

# SAPUI5

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**Abstract—** SAPUI5 is a robust framework for developing modern web applications. This paper provides an overview of SAPUI5's environment set up, anatomy, utilities and capabilities to understand the base of SAPUI5.

**Keywords—** SAPUI5, Web Application Development, Model-View-Controller (MVC), User Interface (UI) Components, Utilities, Capabilities, Accessibility, Cross-Browser Compatibility, Localization, Open Source, Theming, SDK, Documentation, UI5 Web Components, Modular Core, Rendering and Controls, Programming Models, Build Tooling.

## I. INTRODUCTION

SAPUI5 is a powerful development framework that bridges the gap between SAP's robust back-end systems and modern front-end technologies. It is designed to facilitate the creation of user-friendly web applications, making it an essential tool for developers aiming to leverage the full potential of SAP's ecosystem. SAPUI5 combines the best of SAP's enterprise-level capabilities with the latest web development practices, offering a comprehensive solution for building sophisticated and scalable applications[1].

## II. SETTING UP ENVIRONMENT

To use SAPUI5, you would need to use SAP BTP. Following are the requirements and steps to set up a SAP free trial account to access SAP BTP

### A. System Requirements

SAPUI5 runs on SAP BTP so the system requirements must adhere to it. can vary depending on factors such as the specific services and components being utilised, as well as the scale of the deployment. However, here are some general guidelines and considerations:

- *Supported Browsers:* SAP BTP typically supports modern web browsers such as Google

Chrome, Mozilla Firefox, Microsoft Edge, and Safari.

- *Development Environment:* For development purposes, you will need a compatible Integrated Development Environment (IDE) such as SAP Business Application Studio, Eclipse, or Visual Studio Code.
- *Operating System:* As a cloud-based platform, SAP BTP is accessed through web interfaces and APIs, so there are no specific operating system requirements for end-users. However, for development purposes, you may need an operating system compatible with your chosen IDE.
- *Hardware Requirements:* Since SAP BTP is a cloud-based service, hardware requirements are managed by the cloud provider (SAP). Users typically require a device capable of running a compatible web browser and accessing the internet.
- *Network Connectivity:* Stable and reliable internet connectivity is essential for accessing and utilising SAP BTP services.
- *Database Requirements:* If you're utilising database services within SAP BTP (such as SAP HANA or other database options), there may be additional requirements or considerations specific to the database service being used.

### B. Environment Setup Guide

Here are the steps to create a SAP account and set up environment to use SAPUI5[9]

#### 1. Creating SAP universal ID

Visit SAP website to register for a SAP ID (<https://account.sap.com/core/login-native>).

#### 2. Creating SAP BTP trial account

Visit SAP BTP Trial (<https://account.hanatrial.ondemand.com/cockpit>) to finalise your free trial account creation.

#### 3. Log in to SAP BTP

Log in to your SAP BTP account (<https://cockpit.hanatrial.ondemand.com/>) and click 'Go To Your Trial Account'.

4. **Navigate to your trial account on SAP BTP**  
Click on 'Trial' under the 'Subaccount' panel on the Account Explorer menu.

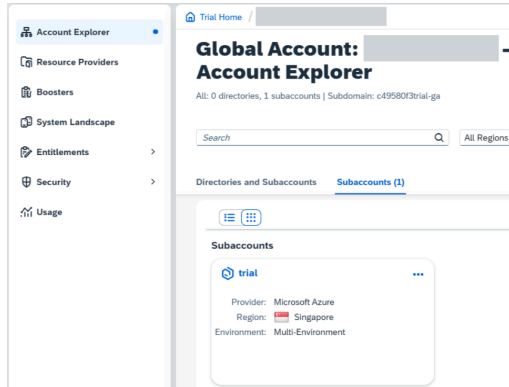


Fig. 1 Trial account on SAP BTP

5. **Create SAP Build Work Zone**  
Go to 'Service Marketplace' under the Services menu and search for 'SAP Build Work Zone' and click on the first search result

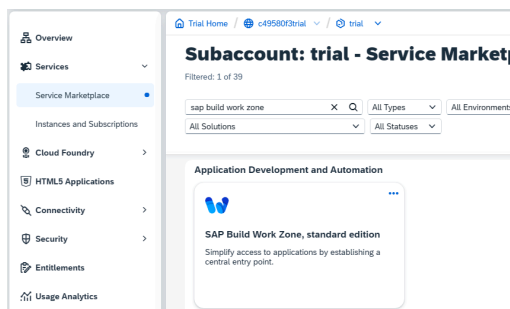


Fig. 2 SAP Build Work Zone Marketplace search result

Click on the '...' and click 'Create'

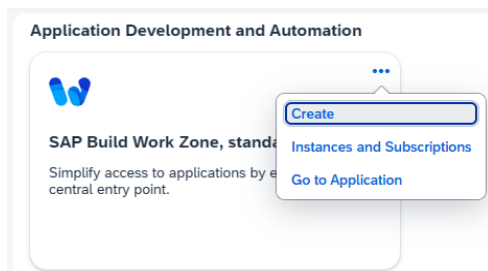


Fig. 3 Creating a Work Zone

Choose 'standard - Subscription' for the plan under Basic Info

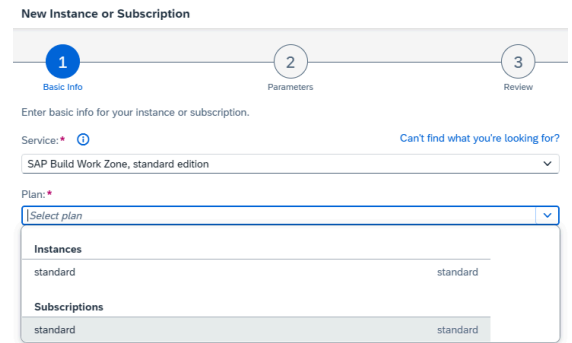


Fig. 4 Work Zone plan

6. **Add yourself as an admin role**  
Under Security click Role Collections from the side menu.

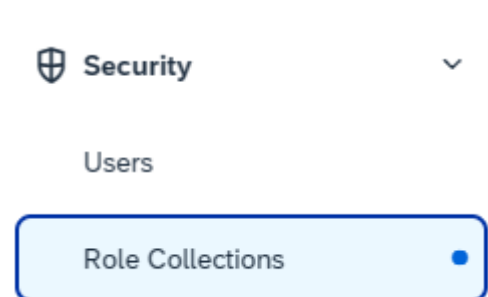


Fig. 5 Role Collections

In the Search field start typing 'Launchpad' to find the Launchpad\_Admin role collection. Click on 'Launchpad\_Admin'.

Click on 'Edit'



Fig. 6 Edit role

Under the 'Users' tab, enter your email in both the ID and the E-Mail fields. Then click 'Save'.

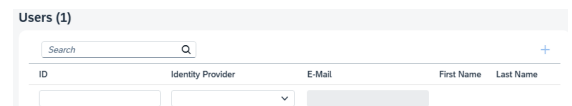


Fig. 7 Add users to Launchpad\_Admin

7. **Access SAP Build Work Zone, standard edition**

From the side panel, click Instances and Subscriptions.

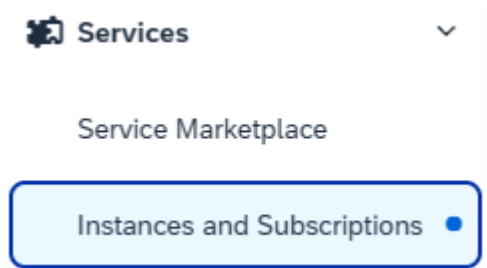


Fig. 8 Instances and Subscriptions

Under the 'Subscriptions' tab, click SAP Build Work Zone, standard edition. You can also click Go to Application on the right.

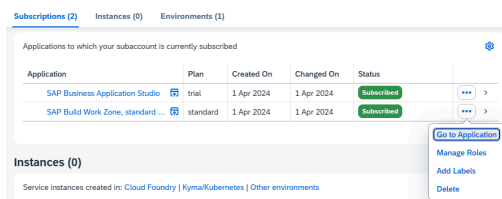


Fig. 9 Go to application

The Site Directory opens. This is where you'll create and manage your sites.

8. **Launch SAP Business Application Studio**  
Go to 'Service Marketplace' under the Services menu and search for 'business application' and click on the first search result

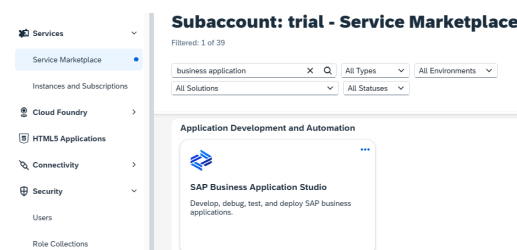


Fig. 10 SAP Business application Marketplace search result

Click on '..' button and click on 'Create'

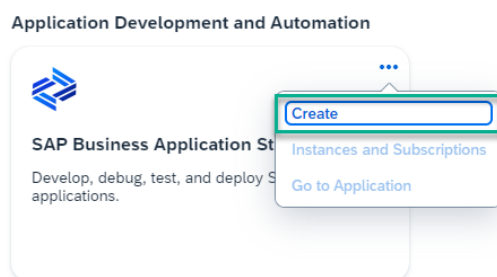


Fig. 11 Business Application 'Create' button

In the wizard, verify that 'SAP Business Application Studio' is selected in the Service field and 'trial' is selected in the Plan field.

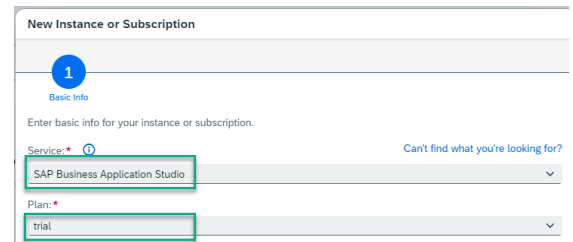


Fig. 12 Business Application wizard

Click on 'Create'

A Creation in Progress popup appears. Click View Subscription to view the SAP Business Application Studio subscription in the Instances and Subscriptions page.

Under the 'Subscriptions' tab, click SAP Business Application Studio, trial edition. You can also click Go to Application on the right.

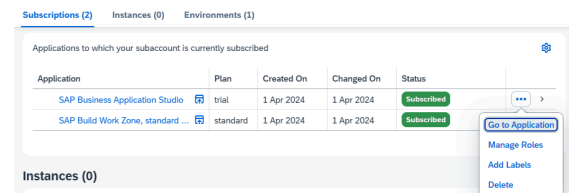


Fig. 13 Go to application

### III. SAPUI5 ANATOMY

SAPUI5, or SAP User Interface for HTML5, is a framework developed by SAP for building responsive web applications. It is designed to facilitate the creation of user-friendly web applications, leveraging the power of SAP's robust back-end systems with modern front-end technologies. The framework is built around the Model-View-Controller (MVC) architecture, which separates the application into three interconnected components[6,7]:

- *Model*: Represents the data and the business logic. It is responsible for retrieving and storing data, as well as performing data processing and validation[8].
- *View*: Represents the user interface and the presentation of the data. It is responsible for displaying the data provided by the model in a user-friendly format[7,8].
- *Controller*: Acts as an intermediary between the Model and the View. It handles user input and updates the Model and View accordingly[6].

SAPUI5 applications are composed of various UI components, which are reusable and customizable. These components are organised into libraries, such as sap.m for mobile controls and sap.ui.table for table controls. The framework also supports theming, allowing developers to customise the look and feel of their

applications to match their branding or user preferences[1, 2].

#### IV. SAPUI5 UTILITIES

SAPUI5 provides a range of utilities to enhance the development process and improve the functionality of applications. These utilities include:

1. *UI5 Web Components*: These are a set of UI controls that can be used across different frameworks and libraries, promoting reusability and consistency in the UI[3].
2. *SDK and Documentation*: SAPUI5 comes with a comprehensive SDK and documentation, providing developers with detailed information on the framework's capabilities, APIs, and best practices[3].
3. *Testing Tools*: SAPUI5 includes tools for unit testing, integration testing, and end-to-end testing. Tools like QUnit, OPA5, and the mock server are available to ensure the quality and reliability of applications. OPA5, in particular, is designed to test user interactions, navigation, and data binding in SAPUI5 applications[3].
4. *Development Environments and Tools*: SAPUI5 supports various development environments, including the SAP Business Application Studio, a cloud-based development environment. The UI5 Tooling is an open and modular toolchain that allows developers to use the IDE of their choice for SAPUI5 application development[3].
5. *Performance Checklist*: SAPUI5 provides a performance checklist to help developers identify and address common performance issues in their applications. This includes guidance on optimising the application's performance for better user experience[3].

By leveraging these utilities, developers can streamline their development process, ensure the quality of their applications, and create more efficient and user-friendly web applications with SAPUI5.

#### V. SAPUI5 CAPABILITIES

SAPUI5, or SAP User Interface for HTML5, is a comprehensive framework that enables the development of enterprise-grade applications with a consistent user experience (UX). It is a collection of libraries designed to build applications that run in both desktop and mobile browsers, maintaining a single code base for both environments. The framework is built around HTML5 web development standards, making it easy to create accessible and responsive web applications without additional coding[4].

Key Capabilities of SAPUI5:

1. *Accessibility*: SAPUI5 supports accessibility, allowing developers to write code that can be accessed by all users, including those using screen readers[2].
2. *Cross-Browser Compatibility*: The framework is responsive to various factors such as device type, operating system, browser, and screen size. This ensures that applications can automatically adapt to different views and adjust controls to maintain a pleasant user experience[2].
3. *Localization*: SAPUI5 facilitates the localization of applications, making it easier to adapt applications to different languages and regions[2].
4. *Open Source*: SAPUI5 is compatible with multiple open-source technologies, including jQuery, datajs for connecting with OData, and Handlebars for templating. The open-source version of UI5 is known as OpenUI5[2].
5. *Theming*: SAPUI5 supports theming, allowing developers to customise the look and feel of their applications to match their branding or user preferences[2].
6. *SDK and Documentation*: The SAPUI5 Development Toolkit (SDK) provides a comprehensive resource for development, including UI control samples, API documentation, and tutorials. This toolkit is beneficial for both developers and designers[5].
7. *UI5 Web Components*: SAPUI5 includes UI5 Web Components, a set of UI controls that can be used across different frameworks and libraries, promoting reusability and consistency in the UI[2].
8. *Modular Core*: The framework features a modular core, enabling developers to use only the components they need, thereby optimising application performance and size.
9. *Rendering and Controls*: SAPUI5 offers a variety of UI controls, ranging from basic elements to complex UI patterns, allowing for the creation of appealing layouts with a consistent design language and coherent UX patterns[4].
10. *Programming Models*: SAPUI5 supports various programming models, including the ability to use it alongside other frameworks such as Angular or React, offering flexibility in development approaches[2].
11. *Build Tooling*: The framework provides build tooling to streamline the development process, including tools for compiling and minifying code, optimising assets, and more[2].

These capabilities make SAPUI5 a powerful and versatile framework for developing web applications,

catering to the needs of modern businesses and developers.

## VI. CONCLUSION

SAPUI5 emerges as a comprehensive framework for the development of web applications, offering a robust set of capabilities that cater to the needs of modern businesses. Its integration with SAP's back-end systems, coupled with its support for responsive design, data binding, and security, positions SAPUI5 as an ideal choice for organisations seeking to leverage the full potential of their SAP investments.

The framework's emphasis on reusability and customization, along with its extensive set of utilities and development tools, further enhances its appeal. Developers can quickly get started with SAPUI5, thanks to its well-documented SDK and the availability of a wide range of tutorials and resources.

In conclusion, SAPUI5 is not merely a framework; it is a powerful ecosystem that enables organisations to build sophisticated, scalable, and secure web applications that can meet the evolving needs of their users. Whether one is a developer looking to enhance their skills or an organisation seeking to improve its digital presence, SAPUI5 offers a compelling solution for web application development. This paper has sought to highlight the capabilities and potential of SAPUI5, underscoring its significance in the landscape of web development.

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