



SAP HANA Interactive Education (SHINE) for SAP HANA 2.0 SPS05 for SAP HANA XS Advanced Model

Target Audience

- Developers
- Administrators
- Others

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1 Overview of SHINE for SAP HANA Extended Application Services Advanced Model (SHINE for XSA)

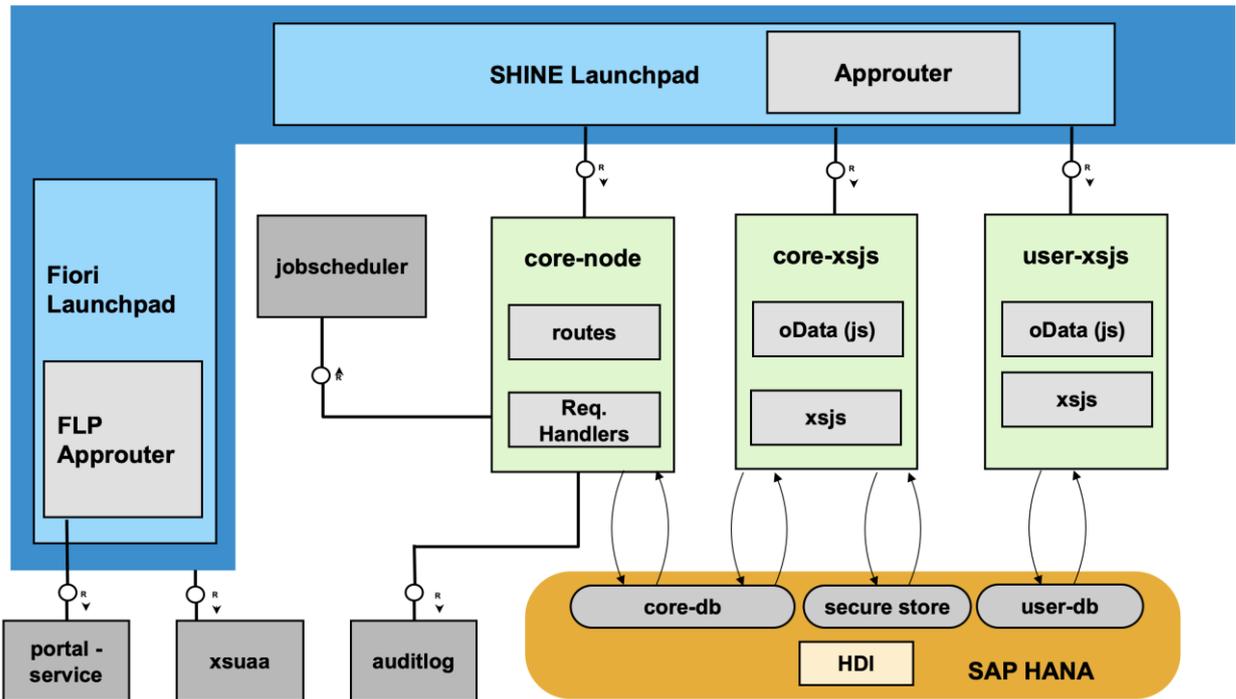
SAP HANA Interactive Education, or SHINE, is a demo application that makes it easy to learn how to build applications on SAP HANA Extended Application Services Advanced Model. This demo application is delivered as a package that contains sample data and design-time developer objects for the applications database tables, views, OData and user interface.

The application consists of the following packages:

Package	Description
core-db	This package contains the SAP HANA Deployment Infrastructure (HDI) artifacts and the database artifacts required to create the tables and other database artifacts (for example, hdbcds, hdbsequence, and so on) for Data Generator, Purchase Order Worklist and Sales Dashboard and Spatial Scenario.
user-db	This package contains the SAP HANA Deployment Infrastructure (HDI) artifacts and the database artifacts required to create the tables and other database artifacts (for example, hdbcds, hdbsequence, and so on) for User CRUD and Job Scheduling.
core-node	This package has the <i>Node.js</i> based server-side implementation of Data Generator and job scheduler.
core-xsjs	This package has the <i>xsjs</i> based server-side implementation of Purchase Order Worklist, Sales Dashboard and Spatial scenario.
user-xsjs	This package contains the <i>xsjs</i> based server-side implementation for User creation, User CRUD.
Web	This package contains the user interface for the SHINE Launchpad, Data Generator, Purchase Order Worklist Job Scheduler, Spatial scenario and User CRUD applications implemented in SAP UI5.
site-content	This package contains site configuration files required for Fiori Launchpad.
site-web	This package contains the user interface for the SHINE Fiori Launchpad, Data Generator, Purchase Order Worklist, Job Scheduler, Sales dashboard, Spatial and User CRUD implemented in SAP UI5.

1.1 SHINE XSA Architecture

The architecture for SHINE for XSA is represented on the following image:



This application contains the following micro services:

- core-node
- core-xsjs
- user-xsjs

The XS runtime platform provides several services for managing the various container instances and their application runtime. Containers are used to manage runtime and allow isolation, resource management, and shared service injection. The XS advanced application runtime contains lightweight processes that are called over HTTP and communicate remotely with the database.

The SAP HANA Deployment Infrastructure (HDI) provides a service layer that helps to deploy database development artifacts to containers. This service layer includes a family of consistent design-time artifacts for all key HANA platform database features, which describe the target (runtime) state of SAP HANA database artifacts, for example: tables, views, or procedures. These artifacts are modeled, staged (uploaded), built, and deployed on SAP HANA.

1.2 XSA Features

This version of SHINE for XSA includes the following features:

HDI Features:

- Table
- CDS Views
- Sequence
- Calculation Views
- Associations
- Table functions
- Synonyms
- Procedures
- Cross Container Access
- Multiple containers
- Spatial features
- Local time data generation
- Constraints
- Comments for tables
- Index and Full text index
- Structured Privilege
- CDS Enhancements
- Comments in CDS artifacts
- Usage of table functions in CDS views
- SQLScript Enhancements
 - o HDI Library
 - o MAP_MERGE
 - o TABLE SEARCH
 - o BETWEEN Operator
 - o Parallel SELECT
 - o MAP_REDUCE

XSA Features:

- User Authentication and Authorization (UAA)
- App Router
- oData V2 Services (Node.js)
- Nodecds
- Authorization(roles)
- oData Exits
- Job Scheduler token-based authentication
- Node.js - logging
- Node.js - ES6 standards
- oData batch
- Metadata caching
- Fiori Launchpad

Dynamic Tiles in Fiori Launchpad

Audit Logging.

Full-Text Search.

HANA Secure Store.

Fiori Elements in User CRUD.'

SAPUI5 Service broker

Nodejs Promises

CSP Headers in FLP

Secure Store

Tests for Tables, Views, Fucntions and Procedures

MTA Development and Deployment Descriptor:

Service Replacement

Schema config

MTA Extension Descriptor

2 Prerequisites

The XSAC_SERVICES, XSAC_PORTAL_SERVICES and SAPUI5_FESV6 components should be installed before SHINE is installed on XSA.

2.1 Check for Job Scheduler, Portal Services and Audit Log Service

SHINE for XSA needs a job scheduler service broker to create a job scheduler service. The Fiori Launchpad in SHINE needs the portal services application to be installed. For this, the XSA components: XSAC_SERVICES and XSAC_PORTAL_SERVICES need to be installed in the SAP space of the system. SHINE also needs the audit log service to log messages for changes in transactional data. Use the following code sample to check if all the required components are already installed there.

```
xs marketplace
```

```
Getting services from marketplace...
service      plans      description
-----
fs-storage   free      xs file service provides an env variable which denotes the root of the clients application file system.
hana         hdi-shared, sbss, schema, securestore  SAP HANA database
xsuaa        default, devuser, space  Manage application authorizations and trust to identity providers
managed-hana hdi-shared, schema, securestore  Creates service instances at runtime of: SAP HANA database
auditlog     free      Audit log broker on the XSA Platform
portal-services site-host, site-content, admin-cockpit  Service broker for creating and accessing portal DB
jobscheduler default    Job Scheduler for scheduling long running, repeated tasks.
```

If any of them is not installed, contact your system administrator to install the necessary components on the SAP space.

To enable SAP HANA audit logging, proceed as follows:

1. Create an xsa audit-log policy for the following actions: *SECURITY EVENT*, *PERSONAL DATA ACCESS*, *PERSONAL DATA MODIFICATION*, and *CONFIGURATION CHANGE*.

For example, in SAP HANA Studio, right click on the System name, click *Open SQL Console* and execute the following SQL query:

```
create audit policy xsa_audit auditing all SECURITY EVENT, PERSONAL DATA
ACCESS, PERSONAL DATA MODIFICATION, CONFIGURATION CHANGE level info;

ALTER AUDIT POLICY xsa_audit ENABLE;
```

2. To enable the HANA Audit Log, install [SAP HANA Studio](#), as described in the SAP HANA Studio Installation and Update Guide, and connect to the XSA system. When you add a system in SAP HANA Studio, choose the *Multiple containers* mode and then choose *System database*.
3. Follow the steps described in [Activate and Configure Auditing](#) in the SAP HANA Administration Guide for SAP HANA Platform, and configure the required audit trail targets as displayed on the screenshot below.

The screenshot shows the SAP Security Administration interface for the SYSTEMDB@XSA (SYSTEM) instance. The 'System Settings for Auditing' section is visible, with 'Auditing Status' set to 'Enabled' and 'Audit Trail Target' set to 'Database Table'. Below this, the 'Audit Policies' table shows the 'XSA_AUDIT' policy is 'Enabled' and audits actions such as 'PERSONAL DATA ACCESS, PERSONAL DATA MODIFICATION, CON...' at an 'INFO' audit level.

- To see the stored audit logs in the SAP HANA audit-logging system in the `xsa_audit_log` view, execute the following statement in the database with administrator credentials:

```
select * from xsa_audit_log;
```



In HANA Express, the Job Scheduler could be pre-installed, so in addition to checking if the job scheduler service is present, also check if the status of jobscheduler-broker is started.

To do this, proceed as follows:

- Go to SAP space by using the command `xs target -o HANAExpress -s SAP`.
- Run the command `xs apps | grep STOPPED` to get all stopped services.
- Check if the status of jobscheduler-broker is stopped.
- If it is stopped, start it with the command `xs start jobscheduler-broker`.

2.2 Check for XS Advanced Cockpit Tool

To create a user and to assign roles, you need the XS Cockpit tool. To get the URL you need access to SAP space and run the following command or get it from your system administrator.

```
xs app xsa-cockpit -urls
```

2.3 Check for SAP UI5 Service Broker

UI5 applications, like SHINE, no longer need to refer to a particular UI5 service that they depend on; they can refer to the UI5 Service Broker, which serves the bootstrap URL of the service they require. Unlike standard service brokers, the UI5 Service Broker does not need to manage bindings to UI5 applications. If an application refers to a version of SAP UI5 during deployment, the SAP UI5 service broker is called and serves the UI5 bootstrap URL to the application, to complete its installation. If an application needs UI5 updates or fixes, which are included with a new version of the UI5 release, the UI5 service is updated silently for the consuming application. It is not necessary to redeploy the application; the changes and fixes included in the new UI5 version are loaded and made available automatically. Although there is typically

2.5 Creating Users and Assigning Roles

1. Login to XS Advanced Cockpit with the XSA_ADMIN user and create a new user called *SHINE_USER*.
2. Choose the *User Management* tile in the XS Advanced Cockpit tool. See step 2.2 for more details on how to get the URL of the XS Advanced Cockpit tool.
3. On the *User Management* page, choose the *New User* button.
4. Enter the required details and choose the *Create* button to create a new user.

5. For the new user, click on *Assign Role Collections* button
6. Click on the *Add* button and assign the role collections *XS_AUTHORIZATION_ADMIN* and *XS_CONTROLLER_ADMIN* to the user *SHINE_USER* and press *Save*



After the user is created, log in once with the created user and change the default password.

7. Assign the *Space Developer* role to the *SHINE_USER*.
 - a. Login to the XSA system in the CLI of the XS Advanced system with user *XSA_ADMIN*.

```
xs login -u XSA_ADMIN
```

- b. Set the space role for SHINE_USER.

```
xs set-space-role SHINE_USER <orgname> <spacename> SpaceDeveloper
```

```
root@86507311:/s/141 > xs set-space-role SHINE_USER REF PROD SpaceDeveloper
Adding role 'SpaceDeveloper' to user SHINE_USER in space "PROD" of org "REF" ...
OK
```

Optional

If you want to use SAP WebIDE for SAP HANA to import SHINE for XSA code, the role collections **WebIDE_Administrator** and **WebIDE_Developer** should be assigned to the SHINE_USER.

3 Deployment Options for SHINE

After you have performed the steps above, you have the following two deployment options:

1. Deploy SHINE via SAP WebIDE for SAP HANA.

This option has two further options of deployment:

- Deploy SHINE with Fiori Launchpad
- Deploy SHINE without Fiori Launchpad.

2. Deploy SHINE by downloading the SCA from the Service Marketplace or using it from the XSA_CONT folder of HANA.

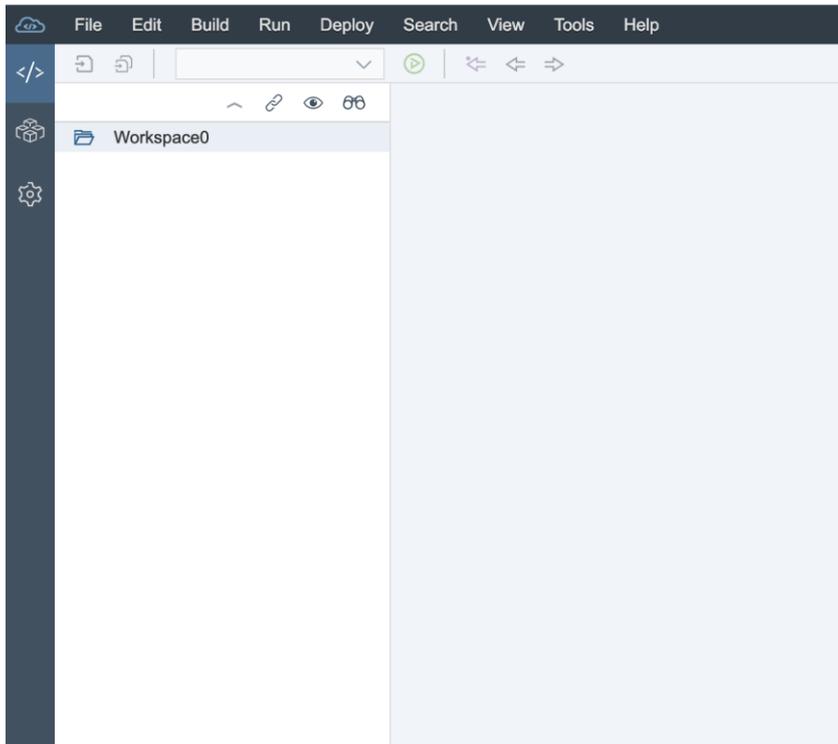
All of the above-mentioned deployment options are explained in detail in the subsequent chapters.

3.1 Deploying SHINE via SAP WebIDE for SAP HANA

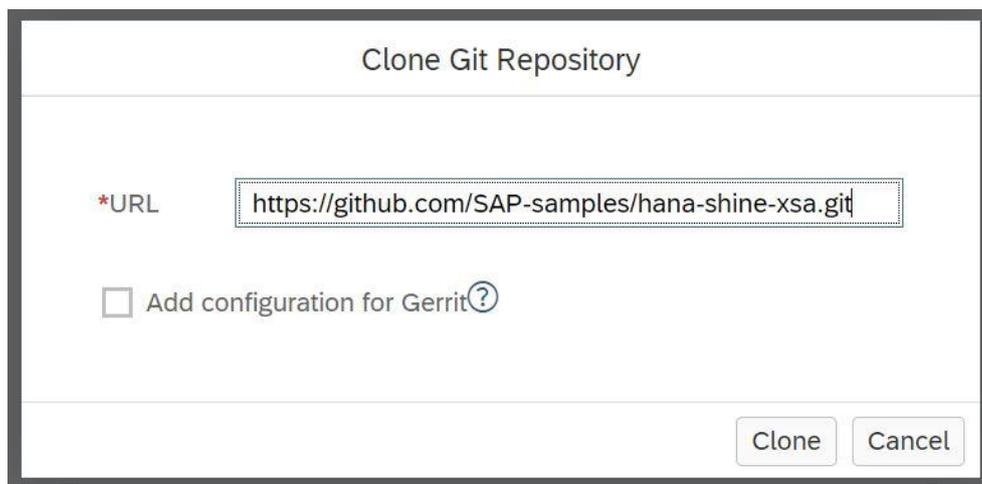
3.1.1 Import from GitHub

1. Launch SAP Web IDE for SAP HANA.

Refer to Step 2.4 for instructions on how to launch the SAP Web IDE.



2. Navigate to *File -> Git -> Clone Repository*
3. Enter the URL of the SHINE repository: <https://github.com/SAP-samples/hana-shine-xsa.git>
4. Choose *Clone*.



3.1.2 Deploy SHINE for XSA Application Without FLP

Follow the steps below to deploy and run SHINE for XSA application without the Fiori Launchpad:

1. Create xs-security.json file by using the following command in the CLI of XSA system:

```
vi xs-security.json
```

Paste the following content in the file:

```
{
  "xsappname": "shine",
  "scopes": [
    {
      "name": "$XSAPPNAME.JOBSCHEDULER",
      "description": "Job Scheduler Scope",
      "grant-as-authority-to-apps": ["jobscheduler"]
    },
    {
      "name": "$XSAPPNAME.Display",
      "description": "display"
    },
    {
      "name": "$XSAPPNAME.Edit",
      "description": "edit"
    },
    {
      "name": "$XSAPPNAME.Delete",
      "description": "delete"
    },
    {
      "name": "$XSAPPNAME.DataGenerator",
      "description": "data generator"
    },
    {
      "name": "xs_authorization.read",
      "description": "Read authorization information from UAA"
    },
    {
      "name": "xs_authorization.write",
      "description": "Write authorization information to UAA"
    }
  ],
  "role-templates": [
```

```

{
  "name": "shine_admin",
  "description": "refapps administrator",
  "scope-references": [
    "$XSAPPNAME.Display",
    "$XSAPPNAME.Edit",
    "$XSAPPNAME.Delete",
    "$XSAPPNAME.DataGenerator",
    "xs_authorization.read",
    "xs_authorization.write",
    "$XSAPPNAME.JOBSCHEDULER",
    "xs_controller.read"
  ]
}
]
}

```

2. Create a UAA service instance by executing the command in CLI of XSA system, from the same location where the `xs-security.json` was created in the previous step:

```
xs create-service xsuaa space shine-uaa -c xs-security.json
```

3. Check if the app `jobscheduler-broker` is started and is up and running. Please refer to step 2.1 about starting the `jobscheduler-broker`.

4. Create Job Scheduler Service by executing the command in CLI of XSA system:

```
xs cs jobscheduler default shine-scheduler
```

5. Create an audit log service instance by executing the following command in CLI of XSA system:

```
xs cs auditlog free shine-auditlog
```

6. Create a HANA secure store service by executing the command in CLI of XSA system:

```
xs cs hana securestore secureStore
```

7. Create a SAP UI5 Broker service by executing the command in CLI of XSA system:

```
xs cs sapui5_sb sapui5-1.71 sapui5-provider
```

8. Enable the space for development using the Space Enablement administration tool.

For more details on how to enable access to this tool, please refer to the chapter **Enabling Access to the SAP Web IDE Administration and Development Tools** of SAP Web IDE for [SAP HANA - Installation and Upgrade Guide](#).

9. Once done, open the Space Enablement Tool, whose URL can be obtained by running the following command:

```
xs app di-space-enablement-ui --urls
```

10. The Space Enablement Tool allows you to enable spaces for development by deploying the builder component in each space. In this tool, you can view the status and builder version of all the spaces defined in your organization and perform the following tasks:

- In a space row, choose *Enable* to deploy the builder in the space.
- Choose *Redeploy* to redeploy the builder, if its version matches the DI CORE version displayed at the right of the app title bar.
- Choose *Update* to update the builder to the DI CORE version. The process steps are displayed in the Log window. You can view the latest log for each space by clicking the icon in the space row in the table

11. Before building the modules, you need to assign the space to the project.

This can be done by right-clicking on the project name and choosing *Project Settings*. Choose the *Space* tab and from the drop-down menu select the appropriate space, in which the application should be deployed, and then choose *Save*.

12. Open the `mta.yaml` in SAP WebIDE for SAP HANA. Navigate to the *Resources* section. For the resources `shine-user-container` and `shine-container`, in the parameters section update the **service name** and **config: schema** by replacing `<USER_NAME>` with your Web IDE user name as shown in screenshot below. In case `<USER_NAME>` is not there, you can still follow this naming convention.

```

- name: shine-container
  type: com.sap.xs.hdi-container
  properties:
    container-name: ${service-name}
  parameters:
    service-name: <USERNAME>_shine-container
    config:
      schema: <USERNAME>_SHINE_CORE_SCHEMA
- name: shine-user-container
  type: com.sap.xs.hdi-container
  properties:
    user-container-name: ${service-name}
  parameters:
    service-name: <USERNAME>_shine-user-container
    config:
      schema: <USERNAME>_SHINE_USER_SCHEMA
- name: shine-scheduler
  type: com.sap.xs.job-scheduler

```

13. In the `mta.yaml` replace the UAA and Controller endpoint by following the steps below:

a) Navigate to the resource **uaa**.

b) Replace the **url** property of the resource `uaa` to your respective UAA end-point URL. In a port-based routing system, it will be in the following format:

`http(s)://<host-name> :3<instance-number>32/ uaa-security`

For example, in HANA express the UAA endpoint can be <https://hxehost:3<instance-number>32/uaa-security>



In HANAExpress, the VM install has a default instance of 90. The binary install is a user-defined number.

c) Do the same for the resource **controller**.

14. Open the folders below and remove the `package.json` files, if they are present:

- user-db
- core-db

15. Build all packages, one by one, in the following sequence:

- user-db
- core-db
- user-xsjs
- core-node

core-xsjs

web

15. After the successful build of all these modules, run the following modules by right-clicking on the respective module and choosing *Run* → *Run as*:

Run core-node, core-xsjs and user-xsjs as a Node-js application

Run web as Web Application, choose the 'launchpad/index.html' if prompted.

Click on *Check Prerequisites* button, generate Time Data and create Role Collections. The application will log off automatically. Don't login back just yet.

Go to XS Advanced Cockpit application, assign the role collection "SHINE_ADMIN" to your user.

Now login back to shine web application to access all modules seamlessly.

For more information on cloning, building, or deploying for XSA applications, see [SAP HANA - Installation and Upgrade Guide](#).

3.1.3 Deploy SHINE for XSA Application with FLP



Prerequisite: Steps 1 to 13 in Chapter 3.1.2 should be performed before going forward with the steps below.

Follow the steps below to deploy and run SHINE for XSA application with the Fiori Launchpad:

1. Expand the SHINE folder in WebIDE.
2. Open mta.yaml
3. In the resources section, navigate to the entry “controller”.
4. Replace the url property with the respective API URL of the XSA system.

For example, it will be of the format below for the port-based outgoing system:

http(s)://<XSA host name>:<xs controller port>

By default, the xs controller port is 3##30 where ## is the instance number.



In HANAExpress VM install has default instance as 90, Binary install is a user-defined number

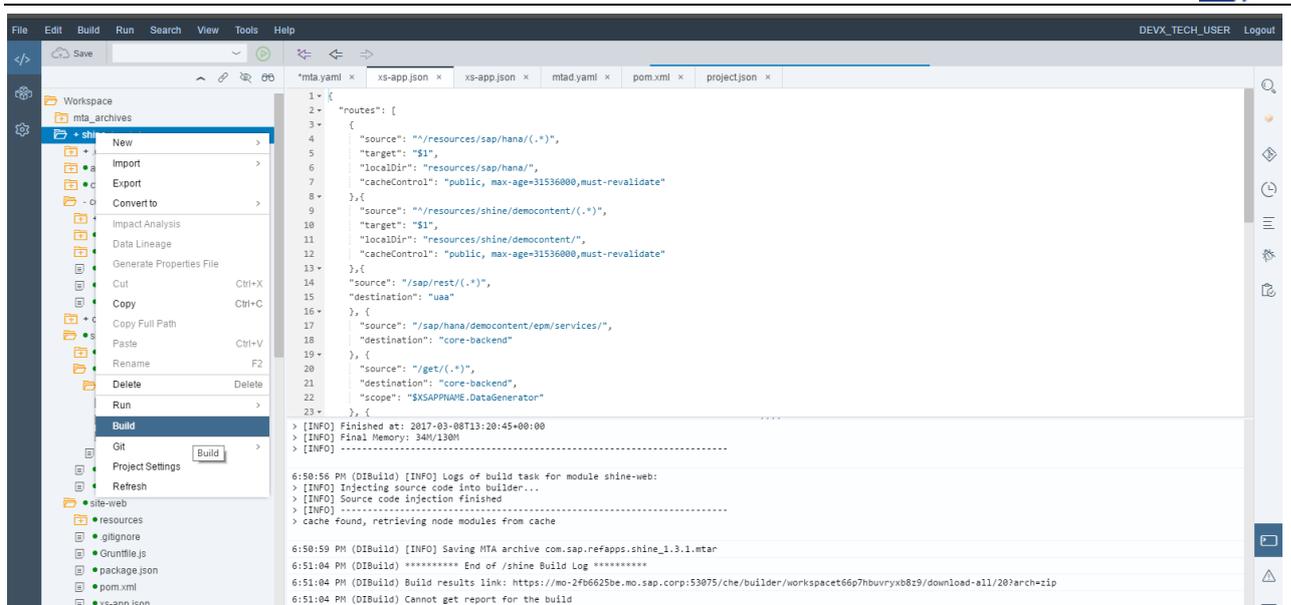
5. Navigate to the resources section, for the resource shine-user-container. In the parameters section update the **service name** and **config: schema** by replacing <USER_NAME> with your Web IDE user name as shown in screenshot below. In case <USERNAME> is not there, you can still follow this naming convention.

```
- name: shine-container
  type: com.sap.xs.hdi-container
  properties:
    container-name: ${service-name}
  parameters:
    service-name: <USERNAME>_shine-container
    config:
      schema: <USERNAME>_SHINE_CORE_SCHEMA
  ...

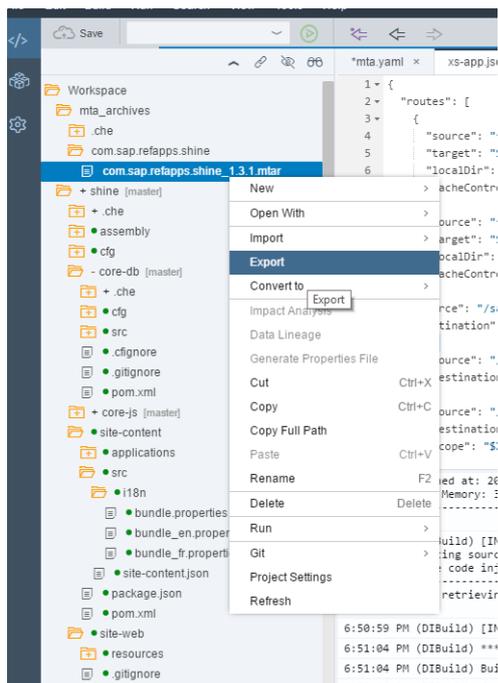
- name: shine-user-container
  type: com.sap.xs.hdi-container
  properties:
    user-container-name: ${service-name}
  parameters:
    service-name: <USERNAME>_shine-user-container
    config:
      schema: <USERNAME>_SHINE_USER_SCHEMA
  ...

- name: shine-scheduler
  type: com.sap.xs.job-scheduler
```

6. Right-click on the SHINE project folder and select *Build*.



7. After a successful build of the project, there will be a folder called `mta_archives` created in the workspace.
8. Expand the folder and expand the folder `com.sap.refapps.shine_1.8.x.mtar` file present inside.
9. Right-click on the `mtar` file present inside and select *Export*.



10. Create a UAA service instance by executing the command in CLI of XSA system, from the same location where the `xs-security.json` was created as mentioned above in Section 3.1.2, step 1:

```
xs create-service xsuaa space shine-uaa -c xs-security.json
```

11. Once exported, login to the XSA system via CLI and deploy the `mtar` file using the following command:

```
xs deploy com.sap.refapps.shine_1.8.x.mtar
```



Ensure that you do not deploy the mtar in the same space as the application from SAP WEB IDE for SAP HANA was deployed in Chapter 3.1.2.

Deploying the mtar in a different space will avoid the installation failure due to the conflict created by same schema names in both instances of the application.

3.2 Deploy SHINE for XSA SCA



Do not install SHINE on your productive SAP HANA system.

SHINE for XSA Software Component Archive (SCA) can be found on SAP HANA Media as well as on the SAP Support Portal.

3.2.1 Download from HANA Media

SHINE for XSA can be found in the XSA_CONT folder of HANA media.

Refer to the matrix below for downloading the correct version of SHINE for the respective version of HANA:

SHINE VERSION	HANA VERSION
XSACSHINE01_x	HANA 1.0 SPS12
XSACSHINE02_x	HANA 2.0 SPS0
XSACSHINE03_x	HANA 2.0 SPS01
XSACSHINE04_x	HANA 2.0 SPS02
XSACSHINE06_x	HANA 2.0 SPS03
XSACSHINE07_x	HANA 2.0 SPS04
XSACSHINE08_x	HANA 2.0 SPS05

3.2.2 Download from SAP Support Portal

The SAP HANA Interactive Education (SHINE) for XSA SCA is available for download on the *SAP Support Portal* → *Software Download* page.

Refer to the matrix below for downloading the correct version of SHINE for the respective version of HANA:

SHINE VERSION	HANA VERSION
XSACSHINE01_x_XXXXX	HANA 1.0 SPS12
XSACSHINE02_x_XXXXX	HANA 2.0 SPS0
XSACSHINE03_x_XXXXX	HANA 2.0 SPS01
XSACSHINE04_x_XXXXX	HANA 2.0 SPS02
XSACSHINE06_x_XXXXX	HANA 2.0 SPS03
XSACSHINE07_x_XXXXX	HANA 2.0 SPS04
XSACSHINE08_x_XXXXX	HANA 2.0 SPS05

Procedure

To download the SHINE software component archive from SAP Support, perform the following steps:

1. Open your Internet browser and enter <https://support.sap.com/patches>. Click on *My Support* drop down in the category *Software Downloads*, click on *Types of Software*.
2. Under *Support Packages and Patches*, click on *Access Downloads*.
3. In the newly opened *SAP ONE Support Launchpad* window/tab, click on the *Support Packages & Patches* → *By Alphabetical Index (A-Z)* → *H* → *SAP HANA PLATFORM EDITION* → *Downloads* → *SAP HANA PLATFORM EDITION. 2.0* → *Downloads*
4. Select *SAP HANA DEMO MODEL ADV. 1*.

The *Downloads* tab appears with information about the packages available for download.

5. Select the *latest* version of ZIP for SAP HANA DEMO MODEL ADV. 1 and choose *Add to Download Basket*.
6. Choose *Download Basket* and save the ZIP file in a convenient location, for example, on your local PC hard drive.

3.2.3 Install the Software Component Archive

Prerequisites

You have downloaded the SHINE for XSA software component archive from the SAP Support Portal or SAP HANA Media.

Please note these steps are optional and are only needed if the schema names provided in the SHINE application need to be overridden.

- a. Download the MTA extension descriptor for SHINE for XSA shine.mtaext from <https://github.com/SAP-samples/hana-shine-xsa> or download sap-xsac-shine-1.8.xx.mtaext attached to SAP Note: [2239095](https://support.sap.com/en/notes/2239095)
- b. Open the mtaext file in any text editor.
- c. Update the two schema fields <SCHEMA_NAME_1> and <SCHEMA_NAME_2> in the mtaext file with two different schema names. (e.g.: SHINE_USER_SCHEMA, SHINE_CORE_SCHEMA).

Please ensure that the two schema names are not identical.

Procedure

1. Login to the XSA system using CLI (Command-line interface) with the SHINE_USER user you created in the previous chapter using the `xs login -u SHINE_USER` command:

```

mo-000f1d1f5a:/> xs login -u SHINE_USER

API URL: https://mo-0/8f5df5a/myorg:30000

USERNAME: SHINE_USER
PASSWORD>
ORG: myorg

Existing spaces:
0.      PROD
1.      SAP
SPACE> 0
SPACE: PROD
API endpoint: https://mo-0/8f5df5a/myorg:30000 API endpoint: 1
User:      SHINE_USER
Org:       myorg
Space:     PROD

```

2. Navigate to your corresponding XSA organization and space using the command

```
xs target -o <orgname> -s <spacename>
```

3. Deploy the SHINE for XSA application without the extension descriptor using the following command:

```
xs install XSACSHINE07_<patch.no>.zip
```

4. Deploy the SHINE for XSA application with the extension descriptor using the following command:

```
xs install XSACSHINE07_<patch.no>.zip -e sap-xsac-shine-1.8.xx.mtaext
```

3.2.4 Uninstall the Software Component Archive

Prerequisites

The software component SHINE for XSA should be installed on the system.

Procedure

To uninstall SHINE from the system, please follow the below steps:

- a) Login to the XSA system using CLI (Command-line interface) with the SHINE_USER user you created in the previous chapter using the command.

```
xs login -u SHINE_USER
```

- b) Navigate to your corresponding XSA organization and space using the command

```
xs target -o <orgname> -s <spacename>
```

- c) Uninstall the SHINE for XSA application using the command

```
xs uninstall XSAC_SHINE --delete-services
```

Note: The delete-services flag is used to delete all the services associated with the SHINE application. Its recommended that one sets this flag while uninstalling SHINE for clean uninstall.

3.2.5 Reinstall the Software Component Archive

To reinstall SHINE for XSA software component, proceed as follows:

5. Reinstall SHINE without the extension descriptor using the following command:

```
xs install XSACSHINE07_<patch.no>.ZIP -o  
<ALLOW_SC_SAME_VERSION, [ALLOW_SC_DOWNGRADE]>
```

6. Reinstall SHINE with the extension descriptor using the following command:

```
xs install XSACSHINE07_<patch.no>.ZIP -e sap-xsac-shine-1.8.xx.mtaext  
-o <ALLOW_SC_SAME_VERSION, [ALLOW_SC_DOWNGRADE]>
```

Please note that the **ALLOW_SC_SAME_VERSION** flag is used to reinstall the same version of the software component and **ALLOW_SC_DOWNGRADE** is used to downgrade a software component.

4 Launch the SHINE for XSA Application

1. Login to the XSA system from CLI to find the URL of the SHINE for XSA application.
2. Enter the `xs target -o <orgname> -s <spacename>` command to navigate to the corresponding organization and space in which SHINE for XSA is installed.
3. Enter the `xs app shine-web -urls` command to display a list of all applications running in your space.

```
@ :~> xs app shine-web -urls
https://
```

4. In a browser, use this URL to start the application and login with `SHINE_USER`.
The application opens and a popup appears providing information about the SHINE for XSA application.

SAP SHINE (SAP HANA Interactive Education) for SAP HANA XS Advanced Model

SAP HANA Interactive Education, or SHINE, is a demo application that makes it easy to learn how to build applications on SAP HANA Extended Application Services Advanced Model. This demo application is delivered as a package which contains sample data and design-time developer objects for the applications database tables, views, OData and user interface.

What's new with SHINE for XSA

- Unit tests for tables,views,functions,procedures in Node.js
- SecureStore in Node.js

Clicking on each tile will bring up the help for that module.

Note : No real data should be entered.

[Check Prerequisites](#)

Do not show this again

[OK](#)

5. Choose the *Check Prerequisites* button.
6. Once the *Check Prerequisites* button is clicked, in the new pop up there will be an “X” symbol for Role Collection, indicating that the role collection “SHINE_ADMIN”, necessary to access the Data Generator tile, is not available and another “X” symbol for Generate Time data button indicating that the time dimensional data, needed for charts and reports to be displayed with respect to time, is not yet generated.

✕

Checking Prerequisites

Please check the SHINE documentation for the complete list of prerequisites.

Role Collections

In order to launch the data generator tile, we need a role collection which has a role template shine admin. Click on the button "Create Role Collection" to create a role collection with the name SHINE_ADMIN and assign the role template shine admin to it. You will be logged out after the role collection creation.

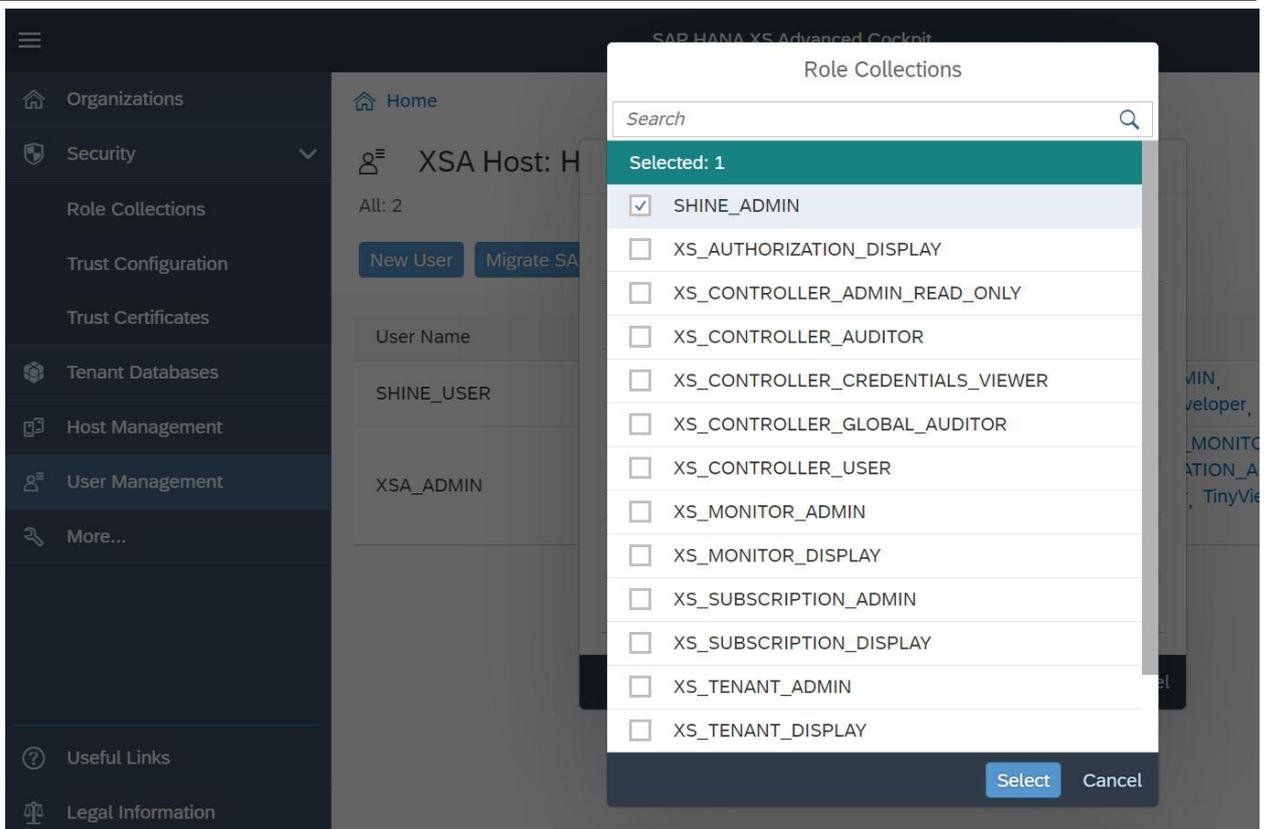
✕

Generate Time Data

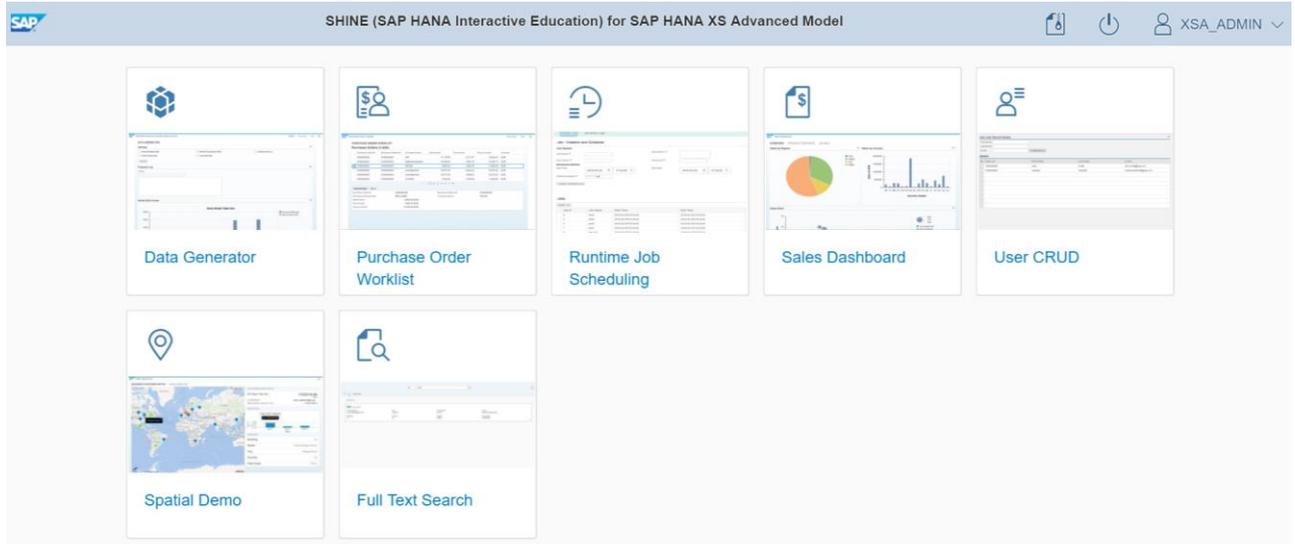
Time Dimensional Data needs to be loaded into the SHINE Time Dimension table for the models and charts to work perfectly. You can easily generate this data by clicking on **Generate Time Data** button.

✓

7. Click on the *Generate Time Data* button to generate time-dimensional data required for charts and reports.
8. Click on the *Create Role Collections* button, which creates the SHINE_ADMIN role collection. The user will be logged out of the application.
9. In a separate window, log on to the XS Advanced Cockpit tool and navigate to the *User Management* tile. For more information on how to open XS Advanced Cockpit Tool, see Step 2.2.
10. Look for the user name created in Step 2.5 (for example, SHINE_USER) and click on the *Assign Role Collections* button
11. Click on the *Add* button and search for the role collection "SHINE_ADMIN".



12. Select the SHINE_ADMIN role and click *Select* and then click the *Save* button
13. Open the SHINE application URL or log on back to the SHINE application.
14. Once the user is logged in again, note that *Check Prerequisites* will return a (green tick) sign for both prerequisites. Click *OK*.
15. The SHINE Launchpad appears with 7 tiles, the *Data Generator*, the *Purchase Order Worklist*, *Job Scheduler*, *Sales Dashboard*, *User CRUD*, *Spatial Demo* and *Full Text Search* applications.



16. Click on any tile to start the corresponding application.

5 Launch the Fiori Launchpad of SHINE for XSA Application

Fiori Launchpad is the entry point to Fiori apps on mobile or desktop devices. The Fiori Launchpad displays various tiles that provide access to applications.

The tiles that appear on a user's entry page depend on the user's role and hence it provides role based navigation and business function access.

The Fiori Launchpad available in SHINE provides an alternate entry point for the various microservices in SHINE.



Execute steps 1 to 13 in Chapter 4 before launching SHINE Fiori Launchpad to

- Create SHINE_ADMIN Role Collection and assign it to user
- Generate Time Data

To launch the Fiori Launchpad in SHINE, proceed as follows:

1. Login to the XSA system from CLI to find the URL of the SHINE for XSA FLP application.
2. Enter the `xs target -o <orgname> -s <spacename>` command to navigate to the corresponding organization and space in which SHINE for XSA is installed.
3. Enter the `xs app shine-site-web -urls` command to display a list of all applications running in your space.

```

C:\Program Files\ SAP\bin> xs app shine-site-web -urls
https://...:51043
  
```

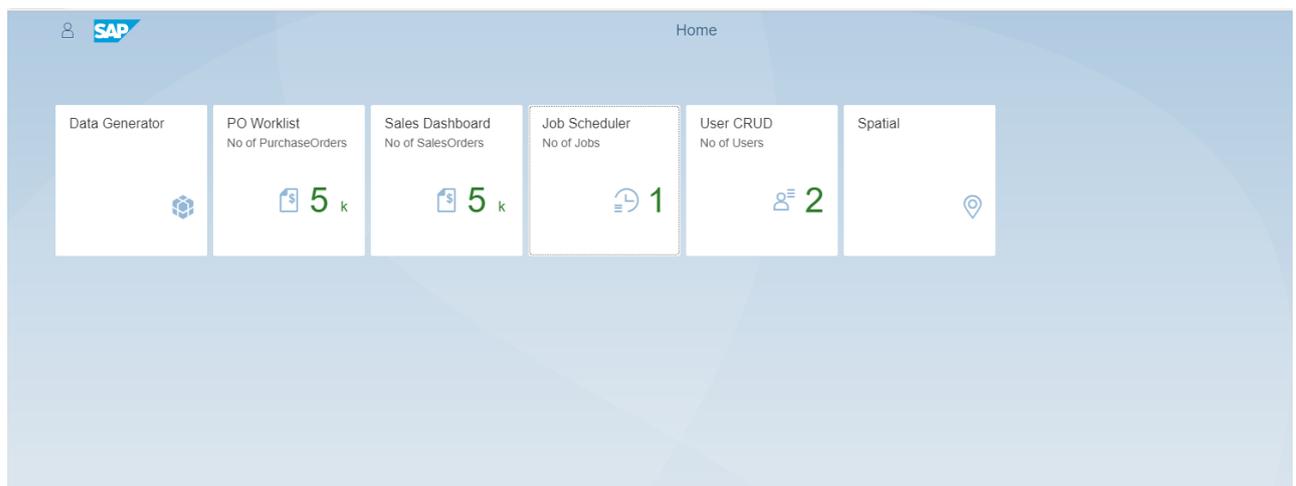
4. In a browser, use this URL to start the application and login with **SHINE_USER**.

The SHINE Fiori Launchpad application opens with the following tiles: *Data Generator*, *PO Worklist*, *Job Scheduler*, *Sales Dashboard*, *Spatial* and *User CRUD*.

Please note that the tile *Data Generator* appears only if the logged in user is assigned the SHINE_ADMIN role collection.

The tiles like PO Worklist, Sales Dashboard, Job Scheduler and User CRUD also display additional dynamic information like the number of purchase orders, the number of sales orders, the number of jobs active and the number of users created.

For more details on how to assign the SHINE_ADMIN role collection, see Chapter 5 Step 10.



5. Click on any tile to start the corresponding application

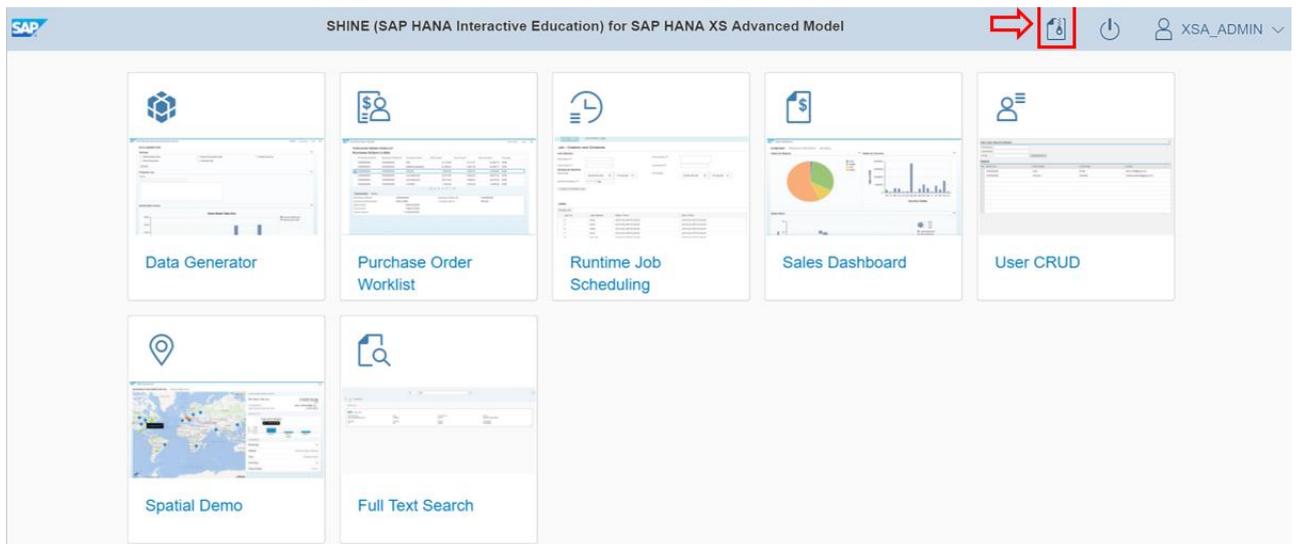
6 Downloading the Source Code of SHINE for XSA as ZIP

The source code of SHINE application can also be downloaded as a ZIP file so that the users can readily view the sample data and design-time developer objects such as database tables, views, OData and user interface.

To download the source code of the SHINE application, click on the icon in the *Launchpad* as highlighted in the image below.



In addition to the DB artifacts and services required for the SHINE application, there are also a lot of standalone samples present in the code.



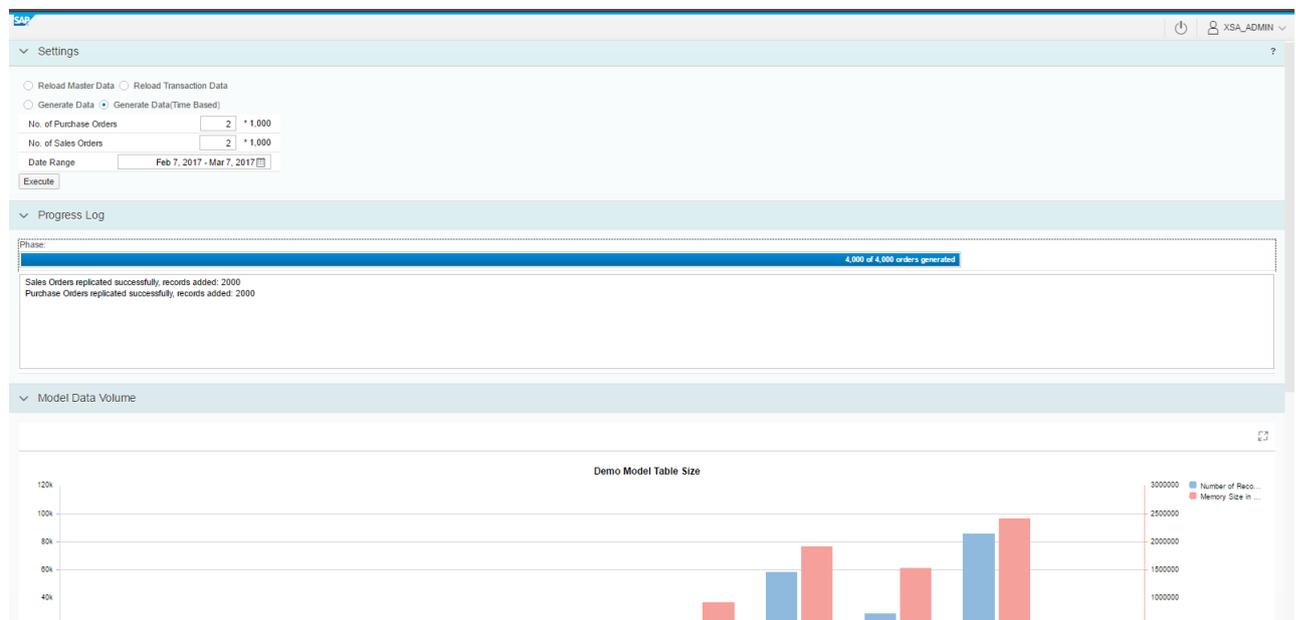
7 Scenarios

This version of SHINE contains the features *Data Generator*, *Purchase Order Worklist*, *Job Scheduler*, *User CRUD*, *Sales Dashboard*, *Spatial* and *Full Text Search*. The scenarios are described in the following sections.

7.1 Data Generator

This application can be used to perform the following operations with respect to data:

- The application master data can be reset or reloaded by using the Reload Master Data module (which includes data reloading for Business Partners, Addresses, Products tables, and so on).
- The applications transactional data can be reset or reloaded using the module Reload Transactional Data (which includes data reloading for Sales Orders and Purchase Orders tables).
- New transactional data for Sales Orders and Purchase Orders can be generated using the Generate Data module.
- Time-based Purchase and Sales orders can be generated for a specific time interval using the Generate Data (Time Based) module.



7.2 Purchase Order Worklist

This application illustrates a comprehensive Purchase Order Worklist that acts as an interface for a Purchase Department Head to manage the purchase orders created by his or her department. The following tasks can be performed:

- View the list of purchase orders and choose a particular order to see the General Data and Purchase Order items related to it, displayed in separate tabs.
- Perform actions such as *New*, *Delete*, *Accept*, or *Reject* for a selected purchase order.
- Perform actions such as *Export to Excel* which downloads all purchase-order data into an Excel spreadsheet.
- Perform operations such as searching for purchase orders based on various attributes, including *Company Name*, *Product ID*, and so on.
- Click on the *Reports* tab to see the summary of purchase order gross value grouped by different attributes like *Company Name*, *City* etc.

PURCHASE ORDER WORKLIST

Filter By ?

Super Search Q

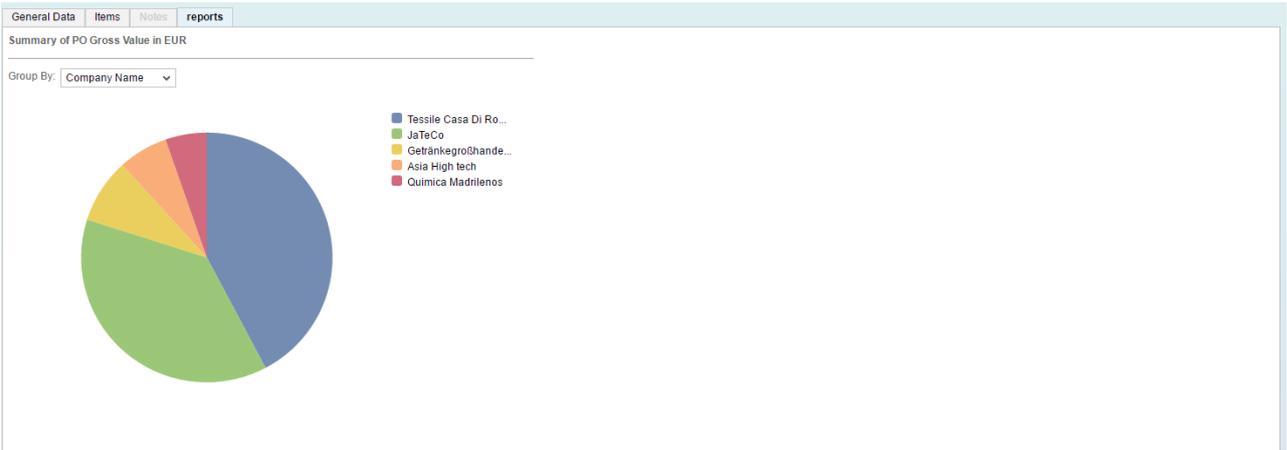
New Edit Delete Actions Export to Excel Export as Zip ?

Purchase Order...	Order Item	Business Partne...	Product ID	Company Name	Gross Amount	Currency	PO Lifecycle	PO Approval	PO Confirmation	PO Ordering
300000000	10	100000000	HT-1000	SAP	13224.47	EUR	New	Initial	Initial	Initial
300000000	100	100000000	HT-1000	SAP	13224.47	EUR	New	Initial	Initial	Initial
300000000	20	100000000	HT-1091	SAP	13224.47	EUR	New	Initial	Initial	Initial
300000000	30	100000000	HT-6100	SAP	13224.47	EUR	New	Initial	Initial	Initial
300000000	40	100000000	HT-1000	SAP	13224.47	EUR	New	Initial	Initial	Initial
300000000	50	100000000	HT-1091	SAP	13224.47	EUR	New	Initial	Initial	Initial

K < 1 2 3 4 5 > |

General Data Items Notes reports

Purchase Order ID	Business Partner ID
Employee Responsible	Company Name
Net Amount	0
Tax Amount	0
Gross Amount	0



7.3 Job Scheduler

This application defines recurring tasks that run in background and can be used to do the following operations by using XSA Job Scheduler Service:

- Create a job and schedule it
- Created jobs can also be deleted via this user interface

The jobscheduler uses tokens to authenticate and trigger jobs defined within SHINE application.

Job - Creation and Schedule

Job Details

Job Name *

Description *

Schedule Details

Start Date

End Date

CRON Schedule *

Jobs

Job Id	Job Name
2	jobtest

The triggered jobs can be viewed on the *Job Trigger Logs* tab.

Home | Manage Jobs | Job Trigger Logs

Delete Refresh

Trigger Id	Job Name	Time Stamp
700000037	demo	Thu Apr 14 2016 12:42:10 GMT+0530 (India Standar...
700000038	demo	Thu Apr 14 2016 12:42:10 GMT+0530 (India Standar...

7.4 User CRUD

This application illustrates how to manage users in the system. The implementation of the User CRUD service is in Node.js. It performs CRUD operations on the database container - **user-db**.

This application can be used for the following operations:

- Create a new user
- Update an existing user
- View all existing users
- Delete an existing user

Note: The Java implementation in SHINE based on OData v4 support for XS Advanced Java application has been removed. The recommended way to build Java applications that use OData v4 is now based on the SAP Cloud Application Programming Model, which is described in more detail in [Working with the SAP Cloud Application Programming Model](#).

To find new ways of implementing oData v4 in Java, please refer to <https://github.com/SAP/hana-shine-apm/tree/hana-shine-apm-java>.

New User Record Details ? -

First Name

Last Name

Email

Create users with batch request ?

Users

?

UserId	FirstName	LastName	Email
No data			

In order to create a new user, the *First Name*, *Last Name* and *Email* should be provided in the top left-hand side of the screen. After filling in the details, the user needs to choose the *Create Record* button. *First Name*, *Last Name* and *Email* are mandatory parameters.

New User Record Details ? -

First Name

Last Name

Email

Create users with batch request ?

Users

?

UserId	FirstName	LastName	Email
No data			

Once the user has been successfully created, the details of all the users are displayed in the table below.

Users

Delete User ?

UserId	FirstName	LastName	Email
1	John	Doe	john.doe@sap.com
2	Harry	Potter	hp@sap.com
3	Ronald	Weasley	rw@sap.com
4	Hermione	Granger	hg@sap.com

To modify an existing user, you can directly modify the text element in the table (example, the First Name, Last Name or Email). Once you have modified the values, you can trigger an update by pressing the Enter key or by clicking anywhere else on the UI.

New User Record Details ?

First Name

Last Name

Email

Create users with batch request ?

Users

Delete User ?

UserId	FirstName	LastName	Email
1	John	Doe	john.doe@sap.com
2	Harry	Doe	hp@sap.com
3	Ronald	vweasley	rw@sap.com
4	Hermione	Granger	hg@sap.com

To delete an existing user, click on the left-most column of the record that you wish to delete and once that record is highlighted, click on the *Delete User* button on top of the *User* table. This will trigger a delete request which will delete the selected user.

Users

Delete User ?

Userld	FirstName	LastName	Email
1	John	Doe	john.doe@sap.com
2	Harry	Potter	hp@sap.com
3	Ronald	Weasley	rw@sap.com
4	Hermione	Granger	hg@sap.com

The Node.js implementation of the service also provides the functionality for creating users via oData batch. This functionality is only present in the Node.js implementation of the User CRUD. To access this feature, the end user has to select the Node.js implementation and then click on the *Create Users with Batch Request* button.

New User Record Details ?

First Name

Last Name

Email

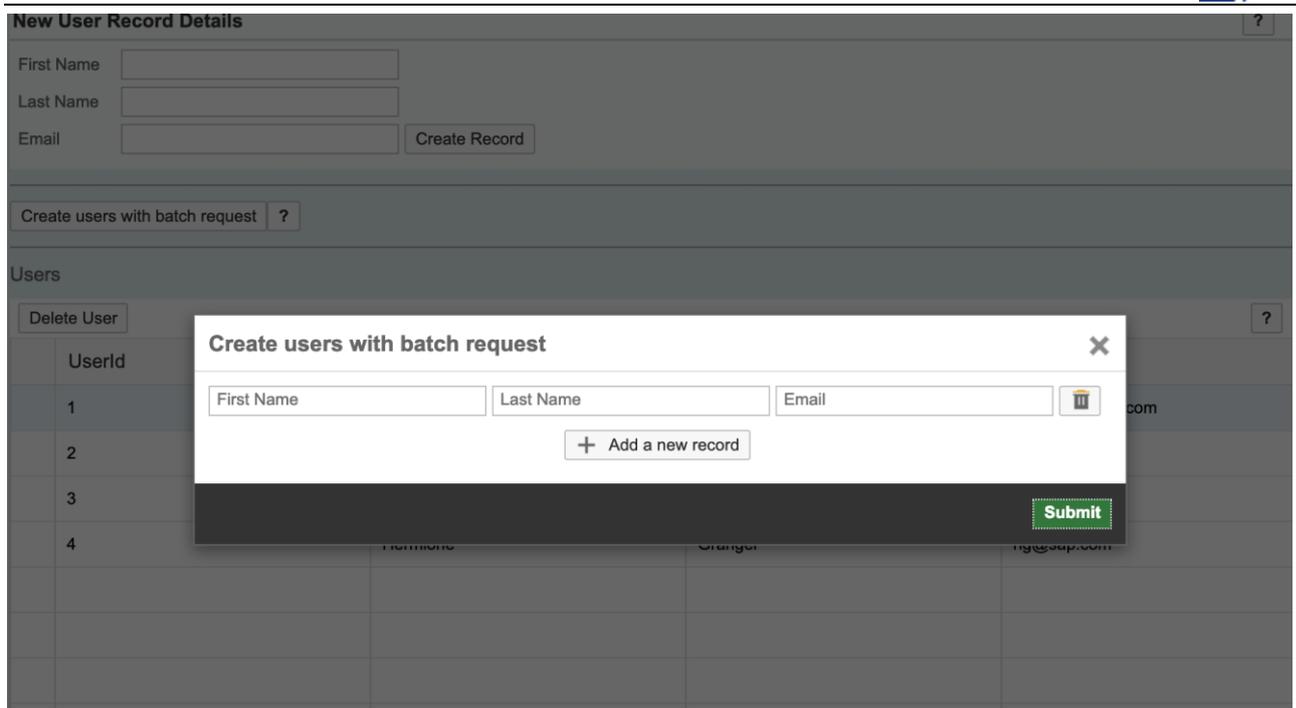
Create users with batch request ?

Users

Delete User ?

Userld	FirstName	LastName	Email
1	John	Doe	john.doe@sap.com
2	Harry	Potter	hp@sap.com
3	Ronald	Weasley	rw@sap.com
4	Hermione	Granger	hg@sap.com

Once the user clicks on the button, the end user can create multiple records and submit them via one single request.



7.5 Sales Dashboard

The Sales Dashboard application shows the analytical view of the sales orders created by the company ITELO (such as Sales by Region, Sales by Country, Compare Product Category Sales Year on Year and so on). Based on the analytical inputs, the Sales Manager can make decisions or take the necessary actions for the company.

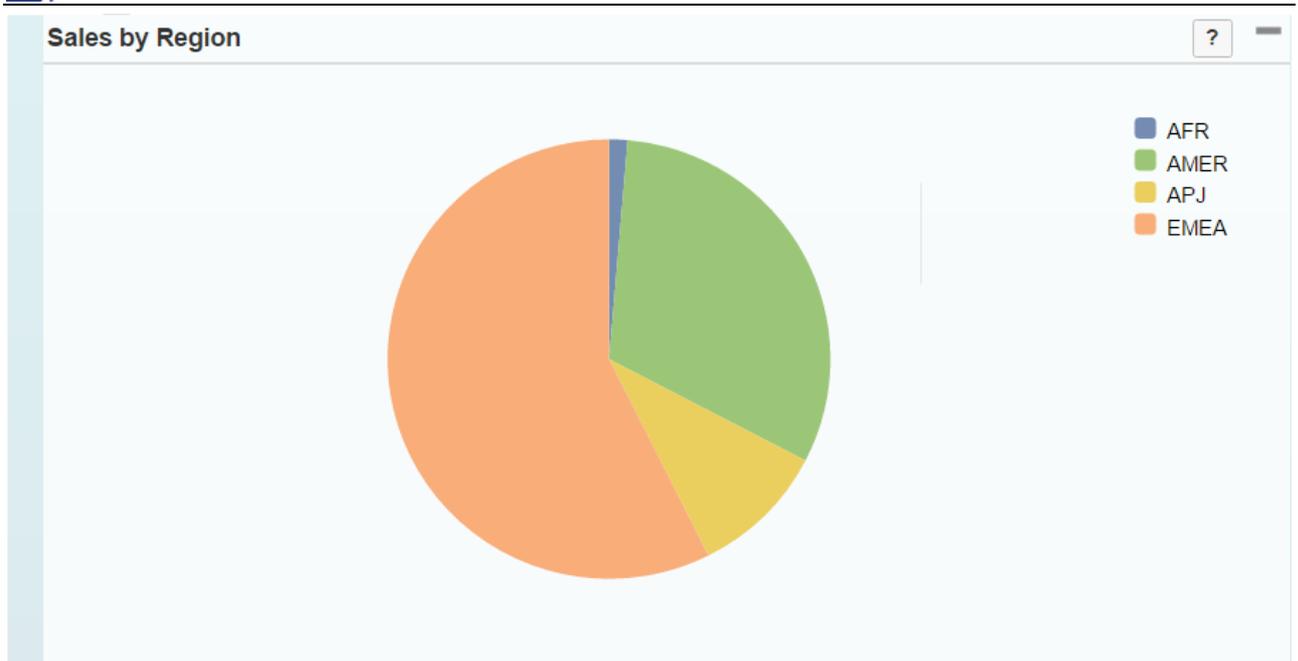


This Sales Dashboard provides a comprehensive dashboard concept that contains several charts based on the OData model constructed in the demo content. You can see sales-specific charts based on Region/Country/Discount per region and charts that provide sales information categorized by product.

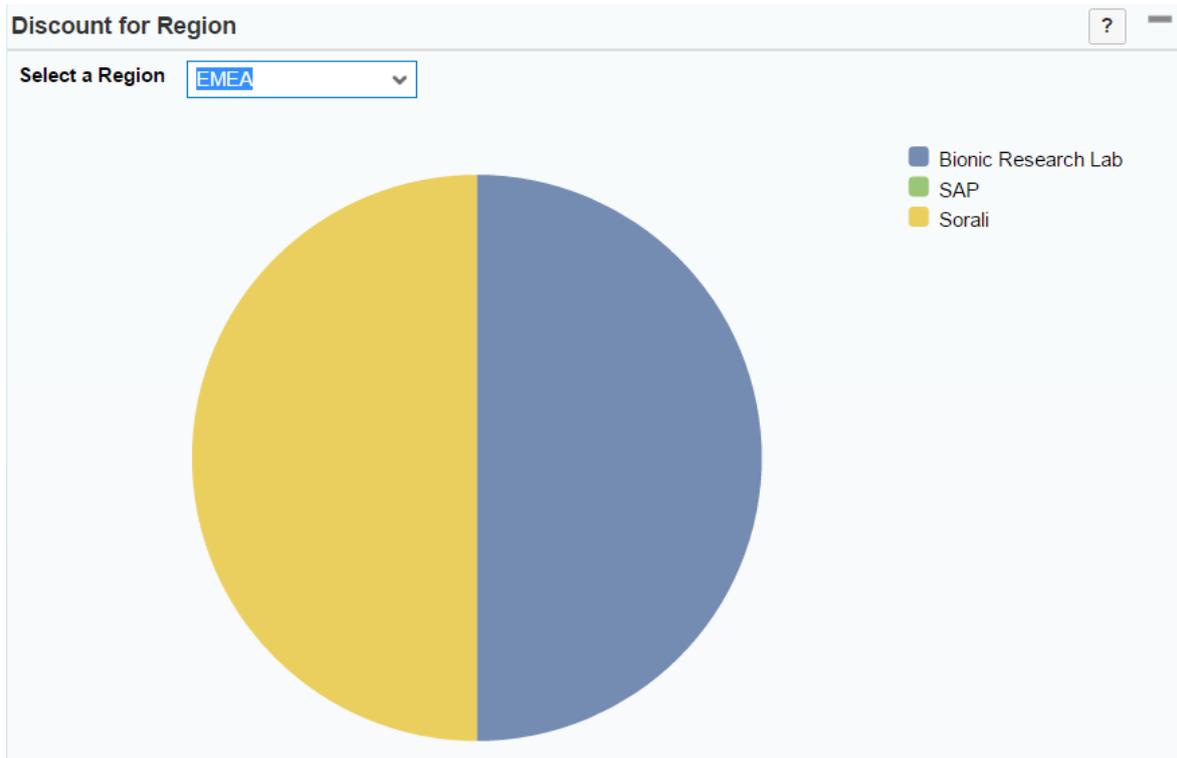
This application can be used to:

Overview Tab:

- Find the total sales for all regions and by country.

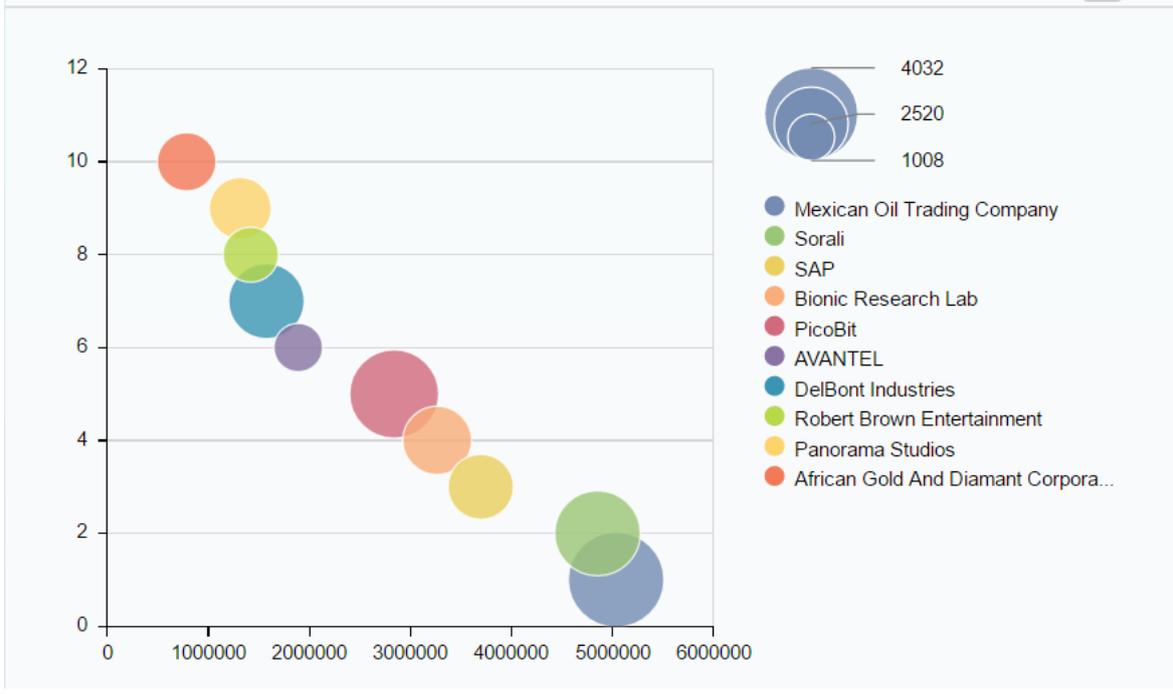


- Find the discount for the companies across a region based on the amount of sales, sales ranking, amount of orders, and order rankings



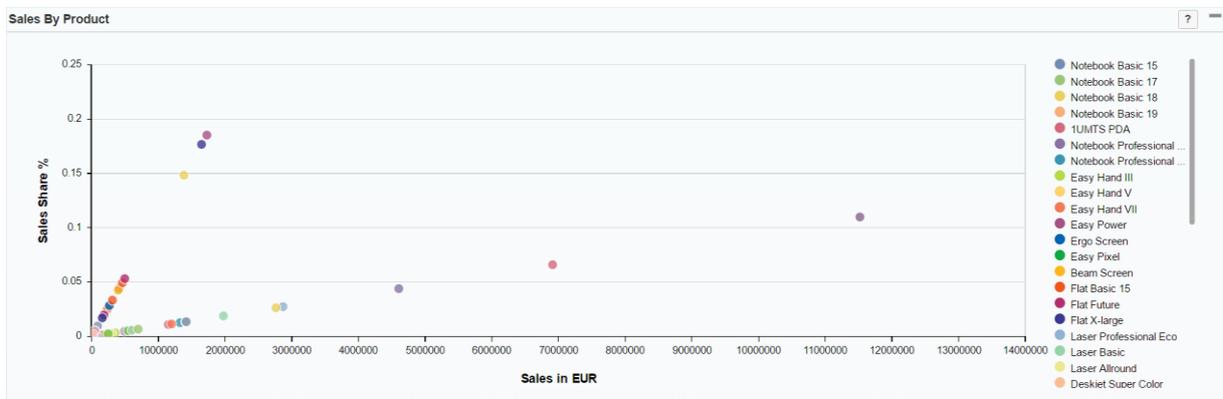
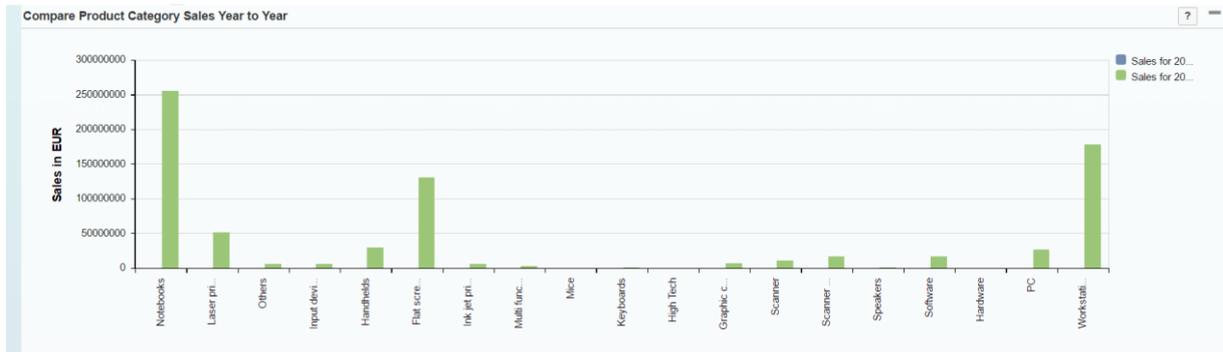
Sales Rank

? -



Product Reports Tab:

- The charts *Compare Product Category Sales Year to Year* and *Sales by Products* are displayed



Details Tab:

- View the list of sales orders and choose a particular order to see the *General Data* and *Sales Order* items related to it, displayed in separate tabs
- Perform operations such as searching for sales orders based on various attributes, including *Company Name*, *Product ID*, and so on
- Create a new sales order
- Delete an existing sales order

Sales Orders (11,029)

Sales Order ID	Partner ID	Company	City	Gross Amount	Tax Amount	Currency
500011028	100000038	Bionic Research...	Bühl	11379.97	1816.97	EUR
500011027	100000037	PicoBit	New York City	411.50	65.70	EUR
500011026	100000042	Siwusha	Shanghai	521.22	83.22	EUR
500011025	100000036	African Gold An...	Johannesburg	114.24	18.24	EUR
500011024	100000044	Sorali	Karlsruhe	113032.74	18047.24	EUR
500011023	100000043	Danish Fish Tra...	Kopenhagen	6543.80	1044.80	EUR
500011022	100000038	Bionic Research...	Bühl	871.55	139.15	EUR
500011021	100000036	African Gold An...	Johannesburg	178.14	28.44	EUR
500011020	100000041	South American ...	Cordoba	803.25	128.25	EUR
500011019	100000042	Siwusha	Shanghai	530.62	84.72	EUR

Sales Order Items

Sales Order...	Product	Product Name	Quantity	Quantity Unit	Net Amount	Tax Amount	Currency
30	HT-1106	Smart Firewall	1.000	EA	34.00	6.46	EUR
10	HT-1104	Smart Games	3.000	EA	165.00	31.35	EUR
20	HT-1105	Smart Internet ...	3.000	EA	87.00	16.53	EUR
40	HT-1107	Smart Money	2.000	EA	59.80	11.36	EUR

7.6 Spatial



The use of SHINE Spatial Demo requires certain voluntary map content and base map services provided by third-party service providers (“Third-Party Map Services”). We may facilitate your use of the Third-Party Map Services by providing hyperlinks or other methods to aid your access to and use of such third-party services. While we endeavor to direct you to helpful, trustworthy third-party services, we cannot endorse, approve, or guarantee the software, information, products, or services provided by such third parties. You shall determine the accuracy, completeness, timeliness, fitness for a particular purpose, appropriateness and lawfulness for your use of any Third-Party Map Services in connection with the SHINE Spatial Demo, and we are not liable for any loss or damage resulting from your use of, or any failure of, such Third-Party Map Services. In particular, local laws and regulations may stipulate certain requirements or restrictions relating to Third-Party Map Services. Please assess if such Third-Party Map Services is in compliance with local laws and regulations before you decide to activate or use the SHINE Spatial Demo.

Customers who have licensed SAP HANA (SAP HANA PLATFORM EDITION, SAP HANA ENTERPRISE EDITION, SAP HANA BASE EDITION with the SAP HANA SPATIAL OPTION, or derived licenses thereof), or SAP HANA EXPRESS EDITION can use the voluntary map content and base map services (spatial map client, geo-content, spatial content viewer) provided by HERE. These additional services and content are provided by SAP voluntarily and can be withdrawn, postponed, or suspended at any time. Customers who have licensed SAP HANA (SAP HANA PLATFORM EDITION, SAP HANA ENTERPRISE EDITION, SAP HANA BASE EDITION with the SAP HANA SPATIAL OPTION, or derived licenses thereof) or SAP HANA EXPRESS EDITION can use this voluntary map content and base map services at no additional fee or license cost. For more information, see also SAP Note [2091935](#) - SAP HANA Spatial

Spatial data is data that describes the position, shape, and orientation of objects in a defined space. Spatial data is represented as 2-dimensional (2D) geometries in the form of points, line strings, and polygons.

Two common operations performed on spatial data are calculating the distance between geometries and determining the union or intersection of multiple objects. These calculations are performed using predicates such as intersects, contains, and crosses. The spatial data documentation assumes you already have some familiarity with spatial reference systems and with the spatial data you intend to work with. The software provides storage and data management features for spatial data, allowing you to store information such as geographic locations, routing information, and shape data. These pieces of information are stored as points and various forms of polygons and lines in columns defined with a corresponding spatial data type (such as `ST_Point` and `ST_Polygon`). You use methods and constructors to access and manipulate the spatial data. The software also provides a set of SQL spatial functions designed for compatibility with other products.

Spatial data support allows you to associate spatial information with your data. For example, a table representing companies could store the location of the company as a point, or it could store the delivery area for the company as a polygon. This could be represented in SQL as:

```
SELECT * FROM Locations WHERE DeliveryArea.ST_Contains( new ST_POINT(1,1) ) = 1
```

7.6.1 Spatial Demo

Obtain Your Authorization Key from HERE Maps

Use HERE maps as a showcase for this demo scenario. HERE maps APIs require some authorization that you can obtain after you register from their Web site. You need to obtain the `App_Id` and `App_Code` for an Evaluation Key to perform the tasks in this scenario successfully. This `App_id` and `App_Code` is stored in HANA secure store.

1. Use the following URL to obtain the *Evaluation Key*.
<http://developer.here.com/get-started>
2. Look for "Free Trial" or select a specific plan suiting your requirements.
3. Follow the instructions on the Web page.
4. Make a note of the `App_Id` and `App_Code` for later use.

7.6.2 Spatial Query Used

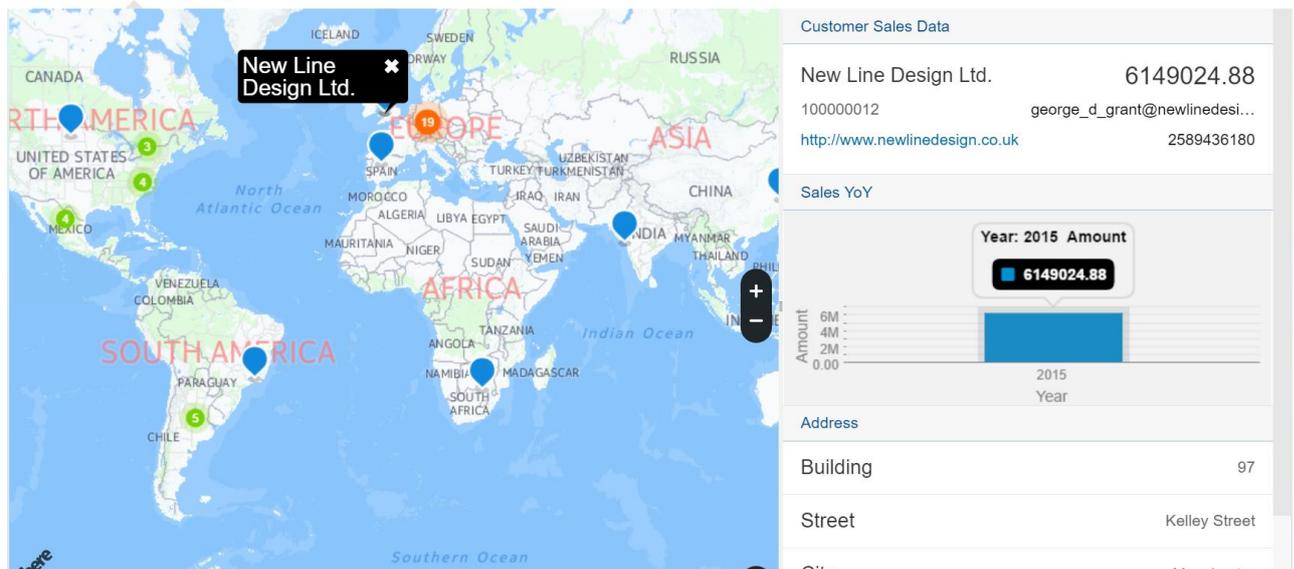
The spatial query uses Business Partner data from the "MD.BusinessPartner" table in SHINE master data. The addresses are stored in the "MD.Addresses" table.

The Addresses table has been modified to include latitude and longitude information for each address.

Using the geographical (Geo) information, all the business partners are plotted on the world map.

Additionally, the address data is used with the clustering feature to provide an overview of partners in a region.

BUSINESS PARTNERS DETAIL SALES ANALYSIS PRODUCT SALES



Sales Analysis Scenario

Use the Geo information to perform simple analysis over a particular region.

In this scenario you can use the boundaries provided by the HERE map that you select or you can mark the points that you want to see and create a polygon on that map. Using these boundaries, you can calculate the business partners that lie within this area with a select statement, for example:

```
select STREET, NEW ST_Point(LATITUDE, LONGITUDE).ST_Within( NEW
ST_Polygon('Polygon((0.0 0.0,90.0 0.0, 90.0 90.0, 0.0 90.0, 0.0 0.0))') ) AS
IS_INSIDE from "MD.Addresses"
```

Subsequently, use the REGION_SALES_BP analytical model to find the sales data for this region.

Additionally, you can query the top five customers in this region. The results appear as shown in the following screen shot.

BUSINESS PARTNERS DETAIL SALES ANALYSIS PRODUCT SALES

Remove Polygon	
Sales data for selected region	
Total Sales Amount	22025918.64 EUR
Sales YoY	
Year: 2015 Amount	
Top Five Customers	
Vente Et Réparation de Ordinateur S.A.R.L.	6340119.36 EUR
100000026	
New Line Design Ltd	6140024.88

Heat Map Scenario

In this scenario, you plot the sales of the products around the world with the weight of their quantities sold. This allows you to plot a heatmap and see the areas where a particular product is sold more. The analysis is done through the PRODUCT_SALES analytic view, which links Addresses, Sales Order Header and Sales Order Items table with the Products table. By doing this, you can map the location for a Sales Order Item and the quantity sold. The following image provides an example of this.

BUSINESS PARTNERS DETAIL SALES ANALYSIS PRODUCT SALES

Choose a Product

ADSL progress T1

Yearly sales for this product

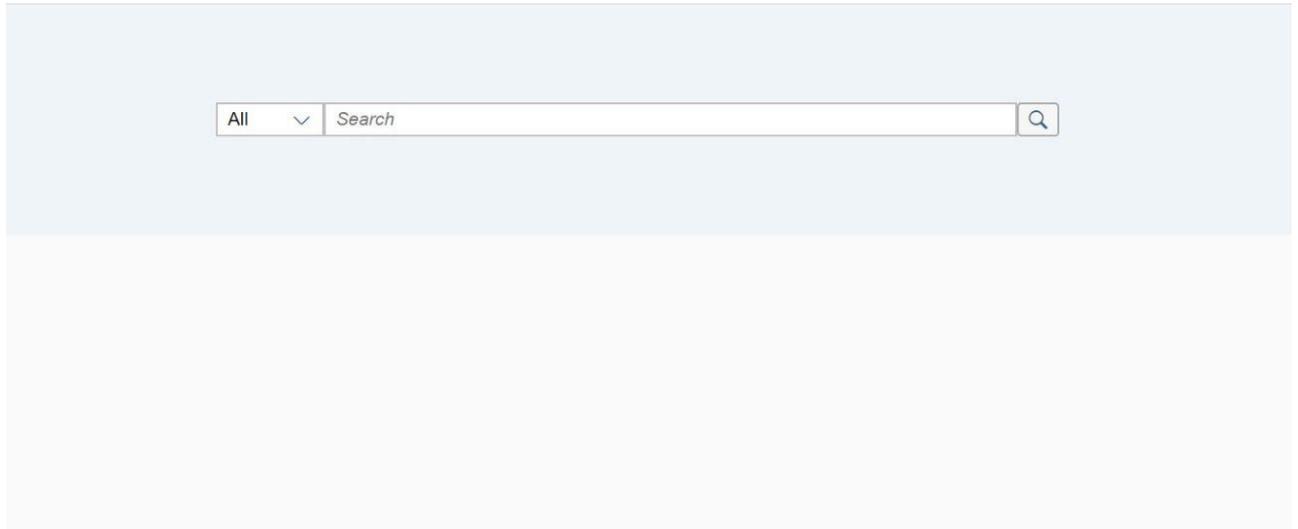
Year	Amount
2014	
2015	447678.00

7.7 Full-Text Search

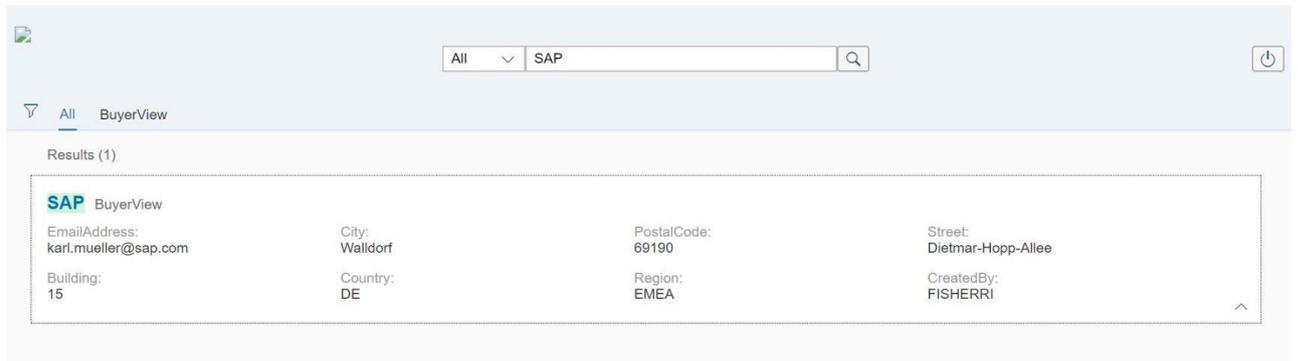
SAP Search UI on HANA provides an easy way to perform full text search on content stored in tables or exposed via views. Just like searching on the Internet, full-text search finds terms irrespective of the sequence of characters and words.

In this scenario search is performed on the Product categories and also on the business partners.

As you can see below, the UI is very simple with a drop-down list (with a list of search views) and a text field where the end users can enter search terms.



You can search for a specific keyword or you enter a wildcard character like '*' to search through all the data. The result set will be displayed in list format. The format can be changed to a table display.



BuyerView

All productTexts BuyerView

Results (39)

Company	EmailAddress	City	PostalCode	Street
SAP	karl.mueller@sap.com	Walldorf	69190	Dietmar-Hopp-Allee
DelBont Industries	maria.brown@delbont.com	Wilmington Delaware	19899	1 2345 King Street
Talpa	saskia.sommer@talpa-hannover.de	Hannover	30625	An der Breiten Wiese

The results can be filtered further by company name and by product category.

BuyerView

All BuyerView 2

Filter By

Company Name

- AVANTEL 1
- African Gold And Diamant C... 1
- Alpine Systems 1
- Anav Ideon 1
- Angéré 1

Show More

Results (2)

Company	EmailAddress	City	PostalCode	Street	Building	Country	Region	CreatedBy
Anav Ideon	theodor.monathy@anavideon....	Bismarck North Dakota	58501	Franklin Ave	153	US	AMER	FISHERRI
Angéré	amelie.troyat@angere.fr	Paris	75018	Rue de Rivoli				

productTexts

All productTexts 9

Filter By

CATEGORY

- Others 13
- Notebooks 10
- Flat screens 9
- Software 8
- Electronics 5

Show More

Results (9)

Product	TEXT
Flat screens	Ergo Screen
Flat screens	Easy Pixel
Flat screens	Beam Screen
Flat screens	Flat Basic 15

7.8 Fiori elements in User CRUD

This application illustrates the usage of Fiori Elements in the user CRUD. The implementation of the User CRUD service is in XSODATA. This service implementations perform CRUD operations on the database container, the user-db. Here in this scenario we are using Fiori Elements List Report.

This application can be used for the following operations:

- Create a new user
- Update an existing user
- Delete an existing user

In order to create a new user, click on the *Create* button on the top of *Users* table. The *First Name*, *Last Name* and *Email* should be provided by the user. After filling in the details, choose the *Create* button.

The screenshot shows the SAP Fiori User CRUD application interface. At the top, there is a navigation bar with the SAP logo and the title 'User Crud'. Below the navigation bar, there is a header area with 'Standard' and a 'Go' button. The main content area displays a table with the following data:

UserID	First Name	Last Name	Email
1	Bismay Kumar	Biswal	bismay@sap.com

Buttons for 'Create', 'Delete', and 'Settings' are visible above the table.

The screenshot shows the 'Create New User' dialog form. It contains the following fields:

- *First Name:** A text input field with a dotted border.
- *Last Name:** A text input field.
- *Email:** A text input field.

At the bottom of the dialog, there are two buttons: 'Create' and 'Close'.

Once the user has been successfully created, the details of all the users are displayed in the smart table with the message "User created successfully".

Standard ▾ Adapt Filters Go

Users (2) | Standard ▾ Create Delete ⚙️

UserID	First Name	Last Name	Email
<input type="radio"/> 1	Bismay Kumar	Biswal	bismay@sap.com
<input type="radio"/> 3	uday	kumar	uday.kumar@xyz.com

User created successfully

To edit the user details, select the user you want to edit. The user details are displayed. Click on *Edit* in the top right-hand corner and update the user details (example, *First Name*, *Last Name* or *Email*). Once you have modified the values, you can save the record by pressing the *Save* button.

1 Edit Delete ↗️

User Information

First Name:
Bismay Kumar

Last Name:
Biswal

Email:
bismay@sap.com

1 Delete ↗️

User Information

User Information

First Name:

Last Name:

Email:

Save Cancel

To delete an existing user, select the radio button next to the record that you wish to delete and click on the *Delete* button.



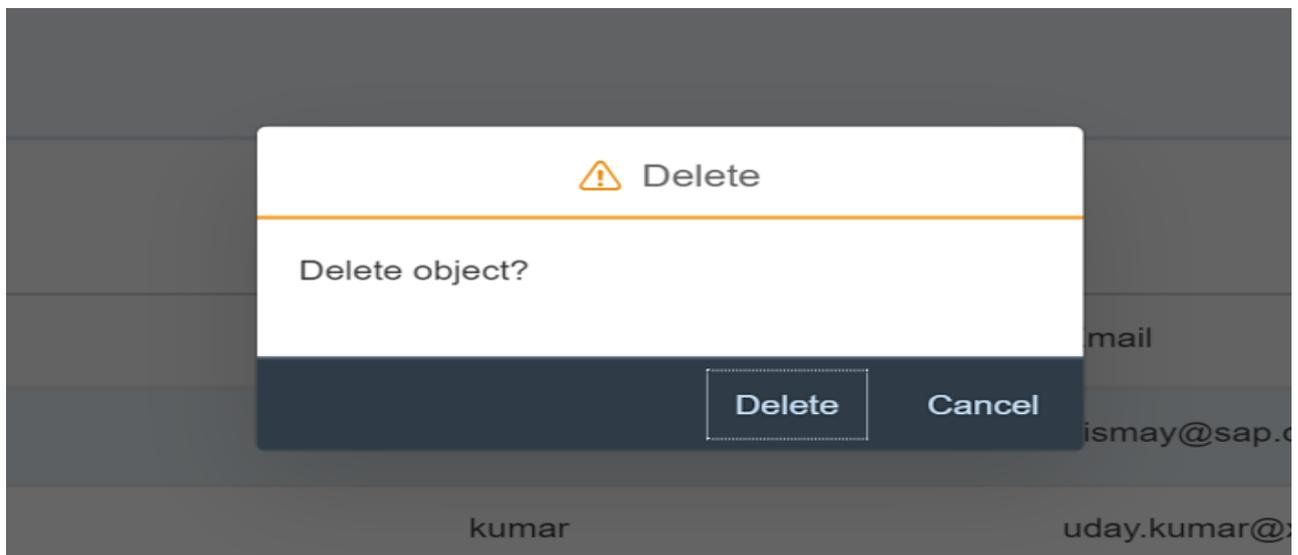
Standard ▾

Adapt Filters **Go**

Users (2) | Standard ▾ Create **Delete** ⚙️

UserID	First Name	Last Name	Email
<input checked="" type="radio"/> 1	Bismay Kumar	Biswal	bismay@sap.com
<input type="radio"/> 3	uday	kumar	uday.kumar@xyz.com

A *Delete* popup will appear, press *Delete* to confirm. This will trigger a delete request which will delete the selected user.



8 Tutorials

8.1 Fiori Elements

The essential steps to create a Fiori Element List Report are:

- Prepare the OData service
- Prepare the UI Annotations
- Create a Fiori App using the Fiori Elements List Report template

Note that the easiest way to create the Fiori App is by using the SAP HCP Web IDE (or Personal Web IDE) and the List Report (formerly Smart Template) Application wizard. However, it is possible to create your UI application manually in any text editor once you know what is required.

8.8.1 Prepare the OData Service

First and foremost, we prepare the OData service that will extract user data from the database (user-db) to be displayed in our List Report app.

When designing the OData service it is worth considering what features we want to support in our List Report. Is it just a read-only list or should we include some CRUD (Create, Read, Update, Delete) features? Here we have used XSODATA exit modifications for the CRUD operation.

To create the OData service:

1. Define a XSA CDS view to extract the data for the List Report.
2. Test the CDS view.
3. Expose the CDS view as an OData service –

```
1 service namespace "sap.hana.democontent.epm.services" {
2   "UserViews.UserHeader" as "Users" keys("UserId") concurrencytoken ("FirstName", "LastName","Email")
3   delete using "user.xsjs:userExit.xsjslib::my_delete_after_exit"
4   update using "user.xsjs:userExit.xsjslib::my_update_after_exit";
5 }
```

4. Test the OData service.

8.8.2 Prepare the UI Annotations

While creating the annotations, it can be placed directly into the CDS views or annotations file can be generated using annotation modeler. Here in our case we have created the annotations using annotation modeler using SAP HCP Web IDE

The annotation file will look like this

```

<Schema xmlns="http://docs.oasis-open.org/odata/ns/edm" Namespace="UserCrud.userExt.xsodata">
  <!--=====
  Entity Type from chosen collection
  =====>
  <Annotations Target="sap.hana.democontent.epm.services.UsersType">
    <Annotation Term="UI.Identification">
      <Collection>
        <Record Type="UI.DataField">
          <PropertyValue Property="Value" Path="FirstName"/>
          <PropertyValue Property="Label" String="{@i18n&gt;FIRST_NAME}"/>
        </Record>
        <Record Type="UI.DataField">
          <PropertyValue Property="Value" Path="LastName"/>
          <PropertyValue Property="Label" String="{@i18n&gt;LAST_NAME}"/>
        </Record>
        <Record Type="UI.DataField">
          <PropertyValue Property="Value" Path="Email"/>
          <PropertyValue Property="Label" String="{@i18n&gt;EMAIL}"/>
        </Record>
      </Collection>
    </Annotation>
  </Annotations>

```

The DataField complex type is used to define the data for a column within the smart table

```

<Annotation Term="UI.LineItem">
  <Collection>
    <Record Type="UI.DataField">
      <PropertyValue Property="Value" Path="UserId"/>
      <PropertyValue Property="Label" String="{@i18n&gt;USERID}"/>
      <Annotation Term="UI.Importance" EnumMember="UI.ImportanceType/High"/>
    </Record>
    <Record Type="UI.DataField">
      <PropertyValue Property="Value" Path="FirstName"/>
      <PropertyValue Property="Label" String="{@i18n&gt;FIRST_NAME}"/>
    </Record>
    <Record Type="UI.DataField">
      <PropertyValue Property="Value" Path="LastName"/>
      <PropertyValue Property="Label" String="{@i18n&gt;LAST_NAME}"/>
    </Record>
    <Record Type="UI.DataField">
      <PropertyValue Property="Value" Path="Email"/>
      <PropertyValue Property="Label" String="{@i18n&gt;EMAIL}"/>
    </Record>
  </Collection>
</Annotation>
<Annotation Term="UI.HeaderInfo">
  <Record Type="UI.HeaderInfoType">
    <PropertyValue Property="TypeName" String="{@i18n&gt;USER}"/>
    <PropertyValue Property="TypeNamePlural" String="{@i18n&gt;USERS}"/>
    <PropertyValue Property="Title">
      <Record Type="UI.DataField">
        <PropertyValue Property="Value" Path="UserId"/>
      </Record>
    </PropertyValue>
  </Record>
</Annotation>

```

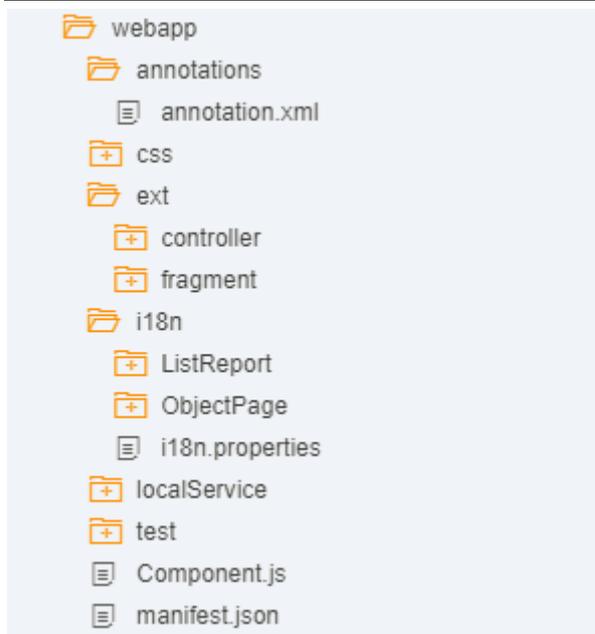
the UI.LineItem vocabulary term is used to define the columns for the smart table.

General annotation for the List Report Header

8.8.3 Create a Fiori App using the List Report template

The simplest way to do this is to generate the app using the List Report Application wizard in the SAP HCP Web IDE. And it can also be done manually if the folder structure is known.

The folder structure looks as follows:



Taking a close look also at the manifest.json file, we see the annotations files have been added as “data sources”. As usual, the i18n properties files are listed as “models”.

```

    "dataSources": {
      "mainService": {
        "uri": "/UserCrud_fiori_elements/user/xsodata/userView.xsodata/",
        "type": "OData",
        "settings": {
          "annotations": [
            "annotation"
          ],
          "localUri": "localService/metadata.xml"
        }
      },
      "annotation": {
        "uri": "annotations/annotation.xml",
        "type": "ODataAnnotation",
        "settings": {
          "localUri": "annotations/annotation.xml"
        }
      }
    },
  },

```

The real magic of a Fiori Element app is in the “sap.ui.generic.app” section (which you will find after the “sap.ui5” section).

```

"sap.ui.generic.app": {
  "pages": [
    {
      "entitySet": "Users",
      "component": {
        "name": "sap.suite.ui.generic.template.ListReport",
        "list": true,
        "settings": {
          "smartVariantManagement": true,
          "selectionVariantManagement": true,
          "enableAutoBinding": true
        }
      },
    },
    {
      "entitySet": "Users",
      "component": {
        "name": "sap.suite.ui.generic.template.ObjectPage"
      }
    }
  ]
}
},

```

This is where the List Report and Object Page dynamic templates are applied to our app. At runtime, the app applies these dynamic templates to the annotations in our project (including the ones we inherited from our OData Service) to generate a working, high quality, production-ready, SAPUI5 app.

Controller or Views can be extended in the Fiori elements List Report. Here create action controller is extended.

```

"extends": {
  "extensions": {
    "sap.ui.controllerExtensions": {
      "sap.suite.ui.generic.template.ObjectPage.view.Details": {
        "controllerName": "UserCrudListReport.ext.controller.ListReportExt"
      },
      "sap.suite.ui.generic.template.ListReport.view.ListReport": {
        "controllerName": "UserCrudListReport.ext.controller.ListReportExt",
        "sap.ui.generic.app": {
          "Users": {
            "EntitySet": "Users",
            "Actions": {
              "ActionPOHeader1": {
                "id": "createUserButton",
                "text": "Create",
                "press": "newUser"
              }
            }
          }
        }
      }
    }
  }
}
},

```

9 FAQ

1. The SHINE installation fails with the message:
SHINE version is already installed or cannot be downgraded.

Reinstall SHINE with the **ALLOW_SAME_ORIGIN** or **ALLOW_SC_DOWNGRADE** flag respectively.

```
xs install XSACSHINE07_<version.no>.ZIP -e sap-xsac-shine-1.8.xx.mtaext -o
ALLOW_SAME_VERSION

xs install XSACSHINE07_<version.no>.ZIP -e sap-xsac-shine-1.8.xx.mtaext -o
ALLOW_SC_DOWNGRADE
```

2. If the SHINE installation fails with the message:
String is too short (0 chars), minimum 1.

Install the latest version of **XSAC_PORTAL_SERVICES** and reinstall SHINE.

```
3/9/17 8:03:18.331 AM [APP/1-0] SYS #2.0#2017 03 09 08:03:18:331#00:00#INFO#toggles.js#####PLAIN##Send request for toggles to: https://mo-2fb6625be.mo.sap.corp:51011/v1/toggles#
3/9/17 8:03:18.407 AM [APP/1-0] SYS #2.0#2017 03 09 08:03:18:406#00:00#INFO#server.js#####PLAIN##Toggles: {}#
3/9/17 8:03:18.423 AM [APP/1-0] SYS #2.0#2017 03 09 08:03:18:423#00:00#INFO#server.js#####PLAIN##
3/9/17 8:03:18.423 AM [APP/1-0] SYS -----
3/9/17 8:03:18.423 AM [APP/1-0] SYS Strating server ...
3/9/17 8:03:18.423 AM [APP/1-0] SYS #
3/9/17 8:03:18.424 AM [APP/1-0] SYS #2.0#2017 03 09 08:03:18:424#00:00#INFO#server.js#####PLAIN##Support independent app toggle: undefined#
3/9/17 8:03:18.446 AM [APP/1-0] SYS #2.0#2017 03 09 08:03:18:445#00:00#INFO#approuter#####PLAIN##Application router version 2.6.1#
3/9/17 8:03:18.456 AM [APP/1-0] ERR /usr/sap/hana/shared/XSA/xs/app_working/mo-2fb6625be.mo.sap.corp/executionroot/ee342e8c-608a-4e10-884a-6d6c7d6dcb94/app/node_modules/@sap/approuter/lib/util9/
JsonValidator.js:30
3/9/17 8:03:18.457 AM [APP/1-0] ERR throw new VError('%s: %s',
3/9/17 8:03:18.457 AM [APP/1-0] ERR #
3/9/17 8:03:18.457 AM [APP/1-0] ERR VError: environment-destinations/4/url: String is too short (0 chars), minimum 1
3/9/17 8:03:18.457 AM [APP/1-0] ERR at JsonValidator.validate (/usr/sap/hana/shared/XSA/xs/app_working/mo-2fb6625be.mo.sap.corp/executionroot/ee342e8c-608a-4e10-884a-6d6c7d6dcb94/app/node_modules/@sap/approuter/lib/util9/JsonValidator.js:30:11)
3/9/17 8:03:18.457 AM [APP/1-0] ERR at Object.validateEnvDestinations (/usr/sap/hana/shared/XSA/xs/app_working/mo-2fb6625be.mo.sap.corp/executionroot/ee342e8c-608a-4e10-884a-6d6c7d6dcb94/app/node_modules/@sap/approuter/lib/configuration/validators.js:97:15)
3/9/17 8:03:18.457 AM [APP/1-0] ERR at loadDestinations (/usr/sap/hana/shared/XSA/xs/app_working/mo-2fb6625be.mo.sap.corp/executionroot/ee342e8c-608a-4e10-884a-6d6c7d6dcb94/app/node_modules/@sap/approuter/lib/configuration/env-config.js:39:14)
3/9/17 8:03:18.457 AM [APP/1-0] ERR at Object.load (/usr/sap/hana/shared/XSA/xs/app_working/mo-2fb6625be.mo.sap.corp/executionroot/ee342e8c-608a-4e10-884a-6d6c7d6dcb94/app/node_modules/@sap/approuter/lib/configuration/env-config.js:20:28)
3/9/17 8:03:18.457 AM [APP/1-0] ERR at Object.module.exports.load (/usr/sap/hana/shared/XSA/xs/app_working/mo-2fb6625be.mo.sap.corp/executionroot/ee342e8c-608a-4e10-884a-6d6c7d6dcb94/app/node_modules/@sap/approuter/lib/configuration.js:15:37)
3/9/17 8:03:18.457 AM [APP/1-0] ERR at bootstrap (/usr/sap/hana/shared/XSA/xs/app_working/mo-2fb6625be.mo.sap.corp/executionroot/ee342e8c-608a-4e10-884a-6d6c7d6dcb94/app/node_modules/@sap/
```

3. If the SHINE installation message fails with the message:
Error resolving merged descriptor properties and parameters: No configuration entries were found matching the filter specified in resource "sapui5-provider"

Install **XSAC_SAPUI5_FESV6** and version **>= 1.71.8** and reinstall SHINE.

```
validating and merging descriptors...
Detecting deployed MTA...
Deployed MTA detected
Collecting system parameters...
Deployed MTA version: 1.3.0
New MTA version: 1.3.0
Resolving properties and parameters in merged descriptor...
Error resolving merged descriptor properties and parameters: No configuration entries were found matching the filter specified in resource "sapui5-provider"
----- deploy service END -----
Error resolving merged descriptor properties and parameters: No configuration entries were found matching the filter specified in resource "sapui5-provider"
Error resolving merged descriptor properties and parameters: No configuration entries were found matching the filter specified in resource "sapui5-provider"
Installation of the component XSAC SHINE (sap.com) 1.3.0 failed during deployment.
Deployment of the MTA XSAC_SHINE 1.3.0 failed. Check SAP release information note [No release note provided] and analyze the issue. In case you need help, contact SAP support using the SAP component [No SAP component provided]
Installation of archive file(s) 'XSACSHINE03_0.ZIP' failed.
To see installation logs execute 'xs display-installation-logs 15737 -scv'.
com.sap.lm.sl.alm.core.monitor.ProcessException: Error resolving merged descriptor properties and parameters: No configuration entries were found matching the filter specified in resource "sapui5-provider"
Installation of the component XSAC SHINE (sap.com) 1.3.0 failed during deployment.
Deployment of the MTA XSAC_SHINE 1.3.0 failed. Check SAP release information note [No release note provided] and analyze the issue. In case you need help, contact SAP support using the SAP component [No SAP component provided]
xsasadm@mo-b4e59c772:/home/1302582/shine/assembly/target
```

4. While deploying SHINE using SAP WebIDE for SAP HANA, if the build of any module fails with the error message that looks as follows:
No compatible version found: @sap/jobs-client@1.1.1

Then open the package.json of the module which failed and change the version of the library shown in the error message to one of the correct versions also mentioned in the error message.

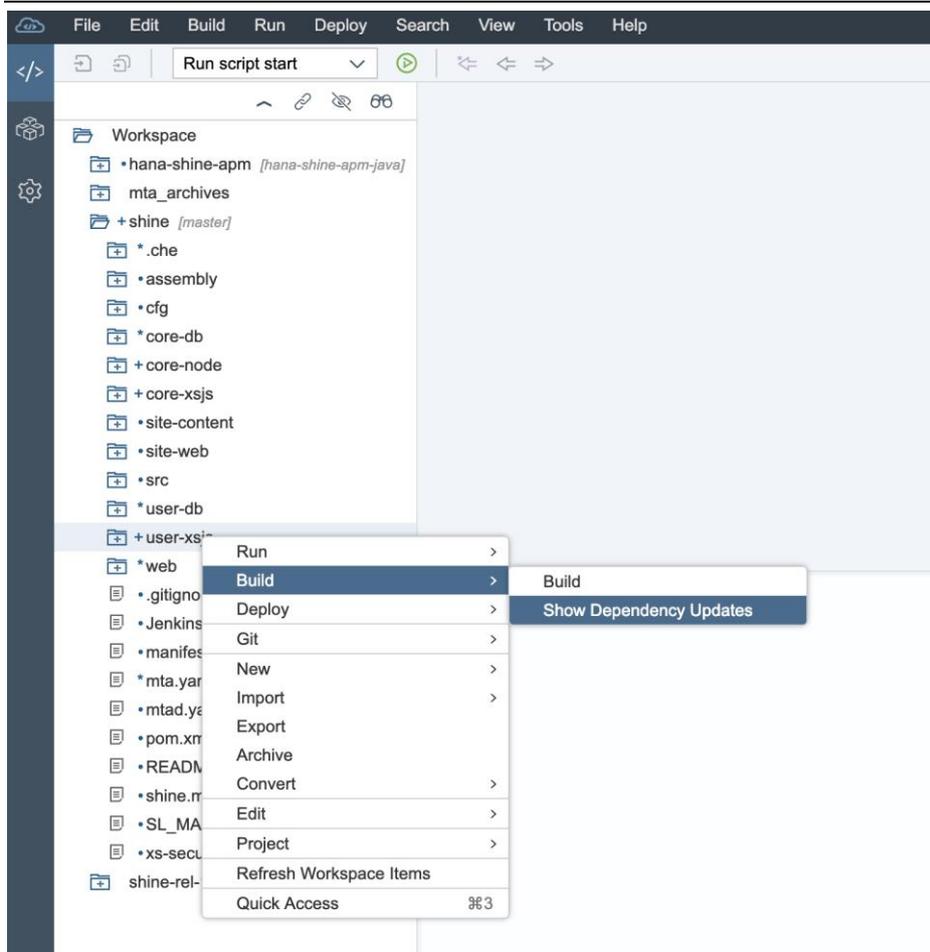
```
2:38:10 PM (DIBuild)
npm ERR! notarget No compatible version found: @sap/jobs-client@1.1.1
npm ERR! notarget Valid install targets:
npm ERR! notarget 1.1.0 Valid Version
npm ERR! notarget
npm ERR! notarget This is most likely not a problem with npm itself.
npm ERR! notarget In most cases you or one of your dependencies are requesting
npm ERR! notarget a package version that doesn't exist.
npm ERR! notarget
npm ERR! notarget It was specified as a dependency of 'user-js'
npm ERR! notarget
```

For example, in the above case the version of library @sap/jobs-client must be changed from 1.1.1 to 1.1.0.

```
npm ERR! notarget No compatible version found: express@4.14.1
npm ERR! notarget Valid install targets:
npm ERR! notarget 4.15.2, 4.14.0, 4.12.3
npm ERR! notarget
npm ERR! notarget This is most likely not a problem with npm itself.
npm ERR! notarget In most cases you or one of your dependencies are requesting
npm ERR! notarget a package version that doesn't exist.
npm ERR! notarget
npm ERR! notarget It was specified as a dependency of 'shine-core-js-backend'
npm ERR! notarget
```

In this case, the version of express should be changed from 4.14.1 to either 4.15.2 or 4.14.0 or 4.12.3.

You can also check the compatible versions of the libraries by right-clicking on the module and selecting “**Show dependency updates**”.



For a node.js module the dependencies will be shown like below:

```

5:18:44 PM (DIBuild) [INFO] Injecting source code into builder...
[INFO] Source code injection finished
[INFO] -----
cache found, retrieving node modules from cache

5:18:46 PM (DIBuild) "async": {
  "current": "1.4.0",
  "wanted": "1.4.0",
  "latest": "2.4.0",
  "location": "node_modules/async",
  "type": "dependencies"
},
"body-parser": {
  "current": "1.13.2",
  "wanted": "1.13.2",
  "latest": "1.17.1",
  "location": "node_modules/body-parser",
  "type": "dependencies"
},
"express": {
  "current": "4.14.0",
  "wanted": "4.14.0",
  "latest": "4.15.2".

```

More Information

[SAP HANA Developer Guide \(for SAP HANA XS Advanced Model\)](#)

[SAP HANA Application Lifecycle Management Guide](#)

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