmenu');
// Insert a custom menu item at the end of the bookmark contextmenu.
bookmarkContextMenu.append('<custom:highlight-bookmark-contextmenu-item>');
})()

</script>
```

This example inserts a custom menu item at the end of the bookmark contextmenu. Clicking this item allows you to set the currently selected bookmark to red. Moreover, this action can be undone or redone using [Ctrl+Z/Ctrl+Y](#). Please note, to enable the undo/redo feature, you need to include `libPath + '/uix-addons/undo-redo'` in the `addons` configuration when initializing PDFUI, or you can simply configure `addons: libPath + '/uix-addons/allInOne.js'` to load all addons.

## Integration of ServiceWorker

### Purpose

This section aims to provide developers a comprehensive guide for integrating and consolidating the built-in ServiceWorker functionality in the SDK at the application layer. It addresses the ServiceWorker conflict issues and common problems.

Although the browser allows multiple ServiceWorkers to be registered in the same domain, these ServiceWorkers must have different scopes. In this way, each ServiceWorker can independently control the resources under different scopes. However, MessageWorker.js occupies a scope (default

is '/'), which will cause the application layer's ServiceWorker to fail to register successfully in the same scope. Therefore, when the ServiceWorker at the application layer needs to share the same scope with the SDK's built-in MessageWorker.js, they need to be merged into a single file.

This section will introduce how to merge and customize parameters related to ServiceWorker configuration.

## **Introduction to ServiceWorker**

ServiceWorker is a script that runs in the background of a browser, which can be used to implement offline capabilities, push notifications, background synchronization, and other features. After the webpage is fully loaded, it operates in the background and can intercept network requests, cache resources, and provide other functions.

### **Key features of ServiceWorker:**

- **Offline Capabilities:** ServiceWorker can cache resources, allowing users to access websites even when the network is disconnected.
- **Push Notifications:** ServiceWorker can receive push notifications from the server and display messages to the user.
- **Background Synchronization:** ServiceWorker can perform tasks in the background, such as uploading data or updating data.
- **Network Interception:** ServiceWorker can intercept network requests and process them as needed, such as caching data or modifying request headers.

## **Overview of MessageWorker.js**

MessageWorker.js is a ServiceWorker script provided by the SDK to implement synchronous communication in the Web Worker layer. Since MessageWorker.js occupies an independent scope, when the application layer's ServiceWorker needs to use the same scope, the two need to be merged into a single file.

## **Environment Setup**

Before starting to integrate ServiceWorker, please ensure your development environment meets the following requirements:

- Browser supporting ServiceWorker: Ensure your target browser supports ServiceWorker, such as Chrome, Firefox, and Edge. For more specific information, you can refer to [Can I use](#).

- @foxitsoftware/foxit-pdf-sdk-for-web-library: The version must be 10.0.0 or higher, and the lib directory should contain the MessageWorker.js file.
- HTTPS support: Your website must be accessed via HTTPS to use ServiceWorker. However, there are exceptions for the development environment. localhost and 127.0.0.1 can use ServiceWorker without enabling HTTPS access.

## Registration and Configuration of ServiceWorker

Starting from 10.0.0, a new messageSyncServiceWorker parameter has been added to the PDFViewer constructor arguments, used for specifying the registration method of the ServiceWorker.

There are two ways to use messageSyncServiceWorker:

1. Method 1: Specify url and options:

- url is the registration path for the ServiceWorker;
- options are the registration options for the ServiceWorker, you can refer to the specific description in [MDN](#).

```
const viewer = new PDFViewer({
  messageSyncServiceWorker: {
    url: '/your-service-worker.js',
    options: { // Optional
      scope: '/foxit-lib/'
    }
  }
  // ... Other parameters
})
```

2. Method 2: Specify registration:

- registration is the Promise<ServiceWorkerRegistration> object returned by the navigator.serviceWorker.register() method.

```
const viewer = new PDFViewer({
  messageSyncServiceWorker: {
    registration: navigator.serviceWorker.register('/your-service-worker.js',
{
      scope: '/foxit-lib/'
    }
  }
  // ... Other parameters
})
```

Method 1 will be determined by the SDK internally as to when to register the ServiceWorker. If you need to manually control the registration of the ServiceWorker, you must use method 2.

In the SDK release package, we have provided a complete example (/examples/PDFViewCtrl/integrate-service-worker). You can directly refer to its implementation and run and view the effects according to the README.md document.

## **Service-Worker-Allowed Response Header**

By default, the max scope allowed by a Service Worker is determined by its script location. Specifically, the scope of the Service Worker can only cover the directory where its script is located and its subdirectories. For example, if the Service Worker script is located at <https://example.com/sub/worker.js>, it can only control resources under <https://example.com/sub/> and its subpaths by default. If you forcibly specify the scope parameter to a larger scope, it will lead to the failure of the Service Worker registration, and the error message will be: [The path of the provided scope \('/'\) is not under the max scope allowed \('/sub/'\)](#).

However, in some cases, you may want to expand the scope of the Service Worker so that it can control resources within a larger range. At this point, the [Service-Worker-Allowed](#) response header becomes particularly important. By configuring this response header, you can specify a broader path, allowing the Service Worker to be effective within a larger scope.

### ***Configuring Service-Worker-Allowed Response Header***

To use the [Service-Worker-Allowed](#) response header, you need to include the following field in the HTTP response header of the Service Worker script. Its value is the max scope path allowed:

```
Service-Worker-Allowed :/;
```

### **Nginx Configuration Example**

If you are using Nginx as your server, you can include the [Service-Worker-Allowed](#) response header by modifying the Nginx configuration file. Below is a configuration example:

```
server {  
    location /sw.js {  
        add_header Service-Worker-Allowed /;  
    }  
}
```

### **Webpack Dev Server Configuration Example**

If you are using Webpack Dev Server for local development, you can include the [Service-Worker-Allowed](#) response header by configuring devServer. Below is a configuration example:

```
// webpack.config.js
module.exports = {
  // Other configurations
  devServer: {
    headers: {
      'Service-Worker-Allowed': '/'
    }
  }
};
```

### **vue.config.js Configuration Example**

If you are using Vue CLI, you can adjust the Webpack Dev Server by modifying [vue.config.js](#). Below is a configuration example:

```
// vue.config.js
module.exports = {
  devServer: {
    headers: {
      'Service-Worker-Allowed': '/'
    }
  }
};
```

### **Special Request Address**

Starting from 10.0.0, a new [messageSyncServiceWorker](#) parameter has been added to the [PDFViewer](#) constructor arguments, used for specifying the registration method of the ServiceWorker.

In the [fetch](#) event listened by the ServiceWorker in the application layer, if the request address matches [\\_foxitwebsdk-syncmsg\\_](#), please ignore this request directly. This is also mentioned in our example code ([examples/PDFViewCtrl/integrate-service-worker/src/service-worker.js](#)).

### **Common Questions and Troubleshooting**

Starting from 10.0.0, a new [messageSyncServiceWorker](#) parameter has been added to the [PDFViewer](#) constructor arguments, used for specifying the registration method of the ServiceWorker.

1. ServiceWorker Not Registered

- Issue description: Unable to find the ServiceWorker registration results in the developer tools.
  - Possible reasons:
    1. The path is set incorrectly, and the ServiceWorker js request returns 404 or other errors;
    2. The browser does not support ServiceWorker;
    3. The HTTPS protocol is not enabled. For security reasons, ServiceWorker can only be used under the HTTPS protocol. An exception to this is localhost and 127.0.0.1, which do not require HTTPS.
  - Solutions:
    1. Check the ServiceWorker's registration code and path configurations.
    2. Check browser compatibility. For ServiceWorker compatibility, please refer to [Can I use](#).
    3. Enable HTTPS protocol.
2. ServiceWorker Registration Failed
- Issue description: A prompt during registration indicates that the scope exceeds the max scope allowed. Example of error message:
- ```
register a ServiceWorker for scope ('http://localhost:9899/') with script
('http://localhost:9899/lib/MessageWorker.js?b=http://localhost:9899/_foxitwe
bsdk-syncmsg_'): The path of the provided scope ('/') is not under the max
scope allowed ('/lib/'). Adjust the scope, move the Service Worker script, or
use the Service-Worker-Allowed HTTP header to allow the scope.
```
- Possible reasons: The registration path or scope of the Service Worker is not set correctly. It should be noted that the max scope allowed by the Service Worker depends on the location of the Service Worker script itself (refer to: [MDN](#)).
  - Solutions:
    1. Understand the scope rules of ServiceWorker;
    2. Check the registration code and scope settings of ServiceWorker;
    3. Adjust the scope of ServiceWorker, that is, modify the [scope](#) parameter;
    4. Adjust the [Service-Worker-Allowed](#) HTTP response header to allow a larger scope;
    5. Check the path of ServiceWorker script and server configuration.
3. ServiceWorker Registration Indicates Unsupported MIME Type
- Issue description: A prompt during registration indicates an unsupported MIME type ('\*\*\*/\*\*\*'). Example of error message:

```
Failed to register a ServiceWorker for scope ('http://localhost:5173/assets/')  
with script ('http://localhost:5173/assets/service-worker.js'): The script has  
an unsupported MIME type ('text/html').
```

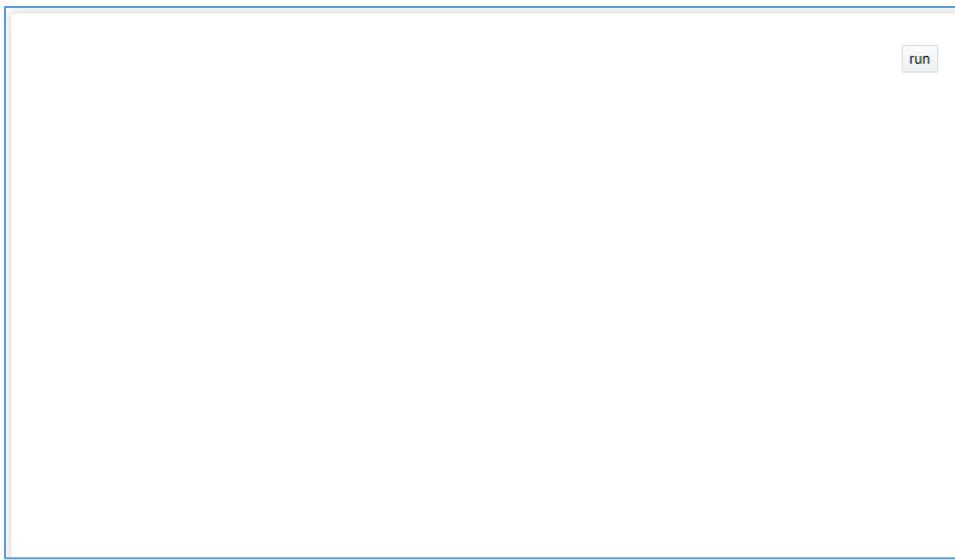
- Possible reasons: The registration path of the ServiceWorker is incorrect or the target file does not exist.
- Solutions:
  1. Check the registration path of the ServiceWorker;
  2. Check if the target file exists;
  3. Check the server configuration.

# Troubleshooting

## Thumbnail Loading Error

### **This component is unavailable until "thumbnail" addon is loaded**

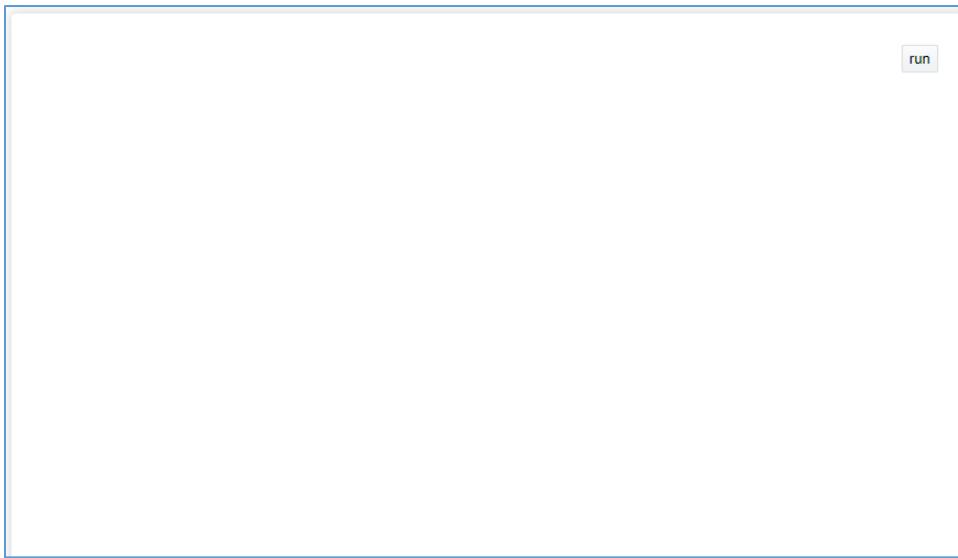
With the release of version 7.3.0, the thumbnail component was modularized as an add-on. As thus, before migrating past versions to this version or higher, thumbnail components should be configured according to actual needs. Directly migrated versions without proper changes on thumbnail component will cause an error on your browser console during the initialization phase. To view the details of the error, open the browser DevTools and click [run](#) at the top right of the following demo. Note: the following demo doesn't run on legacy browsers.



## Solutions

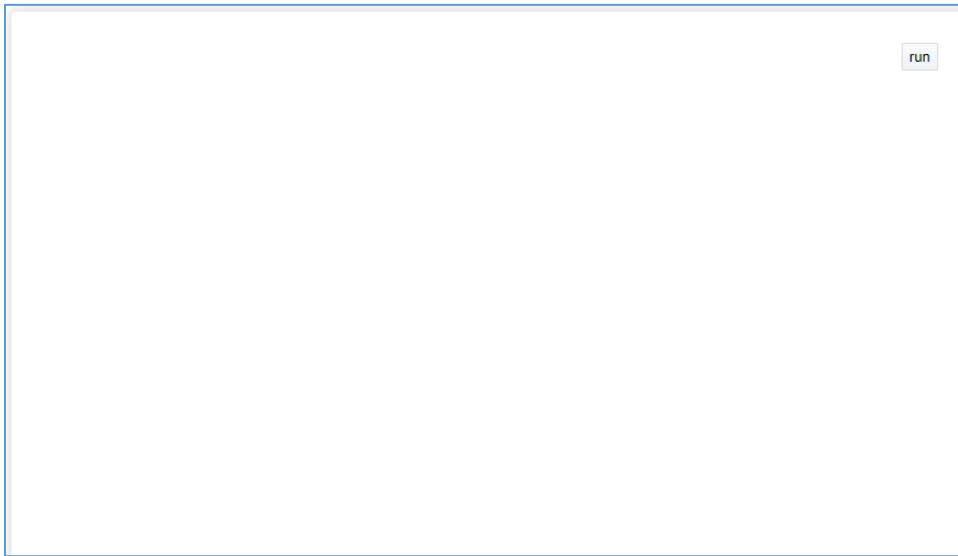
### **Reference thumbnail addon**

If you need Thumbnails, you should reference `/uix-addons/thumbnail` when initializing PDFUI. Below is the code example:



**Delete the tag <thumbnail-sidebar-panel> in the layout-template section**

If you don't need thumbnail, then you should delete <thumbnail-sidebar-panel> tag to avoid the error. Below is the code example:



**Auto Zoom when typewriting on iPhone**

**The page will automatically zoom in when typewriting on iPhone**

This is a feature for iPhones, if you want to prevent page from Auto Zoom when typewriting, you can add the following code:

```
/*.html
<meta name="viewport" content="width=device-width,initial-scale=1,minimum-scale=1,maximum-scale=1,user-scalable=no">

/*.js
// Prevent page from Auto Zoom in Input text fields on iPhone.

window.onload = function () {
    if(UIExtension.PDFViewCtrl.DeviceInfo.isIPHONE) return;
    var lastTouchEnd = 0;
    document.addEventListener('touchend', function (event) {
        var now = (new Date()).getTime();
        if (now - lastTouchEnd <= 300) {
            event.preventDefault();
        }
        lastTouchEnd = now;
    }, false);
};
```

## Dynamically show/hide components

### How to dynamically show/hide components

From version 8.5.2, three new APIs (`keepState`, `revokeKeepState`, `isStateKept`) are provided to help users show/hide components dynamically. **keepState** is a function specially provided to the application layer to manage the state of components, and is not be used by Web SDK internally. Currently, it is only valid for show/hide states. Users can first call **show/hide** function to control the visibility of the component, and then call **keepState** function to keep the current visibility state. The purpose of using **keepState** is to prevent SDK from modifying the visibility state at an uncertain time.

Example:

```
const redactApplyMenu = await pdfui.getComponentByName('fv--contextmenu-item-apply');

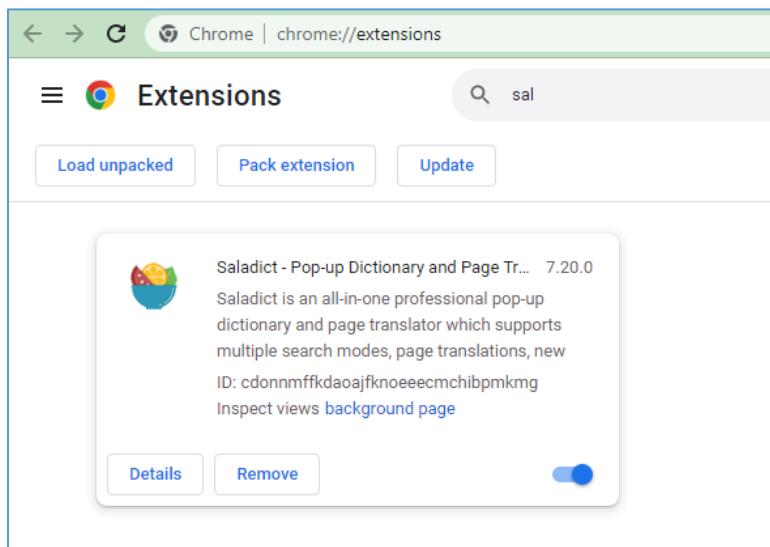
redactApplyMenu.hide(); // First hide component.
redactApplyMenu.keepState(); // Keep the current hide state of the component, which prevents the component
                           // from being showed inside the SDK.
// Revoke the keep-state when necessary.
redactApplyMenu.revokeKeepState();
```

## Support third-party text highlighting translation plugin

### How to support third-party text highlighting translation plugin in Foxit PDF SDK for Web

You can use the **select-text** event to activate the text highlighting translation plugin of browser. Here we take Chrome Saladict plugin as an example to show you how to listen to the selection event and implement a pop-up dictionary or page translator.

3. Enable the Saladict plugin in the Chrome://extensions panel.



4. Add the select-text event listener in your code.

```
let div = document.createElement('div');
div.style.cssText += `
  opacity: 0;
  position: absolute;
  width: 0;
  height: 0;
  display: flex;
  justify-content: center;
  align-items: center;
`;

document.body.append(div);
document.addEventListener('mousedown', () => {
  window.getSelection().removeAllRanges();
});

pdfui.addUIEventListener(PDFViewCtrl.Events.selectText, (data) => {
  if (!data || !data.text || !data.e || !data.e.srcEvent) {
    return;
  }
});
```

```
}

const {text, e} = data;
const event = e.srcEvent;
div.style.cssText += `
left: ${event.clientX}px;
top: ${event.clientY}px;
`;
div.innerHTML = "";
div.append(document.createTextNode(text));

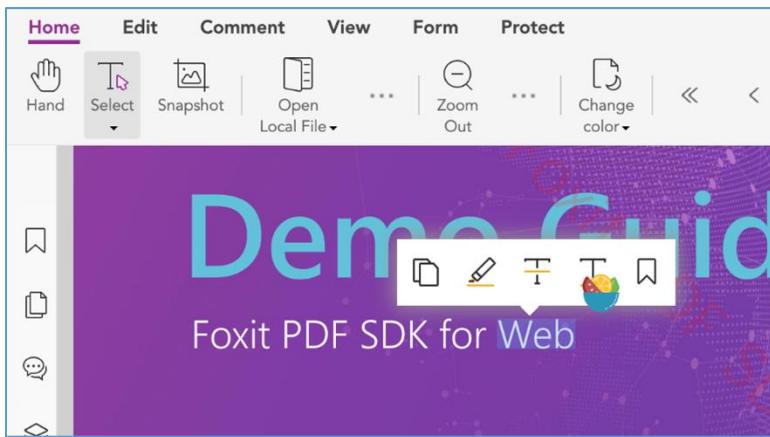
const mousedown = new MouseEvent('mousedown', {
  bubbles: true,
  clientX: event.clientX,
  clientY: event.clientY,
  relatedTarget: div
});
const pointerup = new PointerEvent('pointerup', {
  bubbles: true,
  clientX: event.clientX,
  clientY: event.clientY,
  relatedTarget: div
});
const mouseup = new PointerEvent('mouseup', {
  bubbles: true,
  clientX: event.clientX,
  clientY: event.clientY,
  relatedTarget: div
});

div.dispatchEvent(mousedown);

const selection = window.getSelection();
const range = document.createRange();
range.selectNode(div);
selection.addRange(range);

div.dispatchEvent(mouseup);
div.dispatchEvent(pointerup);
});
```

5. Choose Select Text Tool, drag and select a range of text on the page, and then the Saladict icon will appear on the selection.



## CORS

### Principle Analysis

#### *What is CORS*

CORS is a [W3C standard mechanism](#) based on HTTP headers, with the full name of "Cross-Origin Resource Sharing". This mechanism uses additional HTTP response headers to inform the browser whether a page is allowed to access resources from servers with different origins, overcoming the limitation of AJAX which can only use the same origin, and enabling cross-origin access to resources.

For more information about CORS, please refer to the [MDN document](#).

#### *Same-Origin Policy*

The Same-Origin Policy is an important security mechanism used to isolate potentially malicious files and reduce attacks. It limits how a page or script from one origin can interact with resources from another origin. For example, if a page uses AJAX to send a request to a URL from a different origin, the browser will detect that the request is from a different origin (i.e. cross-origin) and blocks the request, and then output the error message to the console.

So, what is the same-origin? In short, having the same protocol, IP/domain name, and port can be considered the same-origin. If any of these are different, it is not the same-origin. Some examples are given in the table below:

| URLs  | Result              | Reason                    |
|---|---------------------|---------------------------|
| http://www.company.com/<br>https://www.company.com/ | Not the Same-Origin | The protocol is different |

| <b>URLs</b>  | <b>Result</b>       | <b>Reason</b>  |
|--|---------------------|--|
| http://www.company.com/<br>http://www.company.net/                         | Not the Same-Origin | The domain name is different                               |
| http://www.company.com/<br>http://blog.company.com/                        | Not the Same-Origin | The domain name is different                               |
| http://www.company.com/<br>http://www.company.com:8080/                    | Not the Same-Origin | The port is different (The default port for http:// is 80) |
| http://www.company.com/<br>http://www.company.com/blog.html                | Same-Origin         | Only the path is different                                 |
| http://www.company.com/blog/index.html<br>http://www.company.com/blog.html | Same-Origin         | Only the path is different                                 |
| http://192.168.0.1/<br>http://192.168.1.1                                  | Not the Same-Origin | The IP address is different                                |

### ***Two kinds of CORS Requests***

Browsers divide CORS requests into two categories: simple requests and non-simple requests.

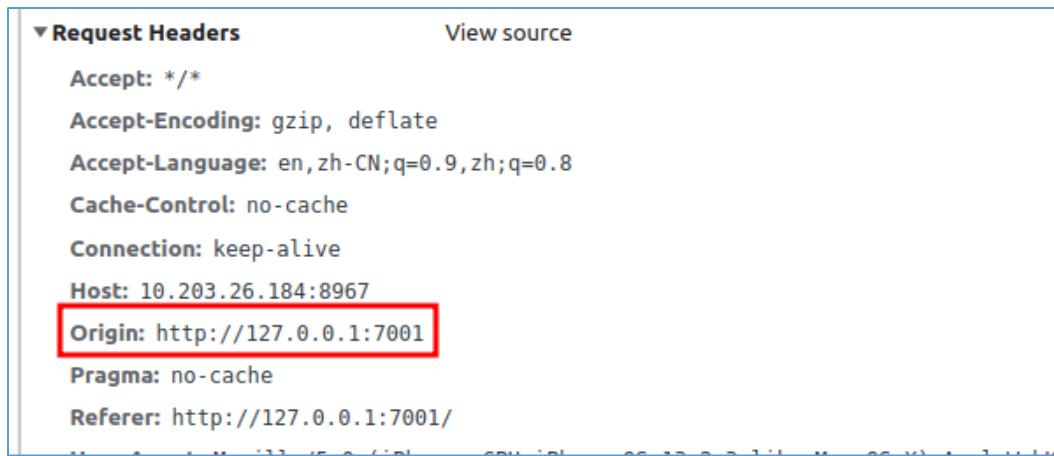
A request is a simple request as long as it meets the following two conditions simultaneously:

1. The request method is one of the three methods: [HEAD](#), [GET](#), [POST](#).
2. The header information of HTTP does not exceed the following fields:
  - o [Accept](#)
  - o [Accept-Language](#)
  - o [Content-Language](#)
  - o [Last-Event-ID](#)
  - o Content-Type is one of the following: [application/x-www-form-urlencoded](#), [multipart/form-data](#), [text/plain](#).

Browsers handle these two kinds of requests differently.

### **Simple Requests**

For simple requests, the browser directly sends a CORS request and adds an [Origin](#) field in the request header.



The screenshot shows the 'Request Headers' section of a browser's developer tools. The headers listed are:

- Accept: \*/\*
- Accept-Encoding: gzip, deflate
- Accept-Language: en,zh-CN;q=0.9,zh;q=0.8
- Cache-Control: no-cache
- Connection: keep-alive
- Host: 10.203.26.184:8967
- Origin: http://127.0.0.1:7001
- Pragma: no-cache
- Referer: http://127.0.0.1:7001/

The `Origin` field indicates which origin (protocol, domain, port) the request comes from. The server can set the `Access-Control-Allow-Origin` field based on this value to tell the browser whether to respond to this request.

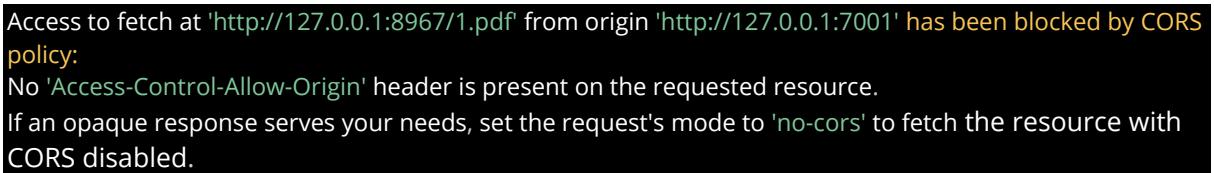
### Non-Simple Requests

Non-simple requests are different from simple requests. When the browser detects a non-simple request, it will automatically send an `OPTIONS` request first, which is called a preflight request. The purpose of the preflight request is to ask the server if cross-origin requests are allowed, which can avoid additional calculation logic.

After receiving the response from the preflight request, the browser will determine whether to continue sending the second request based on the related fields such as `Access-Control-Allow-Origin` and `Access-Control-Allow-Methods` in the response header.

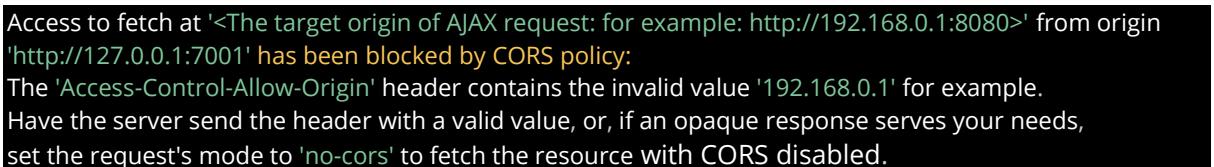
### Several Typical Cross-Origin Errors

1. The response header does not contain `Access-Control-Allow-Origin`:



Access to fetch at '`http://127.0.0.1:8967/1.pdf`' from origin '`http://127.0.0.1:7001`' has been blocked by CORS policy:  
No '`Access-Control-Allow-Origin`' header is present on the requested resource.  
If an opaque response serves your needs, set the request's mode to '`no-cors`' to fetch the resource with CORS disabled.

2. `Access-Control-Allow-Origin` format error:



Access to fetch at '`<The target origin of AJAX request: for example: http://192.168.0.1:8080>`' from origin '`http://127.0.0.1:7001`' has been blocked by CORS policy:  
The '`Access-Control-Allow-Origin`' header contains the invalid value '`192.168.0.1`' for example.  
Have the server send the header with a valid value, or, if an opaque response serves your needs, set the request's mode to '`no-cors`' to fetch the resource with CORS disabled.

✖ Access to fetch at '[http://127.0.0.1:8967/Annot\\_all.pdf](http://127.0.0.1:8967/Annot_all.pdf)' from origin '<http://127.0.0.1:7001>' has been blocked by CORS policy: The 'Access-Control-Allow-Origin' header contains the invalid value '192.168.0.1'. Have the server send the header with a valid value, or, if an opaque response serves your needs, set the request's mode to 'no-cors' to fetch the resource with CORS disabled.

### 3. Access-Control-Allow-Origin does not match:

Access to fetch at '<http://127.0.0.1:8967/1.pdf>' from origin '<http://127.0.0.1:7001>' has been blocked by CORS policy: Response to preflight request doesn't pass access control check: The 'Access-Control-Allow-Origin' header has a value '<Access-Control-Allow-Origin response header content, for example: <http://127.0.0.1:9999>>' that is not equal to the supplied origin. Have the server send the header with a valid value, or, if an opaque response serves your needs, set the request's mode to 'no-cors' to fetch the resource with CORS disabled.

### 4. Access-Control-Allow-Headers is not set:

Access to fetch at '<http://127.0.0.1:8967/1.pdf>' from origin '<http://127.0.0.1:7001>' has been blocked by CORS policy: Request header field range is not allowed by Access-Control-Allow-Headers in preflight response

✖ Access to fetch at '<http://127.0.0.1:8967/1.pdf>' from origin '<http://127.0.0.1:7001>' has been blocked by CORS policy: Request header field range is not allowed by Access-Control-Allow-Headers in preflight response.

## CORS Solutions

There are two ways to solve CORS. One is to use a proxy server to avoid cross-origin issues, and the other is to configure CORS rules.

### ***Using a proxy server***

A proxy server is an intermediary server between the client and target server, which can be used to request third-party URL resources. Since the request is initiated by the proxy server, the browser does not have CORS problems. We can set up a proxy server ourselves or use a third-party proxy server. Here we introduce the methods of configuring a proxy server using nginx and node.js. These two methods implement the same function, which is to proxy requests for `/prefix/*` to the third-party server `http://third_party.file.server`, while removing the `/prefix` prefix from the original path. For example, the URL `http://location:3000/prefix/path/to/some.pdf` will be proxied to `http://third_party.file.server/path/to/some.pdf`.

### **Configure a proxy server with Nginx**

Nginx is a high-performance web server that can be used as a proxy server. Following is the method of configuring a proxy server in Nginx.

Open the Nginx configuration file (usually located in `/etc/nginx/nginx.conf`, depending on the server environment), find the corresponding server block, and add the following code:

```
location ~* ^/prefix/(.*) {  
    proxy_pass http://third_party.file.server/$1$is$args;  
    proxy_redirect off;  
}
```

In the above code, Nginx first constructs the correct file URL path when receiving a request that starts with `/prefix` in the path, and then proxies the request to the third-party file server.

### Configure a proxy server with Node.js

Take Express, Koa, and NestJS as examples.

#### 1. Express

Express can use the third-party middleware `http-proxy-middleware` to implement proxying, and with the routing functionality of Express, proxy requests starting with prefix to a third-party file server:

```
const express = require('express');  
const { createProxyMiddleware } = require('http-proxy-middleware');  
const app = express();  
  
app.use('/prefix', createProxyMiddleware({  
    target: 'http://third_party.file.server',  
    changeOrigin: true,  
    pathRewrite: {  
        '^/prefix': ''  
    }  
}));
```

This code will replace the `/prefix/` in the path when receiving requests starting with `/prefix`, and forward the request to the target URL. For more usage, please refer to <https://www.npmjs.com/package/http-proxy-middleware>.

#### 2. Koa

Koa needs to use the third-party middleware `koa-proxy` to implement proxying:

```
const Koa = require('koa');  
const proxy = require('koa-proxy');  
const app = new Koa();  
  
app.use(  
    proxy('/prefix', {  
        host: 'http://third_party.file.server',  
    })
```

```
match: /^\/prefix\//,
map: function(path) {
    return path.replace('/prefix', ''); // Replace the /prefix prefix in the path
}
)
)
```

For more usage, please refer to <https://www.npmjs.com/package/koa-proxy>.

### 3. NestJS

Similar to Express, NestJS can use the third-party middleware `http-proxy-middleware` to implement proxying:

```
import { NestFactory } from '@nestjs/core';
import { AppModule } from './app.module';
import { createProxyMiddleware } from 'http-proxy-middleware';

async function bootstrap() {
  const app = await NestFactory.create(AppModule);

  // Proxy endpoints
  app.use('/prefix', createProxyMiddleware({
    target: 'http://third_party.file.server',
    changeOrigin: true,
    pathRewrite: {
      [`^/prefix`]: '',
    }
  }));
  await app.listen(3000);
}

bootstrap();
```

This code has the same effect as the example of Express.

#### **Configuring CORS**

In Foxit PDF SDK for Web, [PDFViewer.openPDFByHttpRequest](#) API often encounters cross-domain problems. In order to improve the speed of opening PDF documents and reduce file server bandwidth, this API will send a request with the `Range` request header to the file server when requesting PDF files. After receiving the response, it needs to calculate the total file size based on the `Content-Range` response header. Therefore, when configuring CORS, the following three items should be included at least.

```
Access-Control-Allow-Headers: Range;
Access-Control-Allow-Origin: *; // For security reasons, it is recommended to be the same as the value of the
Referer header in the request.
```

Access-Control-Expose-Headers: Content-Range; // Only the response header keys added here can be obtained by JavaScript to get the values of the response headers.

Below are the configuration methods for several different scenarios.

### Configure CORS with web servers

#### 1. Configure CORS with Nginx

Add the following node to the nginx.conf file (usually located at /etc/nginx/nginx.conf):

```
server {  
    listen 8967;  
    server_name 127.0.0.1;  
    charset utf8;  
    location / {  
        root "/path/to/files/directory/";  
        if ($request_method = OPTIONS) {  
            add_header 'Access-Control-Allow-Headers' 'Range';  
            add_header 'Access-Control-Allow-Origin' '*';  
            add_header 'Access-Control-Expose-Headers' 'Content-Range';  
            return 204;  
        }  
        add_header 'Access-Control-Allow-Headers' 'Range';  
        add_header 'Access-Control-Allow-Origin' '*';  
        add_header 'Access-Control-Expose-Headers' 'Content-Range';  
    }  
}
```

The above configuration allows all sites to access resources across domains, which is an unsafe but convenient approach. In actual application scenarios, restrictions should be added, such as setting whether to allow cross-domain access based on the origin of the request. The approach is as follows:

1. Add the \$cors variable and use \$http\_origin to determine if the origin is valid. The following code will allow all subdomains of foxit.com to access resources across domains:

```
map $http_origin $cors {  
    '~*^https?://.*.foxit.com$' 'true';  
}
```

2. Add the \$allow\_origin variable. If the value of \$cors is 'true', it means that the request is a cross-domain request, and then response the value of Access-Control-Allow-Origin.

```
map $cors $allow_origin {  
    'true' $http_origin;  
}
```

3. Similarly, you can specify the `Access-Control-Allow-Headers` response header when making a cross-domain request.

```
map $cors $allow_headers {  
    'true' 'Range';  
}
```

4. Finally, integrate all the configurations.

```
map $http_origin $cors {  
    '~*^https?://.+.foxit.com$' 'true';  
}  
map $cors $allow_origin {  
    'true' $http_origin;  
}  
map $cors $allow_headers {  
    'true' 'Range';  
}  
map $cors $allow_expose_headers {  
    'true' 'Content-Range'  
}  
server {  
    listen 8967;  
    server_name 127.0.0.1;  
    charset utf8;  
    location / {  
        root "/path/to/files/directory/";  
        if ($request_method = OPTIONS) {  
            add_header 'Access-Control-Allow-Headers' $allow_headers;  
            add_header 'Access-Control-Allow-Origin' $allow_origin;  
            add_header 'Access-Control-Expose-Headers' $allow_expose_headers;  
            return 204;  
        }  
        add_header 'Access-Control-Allow-Headers' $allow_headers;  
        add_header 'Access-Control-Allow-Origin' $allow_origin;  
        add_header 'Access-Control-Expose-Headers' $allow_expose_headers;  
    }  
}
```

In order to ensure that the modifications are correct, we recommend running `nginx -t` to check if there are any errors in the modified configuration. If there are no errors, then run `nginx -s reload` to reload the Nginx service.

## 2. Configure CORS with Tomcat

Following is a simple example of CORS configuration. You can also refer to the official documentation of Tomcat: [http://tomcat.apache.org/tomcat-7.0-doc/config/filter.html#CORS\\_Filter](http://tomcat.apache.org/tomcat-7.0-doc/config/filter.html#CORS_Filter).

```
<filter>
  <filter-name>CorsFilter</filter-name>
  <filter-class>org.apache.catalina.filters.CorsFilter</filter-class>
</filter>
<init-param>
  <param-name>cors.allowed.origins</param-name>
  <param-value>https://*.foxit.org</param-value>
</init-param>
<init-param>
  <param-name>cors.allowed.headers</param-name>
  <param-value>Range</param-value>
</init-param>
<init-param>
  <param-name>cors.exposed.headers</param-name>
  <param-value>Content-Range</param-value>
</init-param>

<filter-mapping>
  <filter-name>CorsFilter</filter-name>
  <url-pattern>*</url-pattern>
</filter-mapping>
```

### 3. Configure CORS with Apache

In Apache, we can enable CORS by adding the following rules to the `<Directory>`, `<Location>`, `<Files>` or `<VirtualHost>` section in the server configuration, which is usually located in `httpd.conf` or `apache.conf`:

```
Header set Access-Control-Allow-Origin '*';
Header set Access-Control-Allow-Headers 'Range';
Header set Access-Control-Expose-Headers 'Content-Range';
```

You can also add the following code to the `.htaccess` file:

```
<IfModule mod_headers.c>
  Header set Access-Control-Allow-Origin '*';
  Header set Access-Control-Allow-Headers 'Range';
  Header set Access-Control-Expose-Headers 'Content-Range';
</IfModule>
```

In order to ensure that the modifications are correct, we recommend running `apachectl -t` to check if there are any errors in the modified configuration. If there are no errors, then run `sudo service apache2.conf` or `apachectl -k graceful` to reload the Apache service.

Note: You can also use the `add` command instead of the `set` command, but using `add` may result in the header information being added multiple times. Therefore, the safest approach is to use `set`.

### 4. Configure CORS with IIS

The configuration methods for IIS6 and IIS7 versions are different. Please confirm the version you are currently using before configuring.

## 1. IIS6

Open IIS, select the site you need to configure, and right-click to open the property dialog box. Select the 'HTTP Headers' tab, and click the 'Add' button, and then add these response headers:  
`Access-Control-Allow-Headers: 'Range', Access-Control-Allow-Origin: *, Access-Control-Expose-  
Headers: Content-Range.`

## 2. IIS7

Please merge or add the following configuration to your site configuration file (i.e. web.config file. If you do not have this file, you can create a new one.):

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
<system.webServer>
<httpProtocol>
  <customHeaders>
    <add name="Access-Control-Allow-Origin" value="*" />
    <add name="Access-Control-Allow-Headers" value="Range" />
    <add name="Access-Control-Expose-Headers" value="Content-Range" />
  </customHeaders>
</httpProtocol>
</system.webServer>
</configuration>
```

## Configure CORS with cloud storage resources

There are many cloud storage and CDN services in the market, and most of them have their corresponding configuration methods available in their official documentation. Here are just a few examples:

1. Alibaba Cloud: <https://www.alibabacloud.com/help/en/object-storage-service/latest/configure-cors>
2. Tencent Cloud: <https://www.tencentcloud.com/document/product/436/13318>
3. Google Cloud: <https://cloud.google.com/storage/docs/using-cors>
4. Azure Storage: <https://learn.microsoft.com/en-us/rest/api/storageservices/cross-origin-resource-sharing--cors--support-for-the-azure-storage-services>
5. AWS S3: <https://docs.aws.amazon.com/AmazonS3/latest/userguide/cors.html>

## Configure CORS in server-side frameworks

1. Node.js related frameworks

1. Express: please refer to [express cors middleware](#)
2. Koa: please refer to [@koa/cors](#)
3. NestJS: please refer to [CORS|NestJS](#)
2. SpringBoot (java) framework: please refer to [Enabling Cross Origin Requests for a RESTful Web Service](#)
3. Django (python) framework: please refer to [django-cors-headers](#)
4. Laravel (php) framework: please refer to [laravel-cors](#)

# Basics

## Appearance

`Appearance` is a class that defines the appearance of the UI, it provides a template to specify the layout of the UI and fragments to modify the layout and control the logic of the components.

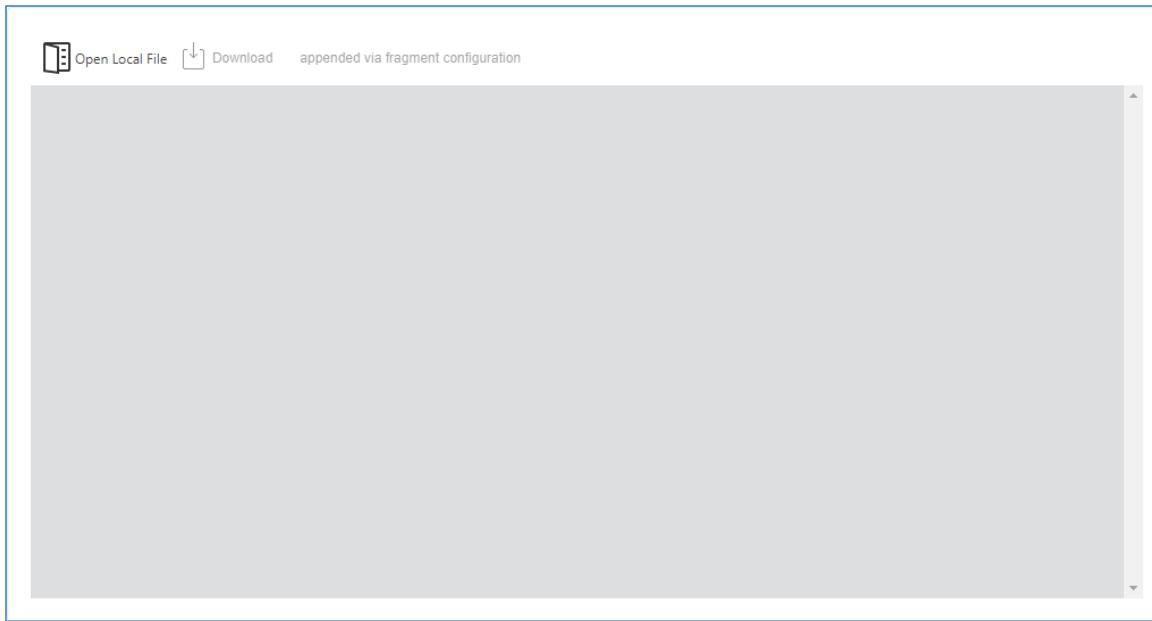
Following is the declaration of the `Appearance` class, its sub-classes should override these methods to define new appearance:

```
class Appearance {  
    constructor(pdfui);  
    // Layout template.  
    public getLayoutTemplate: () => string;  
    // Return fragment configuration.  
    public getDefaultFragments: () => UIFragmentOptions[];  
    // Triggered before inserting the component into the DOM tree.  
    public beforeMounted: (root: Component) => void  
    // Triggered after inserting the component into the DOM tree.  
    public afterMounted: (root: Component) => void  
    // Called to disable the component after closing PDF documents.  
    protected disableAll: () => void;  
    // Called to enable the component after closing PDF documents.  
    protected enableAll: () => void;  
}
```

## Custom Appearance Example

```
<html>  
    <template id="layout-template">  
        <webpdf>  
            <div name="toolbar" style="display: flex; flex-direction: row; padding: 6px;">  
                <open-localfile-button></open-localfile-button>  
                <download-file-button></download-file-button>  
            </div>  
            <div class="fv__ui-body">  
                <viewer @touch-to-scroll></viewer>  
            </div>  
        </webpdf>  
    </template>  
</html>  
<script>  
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
```

```
getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
},
getDefaultFragments: function() {
    return [{
        target: 'toolbar',
        action: 'append',
        template: `<xbutton style="margin: 0 10px">appended via fragment configuration</xbutton>`
    }];
},
beforeMounted: function(root) {
    this.toolbarComponent = root.getComponentByName('toolbar')
},
disableAll: function() {
    this.toolbarComponent.disable();
},
enableAll: function() {
    this.toolbarComponent.enable();
}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```



## Device Adaptation

If the UI layout needs to be adaptive to the devices, you should determine the device type based on the characteristic value of your current device, and then pass the different appearance instance to PDFUI. Please refer to the following example:

The following code can be used to simulate the operation of different devices using the device mode of Chrome DevTool on the desktop Chrome browser.

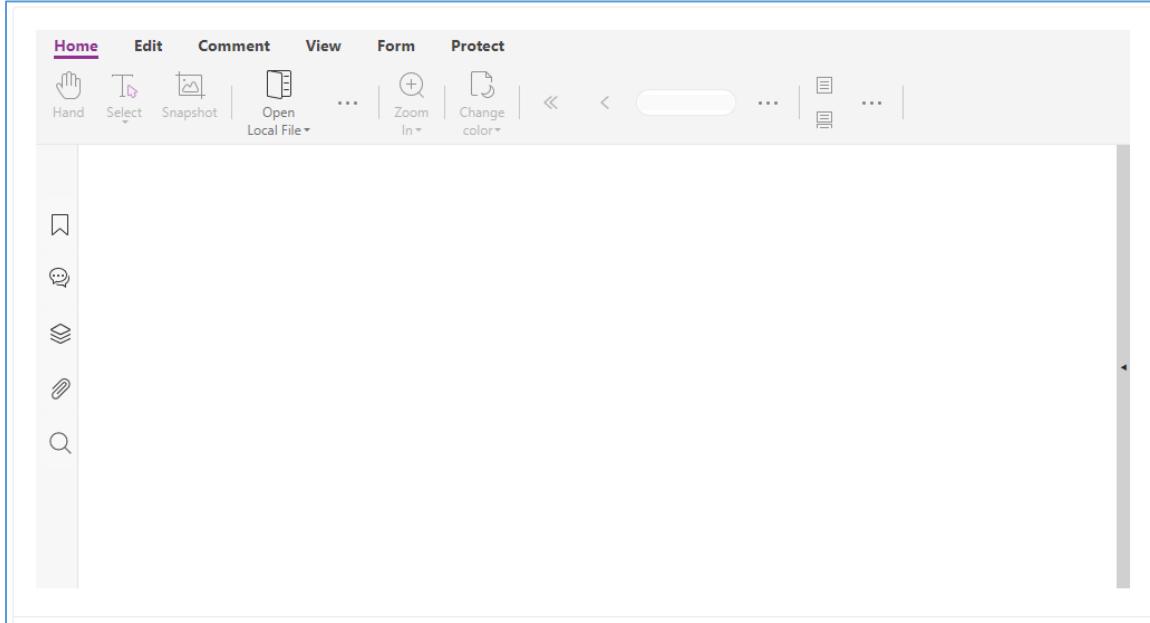
```
<html>
</html>
<script>
var mobileAppearance = UIExtension.appearances.MobileAppearance;
var desktopAppearance = UIExtension.appearances.RibbonAppearance;
var tabletAppearance = UIExtension.appearances.RibbonAppearance;

var isDesktop = PDFViewCtrl.DeviceInfo.isDesktop;
var isMobile = PDFViewCtrl.DeviceInfo.isMobile;

var libPath = window.top.location.origin + '/lib';

var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
},
```

```
renderTo: document.body,  
// Provide different appearance depending on the device type.  
appearance: isDesktop? desktopAppearance : isMobile ? mobileAppearance : tabletAppearance,  
addons: []  
});  
</script>
```



## Built-in appearances

```
// desktop appearance  
UIExtension.appearances.RibbonAppearance  
// mobile appearance  
UIExtension.appearances.MobileAppearance  
// select ribbon or mobile appearance according to the device type (support both desktop and mobile)  
UIExtension.appearances.AdaptiveAppearance
```

## Modular

Modules are equivalent to a separate namespace, and UIExtension places all components, controllers and directives in different modules, which can avoid name conflicts. Currently, the modules are used in the following scenarios:

- Root module: The basic components and directives are placed in the root module. Root module does not have module name, and does not need to add module name prefix when using it.
- Business module: Business components and controller.
- The module created by Addon.

Detailed information will be introduced in the related sections of Components.

## Create a new module

```
const module = PDFUI.module('module-name', [  
    // ...dependencies  
]);
```

The module name cannot be repeated, otherwise it will report errors.

The second parameter is a dependent module that you can pass a name or module object. If it has no dependent module, you can pass an empty array.

## Get module object

### 1. Get root module object

The root module is the foundation of all modules, and it contains the information of all built-in components and layouts.

```
const root = PDFUI.root();
```

### 2. Get a custom module object

As with the method of creating module, but it does not have the second parameter. It will report errors when the module name does not exist.

```
const module = PDFUI.module('module-name');
```

## The methods of the module object

### 1. Register new component

```
// Register a custom component.  
module.registerComponent(class ComponentClass extends UIExtension.Component{  
    static getName(){  
        return 'custom-component';  
    }  
});  
// or  
module.registerComponent(UIExtension.Component.extend('custom-component', {  
}););  
module.getComponentClass('custom-component');
```

Use the custom component in the template:

```
<module-name:custom-component></module-name:custom-component>
```

2. Register a pre-configured component

```
module.registerPreConfiguredComponent('pre-configured-btn', {  
    template: '<xbutton name="pre-configured-btn"></xbutton>',  
    config: [{  
        target: 'pre-configured-btn',  
        callback: function() {  
            alert('button click')  
        }  
    }]  
});
```

Use the component in the template:

```
<module-name:pre-configured-btn></module-name:pre-configured-btn>
```

3. Register Controller

```
module.registerController(class CustomController extends Controller {  
    static getName(){  
        return 'CustomController';  
    }  
    handle(){  
        alert("")  
    }  
});
```

Or

```
module.controller('CustomController', {  
    handle: function(){  
        alert("")  
    }  
});
```

Use the controller in the template:

```
<module-name:custom-component @controller="module-name:CustomController"></module-name:custom-component>
```

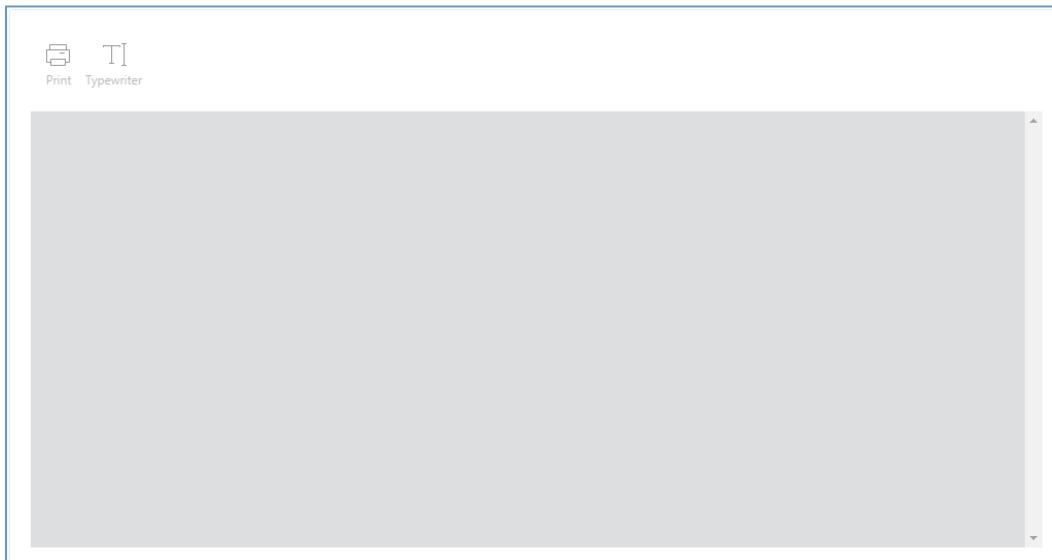
## Layout Template

### Example

In Foxit PDF SDK for Web, templates are written with HTML that contains UIExtension specific elements, attributes and directives. UIExtension combines the layout template with information from the component, controller and directive to render UI in the browser. The following code snippet shows a template with UIExtension components and directives.

```
<webpdf>
  <div class="toolbar" style="display:flex;flex-direction:row;padding:6px">
    <print:print-ribbon-button></print:print-ribbon-button>
    <ribbon-button name="freetext-typewriter" @tooltip tooltip-title="toolbar.tooltip.typewriter.title"
@controller="states:CreateTypewriterController" icon-class="fv_icon-toolbar-
typewriter" >toolbar.create.typewriter</ribbon-button>
  </div>
  <div class="fv_ui-body">
    <viewer @touch-to-scroll></viewer>
  </div>
  <template name="template-container">
    <print:print-dialog></print:print-dialog>
  </template>
</webpdf>
```

Click **run** button to view the running result:



```
<html>
  <template id="layout-template-container">
    <webpdf>
      <div name="mytoolbar" class="toolbar" style="display:flex;flex-direction:row;padding:6px">
        <print:print-ribbon-button></print:print-ribbon-button>
        <ribbon-button name="freetext-typewriter" @tooltip tooltip-title="toolbar.tooltip.typewriter.title"
@controller="states:CreateTypewriterController" icon-class="fv_icon-toolbar-
typewriter" >toolbar.create.typewriter</ribbon-button>
      </div>
      <div class="fv_ui-body">
        <viewer @touch-to-scroll></viewer>
      </div>
      <template name="template-container">
        <print:print-dialog></print:print-dialog>
      </template>
    </webpdf>
```

```

</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template-container').innerHTML;
    },
    beforeMounted: function(root) {
        this.toolbarComponent = root.getComponentByName('mytoolbar')
    },
    disableAll: function() {
        this.toolbarComponent.disable();
    },
    enableAll: function() {
        this.toolbarComponent.enable();
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [
        libPath + '/uix-addons/print'
    ]
});
</script>
```

## Description of the format of layout template

```

<!-- Layout template must take <webpdf> as the root component. -->
<webpdf>
    <!-- Layout templates support all html tags and properties. -->
    <div class="toolbar" style="display:flex;flex-direction:row;padding:6px">
        <!-- The colon prefix is the name of the component module, and the component name and module name
        must be in lowercase. -->
        <print:print-ribbon-button></print:print-ribbon-button>

        <!-- The parameters that begin with @ are used to mark directives, the content that follow with @ is the
        name of directives. If the directive is registered in a non-root module, then the directive name should be written
        in the @module-name:directive-name format. -->

        <ribbon-button name="freetext-typewriter" @tooltip tooltip-title="toolbar.tooltip.typewriter.title"
        @controller="states:CreateTypewriterController" icon-class="fv_icon-toolbar-
        typewriter" >toolbar.create.typewriter</ribbon-button>
```

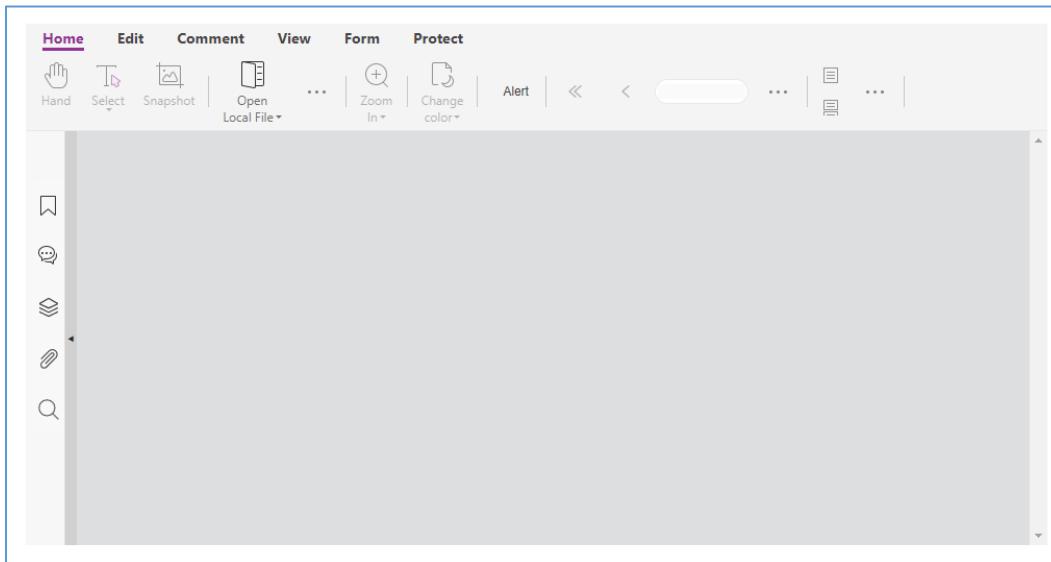
```
</div>
<div class="fv__ui-body">
    <!-- Viewer is used to display the area of PDF, so there must be a viewer component in the layout template - -&gt;
    &lt;viewer @touch-to-scroll&gt;&lt;/viewer&gt;
&lt;/div&gt;
    <!-- Template is a re-written html template tag. It is typically used to hold the components that do not need to be displayed immediately, such as dialog boxes, context menus, floating boxes, and etc.. --&gt;
&lt;template name="template-container"&gt;
    &lt;print:print-dialog&gt;&lt;/print:print-dialog&gt;
&lt;/template&gt;
&lt;/webpdf&gt;</pre>
```

## How to specify layout templates and implement device adaptation

Please refer to the section [Appearance](#).

### Dynamically insert layout templates

Please click **run** button to run the example:



```
<script>
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
```

```
addons: [
    libPath + '/uix-addons/print'
]
});
pdfui.getComponentByName('home-tab-group-change-color')
.then(component => {
    // after this component, insert a new group component.
    component.after(`
        <group>
            <xbutton name="alert-btn" class="fv__ui-toolbar-show-text-button">Alert</xbutton>
        </group>
    `, [
        {
            target: 'alert-btn',
            config: {
                callback: function() {
                    alert('Hello world')
                }
            }
        }
    ])
})
</script>
```

The APIs that support inserting templates are as follows:

- Component
  - #after(component|template, fragments)
  - #before(component|template, fragments)
- ContainerComponent
  - #append(component|template, fragments)
  - #prepend(component|template, fragments)
  - #insert(component|template, index, fragments)

For more information about these APIs, please refer to the API Reference: [Component](#) and [ContainerComponent](#).

### **Insert the layout template when initializing**

Please refer to [UI Fragments](#).

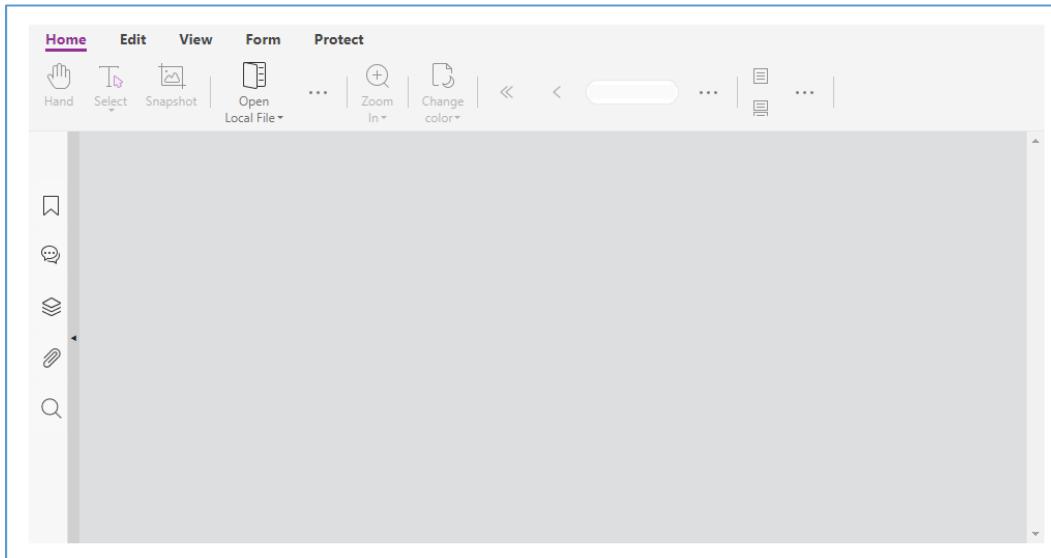
## UI Fragments

Fragments are a set of UI snippets, which can be used to insert, delete, or modify the components in UI template. It is suitable to facilitate a small amount of UI customization based on built-in templates.

If you need a lot of custom layout and device adaptation, please refer to the methods described in [Appearance](#) and [layout template](#).

### simple example

The following code will use fragments configuration to remove the `comment-tab` component from the mobile and desktop/tablet layouts. Click [run](#) to run the example, and you can use the device mode of Chrome DevTool to simulate the running effect of mobile/tablet.



```
<script>
var CustomAppearance = UIExtension.appearances.AdaptiveAppearance.extend({
    getDefaultFragments: function() {
        var isMobile = PDFViewCtrl.DeviceInfo.isMobile;
        if(isMobile) {
            // Fragment configuration for mobile devices.
            return [
                { target: 'comment-tab',
                  action: 'remove' },
                { target: 'comment-tab-li',
                  action: 'remove' },
                { target: 'comment-tab-body',
                  action: 'remove' }
            ];
        } else {
            // Fragment configuration for desktop/tablet devices.
            return [
                { target: 'comment-tab',
                  action: 'keep' },
                { target: 'comment-tab-li',
                  action: 'keep' },
                { target: 'comment-tab-body',
                  action: 'keep' }
            ];
        }
    }
});
```

```
    }];
} else {
    // Fragment configuration for desktop/tablet devices.
    return [
        { target: 'comment-tab',
          action: 'remove' },
        { target: 'fv--comment-tab-paddle',
          action: 'remove' },
        { target: 'hand-tool',
          config: {
            callback: {
              around: function(callback, args) {
                try{
                  console.info('before callback');
                  var ret;
                  if(callback instanceof UIExtension.Controller) {
                    ret = callback.handle(...args);
                  } else {
                    ret = callback.apply(this, args);
                  }
                  console.info('after callback');
                  return ret;
                }catch(e){
                  console.error(e, 'an error occurred');
                } finally {
                  console.info('');
                }
              }
            }
          }
        },
      ];
}
});

var libPath = window.top.location.origin + '/lib';

var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
  // Different appearances are available depending on the device type.
  appearance: CustomAppearance,
  addons: []
});
```

```
</script>
```

## The description of the Fragment configuration parameters

- target: The name of the control, and each name is unique.
- action: Indicates the action mode of the fragment snippets. The default action mode is UIExtension.UIConsts.FRAGMENT\_ACTION.EXT. The specifics are as follows:
  - UIExtension.UIConsts.FRAGMENT\_ACTION.EXT: Extend the target control.
  - UIExtension.UIConsts.FRAGMENT\_ACTION.BEFORE: Insert a new control before the target control.
  - UIExtension.UIConsts.FRAGMENT\_ACTION.AFTER: Insert a new control after the target control.
  - UIExtension.UIConsts.FRAGMENT\_ACTION.APPEND: Insert a new control into the target control (the target control must be a container).
  - UIExtension.UIConsts.FRAGMENT\_ACTION.FILL: Empty the child space of the target control and fill with a new control. Make sure that the target control must be a container.
  - UIExtension.UIConsts.FRAGMENT\_ACTION.REPLACE: Replace the target control with a new control.
  - UIExtension.UIConsts.FRAGMENT\_ACTION.REMOVE: Delete the target control.
- template: The template of the control. The content is in XML format and action is BEFORE/AFTER/APPEND/FILL/REPLACE.
- config: Control configuration object. It is invalid when action is REMOVE.
  - config.target: The name of the control in the above template. It is only required when action is BEFORE/AFTER/APPEND/FILL/REPLACE.
  - config.attrs: Set the html property of the control.
  - config.callback: The business logic implementation of the control. There are three ways to implement it:
    - function: The events of control will call this function, and override the built-in callbacks. The basic components that support function are (xbutton, dropdown-button, context-menu-item). If you want to add functionalities based on the built-in callbacks, you can use the second method.
    - controller class: Controller class can listen for components lifecycle and handle more component events:

```
{  
    target: 'hand-tool',  
    config: {  
        callback: class extends UIExtension.Controller {  
            mounted() {  
                super.mounted();  
                this.component.element.addEventListener('hover', e => {
```

```
        console.info('mouse over', this.component)
    })
}

handle() {
    console.info('hand-tool clicked')
}
}
}
```

- **decorator object:** it contains a series of function hooks for blocking the execution of the controller handle method, including before, after, thrown, and around.

```
{  
    target: 'hand-tool',  
    config: {  
        callback: {  
            before: function() {  
                // The function executed before calling the handle method of controller. It can receive all  
                parameters of the handle method.  
            },  
            after: function(returnValue) {  
                // The function executed after calling the handle method of controller. It can receive the  
                return value and parameters of the handle function.  
            },  
            thrown: function(error) {  
                // The function executed when the handle method of controller throws an exception. It  
                can receive the exception object and parameters.  
            },  
            around: function(callback, args) {  
                // It can receive the references and parameters of controller's handle method. Inside the  
                around callback, you can execute code before/after running the handle function, or in the catch  
                exception block. It also can decide whether to execute the handle method.  
  
                try{  
                    console.info('before callback');  
                    var ret;  
                    if(callback instanceof UIExtension.Controller){  
                        ret = callback.handle(...args);  
                    } else {  
                        ret = callback.apply(this, args);  
                    }  
                    console.info('after callback');  
                    return ret;  
                }catch(e){  
                    console.error(e, 'an error occurred');  
                } finally {  
                    console.info("");  
                }  
            }  
        }  
    }  
}
```

```
    }
```

## Note

It is recommended that only use fragment for UI fine-tuning. If you want to substantially modify the built-in layout, please refer to the methods described in [Appearance](#) and [layout template](#).

## Component Selector

UIExtension provides a css-selector like syntax to make easier to search components. It's usually used to configure the target property of [fragments](#) and component search.

### Syntax

selector name	example	description
name selector	'componentName', 'component_name','component-name', 'component-name1', '1component'	component name selectors can only include single-letter, number, underscore or minus character
type selector	'@div','@dropdown-menu', '@print:print-dialog'	component type means the tag name defined in layout template, a type selector should start with @ character and single-letter, number, underscore or minus. Sometime including the component module name separated with colon character.
star selector	'*'!	Selects all components
children selector	'selector1>selector2'	Selects all components which match selector2 where the parent is selector1
descendants	'selector1 selector2'	Selects all selector2 components inside selector1
attribute selector	[attr=value]	Selects all components with property or attribute name of attr whose value equals to value
attribute selector	[attr^=value]	Selects all components with property or attribute name of attr whose value begins with value

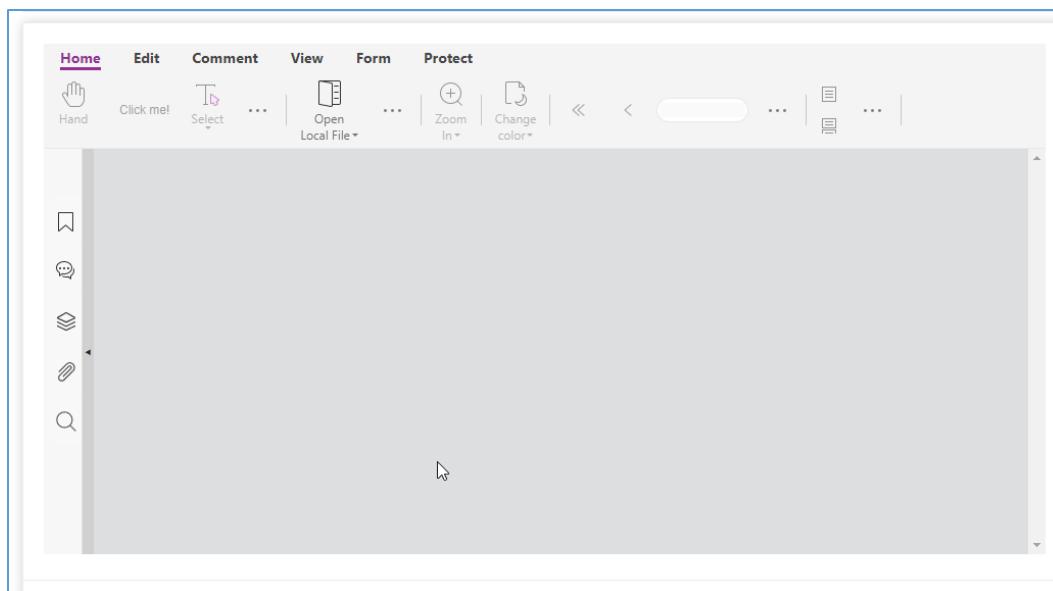
selector name	example	description
attribute selector	[attr\$=value]	Selects all components with property or attribute name of <code>attr</code> whose value ends with <code>value</code>
attribute selector	[attr*=value]	Selects all components with property or attribute name of <code>attr</code> whose value contains with <code>value</code>
attribute selector	[attr!=value]	Selects all components with property or attribute name of <code>attr</code> whose value not equals to <code>value</code>
method selector	selector1::childAt(index)	Selects all components that are all the child at <code>index</code> of their parents selected by <code>selector1</code>
method selector	selector1::parent()	Selects all components that are all the parent component of their children selected by <code>selector1</code>
method selector	selector1::allAfter()	Selects all components of the same level that after the component set selected by <code>selector1</code>
method selector	selector1::allBefore()	Selects all components of the same level that before the component set selected by <code>selector1</code>
index-related selector	selector1::eq(index)	Selects the component by index value in components set selected by <code>selector1</code>
index-related selector	selector1::last()	Selects the last one component of the components set selected by <code>selector1</code>
index-related selector	selector1::first()	Selects the first one component of the components set selected by <code>selector1</code> , It's equivalent to <code>selector1:eq(0)</code>

## Examples

```
<html>
</html>
<script>
UIExtension.PDFUI.module('custom',[])
.controller('customController', {
```

```
handle: function() {
    const root = this.component.getRoot();
    const contextmenuItems = root.querySelectorAll('fv-page-contextmenu>@contextmenu-item');
    contextmenuItems.forEach(function(contextmenu) {
        contextmenu.element.style.cssText += 'color: red';
    })
}
})
})
var CustomRibbonAppearance = UIExtension.appearances.RibbonAppearance.extend({
getDefaultFragments() {
    // remove the export comment dropdown menu!
    return [
        {
            target: 'home-tab-group-hand::childAt(0)',
            action: 'after',
            template: `<xbutton class="fv__ui-toolbar-show-text-button">Click me!</xbutton>`
        },
        {
            target: 'commentlist-export-comment::parent()',
            action: 'remove'
        }
    ];
}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomRibbonAppearance,
    addons: []
});
</script>
```



## i18n

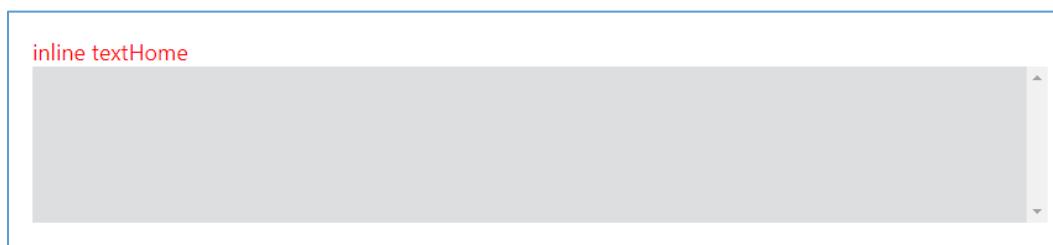
### Custom resources

Please refer to this [page](#).

### Usage

#### <text> component

<text> is a component used to display text. It supports i18n entries. On the DOM tree, it does not create a new HTML Element, but a text node and inserts it into the DOM tree. The font style needs to be enclosed outside Other tags are set through CSS.

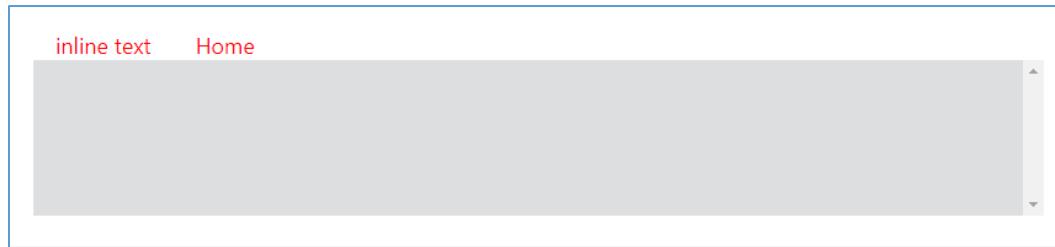


```
<html>
<template id="layout-template">
<webpdf>
<div>
<span class="span-with-text-component">
<!-- The text "inline text" will be displayed --&gt;</pre>
```

```
<text>inline text</text>
</span>
<span class="span-with-text-component">
    <!-- The text "Home" will be displayed -->
    <text>toolbar.tabs.home.title</text>
</span>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.span-with-text-component {
    color: red;
    font-size: 18px;
    font-style: bold;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

### **data-i18n attribute**

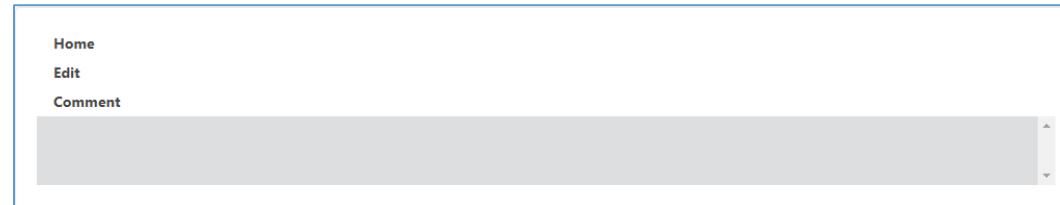
**data-i18n** attribute is another way to show texts in a HTML element, difference from **<text>** component, **data-i18n** will cover all children and replace to the text.



```
<html>
<template id="layout-template">
<webpdf>
<div>
    <!-- The text "inline text" will be displayed -->
    <span class="span-with-text-component" data-i18n="inline text"> </span>
    <!-- The text "Home" will be displayed -->
    <span class="span-with-text-component" data-i18n="toolbar.tabs.home.title"> </span>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.span-with-text-component {
    color: red;
    font-size: 18px;
    font-style: bold;
    padding: 0 1em;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
```

```
});  
</script>
```

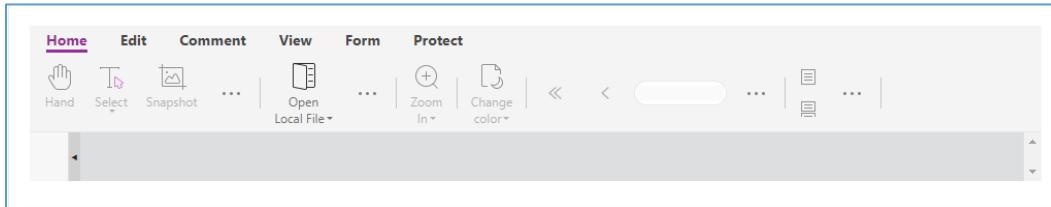
## components supporting



```
<html>  
<template id="layout-template">  
  <webpdf>  
    <div>  
      <div>  
        <!-- tab component example -->  
        <gtab group="example-tab" body="tab-body-1">toolbar.tabs.home.title</gtab>  
        <gtab group="example-tab" body="tab-body-2">toolbar.tabs.edit.title</gtab>  
        <gtab group="example-tab" body="tab-body-3">toolbar.tabs.comment.title</gtab>  
      </div>  
      <div>  
        <div name="tab-body-1" class="button-group">  
          <!-- The text "OK" will be displayed -->  
          <xbutton>dialog.ok</xbutton>  
          <xbutton text="dialog.ok"></xbutton>  
          <file-selector>dialog.ok</file-selector>  
          <file-selector text="dialog.ok"></file-selector>  
          <dropdown text="dialog.ok"></dropdown>  
        </div>  
        <div name="tab-body-2"></div>  
        <div name="tab-body-3"></div>  
      </div>  
      <div>  
        <div class="fv__ui-body">  
          <viewer></viewer>  
        </div>  
      </div>  
    </webpdf>  
  </template>  
</html>  
<style>  
  .span-with-text-component {  
    color: red;  
    font-size: 18px;  
    font-style: bold;  
    padding: 0 1em;  
  }  
  .button-group {  
    display: flex;  
  }
```

```
.button-group .fv__ui-button-text {
    width: 3em;
    text-align: center;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function() {
        //
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## Switch current language via API



```
<html></html>
<style>
.span-with-text-component {
    color: red;
    font-size: 18px;
    font-style: bold;
    padding: 0 1em;
}
</style>
<script>
UIExtension.PDFUI.module('custom', [])
    .controller('SwitchLanguageController', {
```

```
mounted: function() {
    this.updateButtonText();
},
updateButtonText: function() {
    const pdfui = this.getPDFUI();
    switch(pdfui.currentLanguage || navigator.language) {
        case 'en':
        case 'en-US':
            this.component.setText('Switch to Chinese');
            break;
        case 'zh':
        case 'zh-CN':
            this.component.setText('切换为英文');
            break;
    }
},
handle: function() {
    const pdfui = this.getPDFUI();
    switch(pdfui.currentLanguage) {
        case 'en':
        case 'en-US':
            pdfui.changeLanguage('zh-CN').then(() => {
                this.updateButtonText();
            });
            break;
        case 'zh':
        case 'zh-CN':
            pdfui.changeLanguage('en-US').then(() => {
                this.updateButtonText();
            });
            break;
    }
}
});
var CustomAppearance = UIExtension.appearances.AdaptiveAppearance.extend({
    getDefaultFragments: function() {
        return [
            {
                target: 'home-tab-group-hand',
                action: 'append',
                template: '<xbutton class="fv__ui-toolbar-show-text-button" @controller="custom:SwitchLanguageController"></xbutton>'
            }
        ];
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    }
});
```

```
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    );
</script>
```

## Dark mode

The file `"/lib/UIExtension.dark-variable.css"` defines the style variables involved in the dark mode. To switch to the dark mode, you need to load both `"/lib/UIExtension.css"` and `"/lib/UIExtension.dark-variable.css"` files and then reference the style variables defined in `"/lib/UIExtension.dark-variable.css"` within `"/lib/UIExtension.css"` to achieve the desired effect. The specific steps are as follows:

1. Add `/lib/UIExtension.css` to the `<head>` tag of the HTML page:

```
<link rel="stylesheet" type="text/css" href="/lib/UIExtension.css">
```

2. Add `/lib/UIExtension.dark-variable.css` to the `<head>` tag of the HTML page:

```
<link id="dark-variable-css" rel="stylesheet" type="text/css" href="/lib/UIExtension.dark-variable.css">
```

3. Define a method for switching between style modes by changing the "rel" attribute value of the link tag to enable or disable the referenced styles in the browser.

```
function toggleDarkTheme () {
    let eCssLink = document.getElementById('dark-variable-css');
    let rel = eCssLink.getAttribute('rel');
    let STYLESHEET = 'stylesheet';
    eCssLink.setAttribute('rel', rel === STYLESHEET ? STYLESHEET + '-template' : STYLESHEET)
}
```

**Note:** There are many methods for switching between style modes. Simply referencing the style variables defined in the `/lib/UIExtension.dark-variable.css` file will enable dark mode. If not referenced, the original style mode will be maintained.

## Create a Component

This section introduces how to create a custom component through the capabilities provided by UIExtension, and uses the implementation of a Counter functionality as an example to explain the usage of UIExtension components.

## Basic Structure of a Component

A basic component typically consists of the following parts:

1. Layout template: This defines the structure and layout of the component's view. The template syntax can be referred to the [layout template](#).
2. Styles: The component's styles can be added using the `style` attribute or the `class` attribute, similar to HTML. Styles added using the `class` attribute require a separate css file.
3. Scripts: This contains the logic of the component. UIExtension components need to implement a new component class through integration to handle the behavior and interaction of the component.
4. Module: If a component needs to be referenced by other components, it must be assigned a name and registered in a module. For more information about modularization, please refer to [Modular](#).

Here is an example of a basic component structure:

```
/* my-component.css */
.my-counter {
    display: flex;
}

// my-component.js

const { SeniorComponentFactory } = UIExtension;
class MyComponent extends SeniorComponentFactory.createSuperClass({
    template: `
        <div class="my-counter" @var.my_counter="$component">
            <button class="my-btn" @on.click="my_counter.increment()">+</button>
            <div class="my-viewer">@{my_counter.count}</div>
            <button class="my-btn" @on.click="my_counter.decrement()">-</button>
        </div>
    `,
}) {
    static getName() {}
    init() {
        super.init();
        this.count = 0;
    }
    increment() {
        this.count++;
        this.digest(); // After data change, update must be triggered manually
    }
    decrement() {
        this.count--;
        this.digest(); // After data change, update must be triggered manually
    }
}
```

```
    }
}
modular.module('custom', []).registerComponent(MyComponent);
```

## Create a Simple Component

Based on the above description of the basic structure of a component, let's now create a component that displays a clock. Click the **run** button below to start the example:

2023-08-28 16:01:01

```
<style>
  .my-clock {
    font-size: 32px;
    border: 1px solid #ddd;
    padding: .3em;
  }
</style>
<html>
  <template id="layout-template-container">
    <webpdf>
      <custom:clock></custom:clock>
      <div class="fv_ui-body">
        <viewer @touch-to-scroll></viewer>
      </div>
    </webpdf>
  </template>
</html>
<script>
  const { PDFUI, SeniorComponentFactory, modular, appearances: { Appearance } } = UIExtension;
  class ClockComponent extends SeniorComponentFactory.createSuperClass({
    template: `
      <div class="my-clock" @var.clock="$component">
        @{clock.currentTime | timeformat('yyyy-MM-DD HH:mm:ss')}
      </div>
    `,
  }) {
    static getName() {
      return 'clock'
    }
    init() {
      super.init();
      this.currentTime = new Date();
    }
    mounted() {

```

```
super.mounted();
const timerId = setInterval(() => {
    this.currentTime = new Date();
    this.digest();
}, 1000);
this.addDestroyHook(() => {
    // This step ensures that the timer is stopped once the component is destroyed.
    clearInterval(timerId);
});
}
})
modular.module('custom', []).registerComponent(ClockComponent);

const CustomAppearance = Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template-container').innerHTML;
    }
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        },
        renderTo: document.body,
        appearance: CustomAppearance
    }
});
</script>
```

Running the example above, you will see a clock component that updates in real-time. This is just a simple component, but it demonstrates how to create and use a component, initialize and run a timer in the `init` and `mounted` lifecycle of the component, and how to reference component object properties in the component template. You can further extend and customize this example based on your needs.

## Event Triggering and Binding in Components

Components can not only display data, but also interact with users. Parent components can also interact with child components by listening to their events. With UIExtension, we can implement event triggering and listening to achieve interactive functionality.

### **Event Triggering**

To trigger an event in a component, we can use the `trigger` method. This method accepts an event name (required) and multiple data to be transmitted (optional). Here is an example:

```
class DidaComponent extends SeniorComponentFactory.createSuperClass({  
  template: `'  
    <div></div>  
  '  
}  
) {  
  static getName() {  
    return 'dida'  
  }  
  mounted() {  
    super.mounted();  
    const execute = () => {  
      if(this.isDestroyed) {  
        return;  
      }  
      this.trigger('dida', performance.now());  
      requestIdleCallback(execute);  
    };  
    requestIdleCallback(execute);  
  }  
}  
modular.module('custom', []).registerComponent(DidaComponent);
```

In this example, the `<dida></dida>` component triggers a `dida` event and passes a timestamp whenever it is idle.

### **Event Listening**

There are two ways to listen to the events in a component. One is to use the `@on.event-name` directive, and the other is to use the `Component#on` interface. The following example will continue to use the `dida` component mentioned above to demonstrate these two usages:

```
class DidaBoxComponent extends SeniorComponentFactory.createSuperClass({  
  template: `<div @var.box="$component">  
    <custom:dida name="dida" @on.dida="box.onDidaDirectiveEvent($args[0])"></custom:dida>  
  </div>  
  '  
}  
) {  
  static getName() {  
    return 'dida-box';  
  }  
  onDidaDirectiveEvent(time) {  
    console.log('Event listened through directive was triggered', time)  
  }  
  mounted() {
```

```
super.mounted());
this.getComponentByName('dida').on('dida', time => {
  console.log('Event listened through "on" interface was triggered', time)
})
}
```

### **Native DOM Event Listening**

The `@on` directive can not only listen to custom events triggered by components, but also listen to native DOM events. For specific usage, please refer to the [@on](#) section.

### **Component Lifecycle**

The lifecycle of a UIExtension component is relatively simple, with three commonly used methods: `init`, `mounted`, and `destroy`. As shown in the examples above, you can simply override these methods in the parent class. The `init` method is called when the component is constructed and is usually used to initialize some properties. The `mounted` method is called after the component is inserted into the DOM tree, where you can perform some DOM operations on itself or its child components. The `destroy` method requires adding tasks to be destroyed using `addDestroyHook`. These tasks are usually used to eliminate side effects, such as event deregistration and clearing timers. You can refer to the [ClockComponent](#) mentioned in the section [Creating a Simple Component](#).

### **Component Communication**

We know that child components can communicate with parent components by triggering events, while parent components can communicate with child components by calling their methods. But how can components communicate with each other if they are not parent-child? The UIExtension framework also supports simple injection functionality, which allows singleton objects to be injected and enables communication between any components. The implementation of injection is very simple. Here is an example of a counter functionality:

1. First, create a `CounterService` class. The role of `CounterService` is to keep track of a `count` property that can be shared by any component:

```
class CounterService {
  constructor() {
    this.count = 0;
  }
}
```

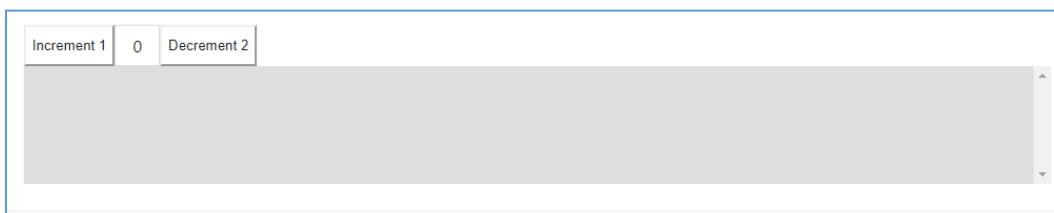
2. Next, create two components: one for modifying the count and one for displaying the count.  
Both of these components inject the `CounterService`:

```

class ModifyButtonComponent extends SeniorComponentFactory.createSuperClass({
    template: `<button @on.click="$component.onClick()"></button>`
}) {
    static getName() {
        return 'modify';
    }
    static inject() {
        return {
            service: CounterService
        };
    }
    createDOMElement() {
        return document.createElement('button');
    }
    init() {
        this.step = 0;
    }
    onClick() {
        this.service.count += this.step;
        this.digest();
    }
    setStep(step) {
        this.step = step;
    }
}
class ShowCountComponent extends SeniorComponentFactory.createSuperClass({
    template: `<span style="border: 1px solid #ddd;padding: .5em 1em; display: inline-block;">{@$component.service.count}</span>`
}) {
    static getName() {
        return 'show-count';
    }
    static inject() {
        return {
            service: CounterService
        };
    }
}

```

Let's take a look at the final result:



```
<style>
.my-clock {
    font-size: 32px;
    border: 1px solid #ddd;
    padding: .3em;
}
</style>
<html>
<template id="layout-template-container">
<webpdf>
<div style="display: flex;">
    <custom:modify @setter.step="1">Increment 1</custom:modify>
    <custom:show-count></custom:show-count>
    <custom:modify @setter.step="-2">Decrement 2</custom:modify>
</div>
<div class="fv__ui-body">
    <viewer @touch-to-scroll></viewer>
</div>
</webpdf>
</template>
</html>
<script>
const { PDFUI, SeniorComponentFactory, modular, appearances: { Appearance } } = UIExtension;
class CounterService {
    constructor() {
        this.count = 0;
    }
}
class ModifyButtonComponent extends SeniorComponentFactory.createSuperClass({
    template: `<button @on.click="$component.onClick()"></button>`
}) {
    static getName() {
        return 'modify';
    }
    static inject() {
        return {
            service: CounterService
        };
    }
    createDOMElement() {
        return document.createElement('button');
    }
    init() {
        this.step = 0;
    }
    onClick() {
        this.service.count += this.step;
        this.digest();
    }
    setStep(step) {
        this.step = step;
    }
}
```

```

        }
    }

    class ShowCountComponent extends SeniorComponentFactory.createSuperClass({
        template: `<span style="border: 1px solid #ddd;padding: .5em 1em; display: inline-block;">@{$component.service.count}</span>`
    }) {
        static getName() {
            return 'show-count';
        }
        static inject() {
            return [
                service: CounterService
            ];
        }
    }

    modular.module('custom', [])
        .registerComponent(ModifyButtonComponent)
        .registerComponent(ShowCountComponent)
        ;

    const CustomAppearance = Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template-container').innerHTML;
        },
        // To facilitate testing, you can override this method to prevent the control from being disabled when no
        document is open.
        disableAll() {}
    });
    const libPath = window.top.location.origin + '/lib';
    const pdfui = new PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance
    });
</script>

```

In the above example, the `CounterService` class is injected into both the `ModifyButtonComponent` and `ShowCountComponent` components. This allows the two components to access and modify the `count` property of the `CounterService` instance. The `ModifyButtonComponent` component increments the count when clicked, while the `ShowCountComponent` component displays the current count value.

By injecting the `CounterService` into the two components, they share the same service instance, enabling communication between them. Any changes made to the `count` property in one component will also be reflected in the other component.

Dependency injection is a powerful feature that enables components to communicate and share data without being tightly coupled. It promotes modularity and reusability in applications.

# Components

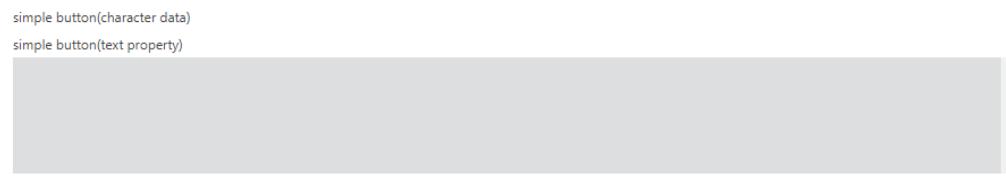
## Basic Components

### XButton component

Xbutton is the UIExtension button component. It can be used to customize icon, define whether to show text, whether to disable/enable button, etc.

#### Code examples

1. Simple xbutton example:



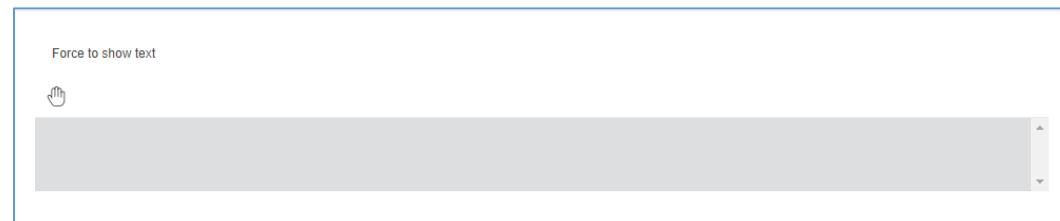
```
<html>
<template id="layout-template">
<webpdf>
<div>
<xbutton>simple button(character data)</xbutton>
<xbutton text="simple button(text property)"></xbutton>
</div>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
```

```

libPath: libPath,
jr: {
    licenseSN: licenseSN,
    licenseKey: licenseKey
},
renderTo: document.body,
appearance: CustomAppearance,
addons: []
});
</script>

```

2. Force to show text in built-in toolbar component



```

<html>
<template id="layout-template">
<webpdf>
<toolbar>
<xbutton class="fv_ui-toolbar-show-text-button">Force to show text</xbutton>
<xbutton icon-class="fv_icon-toolbar-hand">Text will be hidden</xbutton>
</toolbar>
<viewer></viewer>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,

```

```
        appearance: CustomAppearance,  
        addons: []  
    });  
</script>
```

### 3. Customize icon-class



button with icon  
button with custom icon

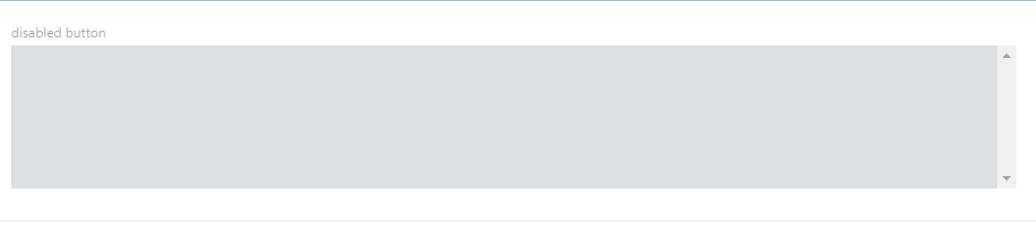
```
<html>  
  <template id="layout-template">  
    <webpdf>  
      <div>  
        <xbutton icon-class="fv_icon-toolbar-hand">button with icon</xbutton>  
        <xbutton icon-class="custom-icon-css-class">button with custom icon</xbutton>  
      </div>  
      <viewer></viewer>  
    </webpdf>  
  </template>  
</html>  
<script>  
  var CustomAppearance = UIExtension.appearances.Appearance.extend({  
    getLayoutTemplate: function() {  
      return document.getElementById('layout-template').innerHTML;  
    },  
    disableAll: function(){  
    };  
  });  
  var libPath = window.top.location.origin + '/lib';  
  var pdfui = new UIExtension.PDFUI({  
    viewerOptions: {  
      libPath: libPath,  
      jr: {  
        licenseSN: licenseSN,  
        licenseKey: licenseKey  
      }  
    },  
    renderTo: document.body,  
    appearance: CustomAppearance,  
    addons: []  
  });  
</script>  
<style>  
.custom-icon-css-class {  
  background-repeat: no-repeat;  
  background-position: center;
```

```

background-image: url(data:image/png;charset=utf-
8;base64,iVBORw0KGgoAAAANSUhEUgAAAABgAAAYCAYAAADgdz34AAAAGXRFWHRTb2Z0d2FyZQBBZG9iZSBjb
WFnZVJYWR5ccIPAAA3ZpVFh0WE1MOmNvbS5hZG9iZS54bXAAAAAADw/eHBhY2tldCBiZWdpbj0i77u/liBpZD0
iVzVNME1wQ2VoaUh6cmVTek5UY3prYzlklj8+IDx4OnhtcG1ldGEgeG1sbnM6eD0iYWRvYmU6bnM6bWV0YS8iHg
6eG1wdGs9IkFkb2JlIiFhNUCBDb3JlIDUuNi1jMTQyIDc5LjE2MDkyNCwgMjAxNy8wNy8xMy0wMTowNjozOSAgICAg
CAglj4gPHjkZjpSREYgeG1sbnM6cmRmPSJodHRwOi8vd3d3LnczLm9yZy8xOTk5LzAyLzlyLXjkZi1zeW50YXgtbnMjl
4gPHjkZjpEZXNjcmIwdGlvbIByZGY6YWJvdXQ9iligeG1sbnM6eG1wTU09Imh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLz
EuMC9tbS8iHhtbG5zOnN0UmVmPSJodHRwOi8vbnMuYWRvYmUuY29tL3hhcC8xLjAvc1R5cGUvUmVzb3VyY2VSZ
WYjliB4bWxuczp4bXA9Imh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLzEuMC8iHhtcE1NOk9yaWdpbmFsRG9jdW1bnR
JRD0ieG1wLmRpZDpIMzAwMTU1Yi04ODI1LTlwNDltYTlwNy0yNmQwZTVhNmjhMTuiHhtcE1NOkRvY3VtZW50SU
Q9InhtcC5kaWQ6Qjk0NjgyRElyM0E4MTFFOTgxREFDQTNEmjBCNDM5NTgilHhtcE1NOkluc3RhbmNISUQ9InhtcC5
paWQ6Qjk0NjgyREEyM0E4MTFFOTgxREFDQTNEmjBCNDM5NTgilHhtcDpDcmVhdG9yVG9vbD0iQWRvYmUgUGH
vdG9zaG9wIENDIDlwMTggKFdpbmRvd3Mplj4gPHtcE1NOkRlcml2ZWRGcm9tIHN0UmVmOmluc3RhbmNISUQ9I
nhtcC5paWQ6ZWlyZTl2YTltMTZlMy1hZTRmlTg1NTUtOTjmNmEyNGEyMDg1iBzdFJlZjpkb2N1bWVudElEPSj4bXA
uZGlikOmUzMDAxNTViLTg4MjUtMja0Mi1hMja3LTi2ZDBINWE2YmExNSlvPiA8L3jkZjpEZXNjcmIwdGlvbj4gPC9yZG
Y6UkRGPiA8L3g6eG1wbWV0YT4gPD94cGFja2V0IGVuZD0icil/PjS81+AAAAHoSURBVHjavFa9SwjhGH8vWjRc+kLFp
RIKUoMMKrcKobGprHBpa6m9RRz6AxqiqSmij6WtQaHRK7ioPIOmjjGxoiXOLfs913uCZ3f3StoDP54773me393z9Sr
VajXWSeliHzA2EWwe79W41mFlt5VDOp0m8hVgFZgBBoBX4Bo4Ac5SqdSXE7H0Ww0QfBjqPBQKRcPhMAsEAstdj
NN01ixWG SqqrjCoXALm2WQP BtfcLC+LTks8OByPB4fjMVilm+Wy+VYNput4HKWSIwUGWKQRDwtNwg+JRdcBOj
gstpq3SzI5xA SoSCK5Ad2ZOfaBclI5FI/Wbn4tCRhNs nRQmm/H5/eZD+3Qk8Hq9pCZEcfqpW1oRI8tFqk+U4I1asRW
pVquk3q2emwdNKZVKi8Fg8Iddkhqm srfHw3aXNhocyuUyqQd0YFNwdFYTwVE+n68T7K9tOX4B7HU/0RSdYkoVW
ZaF0kN2sL8nPyECPIyJTCZTcSKh57DT62xXZKtdNELLzNhFPp9P30VUUNSI9hC9OeXGAwwBKrDAI2FDDSSrA8e0Ta
PUwrxbFJ4SAg3BFTAKPALzQEWIwGaNm3/yCZlxMwkRtOPAeeFBn4Bx4LITjxqRzAF3gGY3aH8Rmrjfz/0pU7/bfkWY
ACxTcQvcW9G6AAAAABJRU5Erkjgg==);
}
</style>

```

#### 4. Disable button



```

<html>
<template id="layout-template">
<webpdf>
<div>
    <xbutton disabled="true">disabled button</xbutton>
</div>
<viewer></viewer>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    }
});

```

```
        },
        disableAll: function(){}
    });
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## 5. Click event handler



```
<html>
<template id="layout-template">
<webpdf>
<div>
    <xbutton name="alert-btn">Click Me!</xbutton>
</div>
<viewer></viewer>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    getDefaultFragments: function() {
        return [
            {
                target: 'alert-btn',
                config: {
                    callback: function() {
                        alert('click button!');
                    }
                }
            }
        ];
    }
});
```

```

        }];
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## 6. Use controller to handle click event



```

<html>
<template id="layout-template">
<webpdf>
<div>
    <xbutton name="alert-btn">Click Me!</xbutton>
</div>
<viewer></viewer>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    getDefaultFragments: function() {
        return [
            {
                target: 'alert-btn',
                config: {
                    callback: UIExtension.controllers.Controller.extend({
                        handle: function() {
                            alert("Click button!");
                        }
                    })
                }
            }
        ];
    }
});

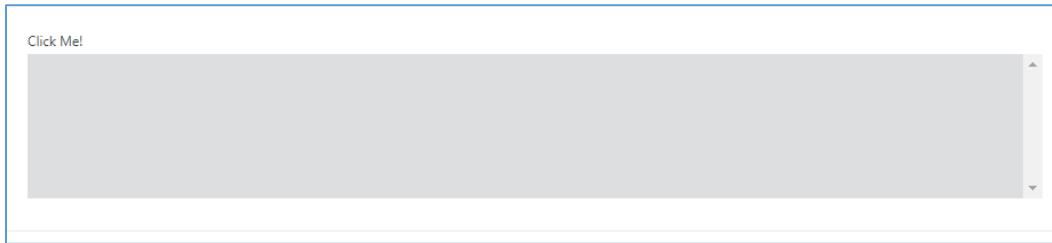
```

```

        }
    })
},
},
},
disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## 7. Use controller directive



```

<html>
<template id="layout-template">
<webpdf>
<div>
    <xbutton name="alert-btn" @controller="custom-module:ClickButtonController">Click Me!</xbutton>
</div>
<viewer></viewer>
</webpdf>
</template>
</html>
<script>
    var module = UIExtension.PDFUI.module('custom-module', []);
    module.controller('ClickButtonController', {
        handle: function() {
            alert("Click button!!");
        }
    });

    var CustomAppearance = UIExtension.appearances.Appearance.extend({

```

```

getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
},
disableAll: function(){}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## API

### Xbutton object properties

Properties	Description	Type
disabled	Button disabled status	boolean
isVisible	Button visibility status	boolean

### Methods

Method	Description	Version
setText(text: String): void	Set button text. It supports I18n entry	7.0
setIconCls(cssClass: String): void	Set icon's css-class of a button	7.0
disable(): void	Disable button. The disabled button will not respond to the click event	7.0
enable(): void	Enable button. The enabled button will respond to the click event	7.0

Method	Description	Version
show(): void	Show the hidden button	7.0
hide(): void	Hide the button	7.0
destroy(): void	Destroy the button component	7.0

### **Events**

Name	Description	Sample	Version
click	Click button to trigger	button.on('click', () => {})	7.0

## **Ribbon button component**

<ribbon-button> has similar functions to XButton, but comparing to XButton, ribbon Button has a top-down structure of ICONS and text, and can be used as a Dropdown toggler.

### **Code examples**

1. Simple ribbon-button example:



```

<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <ribbon-button text="simple ribbon button without icon"></ribbon-button>
      </div>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  }
});

```

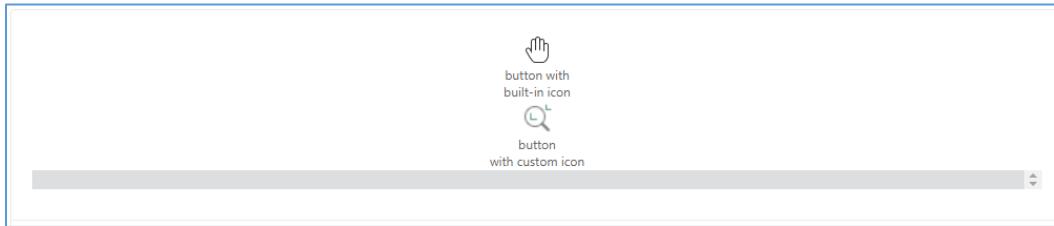
```

    },
    disableAll: function(){}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## 2. Customize icon



```

<html>
    <template id="layout-template">
        <webpdf>
            <div>
                <ribbon-button icon-class="fv_icon-toolbar-hand" text="button with built-in icon"></ribbon-button>
                <ribbon-button icon-class="custom-icon-css-class" text="button with custom icon"></ribbon-button>
            </div>
            <viewer></viewer>
        </webpdf>
    </template>
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });

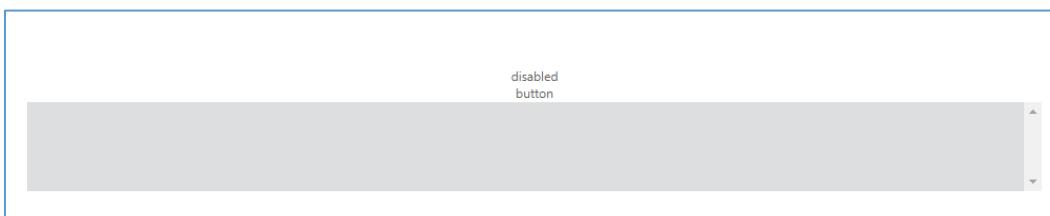
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {

```

```

        licenseSN: licenseSN,
        licenseKey: licenseKey
    }
},
renderTo: document.body,
appearance: CustomAppearance,
addons: []
);
</script>
<style>
.custom-icon-css-class {
    background-repeat: no-repeat;
    background-position: center;
    background-image: url(data:image/png;charset=utf-
8;base64,iVBORw0KGgoAAAANSUhEUgAAABgAAAAYCAYAAADgdz34AAAAGXRFWHRTb2Z0d2FyZQBBZG9iZSBjb
WFnZVJlYWR5cclPAAAA3ZpVFh0WE1MOmNvbS5hZG9iZS54bXAAAAAAAdw/eHBhY2tldCBiZWdpbj0i77u/liBpZD0
iVzVNME1wQ2VoaUh6cmVTek5UY3prYzlklj8+IDx4OnhtcG1ldGEgeG1sbnM6eD0iYWRvYmU6bnM6bWV0YS8iiHg
6eG1wdGs9IkFkb2JlIhNUCDBb3JlDUuNi1jMTQyIDc5LjE2MDkyNCwgMjAxNy8wNy8xMy0wMTowNjozOSAgICAgI
CAglj4gPHJkZjpSREYgeG1sbnM6cmRmPSJodHRwOi8vd3d3LnczLm9yZy8xOTk5LzAyLzlyLXjkZi1zeW50YXgtbnMjI
4gPHJkZjpEZXNjcmlwdGlvbiByZGY6YWJvdXQ9lilgeG1sbnM6eG1wTU09Imh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLz
EuMC9tbS8iIhbtG5zOnN0UmVmPSJodHRwOi8vbnMuYWRvYmUuY29tL3hhcC8xLjAvc1R5cGUvUmVzb3VyY2VSZ
WYjliB4BwXuczp4bXA9Imh0dHA6Ly9ucy5hZG9iZS5jb20veGFwLzEuMC8iIhhtcE1NOk9yaWdpbmFsRG9jdW1lbnR
JRD0ieG1wLmRpZDplMzAwMTU1Yi04ODI1LTlwnDltYTIwNy0yNmQwZTVhNmjhMTuiIhhtcE1NOkRvY3VtZW50SU
Q9InhtcC5kaWQ6Qjk0NjgyRElyM0E4MTFFOTgxREFDQTNEjBCNDM5NTgilHhtcE1NOkluc3RhbmNISUQ9InhtcC5
paWQ6Qjk0NjgyRElyM0E4MTFFOTgxREFDQTNEjBCNDM5NTgilHhtcDpDcmVhdG9yVG9vbD0iQWRvYmUgUGH
vdG9zaG9wIENDIDlwMTggKFdpbmRvd3Mplj4gPHhtcE1NOkRlcmI2ZWRGcm9tIHN0UmVmOmluc3RhbmNISUQ9I
nhtcC5paWQ6ZWlyZTl2YTltMTZIMy1hZTRmLTg1NTUtOTjmNmEyNGEyMDg1liBzdFJlZjpkb2N1bWVudEIEPSj4bXA
uZGlikOmUzMDAxNTViLTg4MjUtMjA0Mi1hMjA3LTi2ZDBINWE2YmExNSlvPiA8L3jkZjpEZXNjcmlwdGlvbj4gPC9yZG
Y6UkRGPiA8L3g6eG1wbWV0YT4gPD94cGFja2V0IGVuZD0icil/PjS81+AAAAHoSURBVHjavFa9SwjhGH8vWjRc+kLFp
RIKUoMMKrcKobGprHBpa6m9RRz6AxqiqSmij6WtQaHRK7ioPIOmjGxoiXOLfs913uCZ3f3StoDP54773me393z9Sr
VajXWSeliHzza2EWwe79W41mFlt5VDOp0m8hVgFZgBBBoBX4Bo4Ac5SqdSXE7H0Ww0QfBjqPBQKRcPhMASeAsztjdj
NN01ixWGSqqrJCoXALm2WQPBtfcLC+LTks8OByPB4fjMVilm+Wy+VYNput4HKWSlwUGWKQRDwtNwg+JrdcBOJ
gstpq3SZi5xASoSCk5Ad2ZOfaBcl5FI/Wbn4tCRhNsNQRQmm/H5//eZD+3Qk8Hq9pCZEcfqpW1oRI8tFqk+U4I1asRW
pVquk3q2emwdNKZVKi8Fg8IddkhqmsrfHw3aXNhocyuUyqQd0YFNwdFYTwVE+n68T7K9tOX4B7HU/0RSdYkoVW
ZaF0kN2sL8nPyECPiyTCZTcSKh57DT62xXZKtdNELLzNhFPp9P30VUUNSI9hC9OeXGAwwBKrDAI2FDDSSrA8e0Ta
PUwrxbFJ4SAg3BFTAKPALzQEWIwGaNm3/yCZlxMwkRtOPAeeFBn4Bx4LITJxqRzAF3gGY3aH8Rmrjfz/0pU7/bfkWY
ACxTcQvcW9G6AAAAABjRU5Erkjggg==);
}
</style>
```

### 3. Disabled button



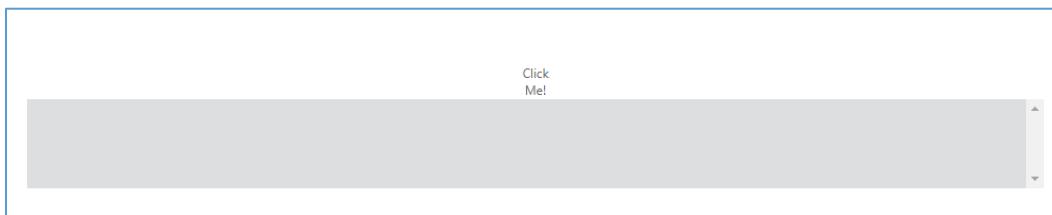
```
<html>
<template id="layout-template">
```

```

<webpdf>
  <div>
    <ribbon-button disabled="true" text="disabled button"></ribbon-button>
  </div>
  <viewer></viewer>
</webpdf>
</template>
</html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
  });
</script>

```

#### 4. Click event handler



```

<html>
<template id="layout-template">
  <webpdf>
    <div>
      <ribbon-button name="alert-btn" text="Click Me!"></ribbon-button>
    </div>
    <viewer></viewer>
  </webpdf>
</template>
</html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({

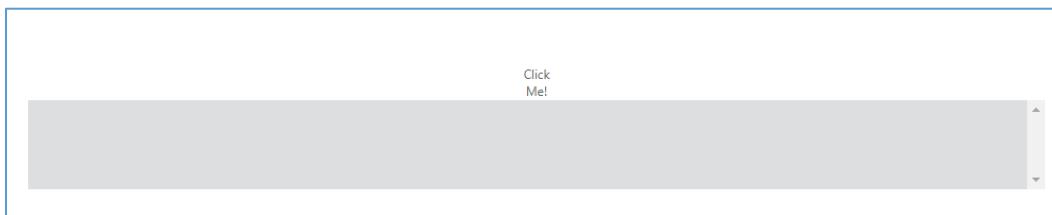
```

```

getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
},
getDefaultFragments: function() {
    return [{
        target: 'alert-btn',
        config: {
            callback: function() {
                alert('click button!');
            }
        }
    }];
},
disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

5. Use controller to handle click event



```

<html>
<template id="layout-template">
<webpdf>
<div>
    <ribbon-button name="alert-btn" text="Click Me!"></ribbon-button>
</div>
<viewer></viewer>
</webpdf>
</template>
</html>
<script>

```

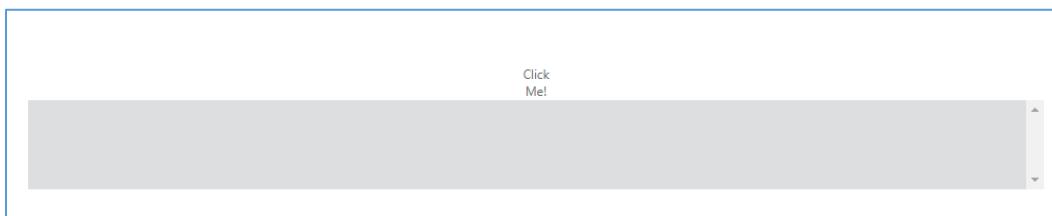
```

var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    getDefaultFragments: function() {
        return [
            {
                target: 'alert-btn',
                config: {
                    callback: UIExtension.controllers.Controller.extend({
                        handle: function() {
                            alert("Click button!");
                        }
                    })
                }
            }];
    },
    disableAll: function(){}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## 6. Use controller directive



```

<html>
<template id="layout-template">
<webpdf>
<div>
    <ribbon-button name="alert-btn" text="Click Me!" @controller="custom-
module:ClickButtonController"></ribbon-button>
</div>
    <viewer></viewer>
</webpdf>

```

```
</template>
</html>
<script>
var module = UIExtension.PDFUI.module('custom-module', []);
module.controller('ClickButtonController', {
    handle: function() {
        alert("Click button!");
    }
});

var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## 7. Nested dropdown component



```
<html>
<template id="layout-template">
```

```
<webpdf>
  <div>
    <ribbon-button icon-class="fx-icon-ribbon_view_read-32" text="read-aloud:read-aloud.read.text"
class="inline">
      <dropdown
        icon-class="fv_icon-read-aloud-read"
        separate="false"
      >
        <xbutton icon-class="fx-icon-ribbon_view_read-16" text="read-aloud:read-
aloud.read.text"></xbutton>
        <xbutton icon-class="fx-icon-ribbon_view_read_rate-32" text="read-aloud:read-
aloud.rate.text"></xbutton>
        <xbutton icon-class="fx-icon-ribbon_view_read-32" text="read-aloud:read-
aloud.volume.text"></xbutton>
        <xbutton icon-class="fx-icon-ribbon_view_read_pause-16" text="read-aloud:read-
aloud.pause.text"></xbutton>
      </dropdown>
    </ribbon-button>
  </div>
  <viewer></viewer>
</webpdf>
</template>
</html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [
      '/lib/uix-addons/read-aloud'
    ]
  });
</script>
```

## API

### Ribbon button properties

Properties	Description	Type
disabled	Button disabled status	boolean
isVisible	Button visibility status	boolean

## Methods

Method	Description	Version
setText(text: String): void	Set button text. It supports I18n entry	8.2.0
setIconCls(cssClass: String): void	Set icon's css-class of a button	8.2.0
disable(): void	Disable button. The disabled button will not respond to the click event	8.2.0
enable(): void	Enable button. The enabled button will respond to the click event	8.2.0
show(): void	Show the hidden button	8.2.0
hide(): void	Hide the button	8.2.0
destroy(): void	Destroy the button component	8.2.0

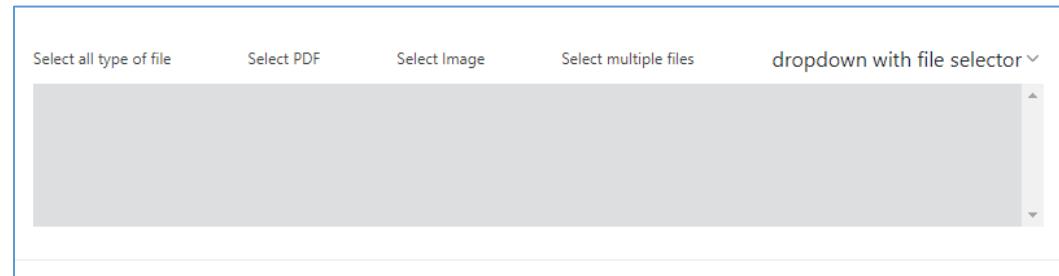
## Events

Name	Description	Sample	Version
click	Click button to trigger	rbutton.on('click', () => {})	8.2.0

## File selector

The usage of File selector is almost same as [button](#). It inherits from the XbuttonComponent and supports the `accept` property and the `change` event.

**Code example**



```
<html>
  <template id="layout-template">
    <webpdf>
      <div class="file-selector-container">
        <!-- accepts all type of files -->
        <file-selector accept="*.*">Select all type of file</file-selector>
        <!-- accepts PDF files -->
        <file-selector accept=".pdf">Select PDF</file-selector>
        <!-- accepts image files -->
        <file-selector accept=".png;.jpg;.bmp" @controller="custom:SelectSingleFileController">Select
        Image</file-selector>
        <!-- select multiple files -->
        <file-selector @controller="custom:SelectMultipleFileController" accept="image/*" multiple>Select
        multiple files</file-selector>
        <!-- use in dropdown -->
        <dropdown style="width: auto" text="dropdown with file selector" separate="false">
          <file-selector accept=".xfdf;.fdf" text="import FDF/XFDF" icon-class="fv_icon-sidebar-import-
          comment"></file-selector>
        </dropdown>
      </div>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<style>
  .file-selector-container {
    display: flex;
    flex-wrap: wrap;
  }
  .file-selector-container > .fv__ui-fileselector {
    flex: 1 1 auto;
  }
</style>
<script>
  UIExtension.PDFUI.module('custom', [])
    .controller('SelectSingleFileController', {
      handle: function(file) {

```

```

        alert('Selected file: ' + file.name);
    }
})
.controller('SelectMultipleFileController', {
    handle: function(files) {
        alert('Selected files: \r\n' + files.map(it => it.name));
    }
})
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## API

You may check [button](#) for more details.

## Events

Name	Description	Example	Version
change	Triggered when the button is clicked. If the file selector turns on multiple selection, file is an array, otherwise it is a single file instance	fileSelector.on('change', (file) => { if(Array.isArray(file)) {} else {} })	7.4

## Dropdown component

### Code examples

#### Basic example



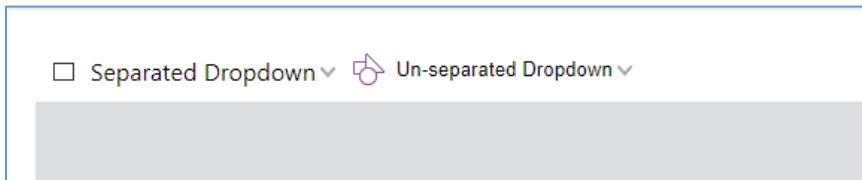
```
<html>
<template id="layout-template">
<webpdf>
<div>
  <dropdown icon-class="fv_icon-toolbar-shape" text="Dropdown">
    <xbutton icon-class="fv_icon-toolbar-square">Square</xbutton>
    <xbutton icon-class="fv_icon-toolbar-circle">Circle</xbutton>
    <li class="fv_ui-dropdown-separator"></li>
    <file-selector>Select a file</file-selector>
    <li class="my-dropdown-list-item">
      </li>
    </dropdown>
  </div>
  <div class="fv_ui-body">
    <viewer></viewer>
  </div>
</webpdf>
</template>
</html>
<style>
.my-dropdown-list-item {
  padding: 10px 0;
  text-align: center;
}
.fv_ui-dropdown {
  width: auto;
}
</style>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
```

```
getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
},
disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

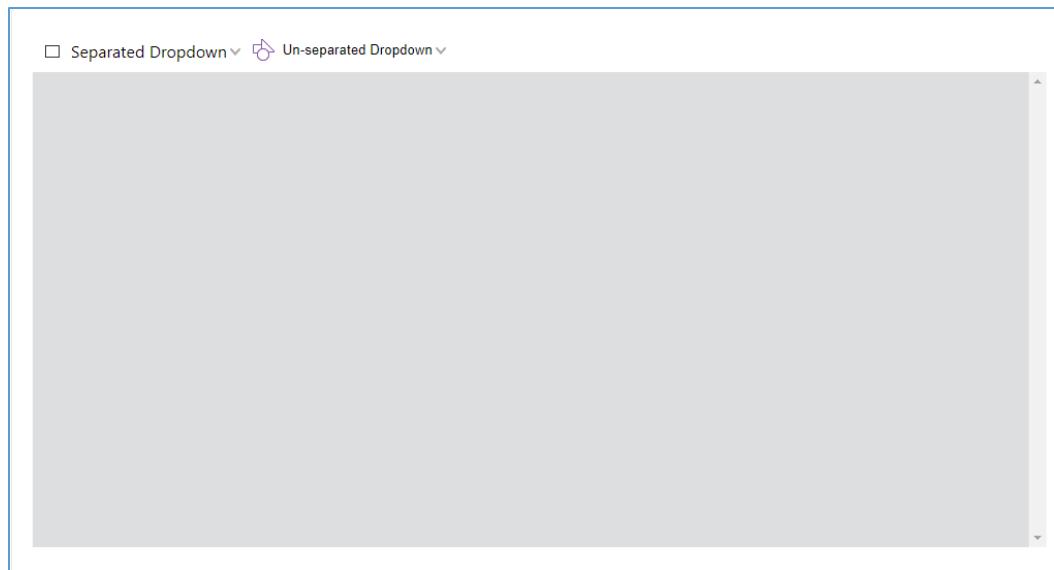
## Separation

A dropdown button can be divided into left and right parts. The left part consists of icons and text, and the right part is a drop-down arrow. When the **separate** parameter is set to false, you can click any one of the two parts to display the drop-down list. When the **separate** parameter is set to true, you can only click the right part (drop-down arrow) to display the drop-down list.

In the following demo, you will see two dropdown buttons as shown below:



Try to click the 'Separated Dropdown' button, you will notice the dropdown list can display only when the arrow is clicked. This is because the dropdown button has been separated, and only clicking-on-arrow can trigger the dropdown list. But you can make the dropdown list display by clicking any area on the **Un-separated Dropdown** button.



```
<html>
<template id="layout-template">
<webpdf>
<div>
    <!-- By default, the value of dropdown's 'separate' option is true -->
    <!-- Set selected="0" means when you click on the dropdown button, it will trigger the event for the first item in the dropdown list -->
    <dropdown name="separate-dropdown" icon-class="fv_icon-toolbar-square" text="Separated Dropdown" selected="0">
        <xbutton name="separate-dropdown-square-btn" icon-class="fv_icon-toolbar-square">Square</xbutton>
        <xbutton icon-class="fv_icon-toolbar-circle">Circle</xbutton>
        <file-selector>Select a file</file-selector>
        <li class="my-dropdown-list-item">
            html &lt;li&gt; tag
        </li>
    </dropdown>
    <dropdown name="non-separate-dropdown" icon-class="fv_icon-toolbar-shape" text="Un-separated Dropdown" separate="false">
        <xbutton icon-class="fv_icon-toolbar-square">Square</xbutton>
        <xbutton icon-class="fv_icon-toolbar-circle">Circle</xbutton>
    </dropdown>
</div>
<div class="fv_ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.my-dropdown-list-item {
    padding: 10px 0;
}
```

```
    text-align: center;
}
.fv__ui-dropdown {
  width: auto;
}
</style>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    getDefaultFragments: function() {
      return [
        {
          target: 'separate-dropdown-square-btn',
          config: [
            {
              callback: function() {
                alert('Click on separate Dropdown');
              }
            }
          ]
        }];
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
  });
</script>
```

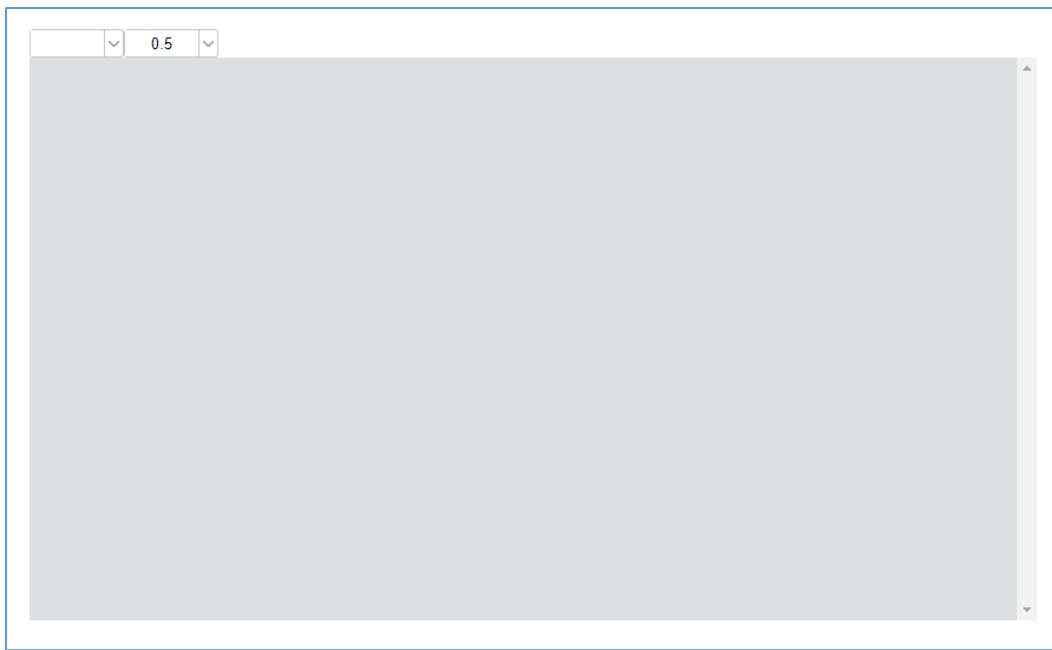
### Use as select component



```
<html>
<template id="layout-template">
<webpdf>
<div>
    <!-- Specify selected="0" that is the initial value -->
    <dropdown name="separate-dropdown" icon-class="fv_icon-toolbar-square" text="Separated
Dropdown" selected="0">
        <xbutton name="separate-dropdown-square-btn" icon-class="fv_icon-toolbar-
square">Square</xbutton>
        <xbutton icon-class="fv_icon-toolbar-circle">Circle</xbutton>
    </dropdown>
    <dropdown name="not-separate-dropdown" icon-class="fv_icon-toolbar-shape" text="not separated
Dropdown" separate="false" selected="0">
        <xbutton icon-class="fv_icon-toolbar-square">Square</xbutton>
        <xbutton icon-class="fv_icon-toolbar-circle">Circle</xbutton>
    </dropdown>
</div>
<div class="fv_ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.my-dropdown-list-item {
    padding: 10px 0;
    text-align: center;
}
.fv_ui-dropdown {
    width: auto;
}
</style>
```

```
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    getDefaultFragments: function() {
      return [
        {
          target: 'separate-dropdown @xbutton,not-separate-dropdown @xbutton',
          config: [
            {
              callback: function() {
                this.component.parent.select(this.component);
              }
            }
          ]
        }];
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
  });
</script>
```

**Editable**

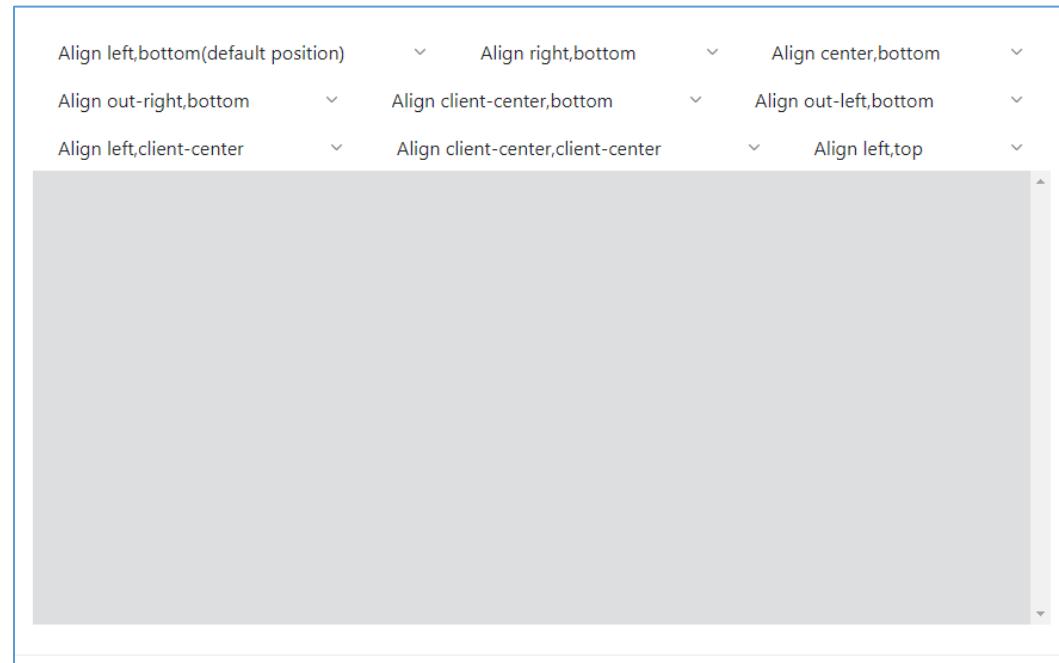


```
<html>
<template id="layout-template">
<webpdf>
<div>
<dropdown name="font-editable-dropdown" editable>
<xbutton>Helvetica</xbutton>
<xbutton>Courier</xbutton>
<xbutton>Times-Bold</xbutton>
<xbutton>宋体</xbutton>
</dropdown>
<dropdown name="zoom-editable-dropdown" editable @controller="custom:ZoomPageController">
<xbutton @controller="custom:ScaleRatioController" scale="0.5">50%</xbutton>
<xbutton @controller="custom:ScaleRatioController" scale="0.75">75%</xbutton>
<xbutton @controller="custom:ScaleRatioController" scale="1">100%</xbutton>
</dropdown>
</div>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.fv__ui-dropdown {
  width: 80px;
}
</style>
<script>
UIExtension.PDFUI.module('custom', []
.controller('ScaleRatioController', {
```

```
handle: function() {
    const scaleRatio = parseFloat(this.component.element.getAttribute('scale'));
    debugger;
    this.component.parent.setEditValue(scaleRatio);
}
});
.controller('ZoomPageController', {
    mounted: function() {
        const component = this.component;
        const firstChild = component.firstChild;
        const scaleRatio = parseFloat(firstChild.element.getAttribute('scale'))
        component.setEditValue(scaleRatio);
        component.on('change', function(newValue, oldValue) {
            if(isNaN(parseFloat(newValue))) {
                alert('Illegal scale value: ' + newValue);
                component.setEditValue(oldValue);
                return;
            }
            alert('scale value changed to: ' + newValue)
        })
    }
});
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    getDefaultFragments() {
        return [
            {
                target: 'zoom-editable-dropdown',
                config: {
                    editOptions: {
                        type: 'number',
                        min: 0,
                        max: 10,
                        step: 0.01
                    }
                }
            }];
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
```

```
        appearance: CustomAppearance,  
        addons: []  
    );  
</script>
```

## Position the dropdown list



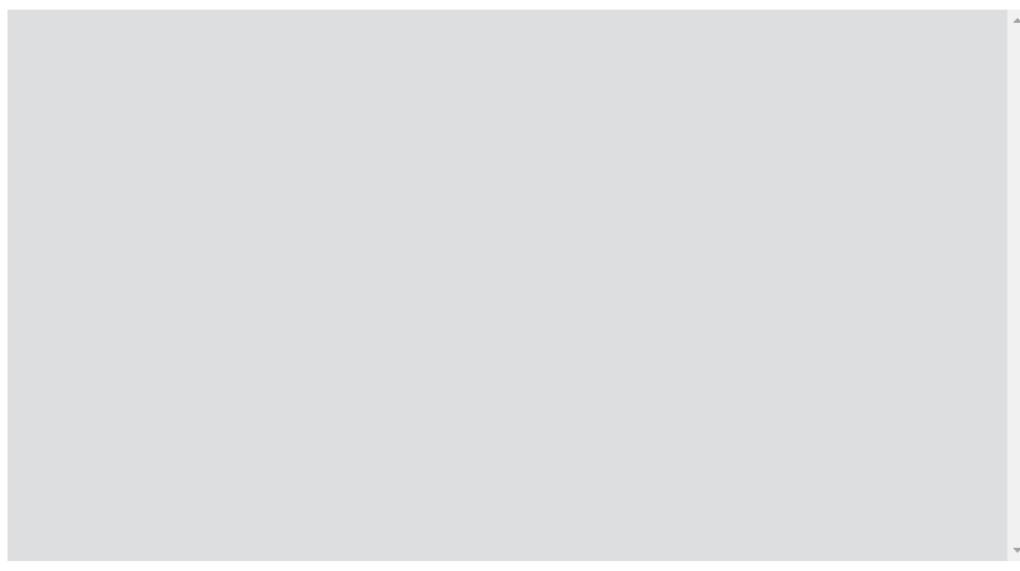
```
<html>  
  <template id="layout-template">  
    <webpdf>  
      <div class="flex-with-gap">  
        <dropdown text="Align left,bottom(default position)" align="left" valign="bottom">  
          <li>left bottom</li>  
        </dropdown>  
        <dropdown text="Align right,bottom" align="right" valign="bottom">  
          <li>right bottom</li>  
        </dropdown>  
        <dropdown text="Align center,bottom" align="center" valign="bottom">  
          <li>center bottom</li>  
        </dropdown>  
      </div>  
      <div class="flex-with-gap">  
        <dropdown text="Align out-right,bottom" align="out-right" valign="bottom">  
          <li>out-right bottom</li>  
        </dropdown>  
        <dropdown text="Align client-center,bottom" align="client-center" valign="bottom">  
          <li>client-center bottom</li>  
        </dropdown>  
        <dropdown text="Align out-left,bottom" align="out-left" valign="bottom">  
          <li>out-left bottom</li>  
        </dropdown>
```

```
</dropdown>
</div>
<div class="flex-with-gap">
  <dropdown text="Align left,client-center" align="left" valign="client-center">
    <i>left client-center</i>
  </dropdown>
  <dropdown text="Align client-center,client-center" align="client-center" valign="client-center">
    <i>client-center</i>
  </dropdown>
  <dropdown text="Align left,top" align="left" valign="top">
    <i>left top</i>
  </dropdown>
</div>
<div class="fv__ui-body">
  <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
  .fv__ui-dropdown {
    width: auto;
  }
  .flex-with-gap {
    display: flex;
    flex-direction: row;
    justify-content: center;
  }
  .flex-with-gap>.fv__ui-dropdown {
    margin: 0 20px;
    flex: 1 1 auto;
  }
</style>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
```

```
    addons: []
});
</script>
```

## Dynamic dropdown list

Dynamic dropdown list ▾



```
<html>
<template id="layout-template">
<webpdf>
<div>
<dropdown separate="false" @controller="custom:DropdownItemListController as ctrl" text="Dynamic
dropdown list">
<li style="padding-left: 1em;">Click button to create more</li>
<li @foreach="item in ctrl.items track by id">
<text @sync.text="item.text"></text>
</li>
<xbutton icon-class="fv__icon-toolbar-add-sign" @controller="custom:AddItemController">Add
dropdown item</xbutton>
</dropdown>
</div>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.fv__ui-dropdown {
  width: auto;
}
```

```
</style>
<script>
    UIExtension.PDFUI.module('custom', [])
        .controller('DropdownItemListController', {
            init: function() {
                this.items = [
                    {
                        id: Date.now().toString(16),
                        text: new Date().toLocaleString()
                    }];
            },
            addItem: function(data) {
                this.items = this.items.concat(data);
                this.digest();
            }
        })
        .controller('AddItemController', {
            handle: function() {
                const itemListCtrl = this.data.ctrl;
                itemListCtrl.addItem({
                    id: Date.now().toString(16),
                    text: new Date().toLocaleString()
                });
            }
        })
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>
```

## API

### Dropdown component template

Template example:

```
<dropdown text="" icon-class="" editable align="left" valign="bottom" separate="true"
selected="0"></dropdown>
```

The template properties:

Property	Description	Type	Default Value	Version
text	Set text for dropdown button	string	''	7.0
icon-class	Set the icon's css class	string	''	7.0
editable	If editable	boolean	false	7.0
align	Horizontal alignment	'left'   'right'   'out-right'   'out-left'   'center'   'client-center'	'left'	7.0
valign	Vertical alignment	'top'   'bottom'   'center'   'client-center'	'bottom'	7.0
separate	If the dropdown button is separated	boolean	true	7.0

Configure dropdown properties using fragment

Besides the `editOptions`, the others are same as the template properties.

```
{
  target: 'dropdown-name',
  config: {
    editOptions: {
      type: 'text',
      min: 0,
      max: 0,
      step: 0,
      value: ''
    }
  }
}
```

Property	Description	Type	Default Value	Version
editOptions.type	Set edit mode for dropdown. It supports both the text and 'number' edit mode	string	'text'	7.0
editOptions.min	The minimum value for the edit box. It is valid only when the edit mode is 'number'	number		7.0
editOptions.max	The maximum value for the edit box. It is valid only when the edit mode is 'number'	number		7.0
editOptions.step	The step for the edit box. It is valid only when the edit mode is 'number'	number		7.0
editOptions.value	The initial value of the edit box	string number		7.0

#### Dropdown object properties

Property	Description	Type
disabled	Button disabled status	boolean
isVisible	Button visible status	boolean
isActive	Check if the dropdown list is active	boolean

#### Methods

Method	Description	Version
setEditValue(text: String number): void	Set the input value. This won't trigger the <code>change</code> event	7.0
disable(): void	Disable dropdown.	7.0
enable(): void	Enable the disabled dropdown	7.0
show(): void	Show the hidden dropdown	7.0

Method	Description	Version
hide(): void	Hide the dropdown	7.0
active(): void	Open the dropdown	7.0
deactive(): void	Close the dropdown	7.0
destroy(): void	Destroy the component	7.0

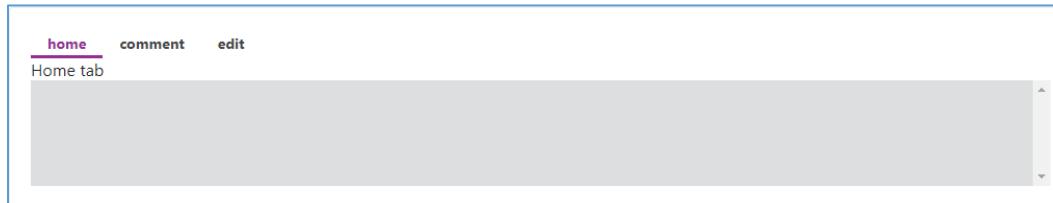
## Events

Name	Description	Example	Version
active	Triggered upon the dropdown expands	dropdown.on('active', () => {})	7.0
deactive	Triggered upon the dropdown hides	dropdown.on('deactive', () => {})	7.0
change	Triggered upon the mouse enters and focus loses	dropdown.on('change', (newValue, oldValue) => {})	7.0

## Tab component

### Code examples

#### Basic tab example



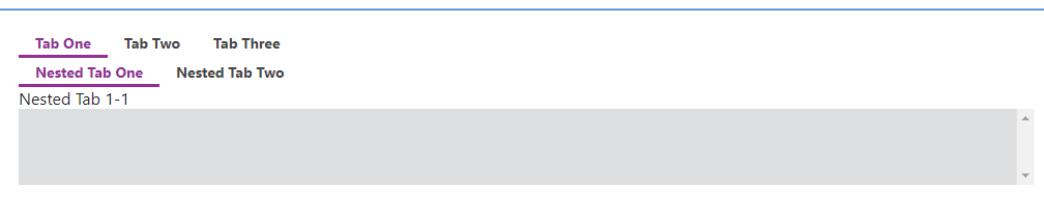
```
<html>
<template id="layout-template">
<webpdf>
<div>
<div>
<div class="tabs">
<gtab group="top-toolbar-tab" body="home-tab" active>home</gtab>
<gtab group="top-toolbar-tab" body="comment-tab">comment</gtab>
<gtab group="top-toolbar-tab" body="edit-tab">edit</gtab>
```

```

</div>
<div class="tab-bodies">
    <div name="home-tab">
        Home tab
    </div>
    <div name="comment-tab">
        Comment tab
    </div>
    <div name="edit-tab">
        Edit tab
    </div>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>

```

## Nested tab



```

<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <div>
          <div class="tabs">
            <gtab group="top-toolbar-tab" body="tab1" active>Tab One</gtab>
            <gtab group="top-toolbar-tab" body="tab2">Tab Two</gtab>
            <gtab group="top-toolbar-tab" body="tab3">Tab Three</gtab>
          </div>
          <div class="tab-bodies">
            <div name="tab1">
              <div class="tabs">
                <gtab group="nested-tab1" body="nested-tab1-1" active>Nested Tab One</gtab>
                <gtab group="nested-tab1" body="nested-tab1-2">Nested Tab Two</gtab>
              </div>
              <div name="nested-tab1-1">Nested Tab 1-1</div>
              <div name="nested-tab1-2">Nested Tab 1-2</div>
            </div>
            <div name="tab2">
              Tab Two
            </div>
            <div name="tab3">
              <div class="tabs">
                <gtab group="nested-tab3" body="nested-tab3-1">Nested Tab3 One</gtab>
                <gtab group="nested-tab3" body="nested-tab3-2" active>Nested Tab3 Two</gtab>
                <gtab group="nested-tab3" body="nested-tab3-3">Nested Tab3 Two</gtab>
              </div>
              <div name="nested-tab3-1">Nested Tab 3-1</div>
              <div name="nested-tab3-2">Nested Tab 3-2</div>
              <div name="nested-tab3-3">Nested Tab 3-3</div>
            </div>
          </div>
        </div>
        <div class="fv__ui-body">
          <viewer></viewer>
        </div>
      </webpdf>
    </template>
  </html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {

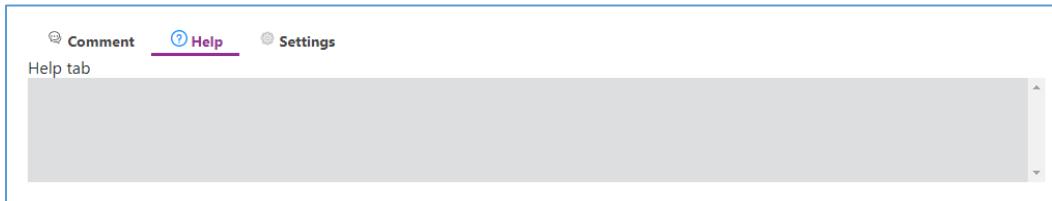
```

```

libPath: libPath,
jr: {
    licenseSN: licenseSN,
    licenseKey: licenseKey
},
renderTo: document.body,
appearance: CustomAppearance,
addons: []
});
</script>

```

## Leading icon



```

<html>
<template id="layout-template">
<webpdf>
<div>
<div>
<div class="tabs">
<gtab group="top-toolbar-tab" body="comment-tab" active icon-class="fv_icon-sidebar-comment-list">Comment</gtab>
<gtab group="top-toolbar-tab" body="help-tab" active icon-class="fv_icon-dialog-level-question">Help</gtab>
<gtab group="top-toolbar-tab" body="settings-tab" icon-class="fv_icon-comment-item-menu-settings">Settings</gtab>
</div>
<div class="tab-bodies">
<div name="comment-tab">
    Comment tab
</div>
<div name="help-tab">
    Help tab
</div>
<div name="settings-tab">
    Settings tab
</div>
</div>
</div>
<div class="fv_ui-body">
    <viewer></viewer>
</div>
</webpdf>

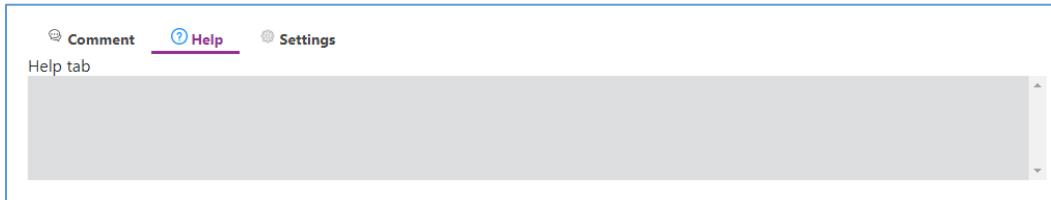
```

```

</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## Top icon



```

<html>
<template id="layout-template">
<webpdf>
<div>
<div>
<div class="tabs">
    <gtab class="stacked" group="top-toolbar-tab" body="comment-tab" active icon-class="fv_icon-sidebar-comment-list">Comment</gtab>
    <gtab class="stacked" group="top-toolbar-tab" body="help-tab" active icon-class="fv_icon-dialog-level-question">Help</gtab>
    <gtab class="stacked" group="top-toolbar-tab" body="settings-tab" icon-class="fv_icon-comment-item-menu-settings">Settings</gtab>
</div>
<div class="tab-bodies">
<div name="comment-tab">
    Comment tab
</div>

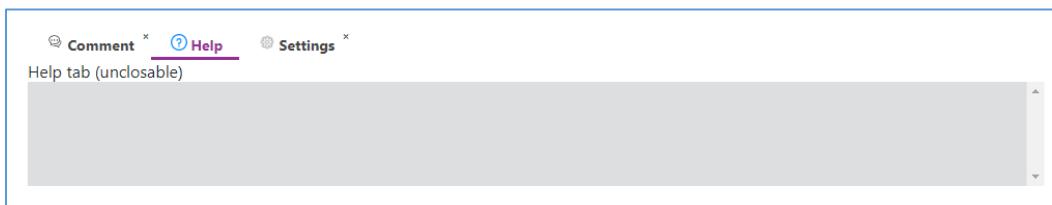
```

```

<div name="help-tab">
    Help tab
</div>
<div name="settings-tab">
    Settings tab
</div>
</div>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>

```

## Closable tabs



```

<html>
    <template id="layout-template">
        <webpdf>
            <div>

```

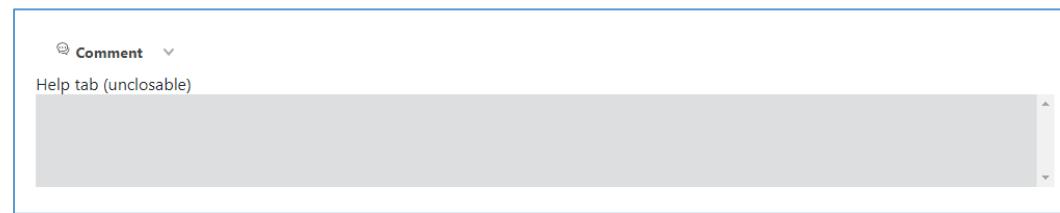
```

<div>
  <div class="tabs">
    <!-- Comment tab will be destroy after closed -->
    <gtab class="stacked" group="top-toolbar-tab" body="comment-tab" icon-class="fv_icon-sidebar-comment-list" closable destroy-on-close>Comment</gtab>
    <gtab class="stacked" group="top-toolbar-tab" body="help-tab" active icon-class="fv_icon-dialog-level-question">Help</gtab>
    <gtab @controller="custom:SettingsTabController" name="settings-tab-ctrl" class="stacked" group="top-toolbar-tab" body="settings-tab" icon-class="fv_icon-comment-item-menu-settings" closable>Settings</gtab>
      <xbutton visible="false" name="open-settings-tab-btn" class="open-settings-tab-btn" @controller="custom:ReopenTabController" icon-class="fv_icon-toolbar-add-sign" @tooltip tooltip-title="Reopen settings tab"></xbutton>
    </div>
    <div class="tab-bodies">
      <div name="comment-tab">
        Comment tab(closable, and will be destroyed after closing)
      </div>
      <div name="help-tab">
        Help tab (unclosable)
      </div>
      <div name="settings-tab">
        Settings tab (closable)
      </div>
    </div>
  </div>
  <div class="fv_ui-body">
    <viewer></viewer>
  </div>
</webpdf>
</template>
</html>
<style>
.tabs {
  display: flex;
  align-items: center;
}
.open-settings-tab-btn {
  display: inline-flex;
  width: 32px;
  height: 32px;
}
</style>
<script>
UIExtension.PDFUI.module('custom',[])
.controller('ReopenTabController', [
  handle: function() {
    this.getComponentByName('settings-tab-ctrl').open();
  }
])

```

```
.controller('SettingsTabController', {
  mounted: function() {
    this.component.on('close', () => {
      this.getComponentByName('open-settings-tab-btn').show();
    });
    this.component.on('open', () => {
      this.getComponentByName('open-settings-tab-btn').hide();
    });
  }
});
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
  appearance: CustomAppearance,
  addons: []
});
</script>
```

## Tabs with dropdown

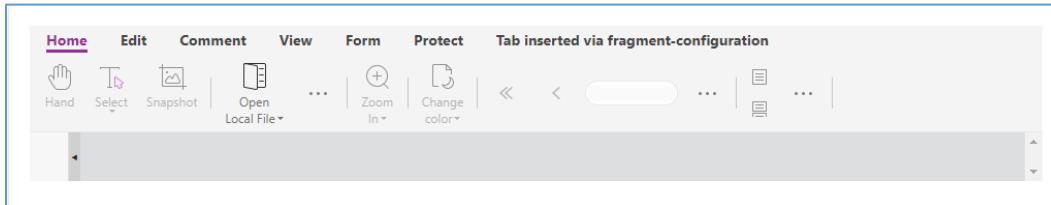


```
<html>
<template id="layout-template">
<webpdf>
  <div>
    <div>
      <div class="tabs">
        <gtab group="top-toolbar-tab" body="comment-tab" icon-class="fv_icon-sidebar-comment-list">Comment</gtab>
        <dropdown>
          <li>
```

```
<gtab group="top-toolbar-tab" body="help-tab" active icon-class="fv__icon-dialog-level-question">Help</gtab>
</li>
<li>
    <gtab name="settings-tab-ctrl" group="top-toolbar-tab" body="settings-tab" icon-class="fv__icon-comment-item-menu-settings">Settings</gtab>
    </li>
</dropdown>
</div>
<div class="tab-bodies">
    <div name="comment-tab">
        Comment tab(closable and will be destroy after closed)
    </div>
    <div name="help-tab">
        Help tab (unclosable)
    </div>
    <div name="settings-tab">
        Settings tab (closable)
    </div>
    </div>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
    .tabs {
        display: flex;
        align-items: center;
    }
</style>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
    });
</script>
```

```
        appearance: CustomAppearance,  
        addons: []  
    );  
</script>
```

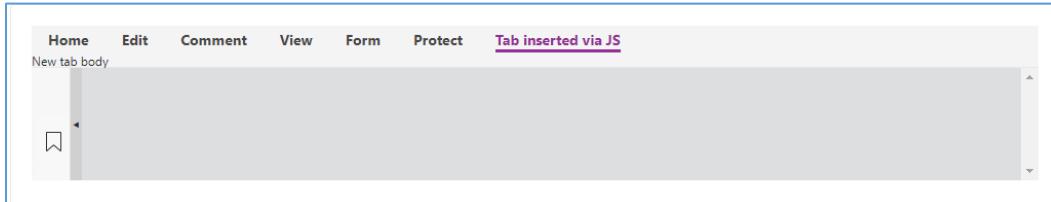
### Insert a tab using fragment-configuration



```
<html>  
</html>  
<style>  
    .tabs {  
        display: flex;  
        align-items: center;  
    }  
</style>  
<script>  
    var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;  
    var CustomAppearance = UIExtension.appearances.RibbonAppearance.extend({  
        getDefaultFragments: function() {  
            return [{  
                target: 'toolbar-tabs',  
                action: FRAGMENT_ACTION.APPEND,  
                template: '<gtab name="new-tab" group="toolbar-tab" body="new-tab-body">Tab inserted via  
fragment-configuration</gtab>'  
            }, {  
                target: 'toolbar-tab-bodies',  
                action: FRAGMENT_ACTION.APPEND,  
                template: '<div name="new-tab-body" style="line-height:1"><text>New tab body</text></div>'  
            }]  
        }  
    });  
    var libPath = window.top.location.origin + '/lib';  
    var pdfui = new UIExtension.PDFUI({  
        viewerOptions: {  
            libPath: libPath,  
            jr: {  
                licenseSN: licenseSN,  
                licenseKey: licenseKey  
            }  
        },  
        renderTo: document.body,  
        appearance: CustomAppearance,  
        addons: []  
    });
```

```
</script>
```

### Dynamically insert a tab using JavaScript



```
<html>
</html>
<style>
.tabs {
    display: flex;
    align-items: center;
}
</style>
<script>
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.RibbonAppearance,
    addons: []
});
pdfui.getRootComponent().then(root => {
    // the component name can be found in 'examples/UIExtension/layout-templates/built-in-pc-layout-template.tpl'
    var tabs = root.getComponentByName('toolbar-tabs');
    var tabBodies = root.getComponentByName('toolbar-tab-bodies');
    // insert a div named in 'new-tab-body'
    tabBodies.append('<div name="new-tab-body" style="line-height:1"><text>New tab body</text></div>');
    // insert a tab into 'toolbar-tabs' and specifies the tab body name as 'new-tab-body'
    tabs.append('<gtab name="new-tab" body="new-tab-body" group="toolbar-tab">Tab inserted via
JS</gtab>');
    // activate new tab
    var newTab = tabs.getComponentByName('new-tab');
    newTab.active();
})
</script>
```

## API

### Tab component template

Template example:

```
<div class="tabs">
  <gtab group="mytabs" body="tab1" class="stacked" icon-class="fv_icon-comment-item-menu-settings" active>Tab Text 1</gtab>
  <gtab group="mytabs" body="tab2" class="stacked" closable destroy-on-close>Tab Text 2<gtab>
</div>
<div class="tab-bodies">
  <div name="tab1">Tab One</div>
  <div name="tab2">Tab Two</div>
</div>
```

The tab component template properties:

Property	Description	Type	Default Value	Version
group	Only one tab can be activated in a group, similar to the radio name	string	--	7.4.0
body	Tab body's name	string	--	7.4.0
closable	Define if the tab is closable	boolean	false	7.4.0
destroy-on-close	Whether to destroy tab after the tab is closed. Once the tab is destroyed, the body component will be destructed also.			
Boolean		false		7.4.0
class="stacked"	Define the tab's 'icon and text' to be displayed in two lines, otherwise in one line.	--	--	7.4.0

### Tab object properties

Property	Description	Type
disabled	Disabled status	boolean

Property	Description	Type
isVisible	Visibility status	boolean
isActive	Activity status	boolean
isClosed	Closes	boolean

## Methods

Method	Description	Version
disable(): void	Disable a tab	7.0.0
enable(): void	Make a disabled tab enabled	7.0.0
show(): void	Make a hidden tab shown	7.0.0
hide(): void	Hide a tab	7.0.0
active(): void	Activate a tab	7.0.0
deactive(): void	Make a tab inactive	7.0.0
destroy(): void	Destroy a tab	7.0.0
close(): void	Close a tab. The closed tab will be hidden, and the adjacent tab will be activated	7.4.0
open(): void	Make a closed tab shown	7.4.0

## Events

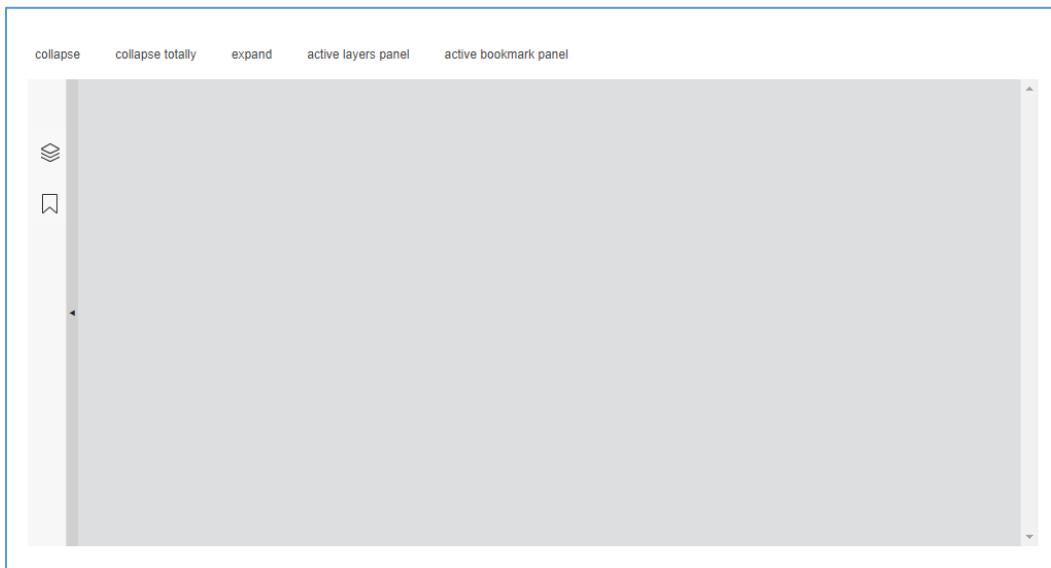
Name	Description	Sample	Version
active	Triggered when a tab is activated	gtab.on('active', () => {})	7.0.0

Name	Description	Sample	Version
deactive	Triggered when a tab is deactivated	gtab.on('deactive', () => {})	7.0.0
close	Triggered when a tab is closed	gtab.on('close', () => {})	7.4.0
open	Triggered when a tab is opened	gtab.on('open', () => {})	7.4.0

## Sidebar Component

### *Code examples*

#### Basic example



```
<html>
<template id="layout-template">
<webpdf>
<div class="btn-container">
    <xbutton @controller="custom:SidebarActionController" action="collapse">collapse</xbutton>
    <xbutton @controller="custom:SidebarActionController" action="collpase.totally">collapse
totally</xbutton>
    <xbutton @controller="custom:SidebarActionController" action="expand">expand</xbutton>
    <xbutton @controller="custom:SidebarActionController" action="active.layers">active layers
panel</xbutton>
    <xbutton @controller="custom:SidebarActionController" action="active.bookmark">active bookmark
panel</xbutton>
</div>
<div class="fv__ui-body">
    <sidebar name="my-sidebar">
```

```
<sidebar-panel name="sidebar-layers" icon-class="fv__icon-sidebar-page-manager"
title="Layers"></sidebar-panel>
    <sidebar-panel name="sidebar-bookmark" active icon-class="fv__icon-sidebar-bookmark"
title="Bookmark"></sidebar-panel>
</sidebar>
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.btn-container {
    display: flex;
    padding: 10px 0;
}
.btn-container>.fv__ui-button + .fv__ui-button {
    margin-left: 20px;
}
</style>
<script>
UIExtension.PDFUI.module('custom', [])
.controller('SidebarActionController', {
    handle: function() {
        var action = this.component.getAttribute('action');
        var sidebar = this.getComponentByName('my-sidebar');
        switch(action) {
            case 'collapse':
                sidebar.collapse();
                break;
            case 'collpase.totally':
                sidebar.collapseTotally();
                break;
            case 'expand':
                sidebar.expand();
                break;
            case 'active.layers':
                sidebar.getComponentByName('sidebar-layers').active();
                break;
            case 'active.bookmark':
                sidebar.getComponentByName('sidebar-bookmark').active();
                break;
        }
    }
})
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
```

```
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## Sidebar width

Use a fixed pixel value as the initial width



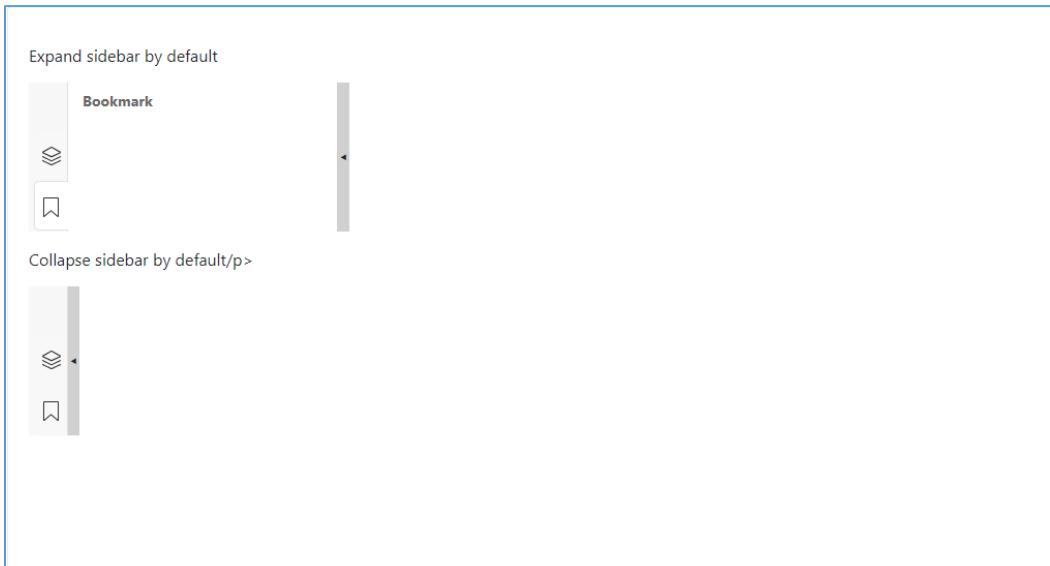
Use the scale value of window.innerWidth as the initial width



```
<html>
<template id="layout-template">
<webpdf>
    <p> Use a fixed pixel value as the initial width </p>
    <div>
        <sidebar width="500" open>
            <sidebar-panel icon-class="fv_icon-sidebar-page-manager" title="Layers"></sidebar-panel>
            <sidebar-panel active icon-class="fv_icon-sidebar-bookmark" title="Bookmark"></sidebar-panel>
        </sidebar>
    </div>
    <p> Use the scale value of window.innerWidth as the initial width </p>
    <div>
        <sidebar width="0.5" open>
            <sidebar-panel icon-class="fv_icon-sidebar-page-manager" title="Layers"></sidebar-panel>
            <sidebar-panel active icon-class="fv_icon-sidebar-bookmark" title="Bookmark"></sidebar-panel>
        </sidebar>
    </div>
</webpdf>
</template>
</html>
```

```
</div>
<div class="hide">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>
```

## Expand and collapse sidebar



```
<html>
```

```
<template id="layout-template">
  <webpdf>
    <p>Expand sidebar by default</p>
    <div>
      <sidebar open>
        <sidebar-panel icon-class="fv_icon-sidebar-page-manager" title="Layers"></sidebar-panel>
        <sidebar-panel active icon-class="fv_icon-sidebar-bookmark" title="Bookmark"></sidebar-panel>
      </sidebar>
    </div>
    <p>Collapse sidebar by default</p>
    <div>
      <sidebar>
        <sidebar-panel icon-class="fv_icon-sidebar-page-manager" title="Layers"></sidebar-panel>
        <sidebar-panel active icon-class="fv_icon-sidebar-bookmark" title="Bookmark"></sidebar-panel>
      </sidebar>
    </div>
    <div class="hide">
      <viewer></viewer>
    </div>
  </webpdf>
</template>
</html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
  });
</script>
```

### Sidebar buttons' tooltip

Hover your mouse over a button to show the tooltip.



```
<html>
<template id="layout-template">
<webpdf>
<div>
    <sidebar open>
        <sidebar-panel @tooltip tooltip-title="Layers sidebar panel" tooltip-placement="right" icon-class="fv__icon-sidebar-page-manager" title="Layers"></sidebar-panel>
        <sidebar-panel @tooltip tooltip-title="Bookmark sidebar panel" tooltip-placement="right" active icon-class="fv__icon-sidebar-bookmark" title="Bookmark"></sidebar-panel>
    </sidebar>
</div>
<div class="hide">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    }
});
```

```
},
renderTo: document.body,
appearance: CustomAppearance,
addons: []
});
</script>
```

### Dynamically insert a sidebar panel using JavaScript



```
<html>
<template id="layout-template">
<webpdf>
<div>
    <xbutton @controller="custom:InsertSidebarController">Add sidebar panel</xbutton>
</div>
<div>
    <sidebar open name="sidebar-component-name">
        <sidebar-panel @tooltip tooltip-title="Layers sidebar panel" tooltip-placement="right" icon-class="fv__icon-sidebar-page-manager" title="Layers"></sidebar-panel>
        <sidebar-panel @tooltip tooltip-title="Bookmark sidebar panel" tooltip-placement="right" active icon-class="fv__icon-sidebar-bookmark" title="Bookmark"></sidebar-panel>
    </sidebar>
</div>
<div class="hide">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
UIExtension.PDFUI.module('custom', [])
.controller('InsertSidebarController', {
    mounted: function() {
        this.count = 0;
    },
    handle: function() {
        if(this.count >= 3) {
            return;
        }
    }
});</script>
```

```

    }
    this.count++;
    this.getPDFUI().getComponentByName('sidebar-component-name')
    .then(sidebar => {
        sidebar.append(
            '<sidebar-panel icon-class="fv__icon-sidebar-bookmark" title="Dynamic sidebar panel"></sidebar-
panel>'
        );
    })
}
});

var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## API

### Sidebar component template

Template example:

```
<!-- The width value smaller than 1 means that is a scale value of window.innerWidth -->
<sidebar open width="500">
    <sidebar-panel icon-class="fv__icon-sidebar-page-manager" title="Layers"></sidebar-panel>
    <sidebar-panel active icon-class="fv__icon-sidebar-bookmark" title="Bookmark"></sidebar-panel>
</sidebar>
```

The `sidebar` component template properties:

<b>Property</b>	<b>Description</b>	<b>Type</b>	<b>Default Value</b>	<b>Version</b>
open	Expand Status	boolean	false	7.0.0
width	The width of the expanded Sidebar will be used as pixel value if it is greater than or equal to 1, and will be calculated by multiplying window.innerWidth if it is less than 1	number	310px	7.0.0

The `sidebar-panel` properties:

<b>Property</b>	<b>Description</b>	<b>Type</b>	<b>Default value</b>	<b>Version</b>
title	The string show at the top of expanded sidebar-panel	string	''	7.0.0
active	If the sidebar-panel is active	boolean	false	7.0.0

### Sidebar object properties

The `sidebar` object properties:

<b>Properties</b>	<b>Description</b>	<b>Type</b>
disabled	If the sidebar is disabled	boolean
isVisible	If the sidebar is visible	boolean
status	Three status: 'SidebarComponent.STATUS_COLLAPSED', 'SidebarComponent.STATUS_COLLAPSED_TOTALLY', 'SidebarComponent.STATUS_EXPANDED'	string

The `sidebar-panel` object properties:

<b>Properties</b>	<b>Description</b>	<b>Type</b>
disabled	If the sidebar-panel is disabled	boolean

Properties	Description	Type
isVisible	If the sidebar-panel is visible	boolean
isActive	If the sidebar-panel is active	boolean

## Methods

The `sidebar` methods:

Method	Description	Version
<code>isCollapsed(): boolean</code>	Return true if the status is not equal to <code>sidebarcomponent.status_expanded</code>	7.0.0
<code>expand(width: number): void</code>	Expand sidebar	7.0.0
<code>collapse(): void</code>	Hide the sidebar-panel with the sidebar buttons visible	7.0.0
<code>collapseTotally(): void</code>	Hide the sidebar with the sidebar buttons invisible	7.0.0

The `sidebar-panel` methods:

Method	Description	Version
<code>disable(): void</code>	Disable sidebar-panel. Once disabled, it cannot be activated	7.0
<code>enable(): void</code>	Enable sidebar-panel	7.0
<code>show(): void</code>	Show the hidden sidebar-panel	7.0
<code>hide(): void</code>	Hide the sidebar-panel	7.0
<code>destroy(): void</code>	Destroy the sidebar-panel	7.0

## Events

The `Sidebar` events:

Event Name	Description	Sample	Version
COMPONENT_EVENTS.EXPAND	Triggered when the sidebar is expanded	sidebar.on(COMPONENT_EVENTS.EXPAND, () => void)	7.0.0
COMPONENT_EVENTS.COLLAPSE	Triggered when the sidebar is collapsed	sidebar.on(COMPONENT_EVENTS.COLLAPSE, () => void)	7.0.0

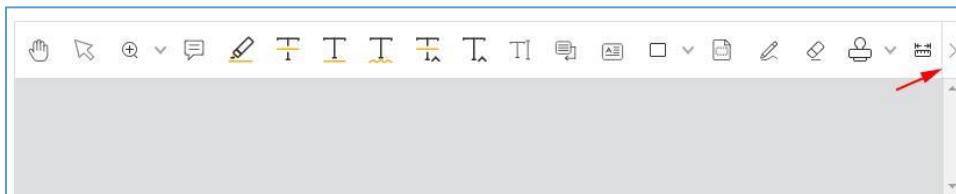
The Sidebar-panel events:

Event Name	Description	Sample	Version
active	Triggered when the sidebar-panel is activated	sidebarPanel.on('active', () => {})	7.0.0
deactive	Triggered when the sidebar-panel is deactivated	sidebarPanel.on('deactive', () => {})	7.0.0
shown	Triggered when the sidebar-panel is shown	sidebarPanel.on('shown', () => {})	7.0.0
hidden	Triggered when the sidebar-panel is hidden	sidebarPanel.on('hidden', () => {})	7.0.0

## Paddle component

In a case of the toolbar length which goes beyond the screen width, some tools are hidden. Users have to scroll to show the hidden contents. The Paddle component serves in other way to display buttons at the ends of toolbar so that users can click to show the hidden tools instead of using scrollbar.

The arrow is the paddle button:



## Code examples



```
<html>
<template id="layout-template">
<webpdf>
<toolbar>
<paddle>
<div class="flex-div">
<hand-button></hand-button>
<selection-button></selection-button>
<zoom-dropdown></zoom-dropdown>
<create-note-button></create-note-button>
<create-text-highlight-button></create-text-highlight-button>
<create-strikeout-button></create-strikeout-button>
<create-underline-button></create-underline-button>
<create-squiggly-button></create-squiggly-button>
<create-replace-button></create-replace-button>
<create-caret-button></create-caret-button>
<create-typewriter-button></create-typewriter-button>
<create-callout-button></create-callout-button>
<create-textbox-button></create-textbox-button>
<create-drawings-dropdown></create-drawings-dropdown>
<create-area-highlight-button></create-area-highlight-button>
<create-pencil-button></create-pencil-button>
<eraser-button></eraser-button>
<stamp-dropdown></stamp-dropdown>
<create-measure-dropdown></create-measure-dropdown>
<create-attachment-button></create-attachment-button>
<create-image-button></create-image-button>
<create-link-button></create-link-button>
</div>
</paddle>
</toolbar>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.flex-div {
    display: flex;
}
```

```

.fv__ui-toolbar {
    border: 1px solid #ddd;
}
</style>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>

```

If you apply the same layout template for desktop and tablet, but only use drag functions on tablet instead of paddle, you can use `exclude-devices` to implement it:



```

<html>
<template id="layout-template">
    <webpdf>
        <toolbar>
            <!-- exclude all tablet devices -->
            <paddle exclude-devices="tablet">
                <div class="flex-div">
                    <hand-button></hand-button>
                    <selection-button></selection-button>
                    <zoom-dropdown></zoom-dropdown>
                    <create-note-button></create-note-button>
                    <create-text-highlight-button></create-text-highlight-button>
                    <create-strikeout-button></create-strikeout-button>
                    <create-underline-button></create-underline-button>
                </div>
            </paddle>
        </toolbar>
    </webpdf>
</template>

```

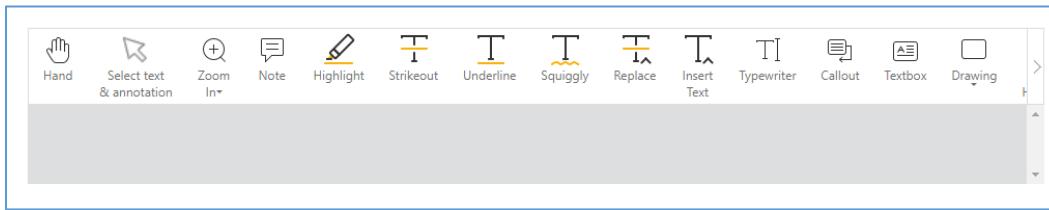
```
<create-squiggly-button></create-squiggly-button>
<create-replace-button></create-replace-button>
<create-caret-button></create-caret-button>
<create-typewriter-button></create-typewriter-button>
<create-callout-button></create-callout-button>
<create-textbox-button></create-textbox-button>
<create-drawings-dropdown></create-drawings-dropdown>
<create-area-highlight-button></create-area-highlight-button>
<create-pencil-button></create-pencil-button>
<eraser-button></eraser-button>
<stamp-dropdown></stamp-dropdown>
<create-measure-dropdown></create-measure-dropdown>
<create-attachment-button></create-attachment-button>
<create-image-button></create-image-button>
<create-link-button></create-link-button>
</div>
</paddle>
</toolbar>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.flex-div {
    display: flex;
}
.fv__ui-toolbar {
    border: 1px solid #ddd;
}
/* use native scrollbar in tablet device */
.fv__ui-tablet .fv__ui-toolbar {
    overflow-y: auto;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    }
});
```

```
},
renderTo: document.body,
appearance: CustomAppearance,
addons: []
);
</script>
```

The device values that can be used include the following:

mac, ios, iphone, ipad, ipod, android, webos, kindle, tablet, mobile, desktop, xiaomi, huawei, touch.

By default, continuously clicking the paddle buttons at the ends of the toolbar moves the tool to the beginning or end. However, when the toolbar length is twice the screen width, the middle tools will never be displayed. To avoid this problem, you can set step in the paddle component.



```
<html>
<template id="layout-template">
<webpdf>
<toolbar>
<paddle step="200">
<div class="flex-div">
<hand-button></hand-button>
<selection-button></selection-button>
<zoom-dropdown></zoom-dropdown>
<create-note-button></create-note-button>
<create-text-highlight-button></create-text-highlight-button>
<create-strikeout-button></create-strikeout-button>
<create-underline-button></create-underline-button>
<create-squiggly-button></create-squiggly-button>
<create-replace-button></create-replace-button>
<create-caret-button></create-caret-button>
<create-typewriter-button></create-typewriter-button>
<create-callout-button></create-callout-button>
<create-textbox-button></create-textbox-button>
<create-drawings-dropdown></create-drawings-dropdown>
<create-area-highlight-button></create-area-highlight-button>
<create-pencil-button></create-pencil-button>
<eraser-button></eraser-button>
<stamp-dropdown></stamp-dropdown>
<create-measure-dropdown></create-measure-dropdown>
<create-attachment-button></create-attachment-button>
<create-image-button></create-image-button>
<create-link-button></create-link-button>
```

```

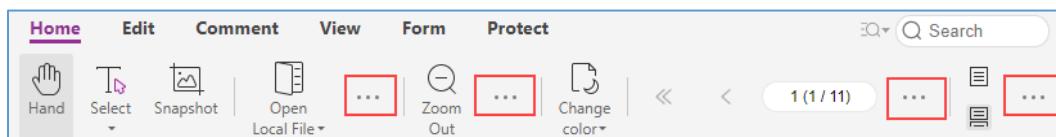
        </div>
        </paddle>
    </toolbar>
    <div class="fv__ui-body">
        <viewer></viewer>
    </div>
</webpdf>
</template>
</html>
<style>
.flex-div {
    display: flex;
}
.fv__ui-toolbar {
    border: 1px solid #ddd;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## Group component

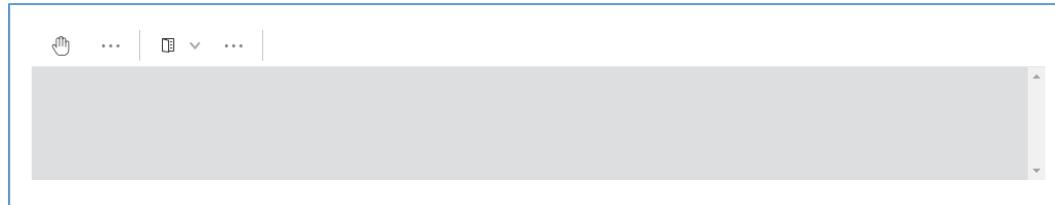
The Group component is commonly used on the Toolbar to separate the components with a vertical line. Each group represents a category, and can be set to shrink when running in a small screen.

Group shrank and hid tools under the dots:



### Code example

#### Getting started

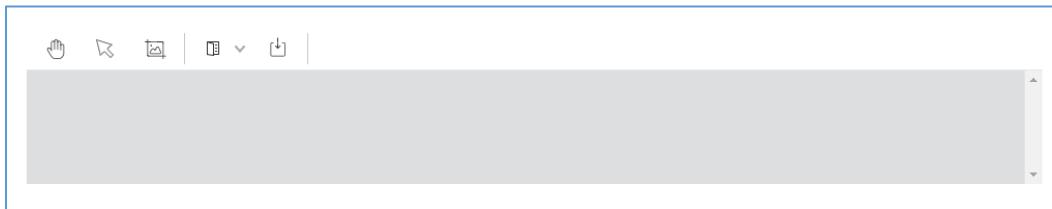


```
<html>
  <template id="layout-template">
    <webpdf>
      <toolbar>
        <group-list>
          <group name="home-tab-group-hand">
            <hand-button></hand-button>
            <selection-button>Selection</selection-button>
            <snapshot-button></snapshot-button>
          </group>
          <group name="home-tab-group-io">
            <open-file-dropdown></open-file-dropdown>
            <download-file-button></download-file-button>
          </group>
        </group-list>
      </toolbar>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<style>
</style>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
  });
</script>
```

```
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
);
</script>
```

### Designate the shrink-size

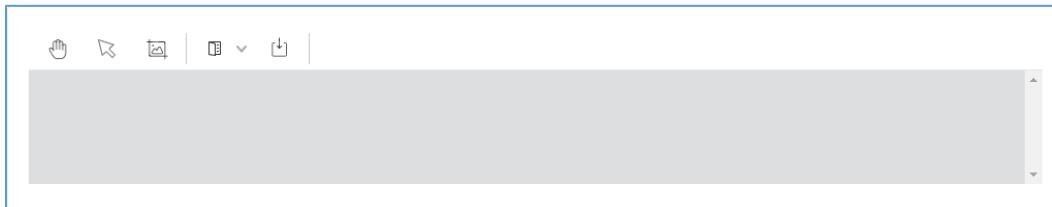
In the following example, the `group-list` defines `shrink-size` as 762 pixels, which means all child group with no `shrink-size` marker will contract when the width of the root component `<webpdf>` is smaller than 762 pixels. The child group with `shrink-size="600"` marker will shorten when the root component's width is less than 600 pixels.



```
<html>
<template id="layout-template">
<webpdf>
<toolbar>
<group-list shrink-size="762">
<group name="home-tab-group-hand">
<hand-button></hand-button>
<selection-button>Selection</selection-button>
<snapshot-button></snapshot-button>
</group>
<group name="home-tab-group-io" shrink-size="600">
<open-file-dropdown></open-file-dropdown>
<download-file-button></download-file-button>
</group>
</group-list>
</toolbar>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
},
```

```
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>
```

### Designate the retained components after shrinkage



```
<html>
<template id="layout-template">
    <webpdf>
        <toolbar>
            <group-list shrink-size="762">
                <!-- retain two components after shrinking -->
                Specify
                <group name="home-tab-group-hand" retain-count="2">
                    <hand-button></hand-button>
                    <selection-button>Selection</selection-button>
                    <snapshot-button></snapshot-button>
                </group>
                <!-- If the retain-count value is equal to the components count, no shrinkage will occur -->
                <group name="home-tab-group-io" retain-count="2">
                    <open-file-dropdown></open-file-dropdown>
                    <download-file-button></download-file-button>
                </group>
            </group-list>
        </toolbar>
        <div class="fv__ui-body">
            <viewer></viewer>
        </div>
    </webpdf>
</template>
</html>
```

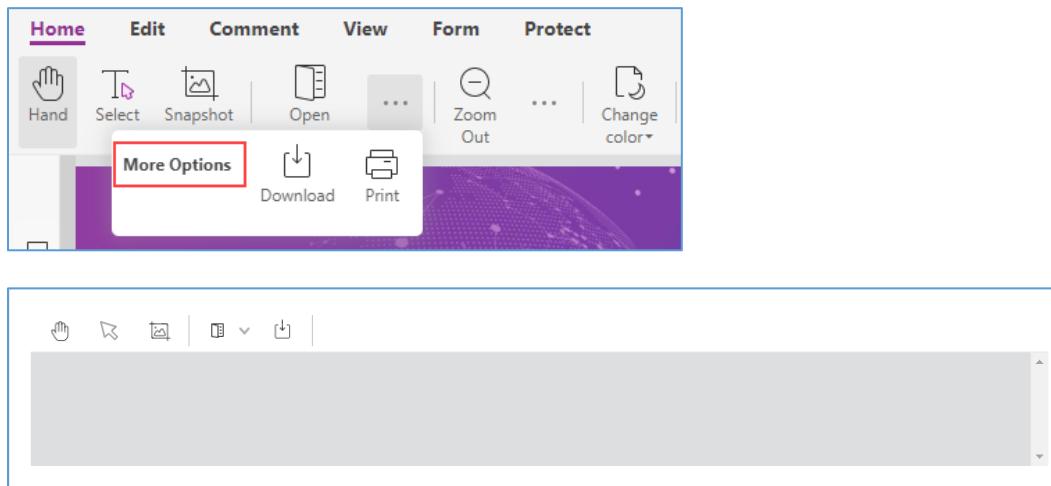
```

<style>
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

### Designate the shrink-title

The More Options in the image below is the shrink title:



```

<html>
<template id="layout-template">
<webpdf>
<toolbar>
<group-list shrink-size="762">
    <group name="home-tab-group-hand" retain-count="2" shrink-title="options">
        <hand-button></hand-button>

```

```
<selection-button>Selection</selection-button>
<snapshot-button></snapshot-button>
</group>
<group name="home-tab-group-io" shrink-title="options">
    <open-file-dropdown></open-file-dropdown>
    <download-file-button></download-file-button>
</group>
</group-list>
</toolbar>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
</style>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>
```

## API

### Group component template

Template example:

```
<group-list shrink-size="762">
    <group retain-count="2" shrink-title="options"></group>
    <group retain-count="1" shrink-title="options"></group>
</group-list>
```

The `group-list` template properties:

Property	Description	Type	Default Value	Version
shrink-size	Specify a pixel width. Triggered when the <webpdf> width is less than the specified width	number	1024	7.0.0

The `<group>` template properties:

Property	Description	Type	Default Value	Version
retain-count	Define the retained components after shrinkage	number	1	7.0.0
shrink-title	Define the title which shows on the top of the drop-down list after shrinkage	string	''	7.0.0
shrink-size	Specify a pixel width value. Triggered when the <webpdf> width is less than this value. Once specified, this group will ignore the value defined in the parent group-list	number	the same value in the parent component <code>group-list</code>	7.0.0

## Methods

The `<group>` component methods:

Method	Description	Version
<code>setRetainCount(count: number): void</code>	Set the retained count after shrinkage	7.0.0
<code>setShrinkTitle(title: string): void</code>	Set the title which shows on the top of the drop-down list after shrinkage	7.0.0

## Events

The `<group>` component events:

Name	Description	Example	Version
<code>shrink</code>	Triggered on shrink or expand	<code>group.on('shink', (isShrinked) =&gt; void)</code>	7.4.0

The `<group-list>` component events:

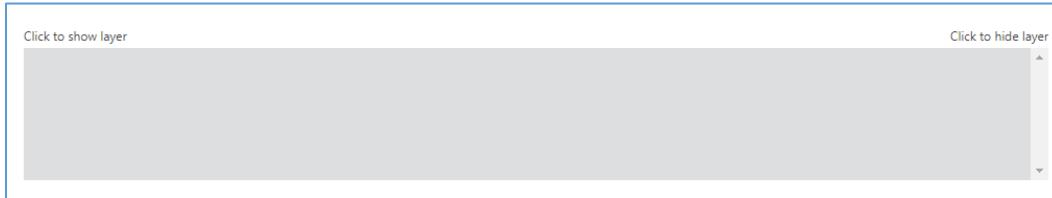
Name	Description	Example	Version
shrink	Triggered on shrink or expand	groupList.on('shink', (groupComponent, isShrunk) => void)	7.4.0

## Layer component

Layer is a floating box component, which is typically used to implement dialogs, tooltips, context menus, and some other components that need to float on other elements.

### Code examples

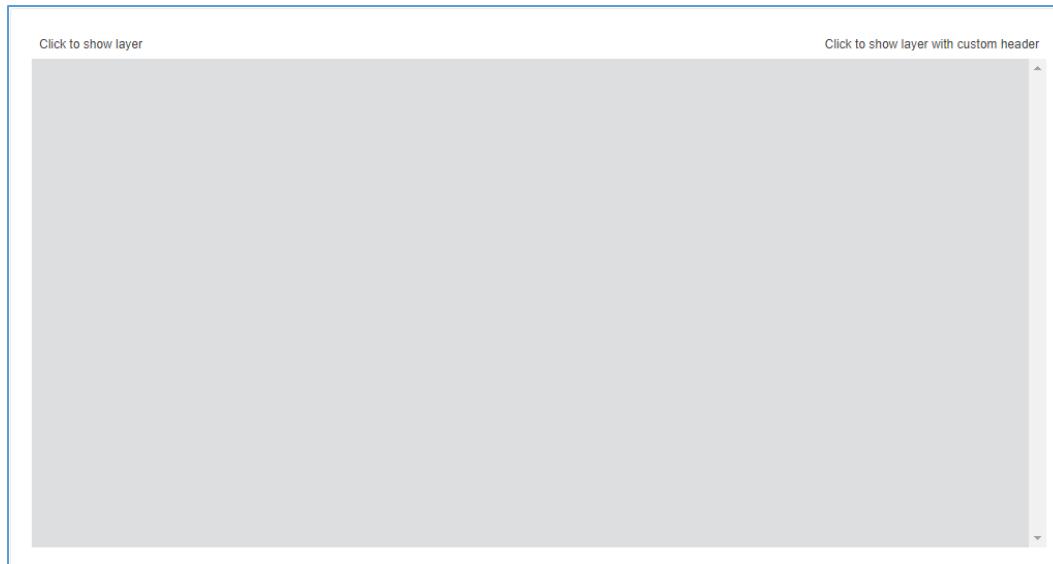
#### Getting started



```
<html>
  <template id="layout-template">
    <webpdf>
      <div class="flex-container">
        <xbutton action="show-layer" @controller="custom:ShowHideLayerController">Click to show
layer</xbutton>
        <xbutton action="hide-layer" @controller="custom:ShowHideLayerController">Click to hide
layer</xbutton>
      </div>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
      <template>
        <layer name="my-layer" class="center">
          <text>Hello! I'm a layer component!</text>
        </layer>
      </template>
    </webpdf>
  </template>
</html>
<style>
.flex-container {
  display: flex;
  justify-content: space-between;
}
</style>
```

```
<script>
    UIExtension.PDFUI.module('custom', [])
        .controller('ShowHideLayerController', {
            handle: function() {
                const layer = this.getComponentByName('my-layer');
                const action = this.component.getAttribute('action');
                switch(action) {
                    case 'show-layer':
                        layer.show();
                        break;
                    case 'hide-layer':
                        layer.hide();
                        break;
                }
            }
        });
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>
```

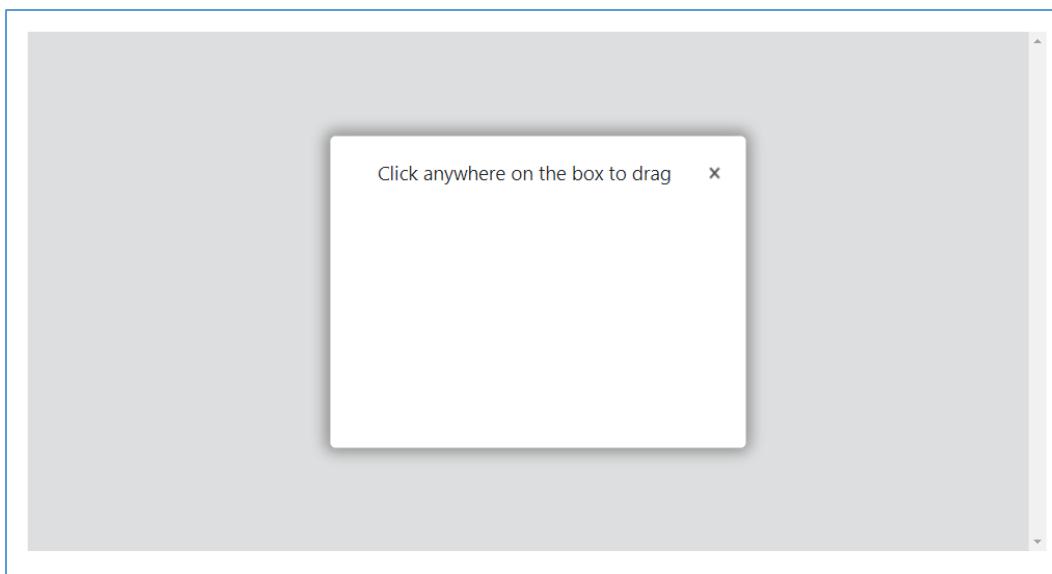
### Create a layer with header



```
<html>
<template id="layout-template">
  <webpdf>
    <div class="flex-container">
      <xbutton target-layer="my-layer" @controller="custom>ShowLayerController">Click to show layer</xbutton>
      <xbutton target-layer="my-layer-2" @controller="custom>ShowLayerController">Click to show layer with custom header</xbutton>
    </div>
    <div class="fv__ui-body">
      <viewer></viewer>
    </div>
  <template>
    <layer name="my-layer" class="center my-layer">
      <layer-header title="Layer Title" icon-class="fv__icon-toolbar-print"></layer-header>
    </layer>
    <layer name="my-layer-2" class="center my-layer">
      <div class="my-custom-layer-header">
        <i class="fv__icon-toolbar-print"></i>
        <h2>Custom layer header</h2>
      </div>
    </layer>
  </template>
</webpdf>
</template>
</html>
<style>
  .my-layer {
    width: 400px;
    height: 300px;
  }
  .my-custom-layer-header {
    display: flex;
  }
</style>
```

```
    align-items: center;
}
.my-custom-layer-header i{
  display: inline-block;
  width: 32px;
  height: 32px;
}
.my-custom-layer-header h2 {
  flex: 1;
  margin: 0 0 0 1em;
}
.flex-container {
  display: flex;
  justify-content: space-between;
}
</style>
<script>
UIExtension.PDFUI.module('custom', [])
.controller('ShowLayerController', {
  handle: function() {
    const layerName = this.component.getAttribute('target-layer')
    const layer = this.getComponentByName(layerName);
    layer.show();
  }
});
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
  appearance: CustomAppearance,
  addons: []
});
</script>
```

## Create a draggable layer

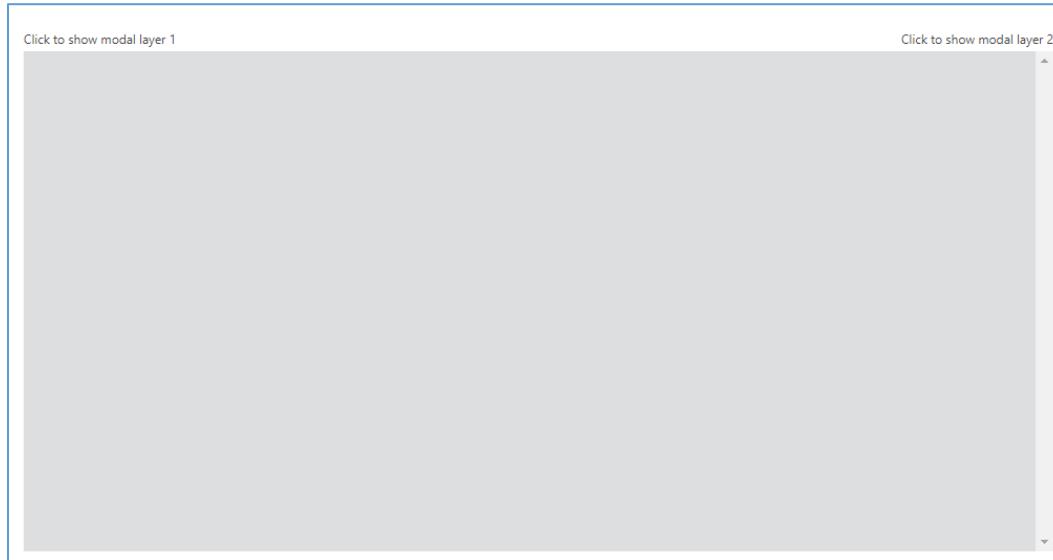


```
<html>
  <template id="layout-template">
    <webpdf>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
      <template>
        <layer name="my-layer1" class="center my-layer" visible>
          <layer-header @draggable="{type:'parent'}" title="Click header area to drag" icon-class="fv__icon-toolbar-print"></layer-header>
        </layer>
        <layer name="my-layer2" class="center my-layer" @draggable visible>
          <layer-header title="Click anywhere on the box to drag" icon-class="fv__icon-toolbar-print"></layer-header>
        </layer>
      </template>
    </webpdf>
  </template>
</html>
<style>
  .my-layer {
    width: 400px;
    height: 300px;
  }
  .flex-container {
    display: flex;
    justify-content: space-between;
  }
</style>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {

```

```
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

### Create a modal layer



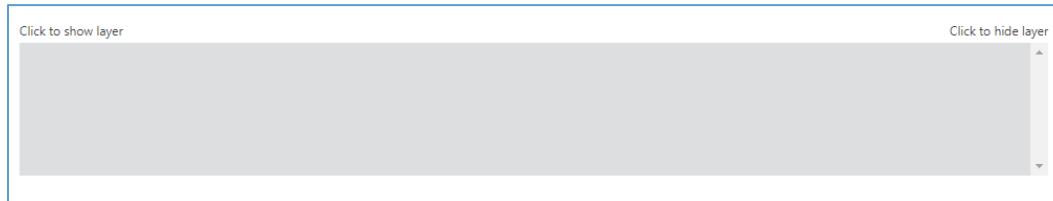
```
<html>
<template id="layout-template">
<webpdf>
<div class="flex-container">
    <xbutton @controller="custom>ShowLayer1Controller">Click to show modal layer 1</xbutton>
    <xbutton @controller="custom>ShowLayer2Controller">Click to show modal layer 2</xbutton>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
<template>
<layer name="my-layer-1" class="center my-layer" modal backdrop>
```

```
<layer-header title="Modal layer with backdrop" icon-class="fv__icon-toolbar-print"></layer-header>
</layer>
<layer name="my-layer-2" class="center my-layer" modal>
    <layer-header title="Modal layer without backdrop" icon-class="fv__icon-toolbar-print"></layer-
header>
    </layer>
</template>
</webpdf>
</template>
</html>
<style>
.my-layer {
    width: 400px;
    height: 300px;
}
.flex-container {
    display: flex;
    justify-content: space-between;
}
</style>
<script>
UIExtension.PDFUI.module('custom', [])
.controller('ShowLayer1Controller', {
    handle: function() {
        const layer = this.getComponentByName('my-layer-1');
        layer.show();
    }
})
.controller('ShowLayer2Controller', {
    handle: function() {
        const layer = this.getComponentByName('my-layer-2');
        layer.show();
    }
});
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
```

```
    addons: []
  });
</script>
```

### Specify a parent node for the layer component

By default, the layer DOM nodes are appended to the end of the root component when the layer is displayed. This may cause the layer DOM hierarchy to display incorrectly in some cases. To avoid this problem, you can specify where to insert the layer DOM when calling `show()`. Here is the code example:



```
<html>
<template id="layout-template">
  <webpdf>
    <div class="flex-container">
      <xbutton action="show-layer" @controller="custom:ShowHideLayerController">Click to show
layer</xbutton>
      <xbutton action="hide-layer" @controller="custom:ShowHideLayerController">Click to hide
layer</xbutton>
    </div>
    <div class="fv__ui-body">
      <viewer></viewer>
    </div>
    <template>
      <layer name="my-layer" class="center">
        <text>Hello! I'm a layer component!</text>
      </layer>
    </template>
  </webpdf>
</template>
</html>
<style>
.flex-container {
  display: flex;
  justify-content: space-between;
}
</style>
<script>
UIExtension.PDFUI.module('custom', [])
  .controller('ShowHideLayerController', {
    handle: function() {
      const layer = this.getComponentByName('my-layer');
      const action = this.component.getAttribute('action');
    }
  })
</script>
```

```

switch(action) {
    case 'show-layer':
        layer.show(document.body); // The layer will be appended to `document.body` when it is
displayed.
        break;
    case 'hide-layer':
        layer.hide();
        break;
    }
}
});

var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## API

### Layer component template

Template example:

```
<layer class="center" visible modal backdrop>
    <layer-header title="" icon-class="fv_icon-toolbar-print"></layer-header>
</layer>
```

The `<layer>` component template properties:

Property	Description	Type	Default value	Version
visible	Whether make the layer visible	boolean	false	7.0.0

<b>Property</b>	<b>Description</b>	<b>Type</b>	<b>Default value</b>	<b>Version</b>
modal	Whether it is a modal box	boolean	false	7.0.0
backdrop	Whether the modal box uses a black translucent background	boolean	false	7.0.0
class="center"	Center layer	--	--	7.0.0
class="centerv"	Vertically center layer	--	--	7.0.0
class="centerh"	Horizontally center layer	--	--	7.0.0
class="left"	Show the layer on the left	--	--	7.0.0
class="right"	Show the layer on the right	--	--	7.0.0
class="top"	Show the layer on the top	--	--	7.0.0
class="bottom"	Show the layer on the bottom	--	--	7.0.0

The <layer-header> component template properties:

<b>Property</b>	<b>Description</b>	<b>Type</b>	<b>Default value</b>	<b>Version</b>
title	Title contents	string	"	7.0.0
icon-class	Title icon	string	"	7.0.0

## Methods

<b>Method</b>	<b>Description</b>	<b>Version</b>
showappendTo: HTMLElement: void	Append the layer components to a specified DOM node, and show.	7.0.0
openappendTo: HTMLElement: void	Function same as show()	7.0.0
hide(): void	Hide layer	7.0.0

Method	Description	Version
close(): void	Hide and destroy layer	7.0.0

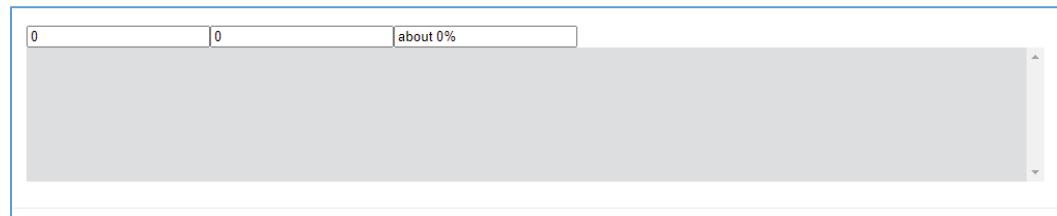
### Events

Name	Description	Sample	Version
shown	Triggered after the layer displays	layer.on('shown', () => void)	7.0.0
hidden	Triggered after the layer is hidden	layer.on('hidden', () => void)	7.0.0
closed	Triggered after the layer is hidden and destroyed	layer.on('closed', () => void)	7.0.0

## Number component

The number component is used for number inputs. Its features include the input number range, the step gradient, the display effects, etc.

### Code example



```
<html>
<template id="layout-template">
<webpdf>
<div class="flex-container">
<number @tooltip tooltip-placement="right" tooltip-title="Any non numeric characters will be rejected" min="0"></number>
<number @tooltip tooltip-title="min=0,max=100,step=0.1" min="0" max="100" step="0.1"></number>
<number @tooltip tooltip-title="use prefix and suffix" min="0" max="100" step="0.1" prefix="about " suffix="%"></number>
</div>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
```

```
</html>
<style>
.flex-container {
    display: flex;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## API

### Number component template

```
<number min="0" max="100" step="0.1" prefix="about " suffix="%"></number>
```

#### Methods

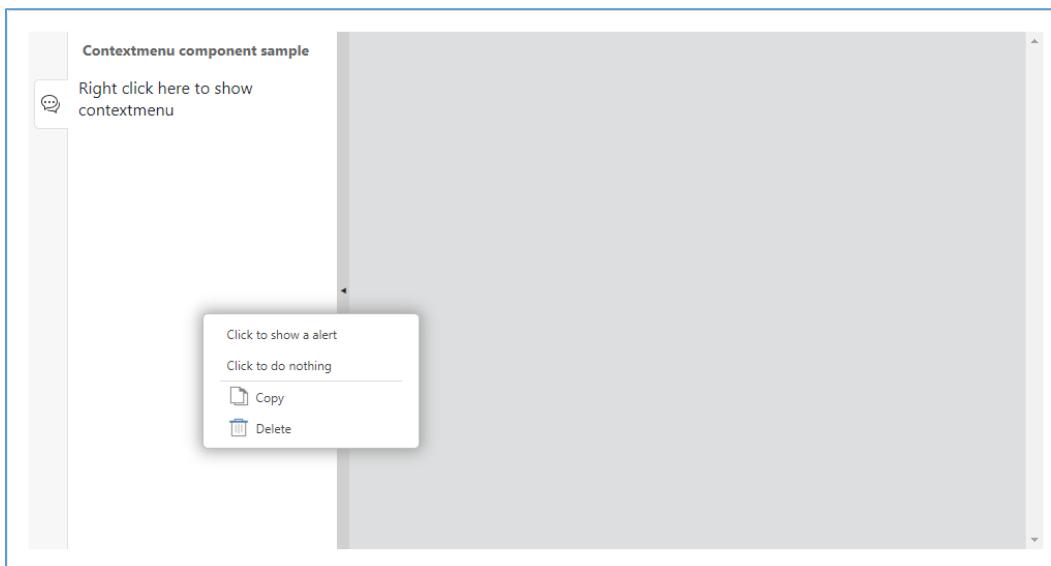
Method	Description	Version
setValue(value: number)	Set the value. If the value is not in the specified range and step, it will be automatically formatted. Calling this method won't trigger the change event.	7.1.0
getValue(): number	Get the current value	7.1.0

## Events

Name	Description	Sample	Version
change	Triggered when the user enters a number and blurs focus	number.on('change', (newValue, oldValue) => void)	7.1.0

## Contextmenu component

### Code examples



```
<html>
<template id="layout-template">
  <webpdf>
    <div class="fv__ui-body">
      <sidebar open>
        <sidebar-panel icon-class="fv__icon-sidebar-comment-list" @controller="custom:CustomController" title="Contextmenu component sample">
          <text>Right click here to show contextmenu</text>
        </sidebar-panel>
      </sidebar>
      <viewer></viewer>
    </div>
  <template>
    <contextmenu name="fv--custom-contextmenu">
      <contextmenu-item @controller="custom:AlertDialogController">Click to show a alert</contextmenu-item>
      <contextmenu-item>Click to do nothing</contextmenu-item>
      <contextmenu-separator></contextmenu-separator>
      <contextmenu-item icon-class="fv__icon-comment-item-menu-copy">Copy</contextmenu-item>
    </contextmenu>
  </template>
</webpdf>
</template>
```

```
<contextmenu-item icon-class="fv__icon-comment-item-menu-delete">Delete</contextmenu-item>
</contextmenu>
</template>
</webpdf>
</template>
</html>
<script>
UIExtension.PDFUI.module('custom', [])
.controller('AlertDialogController', {
  handle: function() {
    this.getPDFUI().alert('Hello World');
  }
})
.controller('CustomController', {
  mounted: function() {
    this.component.active();
    var element = this.component.getContainerElement();
    var contextmenu = this.getComponentByName('fv--custom-contextmenu');
    var rect = element.getBoundingClientRect();
    contextmenu.showAt(rect.left + rect.width/2, rect.top + rect.height / 2);
    element.addEventListener('contextmenu', function(e) {
      contextmenu.showAt(e.clientX, e.clientY);
      e.preventDefault();
    });
  }
});
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
  appearance: CustomAppearance,
  addons: []
});
</script>
```

## API

### Contextmenu component template

Template example:

```
<contextmenu name="fv--custom-contextmenu">
  <contextmenu-item>Click to show a alert</contextmenu-item>
  <contextmenu-item>Click to do nothing</contextmenu-item>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item icon-class="fv_icon-comment-item-menu-copy">Copy</contextmenu-item>
  <contextmenu-item icon-class="fv_icon-comment-item-menu-delete">Delete</contextmenu-item>
</contextmenu>
```

## Methods

Contextmenu methods

Method	Description	Version
showAt(x: number, y: number):void	Shows on the specified coordinates, where the x and y axes are relative to the browser viewport.	7.2.0

For more information, you may check [layer component](#).

Contextmenun item method:

For details, you may check [button component](#).

## Events

Contextmenu events are same as [layer component](#).

## Viewer component

The `<viewer>` component is used to render PDF. It is required in the layout template. Below is a basic layout template example:

```
<webpdf>
  <viewer></viewer>
</webpdf>
```

Runnable example:



```
<html>
  <div id="pdf-ui"></div>
  <template id="layout-template">
    <webpdf>
      <viewer></viewer>
    </webpdf>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 4180px;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
</style>
```

```
</style>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: '#pdf-ui',
        appearance: CustomAppearance,
        addons: []
    });

    var origin = window.top.location.origin;
    var url = origin + window.top.location.href.slice(origin.length).replace(/((\?.*)?\vdocs\v).*/,
        '$1FoxitPDFSDKforWeb_DemoGuide.pdf');
    pdfui.openPDFByHttpRangeRequest({
        range: {
            url: url,
        }
    }, { fileName: 'FoxitPDFSDKforWeb_DemoGuide.pdf' })

    window.addEventListener(UIExtension.PDFViewCtrl.DeviceInfo.isDesktop ? 'resize' : 'orientationchange',
    function(e) {
        pdfui.redraw().catch(function(err) {console.log(err)});
    });
</script>
```

By default, the PDFUI container has no size limit. In order to display the scroller, you should set the height for PDFUI based on your real viewer size.



```
<html>
  <div id="pdf-ui"></div>
  <template id="layout-template">
    <webpdf>
      <viewer></viewer>
    </webpdf>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 4180px;
  }
  /* PDFUI container style */
  #pdf-ui {
    position: relative;
    top: 50px;
    height: 500px;
  }
</style>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
```

```

libPath: libPath,
jr: {
    licenseSN: licenseSN,
    licenseKey: licenseKey
},
renderTo: '#pdf-ui',
appearance: CustomAppearance,
addons: []
});

var origin = window.top.location.origin;
var url = origin + window.top.location.href.slice(origin.length).replace(/((V.*)?\docs\V).*/, 
'$1FoxitPDFSDKforWeb_DemoGuide.pdf');
pdfui.openPDFByHttpRangeRequest({
    range: {
        url: url,
    }
}, { fileName: 'FoxitPDFSDKforWeb_DemoGuide.pdf' })

window.addEventListener(UIExtension.PDFViewCtrl.DeviceInfo.isDesktop ? 'resize' : 'orientationchange',
function(e) {
    pdfui.redraw().catch(function(err) {console.log(err)});
});
</script>

```

To achieve drag, zoom and scroll on a rendered PDF page, you should reference directives in your `<viewer>` component.

Usage snippet:

```
<viewer @zoom-on-pinch @zoom-on-doubletap @zoom-on-wheel @touch-to-scroll></viewer>
```

Directives:

Directive	Function
@zoom-on-pinch	Pinch to zoom
@zoom-on-doubletap	Double click to zoom
@zoom-on-wheel	Ctrl + mouse wheel to zoom
@touch-to-scroll	Drag to scroll

## Form-group component

The <form-group> component is used to add certain controls with a specific structure to a form. It is the easy way to organize the layout of input components and labels, and to provide the help text.

**Note:** The <form-group> currently is used only for the "fv--comparison-select-pdf-file-dialog".

### Code Examples

#### Label Text

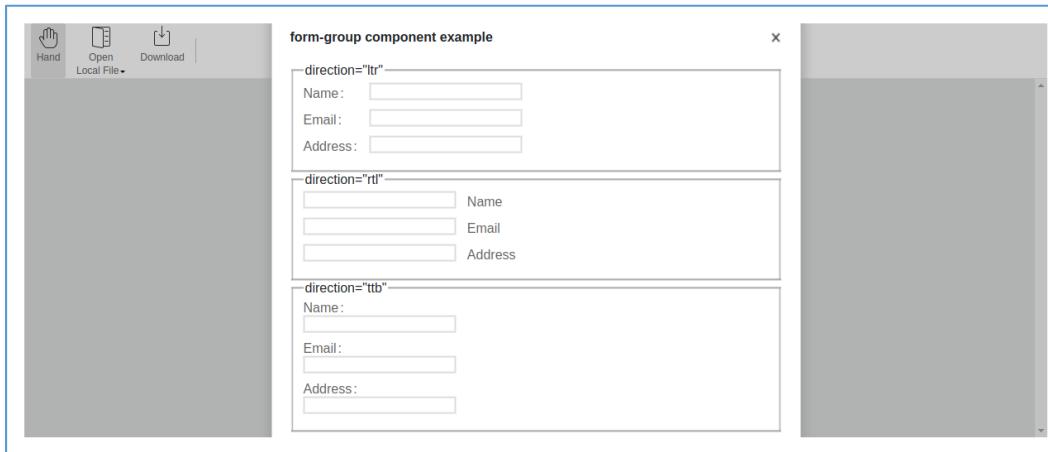
The label text of the form component is used to provide a description of an input component.

#### Label Text Layout

The label text for the form-group component provides three types of form layouts, ltr, rtl and ttb:

- The ltr and rtl are horizontal layouts, and the label text and the input component display on the same line.
- The ltr in layout is that the label text appears on the left side of the input component.
- The rtl in layout is that the label text appears to the right of the input component.
- The ttb is a vertical layout, means Top-To-Bottom, where the label text appears above the input component.

The following example demonstrates the effect of these three layouts:



```
<html>
<template id="layout-template">
<webpdf>
<toolbar>
<group-list>
<group name="home-tab-group-hand">
<hand-ribbon-button></hand-ribbon-button>
```

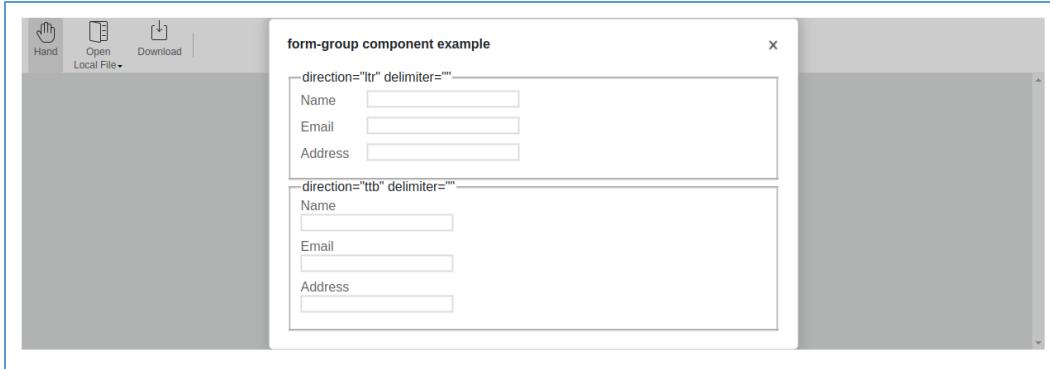
```
<open-file-ribbon-dropdown></open-file-ribbon-dropdown>
<download-file-ribbon-button></download-file-ribbon-button>
</group>
</group-list>
</toolbar>
<div class="fv__ui-body">
  <viewer></viewer>
</div>
<template name="template-container">
  <layer class="center" visible="true" backdrop style="width: 640px">
    <layer-header title="form-group component example" @draggable="{type: 'parent'}"></layer-
header>
    <layer-view>
      <fieldset>
        <legend>direction="ltr"</legend>
        <form-group label="Name">
          <input>
        </form-group>
        <form-group label="Email">
          <input type="email">
        </form-group>
        <form-group label="Address">
          <input type="address">
        </form-group>
      </fieldset>
      <fieldset>
        <legend>direction="rtl"</legend>
        <form-group label="Name" direction="rtl">
          <input>
        </form-group>
        <form-group label="Email" direction="rtl">
          <input type="email">
        </form-group>
        <form-group label="Address" direction="rtl">
          <input type="address">
        </form-group>
      </fieldset>
      <fieldset>
        <legend>direction="ttb"</legend>
        <form-group label="Name" direction="ttb">
          <input>
        </form-group>
        <form-group label="Email" direction="ttb">
          <input type="email">
        </form-group>
      </fieldset>
    </layer-view>
  </layer>
</template>
```

```
</form-group>
<form-group label="Address" direction="ttb">
    <input type="address">
</form-group>
</fieldset>
</layer-view>
</layer>
</template>
</webpdf>
</template>
</html>
<style>
.fv__ui-form-group-label {
    width: 5em;
}
.fv__ui-form-group {
    margin-bottom: 10px;
    color: #666;
}
input {
    border: 1px solid #ddd;
    margin-right: 1em;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

```
</script>
```

### Label Delimiter

In the example above, the label delimiter : takes place automatically when the direction is set to ltr and ttb. If the delimiter sign is not required, you can include delimiter inside the <legend> tag but leave its value blank to hide it:



```
<html>
<template id="layout-template">
<webpdf>
<toolbar>
<group-list>
<group name="home-tab-group-hand">
<hand-ribbon-button></hand-ribbon-button>
<open-file-ribbon-dropdown></open-file-ribbon-dropdown>
<download-file-ribbon-button></download-file-ribbon-button>
</group>
</group-list>
</toolbar>
<div class="fv__ui-body">
<viewer></viewer>
</div>
<template name="template-container">
<layer class="center" visible="true" backdrop style="width: 640px">
<layer-header title="form-group component example" @draggable="{type: 'parent'}"></layer-
header>
<layer-view>
<fieldset>
<legend>direction="ltr" delimiter=""</legend>
<form-group label="Name" delimiter="">
<input>
</form-group>
```

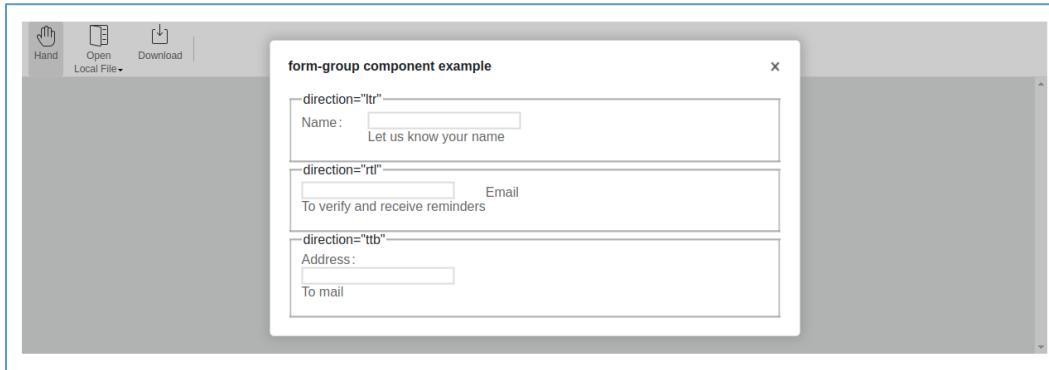
```
<form-group label="Email" delimiter="">
    <input type="email">
</form-group>
<form-group label="Address" delimiter="">
    <input type="address">
</form-group>
</fieldset>
<fieldset>
    <legend>direction="ttb" delimiter=""</legend>
    <form-group label="Name" direction="ttb" delimiter="">
        <input>
    </form-group>
    <form-group label="Email" direction="ttb" delimiter="">
        <input type="email">
    </form-group>
    <form-group label="Address" direction="ttb" delimiter="">
        <input type="address">
    </form-group>
</fieldset>
</layer-view>
</layer>
</template>
</webpdf>
</template>
</html>
<style>
.fv_ui-form-group-label {
    width: 5em;
}
.fv_ui-form-group {
    margin-bottom: 10px;
    color: #666;
}
input {
    border: 1px solid #ddd;
    margin-right: 1em;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
})
```

```
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

### Help Text

The help text is optional and is primarily used to display component descriptive information, and the content can be set through the description property, which supports i18n.

The following example shows the help text styles in the different layouts:



```
<html>
<template id="layout-template">
    <webpdf>
        <toolbar>
            <group-list>
                <group name="home-tab-group-hand">
                    <hand-ribbon-button></hand-ribbon-button>
                    <open-file-ribbon-dropdown></open-file-ribbon-dropdown>
                    <download-file-ribbon-button></download-file-ribbon-button>
                </group>
            </group-list>
        </toolbar>
    </webpdf>
</template>
<body>
    <div>
        <div>
            <div>
                <div>
                    <div>
                        <div>
                            <div>
                                <div>
                                    <div>
                                        <div>
                                            <div>
                                                <div>
                                                    <div>
                                                        <div>
                                                            <div>
                                                                <div>
                                                                    <div>
                                                                        <div>
                                                                            <div>
                                                                                <div>
                                                                                    <div>
                                                                                        <div>
                                                                                            <div>
                                                                                                <div>
                                                                                                    <div>
                                                                                                        <div>
                                                                                                            <div>
                                                                                                                <div>
                                                                                                                    <div>
                                                                                                                        <div>
                                                                                                                            <div>
                                                                                                                                <div>
                                                                                                                                    <div>
                                                                                                                                        <div>
                                                                                                                                            <div>
                                                                                                                                                <div>
                                                                                                                                                    <div>
................................................................
```

```
</toolbar>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
<template name="template-container">
    <layer class="center" visible="true" backdrop style="width: 640px">
        <layer-header title="form-group component example" @draggable="{type: 'parent'}"></layer-
header>
    <layer-view>
        <fieldset>
            <legend>direction="ltr"</legend>
            <form-group label="Name" description="Let us know your name">
                <input>
            </form-group>
        </fieldset>
        <fieldset>
            <legend>direction="rtl"</legend>
            <form-group label="Email" direction="rtl" description="To verify and receive reminders">
                <input type="email">
            </form-group>
        </fieldset>
        <fieldset>
            <legend>direction="ttb"</legend>
            <form-group label="Address" direction="ttb" description="To mail">
                <input type="address">
            </form-group>
        </fieldset>
    </layer-view>
</layer>
</template>
</webpdf>
</template>
</html>
<style>
    .fv__ui-form-group-label {
        width: 5em;
    }
    .fv__ui-form-group {
        margin-bottom: 10px;
        color: #666;
    }
    input {
        border: 1px solid #ddd;
        margin-right: 1em;
    }

```

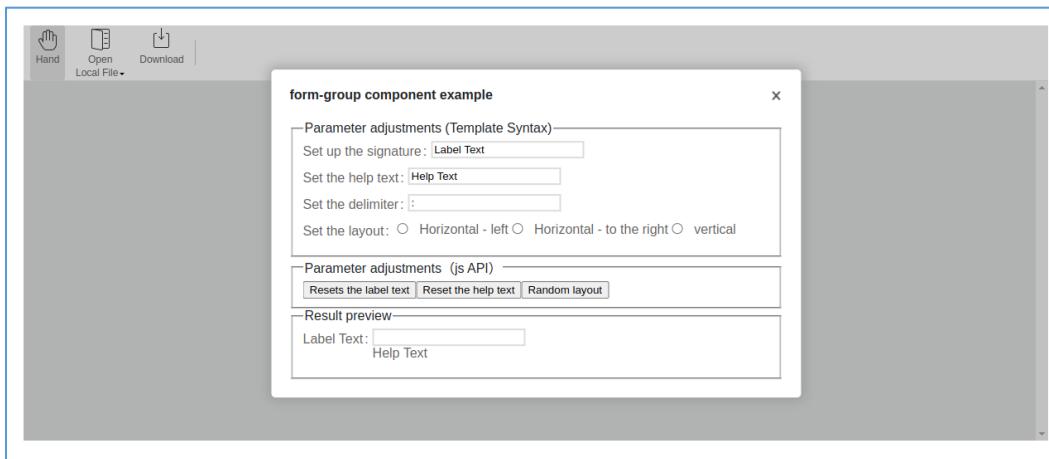
```

        }
    </style>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>

```

### Set Parameters Dynamically

The parameters of the form-group component can be dynamically modified via the template or js, see the following example:



```

<html>
    <template id="example-dialog-template">
        <layer class="center" backdrop style="width: 640px" @var.comp="$component">

```

```
<layer-header title="form-group component example" @draggable="{type: 'parent'}"></layer-header>
<layer-view>
  <fieldset>
    <legend>Parameter adjustments (Template Syntax)</legend>
    <form-group label="Set up the signature">
      <input @model="comp.label">
    </form-group>
    <form-group label="Set the help text">
      <input @model="comp.description">
    </form-group>
    <form-group label="Set the delimiter">
      <input @model="comp.delimiter">
    </form-group>
    <form-group label="Set the layout" tag="div">
      <radio name="form-group-direction" @model="comp.direction" value="ltr" text="Horizontal - left"></radio>
      <radio name="form-group-direction" @model="comp.direction" value="rtl" text="Horizontal - to the right"></radio>
      <radio name="form-group-direction" @model="comp.direction" value="ttb" text="vertical"></radio>
    </form-group>
  </fieldset>
  <fieldset>
    <legend>Parameter adjustments (js API) </legend>
    <button @on.click="comp.resetLabel()">Resets the label text</button>
    <button @on.click="comp.resetDescription()">Reset the help text</button>
    <button @on.click="comp.resetDirection()">Random layout</button>
  </fieldset>
  <fieldset>
    <legend>Result preview</legend>
    <form-group
      @setter.label="comp.label"
      @setter.description="comp.description"
      @setter.delimiter="comp.delimiter"
      @setter.direction="comp.direction"
      @init="comp.formGroupComponent = $component"
    >
      <input>
    </form-group>
  </fieldset>
</layer-view>
</layer>
</template>
<template id="layout-template">
```

```
<webpdf>
  <toolbar>
    <group-list>
      <group name="home-tab-group-hand">
        <hand-ribbon-button></hand-ribbon-button>
        <open-file-ribbon-dropdown></open-file-ribbon-dropdown>
        <download-file-ribbon-button></download-file-ribbon-button>
      </group>
    </group-list>
  </toolbar>
  <div class="fv__ui-body">
    <viewer></viewer>
  </div>
  <template name="template-container">
    <exp:example-dialog visible="true"></exp:example-dialog>
  </template>
</webpdf>
</template>
</html>
<style>
.fv__ui-form-group {
  margin-bottom: 10px;
  color: #666;
}
input {
  border: 1px solid #ddd;
  margin-right: 1em;
}
</style>
<script>
  class ExampleDialog extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: document.getElementById('example-dialog-template').innerHTML
  }) {
    static getName() {
      return 'example-dialog'
    }
    init() {
      super.init();
      this.delimiter = ':';
      this.description = 'Help Text';
      this.label = 'Label Text';
      this.direction = 'ltr';
    }
    resetLabel() {

```

```
this.formGroupComponent.setLabel(  
    this.label = new Date().toUTCString()  
);  
this.digest();  
}  
resetDescription() {  
    this.formGroupComponent.setDescription(  
        this.description = 'Help Text: ' + new Date().toUTCString()  
    );  
    this.digest();  
}  
resetDirection() {  
    this.formGroupComponent.setDirection(  
        this.direction = ['ltr', 'rtl', 'ttb'][Math.floor(Math.random() * 3)]  
    );  
    this.digest();  
}  
}  
UIExtension.modular.module('exp', []).registerComponent(ExampleDialog);  
var CustomAppearance = UIExtension.appearances.Appearance.extend({  
    getLayoutTemplate: function() {  
        return document.getElementById('layout-template').innerHTML;  
    },  
    disableAll: function(){  
    };  
    var libPath = window.top.location.origin + '/lib';  
    var pdfui = new UIExtension.PDFUI({  
        viewerOptions: {  
            libPath: libPath,  
            jr: {  
                licenseSN: licenseSN,  
                licenseKey: licenseKey  
            }  
        },  
        renderTo: document.body,  
        appearance: CustomAppearance,  
        addons: []  
    });  
});  
</script>
```

## API

form-group Component Templates:

```
<form-group delimiter=":" direction="ltr" label="" description="">
  <input>
</form-group>
```

Descriptions for each property of the form-group :

Attribute	Description	Type	The default value	Version
delimiter	The delimiter after the label text, invalid when direction is rtl	string	:	8.5.0
direction	The way to lay out the label text and input components.	'ltr'   'rtl'   'ttb'	'ltr'	8.5.0
label	Label text	string	"	8.5.0
description	The help text under the input component	string	"	8.5.0

## Methods

form-group components' methods

Method	Description	Version
setDelimiter(delimiter: string)	Modify the delimiter	8.5.0
setDirection(direction: 'ltr'   'rtl'   'ttb')	Modify the layout way	8.5.0
setLabel(label: string)	Modify the label text	8.5.0
setDescription(description: string)	Modify the help text	8.5.0

## Events

The form-group component does not define events.

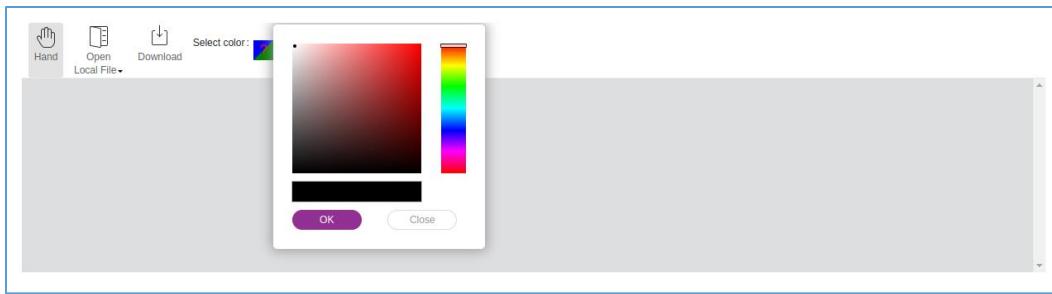
## Inline-color-picker components

The inline-color-picker component displays a rectangular box on the UI, from where a user clicks to bring up a color picker palette and select colors.

**Note:** inline-color-picker currently is only used for the "fv--comparison-select-pdf-file-dialog".

### Code examples

The following example shows the basic usage of the inline-color-picker component:



```
<html>
  <template id="layout-template">
    <webpdf>
      <toolbar>
        <group-list shrink-size="0">
          <group name="home-tab-group-hand">
            <hand-ribbon-button></hand-ribbon-button>
            <open-file-ribbon-dropdown></open-file-ribbon-dropdown>
            <download-file-ribbon-button></download-file-ribbon-button>
            <form-group label="Select color">
              <inline-color-picker></inline-color-picker>
            </form-group>
          </group>
        </group-list>
      </toolbar>
      <div class="fv_ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<style>
</style>
<script>
```

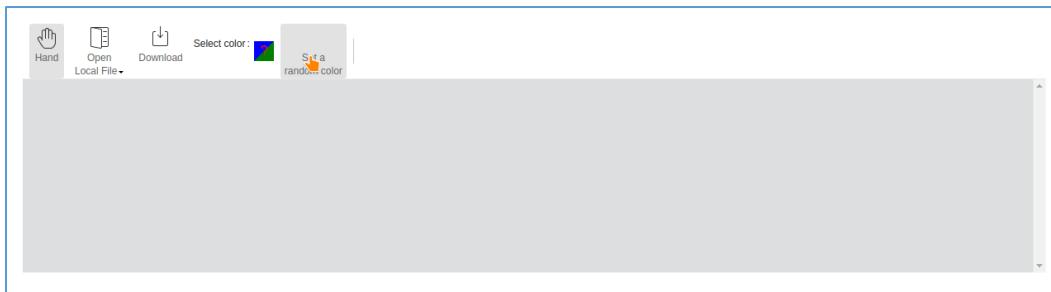
```

var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

Set the current color displayed on the rectangle by using API:



```

<html>
    <template id="layout-template">
        <webpdf>
            <toolbar>
                <group-list shrink-size="0">
                    <group name="home-tab-group-hand" @var.grp="$component">
                        <hand-ribbon-button></hand-ribbon-button>
                        <open-file-ribbon-dropdown></open-file-ribbon-dropdown>
                        <download-file-ribbon-button></download-file-ribbon-button>
                        <form-group label="Select color">
                            <inline-color-picker @init="grp.colorPicker=$component"></inline-color-picker>
                        </form-group>
                    </group>
                </group-list>
            </toolbar>
        </webpdf>
    </template>
</html>

```

```
<ribbon-button @on.click="grp.colorPicker.setValue(Math.floor(Math.random() * 0xFFFFFFFF))">  
text="Set a random color"</ribbon-button>  
</group>  
</group-list>  
</toolbar>  
<div class="fv__ui-body">  
  <viewer></viewer>  
  </div>  
</webpdf>  
</template>  
</html>  
<style>  
  
</style>  
<script>  
  var CustomAppearance = UIExtension.appearances.Appearance.extend({  
    getLayoutTemplate: function() {  
      return document.getElementById('layout-template').innerHTML;  
    },  
    disableAll: function(){  
    });  
  var libPath = window.top.location.origin + '/lib';  
  var pdfui = new UIExtension.PDFUI({  
    viewerOptions: {  
      libPath: libPath,  
      jr: {  
        licenseSN: licenseSN,  
        licenseKey: licenseKey  
      }  
    },  
    renderTo: document.body,  
    appearance: CustomAppearance,  
    addons: []  
  });  
</script>
```

## API

inline-color-picker component templates

```
<inline-color-picker></inline-color-picker>
```

## Methods

Method	Description	Version
setValue(color: number   Color)	Sets the current color value	8.5.0
getValue(): Color	Gets the current color value	8.5.0

### **Events**

Name	Description	Example	Version
change	Triggered when the user selects a color	inlineColorPicker.on('change', (color) => {})	8.5.0

## **Tree Component**

The Tree Component is a powerful UI component that integrates functionalities such as selection, dragging, editing, and lazy loading. This section will introduce how to create a tree component and the usage of its key interfaces and events through examples.

The article will involve some APIs and event names of the Tree Component. For related information, please refer to the API Reference as below:

[TreeComponent](#), [TreeNodeComponent](#) , [TreeNodeData](#)

### **Getting Started**

#### **Create a Tree Component**

As the code snippet below shows, you can create a Tree Component by using the `<tree>` tag in the template. The Tree Component supports three attributes:

1. `draggable`: Indicates whether the dragging feature is enabled. It is disabled by default. Once enabled, tree nodes can be dragged onto other tree nodes, triggering the `dragend` event.
2. `editable`: Indicates whether the editing feature is enabled. It is disabled by default. Once enabled, the text on the tree nodes can be edited by double-clicking, and the `confirm-edit` event is triggered upon hitting enter to confirm the update.
3. `lazy-mode`: Represents the mode for lazy loading child nodes. The default is "`none`", which indicates that delayed loading is not enabled. When set to "`passive`", child nodes are only

created and rendered when they are within the visible area, which can improve performance when there are a large number of child nodes.

```
<tree
  draggable="true"
  editable="true"
  lazy-mode="passive"
></tree>
```

### Display Data in the Tree Component

The previous example code simply creates a tree component and does not display any content, as no data is provided. There are two ways to display data in the tree component:

1. Use the `@setter.data="expression"` directive in the component template to specify the data binding relationship. The result returned by the expression will be used for the tree component's data display.
2. Update the data of the tree component through the [\[TreeComponent.setData\]](#) API.

Please note that these two methods cannot be used simultaneously to avoid unexpected results due to synchronization order issues.

Below are two examples of tree components demonstrated separately by directive and `setData`, please click [run](#) to execute:

1. Display data using the `@setter.data` directive:

```
<html>
  <div id="pdf-ui"></div>
  <template id="layout-template">
    <webpdf class="custom-webpdf-container">
      <my-tree class="my-tree-container"></my-tree>
      <viewer style="flex: 1"></viewer>
    </webpdf>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
}
```

```
.custom-webpdf-container {  
    display: flex;  
    flex-direction: row;  
}  
.my-tree-container {  
    width: 200px;  
    border-right: 1px solid #ddd;  
    overflow-y: scroll;  
}  
</style>  
<script>  
    class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({  
        template: `<div @var.my_tree="$component">  
            <tree  
                @setter.data="my_tree.treeData"  
            ></tree>  
            <xbutton @on.click="my_tree.handleClick()">Show More</xbutton>  
        </div>`  
    }) {  
        static getName() {  
            return 'my-tree'  
        }  
        treeData = [{  
            title: 'First',  
            id: '1'  
        }]  
        handleClick() {  
            this.treeData = [{  
                title: 'First',  
                id: '1'  
            }, {  
                title: 'Second',  
                id: '2'  
            }, {  
                title: 'Third',  
                id: '3',  
                isLeaf: false,  
                children: [{  
                    title: 'Fourth',  
                    id: '4'  
                }]  
            }];  
            this.digest();  
        }  
    }  
    UIExtension.modular.root().registerComponent(MyTreeComponent);  
  
    const CustomAppearance = UIExtension.appearances.Appearance.extend({  
        getLayoutTemplate: function() {  
            return document.getElementById('layout-template').innerHTML;  
        }  
    })
```

```
        },
        disableAll: function(){}
    });
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## 2. Display data using the `setData` API

```
<html>
    <div id="pdf-ui"></div>
    <template id="layout-template">
        <webpdf class="custom-webpdf-container">
            <my-tree class="my-tree-container"></my-tree>
            <viewer style="flex: 1"></viewer>
        </webpdf>
    </template>
</html>
<style>
    html{
        overflow:hidden;
    }
    body {
        height: 100vh;
    }
    #pdf-ui {
        position: relative;
        top: 50px;
    }
    .custom-webpdf-container {
        display: flex;
        flex-direction: row;
    }
    .my-tree-container {
        width: 200px;
        border-right: 1px solid #ddd;
        overflow-y: scroll;
    }
</style>
<script>
```

```

class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<div @var.my_tree="$component">
        <tree></tree>
        <xbutton @on.click="my_tree.handleClick()">Show Tree Data</xbutton>
    </div>`
}) {
    static getName() {
        return 'my-tree'
    }
    handleClick() {
        const tree = this.childAt(0);
        tree.setData([
            {
                title: 'First',
                id: '1'
            },
            {
                title: 'Second',
                id: '2'
            },
            {
                title: 'Third',
                id: '3',
                isLeaf: false,
                children: [
                    {
                        title: 'Fourth',
                        id: '4'
                    }
                ]
            }
        ])
    }
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>

```

## Create an editable tree

To create an editable tree, you need to set the `editable` attribute to `true` on the `<tree>` tag. This will allow the node name to be edited by double-clicking on the tree node text.

For example:

```
<tree editable="true"></tree>
```

After enabling the editing feature, when the tree node text is double-clicked, it will trigger an `edit` event. You can make the node data editable by updating it in the event listener function.

Once the editing is complete, you can listen to the `confirm-edit` event to get the text edited by the user.

Example:

```
<html>
  <div id="pdf-ui"></div>
  <template id="layout-template">
    <webpdf class="custom-webpdf-container">
      <my-tree class="my-tree-container"></my-tree>
      <viewer style="flex: 1"></viewer>
    </webpdf>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
  .custom-webpdf-container {
    display: flex;
    flex-direction: row;
  }
  .my-tree-container {
    width: 200px;
    border-right: 1px solid #ddd;
    overflow-y: scroll;
  }
</style>
<script>
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
```

```

template: `<div @var.my_tree="$component">
  <tree
    editable="true"
    @setter.data="my_tree.treeData"
    @on.confirm-edit="my_tree.onConfirmEdit($args[0])"
  ></tree>
</div>`
}) {
  static getName() {
    return 'my-tree'
  }
  treeData = [{{
    title: 'First',
    id: '1'
  }, {
    title: 'Second',
    id: '2'
  }, {
    title: 'Third',
    id: '3',
    isLeaf: false,
    children: [{{
      title: 'Fourth',
      id: '4'
    }}]
  }]
  onConfirmEdit(event) {
    console.log(event.oldTitle, event.newTitle, event.nodeId);
  }
}
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: '#pdf-ui',
  appearance: CustomAppearance,
  addons: []
})

```

```
});  
</script>
```

If you want to set a specific node to be uneditable, you can individually specify its data parameter `editable` as `false` in `treeData`.

Example:

```
<html>  
  <div id="pdf-ui"></div>  
  <template id="layout-template">  
    <webpdf class="custom-webpdf-container">  
      <my-tree class="my-tree-container"></my-tree>  
      <viewer style="flex: 1"></viewer>  
    </webpdf>  
  </template>  
</html>  
<style>  
  html{  
    overflow:hidden;  
  }  
  body {  
    height: 100vh;  
  }  
  #pdf-ui {  
    position: relative;  
    top: 50px;  
  }  
  .custom-webpdf-container {  
    display: flex;  
    flex-direction: row;  
  }  
  .my-tree-container {  
    width: 200px;  
    border-right: 1px solid #ddd;  
    overflow-y: scroll;  
  }  
</style>  
<script>  
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({  
    template: `<div @var.my_tree="$component">  
      <tree  
        editable="true"  
        @setter.data="my_tree.treeData"  
      ></tree>  
    </div>`  
  }) {  
    static getName() {  
      return 'my-tree'  
    }  
    treeData = [{
```

```

        title: 'First',
        id: '1'
    }, {
        title: 'Not editable',
        id: '2',
        editable: false
    }, {
        title: 'Third',
        id: '3',
        isLeaf: false,
        children: [{
            title: 'Fourth',
            id: '4'
        }]
    }
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

Please note that if you set the `editable` parameter of the tree component to `false`, you will not be able to individually specify whether a node is editable.

### Create a draggable tree

To make the tree component draggable, you need to enable the `draggable` attribute on the `<tree>` component:

```
<tree draggable="true"></tree>
```

In this way, you can drag tree nodes into other nodes. When the dragging ends, a `dragend` event will be triggered. Through the event parameters, you can obtain the data of the dragged node, the ID of the target node, and the relationship between nodes after dragging. Typically, at this point, the application needs to update the backend data based on this information.

Example:

```
<html>
  <div id="pdf-ui"></div>
  <template id="layout-template">
    <webpdf class="custom-webpdf-container">
      <my-tree class="my-tree-container"></my-tree>
      <viewer style="flex: 1"></viewer>
    </webpdf>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
  .custom-webpdf-container {
    display: flex;
    flex-direction: row;
  }
  .my-tree-container {
    width: 200px;
    border-right: 1px solid #ddd;
    overflow-y: scroll;
  }
</style>
<script>
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<div @var.my_tree="$component">
      <tree
        draggable="true"
        @setter.data="my_tree.treeData"
        @on.dragend="my_tree.handleDragendEvent($args[0])"
      ></tree>
    </div>`
  }) {
    static getName() {
      return 'my-tree'
```

```

}
treeData = [{  
    title: 'First',  
    id: '1'  
}, {  
    title: 'Second',  
    id: '2'  
}, {  
    title: 'Third',  
    id: '3',  
    isLeaf: false,  
    children: [{  
        title: 'Fourth',  
        id: '4'  
    }]  
}  
]  
handleDragendEvent(event) {  
    console.log('On dragend event', event)  
}  
}  
  
UIExtension.modular.root().registerComponent(MyTreeComponent);  
  
const CustomAppearance = UIExtension.appearances.Appearance.extend({  
    getLayoutTemplate: function() {  
        return document.getElementById('layout-template').innerHTML;  
    },  
    disableAll: function(){}
});  
const libPath = window.top.location.origin + '/lib';  
const pdfui = new UIExtension.PDFUI({  
    viewerOptions: {  
        libPath: libPath,  
        jr: {  
            licenseSN: licenseSN,  
            licenseKey: licenseKey  
        }  
    },  
    renderTo: '#pdf-ui',  
    appearance: CustomAppearance,  
    addons: []
});  
</script>

```

If you want to set a specific node to be non-draggable, you can individually specify its data parameter `draggable` as `false` in `treeData`.

Example:

```
<html>  
<div id="pdf-ui"></div>
```

```
<template id="layout-template">
  <webpdf class="custom-webpdf-container">
    <my-tree class="my-tree-container"></my-tree>
    <viewer style="flex: 1"></viewer>
  </webpdf>
</template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
  .custom-webpdf-container {
    display: flex;
    flex-direction: row;
  }
  .my-tree-container {
    width: 200px;
    border-right: 1px solid #ddd;
    overflow-y: scroll;
  }
</style>
<script>
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<div @var.my_tree="$component">
      <tree
        draggable="true"
        @setter.data="my_tree.treeData"
        @on.dragend="my_tree.handleDragendEvent($args[0])"
      ></tree>
    </div>`
  }) {
    static getName() {
      return 'my-tree'
    }
    treeData = [
      {
        title: 'First',
        id: '1'
      }, {
        title: 'Not draggable',
        id: '2',
        draggable: false
      }, {
        title: 'Third',
        id: '3',
      }
    ]
  }
</script>
```

```

isLeaf: false,
children: [{
    title: 'Fourth',
    id: '4'
}]
})
}
handleDragendEvent(event) {
    console.log('On dragend event:', event)
}
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

Please note that if the `draggable` of the tree component is specified as `false`, you will not be able to individually specify whether a node is draggable.

### Selectable tree node

To make the tree nodes selectable, you need to enable the `selectable` attribute on the `<tree>` component:

```
<tree selectable="true"></tree>
```

In this way, when a user clicks on a tree node, the `fv__ui-tree-node-selected` CSS class will be added to the node. The default appearance will not change, but your application can customize the appearance after selection. At the same time, the `select` event will be triggered.

```
<html>
```

```
<div id="pdf-ui"></div>
<template id="layout-template">
  <webpdf class="custom-webpdf-container">
    <my-tree class="my-tree-container"></my-tree>
    <viewer style="flex: 1"></viewer>
  </webpdf>
</template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
  .custom-webpdf-container {
    display: flex;
    flex-direction: row;
  }
  .my-tree-container {
    width: 200px;
    border-right: 1px solid #ddd;
    overflow-y: scroll;
  }
  .fv__ui-tree-node-selected>.fv__ui-tree-node-wrapper {
    color: red;
  }
</style>
<script>
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<div @var.my_tree="$component">
      <tree
        selectable="true"
        @setter.data="my_tree.treeData"
        @on.select="my_tree.handleSelectEvent($args[0])"
      ></tree>
    </div>`
  }) {
    static getName() {
      return 'my-tree'
    }
    treeData = [
      {
        title: 'First',
        id: '1'
      },
      {
        title: 'Second',
        id: '2'
      }
    ]
  }
</script>
```

```

}, {
    title: 'Third',
    id: '3',
    isLeaf: false,
    children: [{
        title: 'Fourth',
        id: '4'
    }]
}]
handleSelectEvent(nodeId) {
    console.log('On select event:', nodeId)
}
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>

```

If you want to specify a node as unselectable, you can individually set its data parameter `selectable` to `false` in `treeData`.

Example:

```

<html>
    <div id="pdf-ui"></div>
    <template id="layout-template">
        <webpdf class="custom-webpdf-container">
            <my-tree class="my-tree-container"></my-tree>
            <viewer style="flex: 1"></viewer>
        </webpdf>
    </template>
</html>

```

```
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
  .custom-webpdf-container {
    display: flex;
    flex-direction: row;
  }
  .my-tree-container {
    width: 200px;
    border-right: 1px solid #ddd;
    overflow-y: scroll;
  }
  .fv__ui-tree-node-selected>.fv__ui-tree-node-wrapper {
    color: red;
  }
</style>
<script>
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<div @var.my_tree="$component">
      <tree
        selectable="true"
        @setter.data="my_tree.treeData"
        @on.select="my_tree.handleSelectEvent($args[0])"
      ></tree>
    </div>`
  }) {
    static getName() {
      return 'my-tree'
    }
    treeData = [
      {
        title: 'First',
        id: '1'
      }, {
        title: 'Not selectable',
        id: '2',
        selectable: false
      }, {
        title: 'Third',
        id: '3',
        isLeaf: false,
        children: [
          {
            title: 'Fourth',
            id: '4'
          }
        ]
      }
    ]
  }
</script>
```

```

        }]
    })
    handleSelectEvent(nodeId) {
        console.log('On select event:', nodeId)
    }
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

Please note that if the `selectable` of the tree component is specified as `false`, you will not be able to individually specify whether a node is selectable.

### The states of the tree node

Tree nodes have the following states:

- `disabled`: Whether it is disabled or not, default is `false`. A disabled tree node cannot be edited, selected, or dragged.
- `activated`: Whether the subtree is expanded or not, default is `false`. If the node is a leaf node, setting this value will have no effect.
- `selected`: Whether it is selected or not, default is `false`. If the node is unselectable, setting this value will have no effect.
- `editing`: Whether editing is enabled or not, default is `false`. If the node is uneditable, setting this value will have no effect.

Example:

```
<html>
  <div id="pdf-ui"></div>
  <template id="layout-template">
    <webpdf class="custom-webpdf-container">
      <my-tree class="my-tree-container"></my-tree>
      <viewer style="flex: 1"></viewer>
    </webpdf>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
  .custom-webpdf-container {
    display: flex;
    flex-direction: row;
  }
  .my-tree-container {
    width: 200px;
    border-right: 1px solid #ddd;
    overflow-y: scroll;
  }
  .fv_ui-tree-node-selected>.fv_ui-tree-node-wrapper {
    color: red;
  }
</style>
<script>
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<div @var.my_tree="$component">
      <tree
        selectable="true"
        draggable="true"
        editable="true"
        @setter.data="my_tree.treeData"
      ></tree>
    </div>`
  }) {
    static getName() {
      return 'my-tree'
    }
    treeData = [
      {
        title: 'Selected',
        id: '1',
        selected: true
      }
    ]
  }
</script>
```

```
}, {
    title: 'Editting',
    id: '2',
    editting: true
}, {
    title: 'Expanded',
    id: '3',
    isLeaf: false,
    activated: true,
    children: [
        {
            title: 'Sub node',
            id: '4'
        }
    ],
    {
        title: 'Disabled',
        id: '5',
        disabled: true,
    }
}
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## Lazy Mode

Lazy mode does not refer to data delay, but rendering delay. Considering that there may be a large number of tree nodes, inserting too many DOM nodes into the browser at once can cause display stuttering. To address this, the tree component provides a lazy mode `lazy-mode="passive"`, which can display tree nodes as needed.

Example of using Lazy Mode:

```
<html>
  <div id="pdf-ui"></div>
  <template id="layout-template">
    <webpdf class="custom-webpdf-container">
      <my-tree class="my-tree-container"></my-tree>
      <viewer style="flex: 1"></viewer>
    </webpdf>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
  .custom-webpdf-container {
    display: flex;
    flex-direction: row;
  }
  .my-tree-container {
    width: 200px;
    border-right: 1px solid #ddd;
    overflow-y: scroll;
  }
  .fv__ui-tree-node-selected>.fv__ui-tree-node-wrapper {
    color: red;
  }
</style>
<script>
  class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
    template: `<div @var.my_tree="$component">
      <tree
        selectable="true"
        draggable="true"
        editable="true"
        lazy-mode="passive"
        @setter.data="my_tree.treeData"
      ></tree>
    </div>`
  }) {
    static getName() {
      return 'my-tree'
    }
    treeData = [{
```

```

        title: 'More than 10000+ Children',
        id: '1',
        isLeaf: false,
        children: Array(10000).fill(0).map((_,i) => {
            return {
                title: "" + (Date.now() + i).toString(26),
                id: Date.now() + i
            };
        })
    });
}

UIExtension.modular.root().registerComponent(MyTreeComponent);

const CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

Example without using Lazy Mode:

```

<html>
    <div id="pdf-ui"></div>
    <template id="layout-template">
        <webpdf class="custom-webpdf-container">
            <my-tree class="my-tree-container"></my-tree>
            <viewer style="flex: 1"></viewer>
        </webpdf>
    </template>
</html>
<style>
    html{
        overflow:hidden;
    }
    body {
```

```

        height: 100vh;
    }
    #pdf-ui {
        position: relative;
        top: 50px;
    }
    .custom-webpdf-container {
        display: flex;
        flex-direction: row;
    }
    .my-tree-container {
        width: 200px;
        border-right: 1px solid #ddd;
        overflow-y: scroll;
    }
    .fv__ui-tree-node-selected>.fv__ui-tree-node-wrapper {
        color: red;
    }
</style>
<script>
    class MyTreeComponent extends UIExtension.SeniorComponentFactory.createSuperClass({
        template: `<div @var.my_tree="$component">
            <tree
                selectable="true"
                draggable="true"
                editable="true"
                lazy-mode="none"
                @setter.data="my_tree.treeData"
            ></tree>
        </div>`
    }) {
        static getName() {
            return 'my-tree'
        }
        treeData = [
            title: 'More than 10000+ Children',
            id: '1',
            isLeaf: false,
            children: Array(10000).fill(0).map((_,i) => {
                return {
                    title: "" + (Date.now() + i).toString(26),
                    id: Date.now() + i
                };
            })
        ];
    }
    UIExtension.modular.root().registerComponent(MyTreeComponent);

    const CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {

```

```

        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

When running the above two examples and clicking to expand a subtree with over 10,000 nodes, it can be observed that without the use of lazy mode, the browser exhibits noticeable stuttering at the outset.

## Business Components

### Pre-configured component

Pre-configured components are set in advance with text, icons, event handling and other information and assigning an alias, and then use alias in layout template directory. It is useful to simplify the template and reuse component in different appearance templates.

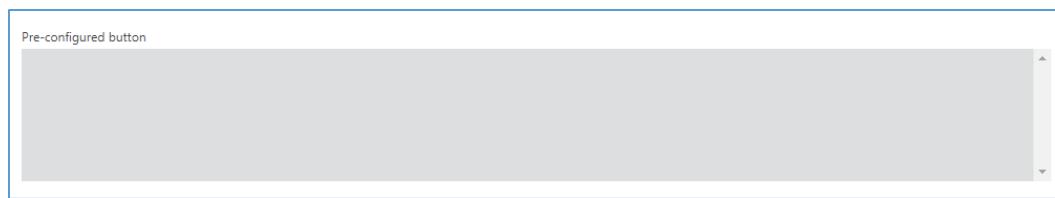
#### *Custom pre-configured component*

##### **registerPreConfiguredComponent API**

```

PDFUI.module('custom', [])
.registerPreConfiguredComponent('alias-button', {
    template: '<xbutton name="pre-configured-button"></xbutton>',
    config: [{
        target: 'pre-configured-button',
        text: 'Pre-configured button'
    }]
})
```

Runnable example:



```
<html>
<template id="layout-template">
<webpdf>
<div>
<custom:alias-button></custom:alias-button>
</div>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
UIExtension.PDFUI.module('custom', [])
.registerPreConfiguredComponent('alias-button', {
  template: '<xbutton name="pre-configured-button">Pre-configured button</xbutton>',
  config: [
    {
      target: 'pre-configured-button',
      callback: function() {
        alert('click pre-configured button')
      }
    }
  ]
});
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
  appearance: CustomAppearance,
  addons: []
});
</script>
```

**Built-in pre-configured components**

**<hand-button>**

From version 8.2.0, `<hand-ribbon-button>` is used by default.

Switch the state-handler to `STATE_HANDLER_HAND`

Component usage:

```
<hand-button></hand-button>
```

Equivalent to:

```
<xbutton @tooltip tooltip-title="toolbar.tooltip.hand.title" name="hand-tool" icon-class="fv_icon-toolbar-hand" @controller="states:HandController"></xbutton>
```

**<hand-ribbon-button>**

Added in version 8.2.0.

Switch the state-handler to `STATE_HANDLER_HAND`.

Component usage:

```
<hand-ribbon-button></hand-ribbon-button>
```

Equivalent to:

```
<ribbon-button text="toolbar.tooltip.hand.title" @tooltip tooltip-title="toolbar.tooltip.hand.title" name="hand-tool" icon-class="fv_icon-toolbar-hand" @controller="states:HandController"></ribbon-button>
```

**<selection-dropdown>**

From version 8.2.0, `<selection-ribbon-dropdown>` is used by default.

A dropdown with select-text-image button and select-annotation button.

component usage:

```
<selection-dropdown></selection-dropdown>
```

Equivalent to:

```
<dropdown @tooltip @controller="selection:SelectionDropdownController" name="selection-dropdown" class="fv_ui-dropdown-hide-text">
  <select-text-image-button></select-text-image-button>
  <select-annotation-button></select-annotation-button>
</dropdown>
```

**<selection-ribbon-dropdown>**

Added in version 8.2.0.

A dropdown with select-text-image button and select-annotation button.

component usage:

```
<selection-dropdown icon-class="fx-icon-ribbon_home_selecttextandimage-32"></selection-dropdown>
```

Equivalent to:

```
<ribbon-button
  @tooltip
  @controller="selection:SelectionDropdownController"
  name="selection-dropdown"
  @var.self="$component"
  has-select="true"
>
  <selection-dropdown></selection-dropdown>
</ribbon-button>
```

### **<select-text-image-button>**

Switch the state-handler to `STATE_HANDLER_SELECT_TEXT_IMAGE`

component usage:

```
<select-text-image-button></select-text-image-button>
```

Equivalent to:

```
<xbutton @controller="states:SelectTextImageController" name="select-text-image" icon-class="fv_icon-toolbar-select-text-image">toolbar.buttons.selectTextImage</xbutton>
```

### **<select-annotation-button>**

Switch the state-handler to `STATE_HANDLER_SELECT_ANNOTATION`

component usage:

```
<select-annotation-button></select-annotation-button>
```

Equivalent to:

```
<xbutton @controller="states:SelectAnnotationController" name="select-annotation" icon-class="fv_icon-toolbar-select-annotation">toolbar.buttons.selectAnnotation</xbutton>
```

### **<snapshot-button>**

From version 8.2.0, `<snapshot-ribbon-button>` is used by default.

Switch the state-handler to `STATE_HANDLER_SNAPSHOT_TOOL`

component usage:

```
<snapshot-button></snapshot-button>
```

Equivalent to:

```
<xbutton @controller="states:SnapshotToolController" @tooltip tooltip-title="toolbar.buttons.snapshot"  
name="snapshot-button" icon-class="fv_icon-toolbar-snapshot">toolbar.buttons.snapshot</xbutton>
```

```
<snapshot-ribbon-button>
```

Added in version 8.2.0.

Switch the state-handler to STATE\_HANDLER\_SNAPSHOT\_TOOL

component usage:

```
<snapshot-ribbon-button></snapshot-ribbon-button>
```

Equivalent to:

```
<ribbon-button  
text="toolbar.buttons.snapshot"  
@controller="states:SnapshotToolController"  
@tooltip  
tooltip-title="toolbar.buttons.snapshot"  
name="snapshot-button"  
icon-class="fv_icon-toolbar-snapshot"  
>toolbar.buttons.snapshot</ribbon-button>
```

```
<change-color-dropdown>
```

From 8.2.0, <change-color-ribbon-dropdown> is used by default.

A dropdown with colors to change background color of PDF viewer.

component usage:

```
<change-color-dropdown></change-color-dropdown>
```

Equivalent to:

```
<dropdown  
name="change-color-dropdown"  
@controller="change-color:ChangeColorController as ctrl"  
@tooltip tooltip-title="toolbar.tooltip.changeColor.title"  
icon-class="fv_icon-toolbar-change-color"  
popup-class="fv_ui-change-color-dropdown-popup"  
class="fv_ui-change-color-dropdown"  
separate="false"  
@init="ctrl.dropdown = $component"  
changelconCls="false"  
>
```

```
<xbutton
  @foreach="color in colors track by background"
  @class="'fv_ui-change-color-dropdown-color-round' + color.type || ''"
  @sync.attr.style="color.type === 'moon' ? '' : ('background-color:' + color.background)"
  tabindex='0'
  @on.click="ctrl.changeColor(color, $index)"
></xbutton>
</dropdown>
```

### **<change-color-ribbon-dropdown>**

Added in 8.2.0.

A dropdown with colors to change background color of PDF viewer.

component usage:

```
<change-color-ribbon-dropdown></change-color-ribbon-dropdown>
```

Equivalent to:

```
<ribbon-button name="change-color-dropdown" @controller="change-color:ChangeColorController as ctrl"
@tooltip tooltip-title="toolbar.tooltip.changeColor.title" text="toolbar.tooltip.changeColor.title" icon-
class="fv_icon-toolbar-change-color" @var.self="$component" not-immediately="true" >
<dropdown
  popup-class="fv_ui-change-color-dropdown-popup" class="fv_ui-change-color-dropdown"
separate="false"
  @init="ctrl.dropdown = $component"
>
<xbutton
  @foreach="color in colors track by background"
  @class="'fv_ui-change-color-dropdown-color-round' + color.type || ''"
  @sync.attr.style="color.type === 'moon' ? '' : ('background-color:' + color.background)"
  tabindex='0'
  @on.click="ctrl.changeColor(color, $index)"
></xbutton>
</dropdown>
</ribbon-button>
```

### **<open-file-dropdown>**

From version 8.2.0, **<open-file-ribbon-dropdown>** is used by default.

A dropdown with open-local-file button and open-url-file button.

Component usage:

```
<open-file-dropdown></open-file-dropdown>
```

Equivalent to:

```
<dropdown @controller="OpenFileDropdownController" name="open-file-button-list" class="fv_ui-dropdown-hide-text" @cannotBeDisabled>
  <file-selector
    @controller="file:OpenLocalFileController"
    icon-class="fv_icon-toolbar-open"
    name="open-local-file"
    accept=".pdf,.gif,.jpeg,.jpg,.png,.bmp"
    @cannotBeDisabled
  >toolbar.buttons.openfile</file-selector>
  <xbutton
    @controller="file:OpenRemoteFileController"
    icon-class="fv_icon-toolbar-open-url"
    name="open-from-url"
    @cannotBeDisabled
  >toolbar.buttons.openFromUrl</xbutton>
</dropdown>
```

### **<open-file-ribbon-dropdown>**

Added in 8.2.0.

A dropdown with open-local-file button and open-url-file button.

Component usage:

```
<open-file-ribbon-dropdown></open-file-ribbon-dropdown>
```

Equivalent to:

```
<ribbon-button name="open-file-button-list" @cannotBeDisabled @var.self="$component">
  <dropdown
    @controller="OpenFileDropdownController"
    name="open-file-button-list"
    class="fv_ui-dropdown-hide-text"
    @cannotBeDisabled
  >
    <file-selector
      @controller="file:OpenLocalFileController"
      icon-class="fv_icon-toolbar-open"
      name="open-local-file"
      accept=".pdf,.gif,.jpeg,.jpg,.png,.bmp"
      @cannotBeDisabled
    >toolbar.buttons.openfile</file-selector>
    <xbutton
      @controller="file:OpenRemoteFileController"
      icon-class="fv_icon-toolbar-open-url"
      name="open-from-url"
      @cannotBeDisabled
    >toolbar.buttons.openFromUrl</xbutton>
  </dropdown>
</ribbon-button>
```

### **<download-file-button>**

From version 8.2.0, <download-file-ribbon-button> is used by default.

A button that clicks to download current opening PDF file.

Component usage:

```
<download-file-button></download-file-button>
```

Equivalent to:

```
<xbutton @tooltip tooltip-title="toolbar.buttons.download" name="download-file-button" icon-class="fv_icon-toolbar-download" @controller="file:DownloadFileController">toolbar.buttons.download</xbutton>
```

### **<download-file-ribbon-button>**

Added in 8.2.0.

A button that clicks to download current opening PDF file.

Component usage:

```
<download-file-ribbon-button></download-file-ribbon-button>
```

Equivalent to:

```
<ribbon-button
  @tooltip
  text="toolbar.buttons.download"
  tooltip-title="toolbar.buttons.download"
  name="download-file-button"
  icon-class="fv_icon-toolbar-download"
  @controller="file:DownloadFileController"
>toolbar.buttons.download</ribbon-button>
```

### **<print:print-button> and <print:print-dialog>**

The function of <print:print-button> is to click to display the <print:print-dialog>

These components are defined in print addon, before using it, you should add the print addon into addons:[] . For more details about addons, please refer to [Introduction to addons](#).

Component usage

At first, define the <print:print-button> (From version 8.2.0, <print:print-ribbon-button> is used by default) inside the toolbar or anywhere you need:

```
<print:print-button></print:print-button>
```

Its Equivalent to

```
<xbutton @tooltip tooltip-title="print:button-tooltip.title" name="print-button" icon-class="fv_icon-toolbar-print" @controller="print>ShowPrintDialogController">print:button-tooltip.title</xbutton>
```

At the second, define `<print:print-dialog>` inside a `<template>` tag:

```
<print:print-dialog></print:print-dialog>
```

This component is essential, because if this component is not defined, the user will not be able to see the print configuration dialog.

### **<print:print-ribbon-button>**

Added in 8.2.0.

Click to display the `<print:print-dialog>`.

Component usage:

```
<print:print-ribbon-button></print:print-ribbon-button>
```

Equivalent to:

```
<ribbon-button
  text="print:button-tooltip.title"
  @tooltip
  tooltip-title="print:button-tooltip.title"
  name="print-button"
  icon-class="fv_icon-toolbar-print"
  @controller="print>ShowPrintDialogController"
>print:button-tooltip.title</ribbon-button>
```

### **<goto-prev-page-button> and <goto-next-page-button>**

These buttons are used to jump pages to previous or next.

Component usage

```
<goto-prev-page-button></goto-prev-page-button>
<goto-next-page-button></goto-next-page-button>
```

Equivalent to:

```
<xbutton @tooltip tooltip-title="toolbar.tooltip.previousPage.title" icon-class="fv_icon-toolbar-prev-page"
name="goto-prev-page" @controller="gotoview:GotoPrevPageController"></xbutton>
<xbutton @tooltip tooltip-title="toolbar.tooltip.nextPage.title" icon-class="fv_icon-toolbar-next-page"
name="goto-next-page" @controller="gotoview:GotoNextPageController"></xbutton>
```

### **<goto-page-input>**

It is a component with input and text that displays the current page number and the total number of pages. It also allows you to enter page numbers and then press enter to jump to the page.

Component usage

```
<goto-page-input></goto-page-input>
```

Equivalent to:

```
<div class="fv__ui-toolbar-gotopage">
  <number @controller="gotoview:GotoPageController" min="1" @bind.attr.max="pageNumber"
  @bind.value="currentPageIndex" name="gotopage-input" @on.change="onchange"
  @on.keydown="onkeydown"></number>
  <span class="fv__ui-toolbar-gotopage-sep">/</span>
  <text @controller="gotoview:TotalPageTextController" @sync.text="pageNumber" name="gotopage-
total">0</text>
</div>
```

**<zoom-out-button>** and **<zoom-in-button>**

These two buttons are used to zoom in/out of the page.

Component usage

```
<zoom-out-button></zoom-out-button>
<zoom-in-button></zoom-in-button>
```

Equivalent to:

```
<xbutton @tooltip tooltip-title="toolbar.buttons.zoomout" @controller="zoom:ZoomInAndOutController"
action="zoomout" name="zoom-out" icon-class="fv__icon-toolbar-zoom-
out">toolbar.buttons.zoomout</xbutton>
<xbutton @tooltip tooltip-title="toolbar.buttons.zoomin" @controller="zoom:ZoomInAndOutController"
action="zoomin" name="zoom-in" icon-class="fv__icon-toolbar-zoom-in">toolbar.buttons.zoomin</xbutton>
```

**<editable-zoom-dropdown>**

This dropdown is used to zoom in/out on the page to specify the scale value.

Component usage

```
<editable-zoom-dropdown></editable-zoom-dropdown>
```

Its equivalent to

template:

```
<dropdown name="editable-zoom-dropdown" @controller="zoom:EditableZoomDropdownController"
class="fv__ui-editable_zoom_dropdown" editable="true">
```

```
<dropdown-button icon-class="fv_icon-toolbar-fit-page" action="fitHeight"
@controller="zoom:EditableZoomActionController" name="editable-zoom-dropdown-
fitpage">toolbar.buttons.fitHeight</dropdown-button>
<dropdown-button icon-class="fv_icon-toolbar-fit-width" action="fitWidth"
@controller="zoom:EditableZoomActionController" name="editable-zoom-dropdown-
fitwidth">toolbar.buttons.fitWidth</dropdown-button>
<li class="fv_ui-dropdown-separator"></li>
<dropdown-button @foreach="scale in $pdfui.customScalingValues" @sync.text="scale * 100 + '%'"
@controller="zoom:EditableZoomToScaleValueController"></dropdown-button>
</dropdown>,
```

config:

```
{
  target: 'editable-zoom-dropdown',
  editOptions: {
    type: 'number',
    min: 25,
    max: 600,
    step: 1,
    value: 50,
    template: '${value}%'
  }
}
```

### **<zoom-dropdown>**

From version 8.2.0, `<zoom-ribbon-dropdown>` is used by default.

This dropdown is used to zoom in/out on the pages like `<editable-zoom-dropdown>`, but it is un-editable.

Component usage

```
<zoom-dropdown></zoom-dropdown>
```

Equivalent to:

```
<dropdown name="dropdown-zoom" icon-class="fv_icon-toolbar-zoom-in" class="fv_ui-dropdown-hide-text"
selected="0">
  <dropdown-button name="dropdown-zoom-in" action="zoomin"
@controller="zoom:DropdownZoomInAndOutController" icon-class="fv_icon-toolbar-zoom-
in">toolbar.buttons.zoomin</dropdown-button>
  <dropdown-button name="dropdown-zoom-out" action="zoomout"
@controller="zoom:DropdownZoomInAndOutController" icon-class="fv_icon-toolbar-zoom-
out">toolbar.buttons.zoomout</dropdown-button>
  <dropdown-button name="dropdown-zoom-fitpage" action="fitHeight"
@controller="zoom:ZoomActionController" icon-class="fv_icon-toolbar-fit-
page">toolbar.buttons.fitHeight</dropdown-button>
```

```
<dropdown-button name="dropdown-zoom-fitwidth" action="fitWidth"
@controller="zoom:ZoomActionController" icon-class="fv_icon-toolbar-fit-
width">toolbar.buttons.fitWidth</dropdown-button>
<li class="fv_ui-dropdown-separator"></li>
<dropdown-button @foreach="scale in $pdfui.customScalingValues" @sync.text="scale * 100 + '%'"'
@controller="zoom:ZoomToScaleValueController"></dropdown-button>
</dropdown>
```

### **<zoom-ribbon-dropdown>**

Added in 8.2.0.

This dropdown is used to zoom in/out on the pages.

Component usage

```
<zoom-ribbon-dropdown></zoom-ribbon-dropdown>
```

Equivalent to:

```
<ribbon-button name="dropdown-zoom" @var.self="$component" @tooltip >
<dropdown @aria:label.caret="aria:labels.setzoom" icon-class="fv_icon-toolbar-zoom-in" class="fv_ui-
dropdown-hide-text" selected="0" @on.selected="self.select($args[0])">
  <dropdown-button name="dropdown-zoom-in" action="zoomin"
@controller="zoom:DropdownZoomInAndOutController" icon-class="fv_icon-toolbar-zoom-in" ribbon-icon="fx-
icon-ribbon_home_zoomin-32" tooltip-title="toolbar.buttons.zoomin"
tabindex="0">toolbar.buttons.zoomin</dropdown-button>
  <dropdown-button name="dropdown-zoom-out" action="zoomout"
@controller="zoom:DropdownZoomInAndOutController" icon-class="fv_icon-toolbar-zoom-out" ribbon-
icon="fx-icon-ribbon_home_zoomout-32" tooltip-title="toolbar.buttons.zoomout"
tabindex="0">toolbar.buttons.zoomout</dropdown-button>
  <dropdown-button name="dropdown-zoom-fitpage" action="fitHeight"
@controller="zoom:ZoomActionController" icon-class="fv_icon-toolbar-fit-page" ribbon-icon="fx-icon-
ribbon_home_fitpage-32" tooltip-title="toolbar.buttons.fitHeight"
tabindex="0">toolbar.buttons.fitHeight</dropdown-button>
  <dropdown-button name="dropdown-zoom-fitwidth" action="fitWidth"
@controller="zoom:ZoomActionController" icon-class="fv_icon-toolbar-fit-width" ribbon-icon="fx-icon-
ribbon_home_fitwidth-32" tooltip-title="toolbar.buttons.fitWidth"
tabindex="0">toolbar.buttons.fitWidth</dropdown-button>
  <dropdown-button name="dropdown-zoom-fitvisible" action="fitVisible"
@controller="zoom:ZoomActionController" icon-class="fv_icon-toolbar-fit-visible" ribbon-icon="fx-icon-
ribbon_home_visible-32" tooltip-title="toolbar.buttons.fitVisible"
tabindex="0">toolbar.buttons.fitVisible</dropdown-button>
  <li class="fv_ui-dropdown-separator"></li>
  <dropdown-button @foreach="scale in $pdfui.customScalingValues" @sync.text="scale * 100 + '%'"'
@controller="zoom:ZoomToScaleValueController" tabindex="0"></dropdown-button>
</dropdown>
</ribbon-button>
```

### **Page view mode buttons**

Page view mode contains a series of buttons which are used to switch page view.

Component usage

```
<single-page-button></single-page-button>
<continuous-page-button></continuous-page-button>
<facing-page-button></facing-page-button>
<continuous-facing-page-button></continuous-facing-page-button>
<h-continuous:h-continuous-button></h-continuous:h-continuous-button>
```

Equivalent to

```
<xbutton @tooltip tooltip-title="toolbar.tools.single-page" @controller="pagemode:SinglePageModeController"
name="single-page" icon-class="fv_icon-toolbar-single-page">toolbar.tools.single-page</xbutton>
<xbutton @tooltip tooltip-title="toolbar.tools.continuous-page"
@controller="pagemode:ContinuousPageModeController" name="continuous-page" icon-class="fv_icon-
toolbar-continuous-page">toolbar.tools.continuous-page</xbutton>
<xbutton @tooltip tooltip="toolbar.tools.facing" @controller="pagemode:FacingPageModeController"
name="facing-page" icon-class="fv_icon-toolbar-double-page">toolbar.tools.facing</xbutton>
<xbutton @tooltip tooltip="toolbar.tools.continuous-facing"
@controller="pagemode:ContinuousFacingPageModeController" name="continuous-facing-page" icon-
class="fv_icon-toolbar-facing-continuous-page">toolbar.tools.continuous-facing</xbutton>
<xbutton @tooltip tooltip-title="h-continuous:buttons.title" @controller="h-
continuous:HContinuousViewModeController" name="h-continuous-button" icon-class="fv_icon-toolbar-h-
continuous-page">h-continuous:buttons.title</xbutton>
```

`<h-continuous:h-continuous-button>` is defined in h-continuous addon, before using it, you should add the 'h-continuous' addon into addons list. For more details about addon, please refer to [Introduction to addons](#).

From version 8.2.0, the default page view mode buttons are changed to use these components:

```
<single-page-ribbon-button></single-page-ribbon-button>
<continuous-page-ribbon-button></continuous-page-ribbon-button>
<facing-page-ribbon-button></facing-page-ribbon-button>
<continuous-facing-page-ribbon-button></continuous-facing-page-ribbon-button>
<h-continuous:h-continuous-ribbon-button></h-continuous:h-continuous-ribbon-button>
```

They are equivalent to

```
<ribbon-button small="true" @tooltip tooltip-title="toolbar.tools.single-page"
@controller="pagemode:SinglePageModeController" name="single-page" icon-class="fv_icon-toolbar-single-
page">toolbar.tools.single-page</ribbon-button>
<ribbon-button small="true" @tooltip tooltip-title="toolbar.tools.continuous-page"
@controller="pagemode:ContinuousPageModeController" name="continuous-page" icon-class="fv_icon-
toolbar-continuous-page">toolbar.tools.continuous-page</ribbon-button>
<ribbon-button small="true" @tooltip tooltip-title="toolbar.tools.facing"
@controller="pagemode:FacingPageModeController" name="facing-page" icon-class="fv_icon-toolbar-double-
page">toolbar.tools.facing</ribbon-button>
```

```
<ribbon-button small="true" @tooltip tooltip-title="toolbar.tools.continuous-facing"
@controller="pagemode:ContinuousFacingPageModeController" name="continuous-facing-page" icon-
class="fv_icon-toolbar-facing-continuous-page">toolbar.tools.continuous-facing</ribbon-button>
<ribbon-button small="true" @tooltip tooltip-title="h-continuous:buttons.title" @controller="h-
continuous:HContinuousViewModeController" name="h-continuous-button" icon-class="fv_icon-toolbar-h-
continuous-page">h-continuous:buttons.title</ribbon-button>
```

### **<loupe-tool-button> and <loupe-tool-dialog>**

A button which is used to switch state-handler to loupe tool when being clicked.

Component usage

```
<loupe-tool-button></loupe-tool-button>
<template>
    <loupe-tool-dialog></loupe-tool-dialog>
</template>
```

Equivalent to

```
<xbutton name="loupe-button" icon-class="fv_icon-toolbar-loupe" class="fv_ui-toolbar-show-text-button"
@tooltip tooltip-title="toolbar.tooltip.loupe.title"
@controller="loupe:LoupeController">toolbar.tools.loupe</xbutton>
<template>
    <layer name="loupe-tool-dialog" class="fv_ui-loupe-tool-dialog" @resizable>
        <layer-header class="fv_ui-loupe-tool-header" title="loupe.title" @draggable="{type: 'parent'}"></layer-
header>
        <layer-view class="fv_ui-loupe-body">
        </layer-view>
        <layer-toolbar class="loupe-tool-bottom-bar" visible="false">
            <dropdown name="loupe-tool-zoom-dropdown" @controller="loupe:LoupeToolScaleListController"
editable="true">
                <dropdown-button @foreach="scaleItem in scaleList track by value"
@controller="loupe:LoupeToolScaleController" @bind.text="scaleItem.text"></dropdown-button>
            </dropdown>
            <slider name="loupe-tool-zoom-slider" min="50" max="600" step="1"></slider>
            <checkbox name="loupe-tool-lock">loupe.lockButton</checkbox>
        </layer-toolbar>
    </layer>
</template>
```

From version 8.2.0, the internal implementation of **<loupe-button>** has been adjusted to **<ribbon-
button>**:

```
<ribbon-button
    name="loupe-button"
    icon-class="fv_icon-toolbar-loupe"
    class="fv_ui-toolbar-show-text-button"
    @tooltip tooltip-title="toolbar.tooltip.loupe.title"
    @controller="loupe:LoupeController"
>toolbar.tools.loupe</ribbon-button>
```

**Note:** The `<loupe-tool-button>` and `<loupe-tool-dialog>` should be defined in layout-template at the same time.

### **<marquee-tool-button>**

A button which is used to switch the current state-handler to the marquee tool.

Component usage

```
<marquee-tool-button></marquee-tool-button>
```

Equivalent to

```
<xbutton name="marquee-button" icon-class="fv_icon-toolbar-marquee" class="fv_ui-toolbar-show-text-button" @tooltip tooltip-title="toolbar.tooltip.marquee.title" @controller="marquee:MarqueeToolController">toolbar.buttons.marquee</xbutton>
```

From version 8.2.0, the internal implementation of `<marquee-tool-button>` has been adjusted to `<ribbon-button>`:

```
<ribbon-button
  name="marquee-button"
  icon-class="fv_icon-toolbar-marquee"
  @tooltip
  tooltip-title="toolbar.tooltip.marquee.title"
  @controller="marquee:MarqueeToolController"
>toolbar.buttons.marquee</ribbon-button>
```

**<fpmodule:contextmenu-item-file-property>, <fpmodule:file-property-button> and  
<fpmodule:file-property-dialog>**

`<fpmodule:contextmenu-item-file-property>` and `<fpmodule:file-property-button>` are used to display `<fpmodule:file-property-dialog>` when being clicked. All of these components are defined in the `file-property` addon. Before using it, you should add the `file-property` addon into `addons:[]`. For more details about addons, please refer to [Introduction to addons](#).

Component usage `<fpmodule:file-property-dialog>`

```
<fpmodule:file-property-button></fpmodule:file-property-button>
<template>
  <fpmodule:file-property-dialog></fpmodule:file-property-dialog>
</template>
```

`<fpmodule:contextmenu-item-file-property>` must be used inside of `<contextmenu>`.

### **Buttons to create annotations**

The following components are built-in pre-configured components with their initial template which are used to switch current state-handler to state-handlers for annotation creation.

```
<create-drawings-dropdown>
```

From version 8.2.0, `<create-drawings-ribbon-button>` is used by default.

```
<dropdown @controller="drawings:DrawingsDropdownController" name="create-shape-dropdown"
class="fv_ui-dropdown-hide-text">
<create-square-button></create-square-button>
<create-circle-button></create-circle-button>
<create-line-button></create-line-button>
<create-arrow-button></create-arrow-button>
<create-polygon-button></create-polygon-button>
<create-polyline-button></create-polyline-button>
<create-cloud-button></create-cloud-button>
</dropdown>
```

```
<create-drawings-ribbon-button>
```

```
<ribbon-button @controller="drawings:DrawingsDropdownController" name="create-shape-dropdown"
@var.self="$component" not-immediately="true">
<dropdown @aria:label.caret="aria:labels.toolbar.shape" @on.selected="self.select($args[0])" class="fv_ui-
dropdown-hide-text" selected="0">
<create-square-button ribbon-text="toolbar.buttons.drawing" tabindex="0"></create-square-button>
<create-circle-button ribbon-text="toolbar.buttons.drawing" tabindex="0"></create-circle-button>
<create-polygon-button ribbon-text="toolbar.buttons.drawing" tabindex="0"></create-polygon-button>
<create-cloud-button ribbon-text="toolbar.buttons.drawing" tabindex="0"></create-cloud-button>
<create-arrow-button ribbon-text="toolbar.buttons.drawing" tabindex="0"></create-arrow-button>
<create-line-button ribbon-text="toolbar.buttons.drawing" tabindex="0"></create-line-button>
<create-polyline-button ribbon-text="toolbar.buttons.drawing" tabindex="0"></create-polyline-button>
</dropdown>
</ribbon-button>
```

```
<create-note-button>
```

```
<xbutton name="create-text" @tooltip tooltip-title="toolbar.tooltip.note.title"
@controller="states:CreateTextController" icon-class="fv_icon-toolbar-note">toolbar.create.note</xbutton>
```

```
<create-note-ribbon-button>
```

```
<ribbon-button name="create-text" @tooltip tooltip-title="toolbar.tooltip.note.title"
text="toolbar.tooltip.note.title" @controller="states:CreateTextController" icon-class="fv_icon-toolbar-
note">toolbar.create.note</ribbon-button>
```

```
<create-text-highlight-button>
```

```
<xbutton name="create-highlight" @tooltip tooltip-title="toolbar.tooltip.highlight.title"
@controller="states:CreateHighlightController" icon-class="fv_icon-toolbar-text-
highlight">toolbar.create.highlight</xbutton>
```

```
<create-text-highlight-ribbon-button>
```

```
<ribbon-button name="create-highlight" @tooltip tooltip-title="toolbar.tooltip.highlight.title"  
text="toolbar.tooltip.highlight.title" @controller="states:CreateHighlightController" icon-class="fv_icon-toolbar-  
text-highlight">toolbar.create.highlight</ribbon-button>
```

```
<create-strikeout-button>
```

```
<xbutton name="create-strikeout" @tooltip tooltip="toolbar.tooltip.strikeout.title"  
@controller="states:CreateStrikeoutController" icon-class="fv_icon-toolbar-  
strikeout">toolbar.create.strikeout</xbutton>
```

```
<create-strikeout-ribbon-button>
```

```
<ribbon-button name="create-strikeout" @tooltip tooltip-title="toolbar.tooltip.strikeout.title"  
text="toolbar.tooltip.strikeout.title" @controller="states:CreateStrikeoutController" icon-class="fv_icon-toolbar-  
strikeout">toolbar.create.strikeout</ribbon-button>
```

```
<create-underline-button>
```

```
<xbutton name="create-underline" @tooltip tooltip-title="toolbar.tooltip.underline.title"  
@controller="states:CreateUnderlineController" icon-class="fv_icon-toolbar-  
underline">toolbar.create.underline</xbutton>
```

```
<create-underline-ribbon-button>
```

```
<ribbon-button name="create-underline" @tooltip tooltip-title="toolbar.tooltip.underline.title"  
text="toolbar.tooltip.underline.title" @controller="states:CreateUnderlineController" icon-class="fv_icon-  
toolbar-underline">toolbar.create.underline</ribbon-button>
```

```
<create-squiggly-button>
```

```
<xbutton name="create-squiggly" @tooltip tooltip="toolbar.tooltip.squiggly.title"  
@controller="states:CreateSquigglyController" icon-class="fv_icon-toolbar-  
squiggly">toolbar.create.squiggly</xbutton>
```

```
<create-squiggly-ribbon-button>
```

```
<ribbon-button name="create-squiggly" @tooltip tooltip-title="toolbar.tooltip.squiggly.title"  
text="toolbar.tooltip.squiggly.title" @controller="states:CreateSquigglyController" icon-class="fv_icon-toolbar-  
squiggly">toolbar.create.squiggly</ribbon-button>
```

```
<create-replace-button>
```

```
<xbutton name="create-replace" @tooltip tooltip="toolbar.tooltip.replace.title"  
@controller="states:CreateReplaceController" icon-class="fv_icon-toolbar-  
replace">toolbar.create.replace</xbutton>
```

```
<create-replace-ribbon-button>
```

```
<ribbon-button name="create-replace" @tooltip tooltip-title="toolbar.tooltip.replace.title"  
text="toolbar.tooltip.replace.title" @controller="states:CreateReplaceController" icon-class="fv_icon-toolbar-  
replace">toolbar.create.replace</ribbon-button>
```

```
<create-caret-button>
```

```
<xbutton name="create-caret" @tooltip tooltip-title="toolbar.tooltip.caret.title"  
@controller="states:CreateCaretController" icon-class="fv_icon-toolbar-insert">toolbar.create.caret</xbutton>
```

```
<create-caret-ribbon-button>
```

```
<ribbon-button name="create-caret" @tooltip tooltip-title="toolbar.tooltip.caret.title"  
text="toolbar.tooltip.caret.title" @controller="states:CreateCaretController" icon-class="fv_icon-toolbar-  
insert">toolbar.create.caret</ribbon-button>
```

```
<create-typewriter-button>
```

```
<xbutton name="freetext-typewriter" @tooltip tooltip-title="toolbar.tooltip.typewriter.title"  
@controller="states:CreateTypewriterController" icon-class="fv_icon-toolbar-  
typewriter" >toolbar.create.typewriter</xbutton>
```

```
<create-typewriter-ribbon-button>
```

```
<ribbon-button name="freetext-typewriter" @tooltip tooltip-title="toolbar.tooltip.typewriter.title"  
@controller="states:CreateTypewriterController" icon-class="fv_icon-toolbar-  
typewriter" >toolbar.create.typewriter</ribbon-button>
```

```
<create-callout-button>
```

```
<xbutton name="freetext-callout" @tooltip tooltip-title="toolbar.tooltip.callout.title"  
@controller="states:CreateCalloutController" icon-class="fv_icon-toolbar-  
callout" >toolbar.create.callout</xbutton>
```

```
<create-callout-ribbon-button>
```

```
<ribbon-button name="freetext-callout" @tooltip tooltip-title="toolbar.tooltip.callout.title"  
@controller="states:CreateCalloutController" icon-class="fv_icon-toolbar-  
callout" >toolbar.create.callout</ribbon-button>
```

```
<create-textbox-button>
```

```
<xbutton name="freetext-textbox" @tooltip tooltip-title="toolbar.tooltip.textbox.title"  
@controller="states:CreateTextboxController" icon-class="fv_icon-toolbar-  
textbox" >toolbar.create.textbox</xbutton>
```

```
<create-textbox-ribbon-button>
```

```
<ribbon-button name="freetext-textbox" @tooltip tooltip-title="toolbar.tooltip.textbox.title"  
@controller="states:CreateTextboxController" icon-class="fv_icon-toolbar-  
textbox" >toolbar.create.textbox</ribbon-button>
```

```
<create-area-highlight-button>
```

```
<xbutton name="create-area-highlight" @tooltip tooltip="toolbar.tooltip.areaHighlight.title"  
@controller="states:CreateAreaHighlightController" icon-class="fv_icon-toolbar-area-  
highlight">toolbar.create.areahighlight</xbutton>
```

```
<create-area-highlight-ribbon-button>
```

```
<ribbon-button name="create-area-highlight" @tooltip tooltip-title="toolbar.tooltip.areaHighlight.title"
text="toolbar.tooltip.areaHighlight.title" @controller="states:CreateAreaHighlightController" icon-
class="fv_icon-toolbar-area-highlight">toolbar.create.areahighlight</ribbon-button>
```

```
<create-pencil-button>
```

```
<xbutton name="pencil-tool" @tooltip tooltip-title="toolbar.tooltip.pencil.title"
@controller="states:CreatePencilController" icon-class="fv_icon-toolbar-
pencil">toolbar.buttons.pencil</xbutton>
```

```
<create-pencil-ribbon-button>
```

```
<ribbon-button name="pencil-tool" @tooltip tooltip-title="toolbar.tooltip.pencil.title"
@controller="states:CreatePencilController" icon-class="fv_icon-toolbar-
pencil">toolbar.buttons.pencil</ribbon-button>
```

```
<eraser-button>
```

```
<xbutton name="eraser-tool" @tooltip tooltip-title="toolbar.tooltip.eraser.title"
@controller="states:EraserController" icon-class="fv_icon-toolbar-eraser">toolbar.buttons.eraser</xbutton>
```

```
<eraser-ribbon-button>
```

```
<ribbon-button name="eraser-tool" @tooltip tooltip-title="toolbar.tooltip.eraser.title"
@controller="states:EraserController" icon-class="fv_icon-toolbar-eraser">toolbar.buttons.eraser</ribbon-
button>
```

```
<stamp-dropdown>
```

It's a dropdown component exhibits all stamp icons and a button for creating custom stamp. From version 8.2.0, `<stamp-ribbon-dropdown>` is used by default.

```
<!-- internal implementation -->
```

```
<stamp-ribbon-dropdown>
```

Added in 8.2.0, Its equivalent to `<stamp-dropdown>`.

```
<create-measurement-dropdown>
```

```
<dropdown name="create-measurement-button-list" class="fv_ui-dropdown-hide-text" @cannotBeDisabled
selected="0">
    <xbutton @tooltip tooltip-title="toolbar.buttons.tooltip.distance" name="create-distance-btn" icon-
class="fv_icon-toolbar-distance"
@controller="distance:CreateDistanceController">toolbar.buttons.distance</xbutton>
    <xbutton @hide-on-sr @tooltip tooltip-title="toolbar.buttons.tooltip.perimeter" name="create-perimeter-btn"
icon-class="fv_icon-toolbar-perimeter"
@controller="distance:CreatePerimeterController">toolbar.buttons.perimeter</xbutton>
    <xbutton @hide-on-sr @tooltip tooltip-title="toolbar.buttons.tooltip.area" name="create-area-btn" icon-
class="fv_icon-toolbar-area" @controller="distance:CreateAreaController">toolbar.buttons.area</xbutton>
```

```
<xbutton @hide-on-sr @tooltip tooltip-title="toolbar.buttons.tooltip.circleArea" name="create-circle-area-btn"
icon-class="fv_icon-toolbar-areacircle"
@controller="distance:CreateCircleAreaController">toolbar.buttons.area</xbutton>
</dropdown>
```

<create-measure-ribbon-dropdown>

```
<ribbon-button @controller="selection:SelectionDropdownController" icon-class="fv_icon-toolbar-
measurement" name="create-measurement-button-list" @var.self="$component">
  <dropdown class="fv_ui-dropdown-hide-text" @cannotBeDisabled selected="0"
@on.selected="self.select($args[0])">
    <xbutton ribbon-text="toolbar.buttons.measure" @tooltip tooltip-title="toolbar.buttons.tooltip.distance"
name="create-distance-btn" ribbon-icon="fx-icon-ribbon_comment_measure_distance-32" icon-class="fx-icon-
sm fv_icon-toolbar-distance"
@controller="distance:CreateDistanceController">toolbar.buttons.distance</xbutton>
    <xbutton ribbon-text="toolbar.buttons.measure" @hide-on-sr @tooltip tooltip-
title="toolbar.buttons.tooltip.perimeter" name="create-perimeter-btn" ribbon-icon="fx-icon-
ribbon_comment_measure_perimeter-32" icon-class="fx-icon-sm fv_icon-toolbar-perimeter"
@controller="distance:CreatePerimeterController">toolbar.buttons.perimeter</xbutton>
    <xbutton ribbon-text="toolbar.buttons.measure" @hide-on-sr @tooltip tooltip-
title="toolbar.buttons.tooltip.area" name="create-area-btn" ribbon-icon="fx-icon-
ribbon_comment_measure_area-32" icon-class="fx-icon-sm fv_icon-toolbar-area"
@controller="distance:CreateAreaController">toolbar.buttons.area</xbutton>
    <xbutton ribbon-text="toolbar.buttons.measure" @hide-on-sr @tooltip tooltip-
title="toolbar.buttons.tooltip.circleArea" name="create-circle-area-btn" ribbon-icon="fx-icon-ribbon_areacircle-
32" icon-class="fx-icon-sm fv_icon-toolbar-areacircle"
@controller="distance:CreateCircleAreaController">toolbar.buttons.area</xbutton>
  </dropdown>
</ribbon-button>
```

<create-attachment-button>

```
<xbutton name="create-fileattachment" @tooltip tooltip-title="toolbar.tooltip.fileattachment.title"
@controller="states:CreateFileAttachmentController" icon-class="fv_icon-toolbar-
attachment">toolbar.create.fileattachment</xbutton>
```

<create-attachment-ribbon-button>

```
<ribbon-button name="create-fileattachment" @tooltip tooltip-title="toolbar.tooltip.fileattachment.title"
text="toolbar.buttons.fileattachment" @controller="states:CreateFileAttachmentController" icon-
class="fv_icon-toolbar-file-attachment">toolbar.create.fileattachment</ribbon-button>
```

<create-image-button>

```
<xbutton name="create-image" @tooltip tooltip-title="toolbar.tooltip.image.title"
@controller="states:CreateImageController" icon-class="fv_icon-toolbar-
image">toolbar.create.image</xbutton>
```

<create-image-ribbon-button>

```
<ribbon-button name="create-image" @tooltip tooltip-title="toolbar.tooltip.imageAnnot.title"
@controller="states:CreateImageController" icon-class="fv_icon-toolbar-image">toolbar.create.image</ribbon-
button>
```

```
<create-link-button>
```

```
<xbutton name="create-link" @tooltip tooltip-title="toolbar.tooltip.link.title"
@controller="states:CreateLinkController" icon-class="fv_icon-toolbar-link" >toolbar.create.link</xbutton>
```

```
<create-link-ribbon-button>
```

```
<ribbon-button name="create-link" @tooltip tooltip-title="toolbar.tooltip.link.title"
@controller="states:CreateLinkController" icon-class="fv_icon-toolbar-links" >toolbar.create.link</ribbon-
button>
```

```
<multi-media:multi-media-button>
```

This component is defined in the `multi-media` addon. Before using it, you should add the `multi-
media` addon into `addons:[]`. For more details about addons, please refer to [Introduction to addons](#).

From version 8.2.0, `<multi-media-ribbon-button>` is used by default.

```
<multi-media:multi-media-ribbon-button>
```

Added in version 8.2.0, and its function is equivalent to `<multi-media:multi-media-button>`.

## Graphics object components

Components defined in `edit-graphics` addon

1. `<edit-graphics:contextmenu-item-properties>`:

A `<contextmenu-item>` component that is used to show graphic object's properties dialog.

2. `<edit-graphics:contextmenu-item-delete>`:

A `<contextmenu-item>` component that is used to delete a graphic object.

3. `<edit-graphics:image-contextmenu>`:

A `<contextmenu>` component with properties & delete items is used for image graphics object.

4. `<edit-graphics:contextmenu-item-set-to-back>`:

A `<contextmenu-item>` component that is used to send a graphic object to back. Added in version 8.2.0.

5. `<edit-graphics:contextmenu-item-set-to-front>`:

A <contextmenu-item> component that is used to bring a graphic object to front. Added in version 8.2.0.

Components defined in `path-object` addon

1. `<edit-pageobjects:path-contextmenu>`:

A <contextmenu> with properties & delete items is used for path graphic object.

2. `<edit-pageobjects:edit-all-objects-button>`:

A button which is used to switch current state-handler to '`edit-all`' state-handler to modify currently supported graphic objects in PDF page.

3. `<edit-pageobjects:path-objects-dropdown>`:

A dropdown component which is used to create different types of path objects.

Components defined in `text-object` addon

1. `<edit-text-object:add-text-button>`:

A button component which is used to switch state-handler into add-text.

2. `<edit-text-object:text-bold-style-button>`:

A button to toggle the current editing text object to bold/thin style.

3. `<edit-text-object:text-italic-style-button>`:

A button to toggle the current editing text object to italic/normal style.

4. `<edit-text-object:text-underline-button>`:

A button to toggle the underline of current editing text object.

5. `<edit-text-object:font-color-picker>`:

A color-picker component which is used to set text color of current editing text object.

6. `<edit-text-object:font-style-dropdown>`:

A dropdown component which is used to set font style & size of the current editing text object.

## **PDF form components**

1. `<import-form-module:import-form-button>`

A button which is used to select a form file to import form data. This component is defined in `import-form` addon. From version 8.2.0, `<import-form-module:import-form-ribbon-button>` is used by default.

2. `<import-form-module:import-form-ribbon-button>`

Added in version 8.2.0. The function of this component is equivalent to `<import-form-module:import-form-button>`.

3. `<export-form-module:export-form-dropdown>`

A button which is used to export form data as a xml file. This component is defined in `export-form` addon.

4. `<create-text-field-button>`

It has been removed from version 8.2.0.

5. `<create-signature-field-button>`

It has been removed from version 8.2.0.

6. `<recognition-form:recognition-form-ribbon-button>`

A button which is used to run form field recognition.

7. `<form-designer:create-text-ribbon>`

A button added in version 8.2.0 which is used to switch the current state-handler to `CreateTextStateHandler` to create text form widget. The function is equivalent to `<create-text-field-button>`.

8. `<form-designer:create-sign-ribbon>`

A button which is used to switch the current state-handler to `CreateSignStateHandler` to create signature form widget.

9. `<form-designer:create-push-button-ribbon>`

A button which is used to switch the current state-handler to `CreatePushButtonStateHandler` to create push-button form widget.

10. `<form-designer:create-check-box-ribbon>`

A button which is used to switch the current state-handler to `CreateCheckBoxStateHandler` to create checkbox form widget.

11. `<form-designer:create-radio-button-ribbon>`

A button which is used to switch the current state-handler to `CreateRadioButtonStateHandler` to create radio form widget.

12. `<form-designer:create-combo-box-ribbon>`

A button which is used to switch the current state-handler to `CreateComboBoxStateHandler` to create combobox form widget.

13. `<form-designer:create-list-box-ribbon>`

A button which is used to switch the current state-handler to `CreateListBoxStateHandler` to create listbox form widget.

14. `<form-designer:create-image-ribbon>`

A button which is used to switch the current state-handler to `CreateImageStateHandler` to create image form widget.

15. `<form-designer:create-date-ribbon>`

A button which is used to switch the current state-handler to `CreateDateStateHandler` to create date form widget.

**`<page-template:page-template-ribbon-button>`**

Added in version 8.2.0. It's used to show a dialog to create PDF page template. This component is defined in `page-template` addon.

```
<ribbon-button text="page-template:button-tooltip.title" @tooltip name="page-template-button" icon-class="fv_icon-toolbar-page-template" @controller="page-template:ShowPageTemplateDialogController">page-template:button-tooltip.title</ribbon-button>
```

**`<xfa-form-module:xfa-form-button>`**

Added in version 8.2.0. It's used to edit static XFA form. This component is defined in `xfa-form` addon.

```
<ribbon-button text="xfa:tips.xfa" @tooltip name="xfa-form-button" icon-class="fv_icon-toolbar-xfa-form"></ribbon-button>
```

**`<form-designer:showco>`**

Added in version 8.2.0. It's used to show the 'Calculation Order' dialog.

```
<ribbon-button name="fv--showCO-btn" icon-class="fv_icon-toolbar-form-CO" @tooltip tooltip-title="form-designer:tips.showCO" @controller="form-designer:showCODialogController">form-designer:tips.showCO</ribbon-button>
```

#### **<form-designer:add-tooltip>**

Added in version 8.2.0. It's used to add tooltip.

```
<ribbon-button @tooltip name="fv--add-tooltip-btn" @controller="form-designer:AddTooltipController" tooltip-title="form-designer:tips.AddTooltip" icon-class="fv_icon-toolbar-add-tooltip">form-designer:tips.AddTooltip</ribbon-button>
```

#### **<form-designer:reset-form>**

Added in version 8.2.0. It's used to reset all form fields to their default values.

```
<ribbon-button @tooltip name="fv--reset-field-btn" @controller="form-designer:ResetFormController" tooltip-title="form-designer:tips.ResetForm" icon-class="fv_icon-toolbar-reset-field">form-designer:tips.ResetForm</ribbon-button>
```

#### **<ink-sign-dropdown> and <create-ink-sign-dialog>**

These components are used to display all ink-signatures and create custom ink-signatures. They should be defined in the layout-template at the same time.

```
<ink-sign-dropdown></ink-sign-dropdown>
<template>
  <create-ink-sign-dialog></create-ink-sign-dialog>
</template>
```

From version 8.2.0, `<ink-sign-ribbon-dropdown>` is used by default.

#### **<ink-sign-ribbon-dropdown>**

Added in version 8.2.0. The function of this component is equivalent to `<ink-sign-dropdown>`.

#### **<password-protect:password-protect-button>**

This button is used to display the password protection dialog to encrypt current PDF document.

Usage

```
<password-protect:password-protect-button></password-protect:password-protect-button>
```

#### **<password-protect:remove-protect-button>**

This button is used to remove security of the current PDF document.

## Usage

```
<password-protect:remove-protect-button></password-protect:remove-protect-button>
```

### Redaction components

1. `<redaction:create-redactions-dropdown>`

A button to switch current state-handler to 'create-redaction-state'.

2. `<redaction:create-redactions-ribbon-dropdown>`

Added in version 8.2.0, the function of this component is equivalent to `<redaction:create-redactions-dropdown>`.

3. `<redaction:apply-redactions-button>`

A button to apply all redactions in PDF document.

4. `<redaction:apply-redactions-ribbon-button>`

Added in version 8.2.0, the function of this component is equivalent to `<redaction:apply-redactions-button>`.

5. `<redaction:redaction-search-button>`

A button to toggle search sidebar panel.

6. `<redaction:redaction-search-ribbon-button>`

Added in version 8.2.0, the function of this component is equivalent to `<redaction:redaction-search-button>`.

### sidebar components

1. `<bookmark-sidebar-panel>`
2. `<commentlist-sidebar-panel>`
3. `<thumbnail-sidebar-panel>`
4. `<layer-sidebar-panel>`
5. `<search-sidebar-panel>`
6. `<attachment-sidebar-panel>`

`<distance:ruler-container>` and `<distance:measurement-popup>`

These two components show ruler and measurement information when creating distance annotation. The `<viewer>` component should be wrapped in `<distance:ruler-container>` with `<slot>` and `<distance:measurement-popup>` should be wrapped in a `<template>` tag.

```
<distance:ruler-container name="pdf-viewer-container-with-ruler">
  <slot>
    <viewer></viewer>
  </slot>
</distance:ruler-container>
<template>
  <distance:measurement-popup></distance:measurement-popup>
</template>
```

## Context menu components

```
<page-contextmenu>
```

```
<contextmenu name="fv--page-contextmenu" @controller="collaboration-mode:PageContextMenuController">
  <full-screen:contextmenu-item-fullscreen></full-screen:contextmenu-item-fullscreen>
  <contextmenu-separator @require-modules="full-screen" @hide-on-device="ios"></contextmenu-separator>
  <contextmenu-item-select-text-image></contextmenu-item-select-text-image>
  <contextmenu-item-select-annotation></contextmenu-item-select-annotation>
  <contextmenu-item-hand-tool></contextmenu-item-hand-tool>
  <contextmenu-item-marquee-zoom></contextmenu-item-marquee-zoom>
  <contextmenu-separator></contextmenu-separator>

  <contextmenu-item-zoom-actual-size></contextmenu-item-zoom-actual-size>
  <contextmenu-item-zoom-fitpage></contextmenu-item-zoom-fitpage>
  <contextmenu-item-zoom-fitwidth></contextmenu-item-zoom-fitwidth>
  <contextmenu-item-zoom-fitvisible></contextmenu-item-zoom-fitvisible>

  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-rotate-right></contextmenu-item-rotate-right>
  <contextmenu-item-rotate-left></contextmenu-item-rotate-left>
  <contextmenu-separator></contextmenu-separator>
  <print:contextmenu-item-print></print:contextmenu-item-print>
  <contextmenu-separator @require-modules="fpmodule"></contextmenu-separator>
  <fpmodule:contextmenu-item-file-property></fpmodule:contextmenu-item-file-property>
</contextmenu>
```

```
<default-annot-contextmenu>
```

If the contextmenu for the annotation cannot be found, and that annotation is not a markup, this will be used by default.

```
<contextmenu name="fv--default-annot-contextmenu">
  <contextmenu-item-reply></contextmenu-item-reply>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
```

```
<contextmenu-separator></contextmenu-separator>
<contextmenu-item-properties></contextmenu-item-properties>
</contextmenu>
```

```
<markup-contextmenu>
```

If the contextmenu for the annotation cannot be found, and that annotation is a markup, this will be used by default.

Original template:

```
<contextmenu name="fv--markup-contextmenu">
  <contextmenu-item-reply></contextmenu-item-reply>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-cut></contextmenu-item-cut>
  <contextmenu-item-copy></contextmenu-item-copy>
  <contextmenu-item-paste></contextmenu-item-paste>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-properties></contextmenu-item-properties>
  <contextmenu-separator></contextmenu-separator>
  <form-designer:alignment-menu></form-designer:alignment-menu>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-flip></contextmenu-item-flip>
  <contextmenu-separator @require-modules="group-annot"></contextmenu-separator>
  <contextmenu-item-group></contextmenu-item-group>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-default-prop></contextmenu-item-default-prop>
</contextmenu>
```

Using

```
<markup-contextmenu name="fv--line-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--lineararrow-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--linedimension-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--polylinedimention-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--polygondimension-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--circle-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--square-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--polyline-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--polygon-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--polygoncloud-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--ink-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--stamp-contextmenu"></markup-contextmenu>
<markup-contextmenu name="fv--text-contextmenu"></markup-contextmenu>
```

```
<caret-contextmenu>
```

Original template:

```
<contextmenu name="fv--caret-contextmenu">
  <contextmenu-item-reply></contextmenu-item-reply>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-properties></contextmenu-item-properties>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-group></contextmenu-item-group>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-default-prop></contextmenu-item-default-prop>
</contextmenu>
```

Usage:

```
<caret-contextmenu name="fv--areahighlight-contextmenu"></caret-contextmenu>
<caret-contextmenu name="fv--replace-contextmenu"></caret-contextmenu>
<caret-contextmenu name="fv--caret-contextmenu"></caret-contextmenu>
```

```
<textmarkup-contextmenu>
```

Original template:

```
<contextmenu name="fv--textmarkup-contextmenu">
  <contextmenu-item-reply></contextmenu-item-reply>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-copy-text></contextmenu-item-copy-text>
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-properties></contextmenu-item-properties>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-default-prop></contextmenu-item-default-prop>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-group></contextmenu-item-group>
</contextmenu>
```

Usage:

```
<textmarkup-contextmenu name="fv--highlight-contextmenu"></textmarkup-contextmenu>
<textmarkup-contextmenu name="fv--strikeout-contextmenu"></textmarkup-contextmenu>
<textmarkup-contextmenu name="fv--underline-contextmenu"></textmarkup-contextmenu>
<textmarkup-contextmenu name="fv--squiggly-contextmenu"></textmarkup-contextmenu>
```

```
<freetext-contextmenu>
```

Original template:

```
<contextmenu name="fv--freetext-contextmenu">
  <contextmenu-item-cut></contextmenu-item-cut>
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-properties></contextmenu-item-properties>
  <contextmenu-separator></contextmenu-separator>
```

```
<form-designer:alignment-menu></form-designer:alignment-menu>
<contextmenu-separator @require-modules="group-annot"></contextmenu-separator>
<contextmenu-item-group></contextmenu-item-group>
<contextmenu-separator></contextmenu-separator>
<contextmenu-item-default-prop></contextmenu-item-default-prop>
</contextmenu>
```

Usage:

```
<freetext-contextmenu name="fv--typewriter-contextmenu"></freetext-contextmenu>
<freetext-contextmenu name="fv--callout-contextmenu"></freetext-contextmenu>
<freetext-contextmenu name="fv--textbox-contextmenu"></freetext-contextmenu>
```

```
<action-annot-contextmenu>
```

Original template:

```
<contextmenu name="fv--action-annot-contextmenu">
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-properties></contextmenu-item-properties>
  <contextmenu-separator></contextmenu-separator>
  <form-designer:alignment-menu></form-designer:alignment-menu>
</contextmenu>
```

Usage:

```
<action-annot-contextmenu name="fv--image-contextmenu"></action-annot-contextmenu>
<action-annot-contextmenu name="fv--link-contextmenu"></action-annot-contextmenu>
```

```
<fileattachment-contextmenu>
```

Original template:

```
<contextmenu name="fv--fileattachment-contextmenu">
  <contextmenu-item-reply></contextmenu-item-reply>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-properties></contextmenu-item-properties>
  <contextmenu-separator></contextmenu-separator>
  <form-designer:alignment-menu></form-designer:alignment-menu>
  <contextmenu-separator @require-modules="group-annot"></contextmenu-separator>
  <contextmenu-item-group></contextmenu-item-group>           <contextmenu-separator></contextmenu-
separat
  <contextmenu-item-default-prop></contextmenu-item-default-prop>
</contextmenu>
```

```
<media-contextmenu>
```

Original template:

```
<contextmenu name="fv--media-contextmenu">
    <contextmenu-item-media-download></contextmenu-item-media-download>
    <contextmenu-separator></contextmenu-separator>
    <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
    <contextmenu-separator></contextmenu-separator>
    <contextmenu-item-properties></contextmenu-item-properties>
    <contextmenu-separator></contextmenu-separator>
    <contextmenu-item-media-play></contextmenu-item-media-play>
    <contextmenu-separator></contextmenu-separator>
    <form-designer:alignment-menu></form-designer:alignment-menu>
</contextmenu>
```

**<sound-contextmenu>**

Original template:

```
<contextmenu name="fv--sound-contextmenu">
    <contextmenu-item-media-download></contextmenu-item-media-download>
    <contextmenu-separator></contextmenu-separator>
    <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
    <contextmenu-separator></contextmenu-separator>
    <contextmenu-item-media-play></contextmenu-item-media-play>
</contextmenu>
```

**<redact-contextmenu>**

Original template:

```
<contextmenu name="fv--redact-contextmenu">
    <contextmenu-item-reply></contextmenu-item-reply>
    <contextmenu-separator functional-module="redaction" @license-validation=""></contextmenu-separator>
    <contextmenu-item-delete-annot functional-module="redaction" @license-validation=""></contextmenu-
item-delete-annot>
    <contextmenu-separator functional-module="redaction" @license-validation=""></contextmenu-separator>
    <contextmenu-item-apply functional-module="redaction" @license-validation=""></contextmenu-item-apply>
    <contextmenu-item-apply-all functional-module="redaction" @license-validation=""></contextmenu-item-
apply-all>
    <contextmenu-item-place functional-module="redaction" @license-validation=""></contextmenu-item-place>
    <contextmenu-separator functional-module="redaction" @license-validation=""></contextmenu-separator>
    <contextmenu-item-properties functional-module="redaction" @license-validation=""></contextmenu-item-
properties>
    <contextmenu-separator functional-module="redaction" @license-validation=""></contextmenu-separator>
    <form-designer:alignment-menu></form-designer:alignment-menu>
    <contextmenu-separator></contextmenu-separator>
    <contextmenu-item-default-prop></contextmenu-item-default-prop>
    <span class="fv-redact-codesets" name="codesets" @controller="annot-opr:SetPropsDefault as spdcl">
        <contextmenu-separator></contextmenu-separator>
    </span>
</contextmenu>
```

```
<edit-graphics:image-contextmenu>
```

Original template:

```
<contextmenu name="fv--image-graphics-object-contextmenu" @edit-graphics:check-activates="">
  <edit-graphics:contextmenu-item-set-to-front name="fv--contextmenu-item-image-graphics-object-set-to-
front"></edit-graphics:contextmenu-item-set-to-front>
  <edit-graphics:contextmenu-item-set-to-back name="fv--contextmenu-item-image-graphics-object-set-to-
back"></edit-graphics:contextmenu-item-set-to-back>
  <edit-graphics:contextmenu-separator></edit-graphics:contextmenu-separator>
  <edit-graphics:contextmenu-item-delete name="fv--contextmenu-item-image-graphics-object-delete"></edit-
graphics:contextmenu-item-delete>
  <edit-graphics:contextmenu-separator></edit-graphics:contextmenu-separator>
  <edit-graphics:contextmenu-item-properties name="fv--contextmenu-item-image-graphics-object-
properties"></edit-graphics:contextmenu-item-properties>
</contextmenu>
```

```
<edit-pageobjects:path-contextmenu>
```

Original template:

```
<contextmenu name="fv--path-graphics-object-contextmenu" @edit-graphics:check-activates="">
  <edit-graphics:contextmenu-item-set-to-front name="fv--contextmenu-item-image-graphics-object-set-to-
front"></edit-graphics:contextmenu-item-set-to-front>
  <edit-graphics:contextmenu-item-set-to-back name="fv--contextmenu-item-image-graphics-object-set-to-
back"></edit-graphics:contextmenu-item-set-to-back>
  <edit-graphics:contextmenu-separator></edit-graphics:contextmenu-separator>
  <edit-graphics:contextmenu-item-delete name="fv--contextmenu-item-path-graphics-object-delete"></edit-
graphics:contextmenu-item-delete>
  <edit-graphics:contextmenu-separator></edit-graphics:contextmenu-separator>
  <edit-graphics:contextmenu-item-properties name="fv--contextmenu-item-path-graphics-object-
properties"></edit-graphics:contextmenu-item-properties>
</contextmenu>
```

```
<text-field-contextmenu>
```

Original template:

```
<contextmenu name='fv--text-field-contextmenu'>
  <contextmenu-item name="fv--contextmenu-item-form-sign" @controller="annot-
opr:SignController">certifySign.sign</contextmenu-item>
  <contextmenu-item-form-properties></contextmenu-item-form-properties>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
</contextmenu>
```

**Note:** The name of the contextmenu is used internally to obtain the menu components and cannot be changed!

From version 8.2.0, this component has been removed and contextmenu-form-designer is used instead.

### **contextmenu-form-designer**

```
<contextmenu name="contextmenu-form-designer">
  <contextmenu-item
    @controller="form-designer:Copy"
  >contextmenu.annot.copyAnnot</contextmenu-item>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item
    name="deleteTarget"
    @controller="form-designer:Delete"
  >contextmenu.annot.delete</contextmenu-item>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item
    name="propertiesMenu"
    @controller="form-designer>ShowPropertiesController"
  >contextmenu.annot.properties</contextmenu-item>
  <contextmenu-separator></contextmenu-separator>
  <contextmenu-item
    @controller="form-designer:MultipleCopy"
  >form-designer:contextMenu.multipleCopy</contextmenu-item>
  <contextmenu-item
    name="copyToPage"
    @controller="form-designer:CopyToPage"
  >form-designer:contextMenu.copyToPage</contextmenu-item>
  <contextmenu-item
    name="setTabOrdern"
    @controller="form-designer:SetTabOrder"
  >form-designer:contextMenu.setTabOrder</contextmenu-item>
  <contextmenu-separator></contextmenu-separator>
  <form-designer:alignment-menu></form-designer:alignment-menu>
</contextmenu>
```

```
<text-sel:text-selection-tooltip>
```

A floating component that appears when you select text in a PDF page.

```
<annottext>
```

A floating component that appears when mouse over an annotation.

# Directives

## @controller

The `@controller` directive attaches a controller class to the component. The controller class must be registered in a module.

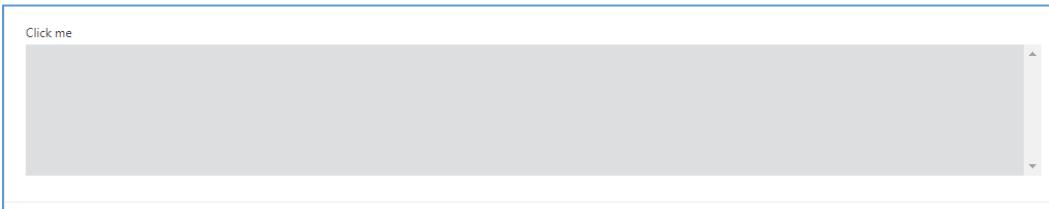
### Usage

Syntax

```
<component-name @controller="module-name:ControllerName">
```

### Example

This example demonstrates the directive syntax.



```
<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <xbutton @controller="custom:MyController">Click me</xbutton>
      </div>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<script>
  UIExtension.PDFUI.module('custom', [])
    .controller('MyController', {
      handle: function() {
        alert('Button click!');
      }
    });
</script>
```

```

var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

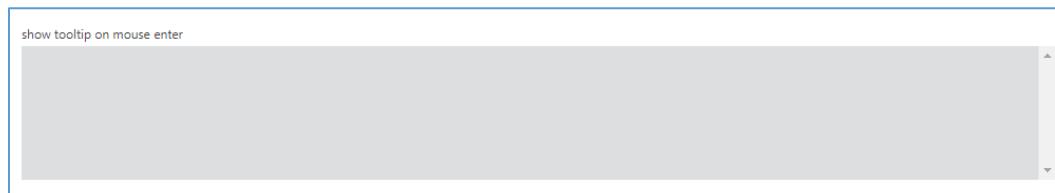
```

## @tooltip

This is a simple text pop-up tip which is shown on mouse enter and hidden on mouse leave. This tooltip doesn't support complex text and operations.

### Example

#### Show tooltip on mouse enter



```

<html>
    <template id="layout-template">
        <webpdf>
            <div>
                <xbutton @tooltip tooltip-title="Tooltip title">show tooltip on mouse enter</xbutton>
            </div>
            <div class="fv__ui-body">
                <viewer></viewer>
            </div>
        </webpdf>
    </template>
</html>

```

```
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>
```

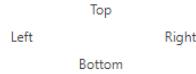
## Tooltip placement



```
<html>
<template id="layout-template">
<webpdf>
<div class="vertical">
    <xbutton @tooltip tooltip-title="pop text" tooltip-placement="top">Top</xbutton>
    <div class="left-right">
        <xbutton @tooltip tooltip-title="pop text" tooltip-placement="left">Left</xbutton>
        <xbutton @tooltip tooltip-title="pop text" tooltip-placement="right">Right</xbutton>
    </div>
    <xbutton @tooltip tooltip-title="pop text" tooltip-placement="bottom">Bottom</xbutton>
</div>
<div class="fv__ui-body">
```

```
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.vertical {
    display: flex;
    flex-direction: column;
    align-items: center;
    width: 200px;
    margin: 50px auto;
}
.vertical .fv__ui-button {
    width: 60px;
    justify-content: center;
}
.left-right {
    display: flex;
    flex-direction: row;
    justify-content: space-between;
    width: 100%;
}
.fv__ui-body {
    display: none;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## Fragment configuration

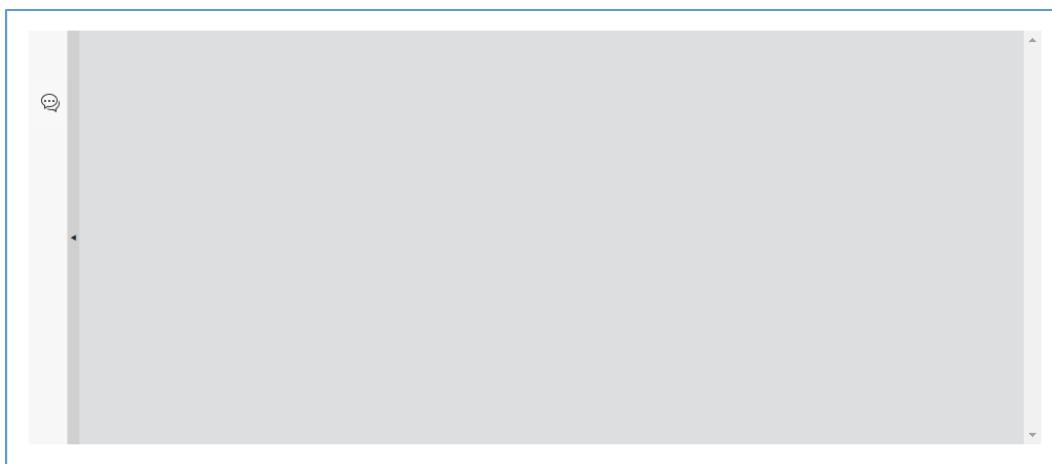


The diagram shows four buttons arranged in a square. The top button is labeled "Top", the left button is labeled "Left", the right button is labeled "Right", and the bottom button is labeled "Bottom".

```
<html>
<template id="layout-template">
<webpdf>
<div class="vertical">
    <xbutton name="top-button" @tooltip tooltip-title="pop text" tooltip-placement="top">Top</xbutton>
    <div class="left-right">
        <xbutton name="left-button" @tooltip tooltip-title="pop text" tooltip-placement="left">Left</xbutton>
        <xbutton name="right-button" @tooltip tooltip-title="pop text" tooltip-placement="right">Right</xbutton>
    </div>
    <xbutton name="bottom-button" @tooltip tooltip-title="pop text" tooltip-placement="bottom">Bottom</xbutton>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<style>
.vertical {
    display: flex;
    flex-direction: column;
    align-items: center;
    width: 200px;
    margin: 50px auto;
}
.vertical .fv__ui-button {
    width: 60px;
    justify-content: center;
}
.left-right {
    display: flex;
    flex-direction: row;
    justify-content: space-between;
}
```

```
    width: 100%;
}
.fv__ui-body {
  display: none;
}
</style>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template').innerHTML;
    },
    getDefaultFragments: function() {
      return [
        {
          target: 'left-button',
          config: {
            tooltip: {
              title: 'fragment config'
            }
          }
        }
      ];
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
  });
</script>
```

### Tooltip on sidebar



```
<html>
<template id="layout-template">
<webpdf>
<div class="fv__ui-body">
<sidebar>
<!-- tooltip-anchor: specify an element to display tip -->
<sidebar-panel
  @tooltip
  tooltip-title="Tooltip text"
  tooltip-placement="right"
  tooltip-anchor=".fv__ui-sidebar-nav-ctrl"
  icon-class="fv__icon-sidebar-comment-list"
></sidebar-panel>
</sidebar>
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
```

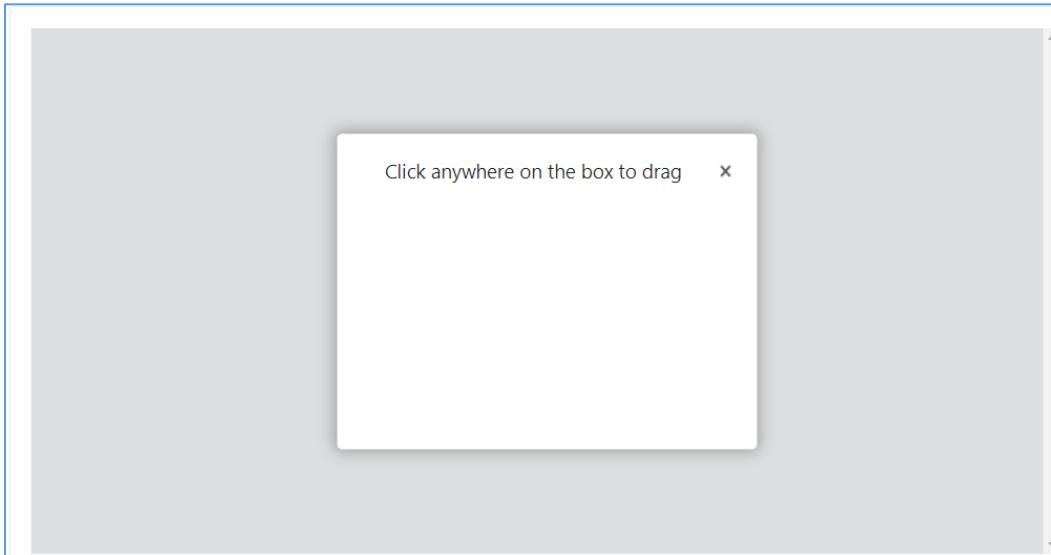
```
        appearance: CustomAppearance,  
        addons: []  
    );  
</script>
```

## @draggable

The `@draggable` directive implements a common drag-and-drop function which is commonly used in dialog components.

### Example

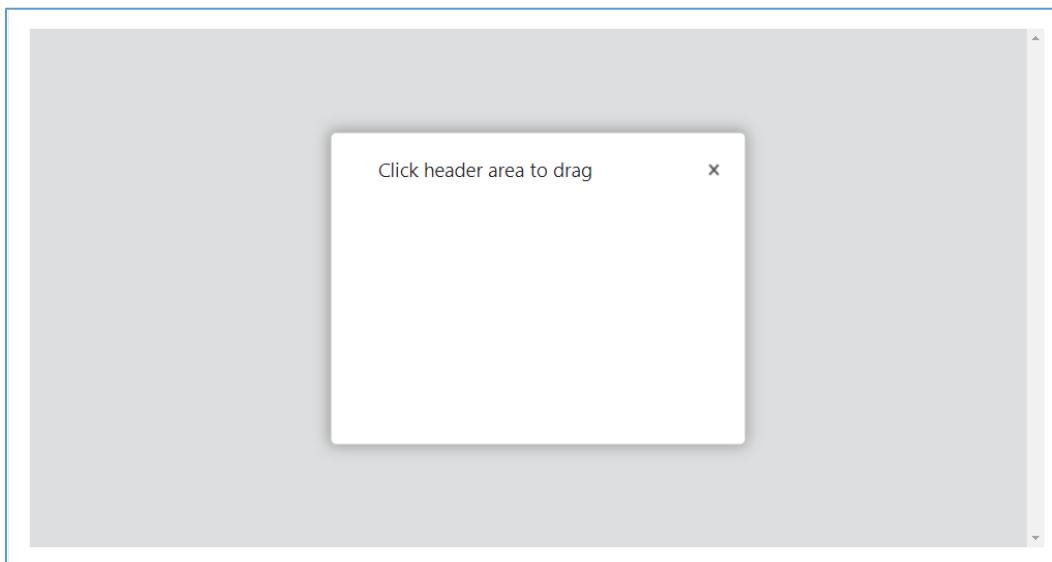
#### Draggable dialog



```
<html>  
  <template id="layout-template">  
    <webpdf>  
      <div class="fv__ui-body">  
        <viewer></viewer>  
      </div>  
      <template>  
        <layer name="my-layer2" class="center my-layer" @draggable visible>  
          <layer-header title="Click anywhere on the box to drag" icon-class="fv__icon-toolbar-print"></layer-  
header>  
        </layer>  
      </template>  
    </webpdf>  
  </template>  
</html>  
<style>  
  .my-layer {
```

```
width: 400px;
height: 300px;
}
.flex-container {
display: flex;
justify-content: space-between;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
getLayoutTemplate: function() {
return document.getElementById('layout-template').innerHTML;
},
disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
viewerOptions: {
libPath: libPath,
jr: {
licenseSN: licenseSN,
licenseKey: licenseKey
}
},
renderTo: document.body,
appearance: CustomAppearance,
addons: []
});
</script>
```

### Draggable dialog header



<html>

```

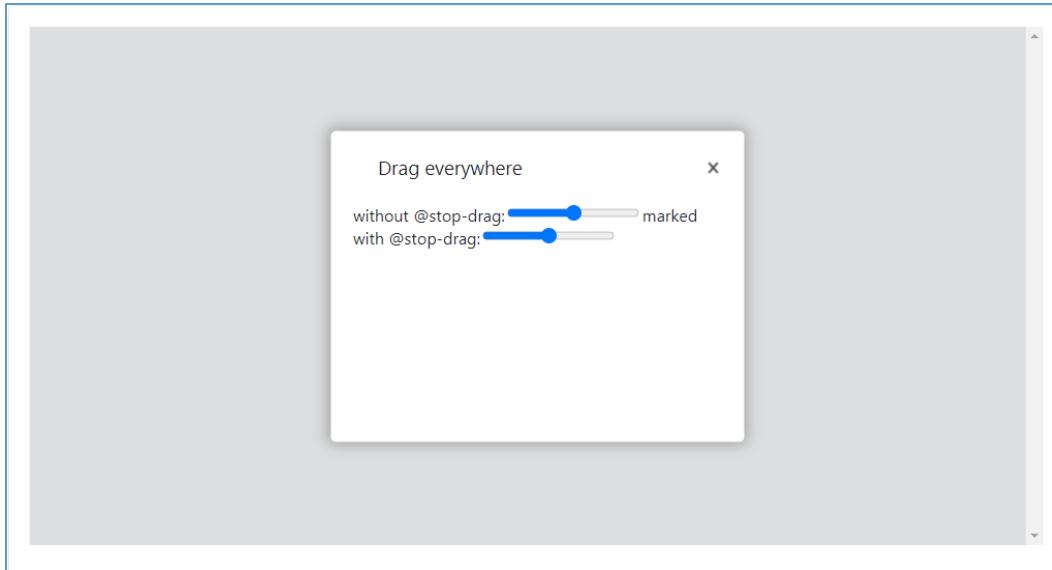
<template id="layout-template">
  <webpdf>
    <div class="fv__ui-body">
      <viewer></viewer>
    </div>
    <template>
      <layer name="my-layer1" class="center my-layer" visible>
        <layer-header @draggable="{type:'parent'}" title="Click header area to drag" icon-class="fv__icon-toolbar-print"></layer-header>
        </layer>
      </template>
    </webpdf>
  </template>
</html>
<style>
.my-layer {
  width: 400px;
  height: 300px;
}
.flex-container {
  display: flex;
  justify-content: space-between;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  },
  disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
  appearance: CustomAppearance,
  addons: []
});
</script>

```

### Non-draggable area

Sometimes, a draggable dialog box may contain components that have their own drag function (e.g., slider). At this point, if the drag function does not stop dragging events from propagating to the

outer layer, the overall interaction will be affected. To solve this problem, you can mark the component with `@stop-drag` to prevent the inner component drag function. Here is the code example:



```
<html>
<template id="layout-template">
  <webpdf>
    <div class="fv__ui-body">
      <viewer></viewer>
    </div>
    <template>
      <layer name="my-layer1" class="center my-layer" @draggable visible>
        <layer-header title="Drag everywhere" icon-class="fv__icon-toolbar-print"></layer-header>
        <div>
          <label>
            without @stop-drag:
            <input type="range" min="0" max="100" step="0.1">
          </label>
          <label>
            marked with @stop-drag:
            <input @stop-drag type="range" min="0" max="100" step="0.1">
          </label>
        </div>
      </layer>
    </template>
  </webpdf>
</template>
</html>
<style>
  .my-layer {
    width: 400px;
  }
</style>
```

```

        height: 300px;
    }
    .flex-container {
        display: flex;
        justify-content: space-between;
    }
</style>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: []
    });
</script>

```

## @device

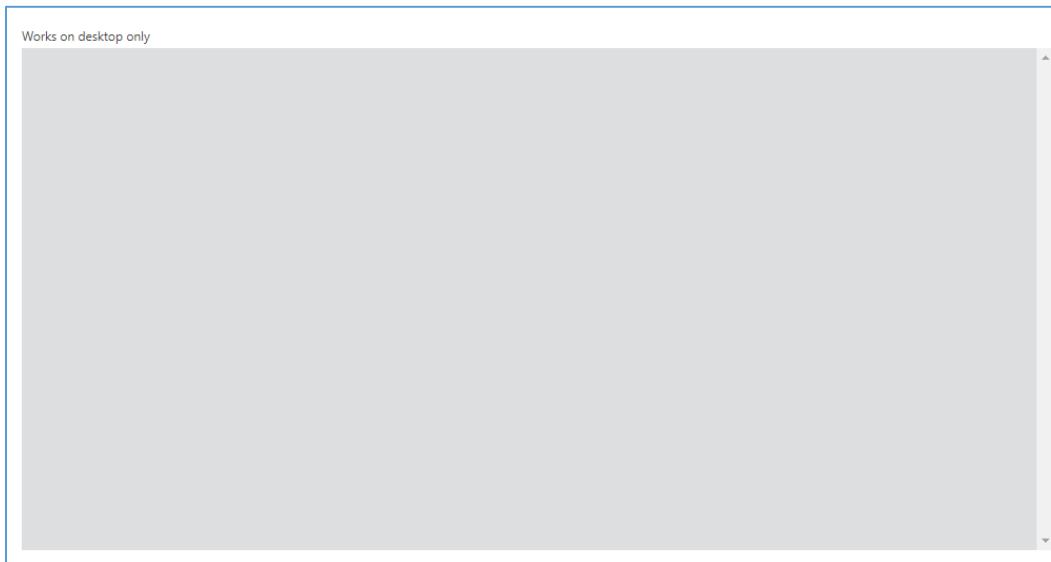
The `@device` directive is used to specify a list of device types and to restrict components to run only on the marked (specified) devices. If the currently running device type doesn't match with any of the marked devices, the component with the device markers won't be resolved and calling `getComponentByName()` or `querySelector` will fail to retrieve the components

### Device Type

Name	Description
mobile	mobile devices
tablet	tablet devices
desktop	desktop

Name	Description
touch	touchable screen devices
android	android devices
iphone	iphones
ios	devices with IOS OS
ipad	ipad

## Example



```
<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <xbutton name="desktop-button" @device="desktop">Works on desktop only</xbutton>
        <xbutton name="mobile-tablet-button" @device="mobile,tablet">Works on mobile and
        tablet</xbutton>
      </div>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
```

```

getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
},
disableAll: function(){}
afterMounted: function(rootComponent) {
    // In addition to the desktop, other devices will return null
    var desktopButton = rootComponent.getComponentByName('desktop-button');
    // in addition to mobile and tablet device, other devices will return null;
    var mobileTabletButton = rootComponent.getComponentByName('mobile-tablet-button');
    console.info(desktopButton, mobileTabletButton);
}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>

```

@device.invert example



```

<html>
<template id="layout-template">
<webpdf>
<div>

```

```
<xbutton name="desktop-button" @device.invert="desktop">Doesn't work on desktop</xbutton>
<xbutton name="mobile-tablet-button" @device.invert="mobile,tablet">Doesn't work on mobile and
tablet</xbutton>
</div>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
</script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    },
    disableAll: function(){}
    afterMounted: function(rootComponent) {
        // In desktop, this will return null
        var desktopButton = rootComponent.getComponentByName('desktop-button');
        // in mobile and tablet device will return null
        var mobileTabletButton = rootComponent.getComponentByName('mobile-tablet-button');
        console.info(desktopButton, mobileTabletButton);
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## @require-modules

The `@require-modules` directive is used to determine if a [module](#) exists, and if it does not, the component marked with this directive won't be resolved.

### Code example

When you run the following example, you won't see any buttons because the `file-Property` addon isn't loaded.



```
<html>
<template id="layout-template">
<webpdf>
<group-list>
<!-- 'fpmodule' is a module defined in the 'file-property' addon which is not declared in the
`addons:[]` , this group component will not be rendered -->
<group name="file-property" @require-modules="fpmodule">
    <fpmodule:file-property-button></fpmodule:file-property-button>
</group>
</group-list>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
<template>
    <fpmodule:file-property-dialog></fpmodule:file-property-dialog>
</template>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template').innerHTML;
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    }
});
```

```
},
renderTo: document.body,
appearance: CustomAppearance,
addons: [] // No addon is loaded
});
var origin = window.top.location.origin;
var url = origin + window.top.location.href.slice(origin.length).replace(/((\?|&)?docs\?).*/,
'$1FoxitPDFSDKforWeb_DemoGuide.pdf');
pdfui.openPDFByHttpRangeRequest({
range: {
url: url,
}
}, { fileName: 'FoxitPDFSDKforWeb_DemoGuide.pdf' })

window.addEventListener(UIExtension.PDFViewCtrl.DeviceInfo.isDesktop ? 'resize' : 'orientationchange',
function(e) {
    pdfui.redraw().catch(function(err) {console.log(err)});
});
</script>
```

When you run the following example, you will see the `File Property` because the `file-Property` addon is loaded.



```
<html>
<template id="layout-template">
<webpdf>
<group-list>
<group name="file-property" @require-modules="fpmodule">
    <fpmodule:file-property-button></fpmodule:file-property-button>
</group>
</group-list>
<div class="fv__ui-body">
    <viewer></viewer>
</div>
<template>
    <fpmodule:file-property-dialog></fpmodule:file-property-dialog>
```

```

        </template>
    </webpdf>
</template>
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template').innerHTML;
        }
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: [
            libPath + '/uix-addons/file-property'
        ] // the `file-property` addon will be loaded
    });
    var origin = window.top.location.origin;
    var url = origin + window.top.location.href.slice(origin.length).replace(/((\.\*)?\\/docs\').*/,
        '$1FoxitPDFSDKforWeb_DemoGuide.pdf');
    pdfui.openPDFByHttpRangeRequest({
        range: {
            url: url,
        }
    }, { fileName: 'FoxitPDFSDKforWeb_DemoGuide.pdf' })

    window.addEventListener(UIExtension.PDFViewCtrl.DeviceInfo.isDesktop ? 'resize' : 'orientationchange',
        function(e) {
            pdfui.redraw().catch(function(err) {console.log(err)});
        });
</script>

```

## @on

The `@on` directive is typically used to listen to events triggered on a component, including custom events within the component and native DOM events, and can accept an expression to be executed after the event is triggered.

## Usage

1. Syntax for listening to custom events:

```
<component @on.custom-event-name="expression"></component>
```

2. Syntax for listening to native DOM events:

```
<component @on.native.click="expression"></component>
```

## Example

The following example demonstrates the usage of the custom events and native DOM events through two buttons. Please click the [run](#) button to start the example:



```
<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <custom:listener></custom:listener>
      </div>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<script>
  const { SeniorComponentFactory, modular } = UIExtension;
  class EventEmitterComponent extends SeniorComponentFactory.createSuperClass({
    template: `
      <button></button>
    `

  }) {
    static getName() {
      return 'emitter'
    }
    mounted() {
      super.mounted();
      this.trigger('foo')
    }
  }
</script>
```

```
class EventListenerComponent extends SeniorComponentFactory.createSuperClass({
  template: `
    <div @var.self="$component">
      <custom:emitter @on.foo="self.onFoo()" @on.native.click="self.onNativeClick()">
        @cannotBeDisabled >Mouse click</custom:emitter>
      </div>
    `
}) {
  static getName() {
    return 'listener'
  }
  onFoo() {
    alert('on foo'); // The emitter component will immediately trigger the foo event after mounted.
  }
  onNativeClick() {
    alert('on native click event'); // Clicking on the emitter component will trigger the click event.
  }
}

modular.module('custom', [])
  .registerComponent(EventEmitterComponent)
  .registerComponent(EventListenerComponent)
;

var CustomAppearance = UIExtension.appearances.Appearance.extend({
  getLayoutTemplate: function() {
    return document.getElementById('layout-template').innerHTML;
  }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: document.body,
  appearance: CustomAppearance,
  addons: []
});
</script>
```

## **@retractable and @retractable-body**

### **Introduction**

@retractable and @retractable-body are two custom directives that need to be used together to implement the retractable (floating) and fixed functionalities of the tab panel. These two directives can help you create tabs with retractable and fixed functionalities in your application, thus providing a better user experience.

### **Usage**

#### ***Basic usage***

To create tabs with retractable and fixed functionalities, please use the @retractable and @retractable-body directives in combination. Below is a basic usage example:

```
<gtab name="home-tab" group="tabs" body="home-tab-body" @retractable></gtab>
<gtab name="edit-tab" group="tabs" body="edit-tab-body" @retractable></gtab>
<div name="home-tab-body" @retractable-body style="position: relative"></div>
<div name="edit-tab-body" @retractable-body style="position: relative"></div>
```

After using the @retractable and @retractable-body directives, the tab panel will have retractable and fixed functionalities, allowing users to click on tabs or buttons to expand or collapse the page content.

#### ***Enable the @retractable functionality***

Since the default layout template does not integrate with this directive, users need to take further action to enable the related functionality. Currently, users may encounter the following scenarios:

1. User uses the default built-in layout
2. User uses a custom layout

Below, we will explain the usage for these two scenarios.

#### ***How to enable the functionality when using the default built-in layout***

You can enable the functionality using [Fragment Configuration](#):

```
var CustomAppearance= UIExtension.appearances.AdaptiveAppearance.extend({
    getDefaultFragments: function() {
        return [
            target: '@gtab', // Select all <gtab> components
            config: {
                attrs: {
```

```

        '@retractable': "
    }
}
}, {
    target: 'toolbar-tab-bodies', // Select the container of the tab panel

    config: {
        attrs: {
            '@retractable-body': "
        }
    }
};

})
new PDFUI({
    // ...more options
    appearance: CustomAppearance
})

```

### **How to enable the functionality when using a custom layout**

In a custom layout, you just need to add the `@retractable` directive to the `<gtab>` component. The `@retractable-body` directive can be added to each tab panel or to the container of the tab panels, as long as all your tab panels are placed under the same container component. However, the first method is more cumbersome, and we do not recommend it. Below, we provide an example of using the `@retractable-body` directive in a container component:

```

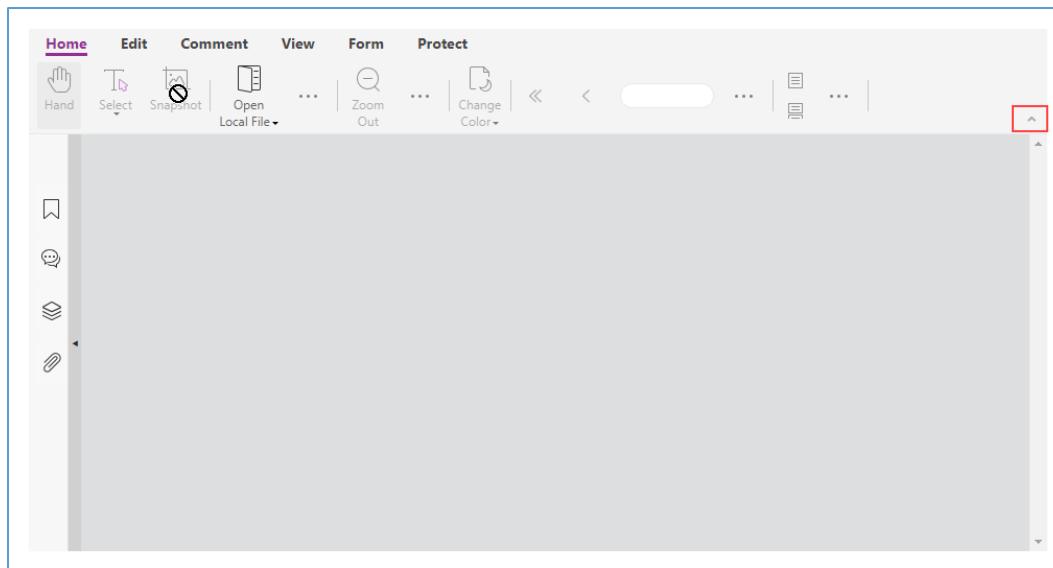
var CustomAppearance= UIExtension.appearances.AdaptiveAppearance.extend({
    getLayoutTemplate: function(){
        return `
            <webpdf @aria:circular-focus>
                <toolbar name="toolbar" class="fv__ui-toolbar-scrollable" @aria:role="navigation"
@aria:label="aria:labels.toolbar.nav-title">
                    <div class="fv__ui-tab-nav" name="toolbar-tabs" @alt.menu="">::activated() @aria:toolbar.tablist>
                        <gtab @retractable name="home-tab" group="toolbar-tab" body="fv--home-tab-paddle"
text="toolbar.tabs.home.title" @aria:toolbar.tab active @portfolio.deactive></gtab>
                        <gtab @retractable name="comment-tab" group="toolbar-tab" body="fv--comment-tab-paddle"
text="toolbar.tabs.comment.title" @aria:toolbar.tab @portfolio.unsupport></gtab>
                    </div>
                    <div class="fv__ui-toolbar-tab-bodies" name="toolbar-tab-bodies" @retractable-body>
                        <paddle exclude-devices="tablet" name="fv--home-tab-paddle" @portfolio.unsupport
@aria:toolbar>
                            <group-list name="home-toolbar-group-list">
                                <group name="home-tab-group-hand" retain-count="3">
                                    <hand-ribbon-button></hand-ribbon-button>
                                    <selection-ribbon-dropdown></selection-ribbon-dropdown>
                                    <snapshot-ribbon-button @hide-on-sr></snapshot-ribbon-button>
                                </group>
                            </group-list>
                        </paddle>
                    </div>
                </toolbar>
            </webpdf>
        `;
    }
});

```

```
<group name="home-tab-group-io" retain-count="1" shrink-
title="toolbar.more.document.title">
    <open-file-ribbon-dropdown></open-file-ribbon-dropdown>
    <download-file-ribbon-button></download-file-ribbon-button>
    <print:print-ribbon-button></print:print-ribbon-button>
</group>
<!-- ... more components -->
</group-list>
</paddle>
<paddle exclude-devices="tablet" name="fv--comment-tab-paddle" @portfolio.unsupport
@aria:toolbar visible="false" @lazy.idle>
    <group-list name="comment-toolbar-group-list">
        <group name="comment-tab-group-hand" retain-count="3">
            <hand-ribbon-button></hand-ribbon-button>
            <selection-ribbon-dropdown></selection-ribbon-dropdown>
            <zoom-ribbon-dropdown></zoom-ribbon-dropdown>
        </group>
        <group name="comment-tab-group-note" retain-count="3">
            <create-note-ribbon-button></create-note-ribbon-button>
            <create-attachment-ribbon-button></create-attachment-ribbon-button>
        </group>
        <!-- ... more components -->
    </group-list>
</paddle>
</div>
</toolbar>
<!-- ... more components -->
</webpdf>
`;
}
})
new PDFUI({
    // ...more options
    appearance: CustomAppearance
})
```

## Example

Here is a complete example that demonstrates how to create a simple application with retractable tabs using the `@retractable` and `@retractable-body` directives. Please click the `run` button to execute.



```
<style>
.my-layer {
  width: 400px;
  height: 300px;
}
.flex-container {
  display: flex;
  justify-content: space-between;
}
</style>
<script>
var CustomAppearance = UIExtension.appearances.AdaptiveAppearance.extend({
getDefaultFragments: function() {
  debugger;
  return [
    {
      target: '@gtab', // Select all <gtab> components
      config: {
        attrs: {
          '@retractable': ''
        }
      }
    },
    {
      target: 'toolbar-tab-bodies', // Select the container of the tab panel
      config: {
        attrs: {
          '@retractable-body': ''
        }
      }
    }
  ];
}
);
var libPath = window.top.location.origin + '/lib';
```

```
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: []
});
</script>
```

## Note

1. The `@retractable` directive adds a button component inside the tab panel, which is displayed at the bottom right corner of the tab panel. This is accomplished using absolute positioning (`position: absolute`). Thus, you need to make sure that the `position` CSS property value of the tab panel cannot be set to `static`.
2. The purpose of the `@retractable-body` directive is to add the `fv__ui-retractable-floating-bar` to the component's `className` when the user collapses the tab panel. This class includes default styles such as `position: absolute; left: 0; right: 0`, which are intended to make the panel width equal to that of the parent node and not take up the container's height. In practical application scenarios, the panel may not display correctly due to issues such as the parent node not having a set width and positioning. Users should adjust these style values based on their specific application requirements.

# Addons

## Introduction to addons

In the `/lib/uix-addons` directory, Foxit PDF SDK for Web provides a set of rich addons that can be freely combined. The following structure lists the currently supported addons. Each addon can be loaded individually or in combination as needed.

uix-addons	
── aria	----- Make components support ARIA standards
── comparison	----- Provides the function of comparing PDF documents
── edit-graphics	----- Edit page objects
── export-form	----- Export form
── file-property	----- Used to display PDF file
── form-designer	----- Provides form editing function
── form-to-sheet	----- Provides functionality for form-to-sheet conversion
── full-screen	----- Full screen
── h-continuous	----- Horizontal continuous page mode
── h-facing	----- Horizontal facing mode for the cover
── h-single	----- Horizontal single page mode
── import-form	----- Import form
── javascript-form	----- Add, modify and test JavaScript within the document
── manage-comments	----- Provides a series of functions to control the list of comments
── multi-media	----- Provides the function of adding audio and video annotations
── page-template	----- Provides the function of editing page templates
── password-protect	----- Password protection
── path-objects	----- Edit path objects
── preview	----- Supports output preview feature
── print	----- Print PDF pages function
── range-input	----- Provides range-input component.
── read-aloud	----- Read aloud UI components
── recognition-form	----- Form field recognition
── redaction	----- Redaction
── rotate-pages	----- Rotate pages
── search	----- Text search function
── text-object	----- Edit text objects
── thumbnail	----- Provides the function of thumbnail sidebar
── undo-redo	----- Undo and redo
── xfa-form	----- Provides the function of editing static XFA form
── dynamic-xfa	----- Provides the function of editing dynamic XFA form
── allInOne.js	----- Collection of all add-ons
── allInOne.mobile.js	----- Collection of all add-ons that support mobile

## Dependency Hierarchy

In order to avoid repeating registration and execution of the same functions in different addons, the functions will be extracted into separate addons, and then passively loaded as dependencies.

```
edit-graphics
  └── path-objects
    └── text-object
```

When the application loads `path-objects` or `text-object`, `edit-graphics` will also be loaded and only loaded once.

## Load Addons

### ***Load addons individually***

You can load all available addons or a few specific addons individually.

#### **Code Example:**

```
<script src="path/to/UIExtension.full.js"></script>
<script>
  var pdfui = new UIExtension.PDFUI({
    addons:[
      "path/to/customized-addon/addon.info.json",
      "path/to/lib/multi-media/addon.info.json",
      ...
    ],
    ...
  })
</script>
```

The file `/examples/UIExtension/complete_webViewer/index.html` also provides an example to show how to load all addons individually.

### ***Load addons in combination***

In the network environment, downloading too many addons would increase the HTTP requests. To minimize the number of HTTP requests, you may prefer loading all addons in a single file. We provide two script files `allInOne.js` (for PC) and `allInOne.mobile.js` (for mobile) which are a combination of all addons. Besides, you can use our [merge addons tools](#) to tailor addons.

## The addon's structure

### *The entry file -- addon.info.json*

The `addon.info.json` is the addon entry file, which includes the addon's library name, i18n sources and css files.

#### **Example:**

```
{  
  "library": "ExampleUIAddon",  
  "i18n": {  
    "ns": "example",  
    "sources": {  
      "en-US": "./locales/en-US.json",  
      "zh-CN": "./locales/zh-CN.json"  
    }  
  },  
  "css": [  
    "./index.css"  
  ]  
}
```

### *The "i18n" sources*

This item is used to configure localization. "ns" specifies namespace. "sources" specifies files.

After configuration, you can use `[i18n-namespace]:[i18n-key]` to implement localization.

In the case below, i18n namespace is "example", "i18n-key" could be "toolbar.title", "dialog.title" or "buttons.addText" (Refer to zh-CN.json for details).

```
<h6>example:dialog.title</h6>
```

will be translated to

```
<h6>Dialog title</h6>
```

And

```
<h6>对话框标题 Dialog title</h6>
```

### *The "css" field*

This item specifies style sheets ("index.css" is the output of style-loader). Currently only CSS is supported.

## **allInOne.js and allInOne.mobile.js**

The `allInOne.js` is a script file that contains all currently supported addons for PC, and the `allInOne.mobile.js` is for mobile. They are provided for your convenience to load addons in a combination way. The difference between them is that form-designer and text-object addons are not available in mobile.

### ***Load allInOne.js and allInOne.mobile.js***

```
<script src="path/to/UIExtension.full.js"></script>
<script src="path/to/allInOne.js"></script>
<script src="path/to/allInOne.mobile.js"></script>
<script>
  var pdfui = new UIExtension.PDFUI({
    addons: UIXAddons, // UIXAddons is the library name in allInOne.js
    ...
  })
</script>
```

### ***Loading custom addInOne.js and allInOne.mobile.js***

The default `allInOne.js` (for PC) and `allInOne.mobile.js` (for mobile) combine all currently supported addons into a single script. You can detach the unwanted addon by `UIXAddons(UIExtension).filter` and then load them to web viewer.

For example:

```
<script src="path/to/UIExtension.full.js"></script>
<script src="path/to/allInOne.js"></script>
<script>
  UIXAddons = UIXAddons(UIExtension).filter(addon=>addon.getName() != 'editTextObject')
  var pdfui = new UIExtension.PDFUI({
    addons: UIXAddons,
    ...
  })
</script>
```

## **Merge addons**

If you want to merge addons by yourself or rebuild `allInOne.js` or `allInOne.mobile.js` to merge your selected addons, you can use our merge addon tools `addon loader` and `gulp plugin`. Check out the links below for details.

- [\*\*addon-loader for webpack\*\*](#)
- [\*\*addon merge tool for gulp\*\*](#)

You can also refer to `/examples/UIExtension/use-merged-addon` for usage.

## Develop custom addons

The `/examples/UIExtension/scaffoldDemo/` is a scaffold project that contains an open source addon example. You may refer to the [`/examples/UIExtension/scaffoldDemo/readme.md`](#) file in that directory to start developing your own addons.

## How to use the controllers in addons

### API overview

The controllers in the Foxit PDF SDK for Web can be found in the API Reference documentation under the "Modules > UIExtension > controllers" section. Specifically, the controllers defined in addons are grouped together under the "Modules > UIExtension > controllers > UIAddon" section.

The API Reference documentation can be found at the following address: [https://webviewer-demo.foxit.com/docs/api\\_reference/html/group\\_controllers.html](https://webviewer-demo.foxit.com/docs/api_reference/html/group_controllers.html)

### The usage of controllers

#### *Using controllers in templates*

Let's take `page-editor:AddTextController` as an example to illustrate how to use a controller in a template.

Using controllers during initialization

```
new PDFUI({
  fragments: [
    // The target element to be manipulated
    target: 'add-text',
    // The type of operation, here is replacement
    action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
    // Template, here the "@require-modules" directive is used to handle lazy loading
    template: `<ribbon-button @controller="page-editor:AddTextController" @require-modules="page-
editor"></ribbon-button>`,
  ]
});
```

or

```
new PDFUI({
  fragments: [
    // The target element to be manipulated
```

```
target: 'add-text',
// The type of operation, here is replacement
action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
// Template, here the "@async" directive is used to handle lazy loading
template: `<ribbon-button @controller="page-editor:AddTextController" @async></ribbon-button>`,
}]
});
```

Using controllers after initialization

```
// After initialization, use the "Component.after" method to add elements after the component
var someComponent = await pdfui.getComponentByName('some-component-name');
someComponent.after(`<ribbon-button @controller="page-editor:AddTextController"></ribbon-button>`);
```

### ***Using controllers in configuration***

Let's take `AddImageController` as an example to illustrate how to use a controller in a configuration-based manner.

```
new PDFUI({
fragments: [
    // The target element to be manipulated
    target: 'image-tool',
    config: {
        // Specify the controller
        callback: UIExtension.controllers.AddImageController
    }
];
});
```

### **Limitations on the use of controllers in addons**

1. Controllers in addons cannot be used in a configuration-based manner and can only be used via templates. This is because addons are loaded asynchronously, and when configuring, the controllers in addons have not yet been loaded. Therefore, they can only be used via templates, which are loaded after the addons have been loaded.
2. Controllers in addons cannot be accessed through `UIExtension.controllers.SomeController`, because addons are loaded asynchronously. Therefore, it is not possible to expose the controllers in addons under `UIExtension.controllers`.

## Undo/Redo

### Introduction

Foxit PDF SDK for Web provides an addon called "undo-redo", which adds undo and redo functionality to PDF documents. Users can use the combination keys [Ctrl+Z](#) and [Ctrl+Y](#) to undo and redo the following actions:

- Add comments
- Delete comments
- Modify comments
- And more

Additionally, the addon also provides APIs to allow developers to implement undo and redo functionality in their custom applications.

### Load the addon

Please refer to the methods in the [Addons Introduction](#) section. Once the addon is loaded, the undo-redo functionality will be automatically activated. Users can use [Ctrl+Z](#) and [Ctrl+Y](#) (or [Cmd+Z](#) and [Cmd+Y](#) on Mac) to undo and redo the previous actions.

### APIs

In addition to providing shortcut keys, the undo-redo addon also offers a series of APIs to help developers implement custom features. Before calling the API, we first need to obtain the object instance of the undo-redo addon:

```
async function obtainAddonInstanceExample() {
  const undoRedoAddon = await pdfui.getAddonInstance("UndoRedoAddon");
  if (undoRedoAddon) {
    // Here you can begin to use the methods of undoRedoAddon object.
  } else {
    console.error("UndoRedo Addon instance not found.");
  }
}
```

For a detailed description of APIs in `UndoRedoAddon` class, please refer to the [API Reference](#).

After getting the `UndoRedoAddon` instance, let's start using it.

### ***Undo an operation***

The `undoRedoAddon.undo()` method is used for undoing an operation, allowing the reversal of the user's last action. Please refer to the example:

```
async function undoExample() {
  const undoRedoAddon = await pdfui.getAddonInstance("UndoRedoAddon");
  if (undoRedoAddon) {
    undoRedoAddon.undo();
  } else {
    console.error("UndoRedo Addon instance not found.");
  }
}
```

### ***Redo an operation***

The `undoRedoAddon.redo()` method is used for redoing an operation, allowing the reapplication of the most recent user action that was undone. Please refer to the example:

```
async function redoExample() {
  const undoRedoAddon = await pdfui.getAddonInstance("UndoRedoAddon");
  if (undoRedoAddon) {
    undoRedoAddon.redo();
  } else {
    console.error("UndoRedo Addon instance not found.");
  }
}
```

### ***Undo all operations***

The `undoRedoAddon.undoAll()` method is used for undoing all operations, allowing the reversal of all user actions and restoring the document to its original state. Please refer to the example:

```
async function undoAllExample() {
  const undoRedoAddon = await pdfui.getAddonInstance("UndoRedoAddon");
  if (undoRedoAddon) {
    undoRedoAddon.undoAll();
  } else {
    console.error("UndoRedo Addon instance not found.");
  }
}
```

Although all operations have been undone, they can still be redone step by step.

### ***Record operations***

The UndoRedoAddon also provides an `invoke` method, through which a callback function can be passed. This function accepts a [PDFDoc](#) object, which is a wrapped object. The difference between

this wrapped PDFDoc and an unwrapped one is that it can record operations, and these recorded operations can be undone and redone.

Here is a simple example, where we record the operations of creating and modifying annotations within the callback function. After these operations have been recorded, we can also undo and redo them using the `undo/redo` APIs:

```
function wait() {
    // The purpose of this function is to pause for a certain amount of time after each step is executed, making it easier to observe the results.
    return new Promise((resolve) => setTimeout(resolve, 2000));
}

async function invokeExample() {
    const undoRedoAddon = await pdfui.getAddonInstance("UndoRedoAddon");
    if (undoRedoAddon) {
        await undoRedoAddon.invoke(async (pdfDoc) => {
            const pdfPage = await pdfDoc.getPageByIndex(0);
            const [square, popup] = await pdfPage.addAnnot({
                type: "square",
                rect: {
                    left: 0,
                    right: 100,
                    bottom: 500,
                    top: 550,
                },
                color: 0xff0000, // Initialize the border color to red.
            });
            await wait();
            // Set the border color to purple after creation is completed.
            await square.setBorderColor(0xff00ff);
        });
        await wait();

        // After undoing, the color reverts back to red.
        await undoRedoAddon.undo();

        await wait();

        // After redoing, the color changes to purple.
        await undoRedoAddon.redo();

        await wait();

        // Undo all, the square annotation will be deleted.
        await undoRedoAddon.undoAll();
    } else {
}
```

```
        console.error("UndoRedo Addon instance not found.");
    }
}
```

## List of APIs supporting Undo/Redo

The following lists the APIs that Foxit PDF SDK for Web currently supports for undo and redo operations.

### ***Supported object retrieval APIs***

Here is a series of APIs that, when called within the `UIXAddon.invoke` callback function, return a wrapped object. Developers can use the methods on this wrapped object to record operations:

#### 1. [\*\*PDFDoc\*\*](#)

- `PDFDoc.getPageByIndex(index)`: Get a page in the document by its index.
- `PDFDoc.getPageById(id)`: Get a page using its unique identifier.
- `PDFDoc.getAnnots()`: Get all annotations in the document.

#### 2. [\*\*PDFPage\*\*](#)

- `PDFPage.getAnnots()`: Get all annotations on a page.
- `PDFPage.getAnnotsByObjectNumArray(objectNums)`: Get annotations on a page using an array of object numbers.
- `PDFPage.getAnnotsByIdArray(annotationIds)`: Get annotations on a page using an array of annotation identifiers.
- `PDFPage.getMarkupAnnots()`: Get markup annotations on a page.
- `PDFPage.getAnnotTree()`: Get the tree structure of annotations on a page.

### **Example:**

```
async function getAnnotsExample() {
    const undoRedoAddon = await pdfui.getAddonInstance("UndoRedoAddon");
    if (undoRedoAddon) {
        await undoRedoAddon.invoke(async (pdfDoc) => {
            const pdfPage = await pdfDoc.getPageByIndex(0);
            const [square] = await pdfPage.getAnnotsByObjectNumArray([12002]);
            square.setBorderColor(0xFF0000);
        });
        await undoRedoAddon.undo();
    } else {
        console.error("UndoRedo Addon instance not found.");
    }
}
```

### ***Supported operation APIs***

After these APIs are called, their operations will be automatically recorded, and the recorded operations can be undone and redone. It is important to note that these APIs must be called on the objects returned by the *object retrieval APIs* listed in the previous paragraph.

1. [\*\*PDFDoc\*\*](#)
  - o PDFDoc.addAnnot
2. [\*\*PDFPage\*\*](#)
  - o PDFPage.addAnnot
  - o PDFPage.removeAnnotById
  - o PDFPage.removeAnnotByObjectNumber
3. [\*\*Annot\*\*](#)(All annotation classes' superclass):
  - o Annot.setContent
  - o Annot.setRect
  - o Annot.setBorderColor
  - o Annot.setBorderInfo
  - o Annot.setFlags
4. [\*\*Markup\*\*](#)(All Markup annotation classes' superclass, including FreeText(callout, textbox, typewriter), ink, line, note, polygon, polyline, redact, sound, square, stamp and TextMarkup(highlight, squiggly, strikeout, underline)):
  - o Markup.setOpacity
  - o Markup.setSubject
  - o Markup.setTitle
  - o Markup.addReply
  - o Markup.addReviewState
  - o Markup.addMarkedState
  - o Markup.setFillColor
5. Specific annotation types:
  - o [\*\*Circle\*\*](#)
    - Circle.setMeasureRatio
    - Circle.setMeasureUnit
    - Circle.setMeasureConversionFactor

- Circle.enableCaption
- Circle.setCaptionColor
- **Line**
  - Line.setMeasureRatio
  - Line.setMeasureUnit
  - Line.enableCaption
  - Line.setCaptionColor
  - Line.setEndPoint
  - Line.setStartPoint
  - Line.setEndingStyle
  - Line.setStyleFillColor
  - Line.setLeaderLineExtend
  - Line.setLeaderLineOffset
  - Line.setLeaderLineLength
  - Line.setCaptionOffset
- **Polygon**
  - Polygon.enableCaption
  - Polygon.setCaptionColor
  - Polygon.updateVertexes
  - Polygon.setVertexes
- **Polyline**
  - Polyline.setMeasureRatio
  - Polyline.enableCaption
  - Polyline.setCaptionColor
  - Polyline.setEndingStyle
  - Polyline.setStyleFillColor
  - Polyline.updateVertexes
  - Polyline.setVertexes
- **Square**
  - Square.setMeasureRatio
  - Square.setMeasureUnit
  - Square.setMeasureConversionFactor

- **FreeText**(typewriter, textbox, callout)
  - FreeText.setAlignment
  - FreeText.setInnerRect
  - FreeText.setCalloutLinePoints
  - FreeText.setCalloutLineEndingStyle
  - FreeText.setDefaultAppearance
  - FreeText.setRotation
- **Screen**
  - Screen.setRotation
- **Stamp**
  - Stamp.setRotation
- **Redact**
  - Redact.setDefaultAppearance
  - Redact.setOverlayText
  - Redact.removeOvelayText
  - Redact.setOverlayTextAlignment
  - Redact.setRepeat
  - Redact.setAutoFontSize
  - Redact.setRedactApplyFillColor
- **Ink**
  - Ink.setInkList
- **Link**
  - Link.setHighlightingMode
  - Link.setAction
- **FileAttachment**
  - FileAttachment.setIconName
- **Note**
  - Note.setIconName

# Customization

From version 7.0, Foxit PDF SDK for Web comes with built-in UI design including the feature modules UI, which are implemented using Foxit PDF SDK for Web and are shipped in the UIExtension.js. Furthermore, customizing UI is straightforward. Foxit PDF SDK for Web provides a rich set of APIs for developers to customize and style the appearance of your web viewer.

The user interface of UIExtension consists of two parts: [template](#) and [fragments](#). Template is equivalent to the extension of HTML, the components in the template should be declared by tags. Template is used to customize the UI layout (css style, icon, text, and so on) without interactions. Fragments are a set of UI snippets, which can be used to customize the configuration items and interaction logic of the components in the template. Each snippet has an operation type "action" that specifies the action mode (append, prepend, before, after, ext, replace, insert, and remove, the default is ext.) of the snippets. Through these action modes, you can insert, delete, replace and modify the components in the template.

## Customize the UI

### Customize the UI layout using template

Template is mainly used to customize the UI layout of the components. Following will list some examples to demonstrate the usage of template. Please note that all the examples are based on the [Integrate the complete web viewer into your project](#) in chapter Integration.

#### *Create a simple template*

A simplest template is as follows:

```
var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: './lib', // the library path of web sdk.
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: '#pdf-ui', // the div (id="pdf-ui").
  appearance: UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
```

```

        return [
          '<webpdf>',
          '  <viewer></viewer>',
          '</webpdf>'
        ].join('');
      }
    })
});

```

- <webpdf> tag listens the opening/closing document events, and then trigger the **enableAll** or **disableAll** function of the **Appearance** object to enable or disable the related components in the UI.
- <viewer> tag is where the PDF contents are rendered. Each template must have a <viewer> tag. It can be placed anywhere you want, please refer to the examples in the following sections.

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see a simple web PDF viewer without any UI component.

#### **Add a new toolbar button**

Use <toolbar> tag to add a new toolbar button.

```

var pdfui = new UIExtension.PDFUI({
  viewerOptions: {
    libPath: './lib', // the library path of web sdk.
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    }
  },
  renderTo: '#pdf-ui', // the div (id="pdf-ui").
  appearance: UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return [
        '<webpdf>',
        '  <toolbar>',
        '    <open-file-dropdown></open-file-dropdown>',
        '  </toolbar>',
        '  <viewer></viewer>',
        '</webpdf>'
      ].join('')
    }
  })
});

```

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see the new toolbar button.

### Add a new tab page

Use <tabs> and <tab> tags to add a new tab page.

```
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return [
            '<webpdf>',
            '  <toolbar>',
            '    <gtab group="custom-tabs" text="Home" body="home-tab-body">',
            '    </gtab>',
            '    <gtab group="custom-tabs" text="Comment" body="comment-tab-body">',
            '    </gtab>',
            '  </toolbar>',
            '  <div class="tab-bodies">',
            '    <div name="home-tab-body">',
            '      <open-file-dropdown></open-file-dropdown>',
            '    </div>',
            '    <div name="comment-tab-body" class="flex-row">',
            '      <create-strikeout-button></create-strikeout-button>',
            '      <create-underline-button></create-underline-button>',
            '      <create-squiggly-button></create-squiggly-button>',
            '      <create-replace-button></create-replace-button>',
            '      <create-caret-button></create-caret-button>',
            '      <create-note-button></create-note-button>',
            '    </div>',
            '    </div>',
            '    <viewer></viewer>',
            '</webpdf>'
        ].join("")
    }
})
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: './lib', // the library path of web sdk.
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui', // the div (id="pdf-ui").
    appearance: CustomAppearance
});
```

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see the new tab page.

### Add a sidebar button

Use <sidebar> tag to add a sidebar button.

```
var CustomAppearance = UIExtension.appearances.Appearance.extend({
```

```

getLayoutTemplate: function() {
    return [
        '<webpdf>',
        '  <toolbar>',
        '    <gtab group="custom-tabs" text="Home" body="home-tab-body">',
        '    </gtab>',
        '    <gtab group="custom-tabs" text="Comment" body="comment-tab-body">',
        '    </gtab>',
        '  </toolbar>',
        '  <div class="tab-bodies">',
        '    <div name="home-tab-body">',
        '      <open-file-dropdown></open-file-dropdown>',
        '    </div>',
        '    <div name="comment-tab-body" class="flex-row">',
        '      <create-strikeout-button></create-strikeout-button>',
        '      <create-underline-button></create-underline-button>',
        '      <create-squiggly-button></create-squiggly-button>',
        '      <create-replace-button></create-replace-button>',
        '      <create-caret-button></create-caret-button>',
        '      <create-note-button></create-note-button>',
        '    </div>',
        '  </div>',
        '  <div class="flex-row">',
        '    <sidebar>',
        '      <bookmark-sidebar-panel></bookmark-sidebar-panel>',
        '    </sidebar>',
        '    <viewer></viewer>',
        '  </div>',
        '</webpdf>'
    ].join('')
}
})
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: './lib', // the library path of web sdk.
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui', // the div (id="pdf-ui").
    appearance: CustomAppearance
});

```

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see the bookmark sidebar.

### **Built-in layout template**

The built-in layout template is placed in the examples\UIExtension\layout\_templates directory. For desktop, reference the **built-in-pc-layout-template.tpl** file, and for mobile, reference the **built-in-mobile-layout-template.tpl** file. You can modify the template directly to customize the UI layout as desired.

In the "examples\UIExtension\custom\_appearance" directory, Foxit PDF SDK for Web provides two custom template examples. "**adaptive-to-the-device.html**" is adaptive to the device (desktop and mobile), and "**not-adaptive-to-the-device.html**" is not adaptive to the device, which only supports desktop.

### **Customize the UI using fragments**

Fragments are a set of UI snippets. It can be used to customize the configuration items and interaction logic of the components in the template.

#### **Create a new drop-down menu item**

The sample code below creates a new drop-down menu including two drop-down buttons, and append it to the end of the list of children of the group component with the name of "home-tab-group-hand".

To get the name of a target component (only for widget), you can right-click the component in the browser, choose **Inspect**, and then find the value of the **component-name** attribute in the corresponding **<a>** tag. For a container component, for example **target: 'home-tab-group-hand'**, you can right-click one of the subcomponents in the browser, choose "**Inspect**", and then find the value of the "**component-name**" attribute in the related **<div>** tag.

```
const customModule = UIExtension.PDFUI.module('custom', []);
customModule.controller('CustomController', {
  mounted: function () {
    console.info(this.component, 'mounted');
  },
  handle: function (selectedFile) {
    alert(selectedFile.name);
  }
});
var CustomController = customModule.getControllerClass('CustomController');

var CustomAppearance = UIExtension.appearances.RibbonAppearance.extend({
  getDefaultFragments: function() {
    return [
      // Add a component to the end of the list of children of a specified target component.
    ];
  }
});
```

```
action: UIExtension.UIConsts.FRAGMENT_ACTION.APPEND,
// Specify the name of the target component that the new components defined in the above template
will be appended to. All the target names of fragments are defined in the layout template.
target: 'home-tab-group-hand',
// Define the properties of the added component, such as icon, text, and css style.
template: [
    '<dropdown icon-class="fv__icon-toolbar-stamp">',
        '<dropdown-button name="show-hello-button" icon-class="fv__icon-toolbar-hand">say
hello</dropdown-button>',
        '<dropdown-button name="select-pdf-file-button" accept=".pdf" file-selector icon-class="fv__icon-
toolbar-open">open</dropdown-button>',
    '</dropdown>'
].join(''),
// Define the interaction logic of the added component.
config: [
    // specify the component in the above template that the configuration will be applied to.
    // For example, the configuration will be applied to the component with the name of "show-hello-
button".
    target: 'show-hello-button',
    callback: function () {
        alert('hello');
    }
},
{
    // The configuration will be applied to the component with the name of "select-pdf-file-button" which is
defined in the above template of fragments.
    target: 'select-pdf-file-button',
    // Extend Controller, and implement the handle function.
    callback: CustomController
}
]
])
}
}

var pdfui = new UIExtension.PDFUI({
viewerOptions: {
    libPath: './lib', // the library path of web sdk.
    jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
    }
},
renderTo: '#pdf-ui', // the div (id="pdf-ui").
appearance: CustomAppearance
});
```

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see a new created drop-down menu.

### **Delete a toolbar button**

To delete a toolbar button through fragment is fairly simple. For example, to delete the Hand tool, you only need to add a new object to the fragment. Based on the above example, add the code below:

```
{  
    target: 'hand-tool',  
    action: UIExtension.UIConsts.FRAGMENT_ACTION.REMOVE  
}
```

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see the Hand tool has been removed from the group component.

### **Modify a toolbar button**

To modify a toolbar button through fragment is also fairly simple. Just like [Delete a toolbar button](#), you only need to add a new object to the fragment.

#### **Change icon of a button**

For example, to change the icon of the Hand tool, just add the code below:

```
{  
    target: 'hand-tool',  
    config: {  
        iconCls: 'fv_icon-toolbar-note' // your custom icon.  
    }  
}
```

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see the icon of the Hand tool has been changed.

#### **Change the tooltip of a button**

For example, to change the tooltip of the Hand tool, just add the code below:

```
{  
    target: 'hand-tool',  
    config: {  
        tooltip: {  
            title: 'your custom tooltip'  
        }  
    }  
}
```

Refresh your browser (<http://127.0.0.1:8080/index.html>), and then you can see the tooltip of the Hand tool has been changed to "your custom tooltip".

### Change the event of a button

To change the event of a button, there are two ways:

- 1) Overwrite the built-in event. For example:

```
{  
    target: 'hand-tool',  
    config: {  
        callback: function() {  
            alert('your click event handler');  
        }  
    }  
}
```

- 2) Add custom behavior based on the built-in event (original logic). You can configure the button using the method as follows:

```
{  
    target: 'hand-tool',  
    config: {  
        callback: {  
            before: function (handleMethodArguments ) {  
                console.info('called before handle callback with arguments: ', handleMethodArguments);  
            },  
            after: function (value, handleMethodArguments ) {  
                console.info('called after handle callback with returning value and arguments: ', value,  
handleMethodArguments);  
            }  
        }  
    }  
}
```

### More examples

For more sample codes, please refer to the examples in the `examples\UIExtension\fragment_usage` folder.

### Modularization

In order to differentiate the built-in components and user-defined components to avoid conflicts, UIExtension provides modularization feature, which allows you to register the components in different modules separately. Then, you only need to add the prefix of the module name when you declare the components in the template.

### **Create your own custom module**

If you want to define and use a custom component which has the same name with the built-in component, you can create a custom module and then register your custom component in the custom module.

For example, in the built-in component, there is already an existing component with the name of "**dropdown**", if you also want to define a custom component called "**dropdown**", you can refer to the simple code below:

Create a new module "my-widgets", and registers a user-defined component in this module:

```
// Create a new module. Please note that the second parameter must be an array if you create a new module.

var module = UIExtension.modular.module('my-widgets', []);

function UserDefinedDropdownComponent() {
    UIExtension.Component.apply(this, arguments);
}

UserDefinedDropdownComponent.getName = function() {
    return 'dropdown'; // Declare the tag name of the component. There is already an existing component with
    the same name of 'dropdown' in the built-in component.
}

UserDefinedDropdownComponent.prototype.constructor = UIExtension.Component;
UserDefinedDropdownComponent.prototype.render = function() {
    UIExtension.Component.prototype.render.call(this);
    this.element.innerText = 'User-defined dropdown component';
}

module.registerComponent(UserDefinedDropdownComponent);
```

Then, the built-in dropdown and user-defined dropdown can be differentiated in the following way:

```
<!-- built-in dropdown -->
<dropdown></dropdown>
<!-- user-defined dropdown -->
<my-widgets:dropdown></my-widgets:dropdown>
```

For example, use the user-defined dropdown component:

```
var pdfui = new UIExtension.PDFUI({
    // Omit other parameters.
    appearance: UIExtension.appearances.RibbonAppearance.extend({
        getDefaultFragments: function() {
            return [
                action: UIExtension.UIConsts.FRAGMENT_ACTION.APPEND,
                target: 'home-tab-group-hand',
                template: '<my-widgets:dropdown></my-widgets:dropdown>' // use a colon to separate the module
name and component name in the template.
            ];
        }
    })
});
```

```
    }
  })
});
```

## Customize annotation context menu

This guide will walk you through the following topics:

- Customizing context menu for supported annotations
- Customizing context menu for unsupported annotations
- Hiding a context menu or menu items
- Showing a customized context menu

### Customize context menu for supported annotations

Web Viewer supports most of standard annotation types. Each type can have its own context menu. Below list the supported annotation and their corresponding XML element name.

```
{
  "line": "fv--line-contextmenu",
  "linearrow": "fv--linearrow-contextmenu",
  "linedimension": "fv--linedimension-contextmenu",
  "polylinedimension": "fv--polylinedimension-contextmenu",
  "polygondimension": "fv--polygondimension-contextmenu",
  "circle": "fv--circle-contextmenu",
  "square": "fv--square-contextmenu",
  "polyline": "fv--polyline-contextmenu",
  "polygon": "fv--polygon-contextmenu",
  "polygoncloud": "fv--polygoncloud-contextmenu",
  "fileattachment": "fv--fileattachment-contextmenu",
  "freetexttypewriter": "fv--freetexttypewriter-contextmenu",
  "typewriter": "fv--typewriter-contextmenu",
  "freetextcallout": "fv--freetextcallout-contextmenu",
  "callout": "fv--callout-contextmenu",
  "freetexttextbox": "fv--freetexttextbox-contextmenu",
  "textbox": "fv--textbox-contextmenu",
  "freetext": "fv--freetext-contextmenu",
  "ink": "fv--ink-contextmenu",
  "stamp": "fv--stamp-contextmenu",
  "text": "fv--text-contextmenu",
  "areahighlight": "fv--areahighlight-contextmenu",
  "highlight": "fv--highlight-contextmenu",
  "caret": "fv--caret-contextmenu",
  "replace": "fv--replace-contextmenu",
  "squiggly": "fv--squiggly-contextmenu",
  "strikeout": "fv--strikeout-contextmenu",
  "redact": "fv--redact-contextmenu",
```

```

"underline": "fv--underline-contextmenu",
"media": "fv--media-contextmenu",
"image": "fv--image-contextmenu",
"link": "fv--link-contextmenu",
"sound": "fv--sound-contextmenu"
}

```

The annotation element name can be accessed by using `super.getAnnotsContextMenuName(owner)` in the `UIExtension.XViewerUI`. You may refer to the section [Customizing viewerUI](#) for a code example.

For the supported annotations, you can use the method `UIExtension.UIConsts.FRAGMENT_ACTION.APPEND` action to replace, add and remove menu items.

### ***Replacing menu items***

```

new UIExtension.PDFUI({
    appearance: UIExtension.appearances.AdaptiveAppearance.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'fv--highlight-contextmenu',
                    action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
                    template: `

<contextmenu name="fv--highlight-contextmenu">
    <contextmenu-item-reply></contextmenu-item-reply>
    <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
    <contextmenu-item-properties></contextmenu-item-properties>
    <contextmenu-item name="x-user-custom-contextmenu-item">Custom </contextmenu-item>
</contextmenu>`,
                    config:[
                        {
                            target: 'x-user-custom-contextmenu-item',
                            callback: function() {
                                alert('custom contextmenu item clicked!');
                            }
                        }
                    ]
                }
            ];
        }
    })
})

```

### ***Adding menu items***

```

new UIExtension.PDFUI({
    appearance: UIExtension.appearances.AdaptiveAppearance.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'fv--textbox-contextmenu',
                    action: UIExtension.UIConsts.FRAGMENT_ACTION.APPEND,
                    template: `

<contextmenu-item name="x-user-custom-contextmenu-item">Custom</contextmenu-item>

```

```

        },
        config: [
            target: 'x-user-custom-contextmenu-item',
            callback: function() {
                alert('custom contextmenu item clicked!');
            }
        ]
    }];
}
});
});
```

### **Removing menu items**

```

new UIExtension.PDFUI({
    appearance: UIExtension.appearances.AdaptiveAppearance.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'fv--media-contextmenu>fv--contextmenu-item-media-download',
                    action: UIExtension.UIConsts.FRAGMENT_ACTION.REMOVE
                }
            ]
        }
    })
});
```

### **Customize context menu for unsupported annotations**

Unsupported annotations mean annotations that are not numerated in the above supported list but have already been defined in the PDF references. To customize the context menu for an unsupported annotation, you should rewrite getAnnotsContextMenuName in XViewUI to create a new context menu and then add it in template.

A quick way to check if the current annotation is supported or not in Web Viewer, you may check their corresponding element name, which is by default labeled as "fv--default-annot-contextmenu".

The following example is making assumption that your current PDF file contains a 'trapnet' annotation which is not yet supported in Web Viewer, and you want to customize its context menu.

```

new UIExtension.PDFUI({
    viewerOptions: {
        viewerUI: new class extends UIExtension.XViewerUI {
            createContextMenu(owner, anchor, config) {
                if(owner instanceof PDFViewCtrl.AnnotComponent) {
                    if(owner.annot.getType() === 'trapnet') {
                        return 'custom-trapnet-contextmenu-name';
                    }
                }
                return super.createContextMenu(owner, anchor, config);
            }
        }
    }
});
```

```
        },
        },
    },
    appearance: UIExtension.appearances.AdaptiveAppearance.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'template-container',
                    action: UIExtension.UIConsts.FRAGMENT_ACTION.APPEND,
                    template: `
                        <contextmenu name="custom-trapnet-contextmenu-name">
                            <contextmenu-item-reply></contextmenu-item-reply>
                            <contextmenu-item-delete-annot></contextmenu-item-delete-annot>
                            <contextmenu-item-properties></contextmenu-item-properties>
                            <contextmenu-item name="x-user-custom-contextmenu-item">Custom </contextmenu-item>
                        </contextmenu>
                    `,
                    config: [
                        {
                            target: 'x-user-custom-contextmenu-item',
                            callback: function() {
                                alert('custom contextmenu item clicked!');
                            }
                        }
                    ]
                }
            ]
        }
    })
});
```

## Hiding the context menu or items

You can use one of the following approaches to achieve the hiding.

## 1) Configuring a class method in fragments to force the hiding action

```
new UIExtension.PDFUI({
  appearance: UIExtension.appearances.AdaptiveAppearance.extend({
    getDefaultFragments: function() {
      // the other options ...
      return [
        {
          target: 'fv--underline-contextmenu',
          config: {
            cls: 'fv__ui-force-hide'
          }
        }
      ]
    }
  })
})
```

The effect of this method is that there is no response following the right-clicking on the underline.

## 2) Customizing viewerUI

```
new UIExtension.PDFUI({
    viewerOptions: {
        viewerUI: new class extends UIExtension.XViewerUI {
            createContextMenu(owner, anchor, config) {
                if(owner instanceof PDFViewCtrl.AnnotComponent) {
                    const contextMenuItemName = super.getAnnotsContextMenuName(owner)
                    if(contextMenuItemName === 'fv--underline-contextmenu'){
                        return;
                    }
                }
                return super.createContextMenu(owner, anchor, config);
            }
        }()
    }
});
```

This method will hide the built-in menu when a right-clicking occurs, and present the browser default menu.

## 3) Overwrite the showContextMenu of AnnotComponent

```
const pdfui = new UIExtension.PDFUI({
    // ....
});
pdfui.initializePromise.then(function () {
    var annotMap = {};
    pdfui.registerMatchRule(function(annot, AnnotComponentClass) {
        let type = annot.getType();
        var intent = annot getIntent && annot.getIntent() || "default";
        // You can add more annotation types
        if(type === 'underline') {
            return AnnotComponentClass;
        }
        if (annotMap[type] && annotMap[type][intent]) {
            return annotMap[type][intent];
        }
        annotMap[type] = annotMap[type] || {};
        return annotMap[type][intent] = (class extends AnnotComponentClass {
            showContextMenu() {
                // Do nothing
            }
        });
    });
});
```

This method will hide the build-in menu and show the browser default menu of a right-clicking

## Showing a customized context menu

You should overwrite the viewerUI to show your own context menu.

```
new UIExtension.PDFUI({
  viewerOptions: {
    viewerUI: new (class extends UIExtension.XViewerUI {
      createContextMenu(owner, anchor, config) {
        if (owner instanceof PDFViewCtrl.AnnotComponent) {
          const contextMenuItemName = super.getAnnotsContextMenuName(owner);
          if (contextMenuItemName === "fv--underline-contextmenu") {
            return new (class extends PDFViewCtrl.IContextMenu {
              constructor() {
                super();
                this.initContextmenu();
              }
              destroy() {
                $(anchor).contextMenu("destroy");
              }
              showAt(x, y) {
                $(anchor).contextMenu();
              }
              disable() {
                super.disable();
                $(anchor).contextMenu("destroy");
              }
              enable() {
                super.enable();
                this.initContextmenu();
              }
              initContextmenu() {
                // The code example below requires referencing Jquery libraries including contextMenu.min.css,
                contextMenu.min.js and min.js.
                $(anchor).contextMenu({
                  selector: config.selector,
                  items: [
                    {
                      name: 'show "Hello World"',
                      callback: function() {
                        alert("hello world");
                      }
                    },
                    {
                      name: 'show "Bye!"',
                      callback: function() {
                        alert("Bye!");
                      }
                    }
                  ]
                });
              }
            });
          }
        }
      }
    });
  }
});
```

```
        }
    })());
}
}
return super.createContextMenu(owner, anchor, config);
}
})()
});
});
```

## Customize page context menu

This guide will present you a list of component name of the built-in page context menu, show you how to remove one of menu items through fragments and templates, add or insert new user items, and how to hide the menu via the fragments and viewerUI.

### Page context menu items

The context menu is named as fv--page-contextmenu. It contains the following items:

- fv--contextmenu-item-full-screen
- fv--contextmenu-item-select-text-image
- fv--contextmenu-item-select-annotation
- fv--contextmenu-item-hand-tool
- fv--contextmenu-item-marquee-zoom
- fv--contextmenu-item-zoom-actual-size
- fv--contextmenu-item-zoom-fitpage
- fv--contextmenu-item-zoom-fitwidth
- fv--contextmenu-item-zoom-fitvisible
- fv--contextmenu-item-rotate-right
- fv--contextmenu-item-rotate-left
- fv--contextmenu-item-print
- fv--contextmenu-item-file-property

### Removing a menu item

The item in the target field will be deleted when the sample code below is executed.

```
new PDFUI({
    appearance: UIExtension.appearances.AdaptiveAppearance.extend({
        getDefaultFragments: function() {
            // the other options ...
        }
    })
});
```

```
        return [
          target: "fv--contextmenu-item-zoom-actual-size",
          action: UIExtension.UIConsts.FRAGMENT_ACTION.REMOVE
        }]
      })
    });
});
```

## Replacing a menu item

The item in the target field will be replaced when the sample code below is executed.

```
new UIExtension.PDFUI({
  appearance: UIExtension.appearances.AdaptiveAppearance.extend({
    getDefaultFragments: function() {
      // the other options ...
      return [
        target: "fv--contextmenu-item-zoom-actual-size",
        action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
        template: `<contextmenu-item name="custom-contextmenu-item">customize contextmenu
item</contextmenu-item>`,
        config: [
          {
            target: "custom-contextmenu-item",
            callback: function() {
              alert("contextmenu item clicked!");
            }
          }
        ]
      ]
    }
  })
});
```

## Inserting a new item

A new item defined in the template will be added after the item in the target when the sample code below is executed.

```
new UIExtension.PDFUI({
  appearance: UIExtension.appearances.AdaptiveAppearance.extend({
    getDefaultFragments: function() {
      // the other options ...
      return [
        target: "fv--contextmenu-item-zoom-actual-size",
        action: UIExtension.UIConsts.FRAGMENT_ACTION.AFTER,
        template: `<contextmenu-item name="custom-contextmenu-item">customize contextmenu
item</contextmenu-item>`,
        config: [
          {
            target: "custom-contextmenu-item",
            callback: function() {
```

```
        alert("contextmenu item clicked!");
    }
}
]
})
})
});
```

### Hiding the context menu or items

You can use one of the following approaches to achieve the hiding.

#### 1) Configuring a class method in fragments to force the hiding action

```
new UIExtension.PDFUI({
    appearance: UIExtension.appearances.AdaptiveAppearance.extend({
        getDefaultFragments: function() {
            // the other options ...
            return [
                {
                    target: "fv--page-contextmenu",
                    config: {
                        cls: "fv__ui-force-hide"
                    }
                }
            ]
        }
    })
});
```

The effect of this method is that there is no response following the right-clicking.

#### 2) Customizing viewUI

```
new PDFUI({
    viewerOptions: {
        viewerUI: new (class extends UIExtension.XViewerUI {
            createContextMenu(owner, anchor, config) {
                switch (owner) {
                    case PDFViewCtrl.STATE_HANDLER_NAMES.STATE_HANDLER_HAND:
                    case PDFViewCtrl.STATE_HANDLER_NAMES
                        .STATE_HANDLER_SELECT_ANNOTATION:
                    return;
                }
                return super.createContextMenu(owner, anchor, config);
            }
        })()
    }
});
```

This method will hide the built-in menu when a right-clicking occurs, but present the browser default menu.

## Showing a customized context menu

You should overwrite the viewerUI to show your own context menu.

```
new UIExtension.PDFUI({
  viewerOptions: {
    viewerUI: new (class extends UIExtension.XViewerUI {
      createContextMenu(owner, anchor, config) {
        switch (owner) {
          case PDFViewCtrl.STATE_HANDLER_NAMES.STATE_HANDLER_HAND:
          case PDFViewCtrl.STATE_HANDLER_NAMES.STATE_HANDLER_SELECT_ANNOTATION:
            return new (class extends PDFViewCtrl.IContextMenu {
              constructor() {
                super();
                this.initContextmenu();
              }
              destroy() {
                $(anchor).contextMenu("destroy");
              }
              showAt(x, y) {
                $(anchor).contextMenu();
              }
              disable() {
                super.disable();
                $(anchor).contextMenu("destroy");
              }
              enable() {
                super.enable();
                this.initContextmenu();
              }
              initContextmenu() {
                //The code example below requires referencing in order Jquery libraries including
                contextMenu.min.css, jquery.min.js and contextMenu.min.js.
                $(anchor).contextMenu({
                  selector: config.selector,
                  items: [
                    {
                      name: 'show "Hello World"',
                      callback: function() {
                        alert("Hello world");
                      }
                    },
                    {
                      name: 'show "How do your do!"',
                      callback: function() {
                        alert("How do you do!");
                      }
                    }
                  ]
                });
              }
            });
          }
        }
      }
    });
  }
});
```

```
        }
    }
]
});
}
})();
}
return super.createContextMenu(owner, anchor, config);
}
})()
});
});
```

## Customize the Floating Text Selection Tooltip

Customizing the floating tooltip involves two steps. First you should create a custom controller to define your own logic for a target tool, and then add or edit the tool on fragments. The following sections will walk you through:

- A sample for creating a custom controller and modifying components by fragments
- The logic processing methods used in floating tooltip
- The component name of the floating tooltip

### A sample for creating a custom controller and modifying components by fragmentation

Code sample can be accessed on [/examples/UIExtension/custom-text-selection-tool](#).

### The logic processing methods used in floating tooltip

In some cases, when you modify the tooltip, you will most likely want to create your own controller to handle your tool. The code below shows commonly used methods to create a controller.

```
var tooltipLayer = this.component.getClosestComponentByType('tooltip-layer');
var textSelectionTool = tooltipLayer.getCurrentSelectionTool();
textSelectionTool.getSelectionInfo().then((selectionInfo)=>{
});
textSelectionTool.pageRender // The current rendering page object
```

The `getClosestComponentByType()` is used to get the matched tooltip layer.

The `getCurrentSelectionTool()` is used to get the text selection tool object. And the `getSelectionInfo()` is called to obtain the selected text information and the current rendering page object. The obtained text information includes:

- page // PDF page object
- text // Text contents
- rectArray //Text block (unit: point)

### The component name of the floating tooltip

Component Name	Description
fv--text-selection-tooltip	The floating tooltip layer
fv--text-selection-tooltip-copy	Copy tool
fv--text-selection-tooltip-create-highlight	Highlight tool
fv--text-selection-tooltip-create-strikeout	Strikeout tool
fv--text-selection-tooltip-create-underline	Underline tool

## Customize Internationalization Resources

### Assumption

Assume you have an `assets/` in your website root directory, where you will configure the internationalization resources. Let's call this path as `websiteRoot/assets/`.

### Configuration

- 1) Copy `lib/locales` inside SDK to `websiteRoot/assets/`.
- 2) Set up the i18n path for loading resources.

```
new UIExtension.PDFUI({
  i18n: {
    absolutePath: 'websiteRoot/assets/locales'
  },
  // the other options...
});
```

- 3) Add more localization languages. Create a new folder in `websiteRoot/assets/locales`. The folder name should follow the language codes standard, such as `zh-CN` for Chinese, `ru_RU` for Russian.
- 4) Copy the "`ui.json`" file under `websiteRoot/assets/locales/en-US` directory into your created folder in the above step. Translate (Localize) all the entries in the "`ui.json`" file.

- 5) Set up default language.

```
new UIExtension.PDFUI({  
    i18n: {  
        absolutePath: `websiteRoot/assets/locals`,  
        lng: 'zh-CN'  
    },  
    // the other options  
})
```

### Verify the configuration in developer environment

1. Clear your browser caches to ensure the latest i18n resources will be loaded.
2. Refresh your browser, open the Network panel in DevTools, and check if the **ui\_.json** request url points to your custom language path. If so, it means success.

### Make the Web Viewer Adaptive to the Device

Foxit PDF SDK for Web can allow the viewer to be adaptive to the device (desktop or mobile), which means if you access the web viewer in your desktop browser, it will be present using the desktop UI layout, and if you access the web viewer in your mobile browser, it will be present using the mobile UI layout. To make the project adaptive to the device, you may refer to the example **adaptive-to-the-device.html** in `examples/UIExtension/custom_appearance/` folder for detail.

### Customize Thumbnail

This part will show the UI structure, layout, label of the thumbnail panel, etc. Fragment related details are as following [UI fragments](#). Much more API details are as following [API Reference](#) document.

#### Thumbnail Panel Structure Details

Before customizing the thumbnail UI, we need to know the following details:

1. [Thumbnail Addon](#)
2. [Thumbnail Panel](#)
3. [Thumbnail List](#)

## Thumbnail Addon

Before using the thumbnail component, please make sure that `thumbnail` plugin is loaded correctly (refer to [here](#)). About how to load Addon, please refer to [here](#).

## Thumbnail Panel

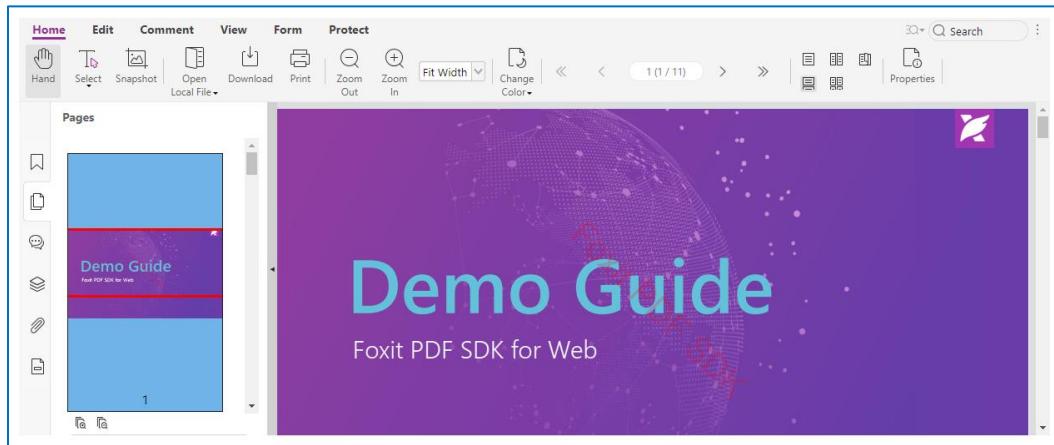
In the built-in layout template, `<thumbnail-sidebar-panel></thumbnail-sidebar-panel>` is the left sidebar thumbnail panel. And it is actually as the following template:

```
<thumbnail:sidebar-panel name="sidebar-thumbnail-panel" @lazy-content="active">
  <thumbnail:toolbar></thumbnail:toolbar>
  <thumbnail:complete-thumbnail-list></thumbnail:complete-thumbnail-list>
</thumbnail:sidebar-panel>
```

It includes `<thumbnail:toolbar>` and `<thumbnail:complete-thumbnail-list>`, if you want to exchange the structure, you can refer to the following template:

```
<thumbnail:sidebar-panel name="sidebar-thumbnail-panel" @lazy-content="active">
  <thumbnail:complete-thumbnail-list></thumbnail:complete-thumbnail-list>
  <thumbnail:toolbar></thumbnail:toolbar>
</thumbnail:sidebar-panel>
```

Next, by fragments, you can exchange the built-in `sidebar-thumbnail-panel`:



```
<script>
  const libPath = window.top.location.origin + '/lib';
  const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
```

```

        licenseKey: licenseKey
    }
},
renderTo: document.body,
appearance: UIExtension.appearances.adaptive.extend({
    getDefaultFragments() {
        return [
            target: 'sidebar-thumbnail-panel',
            action: FRAGMENT_ACTION.REPLACE,
            template: `
                <thumbnail:sidebar-panel name="sidebar-thumbnail-panel" @lazy-content="active">
                    <thumbnail:complete-thumbnail-list></thumbnail:complete-thumbnail-list>
                    <thumbnail:toolbar></thumbnail:toolbar>
                </thumbnail:sidebar-panel>
            `
        ]
    }
}),
addons: libPath + '/uix-addons/allInOne.js'
});
</script>

```

### ***Thumbnail List***

<thumbnail:complete-thumbnail-list> includes all the features of the thumbnail list as follows:

```

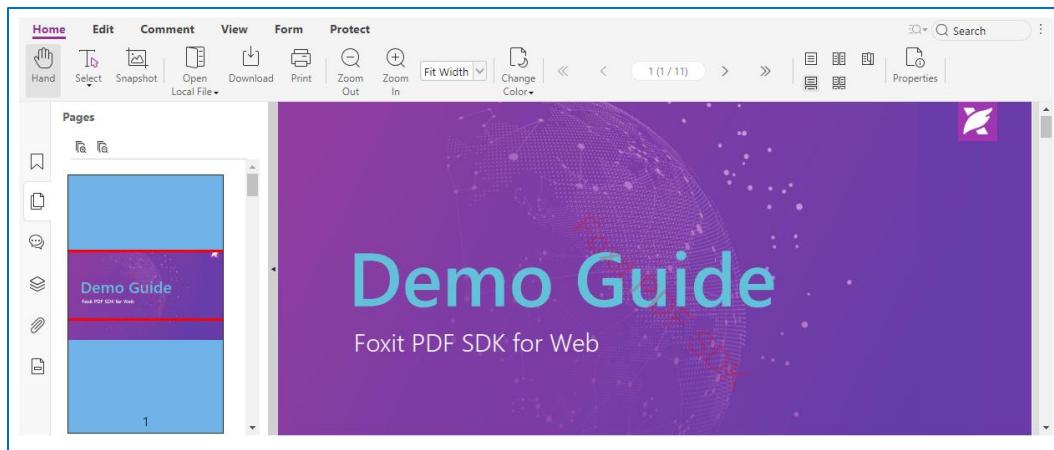
<thumbnail:thumbnail-list
    @thumbnail:centered
    @thumbnail:rearrange-pages
    @thumbnail:drop-to-merge-doc
    @aria:label="thumbnail:title"
>
    <thumbnail:thumbnail-item
        @foreach="thumbnail in thumbnail_list-thumbnails track by id"
        @setter.thumbnail_id="thumbnail.id"
        @lazy-content="visible"
    >
        <div class="fv__ui-thumbnail-viewer-container">
            <thumbnail:thumbnail-viewer @setter.thumbnail="thumbnail" @thumbnail:visible-rect-control></thumbnail:thumbnail-viewer>
        </div>
        <div class="fv__ui-thumbnail-item-label">@{thumbnail.pageIndex+1}</div>
    </thumbnail:thumbnail-item>
</thumbnail:thumbnail-list>

```

Structure details as following:

Node	Structure	Type	isRequired	Details
<thumbnail:th umbnail-list>	@thumbnail:centered	Instruct	N	When dragging the sidebar panel to change the width of the panel, thumbnail list will automatically insert a line feed and be shown in the middle.
<thumbnail:th umbnail-list>	@thumbnail:rearrang e-pages	Instruct	N	Drag the thumbnail to adjust the PDF pages' orders.
<thumbnail:th umbnail-list>	@thumbnail:drop-to- merge-doc	Instruct	N	Insert the PDF dragged to the thumbnail list to the specified position.
<thumbnail:th umbnail-list>	@aria:label="thumbna il:title"	Instruct	N	Accessibility attribute
<thumbnail:th umbnail-item>	@foreach="thumbnail in thumbnail_list.thumb nails track by id"	Instruct	Y	It is to create the thumbnail list, and cannot be modified.
<thumbnail:th umbnail-item>	@setter.thumbnail_id ="thumbnail.id"	Instruct	Y	It is mandatory, and to set thumbnail ID.
<thumbnail:th umbnail-item>	@lazy- content="active"	Instruct	N	To improve the performance of loading the thumbnail.
div.fv_ue- thumbnail- viewer- container	-	HTML Element	Y	It is thumbnail-viewer container without any adjustment.
<thumbnail:th umbnail- viewer>	@thumbnail:visible- rect-control	Instruct	N	Mark and control the PDF visible area.
div.fv_ue- thumbnail- item-label	-	HTML Element	N	It is a container to show the current page's abbreviated information. After modifying the container, much more information will be shown.

When you need to customize the thumbnail list, you should exchange <thumbnail:complete-> to the above template as following:



```
<script>
  const libPath = window.top.location.origin + '/lib';
  const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive.extend({
      getDefaultFragments() {
        return [
          {
            target: 'sidebar-thumbnail-panel',
            action: FRAGMENT_ACTION.REPLACE,
            template: `

<thumbnail:sidebar-panel name="sidebar-thumbnail-panel" @lazy-content="active">
  <thumbnail:toolbar></thumbnail:toolbar>
  <thumbnail:thumbnail-list
    @thumbnail:centered
    @thumbnail:rearrange-pages
    @thumbnail:drop-to-merge-doc
    @aria:label="thumbnail:title"
  >
  <thumbnail:thumbnail-item
    @foreach="thumbnail in thumbnail_list-thumbnails track by id"
    @setter.thumbnail_id="thumbnail.id"
    @lazy-content="visible"
  >
    <div class="fv__ui-thumbnail-viewer-container">
      <thumbnail:thumbnail-viewer @setter.thumbnail="thumbnail" @thumbnail:visible-rect-control></thumbnail:thumbnail-viewer>
    </div>
    <div class="fv__ui-thumbnail-item-label">@{thumbnail.pageIndex+1}</div>
  
```

```
        </thumbnail:thumbnail-item>
    </thumbnail:thumbnail-list>
</thumbnail:sidebar-panel>

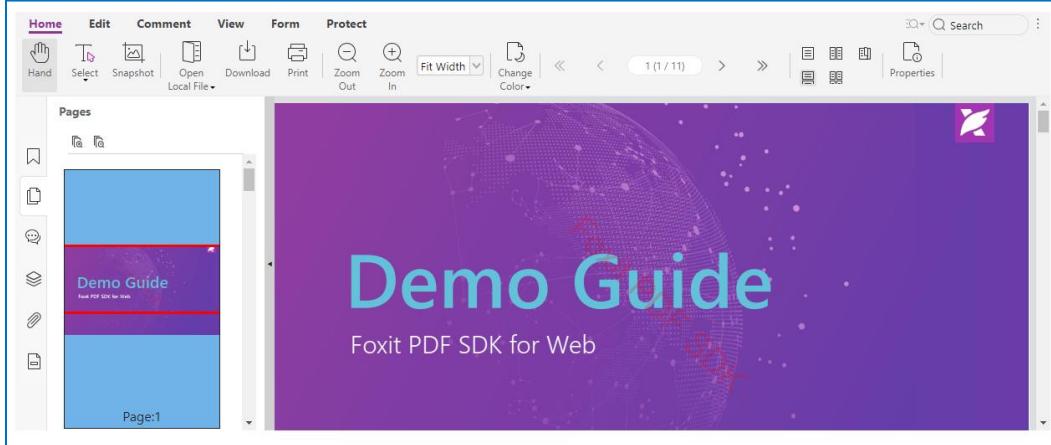
    }
},
}),
addons: libPath + '/uix-addons/allInOne.js'
});
</script>
```

Run the above example, the result is same with the built-in result.

## Start to Customize Thumbnail

### Customize Thumbnail Elements

After changing `<div class="fv__ui-thumbnail-item-label">@{thumbnail.pageIndex+1}</div>` to `<div class="fv__ui-thumbnail-item-label">Page: @{thumbnail.pageIndex+1}</div>`, the result is as following:



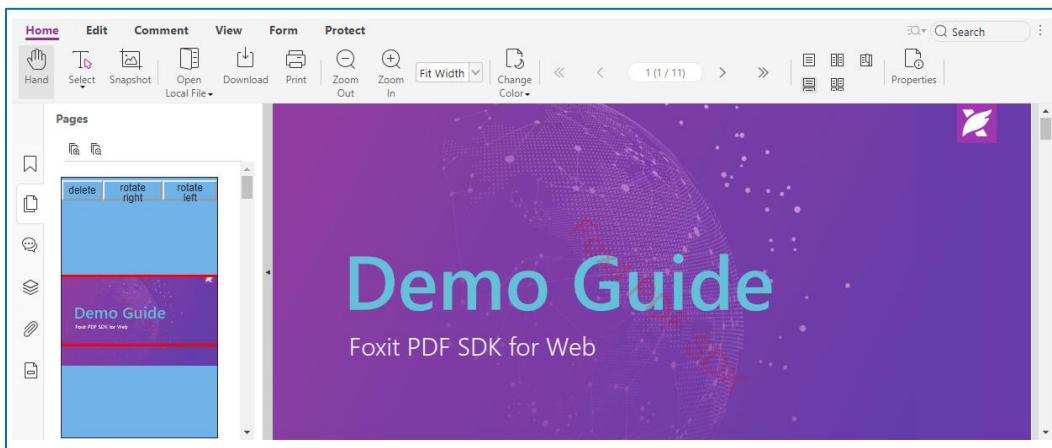
```
<script>
const libPath = window.top.location.origin + '/lib';
const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive.extend({
```

```

 getDefaultFragments() {
    return [
        {
            target: 'sidebar-thumbnail-panel',
            action: FRAGMENT_ACTION.REPLACE,
            template: `
                <thumbnail:sidebar-panel name="sidebar-thumbnail-panel" @lazy-content="active">
                    <thumbnail:toolbar></thumbnail:toolbar>
                    <thumbnail:thumbnail-list
                        @thumbnail:centered
                        @thumbnail:rearrange-pages
                        @thumbnail:drop-to-merge-doc
                        @aria:label="thumbnail:title"
                    >
                        <thumbnail:thumbnail-item
                            @foreach="thumbnail in thumbnail_list-thumbnails track by id"
                            @setter.thumbnail_id="thumbnail.id"
                            @lazy-content="visible"
                        >
                            <div class="fv__ui-thumbnail-viewer-container">
                                <thumbnail:thumbnail-viewer @setter.thumbnail="thumbnail" @thumbnail:visible-rect-control></thumbnail:thumbnail-viewer>
                            </div>
                            <div class="fv__ui-thumbnail-item-label">Page: @{{thumbnail.pageIndex+1}}</div>
                        </thumbnail:thumbnail-item>
                    </thumbnail:thumbnail-list>
                </thumbnail:sidebar-panel>
            `,
        }
    ],
    addons: libPath + '/uix-addons/allInOne.js'
});
</script>

```

You can adjust the thumbnail structure and insert much more components:



```
<script>
  const libPath = window.top.location.origin + '/lib';
  const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive.extend({
      getDefaultFragments() {
        return [
          {
            target: 'sidebar-thumbnail-panel',
            action: FRAGMENT_ACTION.REPLACE,
            template: `
              <thumbnail:sidebar-panel name="sidebar-thumbnail-panel" @lazy-content="active">
                <thumbnail:toolbar></thumbnail:toolbar>
                <thumbnail:thumbnail-list
                  @thumbnail:centered
                  @thumbnail:rearrange-pages
                  @thumbnail:drop-to-merge-doc
                  @aria:label="thumbnail:title"
                >
                  <thumbnail:thumbnail-item
                    @foreach="thumbnail in thumbnail_list-thumbnails track by id"
                    @setter.thumbnail_id="thumbnail.id"
                    @lazy-content="visible"
                  >
                    <div class="my-thumbnail-item-toolbox">
                      <button @controller="thumbnail>DeletePageController">delete</button>
                      <button @controller="thumbnail">RotateRightController">rotate right</button>
                      <button @controller="thumbnail">RotateLeftController">rotate left</button>
                    </div>
                    <div class="fv_ui-thumbnail-viewer-container">
                      <thumbnail:thumbnail-viewer @setter.thumbnail="thumbnail" @thumbnail:visible-rect-control></thumbnail:thumbnail-viewer>
                    </div>
                  </thumbnail:thumbnail-item>
                </thumbnail:thumbnail-list>
              </thumbnail:sidebar-panel>
            `
          }
        ],
      }
    },
    addons: libPath + '/uix-addons/allInOne.js'
  });
</script>
<style>
```

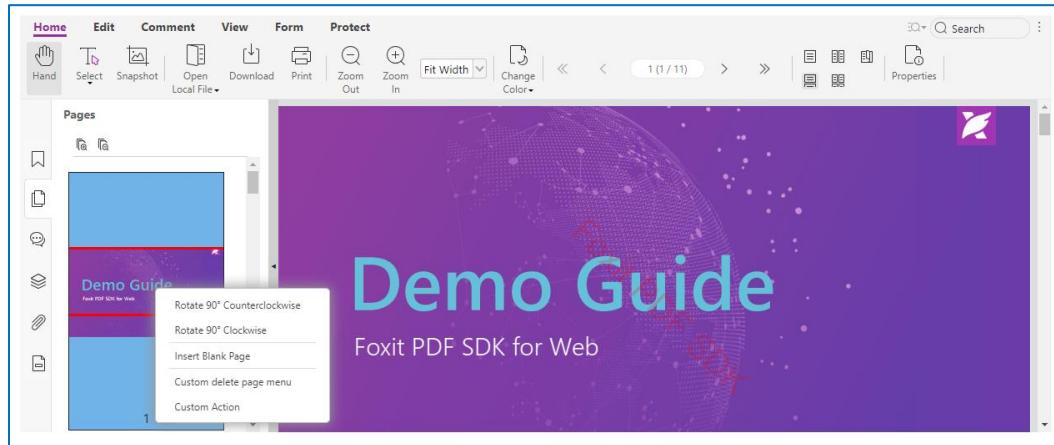
```
.my-thumbnail-item-toolbox {  
    display: flex;  
    padding: 0.2em 0;  
    flex-direction: row;  
}  
.my-thumbnail-item-toolbox button{  
    height: 2em;  
    line-height: 1;  
    font-size: 12px;  
}  
</style>
```

### Customize Thumbnail Right Click Menu

The following is the template of the thumbnail right click menu:

```
<contextmenu name="fv--thumbnail-contextmenu" @thumbnail:permission>  
    <contextmenu-item feature="rotate" name="contextmenu-item-thumbnail-rotate-left"  
@controller="thumbnail:RotateLeftController">thumbnail:contextmenu.rotateLeft</contextmenu-item>  
    <contextmenu-item feature="rotate" name="contextmenu-item-thumbnail-rotate-right"  
@controller="thumbnail:RotateRightController">thumbnail:contextmenu.rotateRight</contextmenu-item>  
    <contextmenu-separator></contextmenu-separator>  
    <contextmenu-item feature="insert" name="contextmenu-item-thumbnail-add-blank-page"  
@controller="thumbnail:InsertBlankPageController">thumbnail:contextmenu.addBlankPage</contextmenu-item>  
    <contextmenu-separator></contextmenu-separator>  
    <thumbnail:delete-page-contextmenu-item name="contextmenu-item-thumbnail-delete"></thumbnail:delete-page-contextmenu-item>  
</contextmenu>
```

We can configure the fragments to delete or add the menu item:



```
<script>  
    var libPath = window.top.location.origin + '/lib';
```

```
var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
var customModule = UIExtension.modular.module('custom', []);

customModule.registerController(UIExtension.Controller.extend({
    mounted: function() {
        pdfui.callAddonAPI('Thumbnail','onSelectThumbnail', [function(currentSelectedPageIndexes) {
            console.log(currentSelectedPageIndexes);
        }]).then(removeListener => {
            this.addDestroyHook(removeListener);
        })
    }
}, {
    getName: function() {
        return 'CustomThumbnailItemOperationController';
    }
}));

var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive.extend({
        getDefaultFragments() {
            return [
                {
                    target: 'contextmenu-item-thumbnail-delete',
                    action: FRAGMENT_ACTION.REMOVE
                },
                {
                    target: 'fv--thumbnail-contextmenu',
                    action: FRAGMENT_ACTION.APPEND,
                    template: `<contextmenu-item @controller="thumbnail:DeletePageController">Custom delete page menu</contextmenu-item>`
                },
                {
                    target: 'fv--thumbnail-contextmenu',
                    action: FRAGMENT_ACTION.APPEND,
                    template: `<contextmenu-item
@controller="custom:CustomThumbnailItemOperationController">Custom Action</contextmenu-item>` ]
            ];
        }
    }),
    addons: libPath + '/uix-addons/allInOne.js'
});
</script>
```

## Customize Shortcuts

### Overview

In order to allow the application layer to customize shortcuts conveniently, Foxit PDF SDK for Web provides interfaces such as [PDFViewer.onShortcutKey](#). This article will introduce how to use these interfaces and the relevant precautions.

#### ***Definition***

To avoid confusion, we have defined the following terms in this document before starting:

1. key combination: A specific combination of keys, such as [Ctrl+Z](#) is a key combination, and [Cmd+Z](#) is another key combination.
2. Shortcut key: A combination of keys that triggers a specific function, such as the shortcut key for undo is [Ctrl+Z](#) or [Cmd+Z](#).

### The Built-in Key Combinations and Their Descriptions

Here, we list the built-in key combinations in Foxit PDF SDK for Web. Developers can refer to this table and customize the key combinations at the application level by replacing the built-in implementation.

Key Combination	Description
Esc	Close the dialog box, exit edit mode or exit the search panel.
Home	Jump to the first page.
End	Jump to the last page.
Delete	Delete the selected object. In edit mode: delete the selected text object; in non-edit mode: delete the selected annotation object.
PageUp	Move the current view upward when a vertical scroll bar is present.

Key Combination	Description
PageDown	Move the current view downward when a vertical scroll bar is present.
UpArrow	Move the vertical scroll bar upward when it is present.
DownArrow	Move the vertical scroll bar downward when it is present.
LeftArrow	Move the horizontal scroll bar to the left when it is present.
RightArrow	Move the horizontal scroll bar to the right when it is present.
Enter	Confirm or continue.
Ctrl+Z	Undo. On Mac platform, it is Cmd+Z.
Ctrl+Y	Redo. On Mac platform, it is Cmd+Shift+Z.
Ctrl+MouseLeft	Select multiple objects, annotations, paths, text editing
Ctrl+F	Open search panel. On Mac platform, it is Cmd+F.
Ctrl+P	Open print panel. On Mac platform, it is Cmd+P.
Ctrl+RightArrow	Open left navigation panel. On Mac platform, it is Cmd+RightArrow.
Ctrl+LeftArrow	Close left navigation panel. On Mac platform, it is Cmd+LeftArrow.
Ctrl+C	Copy annotation (path, text, image). On Mac platform, it is Cmd+C.
Ctrl+X	Cut annotation (text). On Mac platform, it is Cmd+X.

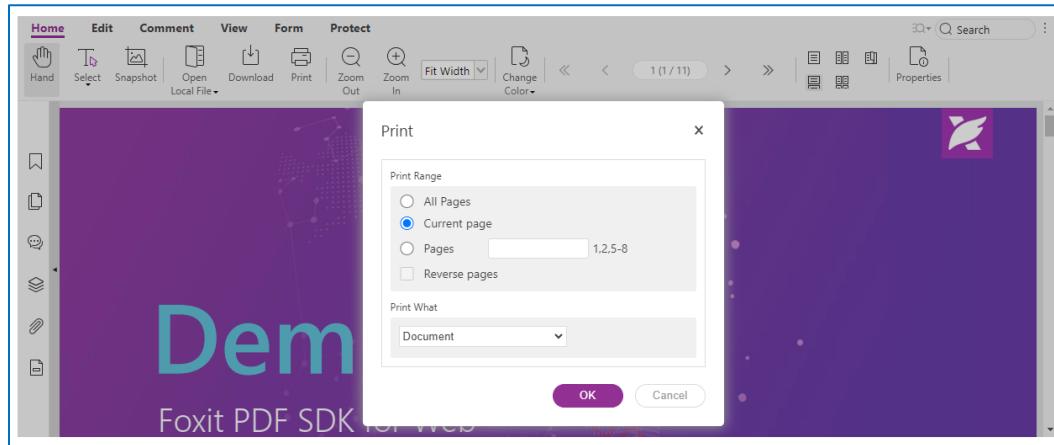
Key Combination	Description
Ctrl+V	Paste annotation (path, text, image). On Mac platform, it is Cmd+V.

## Start Customization

Developers can add shortcut key event handling functions through the `PDFViewer.onShortcutKey` interface. If the received shortcut key is already defined within the SDK (as listed in the table above), setting the `preventDefaultImplementation` parameter to `true` will replace the implementation of the internal shortcut key in the SDK. Otherwise, when the shortcut key is triggered, the internal implementation of the SDK and the developer's custom processing function will be executed simultaneously.

### ***Replace the Implementation of Built-in Shortcut Keys***

Here, we take the shortcut key of the print function as an example:



```
<script>
  const libPath = window.top.location.origin + '/lib';
  const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive,
```

```
    addons: libPath + '/uix-addons/allInOne.js'  
});  
pdfui.onShortcutKey("Ctrl+P", function() {  
    pdfui.getComponentByName('print-dialog').then(printDialog => {  
        if(printDialog) {  
            printDialog.show();  
        }  
    })  
});  
</script>
```

In the above example, the built-in implementation of the shortcut key in the SDK was replaced. When the user presses the [Ctrl+P](#) key combination, the custom print implementation will be triggered. You can obtain the [print-dialog](#) to display the print dialog box in this implementation or use other methods to implement custom printing functionality.

### ***Replace Key Combination***

If you do not want to use [Ctrl+P](#) to trigger the print function, you need to replace the built-in implementation in the SDK and register a custom shortcut key to implement the print function.

Following is an example code:

```
<script>  
const libPath = window.top.location.origin + '/lib';  
const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;  
const pdfui = new UIExtension.PDFUI({  
    viewerOptions: {  
        libPath: libPath,  
        jr: {  
            licenseSN: licenseSN,  
            licenseKey: licenseKey  
        }  
    },  
    renderTo: document.body,  
    appearance: UIExtension.appearances.adaptive,  
    addons: libPath + '/uix-addons/allInOne.js'  
});  
pdfui.onShortcutKey('Ctrl+P', function() {  
    // PASS  
}, true);  
pdfui.onShortcutKey('Ctrl+Alt+P', function(e) {  
    pdfui.print({  
        pages: [0]  
    })  
})  
</script>
```

In the example above, we first register an empty function using `PDFViewer.onShortcutKey` to replace the built-in implementation of `Ctrl+P` in the SDK. Then, we register an event listener for `Ctrl+Alt+P`. When the user presses `Ctrl+Alt+P`, the `pdfui.print()` method will be called to implement the print function.

It is important to note that when replacing the built-in implementation of the shortcut key, the third parameter of the `onShortcutKey` interface should be set to `true`. In this way, the custom implementation will replace the default built-in implementation of the SDK, rather than coexisting with it.

### **Remove Shortcut Key Listener Event**

In some cases, you may need to remove a shortcut key listener event under specific conditions. For example, you can listen for the `Ctrl+W` event to close a document when it is open. But after the document is closed, you need to cancel the `Ctrl+W` event listener to avoid unnecessary operations. To do this, the `PDFViewer.onShortcutKey` interface returns a function that you can use to remove the listener for a shortcut key event. Following is an example:

```
<script>
  const libPath = window.top.location.origin + '/lib';
  const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive,
    addons: libPath + '/uix-addons/allInOne.js'
  });
  var removeShortcutKeyHandler = () => {};
  pdfui.addViewerEventListerner(UIExtension.PDFViewCtrl.ViewerEvents.openFileSuccess, () => {
    removeShortcutKeyHandler();
    pdfui.onShortcutKey('Ctrl+Shift+K', function(e) {
      e.preventDefault(); // Prevent the default implementation of the browser's native behavior.
      pdfui.close(); // User closes the document.
    }).then((remove) => {
      removeShortcutKeyHandler = remove;
    })
  });
  pdfui.addViewerEventListerner(UIExtension.PDFViewCtrl.ViewerEvents.willCloseDocument, () => {
    removeShortcutKeyHandler();
  });
</script>
```

```
</script>
```

In the above example, we first use `PDFViewer.onShortcutKey` to listen for the `Ctrl+Shift+K` event in the `openFileSuccess` event callback, and save the returned function to the variable `removeShortcutKeyHandler`. When the document is going to be closed, we can call the `removeShortcutKeyHandler` function to remove the listener for the `Ctrl+Shift+K` event.

It is important to note that if you use multiple `PDFViewer.onShortcutKey` listener events, each event will return a corresponding function, and you need to save each function and call them separately when needed.

### ***Disable/enable Global Shortcut Key***

In some cases, you may need to disable the shortcut key feature. You can achieve this by using the `setEnableShortcutKey` interface. This interface accepts a boolean value parameter. If it is true, the shortcut key feature will be enabled; if it is false, the shortcut key feature will be disabled.

```
<script>
  const libPath = window.top.location.origin + '/lib';
  const FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION;
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive,
    addons: libPath + '/uix-addons/allInOne.js'
  });
  pdfui.setEnableShortcutKey(false);
</script>
```

The example above disables the shortcut key feature, which means that all key combinations will not be triggered. To re-enable the shortcut key feature, you can call `pdfui.setEnableShortcutKey(true)`.

### **Notes**

To better meet the habits of Mac users, we use different key combinations on the Mac platform. Usually, we use `Cmd` instead of the `Ctrl` key. For example, the shortcut key for "Undo" on Windows/Linux is `Ctrl+Z`, while on Mac it is `Cmd+Z`.

If you want to replace the shortcut key for the "Undo" function, you need to choose one of these two key combinations depending on the system type to listen for the shortcut key event.

## Extensible Components and Usage Guide

This document provides detailed information and usage guide for extensible components, listing the methods to extend extensible components and helping developers understand and use the custom features of components better. In the following document, we will first introduce the concept of extensible components and the methods to extend them using Component API and Fragment configuration. Then, we will provide a detailed list of extensible components, so that developers can have a clear understanding of which components can be modified.

### Prerequisites

To better understand this document, you may need to be familiar with the following concepts:

1. For Fragment configuration: please refer to [UI Fragments](#) section.
2. For Appearance usage: please refer to [Appearance](#) section.
3. For layout templates: please refer to [Layout Template](#) section.
4. For component selector syntax: please refer to [Component Selector](#) section.
5. For Component API: please refer to the [API Reference](#).
6. For the @controller directive: please refer to the [@controller](#) directive section.
7. For the @tooltip directive: please refer to the [@tooltip](#) directive section.
8. For the @on directive: please refer to the [@on](#) directive section.

The upcoming content will utilize the knowledge mentioned above. Please familiarize yourself with them before reading this document, as they will not be repeated here.

### Overview of Extensible Components

1. What are extensible components: Components that can be customized and extended in terms of functionality and appearance through Fragment configuration or Component API.
2. What are non-extensible components: The opposite of extensible components, which cannot be modified. These components are deeply encapsulated within the SDK, so they cannot be broken down and combined at a granular level. However, some of them can be replaced as a whole (e.g., Annotation Property Dialog). More specific details will be provided in subsequent sections.
3. **Note:** Some components do not have unique name identifiers, so they cannot be directly targeted by name. In such cases, [component selector syntax](#) can be used.

## Extensible Components

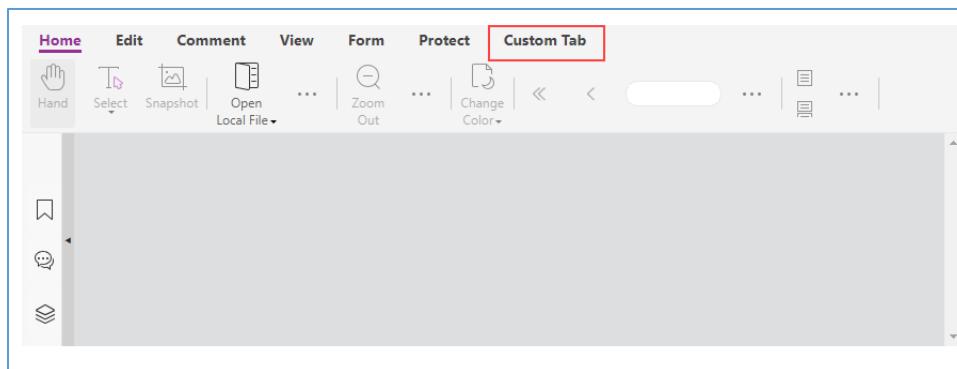
### *Header Area*

#### Tab Component

The tab component is wrapped in a div container named `toolbar-tabs`, while the tab panel is wrapped in a div container named `toolbar-tab-bodies`. If you want to add or remove tabs, you need to modify both of these containers. Here is an example (click the `run` button to see the effect):

1. Add a tab at the end

In this example, we inserted a new tab called `custom-tab` at the end of the tab bar, and also inserted a div component called `fv--custom-tab-body`.



```

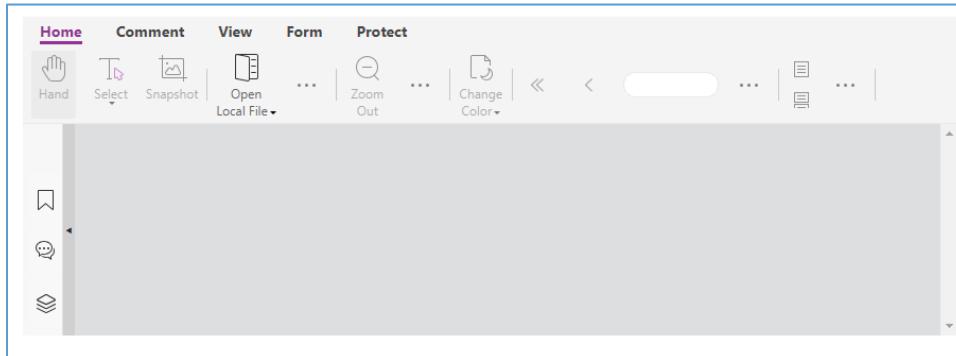
<html>
</html>
<script>
    var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
    var CustomAppearance = UIExtension.appearances.adaptive.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'toolbar-tabs',
                    action: FRAGMENT_ACTION.APPEND,
                    template: '<gtab name="custom-tab" group="toolbar-tab" body="fv--custom-tab-body">
text="Custom Tab" @aria:toolbar.tab></gtab>',
                    }, {
                        target: 'toolbar-tab-bodies',
                        action: FRAGMENT_ACTION.APPEND,
                        template: '<div name="fv--custom-tab-body" style="padding:2em 1em;">Custom Tab Body</div>'
                    // The custom tab panel does not restrict the component type, but make sure that the name should be the
                    // same as the body property value specified in `gtab`.
                },
            ];
        }
    });
    var libPath = window.top.location.origin + '/lib';

```

```
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
});
</script>
```

## 2. Remove a specific tab

In this example, we remove both the `edit-tab` and `fv--edit-tab-paddle` components, and then the `edit` tab will not be visible in the view.



```
<html>
</html>
<script>
    var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
    var CustomAppearance = UIExtension.appearances.adaptive.extend({
        getDefaultFragments: function() {
            return [
                target: 'edit-tab,fv--edit-tab-paddle', // Multiple component names can be separated by commas,
                and these components will be removed together.
                action: FRAGMENT_ACTION.REMOVE
            ];
        }
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        }
    });
</script>
```

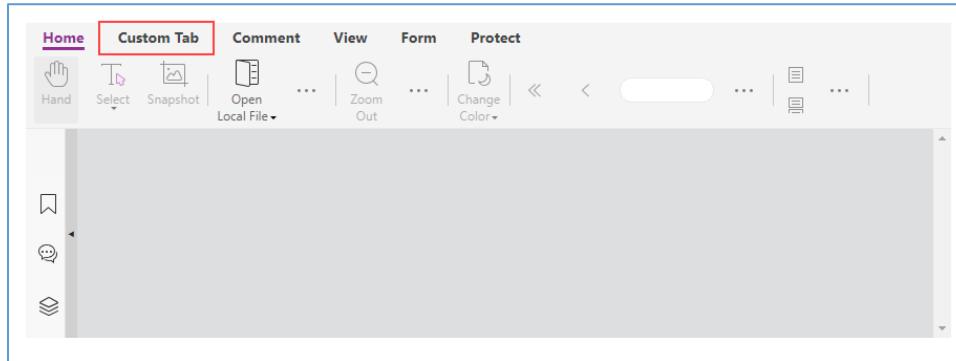
```

        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
);
</script>

```

### 3. Replace a specific tab

In this example, the `edit-tab` tab is replaced with a custom tab.



```

<html>
</html>
<script>
var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
var CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments: function() {
        return [
            {
                target: 'edit-tab',
                action: FRAGMENT_ACTION.REPLACE,
                template: '<gtab name="custom-tab" group="toolbar-tab" body="fv--edit-tab-paddle">Custom Tab</gtab>',
                text="Custom Tab" @aria:toolbar.tab></gtab>'
            },
            {
                target: 'fv--edit-tab-paddle',
                action: FRAGMENT_ACTION.REPLACE,
                template: '<div style="padding:2em 1em;">Custom Tab Body</div>'
            }
        ];
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    }
},

```

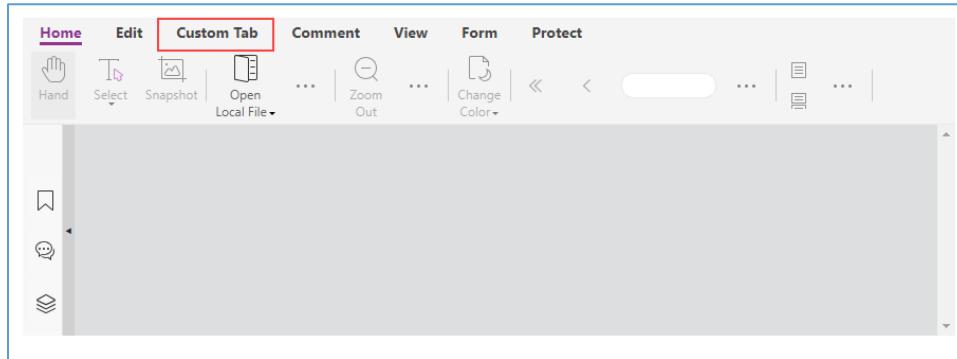
```

        renderTo: document.body,
        appearance: CustomAppearance,
        addons: [] // No addon is loaded
    });
</script>

```

4. Insert a tab at a specified position

The following example inserts a custom tab after a specified position. Similarly, there is a `FRAGMENT_ACTION.BEFORE` operation, which means that the component is inserted before the specified target component.



```

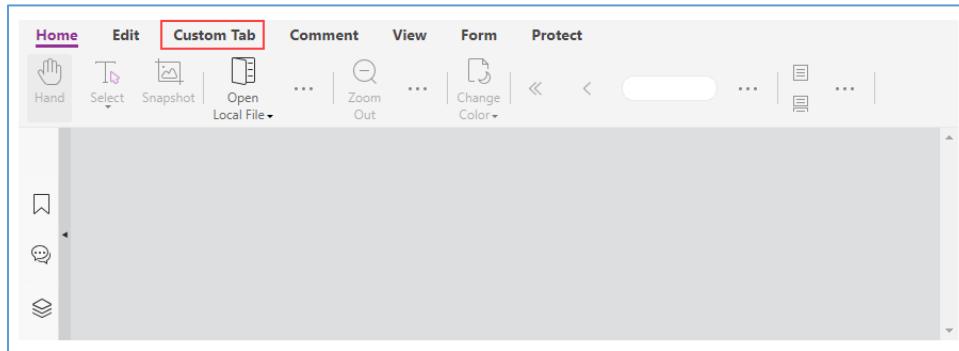
<html>
</html>
<script>
    var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
    var CustomAppearance = UIExtension.appearances.adaptive.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'edit-tab',
                    action: FRAGMENT_ACTION.AFTER, // Insert the custom tab after fv--edit-tab.
                    template: '<gtab name="custom-tab" group="toolbar-tab" body="fv--custom-tab-body">Custom Tab</gtab>',
                    text="Custom Tab" @aria:toolbar.tab></gtab>'
                },
                {
                    target: 'fv--edit-tab-paddle', // Note that the order is not important here because only one tab
                    panel is displayed at a time, this operation is just for demonstration purposes.
                    action: FRAGMENT_ACTION.AFTER,
                    template: '<div name="fv--custom-tab-body" style="padding:2em 1em;">Custom Tab Body</div>'
                }
            ];
        }
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        }
    });
</script>

```

```
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: [] // No addon is loaded
    });
</script>
```

## 5. Use Component API

The following example uses selector syntax and the [Component.after](#) method to insert more tab components into the page.



```
<html>
</html>
<script>
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: UIExtension.appearances.adaptive,
        addons: [] // No addon is loaded
    });
    pdfui.getRootComponent().then(function(root){
        var editTab = root.querySelector('edit-tab')
        var editTabBody = root.querySelector('fv--edit-tab-paddle');
        editTab.after('<gtab name="custom-tab" group="toolbar-tab" body="fv--custom-tab-body" text="Custom Tab" @aria:toolbar.tab></gtab>');
        editTabBody.after('<div name="fv--custom-tab-body" style="padding:2em 1em;">Custom Tab Body</div>');
    });
</script>
```

Compared to editing components with the Fragment configuration, which can only be done during initialization, using the Component API allows you to dynamically edit components at any time after PDFUI initialization.

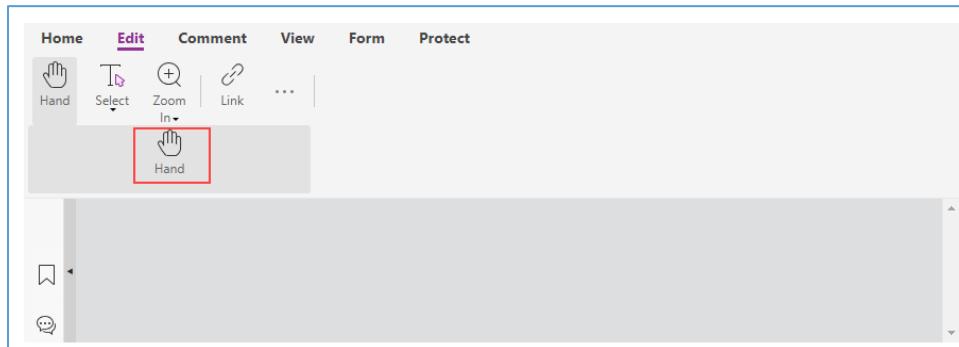
## Tab Panel Components

The tab panel component is the panel displayed after selecting a tab. Currently, the default layout template used by the SDK uses the `paddle` component as the tab panel component. The purpose of using this component is to display buttons on the left and right sides when the browser view width is small, which can be used to scroll the components within the panel.

The paddle component can be seen as a normal `ContainerComponent`. You can use the Fragment configuration to insert child components into it using the `FRAGMENT_ACTION.APPEND` operation, or you can use the Component API to insert child components. The following examples will illustrate this.

### 1. Insert components using the Fragment Configuration

This example uses the Fragment configuration to insert a hand button into the paddle component by default.



```
<html>
</html>
<script>
    var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
    var CustomAppearance = UIExtension.appearances.adaptive.extend({
        getDefaultFragments: function() {
            return [
                target: 'fv--edit-tab-paddle',
                action: FRAGMENT_ACTION.APPEND,
                template: '<ribbon-button text="toolbar.tooltip.hand.title" name="hand-tool" icon-class="fv_icon-toolbar-hand" @controller="states:HandController"></ribbon-button>'
            ];
        }
    });
</script>
```

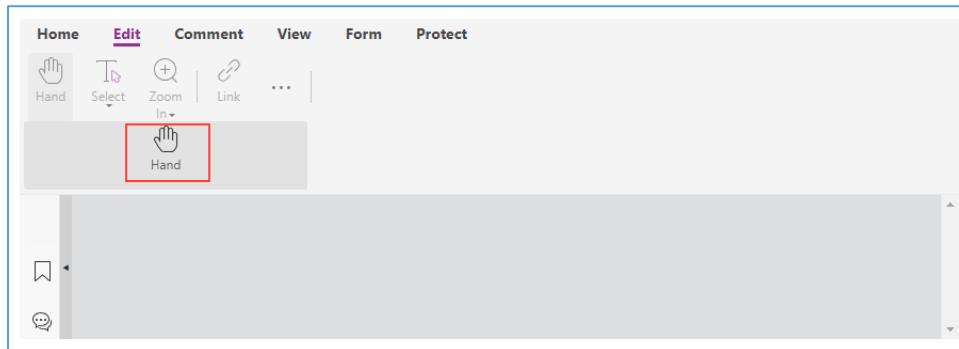
```

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
});
</script>

```

## 2. Insert components using the Component API

This example uses the Component API to insert a hand button. The effect will be the same as the previous example.



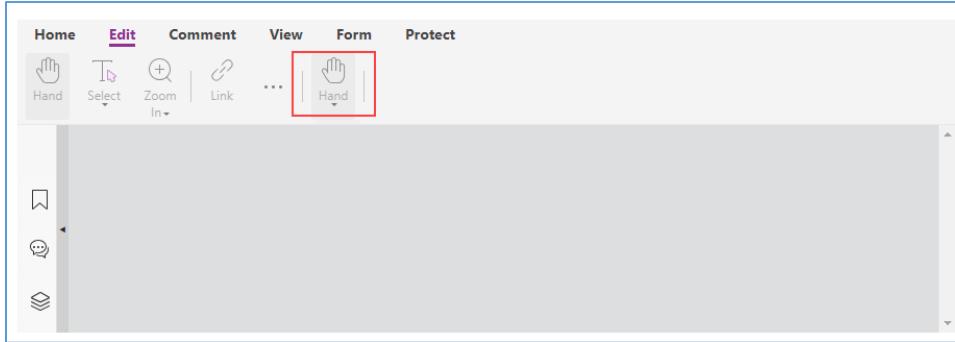
```

<html>
</html>
<script>
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: UIExtension.appearances.adaptive,
    addons: [] // No addon is loaded
});
pdfui.getRootComponent().then(function(root) {
    var editTabBody = root.querySelector('fv--edit-tab-paddle')

```

```
editTabBody.append('<ribbon-button text="toolbar.tooltip.hand.title" name="hand-tool" icon-class="fv_icon-toolbar-hand" @controller="states:HandController"></ribbon-button>')
    })
</script>
```

In the default layout template, we use the `group-list` component to group the child components within the `paddle` component. In practice, it is more common to edit the `group-list` component. The following example will use `group-list` and `group` to illustrate:



```
<html>
</html>
<script>
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: UIExtension.appearances.adaptive,
        addons: [] // No addon is loaded
    });
    pdfui.getRootComponent().then(function(root) {
        var editTabBody = root.querySelector('fv--edit-tab-paddle>@group-list')
        editTabBody.append('<group name="custom-group" retain-count="1"><ribbon-button text="toolbar.tooltip.hand.title" name="hand-tool" icon-class="fv_icon-toolbar-hand" @controller="states:HandController"><ribbon-button text="toolbar.tooltip.hand.title" name="hand-tool" icon-class="fv_icon-toolbar-hand" @controller="states:HandController"></ribbon-button></group>')
    })
</script>
```

In this example, we insert a new `custom-group` where the group contains two hand button components, and set it to only display one component when collapsed.

### Button Components in Tab Panels (ribbon-button)

The `ribbon-button` is a powerful component that can be used as a regular button or as a dropdown component. Let's first explore the custom methods for using `ribbon-button` as a regular button.

As a regular button, the `ribbon-button` component can be customized with the following:

1. Text Content: the text displayed on the button.
2. Icon: the button icon, specified through the `icon-class` attribute, which requires additional CSS styles.
3. Tooltips: the floating tooltip content displayed when the mouse hovers over the button, implemented through the `@tooltip` directive and `tooltip-title` attribute.
4. Controller: usually used for business implementation, and generally used to reuse internal SDK implementation logic on custom buttons.

The following is an example of a custom button that reuses business logic using the SDK's built-in controller:



```
<html>
</html>
<script>
var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
var CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments: function() {
        return [
            {
                target: 'fv--edit-tab-paddle',
                action: FRAGMENT_ACTION.APPEND,
                template: '<ribbon-button text="Hand button" name="custom-hand-tool" icon-class="fv__icon-toolbar-hand" @controller="states:HandController"></ribbon-button>' // Reuse states:HandController
            }];
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
        }
    }
});
```

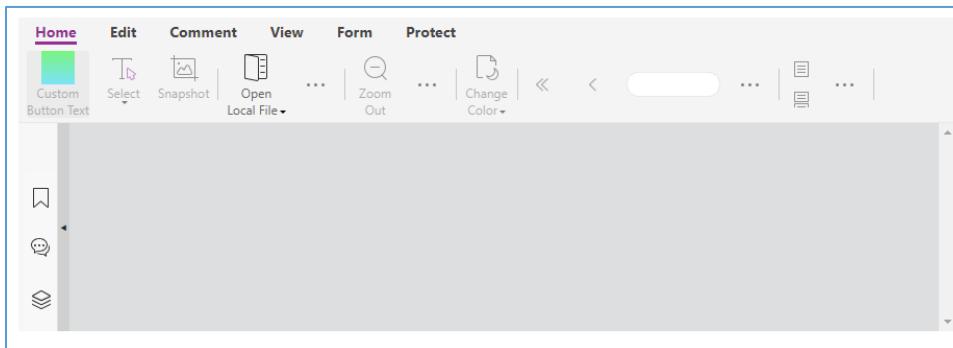
```

        licenseKey: licenseKey
    }
},
renderTo: document.body,
appearance: CustomAppearance,
addons: [] // No addon is loaded
});
</script>

```

From this example, we can see that when reusing a controller, the `@controller=""` directive can be used to specify the [Controller](#) that needs to be reused. Apart from `states:HandController`, there are many other controllers that can be reused. For more details, please refer to the [Controllers](#) section.

In addition to reusing logic with custom buttons, you can also directly modify the built-in components of the SDK. The main way to do this is through configuring Fragments. For example, the following example fully demonstrates how to customize the content of the hand-tool (ribbon-button):



```

<html>
</html>
<style>
.custom-hand-icon {
    background-image: linear-gradient(180deg, rgba(0,245,12,1) 0%, rgba(0,212,255,1) 100%);
}
</style>
<script>
var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
var CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments: function() {
        return [
            {
                target: 'hand-tool',
                action: FRAGMENT_ACTION.EXT,
                config: {
                    'icon-class': 'custom-hand-icon',
                    text: 'Custom Button Text',
                    attrs: {
                        '@tooltip': '',

```

```

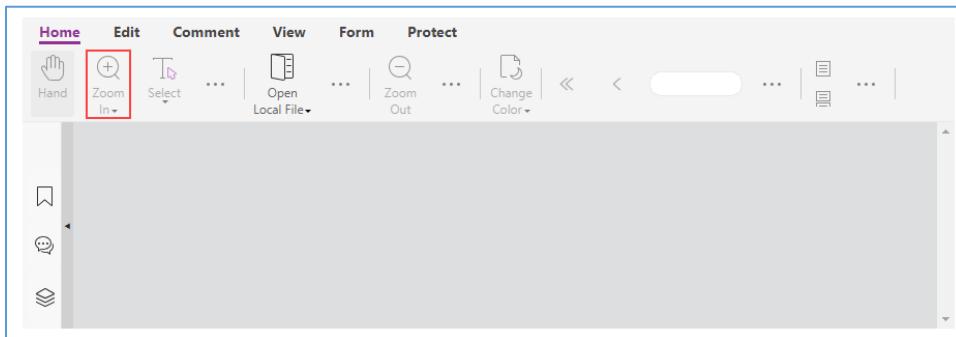
        'tooltip-title': 'Custom Tooltip Title'
    }
}
});
};

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
});
</script>

```

## Dropdown Components in the Toolbar Tab Panel

On the toolbar, the `dropdown` component is usually used in conjunction with the `ribbon-button` component. However, you can also use it separately. The only difference between these two usage methods is the display effect. The following is an example of using `ribbon-button` and `dropdown` together:



```

<html>
</html>
<script>
    var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
    var CustomAppearance = UIExtension.appearances.adaptive.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'hand-tool',
                    action: FRAGMENT_ACTION.AFTER,
                    template: `

```

```
<ribbon-button name="dropdown-zoom" @var.self="$component" @tooltip>
    <dropdown name="fv--inner-zoom-ribbon-dropdown" @aria:label.list="aria:labels.setzoom" icon-class="fv__icon-toolbar-zoom-in" class="fv__ui-dropdown-hide-text" selected="0" @on.selected="self.select($args[0])">
        <dropdown-button name="dropdown-zoom-in" action="zoomin" @controller="zoom:DropdownZoomInAndOutController" icon-class="fv__icon-toolbar-zoom-in" ribbon-icon="fx-icon-ribbon_home_zoomin-32" tooltip-title="toolbar.buttons.zoomin" tabindex="0">toolbar.buttons.zoomin</dropdown-button>
        <dropdown-button name="dropdown-zoom-out" action="zoomout" @controller="zoom:DropdownZoomInAndOutController" icon-class="fv__icon-toolbar-zoom-out" ribbon-icon="fx-icon-ribbon_home_zoomout-32" tooltip-title="toolbar.buttons.zoomout" tabindex="0">toolbar.buttons.zoomout</dropdown-button>
    </dropdown>
</ribbon-button>
`

}];

}

});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
});
</script>
```

For more business components, you can refer to the [pre-configured components](#) section. This section describes the default configurations of multiple business components, and we can adjust them using Fragment configuration based on these configuration options.

### **Left Panel**

In the default layout, the left panel is constructed using the `sidebar` component, and its child components correspond to different business modules encapsulated in the `sidebar-panel` component.

In this section, we will learn about some customization methods and details of the left panel.

#### **Create a sidebar-panel**

Here is a template for the `sidebar-panel` component that includes basic properties:

```
<sidebar-panel  
  class="custom-sidebar-panel"  
  icon-class="custom-sidebar-icon"  
  title="Custom"  
>  
</sidebar-panel>
```

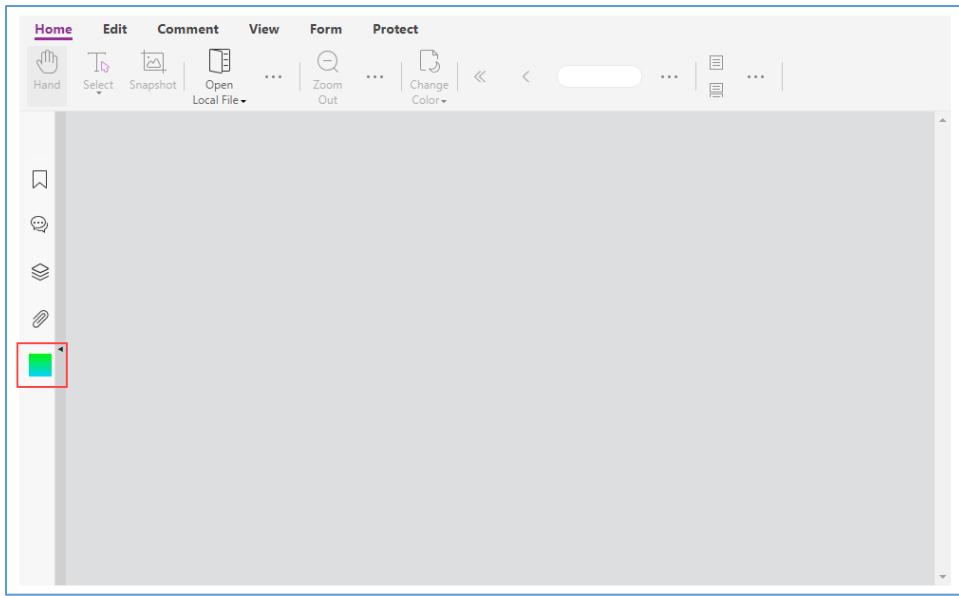
If needed, you can add directives to it, such as the `@tooltip` directive:

```
<sidebar-panel  
  class="custom-sidebar-panel"  
  icon-class="custom-sidebar-icon"  
  title="Custom"  
  @tooltip  
  tooltip-placement="right"  
  tooltip-title="Custom Sidebar"  
>  
</sidebar-panel>
```

If you need to listen to the `active` event (when the sidebar-panel is expanded), you can use the `@on.active` directive to listen to it. Please refer to the following example:

```
class CustomSidebarPanel extends SeniorComponentFactory.createSuperClass({  
  template: `  
    <sidebar-panel  
      class="custom-sidebar-panel"  
      icon-class="custom-sidebar-icon"  
      title="Custom"  
      @tooltip  
      tooltip-placement="right"  
      tooltip-title="Custom Sidebar"  
      @on.active="$component.handleActiveEvent()"  
    >  
    </sidebar-panel>  
  `  
}  
){  
  static getName() {  
    return 'custom-sidebar-panel'  
  }  
  handleActiveEvent(){  
    console.log('hello world')  
  }  
}
```

Finally, let's take a look at a runnable example:



```
<html>
</html>
<style>
    .custom-sidebar-icon {
        background-image: linear-gradient(180deg, rgba(0,245,12,1) 0%, rgba(0,212,255,1) 100%);
        width: 24px;
        height: 24px;
        margin-top: 12px;
        margin-left: 4px;
    }
</style>
<script>
    const { modular, SeniorComponentFactory } = UIExtension;

    class CustomSidebarPanel extends SeniorComponentFactory.createSuperClass({
        template: `
            <sidebar-panel
                class="custom-sidebar-panel"
                icon-class="custom-sidebar-icon"
                title="Custom"
                @tooltip
                tooltip-placement="right"
                tooltip-title="Custom Sidebar"
                @on.active="$component.handleActiveEvent()"
            >
                <div>Custom Sidebar Panel Body</div>
            </sidebar-panel>
        `
    }) {
        static getName() {
            return 'custom-sidebar-panel'
        }
    }
</script>
```

```

        handleActiveEvent(){
            console.log('hello world')
        }
    }
    modular.module('custom', []).registerComponent(CustomSidebarPanel);

var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
var CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments: function() {
        return [
            target: '@sidebar',
            action: FRAGMENT_ACTION.APPEND,
            template: `
                <custom:custom-sidebar-panel></custom:custom-sidebar-panel>
            `
        ];
    }
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
});
</script>

```

## Delete a sidebar-panel

If you want to delete the built-in `sidebar-panel` component in the SDK, we recommend using Fragment configuration instead of the Component API to delete it, unless it is necessary. This is because initializing a `sidebar-panel` component may require a significant amount of resources, and deleting it through Fragment configuration can avoid unnecessary initialization.

```
{
    target: '@layer-sidebar-panel',
    action: UIExtension.UIConsts.FRAGMENT_ACTION.REMOVE
}
```

## Customize the internal components of the built-in sidebar-panel in the SDK

1. commentlist-sidebar-panel

In the commentlist sidebar panel, the CommentCardComponent and ReplyCardComponent can be customized. However, unlike other components, they are dynamically generated based on the current type and number of comments in the document, and their details cannot be modified through Fragment configuration. But we provide events that allow you to obtain the component objects when they are created or deleted, and then modify the details of these components using the Component API.

Here are the descriptions of the relevant events:

- 1). `UIExtension.UIEvents.appendCommentListComment`: Triggered when the CommentCardComponent component is inserted. The event callback can obtain the `commentCardComponent` and `annot` parameters.
- 2). `UIExtension.UIEvents.destroyCommentListComment`: Triggered when the CommentCardComponent component is destroyed. The callback parameters are the same as those of the `appendCommentListComment` event.
- 3). `UIExtension.UIEvents.appendCommentListReply`: Triggered when the ReplyCardComponent component is inserted. The event callback can obtain the `replyCardComponent` and `replyAnnot` parameters.
- 4). `UIExtension.UIEvents.destroyCommentListReply`: Triggered when the ReplyCardComponent component is destroyed. The callback parameters are the same as those of the `appendCommentListReply` event.

You can refer to the API Reference for usage information:

- 1). [\*\*CommentCardComponent\*\*](#)
- 2). [\*\*ReplyCardComponent\*\*](#)
2. thumbnail-sidebar-panel

You can refer to the section: [Customize Thumbnail](#)

3. bookmark-sidebar-panel

Currently, the bookmark list does not support customization, only the bookmark context menu allows customization. For more details, please refer to the [Context Menu](#) section.

4. Others

Apart from the three mentioned above, [layer-sidebar-panel](#), [attachment-sidebar-panel](#), and [field-sidebar-panel](#) currently do not provide customization capabilities.

### **Context Menu**

The context menu refers to the component implemented based on [ContextMenuComponent](#). All customizable context menus are implemented based on the same principle:

1. Each context menu for a specific functionality has a fixed name, and replacing a context menu requires specifying the name. After replacement, the name cannot be changed, as it may cause the context menu to not be displayed or overwrite other context menus, affecting the display of other functionalities.
2. Context menu items can be added, deleted, and replaced through Fragment configuration and the Component API.
3. The [contextmenu-separator](#) separators at the beginning, end, or in a continuous sequence will be automatically hidden and generally do not need to be specifically controlled for showing or hiding.

Next, the context menus for each functional module will be introduced one by one.

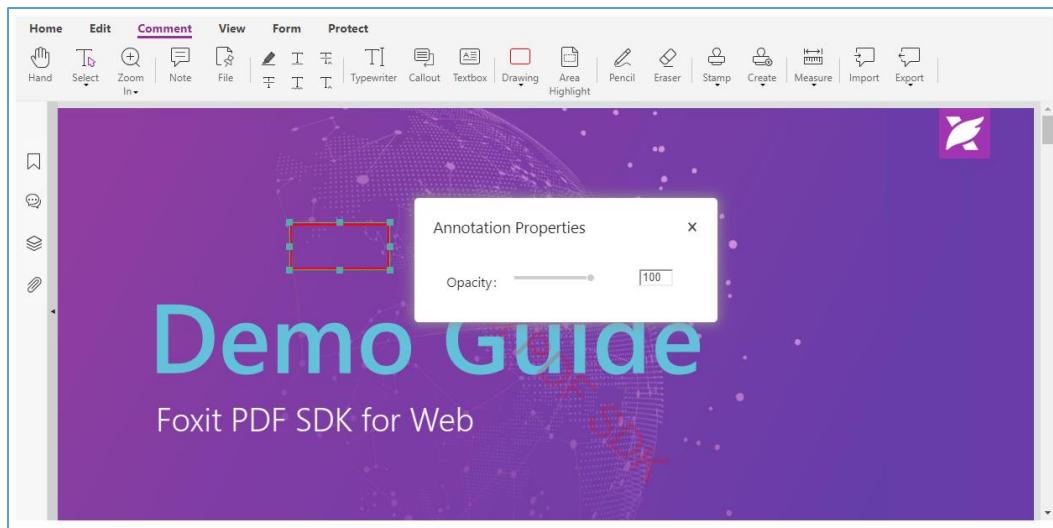
### **PDF Page Context Menu**

Please refer to the section [Customizing Page Context Menu](#).

### **Annotation Context Menu**

Please refer to the section [Customizing Annotation Context Menu](#).

It should be noted that since the Annotation property dialog does not support customization, when implementing a custom property dialog, the implementation of [<contextmenu-item-properties>](#) needs to be replaced. You can refer to the following example:



```

<html>
</html>
<style>
.custom-sidebar-icon {
    background-image: linear-gradient(180deg, rgba(0,245,12,1) 0%, rgba(0,212,255,1) 100%);
    width: 24px;
    height: 24px;
    margin-top: 12px;
    margin-left: 4px;
}
</style>
<script>
    const { modular, SeniorComponentFactory } = UIExtension;

    class CustomAnnotationPropertiesDialog extends SeniorComponentFactory.createSuperClass({
        template: `
            <layer
                class="center"
                @var.self="$component"
            >
                <layer-header @draggable="{type: 'parent'}" title="Annotation Properties"></layer-header>
                <layer-view style="padding: 1em">
                    <form-group label="Opacity">
                        <slider @model="self.properties.opacity" min="0" max="100" step="1"
                            @on.change="self.updateOpacity($args[2])"></slider>
                    </form-group>
                </layer-view>
            </layer>
        `,
        static getName() {
            return 'annotation-properties-dialog'
        }
        init() {
    
```

```

super.init();
this.properties = {
    opacity: 100
};
}
updateOpacity(newOpacity) {
    this.getPDFUI().getAllActivatedElements().then(([element]) => {
        element.annot.setOpacity(newOpacity / 100);
    })
}
doShown() {
    super.doShown();
    this.getPDFUI().getAllActivatedElements().then(([element]) => {
        this.properties.opacity = element.annot.getOpacity() * 100;
        this.digest();
    });
}
}
class CustomAnnotationPropertiesContextMenuItem extends SeniorComponentFactory.createSuperClass({
    template: `<contextmenu-item @on.click="$component.showPropertiesDialog()">Show
Properties</contextmenu-item>`
}) {
    static getName() {
        return 'contextmenu-item-show-properties'
    }
    showPropertiesDialog() {
        const dialog = this.getRoot().querySelector('@custom:annotation-properties-dialog');
        if(dialog) {
            dialog.show();
        }
    }
}
modular.module('custom', [])
    .registerComponent(CustomAnnotationPropertiesDialog)
    .registerComponent(CustomAnnotationPropertiesContextMenuItem)
    ;
var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
var CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments: function() {
        return [
            {
                target: 'template-container',
                action: FRAGMENT_ACTION.APPEND,
                template: `
                    <custom:annotation-properties-dialog></custom:annotation-properties-dialog>
                `
            },
            {
                target: '@contextmenu-item-properties',
                action: FRAGMENT_ACTION.REPLACE,
                template: `
                    <custom:contextmenu-item-show-properties></custom:contextmenu-item-show-properties>
                `
            }
        ];
    }
});

```

```
        }];
    });
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
});
</script>
```

## Other Context Menus

Customizing other context menus is similar to the Page context menu and Annotation context menu described above. You can refer to these documents for self-expansion. The templates for relevant menu components can be found in the section [Pre-configured Components](#).

## Modals

If it is a pop-up within the SDK, including alert, prompt, confirm, and loading overlay, we can define these components triggered by the SDK internally through Viewer UI. For specific usage, please refer to the section [Viewer UI](#).

## Controller Reusability

Below is a list utilizing the `@controller` directive syntax, enumerating the currently reusable controller implementations within the SDK. Module names are listed before the colon, and controller names are listed after the colon.

### **Built-in Controllers in UIExtension**

Built-in controllers can be directly accessed using `UIExtension.modular.module('module name').getController('controller name')` to retrieve the class.

1. `states:HandController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_HAND`.

2. `marquee:MarqueeToolController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_MARQUEE`.
3. `loupe:LoupeController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_LOUPE`.
4. `states:SnapshotToolController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_SNAPSHOT_TOOL`.
5. `file:DownloadFileController`: Used to download the currently open document.
6. `zoom:ZoomInAndOutController`: Controls document view zooming, and needs to be used with the `action` attribute. Optional values are: `action="zoomin"` and `action="zoomout"`.
7. `pagemode:SinglePageModeController`: Switches page mode to single page mode.
8. `pagemode:ContinuousPageModeController`: Switches page mode to continuous page mode.
9. `pagemode:FacingPageModeController`: Switches page mode to facing page mode.
10. `pagemode:ContinuousFacingPageModeController`: Switches page mode to continuous facing page mode.
11. `states:CreateTextController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_TEXT`.
12. `states:CreateFileAttachmentController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_FILE_ATTACHMENT`.
13. `states:CreateHighlightController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_HIGHLIGHT`.
14. `states:CreateStrikeoutController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_STRIKE_OUT`.
15. `states:CreateUnderlineController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_UNDERLINE`.
16. `states:CreateSquigglyController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_SQUIGGLY`.
17. `states:CreateReplaceController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_REPLACE`.
18. `states:CreateCaretController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_CARET`.

19. states:`CreateTypewriterController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_TYPEWRITER`.
20. states:`CreateCalloutController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_FREETEXT_CALLOUT`.
21. states:`CreateTextboxController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_FREETEXT_BOX`.
22. states:`CreateAreaHighlightController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_AREA_HIGHLIGHT`.
23. states:`CreatePencilController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.PENCIL`.
24. states:`EraserController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_ERASER`.
25. states:`CreateLinkController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_LINK`.
26. states:`CreateImageController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_IMAGE`.
27. zoom:`DropdownZoomInAndOutController`: Same as `zoom:ZoomInAndOutController`, but can only be used in dropdown subcomponents.
28. zoom:`ZoomActionController`: Controls document view zooming, and is different from `zoom:ZoomInAndOutController` in that it needs to specify the target zoom level (non-numeric): `action='fitHeight'`, `action='fitWidth'`, `action='fitVisible'`.
29. gotoview:`GotoFirstPageController`: Jumps to the first page.
30. gotoview:`GotoPrevPageController`: Jumps to the previous page.
31. gotoview:`GotoNextPageController`: Jumps to the next page.
32. gotoview:`GotoLastPageController`: Jumps to the last page.
33. states:`CreateSquareController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_SQUARE`.
34. states:`CreateCircleController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_CIRCLE`.
35. states:`CreatePolygonController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_POLYGON`.

36. `states:CreatePolygonCloudController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_POLYGON_CLOUD`.
37. `states:CreateArrowController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_ARROW`.
38. `states:CreateLineController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_LINE`.
39. `states:CreatePolylineController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_POLYLINE`.
40. `distance:CreateDistanceController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_DISTANCE`.
41. `distance:CreatePerimeterController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_PERIMETER`.
42. `distance:CreateAreaController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_AREA`.
43. `distance:CreateCircleAreaController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER.STATE_HANDLER_CREATE_CIRCLE_AREA`.
44. `comment-list:ExportCommentController`: Exports the comments of the current document in a specified format, with the format specified by the format attribute: `format="XFDF"`, which supports XFDF, FDF, and JSON formats.
45. `text-sel:CopySelectedTextController`: Copies the selected text.
46. `text-sel>CreateTextHighlightOnSelectedTextController`: Creates a text highlight annotation within the selected text range.
47. `text-sel>CreateStrikeoutOnSelectedTextController`: Creates a Strikeout annotation within the selected text range.
48. `text-sel>CreateUnderlineOnSelectedTextController`: Creates a Underline annotation within the selected text range.
49. `text-sel>CreateBookmarkOnSelectedTextController`: Adds the selected text to the bookmark list.
50. `states:RibbonSelectTextImageController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_SELECT_TEXT_IMAGE`.
51. `states:RibbonSelectTextAnnotationController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_SELECT_ANNOTATION`.
52. `change-color:ChangeColorController`: Used to change the document background color.

53. `comment-list:ImportCommentButtonController`: Used to import comment data into the document.
54. `states:SelectTextImageController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_SELECT_TEXT_IMAGE`.
55. `states:SelectAnnotationController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_SELECT_ANNOTATION`.
56. `zoom:ContextMenuZoomActionController`: Controls document view zooming, and needs to specify the `action` attribute. Available values are: `fitWidth`, `fitHeight`, `fitVisible`, and numeric values.
57. `ui-rotation:RotateRightController`: Controls document view rotation to the right by 90 degrees.
58. `ui-rotation:RotateLeftController`: Controls document view rotation to the left by 90 degrees.
59. `annot-opr>ShowAnnotReplyController`: Used to open the commentlist on the left panel, locate the selected annotation, and focus on the reply input box.
60. `annot-opr>DeleteAnnotController`: Deletes the selected annotation.
61. `annot-opr>ShowAnnotPropertiesController`: Displays the annotation properties dialog.
62. `annot-opr:SetPropsDefault`: Sets the current annotation properties as default, which will be used for creating annotations next time.

#### ***Controllers in UIExtension Addons***

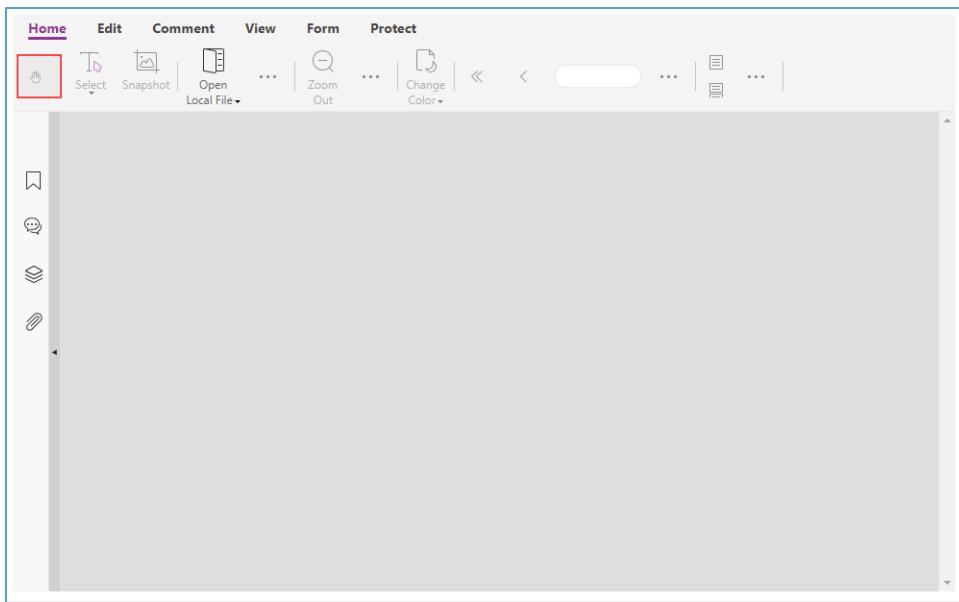
To retrieve the controller classes in Addons, use the same method as retrieving the built-in controller classes in UIExtensions, but make sure that the Addons have been loaded before retrieval.

1. page-template addon:
  1. `page-template>ShowPageTemplateDialogController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER`.
2. form-designer addon:
  1. `form-designer>CreatePushButtonController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_PUSH_BUTTON`.
  2. `form-designer>CreateCheckBoxController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_CHECK_BOX`.
  3. `form-designer>CreateRadioButtonController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_RADIO_BUTTON`.

4. `form-designer:CreateComboBoxController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_COMBO_BOX`.
  5. `form-designer:CreateListBoxController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_LIST_BOX`.
  6. `form-designer:CreateTextController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_TEXT`.
  7. `form-designer:CreateSignController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_SIGNATURE`.
  8. `form-designer:CreateImageController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_IMAGE`.
  9. `form-designer:CreateDateController`: Switches the current StateHandler to `STATE_HANDLER_NAMES.STATE_HANDLER_CREATE_FIELD_DATE`.
3. **page-editor** addon:
    1. `page-editor>EditObjectController`: Switches the current StateHandler to "Page Object Editing" tool, including text, image, shape, and gradient objects.
    2. `page-editor>AddImageAdvController`: Switches the current StateHandler to "Add Image from File" tool.
    3. `page-editor>AddShapesController`: Switches the current StateHandler to "Create Shape" tool.
    4. `page-editor>AddTextController`: Switches the current StateHandler to "Add Text" tool.
  4. **fullscreen** addon:
    1. `full-screen:FullscreenController`: Toggles the full screen mode.
  5. **print** addon:
    1. `print>ShowPrintDialogController`: Displays the print dialog.
  6. **file-property** addon:
    1. `fpmodule:FileInfoCallbackController`: Displays the document property dialog.
  7. **h-continuous** addon:
    1. `h-continuous:HContinuousViewModeController`: Switches the page mode to horizontal continuous page mode.
  8. **export-form** addon:
    1. `export-form-module:ExportToXMLController`: Exports the form of the current document to an XML format file.

2. `export-form-module:ExportToFDFController`: Exports the form of the current document to an FDF format file.
3. `export-form-module:ExportToXFDFController`: Exports the form of the current document to an XFDF format file.
4. `export-form-module:ExportToCSVController`: Exports the form of the current document to a CSV format file.
5. `export-form-module:ExportToTXTController`: Exports the form of the current document to a TXT format file.
9. comparison addon:
  1. `comparison>ShowCompareFileDialogButtonController`: Displays the document comparison dialog.
10. redaction addon:
  1. `redaction:RedactionTextAndImageController`: Switches the current StateHandler to the Redaction tool for creating marked text and images.
  2. `redaction:RedactionController`: Switches the current StateHandler to the Redaction tool for creating marked areas.
  3. `redaction:RedactionPageController`: Switches the current StateHandler to the Redaction tool for creating marked pages.

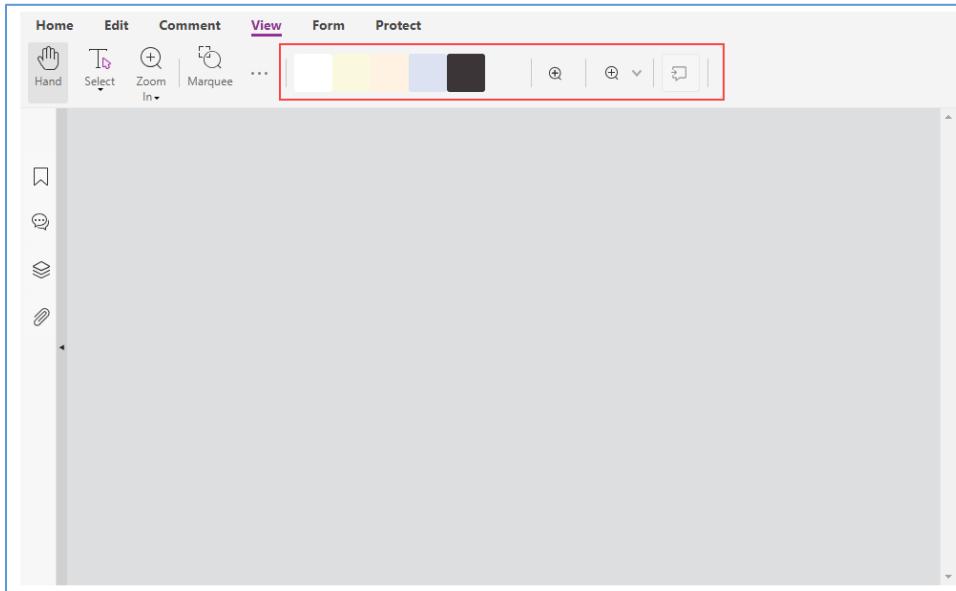
With these controllers, we can rewrite components while reusing the built-in implementation logic of the SDK. Let's take an example of `states:HandController`, which allows switching the current StateHandler tool to the hand tool and can determine whether the current tool is the hand tool to activate/deactivate the component:



```
<html>
</html>
<style>
    .custom-hand-icon {
        background-image: linear-gradient(180deg, rgba(0,245,12,1) 0%, rgba(0,212,255,1) 100%);
    }
</style>
<script>
    var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
    var CustomAppearance = UIExtension.appearances.adaptive.extend({
        getDefaultFragments: function() {
            return [
                {
                    target: 'hand-tool',
                    action: FRAGMENT_ACTION.REPLACE,
                    template: `<xbutton @tooltip tooltip-title="toolbar.tooltip.hand.title" name="hand-tool" icon-class="fv_icon-toolbar-hand" @controller="states:HandController"></xbutton>`
                }
            ];
        }
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: [] // No addon is loaded
    });
</script>
```

```
</script>
```

Of course, some controllers are not as simple as states:HandController. Here are some of the more special controllers. When using them, we need to follow the methods provided in the examples:



```
<style>
.fv__ui-paddle-horizontal .fv__ui-paddle-content {
  display: flex;
  align-items: center;
}
.custom-change-color-panel {
  display: inline-flex;
  align-items: center;
}
</style>
<script>
var FRAGMENT_ACTION = UIExtension.UIConsts.FRAGMENT_ACTION
var CustomAppearance = UIExtension.appearances.adaptive.extend({
  getDefaultFragments: function() {
    return [
      {
        target: 'fv--view-tab-paddle',
        action: FRAGMENT_ACTION.APPEND,
        template: '<group-list name="custom-component-group-list"></group-list>'
      },
      {
        target: 'custom-component-group-list',
        action: FRAGMENT_ACTION.APPEND,
        template: `
          <group>
            <div class="custom-change-color-panel" name="change-color-panel" @controller="change-
color:ChangeColorController as ctrl" @var.self="$component" >
              <xbutton
                @foreach="color in colors track by background">

```

```

        @class="{'fv__ui-change-color-dropdown-color-round': true, 'moon': !!color.type, 'selected': selectedIndex === $index}"
            @sync.attr.style="color.type === 'moon' ? ('background-color:' + color.background)"
            @on.click="ctrl.changeColor(color, $index)"
            @tooltip
            tooltip-title="@{color|json}"
        ></xbutton>
    </div>
</group>
` 

}, {
    target: 'custom-component-group-list',
    action: FRAGMENT_ACTION.APPEND,
    template: `
        <group>
            <xbutton @controller="zoom:ZoomInAndOutController" action="zoomin" icon-class="fv__icon-toolbar-zoom-in"></xbutton>
        </group>
` 

}, {
    target: 'custom-component-group-list',
    action: FRAGMENT_ACTION.APPEND,
    template: `
        <group>
            <dropdown name="fv-inner-zoom-ribbon-dropdown" @aria:label.list="aria:labels.setzoom" icon-class="fv__icon-toolbar-zoom-in" class="fv__ui-dropdown-hide-text" selected="0" @on.selected="self.select($args[0])">
                <xbutton name="dropdown-zoom-in" action="zoomin" @controller="zoom:DropdownZoomInAndOutController" icon-class="fv__icon-toolbar-zoom-in" ribbon-icon="fx-icon-ribbon_home_zoomin-32" tooltip-title="toolbar.buttons.zoomin">toolbar.buttons.zoomin</xbutton>
                <xbutton name="dropdown-zoom-out" action="zoomout" @controller="zoom:DropdownZoomInAndOutController" icon-class="fv__icon-toolbar-zoom-out" ribbon-icon="fx-icon-ribbon_home_zoomout-32" tooltip-title="toolbar.buttons.zoomout">toolbar.buttons.zoomout</xbutton>
                <xbutton name="dropdown-zoom-fitpage" action="fitHeight" @controller="zoom:ZoomActionController" icon-class="fv__icon-toolbar-fit-page" ribbon-icon="fx-icon-ribbon_home_fitpage-32" tooltip-title="toolbar.buttons.fitHeight">toolbar.buttons.fitHeight</xbutton>
                <xbutton name="dropdown-zoom-fitwidth" action="fitWidth" @controller="zoom:ZoomActionController" icon-class="fv__icon-toolbar-fit-width" ribbon-icon="fx-icon-ribbon_home_fitwidth-32" tooltip-title="toolbar.buttons.fitWidth">toolbar.buttons.fitWidth</xbutton>
                <xbutton name="dropdown-zoom-fitvisible" action="fitVisible" @controller="zoom:ZoomActionController" icon-class="fv__icon-toolbar-fit-visible" ribbon-icon="fx-icon-ribbon_home_visible-32" tooltip-title="toolbar.buttons.fitVisible">toolbar.buttons.fitVisible</xbutton>
                <li class="fv__ui-dropdown-separator"></li>
                <xbutton @foreach="scale in $pdfui.customScalingValues" @setter.text="scale | percent" @controller="zoom:ZoomToScaleValueController"></xbutton>
            </dropdown>
        </group>
` 

}, {
    target: 'custom-component-group-list',

```

```

action: FRAGMENT_ACTION.APPEND,
// Note that comment-list:ImportCommentButtonController must be used together with the file-
selector component.
template: `

<group>
<file-selector
    @controller="comment-list:ImportCommentButtonController"
    name="commentlist-import-comment"
    icon-class="fv_icon-sidebar-import-comment"
    @trigon.close.disable
    @trigon.open.enable accept=".fdf,.xfdf,.json"
    >sidebar.commentlist.dropdown.import-comment</file-selector>
</group>

`];
}

});

var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: [] // No addon is loaded
});
</script>

```

## Custom Theme Colors

Foxit PDF SDK for Web offers a public method `setThemeColor` that allows users to customize theme colors. Details are as follows:

```

PDFViewCtrl.shared.setThemeColor([
{
    dom: document.body, // Applied globally.
    colors: {
        primary: "#409eff", // Optional. Sets the color for UI components like buttons and dropdowns.
        background: "#999999", // Optional. Sets the background color for pages and input fields.
        border: "", // Optional. Sets the border color. An empty string means using the default value.
        link: "#9E3ABF", // Optional. Sets the color of links.
        text: "#006ddd", // Optional. Sets the color of the text.
    },
},
{
    dom: document.getElementsByClassName("fv_ui-tab-nav")[0], // Applied to a specific DOM element.
}
]);

```

```
  colors: {
    text: "#d96f3f"
  },
});
]
```

## Customize bookmark

This section mainly introduces the customization methods of the bookmark component. Since the bookmark component is developed based on the tree component, please first understand the [usage](#) of the tree component and the related [API documentation](#).

### Bookmark Component Structure

This section introduces the template structure of bookmark-related components, involving the sidebar panel component, bookmark context menu component, and bookmark tree node component.

#### *Bookmark sidebar panel*

In the built-in layout templates, <bookmark-v2:sidebar-panel></bookmark-v2:sidebar-panel> refers to the left sidebar bookmark panel, which is actually equivalent to the following complex template:

```
<sidebar-panel
  name="sidebar-bookmark-v2"
  class="fv__ui-sidebar-bookmark-v2"
  @tooltip
  tooltip-placement="right"
  tooltip-title="sidebar.bookmark.tooltip"
  title="sidebar.bookmark.title"
  icon-class="fv__icon-sidebar-bookmark"
  @lazy-content="active"
>
  <bookmark-v2:bookmark-tree></bookmark-v2:bookmark-tree>
</sidebar-panel>
```

In the application, the complex template can replace the built-in simplified template and modify its attributes:

```
<html>
<div id="pdf-ui"></div>
<template id="custom-bookmark-panel-template">
  <sidebar-panel
    name="sidebar-bookmark-v2"
    class="fv__ui-sidebar-bookmark-v2"
    @tooltip
    tooltip-placement="right"
```

```
tooltip-title="Custom Bookmark Sidebar Panel Tooltip Title"
title="Custom Bookmark Sidebar Panel Title"
icon-class="fv__icon-sidebar-bookmark"
@lazy-content="active"
>
<bookmark-v2:bookmark-tree></bookmark-v2:bookmark-tree>
</sidebar-panel>
</template>
</html>
<style>
html{
    overflow:hidden;
}
body {
    height: 100vh;
}
#pdf-ui {
    position: relative;
    top: 50px;
}
</style>
<script>
const customBookmarkPanelTemplate = document.getElementById('custom-bookmark-panel-template').innerHTML;
const CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments() {
        return [
            {
                target: 'sidebar-bookmark-v2',
                action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
                template: customBookmarkPanelTemplate
            }
        ];
    }
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>
```

### **Bookmark context menu**

In the built-in layout template, <bookmark-v2:bookmark-contextmenu @lazy></bookmark-v2:bookmark-contextmenu> refers to the bookmark context menu. It is equivalent to the following template:

```
<contextmenu name="fv--bookmark-contextmenu-v2">
    <bookmark-v2:add-bookmark name="fv--bookmark-contextmenu-item-add"></bookmark-v2:add-bookmark>
    <contextmenu-separator @bookmark-v2:hide-if-no-bookmark></contextmenu-separator>
    <bookmark-v2:goto-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-goto"></bookmark-v2:goto-bookmark>
    <contextmenu-separator @bookmark-v2:hide-if-no-bookmark></contextmenu-separator>
    <bookmark-v2:cut-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-cut"></bookmark-v2:cut-bookmark>
    <bookmark-v2:paste-under-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-under"></bookmark-v2:paste-under-selected-bookmark>
    <bookmark-v2:paste-after-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-after"></bookmark-v2:paste-after-selected-bookmark>
    <bookmark-v2:delete-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-delete"></bookmark-v2:delete-bookmark>
    <bookmark-v2:set-destination @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-set-destination"></bookmark-v2:set-destination>
    <bookmark-v2:rename-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-rename"></bookmark-v2:rename-bookmark>
</contextmenu>
```

In the template, for the menu items, a @bookmark-v2:hide-if-no-bookmark directive is provided. The function of this directive is: when there are no bookmarks in the document, right-click on the bookmark panel, we need to hide some menu items, leaving only the <bookmark-v2:add-bookmark> component.

Based on this template, we just need to define a context menu named fv--bookmark-contextmenu-v2, replacing the built-in bookmark context menu, to achieve the effect of overriding the built-in bookmark context menu. Below is an example:

```
<html>
    <div id="pdf-ui"></div>
    <template id="custom-contextmenu-template">
        <contextmenu name="fv--bookmark-contextmenu-v2">
            <bookmark-v2:add-bookmark name="fv--bookmark-contextmenu-item-add"></bookmark-v2:add-bookmark>
            <contextmenu-separator @bookmark-v2:hide-if-no-bookmark></contextmenu-separator>
            <bookmark-v2:goto-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-goto"></bookmark-v2:goto-bookmark>
            <contextmenu-separator @bookmark-v2:hide-if-no-bookmark></contextmenu-separator>
            <bookmark-v2:cut-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-cut"></bookmark-v2:cut-bookmark>
```

```
<bookmark-v2:paste-under-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmarks-contextmenu-item-paste-under"></bookmark-v2:paste-under-selected-bookmark>
<bookmark-v2:paste-after-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmarks-contextmenu-item-paste-after"></bookmark-v2:paste-after-selected-bookmark>
<bookmark-v2:delete-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmarks-contextmenu-item-delete"></bookmark-v2:delete-bookmark>
<bookmark-v2:set-destination @bookmark-v2:hide-if-no-bookmark name="fv--bookmarks-contextmenu-item-set-destination"></bookmark-v2:set-destination>
<bookmark-v2:rename-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmarks-contextmenu-item-rename"></bookmark-v2:rename-bookmark>
</contextmenu>
</template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
</style>
<script>
  const customBookmarkContextmenuTemplate = document.getElementById('custom-contextmenu-template').innerHTML;
  const CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments() {
      return [
        {
          target: 'fv--bookmarks-contextmenu-v2',
          action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
          template: customBookmarkContextmenuTemplate
        }
      ];
    }
  });
  const libPath = window.top.location.origin + '/lib';
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
  });
</script>
```

Of course, apart from replacing the whole built-in bookmark context menu, you can also delete or add menu items individually:

```
<html>
  <div id="pdf-ui"></div>
  <template id="custom-contextmenu-template">
    <contextmenu name="fv--bookmark-contextmenu-v2">
      <bookmark-v2:add-bookmark name="fv--bookmark-contextmenu-item-add"></bookmark-v2:add-bookmark>
      <contextmenu-separator @bookmark-v2:hide-if-no-bookmark></contextmenu-separator>
      <bookmark-v2:goto-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-goto"></bookmark-v2:goto-bookmark>
      <contextmenu-separator @bookmark-v2:hide-if-no-bookmark></contextmenu-separator>
      <bookmark-v2:cut-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-cut"></bookmark-v2:cut-bookmark>
      <bookmark-v2:paste-under-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-under"></bookmark-v2:paste-under-selected-bookmark>
      <bookmark-v2:paste-after-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-after"></bookmark-v2:paste-after-selected-bookmark>
      <bookmark-v2:delete-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-delete"></bookmark-v2:delete-bookmark>
      <bookmark-v2:set-destination @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-set-destination"></bookmark-v2:set-destination>
      <bookmark-v2:rename-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-rename"></bookmark-v2:rename-bookmark>
    </contextmenu>
  </template>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
</style>
<script>
  const customBookmarkContextmenuTemplate = document.getElementById('custom-contextmenu-template').innerHTML;

  class CustomContextMenuItemComponent extends
UIExtension.SeniorComponentFactory.createSuperClass({
  template: `
    <contextmenu-item @on.click="$component.handleClick()">Custom Bookmark Contextmenu
Item</contextmenu-item>
  `


```

```

}) {
    static getName() {
        return 'custom-bookmark-contextmenu-item';
    }
    handleClick() {
        const contextmenu = this.parent;
        const target = contextmenu.getCurrentTarget();
        if(target instanceof UIExtension.components.widgetsTreeNodeComponent) {
            alert('Click on bookmark item: ' + target.title);
        }
    }
}

const customModule = UIExtension.modular.module('custom', []);
customModule.registerComponent(CustomContextMenuItemComponent);

const CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments() {
        return [
            { target: '@bookmark-v2:rename-bookmark',
                action: UIExtension.UIConsts.FRAGMENT_ACTION.REMOVE
            },
            { target: 'fv-bookmark-contextmenu-v2',
                action: UIExtension.UIConsts.FRAGMENT_ACTION.APPEND,
                template: `<custom:custom-bookmark-contextmenu-item></custom:custom-bookmark-contextmenu-item>`
            }
        ];
    }
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>

```

### **Bookmark context menu items**

1. Add bookmark menu item:
  - o Simplified template: <bookmark-v2:add-bookmark name="fv--bookmark-contextmenu-item-add"></bookmark-v2:add-bookmark>

- Complete template: <contextmenu-item @controller="AddBookmarkController">contextmenu.bookmark.add</contextmenu-item>
2. Navigation function menu item:
- Simplified template: <bookmark-v2:goto-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-goto"></bookmark-v2:goto-bookmark>
  - Complete template: <contextmenu-item @controller="GotoBookmarkController" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-goto">contextmenu.bookmark.goTo</contextmenu-item>
3. Cut function menu item:
- Simplified template: <bookmark-v2:cut-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-cut"></bookmark-v2:cut-bookmark>
  - Complete template: <contextmenu-item @controller="CutBookmarkController" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-cut">contextmenu.bookmark.cut</contextmenu-item>
4. Paste bookmark under the selected bookmark function menu item:
- Simplified template: <bookmark-v2:paste-under-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-under"></bookmark-v2:paste-under-selected-bookmark>
  - Complete template: <contextmenu-item @controller="PasteUnderSelectedBookmarkController as ctrl" @show="ctrl.pasteAvailable" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-under">contextmenu.bookmark.pasteUnder</contextmenu-item>
5. Paste bookmark after the selected bookmark function menu item:
- Simplified template: <bookmark-v2:paste-after-selected-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-after"></bookmark-v2:paste-after-selected-bookmark>
  - Complete template: <contextmenu-item @controller="PasteAfterSelectedBookmarkController as ctrl" @show="ctrl.pasteAvailable" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-paste-after">contextmenu.bookmark.pasteAfter</contextmenu-item>
6. Delete bookmark function menu item:
- Simplified template: <bookmark-v2:delete-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-delete"></bookmark-v2:delete-bookmark>

- Complete template: <contextmenu-item @controller="DeleteBookmarkController" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-delete">contextmenu.bookmark.delete</contextmenu-item>
7. Set bookmark target location menu item:
- Simplified template: <bookmark-v2:set-destination @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-set-destination"></bookmark-v2:set-destination>
  - Complete template: <contextmenu-item @controller="SetDestinationBookmarkController" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-set-destination">contextmenu.bookmark.destination</contextmenu-item>
8. Rename bookmark menu item:
- Simplified template: <bookmark-v2:rename-bookmark @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-rename"></bookmark-v2:rename-bookmark>
  - Complete template: <contextmenu-item @controller="RenameBookmarkController" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-rename">contextmenu.bookmark.rename</contextmenu-item>

These are the built-in bookmark context menu items supported by Foxit PDF SDK for Web. The application layer can reuse the @controller implementation of these menu items and replace the built-in menu items to create custom menu item functions. Below is an example:

```
<html>
  <div id="pdf-ui"></div>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
</style>
<script>

  class CustomContextMenuItemComponent extends
UIExtension.SeniorComponentFactory.createSuperClass({
  template: `

    <contextmenu-item @controller="bookmark-v2:RenameBookmarkController" @bookmark-v2:hide-if-no-bookmark name="fv--bookmark-contextmenu-item-rename"
@on.click="$component.handleClick()">contextmenu.bookmark.rename</contextmenu-item>
`
```

```

}) {
    static getName() {
        return 'custom-bookmark-contextmenu-item';
    }
    handleClick() {
        const contextmenu = this.parent;
        const target = contextmenu.getCurrentTarget();
        if(target instanceof UIExtension.components.widgets.TreeNodeComponent) {
            console.log('Rename bookmark item: ' + target.title);
        }
    }
}

const customModule = UIExtension.modular.module('custom', []);
customModule.registerComponent(CustomContextMenuItemComponent);

const CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments() {
        return [
            {
                target: '@bookmark-v2:rename-bookmark',
                action: UIExtension.UIConsts.FRAGMENT_ACTION.REPLACE,
                template: `<custom:custom-bookmark-contextmenu-item></custom:custom-bookmark-contextmenu-item>`
            }
        ];
    }
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: '#pdf-ui',
    appearance: CustomAppearance,
    addons: []
});
</script>

```

### **Bookmark tree node**

The bookmark tree node, also known as [TreeNodeComponent](#), synchronizes with the bookmark data of the PDF document, and is created or destroyed following the creation or deletion of the bookmark data. Therefore, to customize the bookmark tree node, it needs to be done through events. The [TreeComponent](#) component has made these two events available:

1. `create-tree-node` event is triggered when a tree node is created. It can be used to modify the appearance of the tree node and register events on the tree node, etc.
2. `destroy-tree-node` event is triggered when a tree node is destroyed. It can be used to release some data to avoid memory leaks.

Below is an example that demonstrates how to replace the text content of a tree node with a link:

```
<html>
  <div id="pdf-ui"></div>
</html>
<style>
  html{
    overflow:hidden;
  }
  body {
    height: 100vh;
  }
  #pdf-ui {
    position: relative;
    top: 50px;
  }
</style>
<script>
  const libPath = window.top.location.origin + '/lib';
  const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: '#pdf-ui',
    appearance: UIExtension.appearances.adaptive,
    addons: []
  });
  pdfui.getRootComponent().then(root => {
    return root.querySelector('@bookmark-v2:bookmark-tree').getTree()
  }).then(tree => {
    tree.on('create-tree-node', treeNode => {
      const newTitleElement = document.createElement('a');
      treeNode.titleElement.replaceWith(newTitleElement);
      treeNode.titleElement = newTitleElement;
      newTitleElement.target="about:blank";
      newTitleElement.href="https://foxit.com"
    })
  })
</script>
```

## Bookmark Service API

Based on the differences between the PDFViewCtrl layer and the UIExtension layer, we have divided the bookmark API into two parts and provided two Service instances:

1. **BookmarkDataService**: Bookmark data service at the PDFViewCtrl layer. When your application is developed based on PDFViewCtrl, you can only use the API provided by this service for extension.
2. **BookmarkUIService**: The UIExtension layer APIs encapsulated based on **BookmarkDataService**, which encapsulates some APIs of **BookmarkDataService**, are used to support the synchronization of view and data at the UI layer and the **undo-redo** functionality.

The UIExtension layer can also use **BookmarkDataService**, but apart from the APIs encapsulated in **BookmarkUIService**. For specific details, please refer to the [API Reference](#).

### Example 1

A basic demonstration of retrieving and printing first-level bookmarks via **BookmarkDataService**:

```
<html>
<label>Select a PDF file with bookmarks:
  <input type="file" id="file">
</label>
<hr style="width: 100%;">
<div id="pdf-viewer"></div>
</html>
<script>
  const libPath = window.top.location.origin + '/lib';
  const ePDFViewer = document.getElementById('pdf-viewer');
  const pdfViewer = new PDFViewCtrl.PDFViewer({
    libPath: libPath,
    jr: {
      licenseSN: licenseSN,
      licenseKey: licenseKey
    },
    customs: {
      ScrollWrap: PDFViewCtrl.DivScrollWrap.create(ePDFViewer)
    }
  });
  pdfViewer.init(ePDFViewer);
  document.getElementById('file').onchange = function(e){
    if(!this.value) {
      return;
    }
    pdfViewer.openPDFByFile(e.target.files[0]);
    this.value = '';
  }
</script>
```

```
};

pdfViewer.eventEmitter.on(PDFViewCtrl.ViewerEvents.openFileSuccess, () => {
    const bookmarkDataService = pdfViewer.getBookmarkDataService();
    bookmarkDataService.getFirstLevelBookmarks().then(firstLevelBookmarks => {
        console.log(firstLevelBookmarks);
    });
})
</script>
<style>
body {
    display: flex;
    flex-direction: column;
}
#pdf-viewer {
    width: 100%;
    flex: 1;
    overflow: auto;
}
</style>
```

### **Example 2**

A basic demonstration of creating and deleting bookmarks via `BookmarkUIService`:

```
<html>
    <div id="pdf-ui"></div>
    <template id="custom-toolbar-template">
        <div class="custom-toolbar" @var.toolbar="$component">
            <xbutton @on.click="toolbar.addBookmark()">Create</xbutton>
            <xbutton @on.click="toolbar.deleteSelectedBookmark()">Delete</xbutton>
        </div>
    </template>
</html>
<style>
    html{
        overflow:hidden;
    }
    body {
        height: 100vh;
    }
    #pdf-ui {
        position: relative;
        top: 50px;
    }
    .custom-toolbar {
        display: flex;
        gap: 10px;
        border-bottom: 1px solid #f0f0f0;
        padding: 5px 0;
    }
</style>
```

```
</style>
<script>
    const customBookmarkContextmenuTemplate = document.getElementById('custom-toolbar-template').innerHTML;

    class CustomBookmarkToolbarComponent extends
UIExtension.SeniorComponentFactory.createSuperClass({
    template: customBookmarkContextmenuTemplate
}) {
    static getName() {
        return 'custom-bookmark-toolbar';
    }
    addBookmark() {
        const service = this.getPDFUI().getBookmarkUIService();
        const text = prompt("Create new bookmark", "Untitled");
        service.addBookmark({
            title: text,
            relationship: PDF.bookmark.BookmarkRelationship.LAST_CHILD
        })
    }
    deleteSelectedBookmark() {
        const service = this.getPDFUI().getBookmarkUIService();
        const bookmarkId = service.getCurrentActiveBookmarkId();
        if(bookmarkId === undefined) {
            alert('You did not select a bookmark');
            return;
        }
        const confirmed = confirm('Are you sure you want to delete this bookmark? ')
        if(confirmed) {
            service.deleteBookmark(bookmarkId)
        }
    }
}

const customModule = UIExtension.modular.module('custom', []);
customModule.registerComponent(CustomBookmarkToolbarComponent);

const CustomAppearance = UIExtension.appearances.adaptive.extend({
    getDefaultFragments() {
        return [
            {
                target: 'sidebar-bookmark-v2',
                action: UIExtension.UIConsts.FRAGMENT_ACTION.PREPEND,
                template: `<custom:custom-bookmark-toolbar></custom:custom-bookmark-toolbar>`
            }
        ];
    }
});
const libPath = window.top.location.origin + '/lib';
const pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {

```

```
        licenseSN: licenseSN,
        licenseKey: licenseKey
    },
},
renderTo: '#pdf-ui',
appearance: CustomAppearance,
addons: []
});
</script>
```

# Framework Integration

## **Foxit PDF SDK for Web Example - Angular.js**

To integrate Foxit PDF SDK for Web into Angular/cli app, please refer to the website <https://github.com/foxitsoftware/FoxitPDFSDKForWeb-Angular-Example> for details.

## **Foxit PDF SDK for Web Example - React.js**

To integrate Foxit PDF SDK for Web into React app created with WebPack and Babel, please refer to the website <https://github.com/foxitsoftware/FoxitPDFSDKForWeb-ReactJS-Example> for details.

## **Foxit PDF SDK for Web Example - React.js created by "create-react-app"**

To integrate Foxit PDF SDK for Web into React app created by "create-react-app", please refer to the website <https://github.com/foxitsoftware/create-react-app-foxitpdfsdkweb> for details.

## **Foxit PDF SDK for Web Example - React.js created by "create-react-app" (React hook)**

To integrate Foxit PDF SDK for Web into React app created by "create-react-app-hook", please refer to the website <https://github.com/foxitsoftware/create-react-app-hook> for details.

## **Foxit PDF SDK for Web Example - Vue.js**

To integrate Foxit PDF SDK for Web into Vue app, please refer to the website <https://github.com/foxitsoftware/FoxitPDFSDKForWeb-VueJS-Example> for details.

# Accessibility

## ARIA

This section mainly includes how to quickly use the built-in features of the UIExtension framework to achieve accessibility, as well as the introduction of the related tools. If you want to learn more about ARIA's technical specifications and best practices, you can refer to the following addresses:

- <https://www.w3.org/WAI/standards-guidelines/aria/>
- <https://www.w3.org/TR/wai-aria-practices-1.1/>
- <https://developer.mozilla.org/en-US/docs/Web/Accessibility/ARIA>

### How to use UIExtension to enable accessibility

When initializing PDFUI, we need to load the `aria` add-on:

```
new UIExtension.PDFUI({
  addons: [
    // .... other Add-on
    'path/to/lib/uix-addons/aria/addon.info.json' // Make sure that aria is loaded last.
  ]
  // ... other options
})
```

If the plugins in your app are loaded via `allInOne.js`, it has already contained `aria`, then you don't need to load it additionally:

```
new UIExtension.PDFUI({
  addons: 'path/to/lib/uix-addons/allInOne.js'
  // ... other options
})
```

For more information about how to load add-on, you can refer to [Here](#).

### The built-in components in UIExtension

#### ***aria-label* attribute**

After specifying the `text` or `label` parameter for the built-in components, the `aria-label` attribute will be added to the generated DOM node automatically. You can click `run` button to run the demo, and then use a screen reader to see the effect:



```

<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <div>
          <gtab text="XButton" group="aria-tab" body="tab1-body" active></gtab>
          <gtab text="Dropdown" group="aria-tab" body="tab2-body"></gtab>
          <gtab text="Slider" group="aria-tab" body="tab3-body"></gtab>
          <gtab text="Ribbon button" group="aria-tab" body="tab4-body"></gtab>
        </div>
        <div name="tab1-body">
          <xbutton text="button"></xbutton>
        </div>
        <div name="tab2-body">
          <dropdown text="Dropdown" style="width: 8em" separate="false">
            <xbutton text="Dropdown item 1"></xbutton>
            <xbutton text="Dropdown item 2"></xbutton>
          </dropdown>
        </div>
        <div name="tab3-body">
          <slider min="0" max="100" step="1" label="Slider label"></slider>
        </div>
        <div name="tab4-body">
          <ribbon-button text="Ribbon button"></ribbon-button>
        </div>
      </div>
      <div class="fv__ui-body">
        <viewer></viewer>
      </div>
    </webpdf>
  </template>
</html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template');
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';

```

```
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: libPath + '/uix-addons/allInOne.js'
});
</script>
```

## Visually hidden content

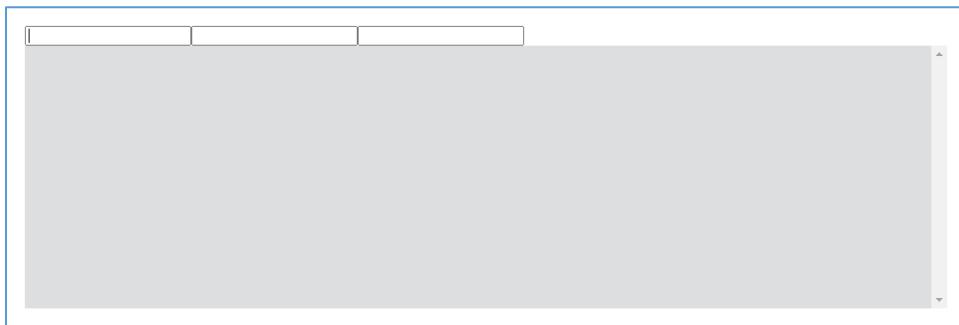
In some scenarios, we need to provide content which should be visually hidden, but remain accessible to assistive technologies such as screen readers, the content can be styled using the `.fv_ui-aria-sr-only` class. This can provide useful information or cues for visually impaired users, for example, sometimes we can use different colors to indicate different types of information, such as dangers and warnings, in that case we need to add additional text content to inform visually impaired users of what type of the information.

```
<p class="text-danger">
    <span class="fv_ui-aria-sr-only">Danger:</span>
    This action is not reversible.
</p>
```

## aria directive

### **`@aria:attr directive`**

This directive is used to set the attribute which is at the beginning of `aria-`. The directive is written as `@aria:attr.${aria-property-name}`. `aria-property-name` can be referred to [Here](#), the value of the parameter is an executable expression:



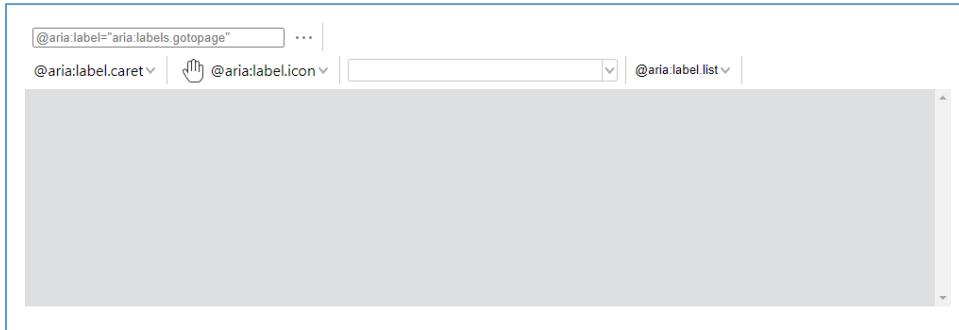
```
<html>
<template id="layout-template">
<webpdf>
<div @var.value="50">
<input @aria:attr.valuemax="1" @aria:attr.valuemin="0" @aria:attr.valuenow="value + %">
<!--Result:
<input aria-valuemax="1" aria-valuemin="0" aria-valuenow="50%" ...>
-->

<!-- source text -->
<input @aria:attr.label="--source text"-->
<!--Result:
<input aria-label="source text" ...>
-->

<!-- I18n key -->
<input @aria:attr.label="--aria:labels.gotopage' | i18n"-->
<!--Result:
<input aria-label="Set page" ...>
-->
</div>
<div class="fv__ui-body">
<viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
        return document.getElementById('layout-template');
    },
    disableAll: function(){}
});
var libPath = window.top.location.origin + '/lib';
var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
        libPath: libPath,
        jr: {
            licenseSN: licenseSN,
            licenseKey: licenseKey
        }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: libPath + '/uix-addons/allInOne.js'
});
</script>
```

### **@aria:label directive**

This directive is used to set the [aria-label](#) attribute, and the directive value is i18n entry.



```
<html>
<template id="layout-template">
<webpdf>
<div>
<group-list>
<group>
<input @aria:label="aria:labels.gotopage"
placeholder="@aria:label="aria:labels.gotopage"">
<!--Result:
<input aria-label="Set page" ...>
-->

<!-- It is equivalent to: -->
<input @aria:attr.label=""aria:labels.gotopage'|i18n"
placeholder="@aria:attr.label='aria:labels.gotopage'|i18n&quot;">
<!--Result:
<input aria-label="Set page" ...>
-->

<!-- source text -->
<input @aria:label="source text" placeholder="@aria:label="source text&quot;">
<!--Result:
<input aria-label="source text" ...>
-->
<!-- It is equivalent to: -->
<input @aria:attr.label=""source text"" placeholder="@aria:attr.label="'source text'&quot;">
<!--Result:
<input aria-label="source text" ...>
-->
</group>
</group-list>
<group-list>
<group>
<!-- It can set attributes at a location specified by the dropdown component -->
<!-- Set aria-label on the drop-down arrow -->
<dropdown @aria:label.caret="Toggle Dropdown" text="@aria:label.caret"></dropdown>
```

```
</group>
<group>
    <!-- Set aria-label on icons -->
    <dropdown icon-class="fv_icon-toolbar-hand" @aria:label.icon="Click dropdown icon"
text="@aria:label.icon"></dropdown>
</group>
<group>
    <!-- Set aria-label on the input box -->
    <dropdown
        editable
        @aria:label.editor="Click dropdown icon"
        selected="1"
        text="@aria:label.editor"
    >
        <dropdown-item>Item 2</dropdown-item>
        <dropdown-item>Item 3</dropdown-item>
        <dropdown-item>Item 1</dropdown-item>
    </dropdown>
</group>
<group>
    <!-- Set the aria-label of the list -->
    <dropdown @aria:label.list="Items" text="@aria:label.list" separate="false">
        <dropdown-item>Item 1</dropdown-item>
        <dropdown-item>Item 2</dropdown-item>
        <dropdown-item>Item 3</dropdown-item>
    </dropdown>
</group>
</group-list>
</div>
<div class="fv_ui-body">
    <viewer></viewer>
</div>
</webpdf>
</template>
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template');
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
    });
</script>
```

```

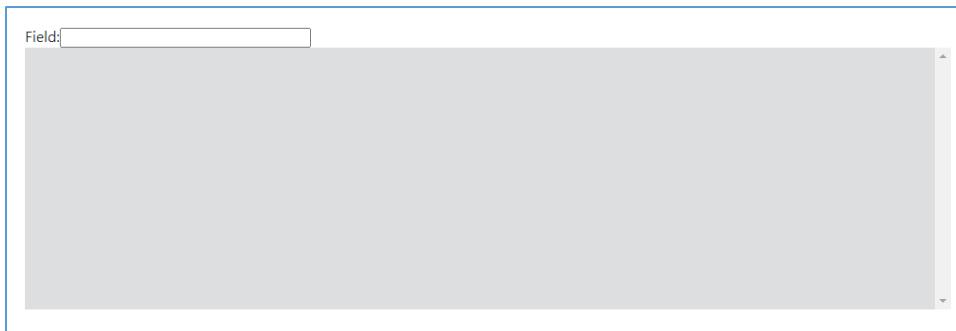
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: libPath + '/uix-addons/allInOne.js'
  );
</script>
<style>
  input {
    width: 20em;
  }
  .fv__ui-dropdown {
    width: auto;
  }
</style>

```

#### **@aria:labelledby directive**

`@aria:labelledby` directive is used to generate the `aria-labelledby` attribute. The directive value is using the selector syntax of UIExtension rather than the element's id. This is because the `aria-labelledby` attribute needs to be associated with another element via id, and id may cause global conflicts, so handwriting id to index elements is not recommended. The selector syntax of this directive can avoid this problem.

For more information about the `aria-labelledby` attribute, please refer to [Here](#).



```

<html>
<template id="layout-template">
  <webpdf>
    <div>
      <span>Field</span>
      <!-- This is just for demonstration -->
      <span name="a-colon">:</span>
      <input type="text" @aria:labelledby="::parent()::childAt(0),a-colon">
    </div>
    <div class="fv__ui-body">
      <viewer></viewer>
    </div>
  </webpdf>
</template>

```

```
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template');
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: libPath + '/uix-addons/allInOne.js'
    });
</script>
<style>
    input {
        width: 20em;
    }
    .fv__ui-dropdown {
        width: auto;
    }
</style>
```

In the above example, `@aria:labelledby="::parent()::childAt(0),a-colon"` specifies the id of the two span components before `<input>` as label. For more information about the selector syntax, please refer to [Here](#).

### **`@aria:describedby directive`**

The usage and principle of the `@aria:describedby` directive are basically the same as `@aria:labelledby`, so we will not repeat it here.

For more information about `aria-describedby`, please refer to [Here](#).



```
<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <span>Field:</span>
        <input type="text" @aria:labelledby="::parent()::childAt(0)" @aria:describedby="::nextSibling(),more-
description">
          <span class="fv__ui-aria-sr-only">
            Description of text input.
          </span>
          <span class="fv__ui-aria-sr-only" name="more-description">
            More description of text input.
          </span>
        </div>
        <div class="fv__ui-body">
          <viewer></viewer>
        </div>
      </webpdf>
    </template>
  </html>
<script>
  var CustomAppearance = UIExtension.appearances.Appearance.extend({
    getLayoutTemplate: function() {
      return document.getElementById('layout-template');
    },
    disableAll: function(){}
  });
  var libPath = window.top.location.origin + '/lib';
  var pdfui = new UIExtension.PDFUI({
    viewerOptions: {
      libPath: libPath,
      jr: {
        licenseSN: licenseSN,
        licenseKey: licenseKey
      }
    },
    renderTo: document.body,
    appearance: CustomAppearance,
    addons: libPath + '/uix-addons/allInOne.js'
  });
</script>
```

```
</script>
<style>
  input {
    width: 20em;
  }
  .fv__ui-dropdown {
    width: auto;
  }
</style>
```

#### **@aria:rel directive**

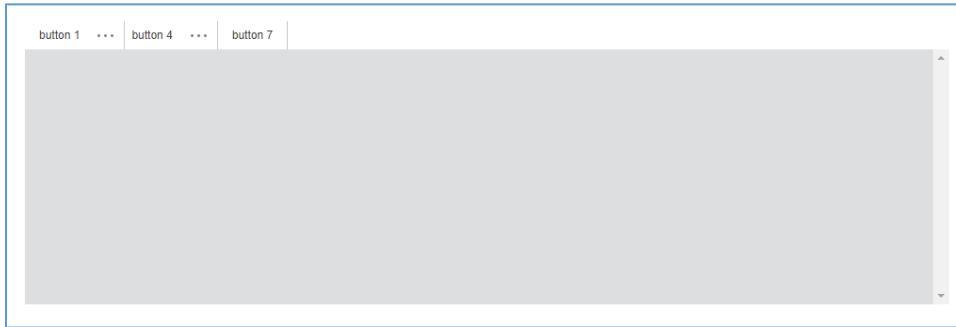
In ARIA specification, in addition to `aria-labelledby` and `aria-describedby`, there are also many attributes that need to be associated with other elements. `@aria:rel` directive encapsulates these commonly used attributes:

- **aria-activedescendant**, this directive is written as: `aria:rel.activedescendant="selecor,..."`
- **aria-flowto**, this directive is written as: `aria:rel.flowto="selecor,..."`
- **aria-owns**, this directive is written as: `aria:rel.owns="selecor,..."`
- **aria-controls**, this directive is written as: `aria:rel.controls="selecor,..."`

#### **@aria:circular-focus directive**

This directive is used to control the focus of elements within the components and implement the loop jump function. It is typically used for pop-ups, or a separate UI area.

Refer to the following example and click `run` button to run it.



```
<html>
  <template id="layout-template">
    <webpdf>
      <div>
        <group-list>
          <group>
            <xbutton>button 1</xbutton>
            <xbutton>button 2</xbutton>
```

```
<xbutton>button 3</xbutton>
</group>
<group @aria:circular-focus>
    <xbutton @tooltip tooltip-title="Press 'Shift + Tab' will switch focus to 'button 6' instead of 'button 3">button 4</xbutton>
        <xbutton>button 5</xbutton>
        <xbutton @tooltip tooltip-title="Press 'Tab' will switch focus to 'button 4' instead of 'button 7">button 6</xbutton>
            </group>
            <group>
                <xbutton>button 7</xbutton>
            </group>
        </group-list>
    </div>
    <div class="fv__ui-body">
        <viewer></viewer>
    </div>
</webpdf>
</template>
</html>
<script>
    var CustomAppearance = UIExtension.appearances.Appearance.extend({
        getLayoutTemplate: function() {
            return document.getElementById('layout-template');
        },
        disableAll: function(){}
    });
    var libPath = window.top.location.origin + '/lib';
    var pdfui = new UIExtension.PDFUI({
        viewerOptions: {
            libPath: libPath,
            jr: {
                licenseSN: licenseSN,
                licenseKey: licenseKey
            }
        },
        renderTo: document.body,
        appearance: CustomAppearance,
        addons: libPath + '/uix-addons/allInOne.js'
    });
</script>
<style>
    input {
        width: 20em;
    }
    .fv__ui-dropdown {
        width: auto;
    }
</style>
```

## Shortcuts

### The shortcuts of business feature

Feature	Shortcut	When to trigger	addon	Description
Copy text/image/ path object	Ctrl+C	Select text/image /path object	edit-graphics, path-object, text-object	None
Delete text/image/ path object	Delete	Select text/image /path object	edit-graphics, path-object, text-object	None
Copy Annotation	Ctrl+C	Select Annotation	None	None
Delete Annotation	Delete	Select Annotation	None	None
Increase the form width by 1px	Ctrl+RightArrow	Select form	form-designer	Need to switch tools to 'Select Annotation' or 'Edit Text/Image/Path'
Reduce the form width by 1px	Ctrl+LeftArrow	Select form	form-designer	The same as above
Increase the form width by 10px	Ctrl+Shift+RightArrow	Select form	form-designer	The same as above
Reduce the form width by 10px	Ctrl+Shift+LeftArrow	Select form	form-designer	The same as above
Increase the form height by 1px	Ctrl+DownArrow	Select form	form-designer	The same as above
Reduce the form height by 1px	Ctrl+UpArrow	Select form	form-designer	The same as above

Feature	Shortcut	When to trigger	addon	Description
Increase the form height by 10px	Ctrl+Shift+DownArrow	Select form	form-designer	The same as above
Reduce the form height by 10px	Ctrl+Shift+UpArrow	Select form	form-designer	The same as above
Undo	Ctrl+Z	None	undo-redo	Support to undo the operations of adding/modifying/deleting Annotation
Redo	Ctrl+Y	None	undo-redo	Support to redo the undone operations of adding/modifying/deleting Annotation
Expand the left sidebar	Ctrl+Right	Don't select any objects on the PDF page	None	None
Close the left sidebar	Ctrl+Left	Don't select any objects on the PDF page	None	None
Select all the Annotation and Form	Ctrl+A	Switch tools to 'Select Annotation'	None	None
Deselect	Esc	Select Annotation or Form	None	None
Switch to Hand tool	Esc	Don't select any Annotation or Form	None	None

Feature	Shortcut	When to trigger	addon	Description
Quick search	Ctrl+F	None	search	None
Show the Print dialog box	Ctrl+P	None	print	None
Scroll down to the height of the viewable area	Shift+DownArrow	The focus is on the PDF document	None	If it is in single-page mode and the page height is less than the viewable area, it will not scroll down
Scroll up to the height of the viewable area	Shift+UpArrow	The focus is on the PDF document	None	If it is in single-page mode and the page height is less than the viewable area, it will not scroll up
Scroll down/Next page	DownArrow	The focus is on the PDF document	None	If it is in single-page mode and the page height is less than the viewable area, it will go to the next page
Scroll right/Next page	RightArrow	The focus is on the PDF document	None	If it is in single page mode, it will go to the next page
Scroll up/Previous page	UpArrow	The focus is on the PDF document	None	If it is in single-page mode and the page height is less than the viewable area, it will go to the previous page
Scroll left/Previous page	LeftArrow	The focus is on the PDF document	None	If it is in single page mode, it will go to the previous page
Scroll horizontally to the left of	Shift+LeftArrow	The focus is on the	None	Horizontal page mode or the page width is greater than the viewable area

<b>Feature</b>	<b>Shortcut</b>	<b>When to trigger</b>	<b>addon</b>	<b>Description</b>
the width of the visible area		PDF document		
Scroll horizontally to the right of the width of the visible area	Shift+RightArrow	The focus is on the PDF document	None	Horizontal page mode or the page width is greater than the viewable area
Next page	PageDown	The focus is on the PDF document	None	In single-page mode, if the page height is less than the viewable area or the bottom of the page is fully displayed, then go to the next page. If the page height is greater than the viewable area, then scroll to the height of the viewable area or scroll to the bottom of the page
Previous page	PageUp	The focus is on the PDF document	None	In single-page mode, if the page height is less than the viewable area or the top of the page is fully displayed, then go to the previous page. If the page height is greater than the viewable area, then scroll to the height of the viewable area or scroll to the top of the page

## The shortcuts of component

<b>Feature</b>	<b>Shortcut</b>	<b>Component</b>	<b>Status</b>
Click triggered by button	Enter	xbutton, ribbon-button	The focus is on the button
Switch focus	Tab/Shift+Tab	All focusable components	Available status

Feature	Shortcut	Component	Status
Close the drop-down box	Escape	dropdown, ribbon-button	Expand the drop-down list, and the focus is on the drop-down list
Close the pop-up layer	Escape	layer, context-menu	The focus is on the pop-up layer

# Support

## Foxit Support

In order to provide you with a more personalized support for a resolution, please log in to your [Foxit account](#) and submit a ticket so that we can collect details about your issue. We will work to get your problem solved as quickly as we can once your ticket is routed to our support team.

You can also check out our [Support Center](#), choose Foxit PDF SDK which also has a lot of helpful articles that may help with solving your issue.

## Phone Support

Phone: 1-866-MYFOXIT or 1-866-693-6948