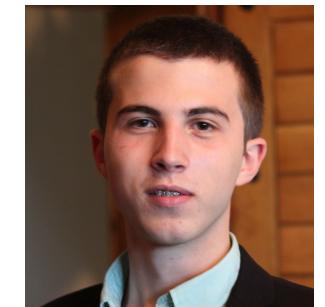




Web Components: The reusable building blocks of web

Filip Siderov, SAP



PUBLIC



Agenda:

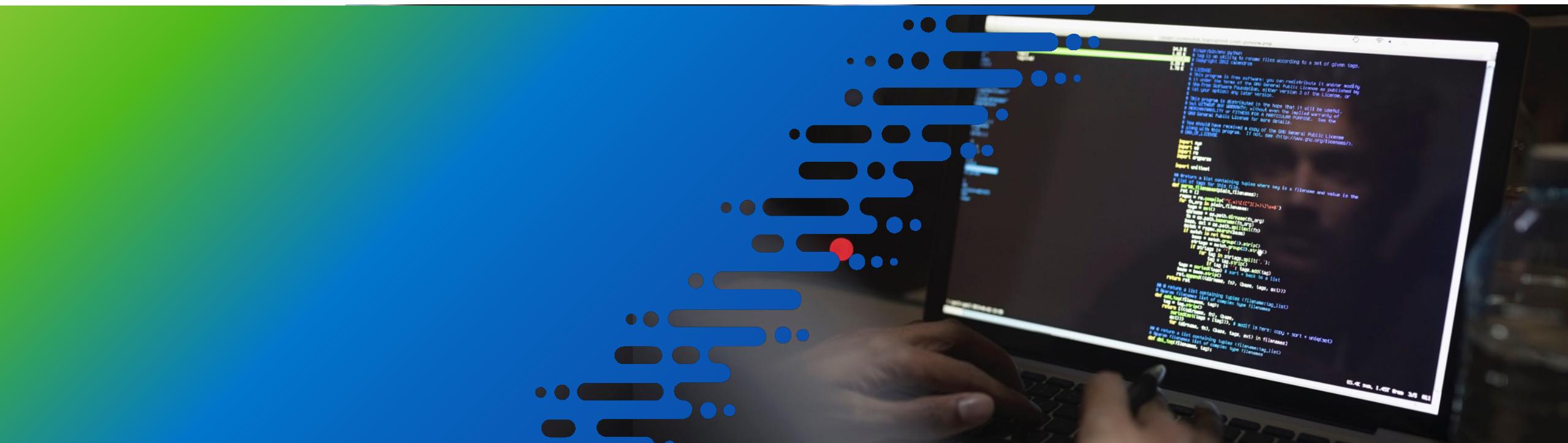
- Web Components
- Custom Elements
- Shadow DOM
- HTML Templates
- ES Modules
- Web Components Within SAP EcoSystem



SAP TECHED



Web Components



Web Components

Web Components is a standard to create reusable, encapsulated HTML tags to use in web pages and web apps.

Set of web standards,
available across all major browsers

Sharing UI elements
across solutions

Run on different frameworks,
application programming models
and technology stacks



Web Components

<https://www.webcomponents.org>

Broad community support

Maintain code readability, reduce app size
and simplify debugging

Accomplish consistency across current
and future technologies

Web Components

Web components consist from 4 standards:

Custom Elements



Shadow DOM

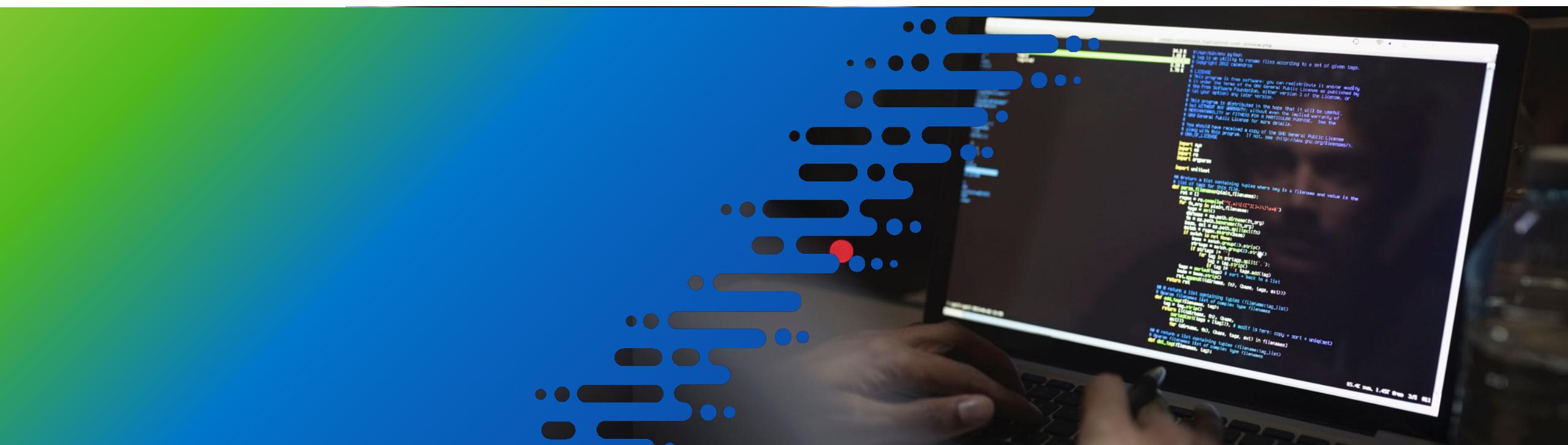
HTML Template

ES Modules

Web Components

<https://www.webcomponents.org>

Custom Elements



Custom Elements

Defining:

```
class CoolButton extends HTMLElement {}  
window.customElements.define(`cool-button`, CoolButton);
```

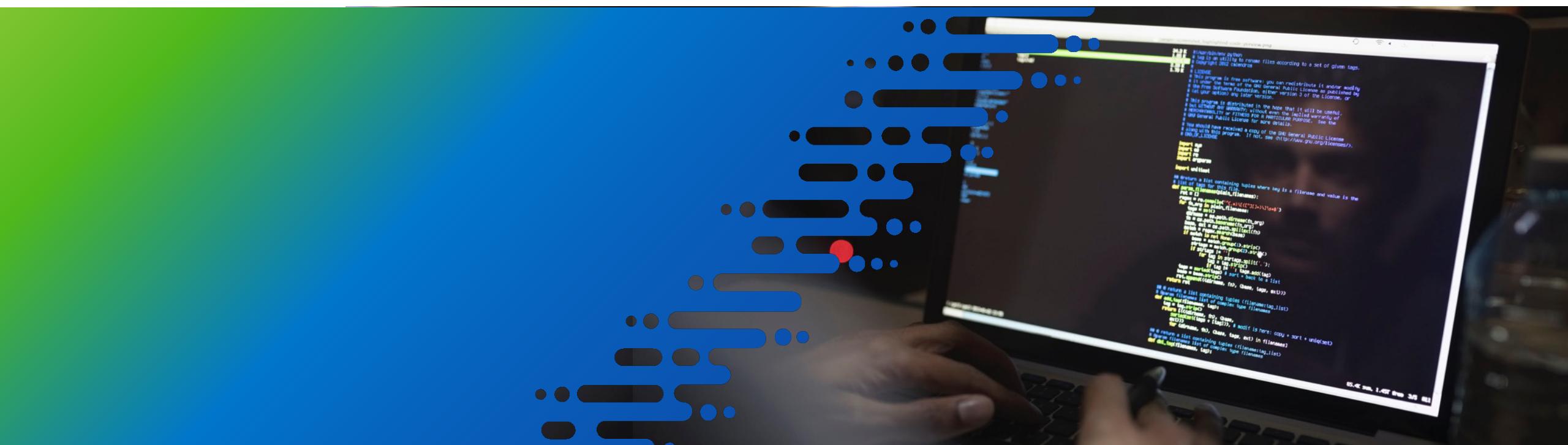
Usage:

```
<cool-button>My Cool Button</cool-button>
```

Custom Elements Rules

1. The name should contain a dash (-)
2. You can't register the same tag more than once.
3. Custom Elements **cannot** use self-closing tags.

Shadow DOM



Shadow DOM

Shadow DOM is just normal **DOM** with two differences:

- how it's created/used
- how it behaves in relation to the rest of the page

Shadow host is the element that **shadow DOM** is attached to.

Benefits of Shadow DOM

- **Isolated DOM**
- **Scoped CSS**
- **Simplifies CSS**
- **Composition**
- **Productivity**

Creation of Shadow DOM

A **shadow root** is a document fragment that gets attached to a “host” element.

```
class CoolButton extends HTMLElement {  
  constructor() {  
    super();  
    const shadowRoot = this.attachShadow({mode: "open"});  
    shadowRoot.innerHTML = `<button>&nbsp; <span>Cool Button</span></button>`;  
  }  
}  
window.customElements.define("cool-button", CoolButton);
```

Shadow DOM: Slot Element

```
class CoolButton extends HTMLElement {  
  constructor() {  
    super();  
    const shadowRoot = this.attachShadow({mode: "open"});  
    shadowRoot.innerHTML = `<button><slot></slot><span>Cool Button</span></button>`;  
  }  
}  
  
window.customElements.define("cool-button", CoolButton);
```

Shadow DOM: Slot Element

```
<cool-button>  
      
</cool-button>
```

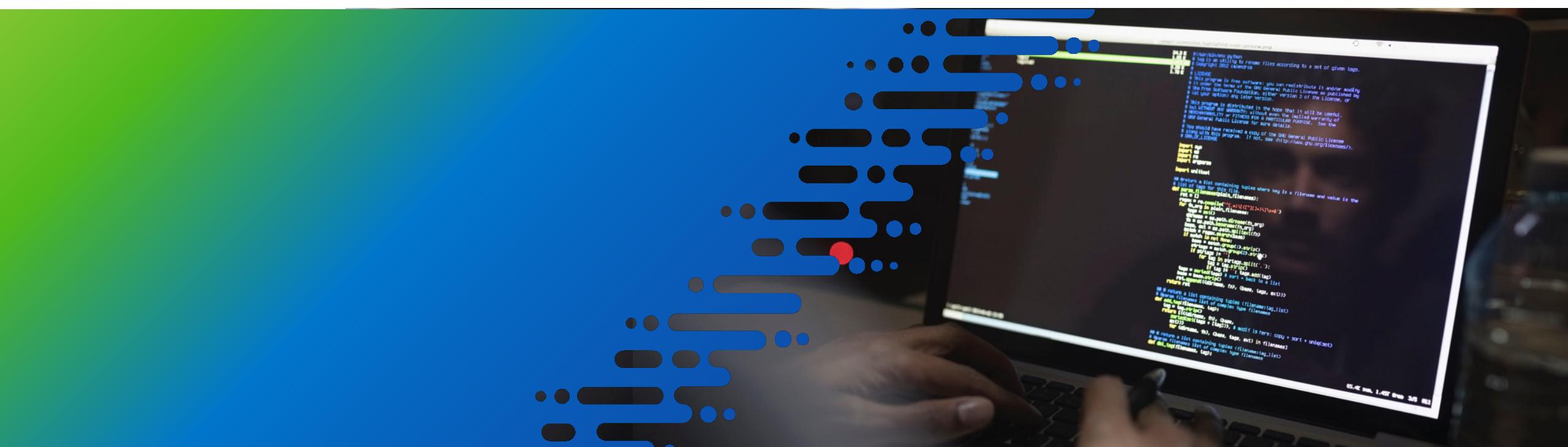
Shadow DOM vs Light DOM

```
▼<cool-button>
  ▼#shadow-root (open)
    ▼<button>
      ▼<slot>
        ↳ <img> reveal
      </slot>
      <span>Cool Button</span>
    </button>
    
  </cool-button>
```

Styling of Shadow DOM

- Component-defined styles
- Provide hooks (in the form of [CSS custom properties](#)).

HTML Templates



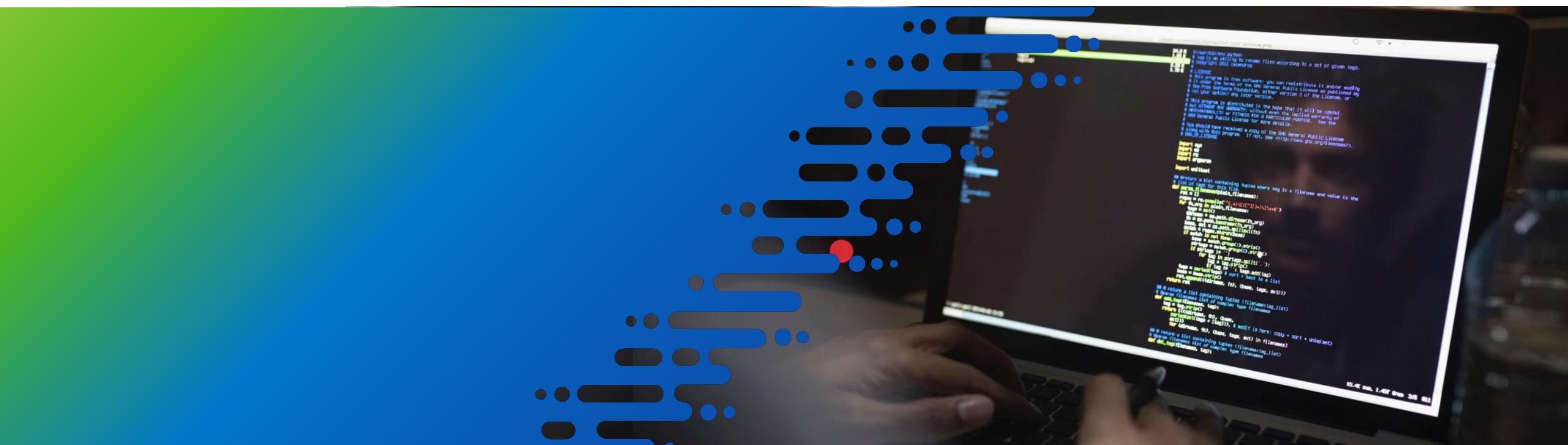
HTML Templates

```
<template id="coolbutton">  
  <style>...</style>  
  <button>  
    <slot></slot>  
    <span>Cool Button</span>  
  </button>  
</template>
```

HTML Templates

```
constructor() {  
    super();  
  
    const templateContent = document.querySelector("#coolbutton").content;  
  
    const shadowRoot = this.attachShadow({mode: "open"})  
        .appendChild(templateContent.cloneNode(true));  
  
}
```

ES Modules



ES Modules

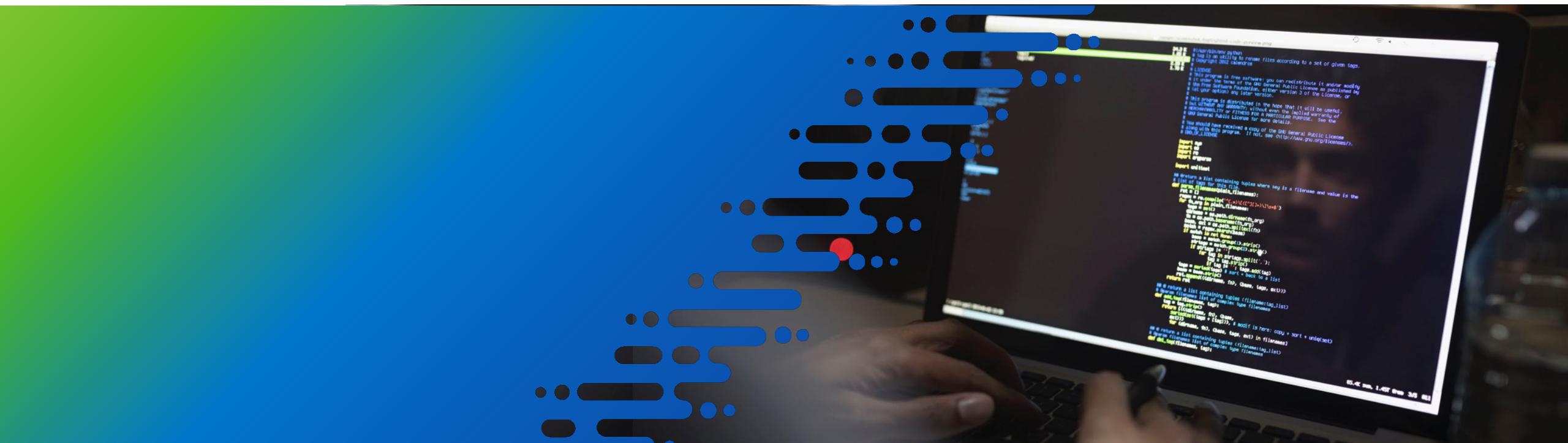
```
//----- lib.js -----  
  
export function square(x) {  
  
    return x * x;  
  
}
```

```
//----- main.js -----  
  
import { square } from './lib';  
  
console.log(square(11)); // 121
```

Web Components Browser Support

Browser support	CHROME	OPERA	SAFARI	FIREFOX	EDGE
 HTML TEMPLATES	 STABLE	 STABLE	 STABLE	 STABLE	 STABLE
 CUSTOM ELEMENTS	 STABLE	 STABLE	 STABLE	 STABLE	 STABLE
 SHADOW DOM	 STABLE	 STABLE	 STABLE	 STABLE	 STABLE
 ES MODULES	 STABLE	 STABLE	 STABLE	 STABLE	 STABLE

Web Components Within SAP EcoSystem



Web Components Within SAP EcoSystem

UI5 Web Components

Enterprise-flavored sugar on top of native APIs!



UI5 Web Components

- Lightweight
- Implementing Fiori Design language
- Easy Consumption
- Future Proof
- Enterprise Features
 - Accessibility
 - I18n
 - Theming

UI5 Web Components

SAP / ui5-webcomponents Public

Notifications Star 1k Fork 159

Code Issues 207 Pull requests 29 Discussions Actions Projects 7 Wiki Security Insights

master ▾ 60 branches 78 tags Go to file Code ▾ About

LilyanaOviPe	docs: UA review (#4134) ...	✓ 3af88bc 1 hour ago	⌚ 2,358 commits
.githooks	Eslint pre-push hook (#582)	2 years ago	
.github	chore: update github templates (#3267)	5 months ago	
.reuse	Updating the dep5 file - rchanging path for files under BSD license, ...	20 days ago	
LICENSES	chore: switch to DCO (#2089)	14 months ago	
deploy	Add script for building the master branch (#914)	2 years ago	
docs	docs: UA review (#4134)	1 hour ago	
packages	chore: rename theme-base to theming (#4133)	1 hour ago	
.editorconfig	Initial commit	3 years ago	
.gitattributes	Initial commit	3 years ago	

UI5 Web Components - the enterprise-flavored sugar on top of native APIs! Build SAP Fiori user interfaces with the technology of your choice.

sap.github.io/ui5-webcomponents/

open-source web-components ui5

Readme Apache-2.0 License

Releases 74

v1.0.0-rc.15 Latest on 4 Aug

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UI5 Web Components

- > 60 components & growing
- > 1K stars in Github
- > 160 forks
- ~6000 Weekly Downloads on NPM

UI5 Web Components: Current State of Project

Current version: 1.0.0-rc.15

Soon: **1.0.0(first stable version)**





Thank you.

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