



SAP UI5

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About the Tutorial

SAP UI5 is the development tool from SAP toolkit, offering various features that the users can use to enhance their user experience to create apps with rich user interfaces for Web business applications.

This tutorial explains the architecture, various key concepts, and important components of SAP UI5.

Audience

This tutorial is designed for all those who want to learn the basics of SAP UI5, especially those who are involved in creating business applications.

Prerequisites

It is a simple and straightforward tutorial which the readers can easily understand, however it will help if you have some prior exposure to any SAP module.

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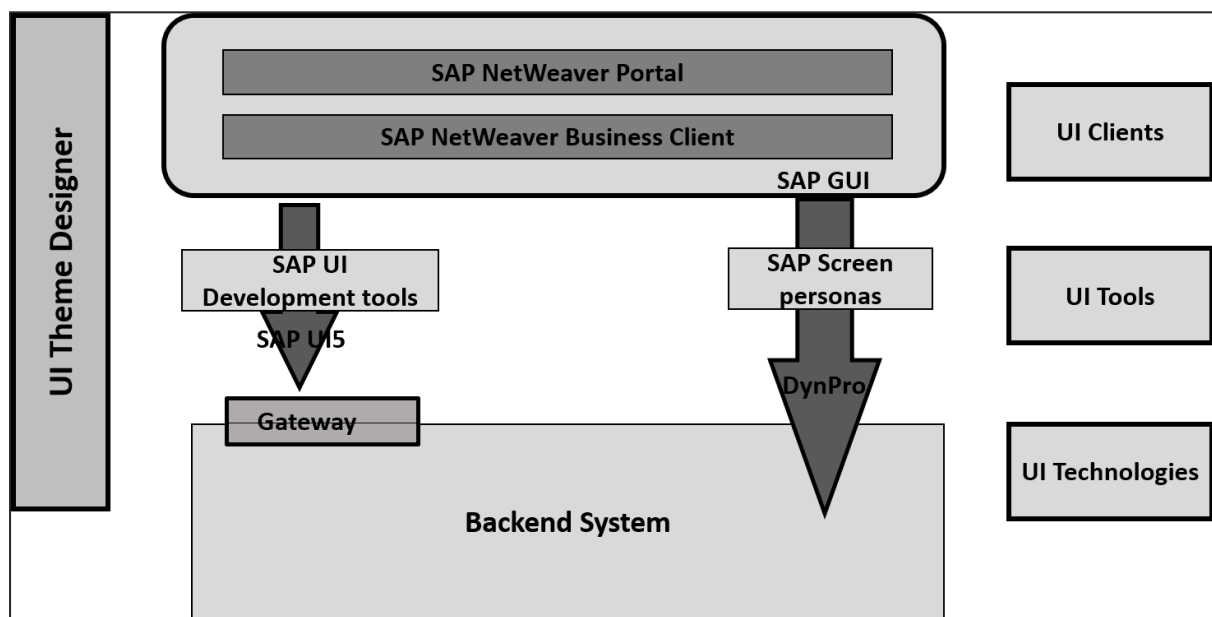
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1. SAP UI5 – Overview

SAP provides various tools that the users can use to enhance their user experience to create apps with rich user interfaces for Web business applications. The most common enablement tools include:

- Theme Designer
- NWBC and Side Panel
- FPM Screens
- SAP UI5 Development Tools



Web-based apps that you create using SAP UI5 provides more consistent user experience and can be accessed on devices such as tablets, smartphones, and laptop. Using the NetWeaver gateway with UI5, you can define a clear separation between the user interface and business logic.

SAP UI5 provides the following key features:

- Extensibility concepts at the code and application level.
- Ability to create complex UI patterns and predefined layouts for typical use cases.
- Model-View-Controller (MVC) and data binding methods.
- Keyboard interaction support and accessibility features.
- SAP UI5 is based on open standards like JavaScript, CSS, and HTML5.
- Theming support based on CSS.

Following are the advantages of using SAP UI in business:

- It helps in increasing productivity.
- Increase user adaption.
- Less manual errors.
- Reduce the cost of training.
- High performance of SAP system.
- Perfectly designed API and can be consumed easily.

SAP UI5— Version

Following is the list of recent UI5 versions that have been introduced. Each UI5 provides new features and enhancements from the previous versions, platform support, usability enhancements, etc.

- SAP UI5 1.26
- SAP UI5 1.28
- SAP UI5 1.30
- SAP UI5 1.32
- SAP UI5 1.34
- SAP UI5 1.36
- SAP UI5 1.38 and many more like SAP UI5 1.6

Version Scheme

SAP UI5 uses 3-digit version number. For example, SAPUI5 1.36.5. Here, the digit (1) specifies the major version. The second digit (36) specifies the minor version number. The third digit specifies the patch version number (5).

In each SAP UI5, the major and minor version as well as the patch version can be used to identify the patches.

SAP UI5 vs Open UI5

SAP UI5 and Open UI5, both provide the UI development environment. However, they are different from each other in the following aspects:

SAP UI5 is part of SAP product suite and is not a separate license. It is integrated with different SAP products like -

- SAP NW 7.4 or higher
- SAP NetWeaver AS 7.3x
- SAP HANA Cloud and on premise solution

Open UI5 is an open source technology for application development and it was released with Apache 2.0.

SAP UI5 is not a separate product and is available with SAP product suite	Open UI5 is free open source platform for application development
SAP UI5 is integrated with - • SAP HANA • SAP HANA Cloud Platform • SAP NetWeaver higher releases	Open UI5 was introduced with Apache 2.0 license OpenUI5 is Open Source, and is available on GitHub

UI5 Browser Support

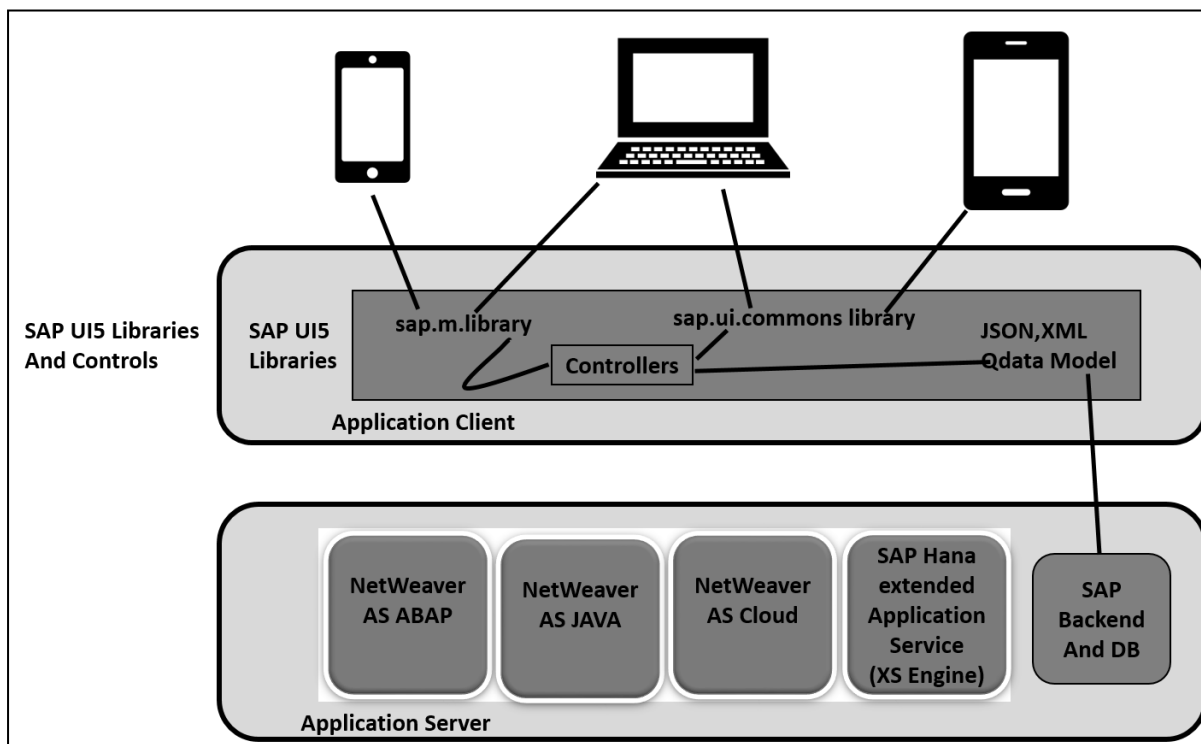
SAP UI5 supports all the main browsers from Microsoft, Google and Firefox with latest releases. However, features supported varies with the browser version and the vendor.

 Firefox version 10 or higher	 Google Chrome version 1 or higher	 Safari browser version 3 or higher	 Internet Explorer v8 or higher. IE 8 supports limited features of CSS3 like text shadows, and corners, etc.
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2. SAP UI5 – Architecture

In SAP UI5 architecture, you have three layers:

- At the top, is the presentation layer, where UI5 components are consumed by devices like mobile, tablets, and laptops.
- At the middle layer, is the application clients that includes SAP UI5 libraries for theming and control. UI5 control libraries include:
 - Sap.viz
 - Sap.ui.commons (Controls like text fields and buttons)
 - Sap.ui.table (Input controls for table)
 - Sap.ui.ux3
 - Sap.m (Includes input control for mobile devices)
- At the bottom, is the option server component. This includes SAP NetWeaver Application Server for ABAP/Java, SAP backend, HANA XS engine for development or database.



3. SAP UI5 – Key Components

SAP UI5 has multiple components which are independent and reusable objects in UI5 application. These components can be developed by different people and can be used in different projects.

An application can use the components from different locations and hence you can easily get the structure of an application. You can create different types of components under SAP UI5 development.

Faceless Components

Faceless components are used to get the data from the backend system and they don't contain a user interface.

Example: They are a part of class `sap.ui.core.component`

UI Components

UI components are used to add rendering functionality and represent a screen area or element on the user interface.

Example: UI component can be a button with settings to perform some task. It is a part of class: `sap.ui.core.UIComponent`

Note: `sap.ui.core.component` is the base class for faceless and UI components. To define the extensibility function, the components can inherit from the base class or from other components in UI development.

The module name of a component is known as the package name, and **.component** where the package name is defined as the name of the parameter passed to the component constructor.

SAP UI5 components can also be divided as per the system landscape:

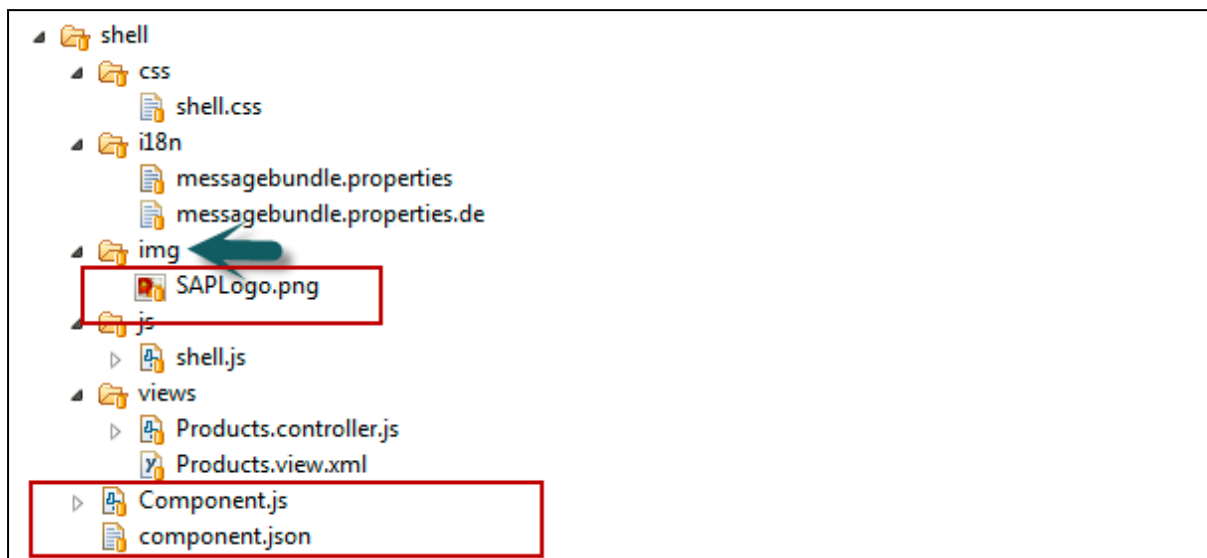
- Client side component: This includes,
 - Control libraries `sap.m`, `sap.ui.common`, etc.
 - Core Javascript
 - Test includes HTML and Javascript
- Server side component:
 - Theming Generator
 - Control and application development tools in Eclipse
 - Resource handler

Structure of a Component

Each component is represented in the form of a folder and contains the name of the components and the resources required to manage the component.

Each component should contain the following files:

- **Component.json** file that contains metadata for design time and is used only for design time tools.
- **Component.js** is used to define properties, events, and components methods that are responsible for runtime metadata.



How to Create a New SAP UI5 Component?

To create a new component, you have to create new folder. Let us name this as **button**.

Next is to create the **component.js** file

Then, you have to extend UI component base class `sap.ui.core.UIComponent.extend` and enter the name of the component and package path.

Later, to define a new component, you have to start with the **require** statement as follows:

```
// defining a new UI Component
jQuery.sap.require("sap.ui.core.UIComponent");
jQuery.sap.require("sap.ui.commons.Button");
jQuery.sap.declare("samples.components.button.Component");

// new Component
sap.ui.core.UIComponent.extend("samples.components.button.Component", {
    metadata : {
        properties : {
```

```

        text: "string"
    }
}
});
samples.components.button.Component.prototype.createContent = function(){
    this.oButton = new sap.ui.commons.Button("btn");
    return this.oButton;
};
/*
 * Overrides setText method of the component to set this text in the button
 */
samples.components.button.Component.prototype.setText = function(sText) {
    this.oButton.setText(sText);
    this.setProperty("text", sText);
    return this;
};

```

The next step is to define the component.json in your folder as follows:

```

{
    "name": "samples.components.button",
    "version": "0.1.0",
    "description": "Sample button component",
    "keywords": [
        "button",
        "example"
    ],
    "dependencies": {
    }
}

```

How to Use a Component

To use a component, you have to wrap the component in a component container. You cannot directly use a UI component in a page using placeAt method. Another way is to pass the component to the componentContainer constructor.

Using placeAt Method

It includes adding the component to the container and using **placeAt** method to place the component on the page.

```
var oComp = sap.ui.getCore().createComponent({
    name: "samples.components.shell",
    id: "Comp1",
    settings: {appTitle: "Hello John"}
});

var oCompCont = new sap.ui.core.ComponentContainer("CompCont1", {
    component: oComp
});

oCompCont.placeAt("target1");
//using placeAt method
```

Using componentContainer Constructor

A component container carries specific settings and also contains the lifecycle methods of a regular control. The following code segment shows how to pass the component to the componentContainer constructor.

```
var oCompCont2 = new sap.ui.core.ComponentContainer("CompCont2", {
    name: " samples.components.shell",
    settings: {text: "Hello John 1"}
});

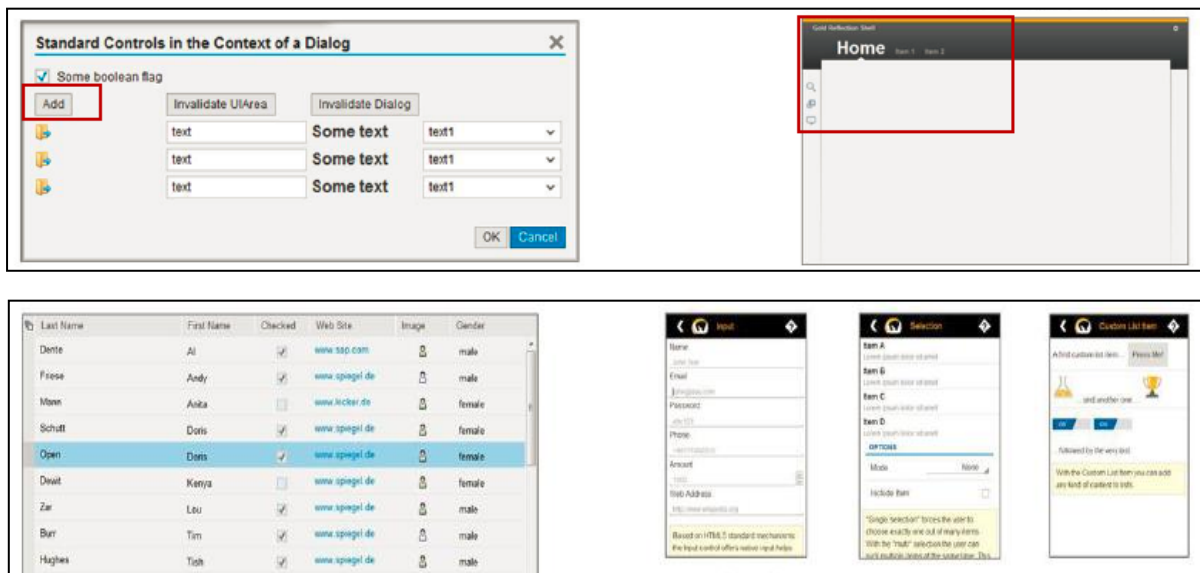
oCompCont2.placeAt("target2");
```

4. SAP UI5 – Control Libraries

There are various JavaScript and CSS libraries that you can use in combination for the application development. SAPUI5 can use these libraries in combination and they are called SAPUI5 control libraries.

Common SAPUI5 control libraries:

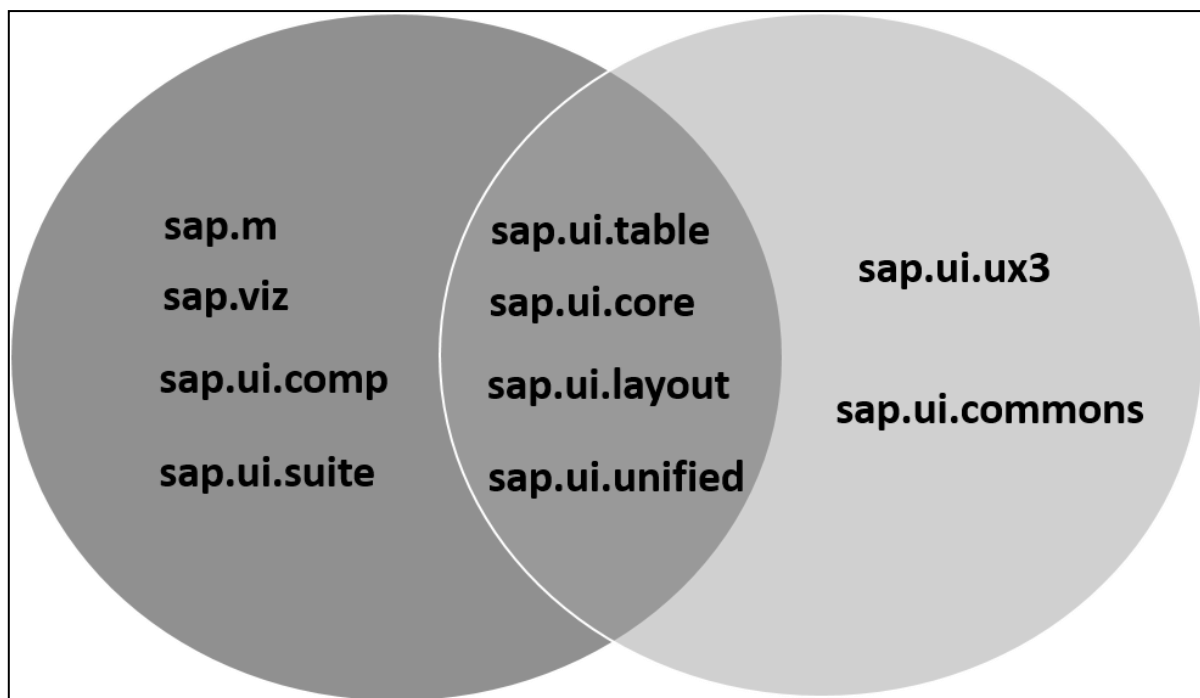
- Sap.ui.commons for control fields, buttons, etc.
- Sap.m is the most common control library and is used for mobile devices
- Sap.ui.table includes table control
- Sap.ui.ux3



Note: SAPUI5 control library sap.m is the most common library and is used for application development. These libraries can be combined with other control libraries.

Control Library Combinations

- You can use the control library sap.m with other control libraries - sap.ui.unified, sap.viz, sap.ui.table, sap.ui.layout, and sap.suite.
- You can combine control libraries - sap.ui.commons, sap.ui.table, sap.ui.ux3 and sap.ui.suite with each other.
- You can also combine control library sap.ui.commons and sap.ui.ux3 with other libraries like sap.ui.core, sap.ui.unified, sap.ui.layout, and sap.ui.table.
- You can combine sap.viz with all other libraries.



The following table shows the main SAPUI5 control libraries and their description:

sap.m	Library with controls specialized for mobile devices.
sap.makitt	SAPUI5 library contains the makitt charts.
sap.ui.commons	Common library for standard controls
sap.ui.ux3	SAPUI5 library with controls that implement the SAP User Experience (UX) Guidelines 3.0
sap.viz	SAPUI5 library containing chart controls based on the VIZ charting library

End of ebook preview

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