Intro to Data Analysis using Datawarehouse & Business Intelligence

Training Document

IT Enterprise Applications

Data & Analytics Team
eis.kaust.edu.sa

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Objective

The objective of this Training Sessions is:

1) Users will be able to understand the purpose of the Functional Landscape of the Datawarehouse System and Business Intelligence (BI) Systems in KAUST.
2) Users will be able to access the BI Reporting Repository using the BI Launchpad.
3) Users will be able to know the usage of the various BI Reporting Tools.
4) Users will be able to create and publish simple reports to the Reporting Repository and view it on Desktop and Mobile.

Topics Covered

The following topics are covered in this Training Session:

1) Datawarehouse & Business Intelligence in KAUST
2) Data Flow Architecture
3) IT and Business Functions
4) System Landscape
5) Connection Routes to various Systems
6) BI Launchpad
7) Reporting Tools – Web and Client Based
8) References & Help

Introduction – BI Team

BI Team is part of IT Enterprise Applications and serves as the central hub for providing KAUST's information consumers with Enterprise Application Data, Tools, Services and Expertise.

- Data: The BI TEAM builds and maintains KAUST's enterprise data warehouse environments that include data from enterprise systems like SAP, Hobsons AY, Connect or any other Third Party Systems. This Datawarehouse includes Data Marts, ODS/Cubes for HR and Finance, Student data, etc.

- Tools: At the enterprise level, the BI TEAM supports the SAP BI Tools of reporting query tools and for visual analysis and dashboards.

- Services & Expertise: Navigating the various data resources and BI tools can be a daunting task, and the BI TEAM is here to help. Enterprise Data is our business, and we're working with the Business Data Analysis Community to enable to advance the state of Business Intelligence at KAUST.

How to Contact BI Team:

BI Team can be reached directly by sending an email to sap-bi@kaust.edu.sa and for any support related queries, you can send an email to IT helpdesk on ithelpdesk@kaust.edu.sa.

What is Datawarehouse & Business Intelligence in KAUST

- Datawarehouse:
  In KAUST, the Data Warehouse is the central repository of all the Enterprise Application Data. This data can be from the core SAP or non-SAP Transaction System like Hobsons Apply Yourself (Admissions) System or Alumni Connect System, for any relevant Business Processes. This Datawarehouse is used to fetch data from all these Transaction Systems and host it is one single repository and this data is made available for the Business Data Analysis Community for query and analysis purpose. This tool is managed by KAUST IT – BI Team.
- Business Intelligence:
  BI is short for Business Intelligence. BI is an umbrella that refers to a variety of Reporting Application software and systems used to analyze the raw data and generate meaningful reports and host it in the BI Reporting Repository. BI is the tool used by the Business Community.

  The bottom-line, using the Datawarehouse and BI together, is imperative to improve decision making, in the day to day operations or periodic managerial decisions and strategic decisions for all the Information Consumers. In all we will be using these two integrated systems that is the Datawarehouse & BI System to perform the data analysis and reporting functionalities.

General Terminology:

1. Business Intelligence (BI) Platform: This term is to denote the BI Repository, where all the content (Dashboard and Reports) created are hosted on a central platform, which is shared to authorized users for access and usage.

2. Connection: Connection is an object in the BI Reporting Repository which is used to connect in the Reporting Application (Tools to create Reports and Dashboards) to the Datawarehouse using a semantic layer.

3. Semantic Layer: Semantic layer is an interface between the Technical Datawarehouse and the Business Naming Convention. With this layer, the technical conventions will be mapped to the Business convention, so that is gives meaningful definition for Business Data Analysis Community.

4. Business Data Analysis Community: This is the group of the Users who use the Business Intelligence Platform and the Reporting Tools for building the Dashboard/Reporting content and distribute it to their respective leadership for the management Information and decision making. This group includes people from the respective Business and Management Department, who build the information content and who use the information content.

5. Information Content: Various Reports, Dashboards created and published on the BI Platform.

6. Dimensions: Dimensions are the business analysis objects which denote the Business or the managerial term. For Example, the Academic Dimensions are – Degree, Division, Program. The Finance Dimensions are – Company, Fiscal year, Accounts etc. Time Dimensions are Year, Quarter, Month, Week, etc.

7. Measures or Key Figures: Measures and Key Figures denote the same meaning and are used interchangeably. Measure or Key figure are the measurable attributes of the Dimensions, which are numeric in nature and can be aggregated based sum, count, average etc. Both Dimensions and Measures are required to generate a meaningful output based on the Business Data.

8. Filters: Filters are the exclusions which are done to the data to exclude the logical dimension values. For example we would want to analyze the Alumni Data only for Dec 2015, which means we will set the filter on the Dimension on "Year and month" to filter data only for Dec 2015.

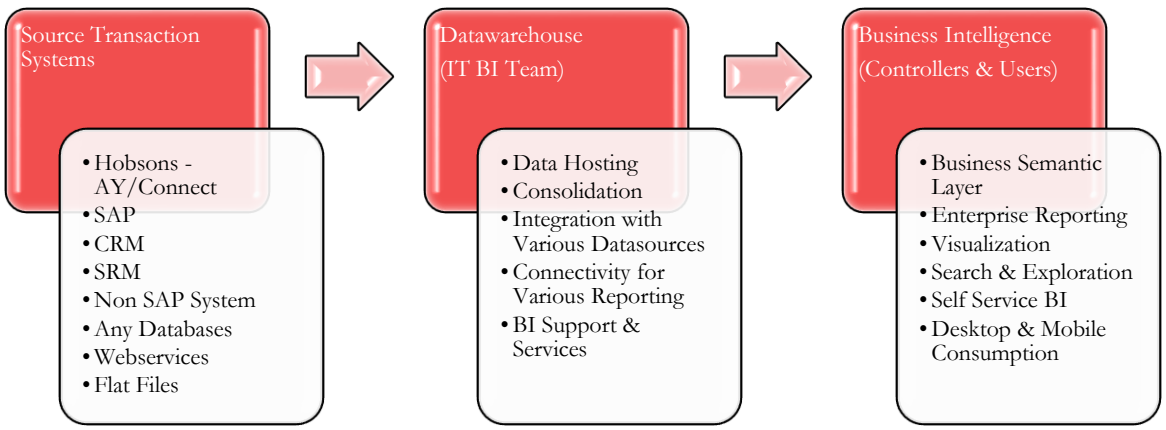
9. Schedule: The BI Platform provides a functionality to automatically refresh the report / dashboard data at specified times, periodically. This schedule can be defined by the Business Data Analysis Community as per their need. The Schedule also provides a functionality to refresh the data and deliver the report or dashboard output to various destination viz., BI Inbox, Email, FTP location etc.

10. Controllers: Controllers are a user community in the respective Business Department, who are authorized and responsible to create and publish Information Content (Dashboard and Reports) on the Business Intelligence Repository or Platform, based on the Data of their respective Department, as they are the experts in the Business Process of their Department and they understand the data generated by their Business Processes. Controllers create Information content and make this available to their Users, who can be their Management Leadership, for their decision making, Peers from other Departments or for General Communication of KAUST.

11. Users: This user group is a set of users, who use the Information Content created and published by the Controllers. They can access this information by taking the appropriate approvals from the Business Owners or Controllers to access the respective department data. They can view the Information Contents (Dashboards & Reports) and refresh the new data, however they will not be allowed to create a new content of their own.

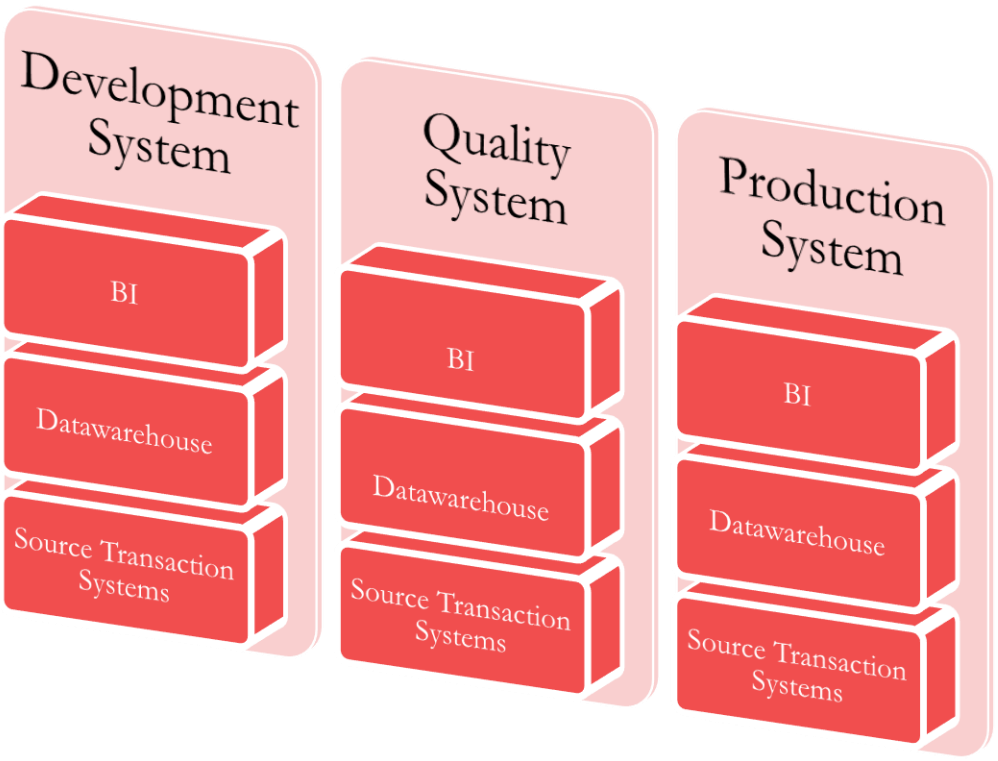
Functional Data Flow

Below is the high-level Data Flow with the Key Functions of the BI Community. The data from various Source systems is extracted in the Datawarehouse and further provided to Business Data Analysis Community for Analysis, Visualization, and Reporting.



System Landscape

In KAUST, we have three tire architecture for the Datawarehouse and BI System. All developments happen in the Development System and these are moved to Quality for Quality Testing assurance and after the acceptance from the respective Business Data Owners, this is moved to Production. Datawarehouse all developments happen in the Development System and after the Quality Testing, the objects are moved to the Production System. However due to the high volatility of the different reporting needs of reports and dashboards, Business Data Analysis Community, are provided to full control access to their content in the Production System.



Access & Connection Routes to various Systems

As per the required task in context, we will be connecting to the two integrated systems that is the Datawarehouse or BI System in either Development (Dev), Quality (QA) or Production (Prd) environment, using the various Reporting Tools either based on Web or Client Technology.

Security to these systems is designed and modeled to provide a full-fledged need based privileges to the Business Data Analysis Community to generate and consume the required Analysis Output for the Decision making purposes, via an integrated security model from Datawarehouse and the BI System.

Further in every Department, mostly there are two types of Users, First are the Controllers or the Super-users, who have this full access, as they build this content, and Second, are the Normal User community, who only consume the content created by the Controllers or the Super Users. Accordingly this basic two roles (Controllers & Users) are provided to Business to manage their reporting needs. These roles are assigned to the users based on the approvals from the respective Business Data Owners.

For accessing these systems, there are two types of Authentications provided:

1) Windows (Active Directory) Authentication
2) SAP Authentication

Below is the connection URL/host names for the various systems, which will be used in the various reporting tools:

Development System	Connection URL / Host &Client	Authentication
Datawarehouse	sthbmdm8dv / 250	Default only SAP
BI Launchpad	https://wthdbodsr01.kaust.edu.sa/BOE/BI/	Select Either - Windows AD/SAP
Mobile	http://wthdbodsr01.kaust.edu.sa:8080 CMS: WTHDBODSR01	Select Either - Windows AD/SAP
Web service (Only Design Studio or Analysis for Excel*)	http://wthdbodsr01:8080/dswsbobje/services/Session	Select Either - Windows AD/SAP

*only for Analysis Service if used

Quality System	Connection URL/Host	Authentication
Datawarehouse	sthbmqm8qa / 550	Default only SAP
BI Launchpad	https://wthqboqsr01.kaust.edu.sa/BOE/BI/	Select Either - Windows AD/SAP
Mobile	http://wthqboqsr01.kaust.edu.sa:8080 CMS: WTHQBOQSR01	Select Either - Windows AD/SAP
Web service URL (Only Design Studio or Analysis for Excel*)	http://wthqboqsr01:8080/dswsbobje/services/Session	Select Either - Windows AD/SAP

*only for Analysis Service if used

Production System	Connection URL/Host	Authentication
Datawarehouse	sthbmpsrcs / 950	Default only SAP
BI Launchpad	https://eis.kaust.edu.sa/BOE/BI/	Select Either - Windows AD/SAP
Mobile	https://eis.kaust.edu.sa CMS: WTHBOPSR01	Select Either - Windows AD/SAP
Web service URL (Only Design Studio or Analysis for Excel*)	http://eis.kaust.edu.sa:8080/dswsbobje/services/Session	Select Either - Windows AD/SAP

*only for Analysis Service if used

BI Launchpad

BI Launchpad is the gateway for the entire Reporting Repository or the content created and published by the Business Data Analysis Community. You can use the BI Launchpad to access the reports / dashboards created and published on the BI Platform. BI Launchpad is referred as BI Platform when we refer any action of publishing content in/to BI Launchpad. This is a web based application, and is the main interface for working with the contents on the BI Repository.

Some of the main features of BI Launchpad are:

1) You can create and publish reporting objects.
2) These reporting objects can be scheduled (refreshed) periodically, automatically.
3) Output of the schedule can be targeted to various destinations, BI Inbox, Email, FTP, File System etc.

Key Tasks on the BI Launchpad are:

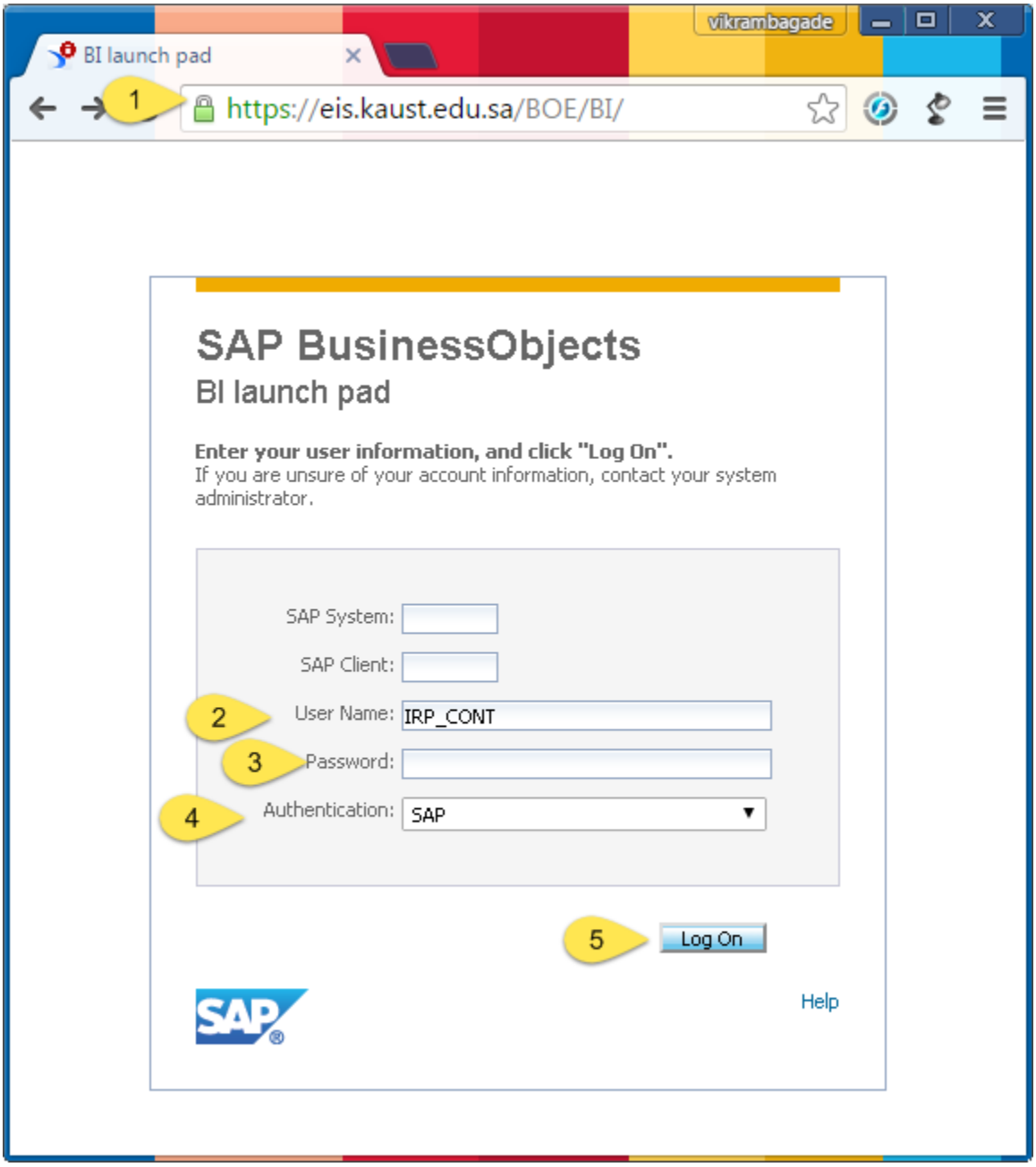
1) Add Reporting Objects
2) View Reporting Objects
3) Modify and Manage Reporting Objects
4) Distribute content to users
5) Set personal preferences for the Launchpad user interface

Key Components of the BI Launchpad are:

1) Home Tab
2) Documents Tab
3) Preferences
4) Applications
5) Public Folders
6) Categories
7) My Documents

Launching of BI Launchpad

You can launch the BI Launch pad by accessing the URL for the respective system. In our case we will be using the Production system.



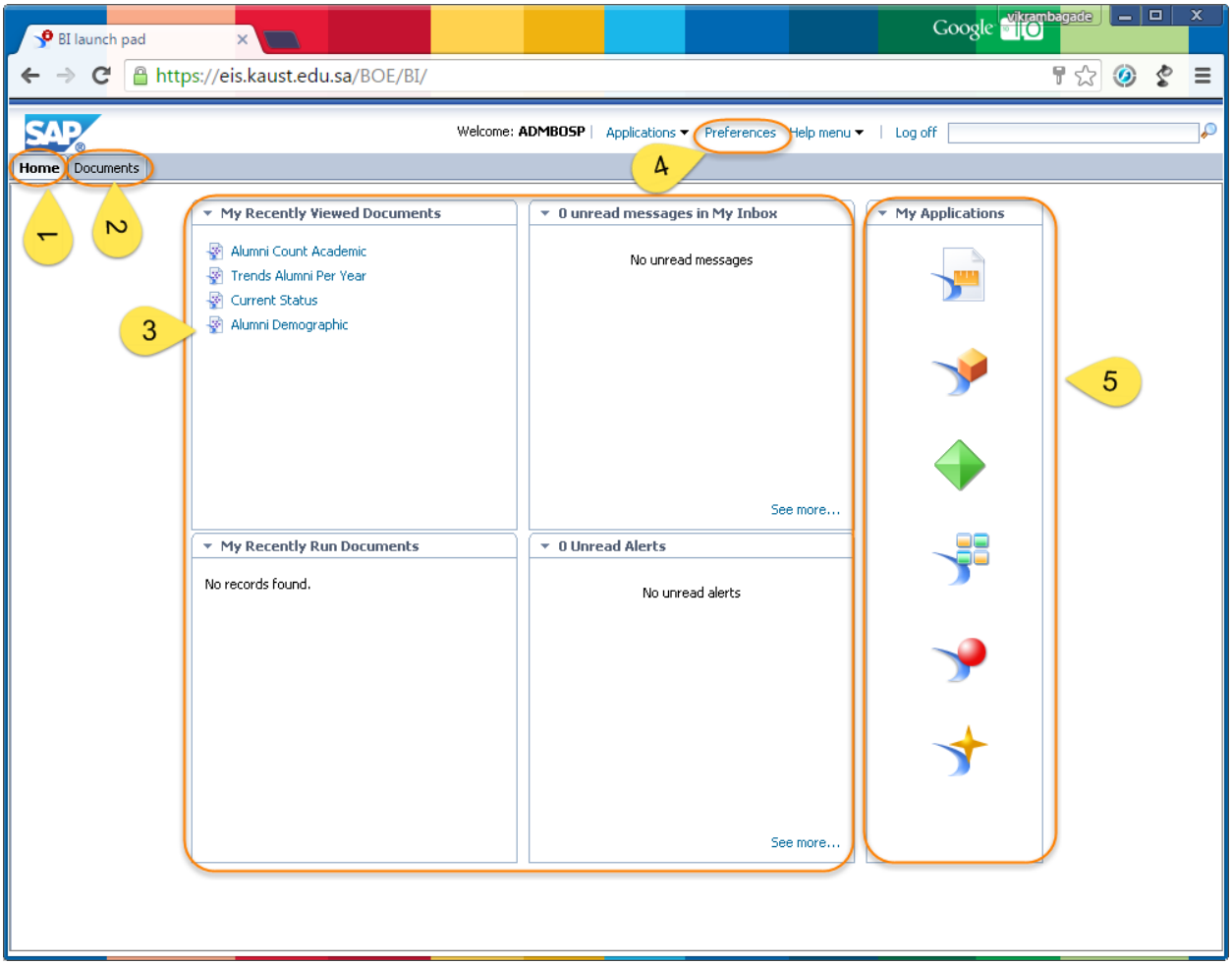
Enter your respective Windows id and password and Select the Authentication as Windows AD or SAP.

Components of BI Launchpad

Once you successfully login, you will see the Home page of the BI Launchpad. Home Page has three main components:

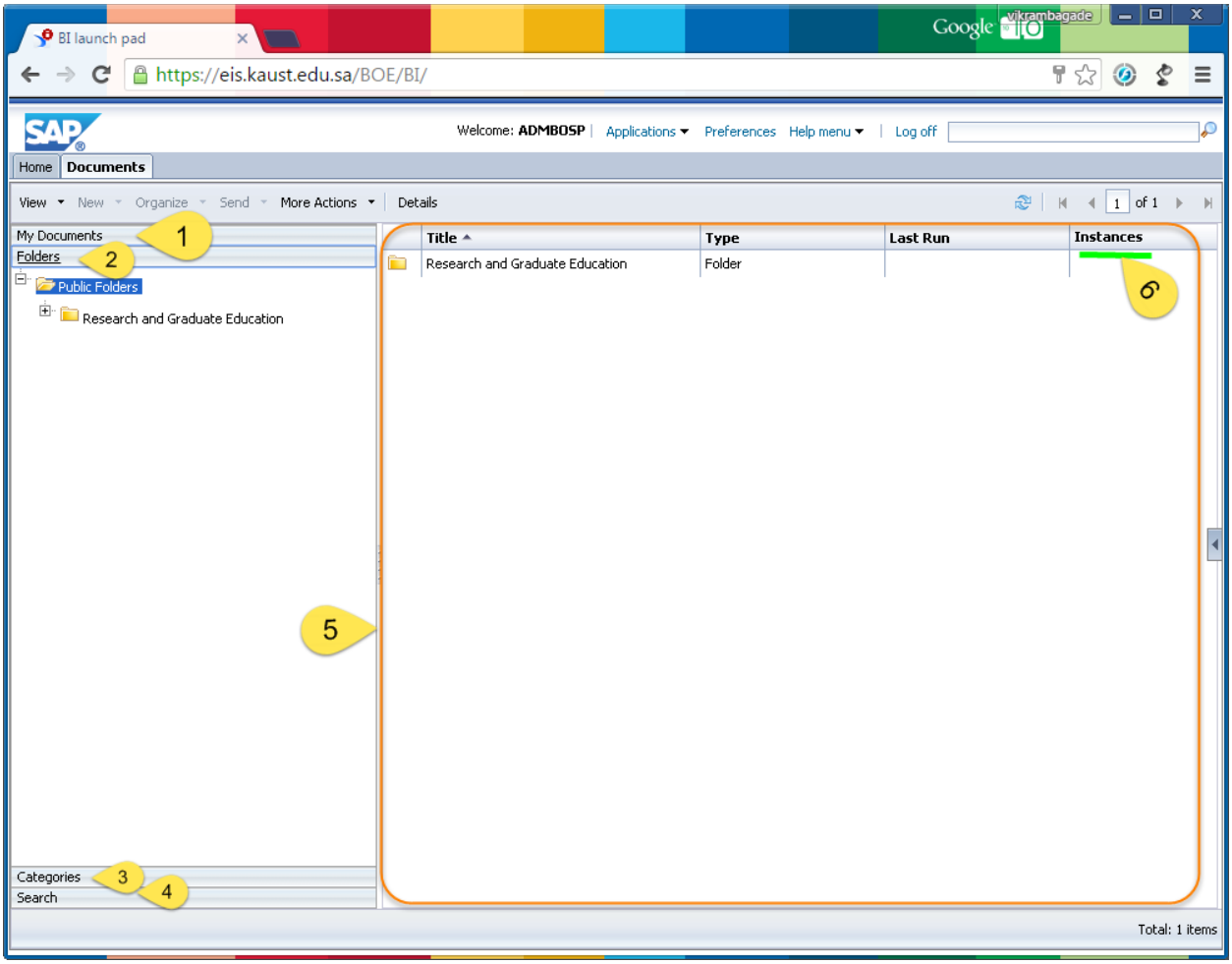
1) Header panel
2) Home Tab
3) Documents Tab

Home Tab Components



1. Home Tab
2. Documents Tab
3. Home Tab Body
4. Preferences
5. Applications

Documents Tab Components



1. My Documents
2. Folders
3. Categories
4. Search
5. Content Area
6. Instances

Scheduling of Reports

As mentioned in the General Terminology, the BI Platform provides a functionality to automatically refresh the report / dashboard data at specified times, periodically. This schedule can be defined by the Business Data Analysis Community as per their need. The Schedule also provides a functionality to refresh the data and deliver the report or dashboard output to various destination viz., BI Inbox, Email, FTP location etc.

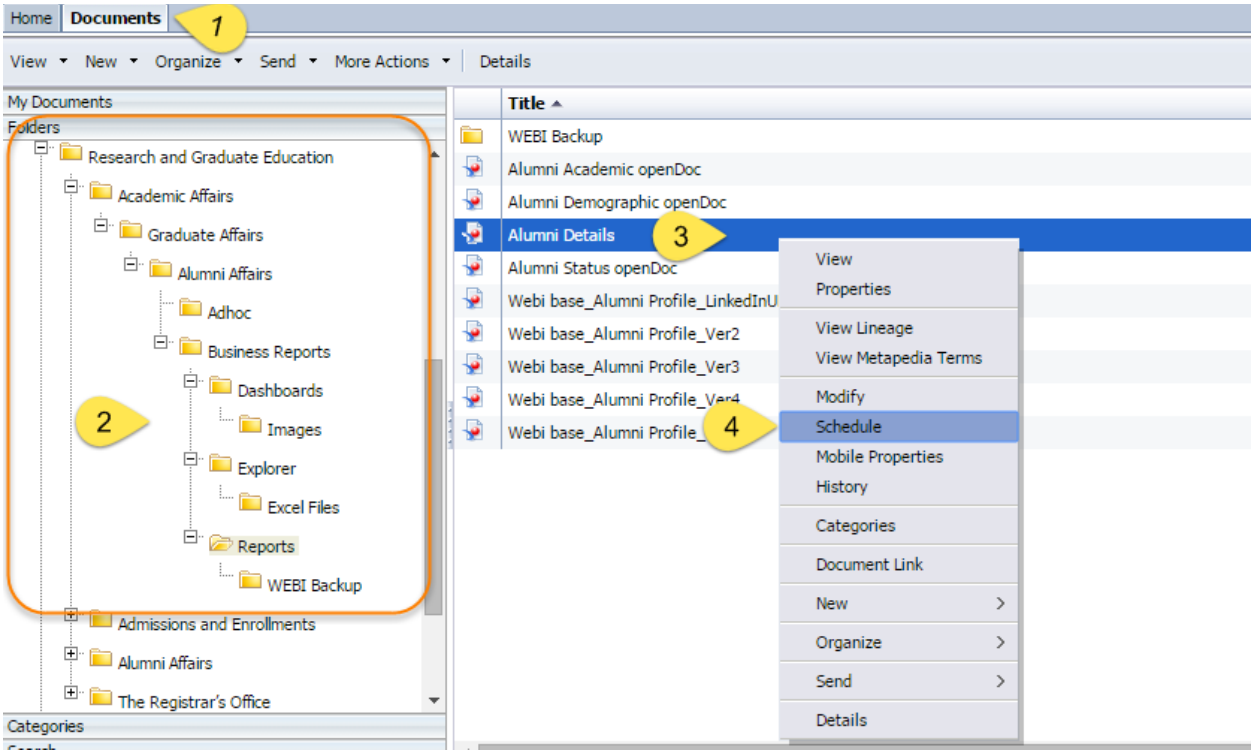
Scheduling by Email, also provides an easier way of distributing the reports to the users, who do not have access in the BI Platform. It is at the discretion of the Controllers to use or not use this feature. With scheduling the generated output of the report can be distributed in the form of a PDF documents to the appropriate email recipients.

Before you begin scheduling your documents, decide on the following:

1) What Instance Title – You can mention the title of the Instance to identify the purpose, time period or subject of distribution of the report.
2) When – Recurrence: You need to decide the recurrence of the time period as to when this report needs to be scheduled and distributed.
3) Which Format: What file format, it the report output required, example, pdf, excel etc..
4) Who or Where: The destinations to where this is to be scheduled. This can either be the BI Inbox, Email, FTP location etc.

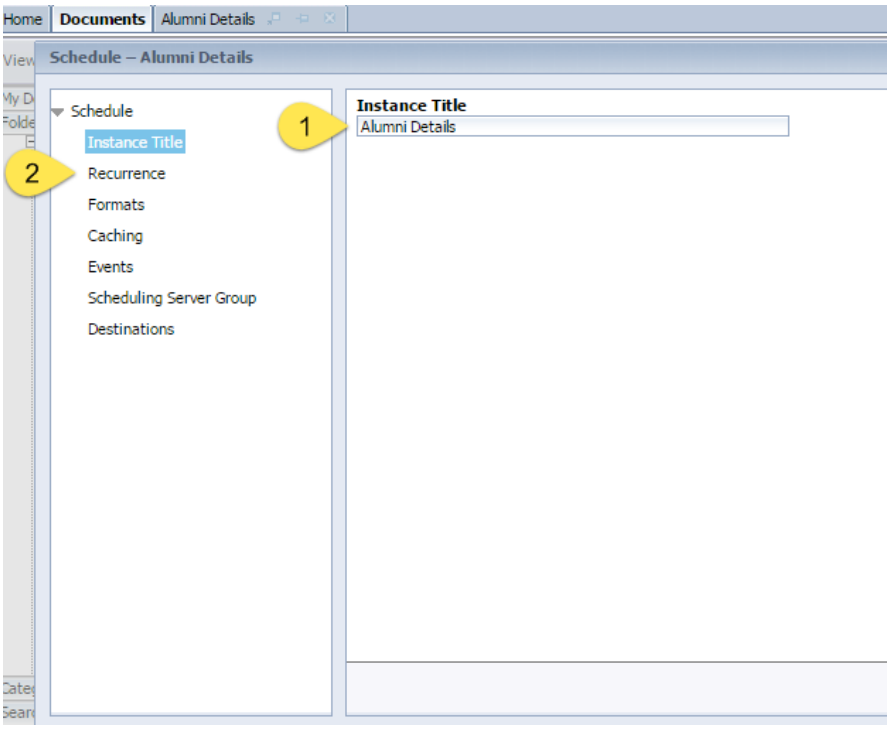
Follow the steps to schedule a document:

In the BI Launchpad, Documents Tab, navigate to the respective authorized folder and right click on the report which needs to be scheduled. Every supported document will get the right click and schedule option.

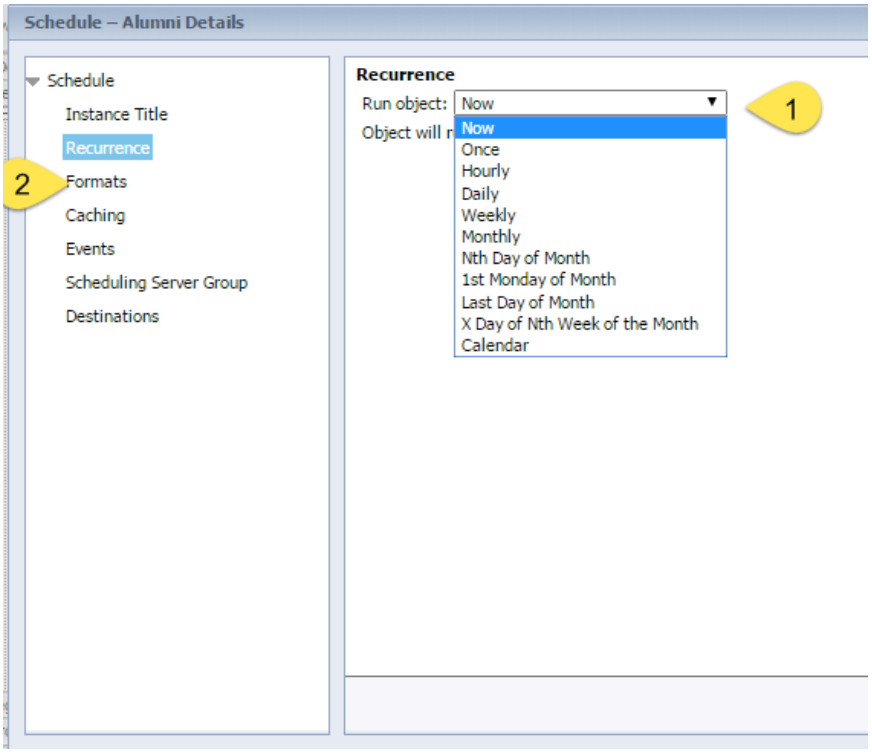


Click on Schedule and the following screen appears.

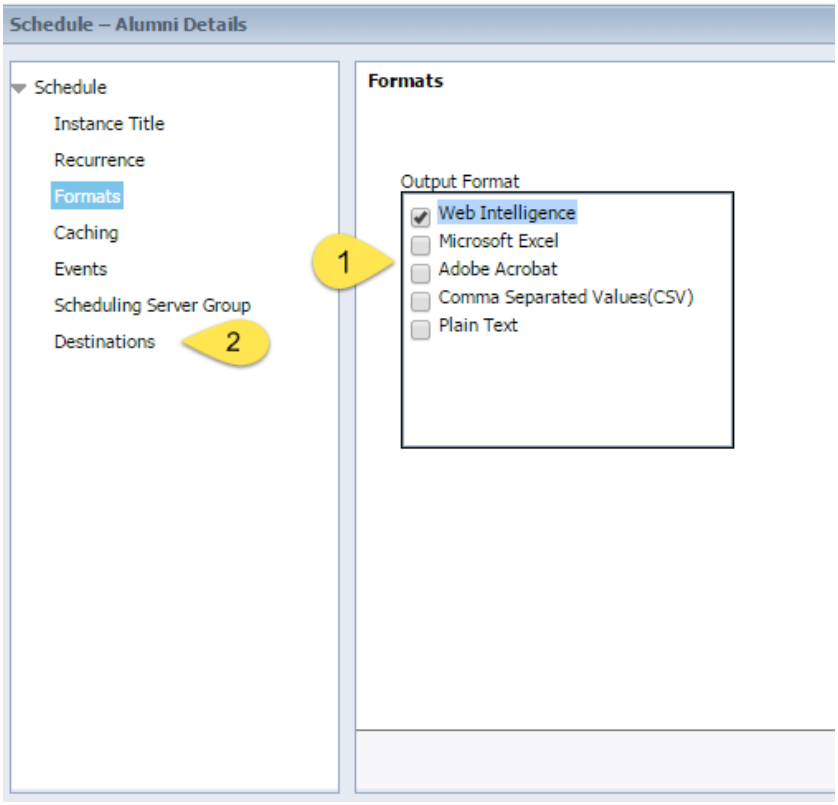
You can enter the Required Title as required for the instance and click on the Recurrence Tab.



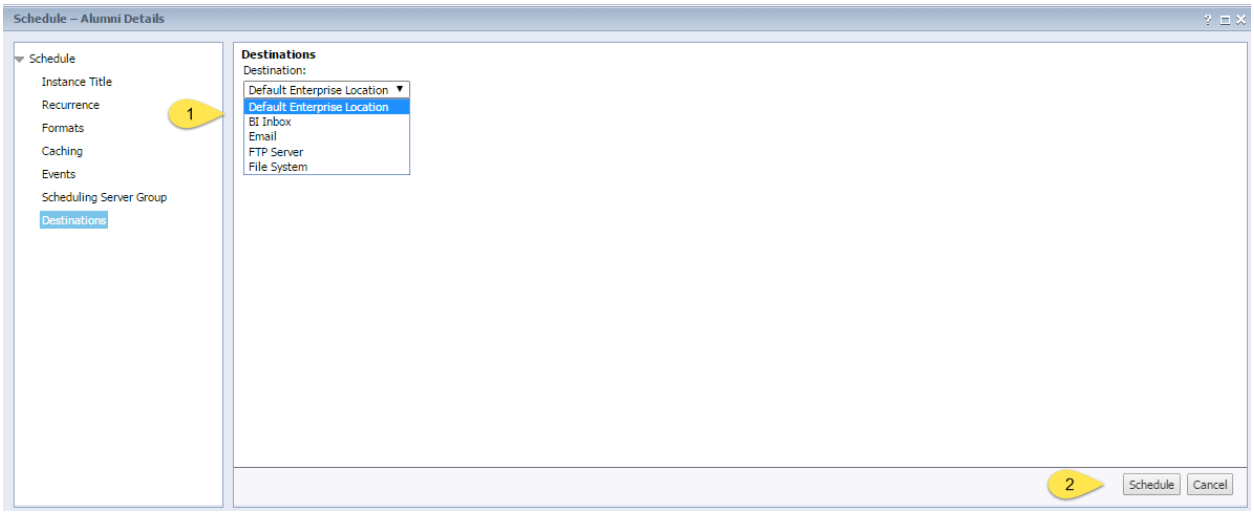
Select the Recurrence as per need and click on Formats Tab to continue.



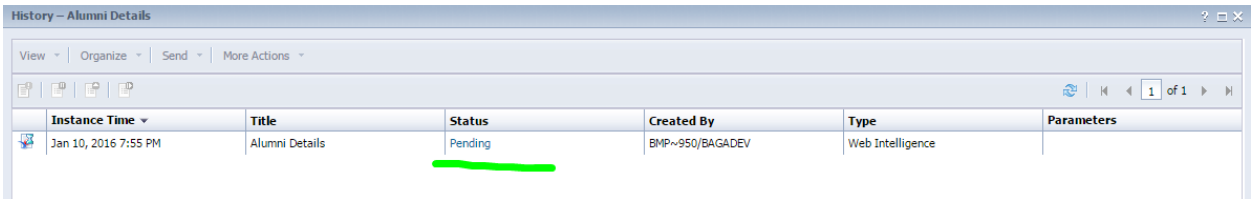
In the Formats Tab, select the required output format and then click on Destinations for selecting the output destinations



In the next screen select the destination required and provide further inputs for the destination. For example if you select email, you need to mention the From To, CC , BCC, Subject, Email Message, etc. Once this is mentioned click schedule.

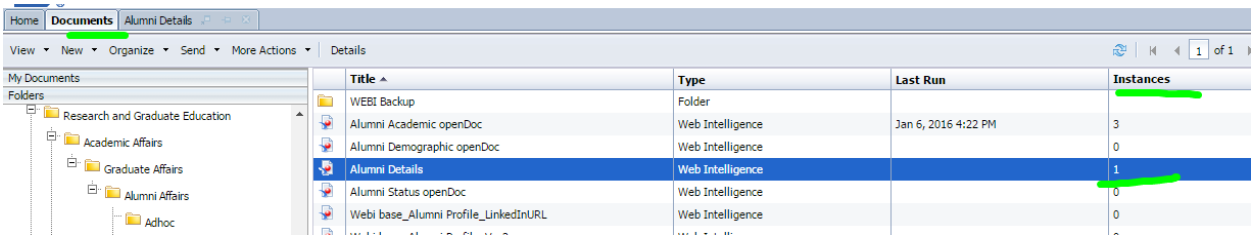


Following screen appears once you click schedule, where you can check the status of the Schedule.

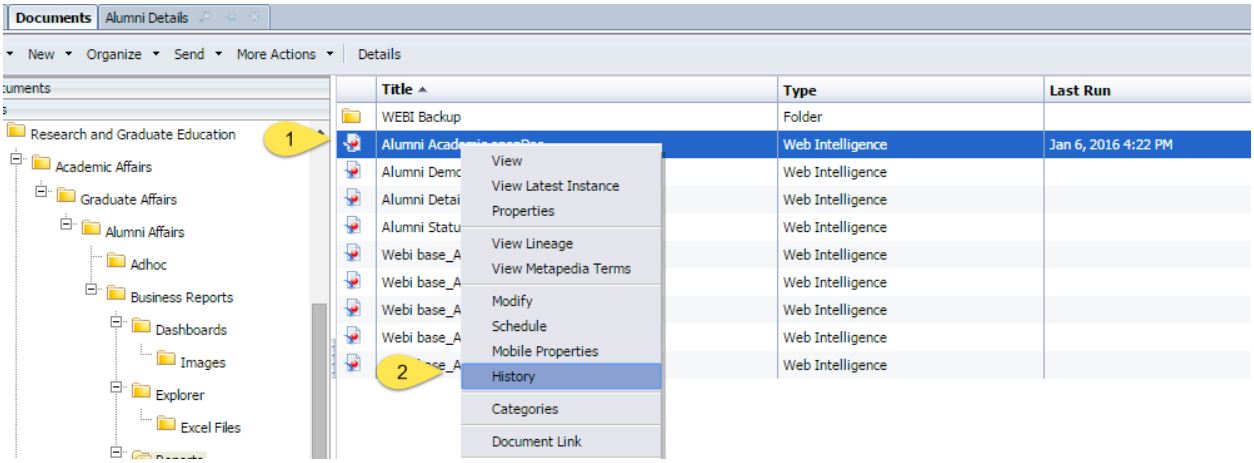


If you see the status of the Instance as success or fail with the appropriate failure message, for example a Schedule, with a destination email, if there was no To Email provided, the instance will fail with the relevant reason.

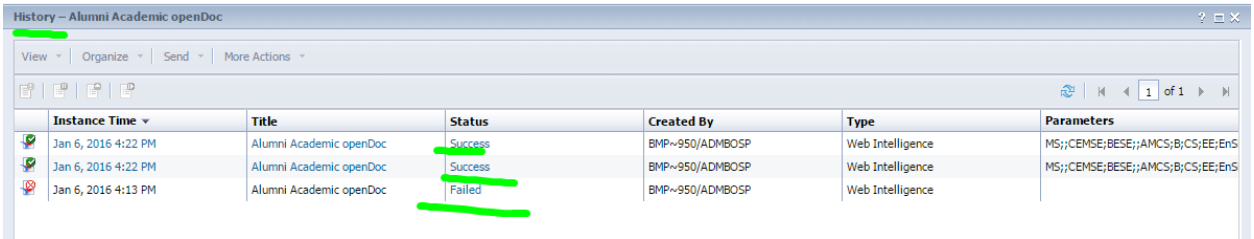
If you select the default enterprise location, the system will create a report instance and host the output data in the instance history. You can see the number instances of every report scheduled from the Launchpad Documents Tab.



You can also see the history of instances by right clicking on the respective reporting document and by clicking on History option.



Notice the History created with their respective instance status.



Reporting Tools

As there are different needs of different users, as wide range of BI tools are used at KAUST. Broadly the reporting tools can be categorized for the following purposes:

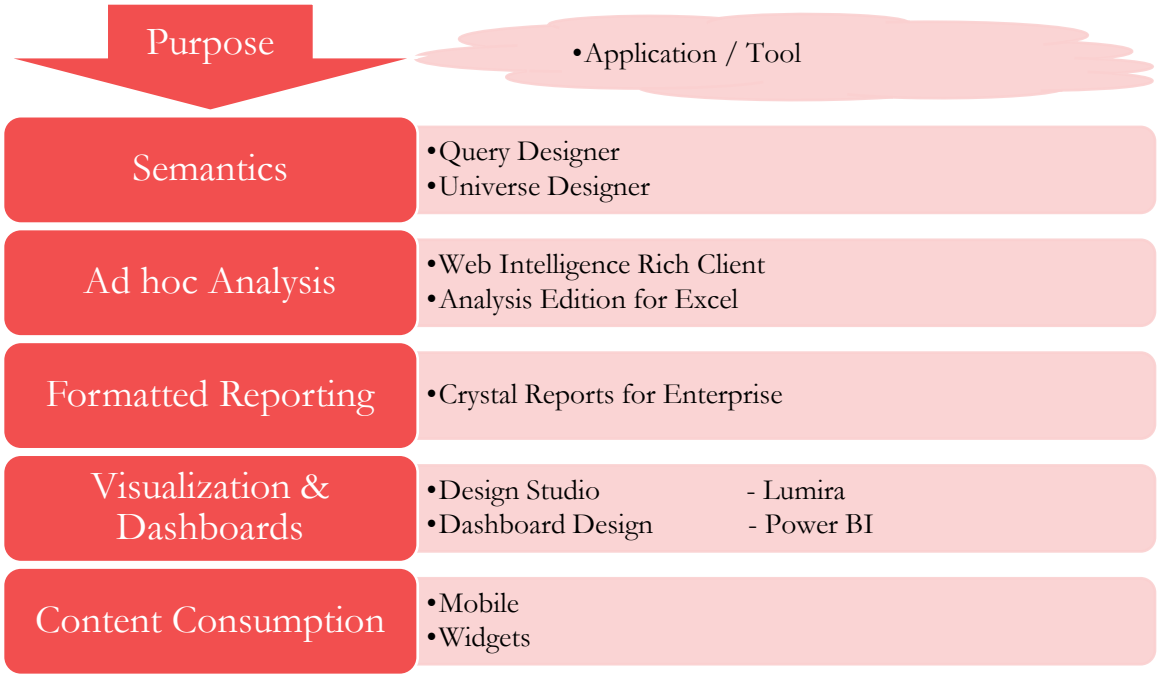
1) Ad hoc Analysis
2) Formatted Reporting
3) Visualization & Dashboards
4) Self Service or Search & Exploration
5) Semantics
6) Content Consumption

Based on the BI output created, the content delivery can be made via Desktop or Mobile Application.

Following are the Tools used in KAUST for the BI Reporting content creation.

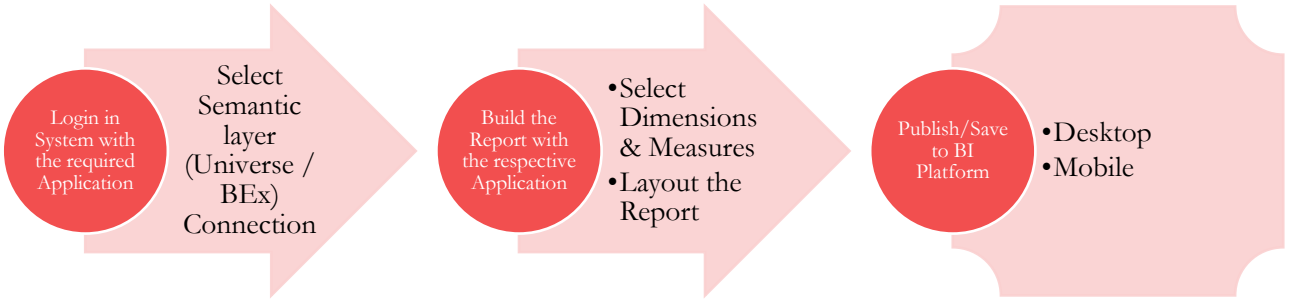
1. Reporting Tools – Web Based (Needs Supported Browsers)

2. Reporting Tools – Client Based (Needs Software Installations)



Modus Operandi/Procedure for Building Reports

There are some general steps you need to remember while using the Reporting Applications for building any reports.

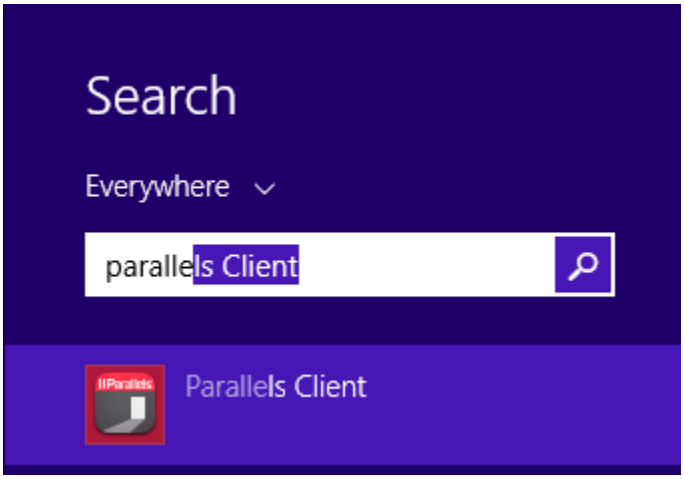


The above three step approach is followed for almost all the tools, with some changes in the way the Reporting tool features for achieving different reporting capabilities.

Note that the next steps provided in the document for using the Reporting Applications are only to provide an idea of which all applications are used and how to create a basic connectivity and generate an output. There will be separate full-fledged training on respective Semantic/Reporting Application.

Reporting Tools – Client Based

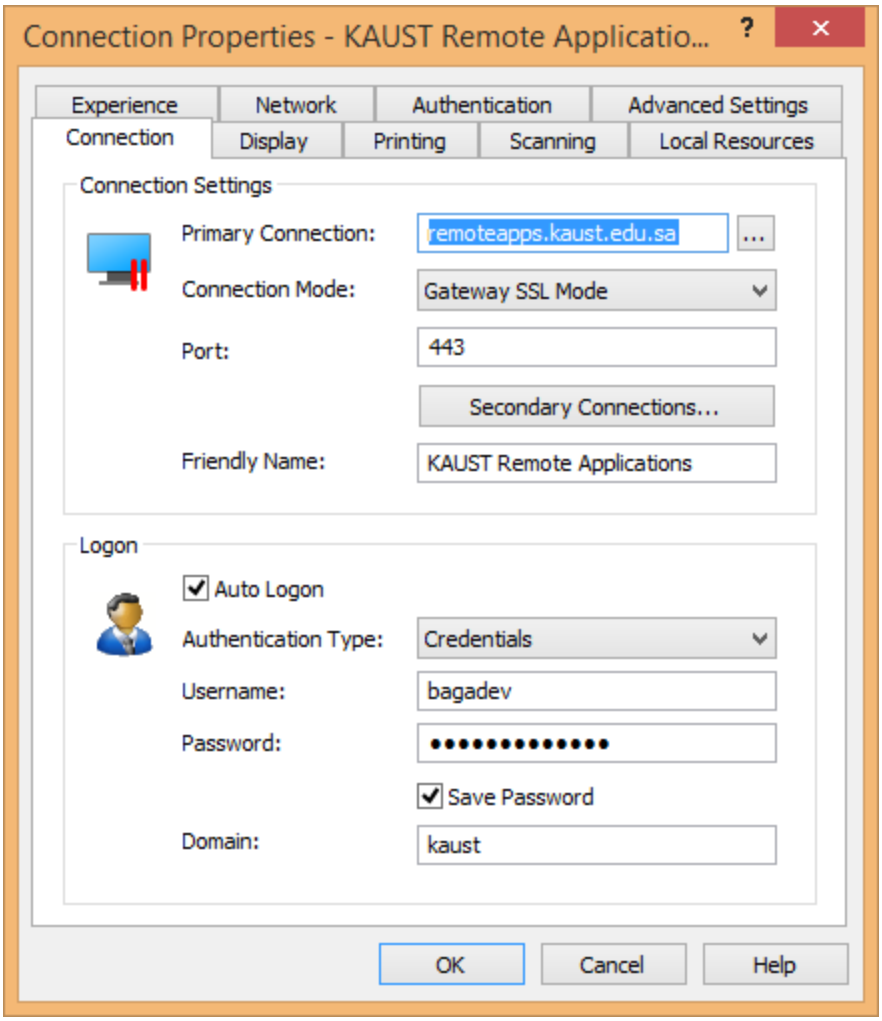
The client based tools, will need to be installed in the respective systems, however all the KAUST BI tools have also been made available via 2x Client. Hence you may need not install the tools on your machines and can access the BI tools via 2x clients. From your desktop's or Macbook's, you can run Parallels 2x Client to access the available BI Tools.



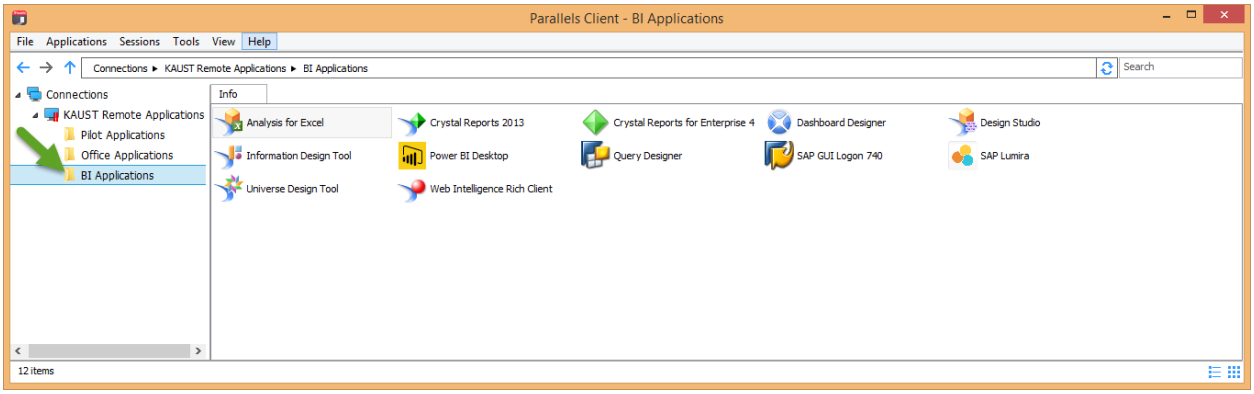
The parallels client will then run from the task bar. Double click on Parallels client on the task bar..

Connect to your default remoteapps..

Ensure below are your connection properties, if you are connecting it for the first time.



Once connected, all BI tools are available in the BI Applications Folder:



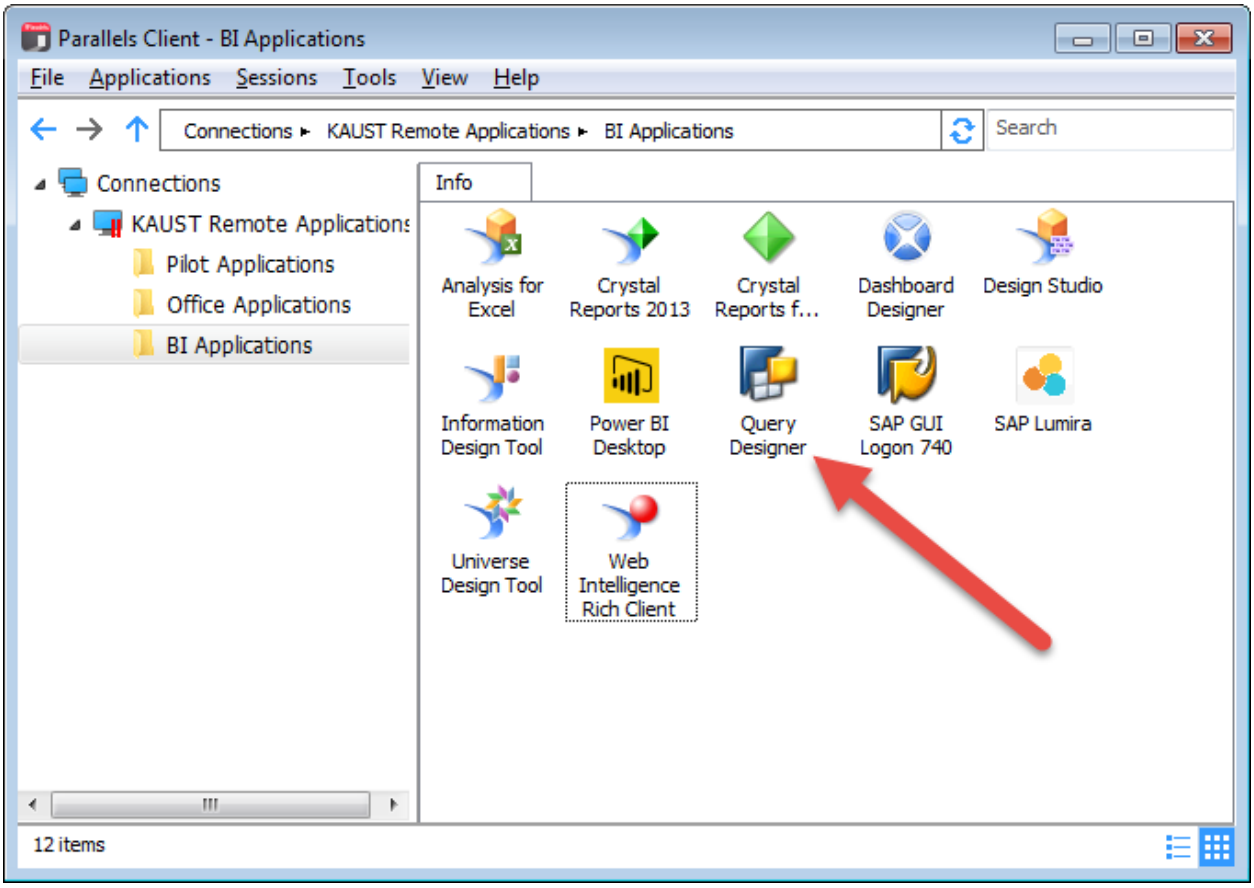
Query Designer

Business Explorer Query Designer is a User Friendly Query Designing Tool to retrieve data from Infoproviders in the Datawarehouse viz., Cube, ODS, Multiprovider or Infosets. The Queries designed and saved in Query Designer act as a Semantic Layer for Business and the source Technical Data. The output or Queries built by this tool forms the basis or the source for almost all the reporting tools which will be used.

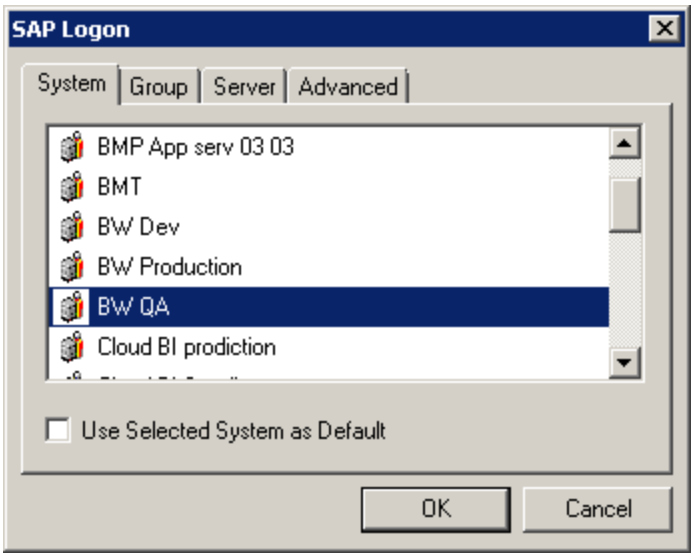
To access BEx Query designer, follow the below steps.

Step 1)

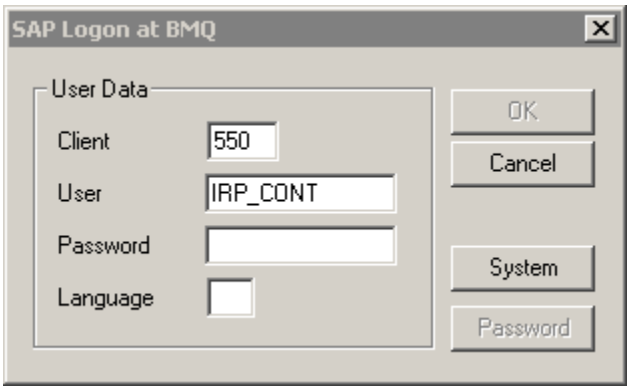
1. Open Query Designer from Parallels client



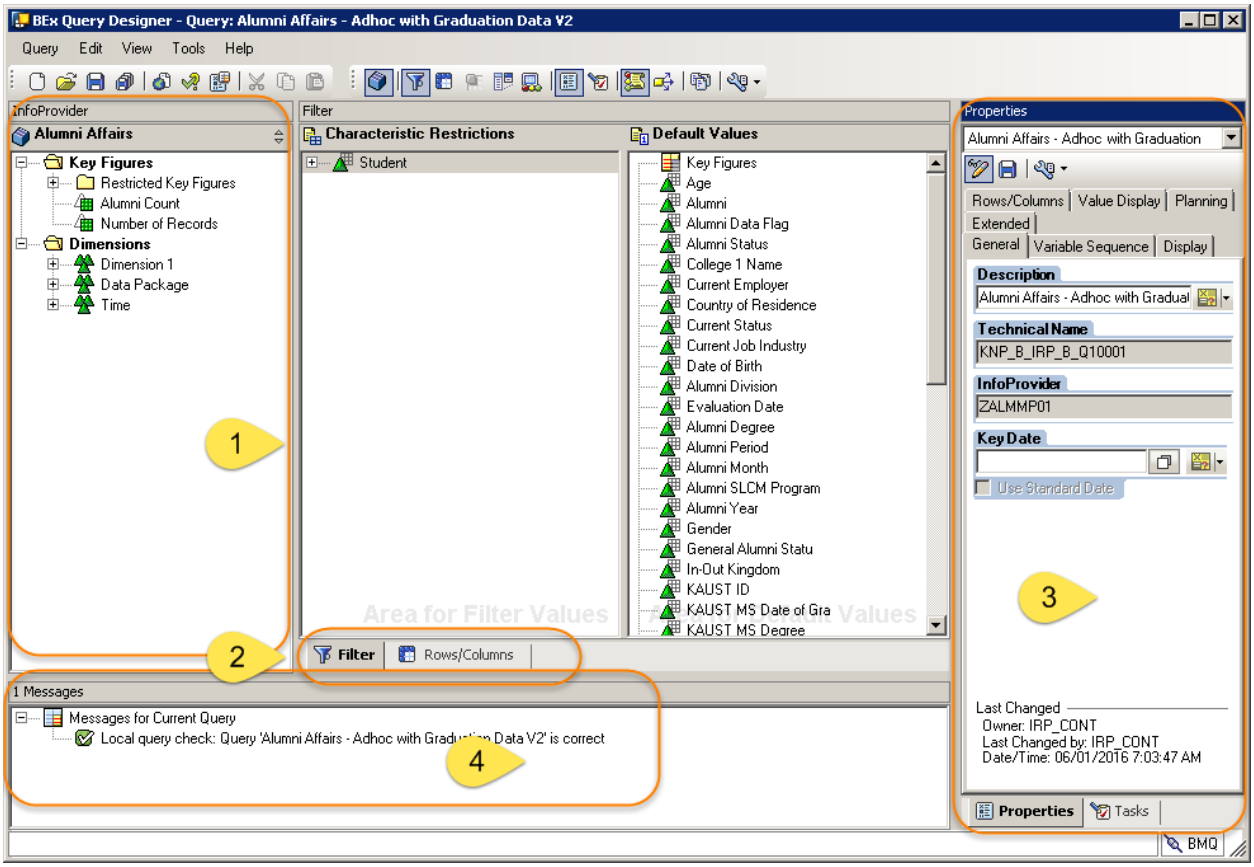
Step 2) Select required BW system. Click the Ok button



Enter the Client, User Name and Password Click the Ok Button



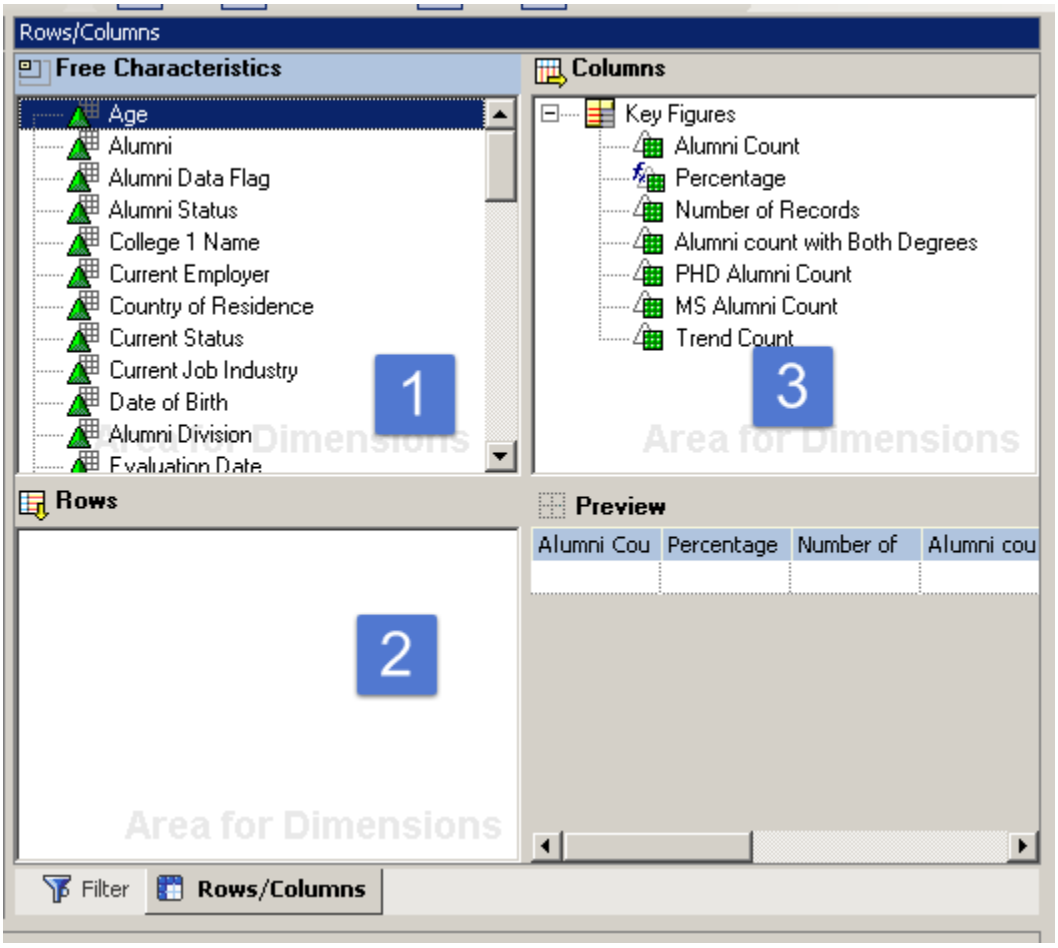
Below Query Panel Opens:



Following are the important Query Panel components:

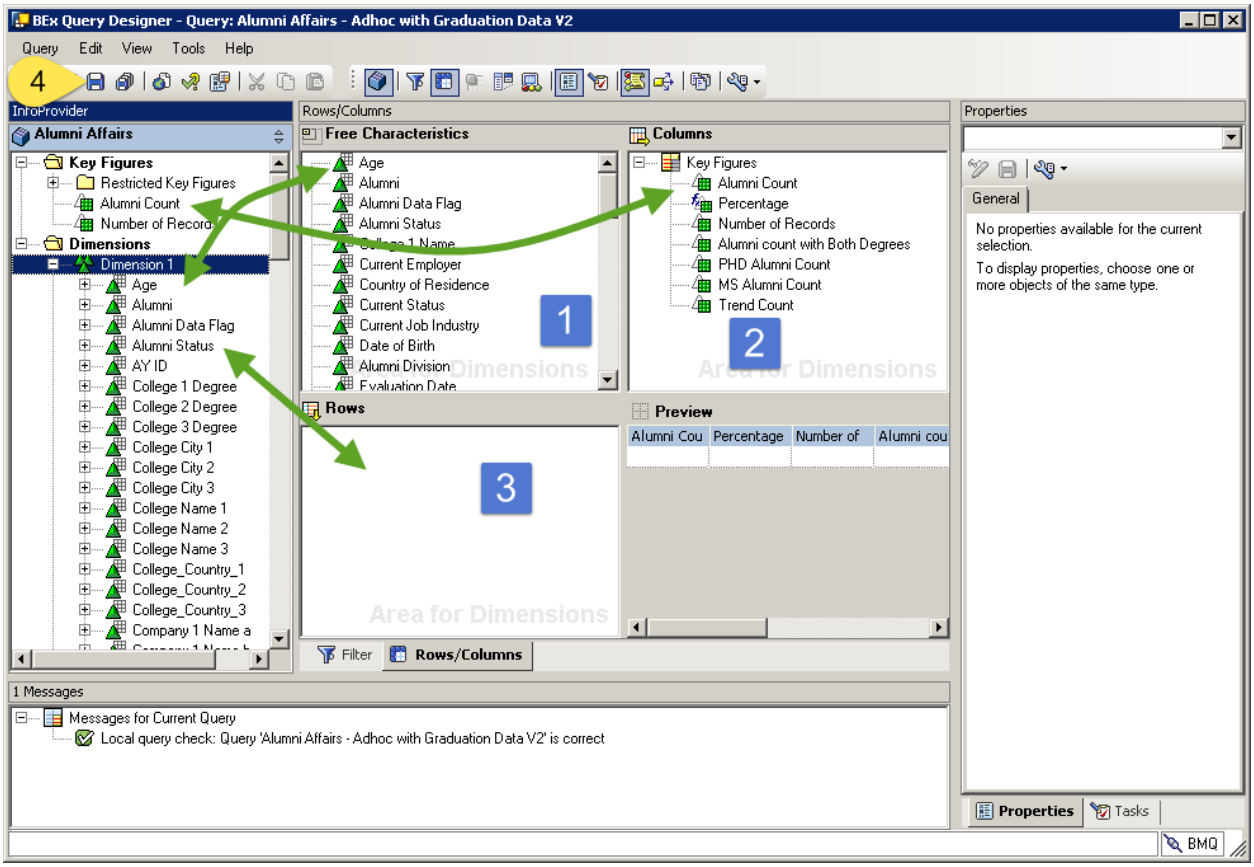
1. InfoProvider Details are available here.
2. Tabs to view various report components.
3. Properties Box which shows the properties of each component selected in the query.
4. System Messages such as any error or warning messages during the Query check is displayed here.

In the Rows/Columns Tab, we have three panel:



In these panels we can drag and drop the Dimensions/Characteristics and Key Figures to get the output of data from these objects in Row/columnar form. Once you are done with the selection of the required dimensions and key figures, you can save the query.

Please note to save the queries in the Query Naming Convention provided as per your Security Matrix. The queries are saved in the Business Datawarehouse and can be used as the source for all the different Reporting Applications for generating any required reports.



The security of the queries is designed based on the Query Technical Name. The below asterix * part can be as per the strategy and understanding among the Business Data Analysis / Controller.

Query Saving Convention for the respective departments.

Please follow the additional Query Convention Sheet for your respective Department:

Note the Query Saving Convention will differ for every department based on their Business Process Data.

In the entire training Document, wherever you will have to search for the Query Name, Please follow the Query Convention for your respective department and not the one mentioned in the Training Document.

Follow the below Query Saving Convention:

1) **For saving a Query – use the technical name as following - "KNP_B_CLABS*** " –** without quotes. The blue part is mandatory and is has to be same. The green part will be changing based on respective department. The Red *** will be a meaningful sequential number preceding by your infoprovider name. See below example: **KNP_B_CLABS_ZPCAODS3_Q0001.**

- KNP stands for KAUST Non Payroll,
- "_" underscore is just a separator.
- B – stands for Business,
- CLABS – stands for Core Labs, however every department this part will be different based on their department abbreviation,
- ZPCAODS3 is the infoprovider, this will change based on your infoprovider used,
- Q – Stands for Query,
- 0001 will be a sequential number.

2) **For saving a Variable – use the technical name as following - "ZCLABS_VAR*** " –** without quotes. The blue part is mandatory and is has to be same. The green part will be changing based on respective department. The Red *** will be a meaningful sequential number preceding by your infoobject name. For example:

ZCLABS_VAR_0FISCYEAR_0001.

- Z stands for Custom object, and by default this has to be Z
- CLABS stands for core labs, however every department this part will be different based on their department abbreviation,
- VAR stands for Variable
- 0FISCYEAR stands for the infoobject being used, this will change based on your infoobject being used.
- 0001 – will be a sequential number.

3) **For saving a Restricted Key Figure** - use the technical name as following - "ZCLABS _RKF***" without quotes. The blue part is mandatory and is has to be same. The green part will be changing based on respective department. *** will be a meaningful sequential number. For example:

ZCLABS_RKF_0001.

- Z stands for Custom object, and by default this has to be Z
- CLABS stands for core labs, however every department this part will be different based on their department abbreviation,
- RKF stands for Restricted Key Figure.
- 0001 – will be a sequential number.

4) **For saving a Calculated Key Figure – use the technical name as following - – "ZCLABS _CKF***" – without quotes.** The blue part is mandatory and is has to be same. The green part will be changing based on respective department. *** will be a meaningful sequential number. For example:

ZCLABS_CKF_0001.

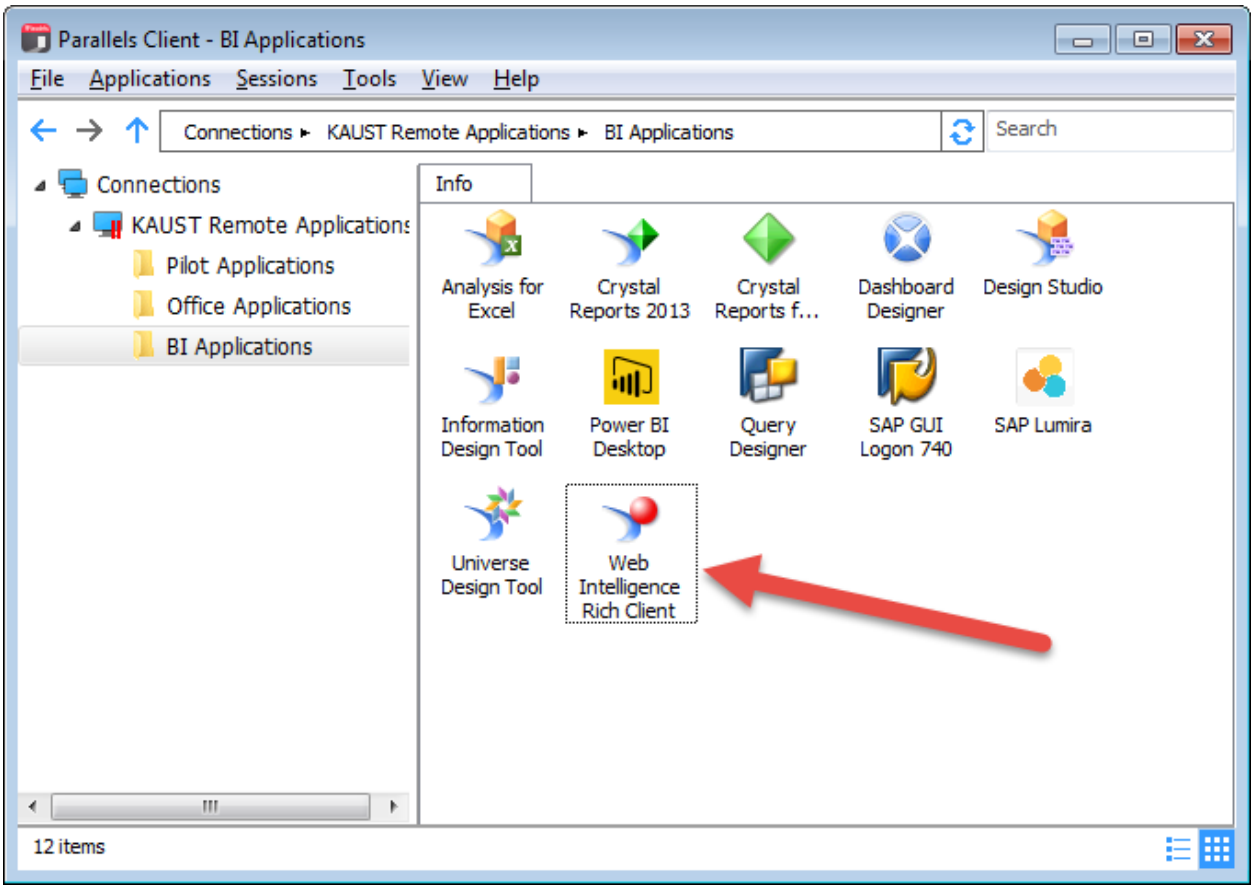
- Z stands for Custom object, and by default this has to be Z
- CLABS stands for core labs, however every department this part will be different based on their department abbreviation,
- CKF stands for Calculated Key Figure.
- 0001 – will be a sequential number.

Web Intelligence Rich Client

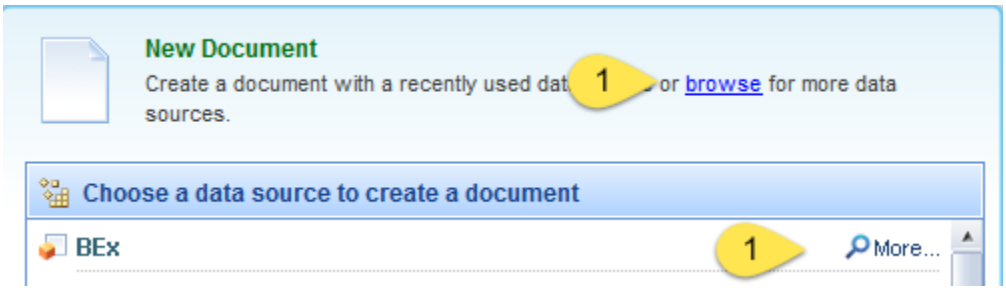
Web Intelligence (WebI) is an ad hoc data analysis tool. This tools is available on Web as well as Client based installation. It connects to various data sources including a normal Excel Spreadsheet. However the primary data source in KAUST is via a Business Explorer (BEx) Query.

The Report/output document created in Web Intelligence tool is called Web Intelligence Document. From the BI Launchpad, where the WebI document is saved, you can right click the document and schedule the document for an automated refresh and send the document to different destination of email, BI Inbox etc.

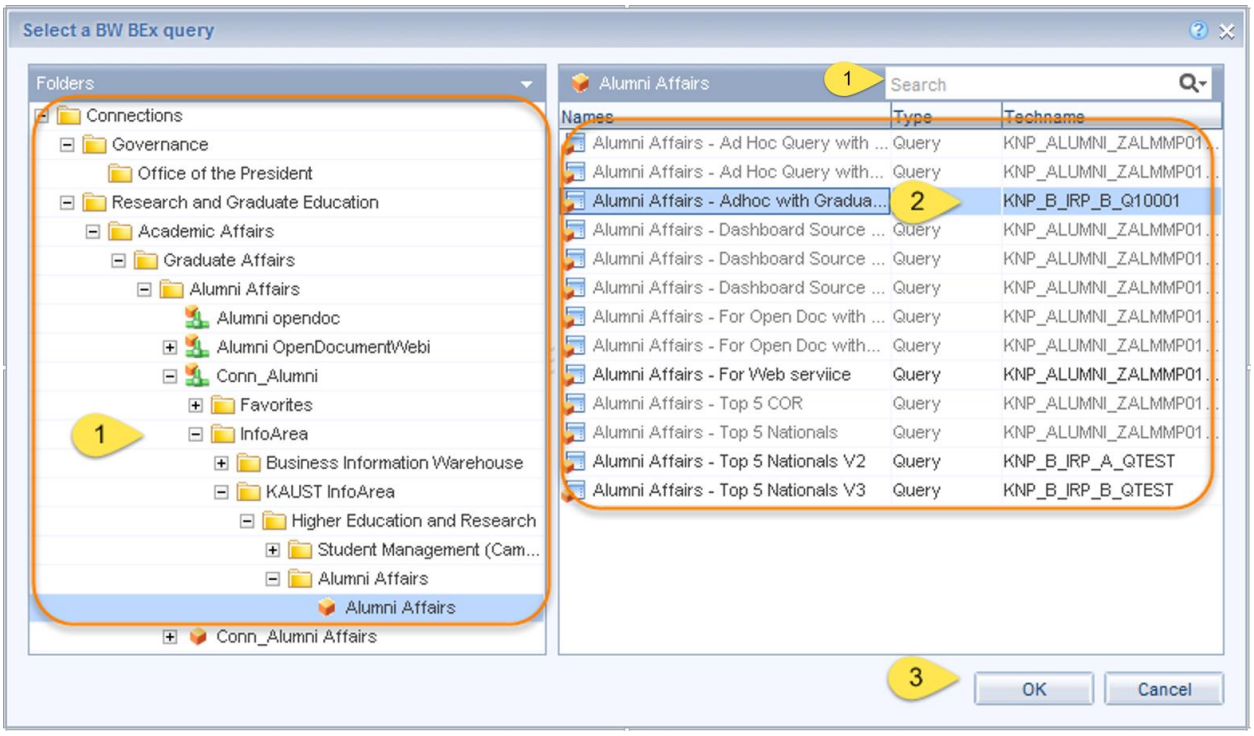
You can launch the WebI application from the parallels.



Enter the System name, User ID, password and select the Authentication:

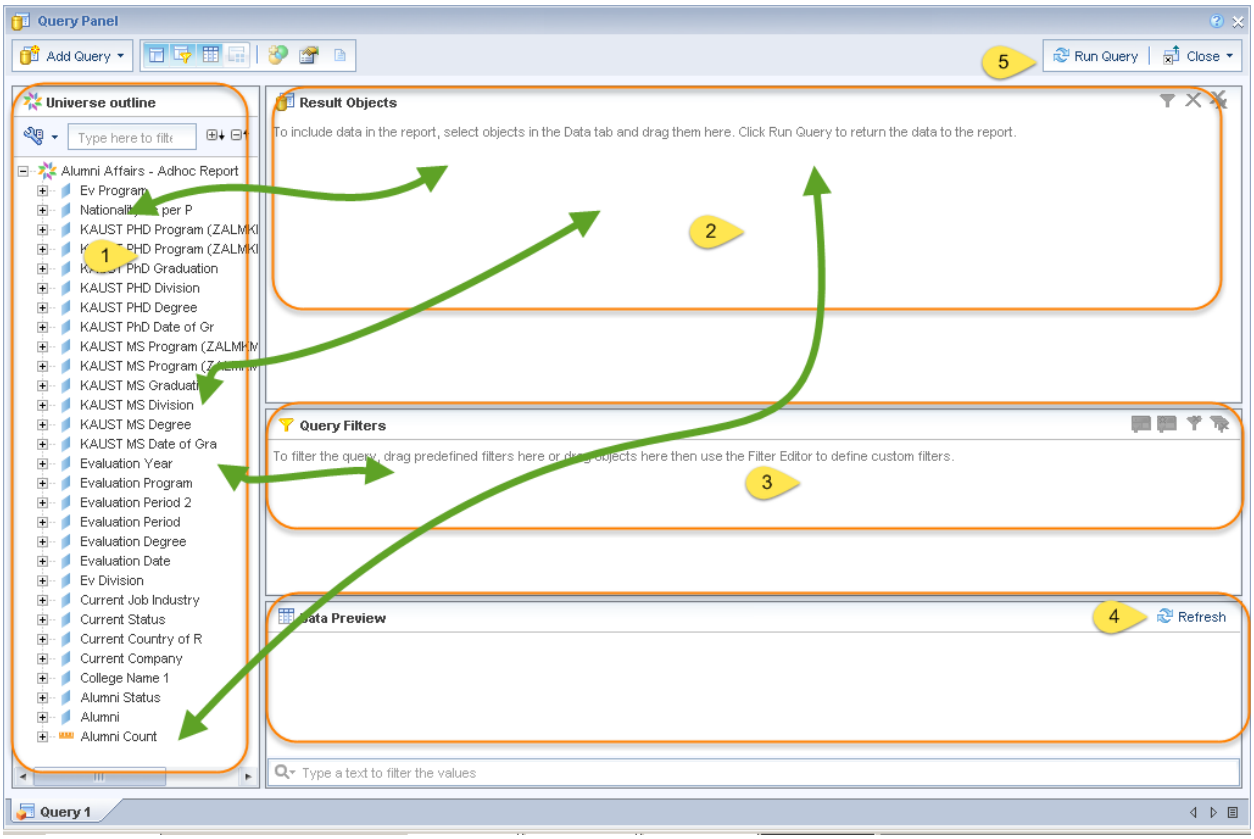


Navigate to the required query by clicking on Create a Document (Browse) or click on BEx (More) and select ok.



In the Folders frame, navigate to your respective folders, to select the required "connection" to retrieve the queries or once you select the required connection, click on search and type the description or technical name of queries to search and select the required query and click ok to continue.

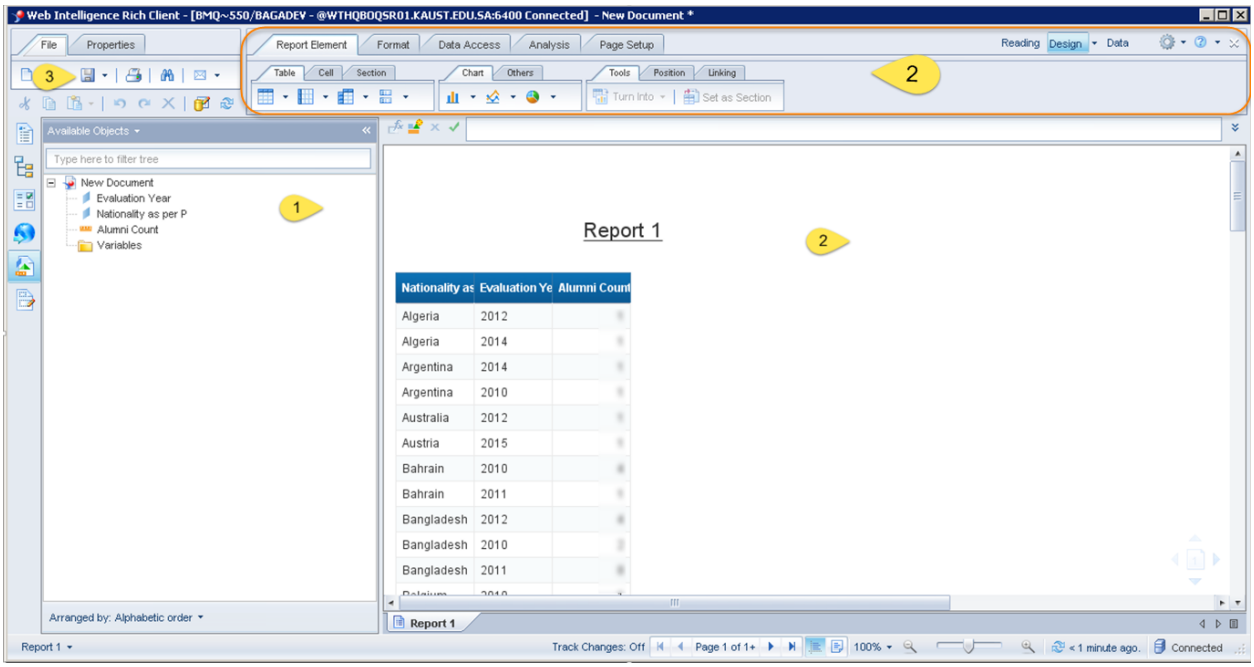
A Query panel opens up. And you can select the dimensions and measures required for the report and then run the query.



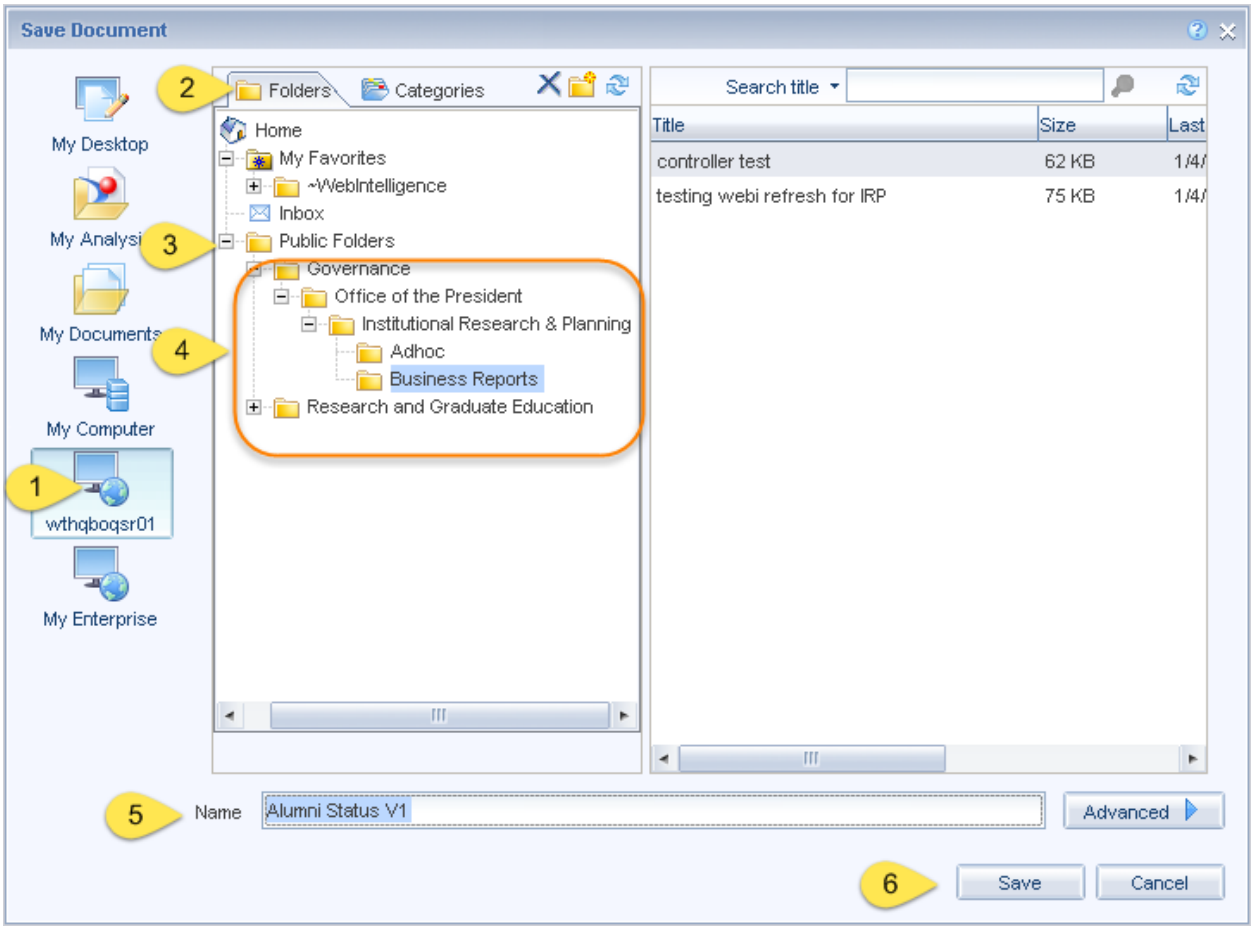
In the above screen:

1) Universe Outline Frame, you can click and drag the required Dimensions and measures to the Results objects Frame.
2) Results Objects frame, in this frame only the selected objects data will be retrieved for the report.
3) In the Query Filters frame, you can drag any dimensions, which you want to filter out any data from the report.
4) In the Data Preview you can preview the data, before running the query for the required report.
5) Run Query – is to complete the selections and filtering of data dimensions and measures to generate the report.

Once you run query, the system executes the query and generates the output in the WebI Design frame.



Once you have the required output, you can extensively design the report using the WebI Design features (1 & 2) and then you can save (3) the query locally or the BI Platform, using the following steps:



To save the to the BI Platform, select the connected to BI Platform Server (1), Navigate to the required Folder (2, 3, & 4) and save with the required names (5 & 6).

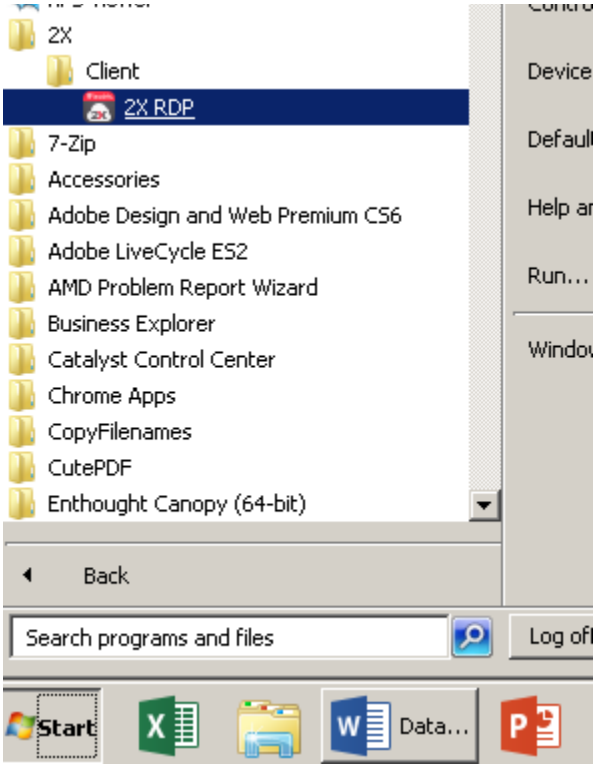
The saved file can be access from BI Launchpad, by navigating to the right saved location in the Public Folders.

Analysis Office for Excel

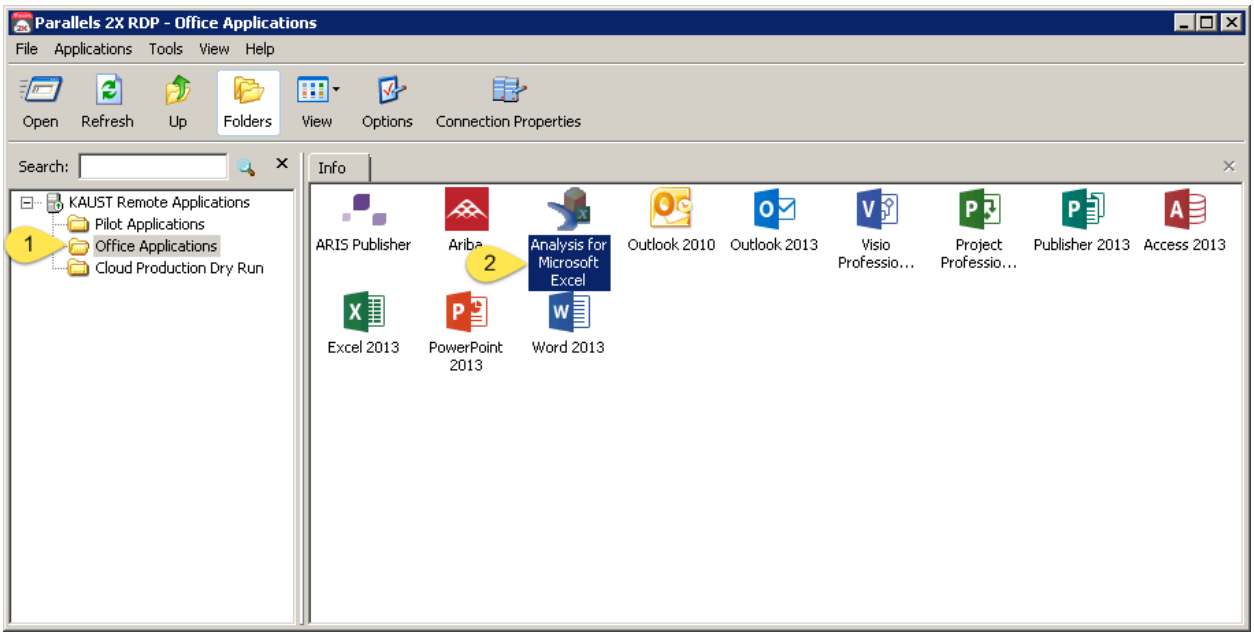
Analysis Office for Excel is an Ad hoc Data Analysis Tool. This is an Excel Add in and gives the flexibility to analyze the Data in the most used Microsoft Excel Application.

The report/output created in Analysis Office for Excel are nothing but excel file. This can be saved as excel and opened with the excel adding and reconnected to the BI Platform to refresh new data. The Analysis view of this document can also be published to the BI platform and can be automatically scheduled.

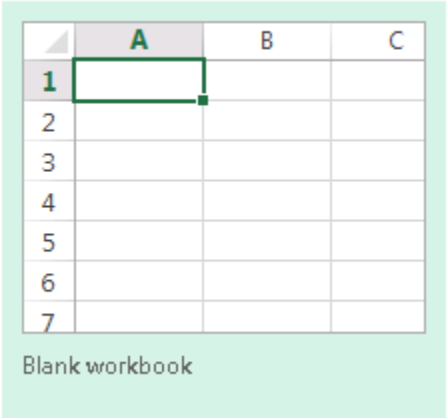
To Launch Office for Excel, run the application 2x Client from the Start Menu.



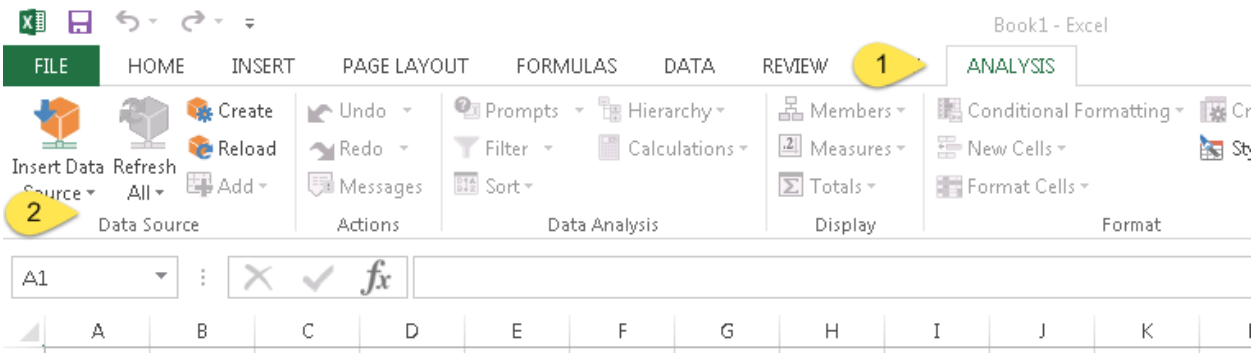
Login into 2x Client with your AD id and password and navigate to Office Applications and Select Analysis for Excel.



Double on the Blank Document to continue:

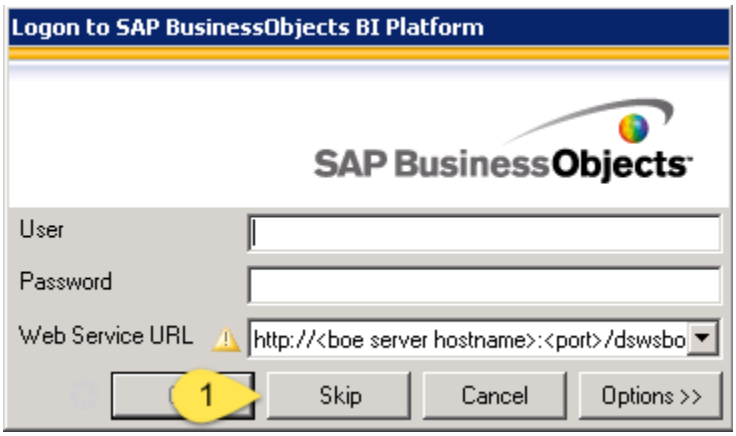


The Excel Application will be opened with a new Analysis Office Tab:

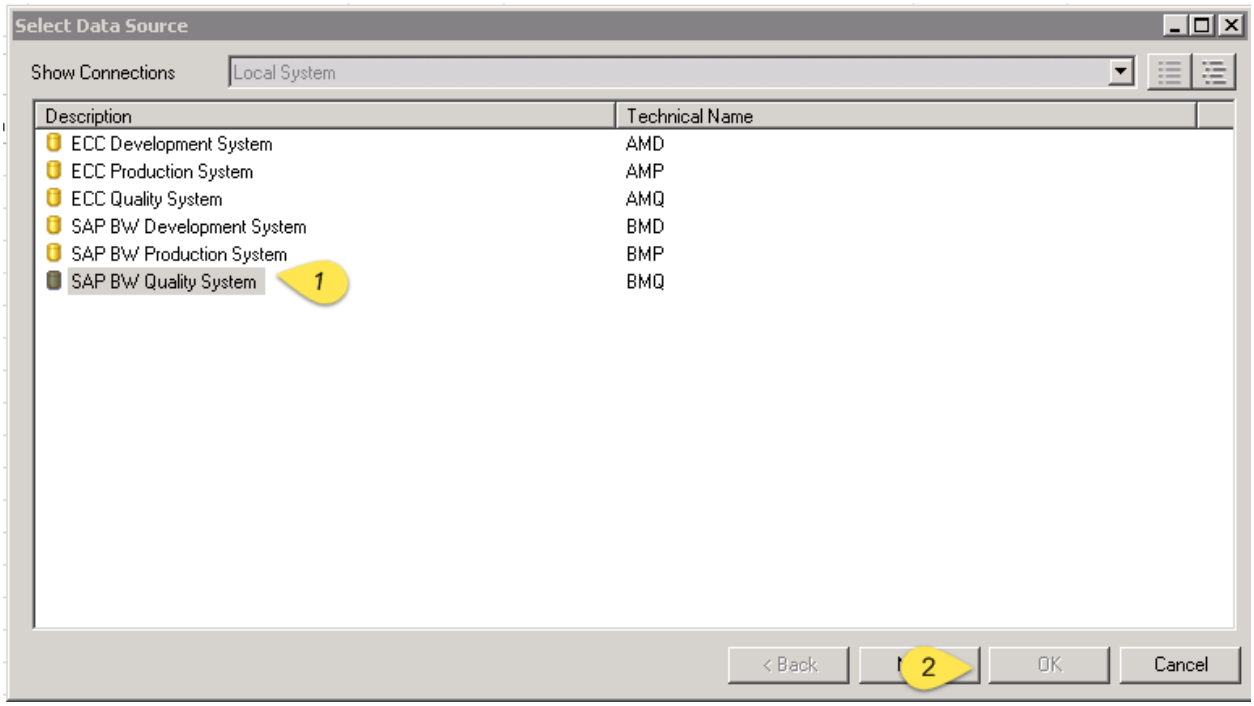


Click on Analysis and Click Insert Data Source -> and Click Select Data Source

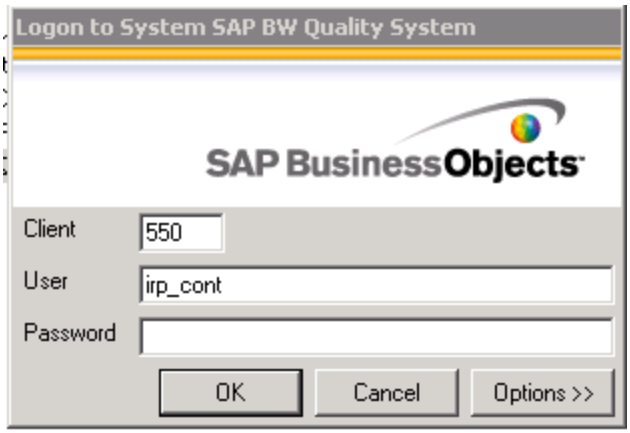
In the below screen. Click Skip.



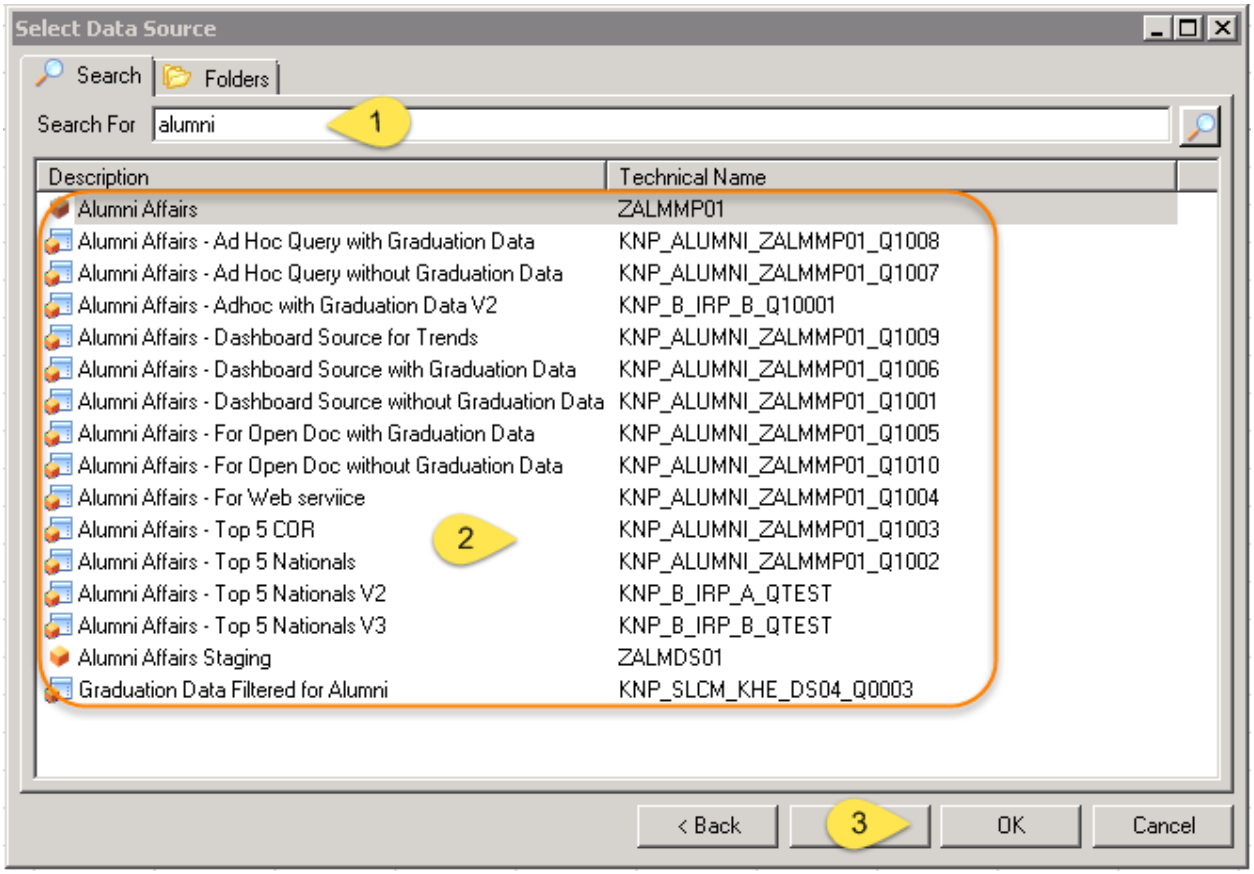
Then select the required System:



Enter the ID and password and click OK:

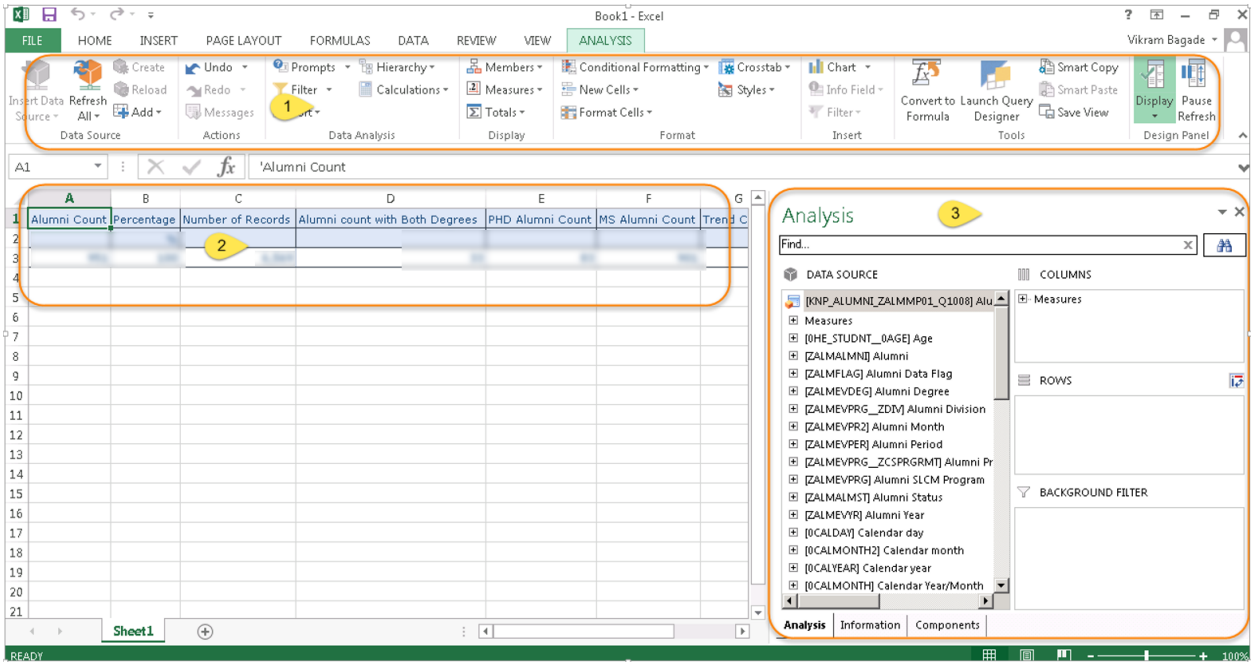


In the below search screen you will see the same queries created and saved. You can search by the technical name or the description:



And click ok.

This opens the data in the Excel and you have the Analysis Add in Features to play around with the data and save it as a required view.



In Analysis Office there are three main components:

1) The Analysis Tool Bar
2) The Data Output
3) Analysis Panel to select the dimension and measures.

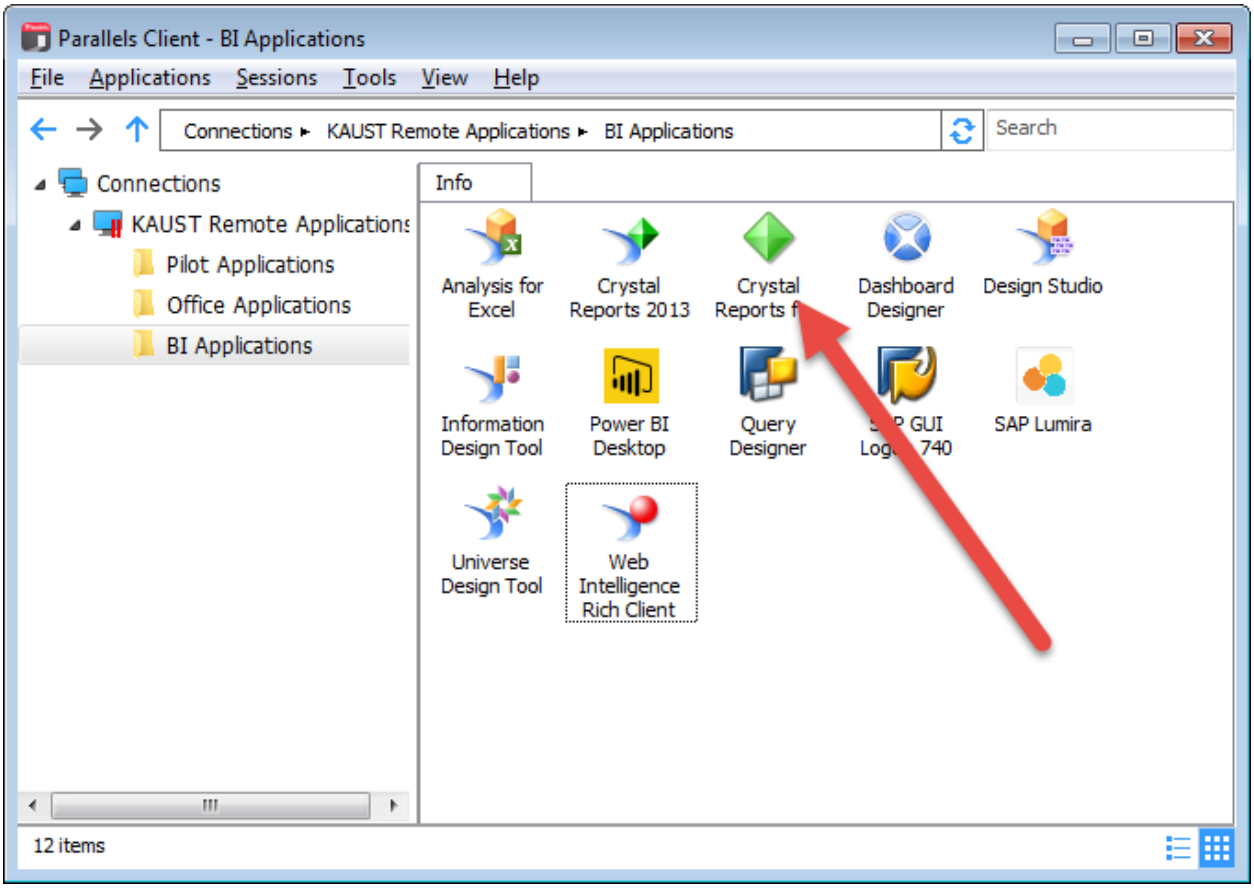
The above components, work similar to the Excel Pivot Tables. Further, from the Datasource Frame, you can drag and drop the dimensions in the Rows or Columns and also set Filters in Background Filter to exclude any data from the output.

Crystal Reports for Enterprise

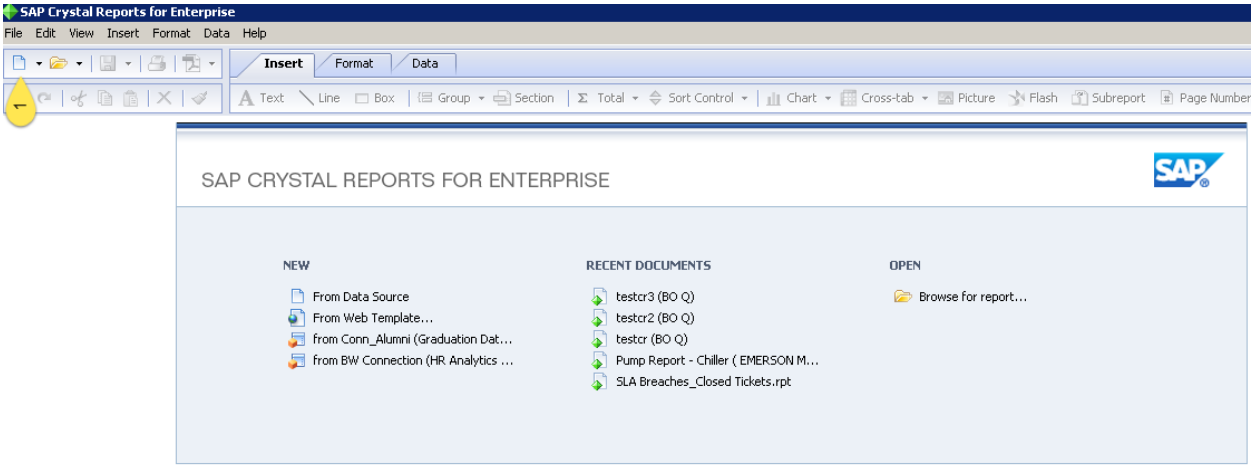
Crystal Reports is a tool to create Pixel Perfect Formatted Reports. Crystal also is a very powerful tool in terms of the creating logic and output of multiple reports and sub reports. Crystal Reports can also be used for creating a booklet kind of a report output. Building just one report of crystal, the output can be can be automatically filtered for data and published to respective department or users based on their respective filters, instead of having to create and publish the report separately for separate departments.

Crystal Reports design tool is a client based application only. There is only a Crystal Report Viewer on the Web. The Report/output document created in Crystal Reports is called Crystal Report file. This file will have an extension .rpt.

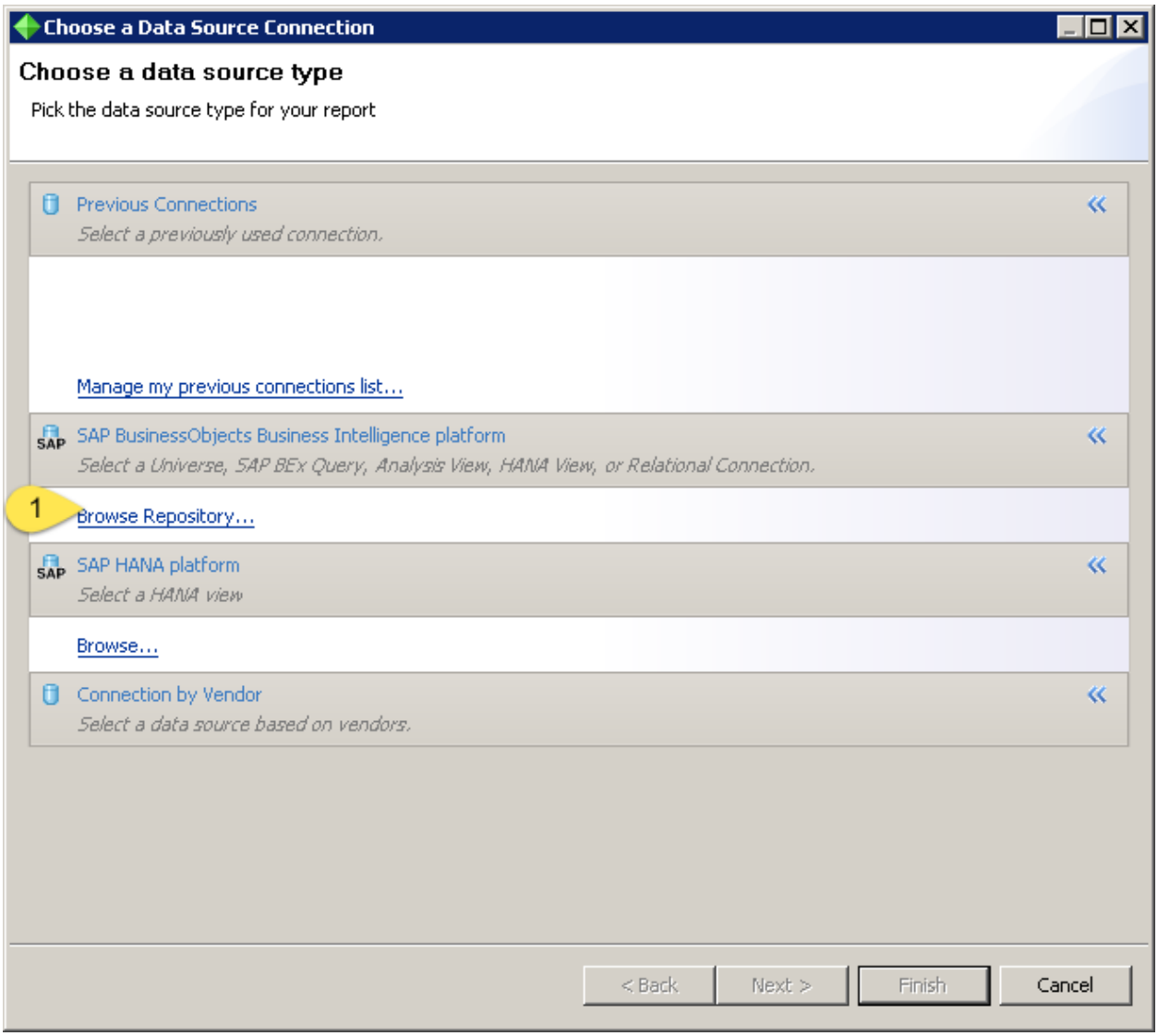
From Parallels client double click on Crystal Reports for Enterprise



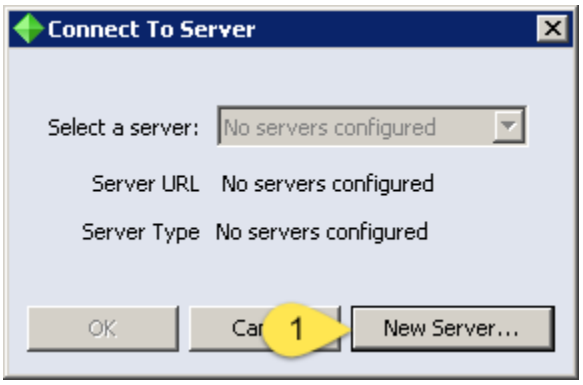
Once Crystal Reports is opened, click on Create icon to create a new report…



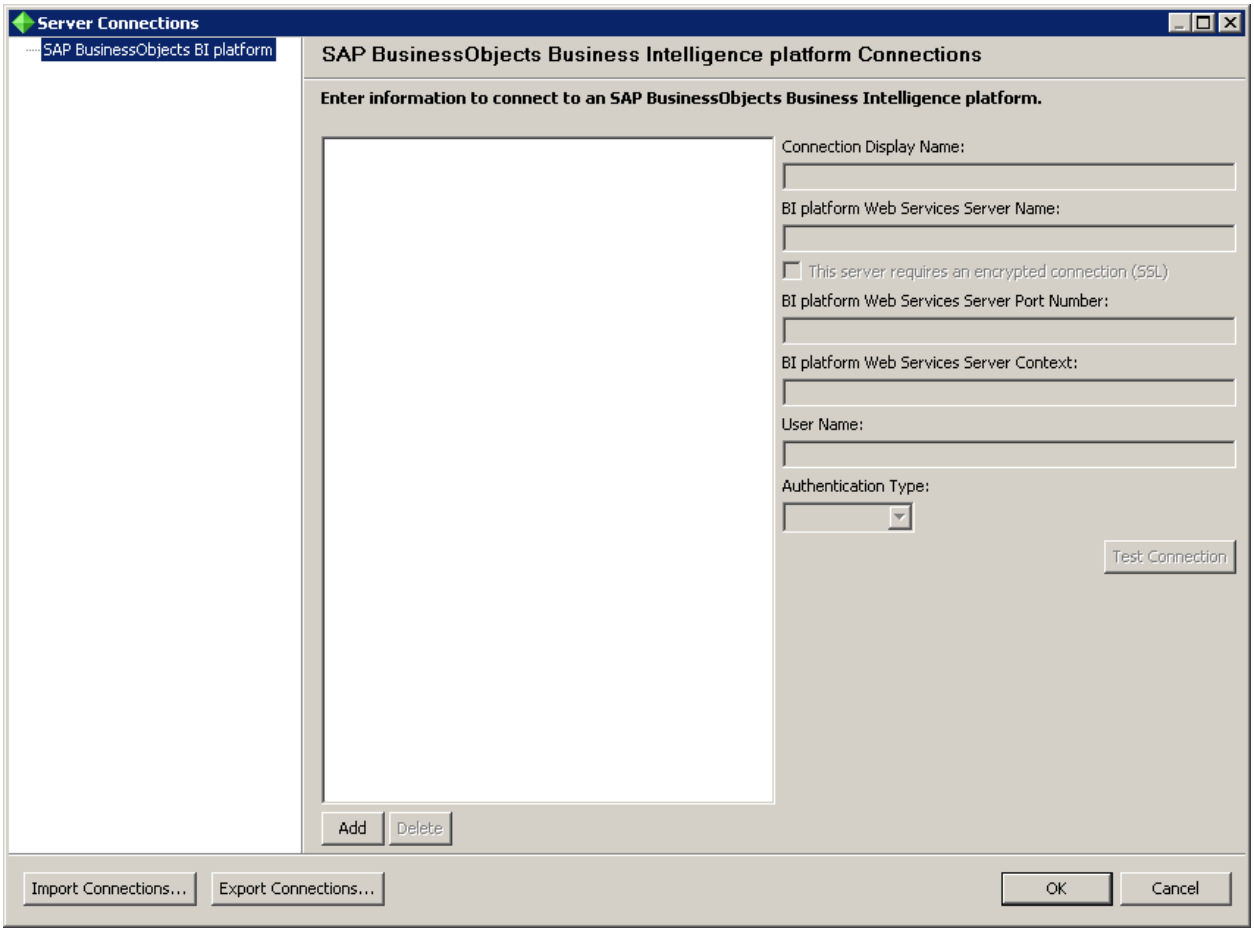
If you are using Crystal Reports for the first time, you will have to create a login connection from your system. Follow the below steps to create a connection to the BI Platform.



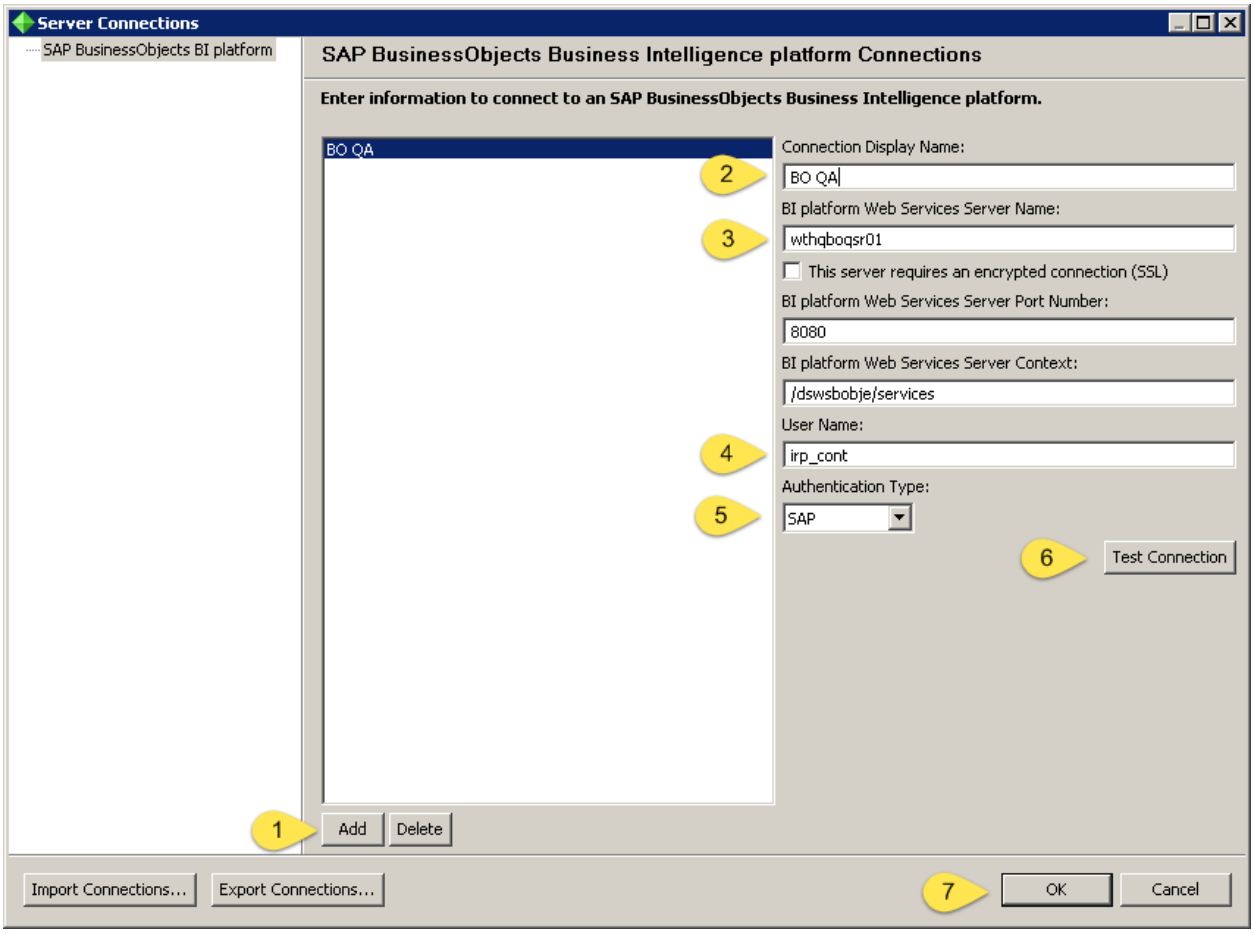
Click on Browse Repository. A dialog box appears, here click on the New Server,

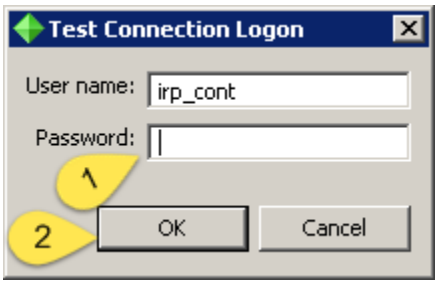


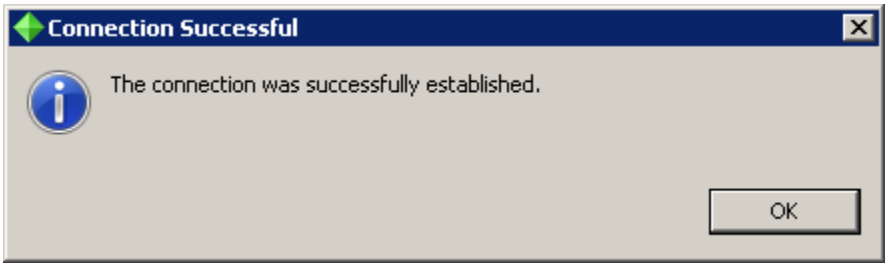
The below Server Connections dialog box appears…



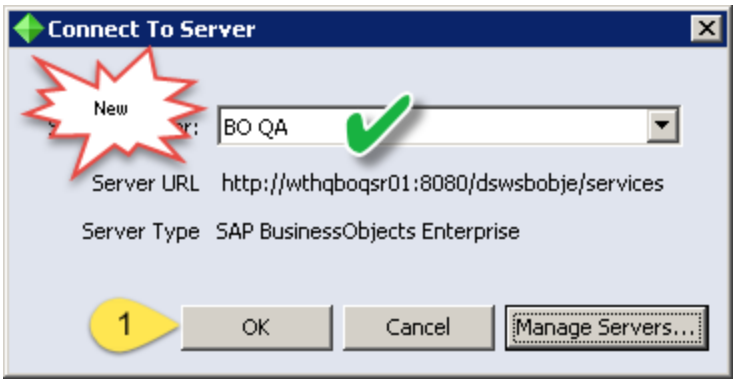
Fill the Connection details as per the Dev/QA/Prd System you are trying to connect. Follow screen shot below.



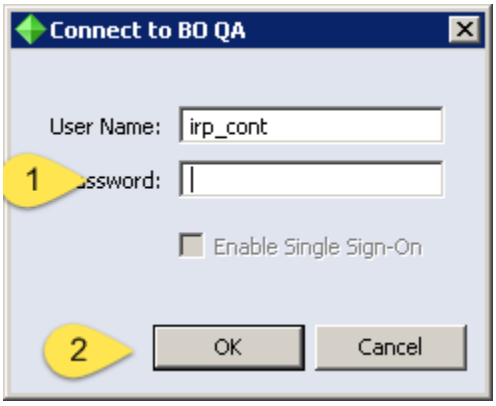




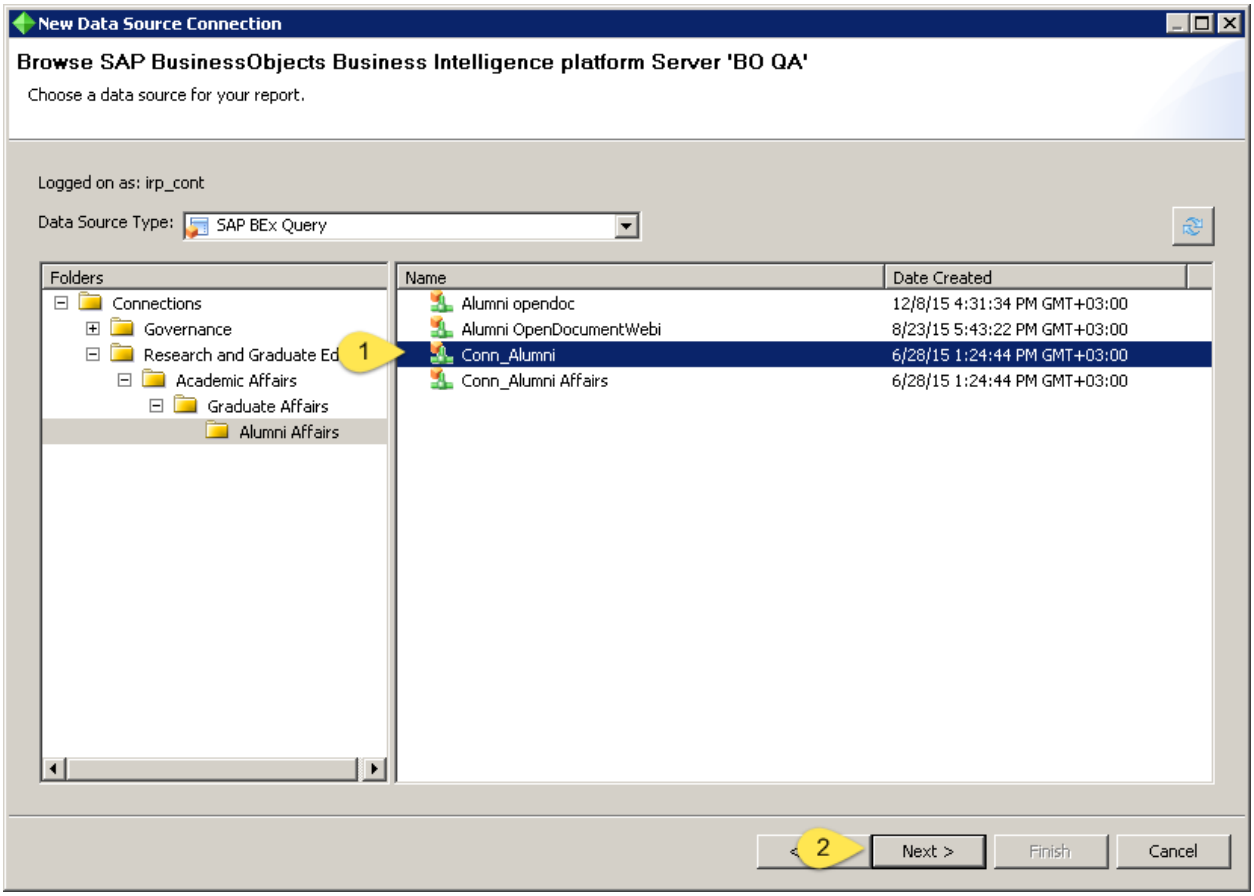
Once the connection is created, this appears on the Connect to Server Dialog Box, here click on OK to continue to create the report. If you need to add other systems connections, click on Manage Servers and add the other system connections as mentioned above.



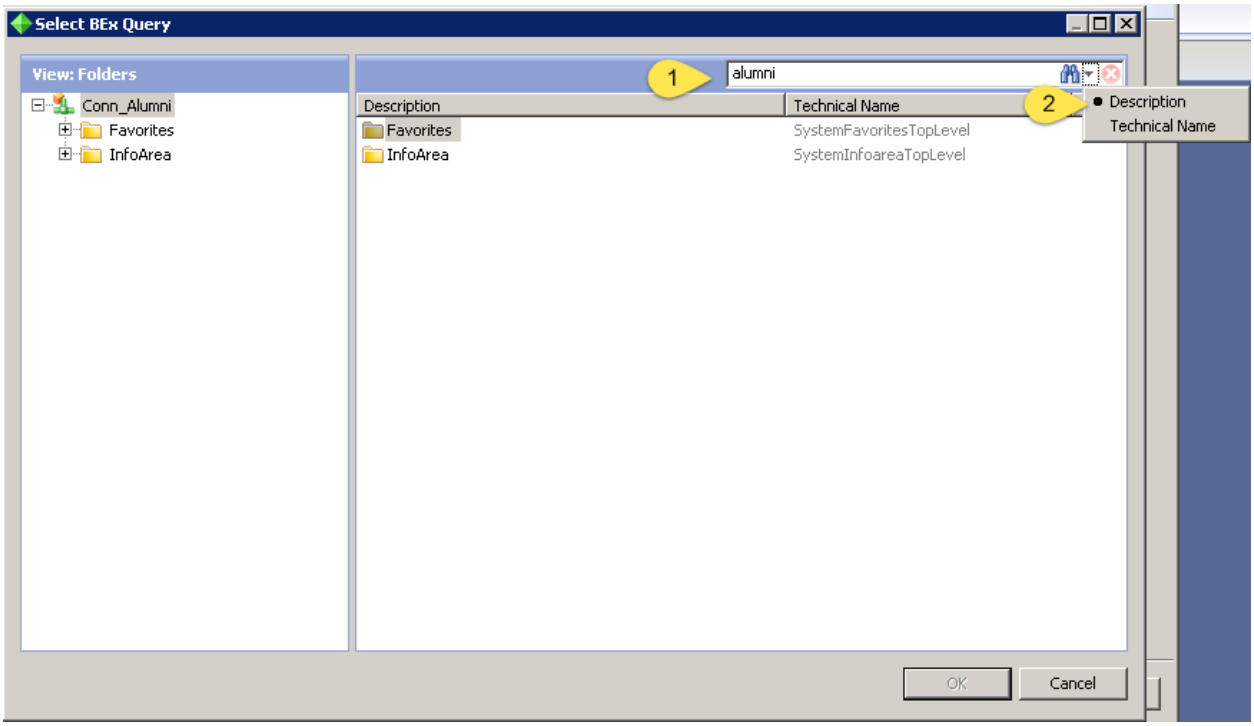
Enter the user id and password to connect to the required respective Dev/QA/Prd system.



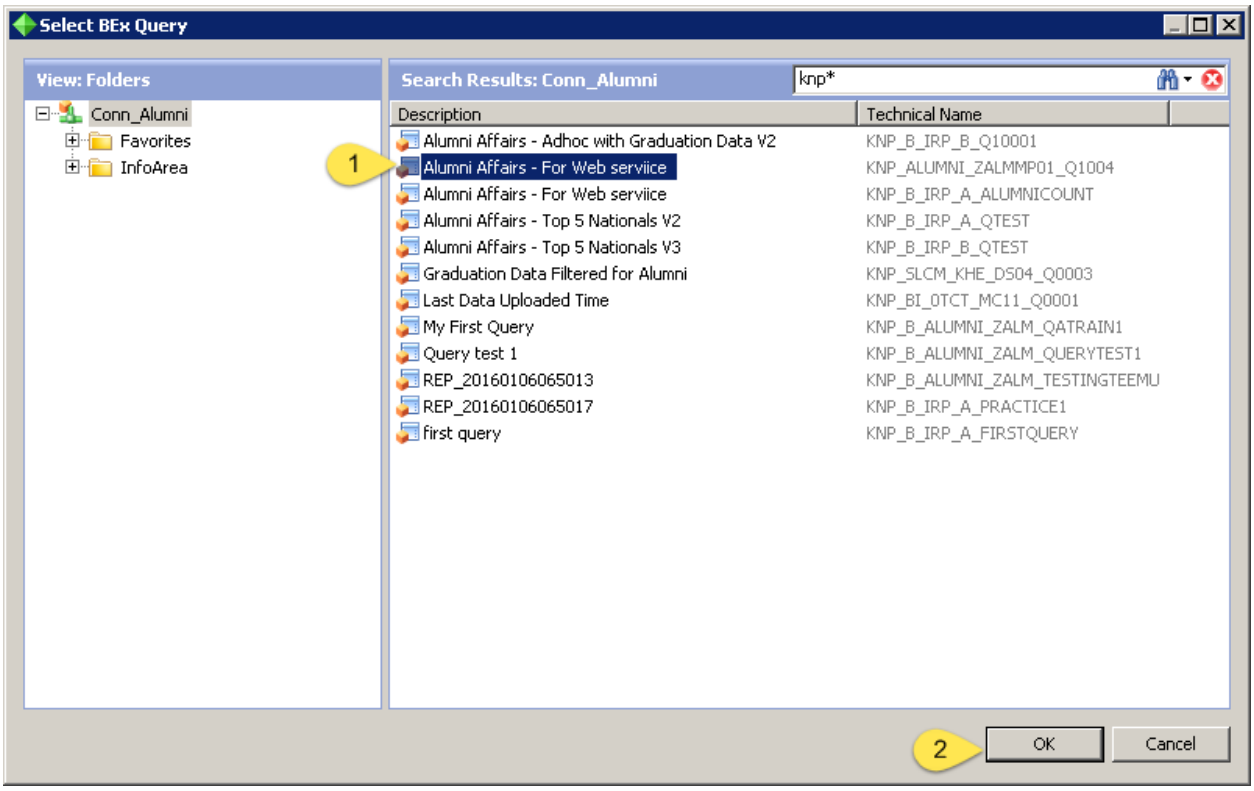
In the next screen, you will see need to Navigate to the SAP BEx Query connection (Conn_Alumni) from your respective Folder Structure, and then search the required query in the search frame.



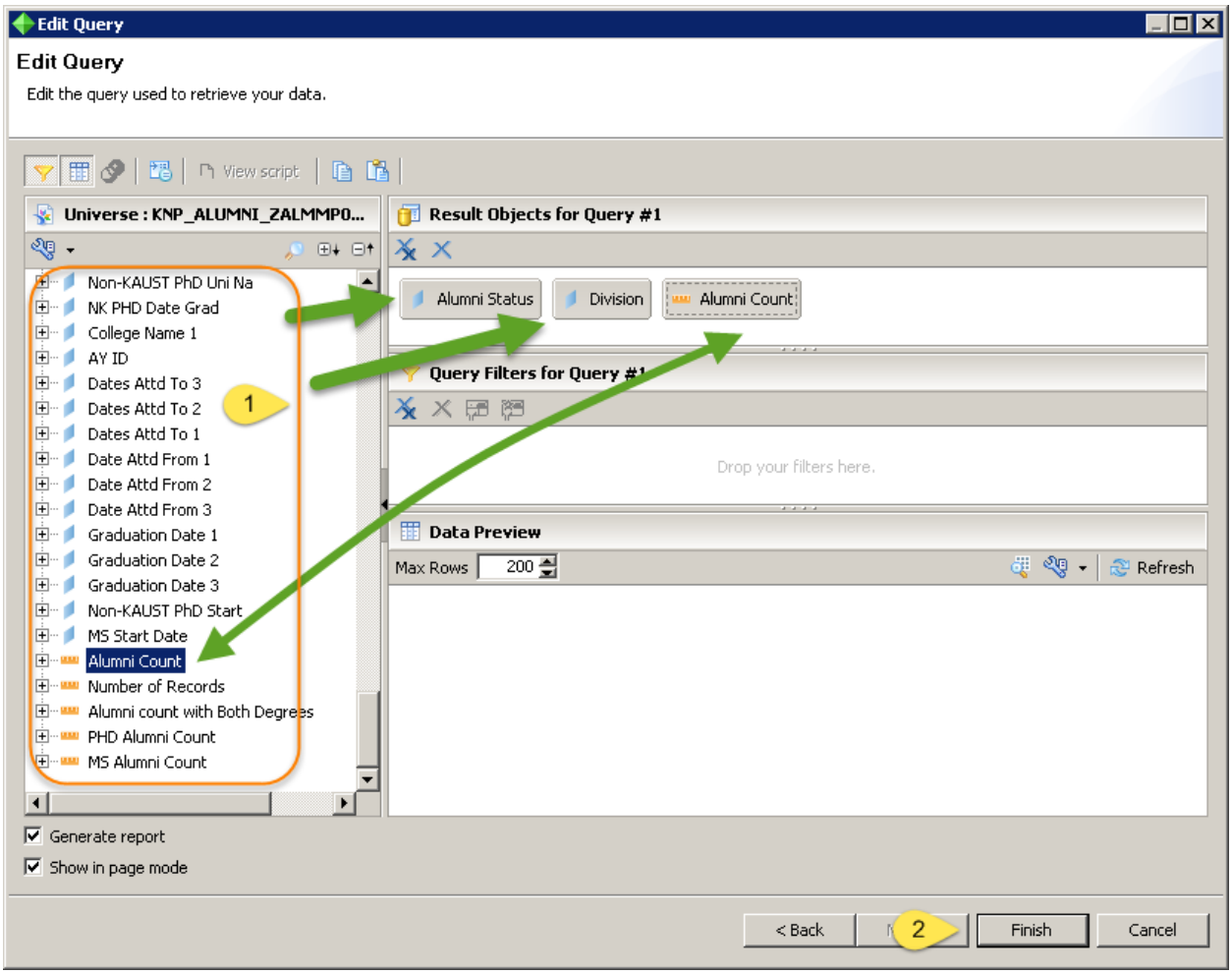
In the search frame, take note to search the query by the description or technical name, by clicking on the small triangle beside the binoculars (2).



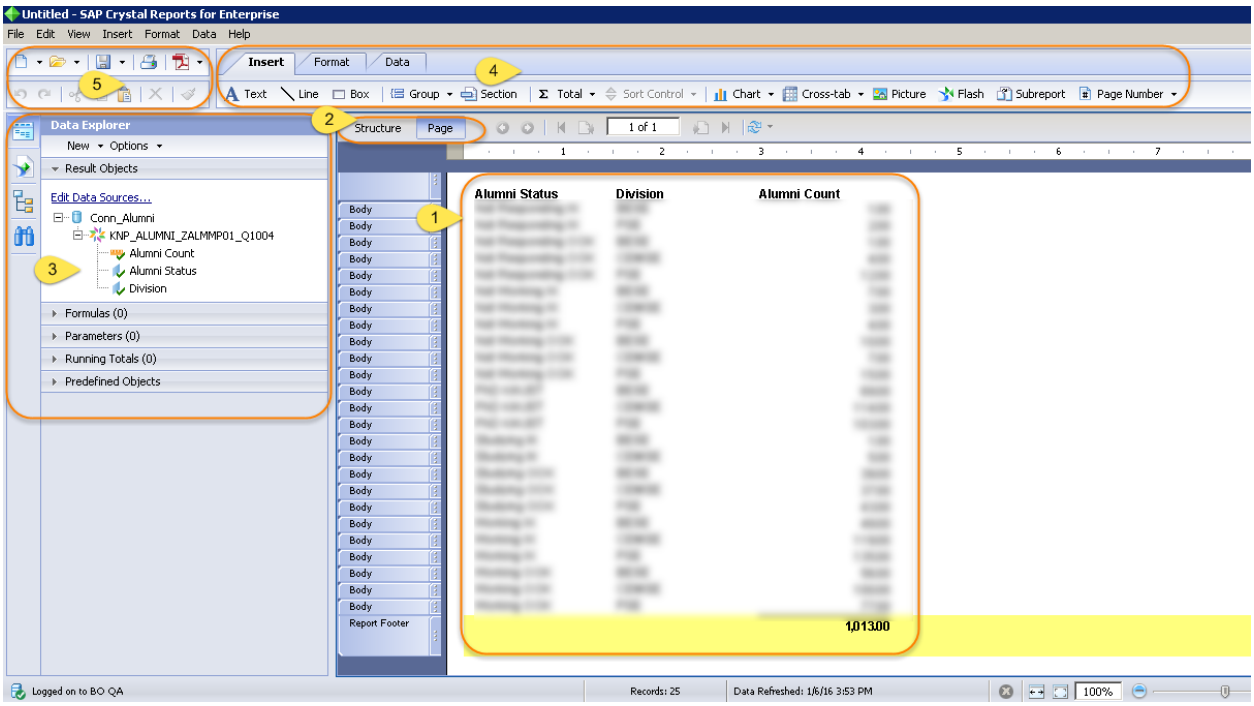
Once you search your required Query, you can select the required Query and click ok to continue.



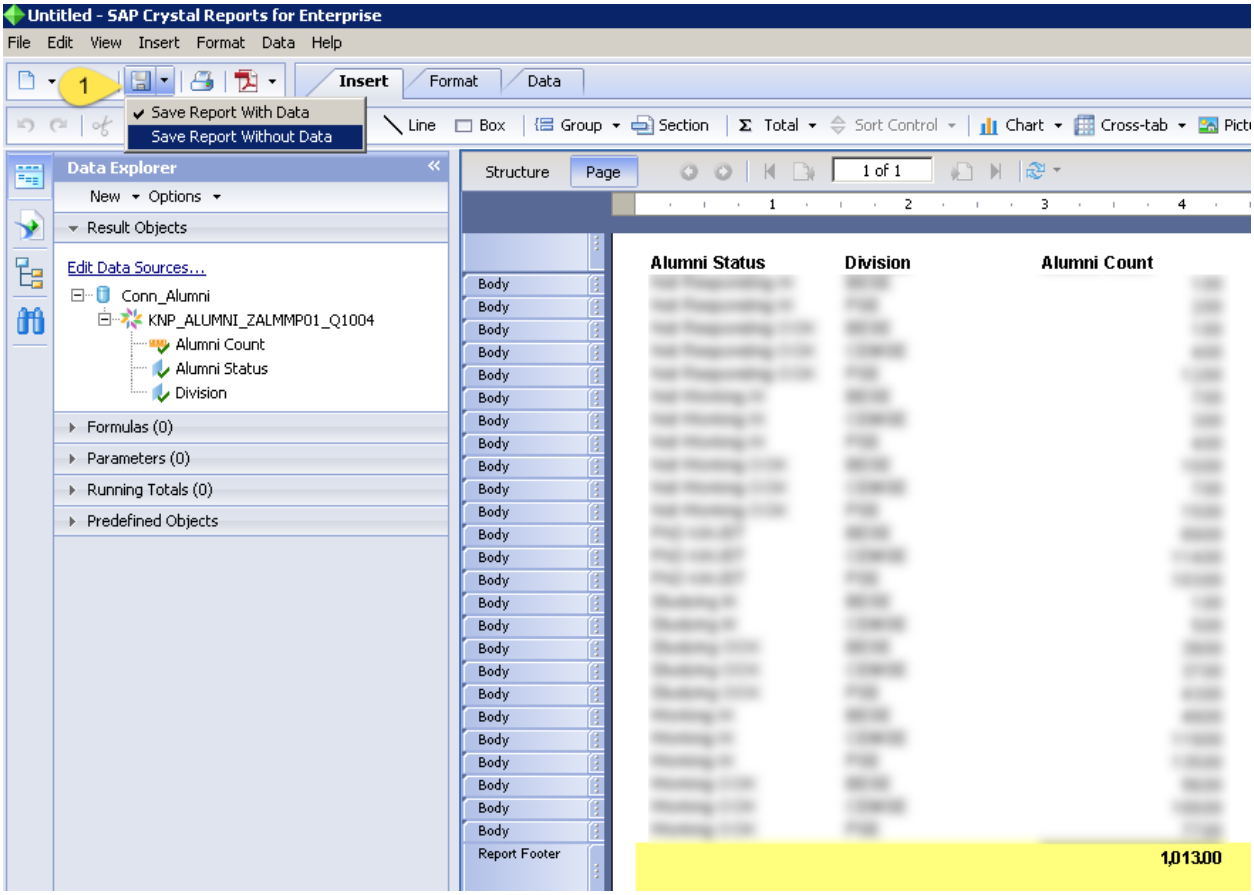
An Edit Query dialog box appears, similar to WebI Tool, where you can select the required dimensions and measures for the query output, set the required filters of data in the Query Filters and click finish to continue.



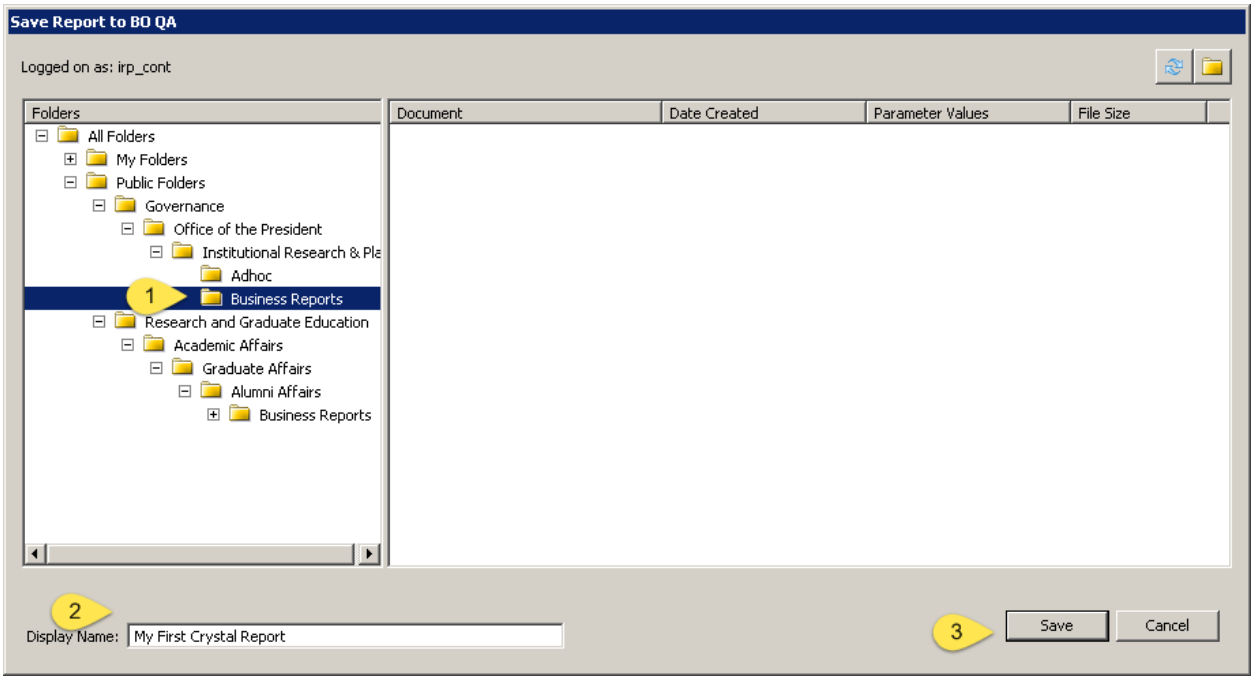
The system generates the required output and displays the data in the Page Layout (2).



You can design the Crystal Report as per you required design by clicking on the "Structure Tab" (2). Once you have designed your report, you can save the report either locally or to the Platform with or without data.



Once you choose to save the data to the platform, choose your required location to publish the query and save the query with your required naming convention.

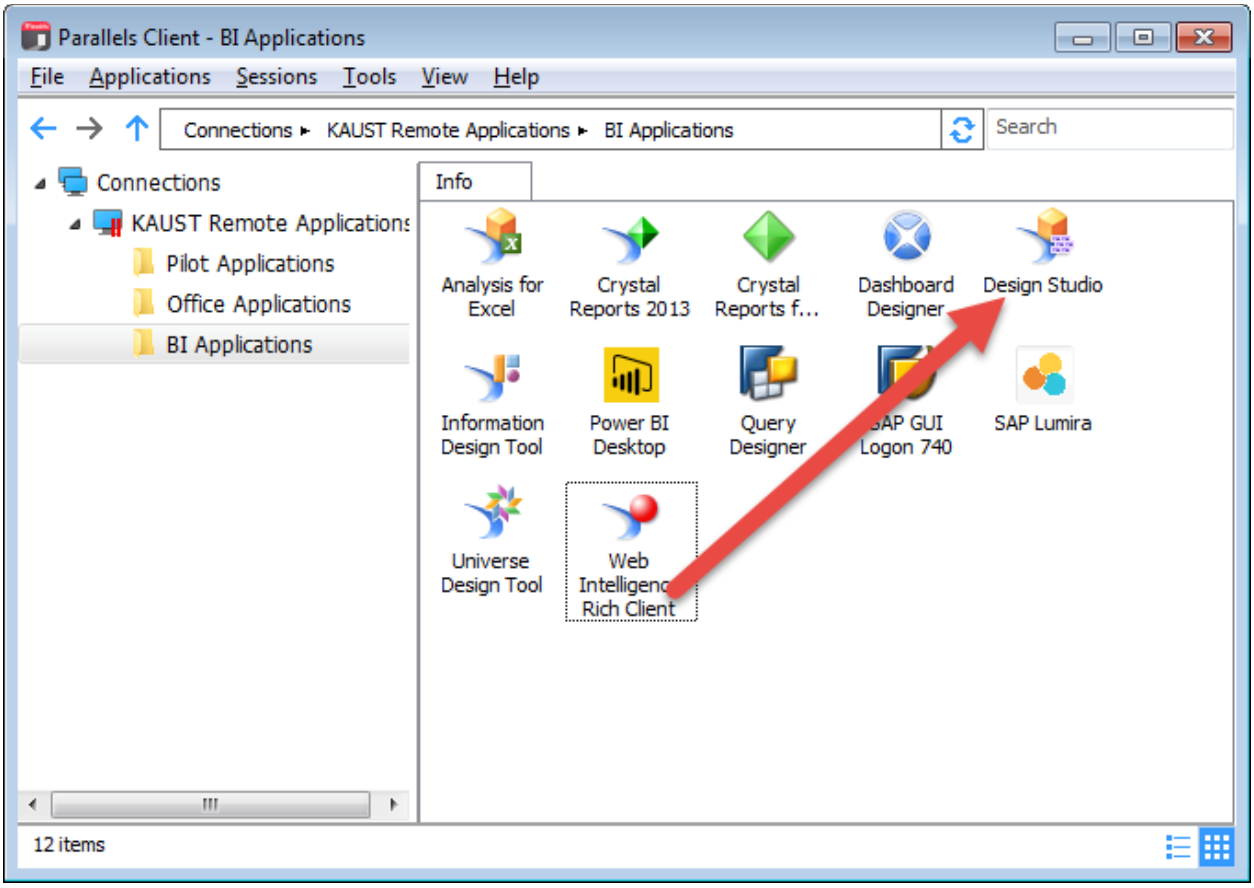

Save Report to BO QA
Logged on as: irp_cont
Folders
All Folders
My Folders
Public Folders
Governance
Office of the President
Institutional Research & Pla
Adhoc
Business Reports
Research and Graduate Education
Academic Affairs
Graduate Affairs
Alumni Affairs
Business Reports
Document
Date Created
Parameter Values
File Size
1
2
Display Name:
My First Crystal Report
3
Save
Cancel

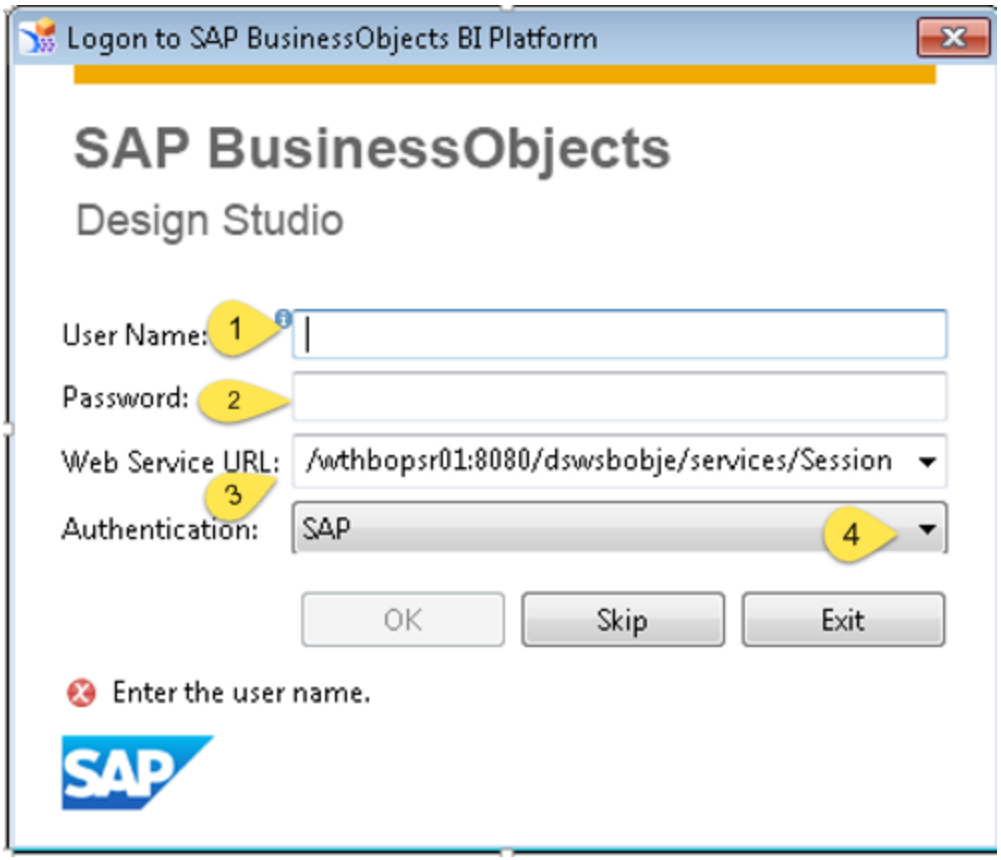
Design Studio

Design Studio is an application to build Executive Dashboards, Managerial Dashboards or Operational Dashboards. Dashboards built with Design Studio can be tailor made either for Desktop usage or for Mobile Usage. Design Studio provides rich features to design the Dashboards with the required intuitiveness/interactivity on the dashboards. The generated output of Design Studio is supported on iPhone, iPad using HTML 5.

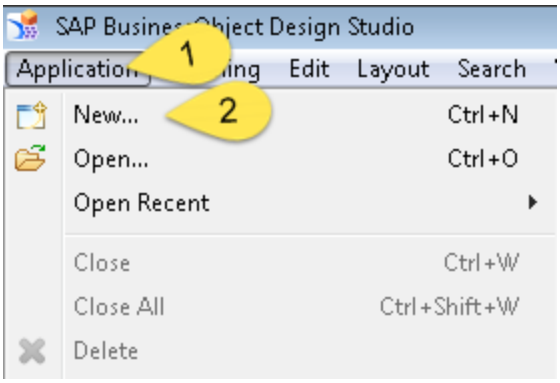
The Report/output document created in Design Studio is called a Design Studio Application.

Follow the steps to launch Design Studio Application.

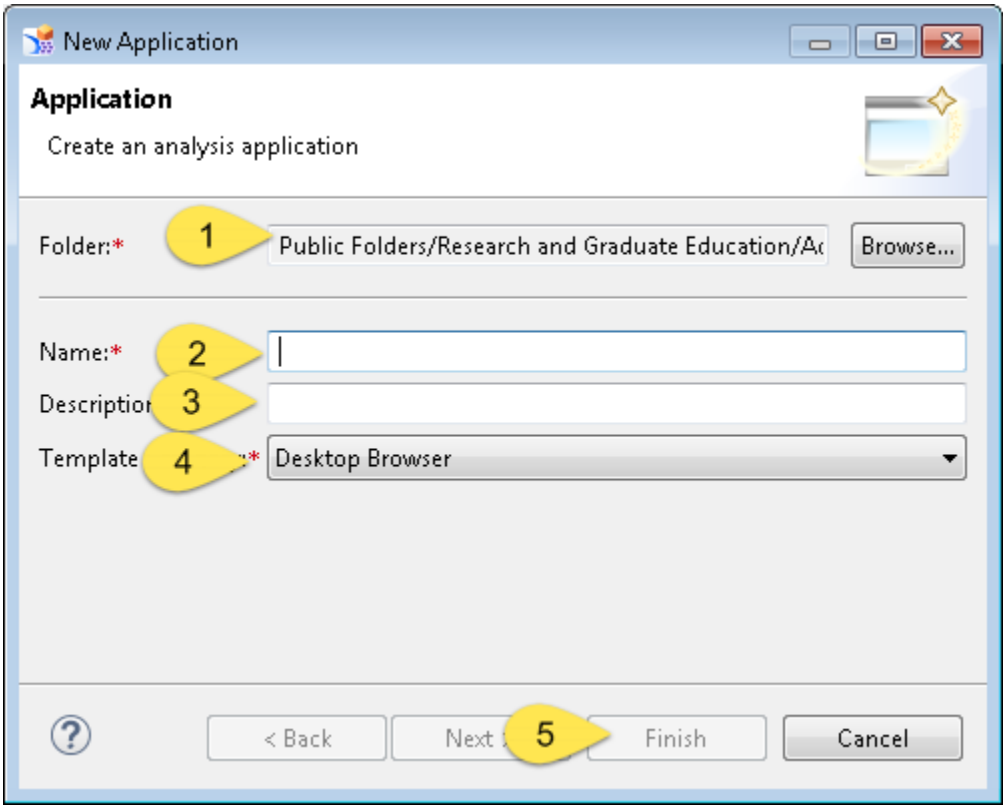




Ensure to use the right Web Service URL to connect to the required Dev/QA or Production BI Platform. Once you login in Design Studio, Click on Application Menu and click on New…

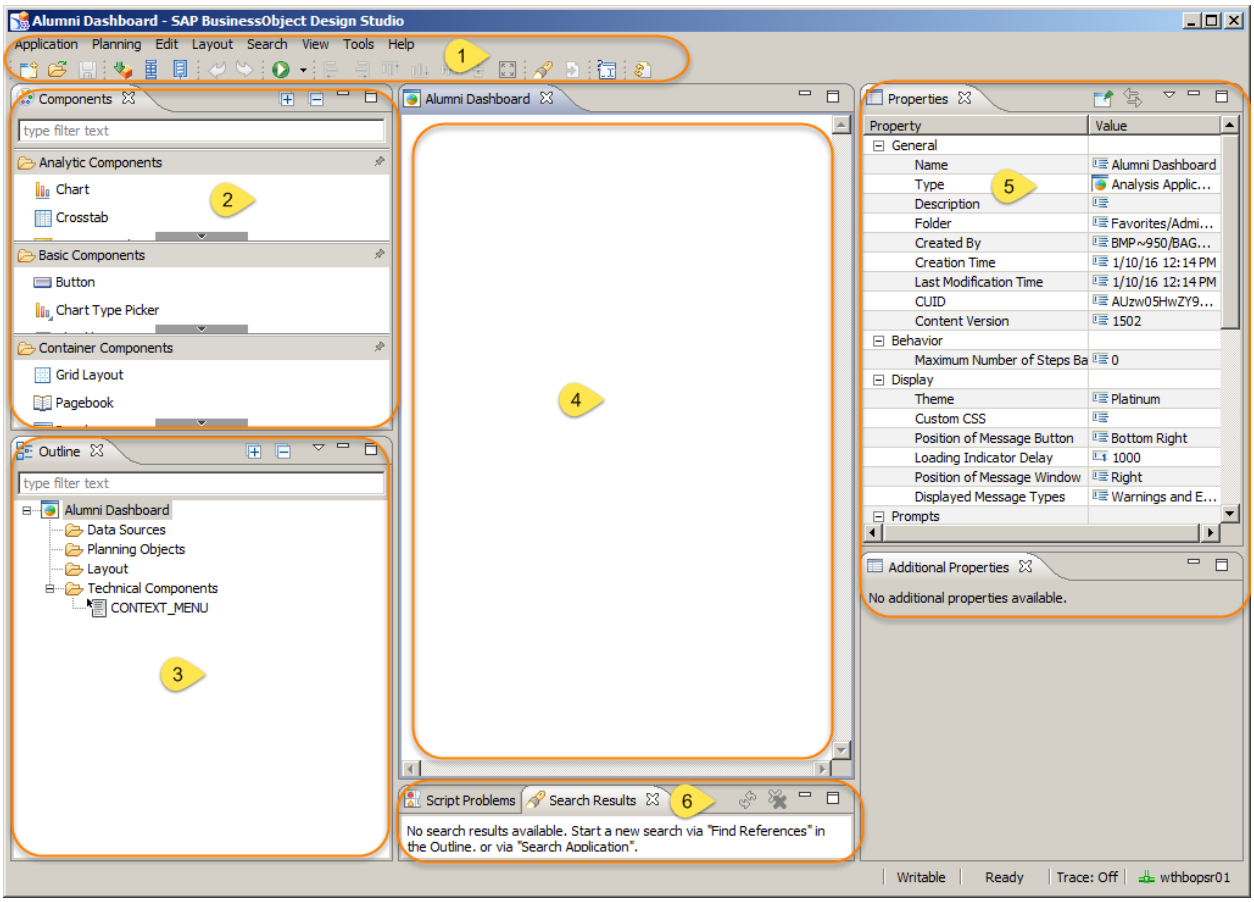


As you are connected to the BI platform, you will have to navigate and choose the BI Platform Public Folder, where this Dashboard file will be saved.



Enter the name of the Dashboard, with the required Description. Select the Template of the Dashboard Application, (Desktop or Mobile) and click Finish.

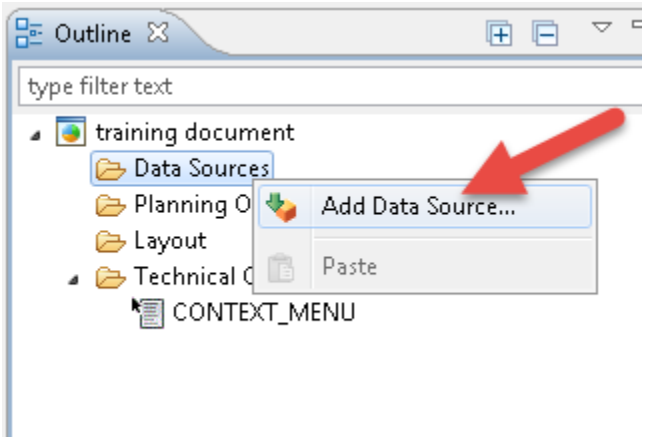
The below first design screen of Design Studio appears:



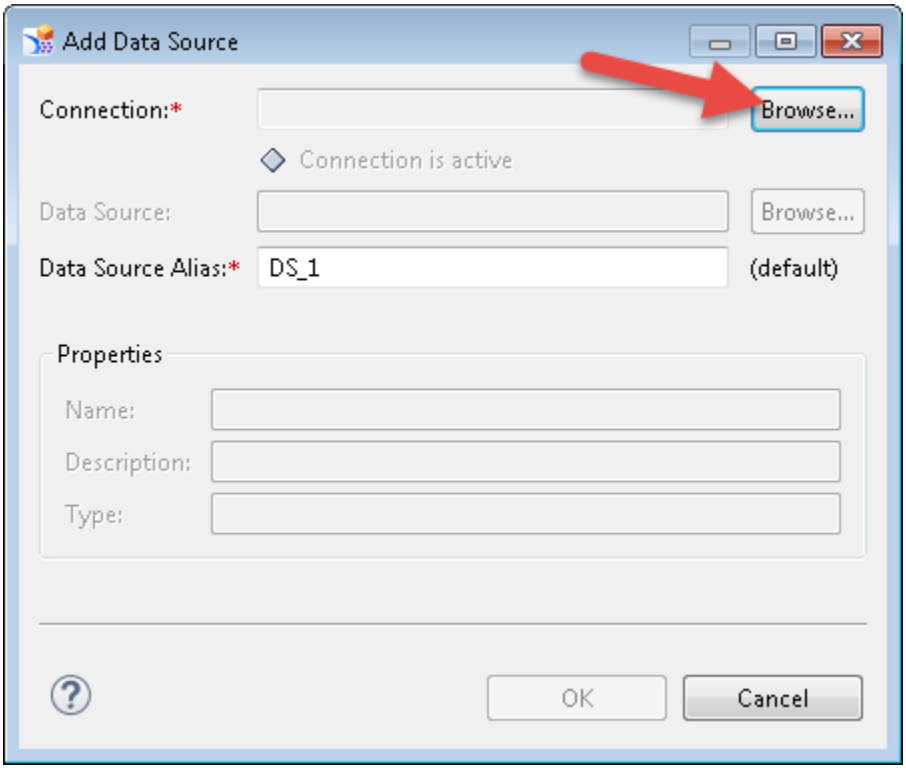
Highlighted above are the important design time features of Design Studio Application:

1) Menu and Tool Bar
2) Components Frame – This includes all the Dashboard Components available for Design (Table/Charts etc.)
3) Outline Frame – This includes options to set the data sources of the Dashboard components, layout etc.
4) This is the Design Canvas where the components are dragged and dropped as per the required dashboard layout.
5) Properties Frame – provides options to set the properties of the dashboard components.
6) Messages Frame – provides the design time messages.

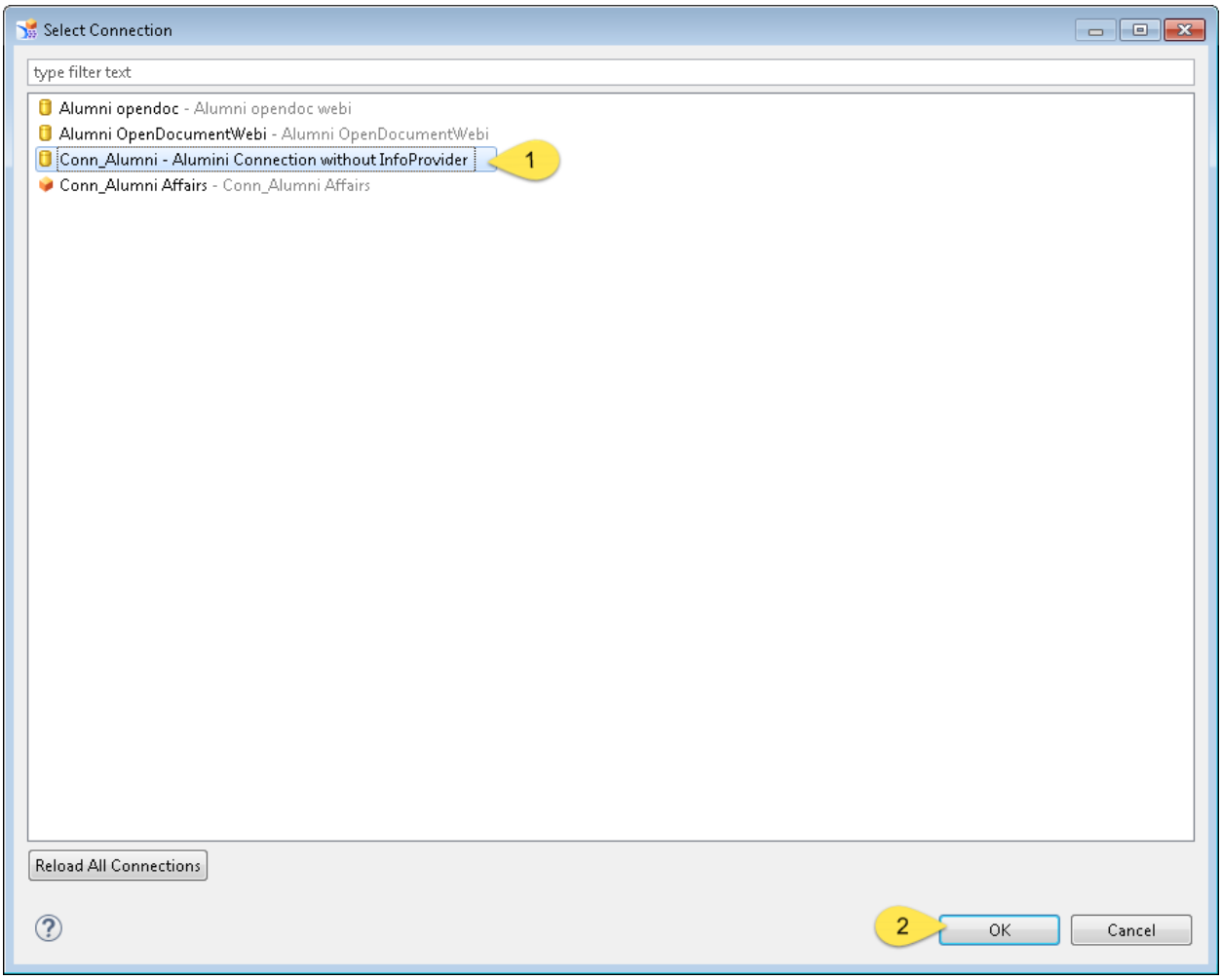
Once the first screen appears, you can set the required datasource/s (Query) of the dashboard from the Outline Frame (3)



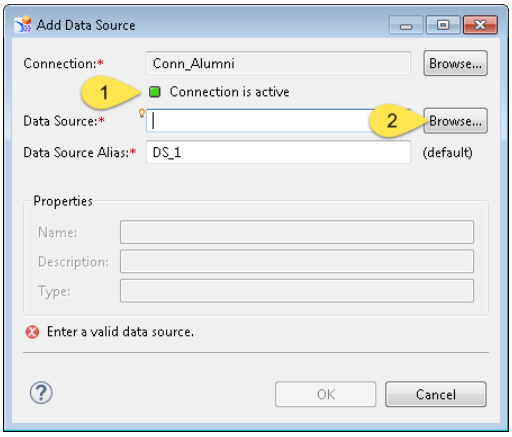
To add a datasource (Query), right click on the Data Sources folder and click on Add Data Source. The following Add Data Source Dialog box appears, Click on browse to continue….



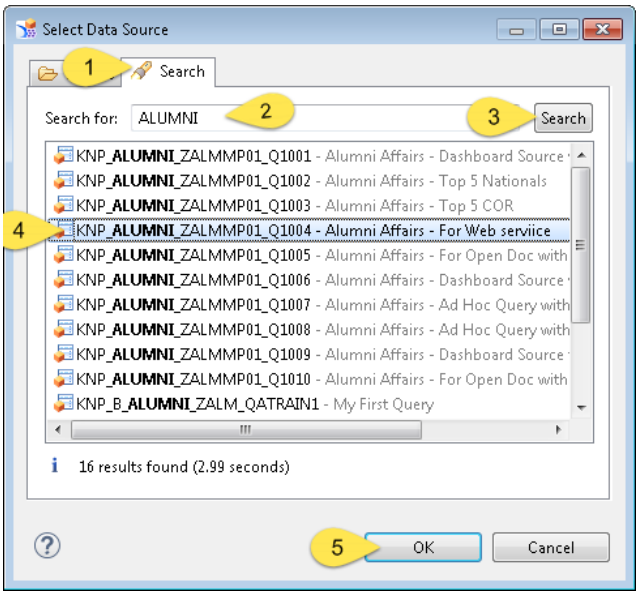
In the Select Connection Dialog Box, select the authorized “connection” for the respective data and click ok.



In the following dialog box…

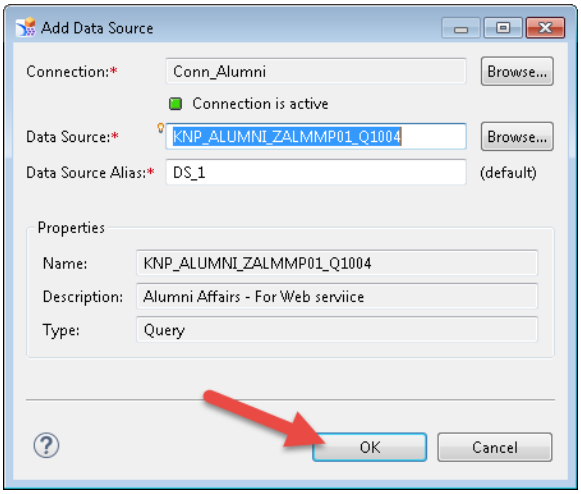


Ensure that the connection is active and click on Browse..



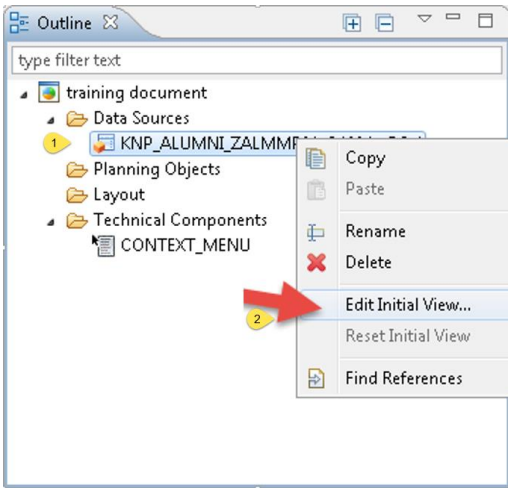
1- Click on Search tab
2- Input a keyword to search for a query
3- Click on search
4- Pick a query
5- Click on Ok

Once the required query is selected, click on "OK", in the Add Data Source Dialog box.

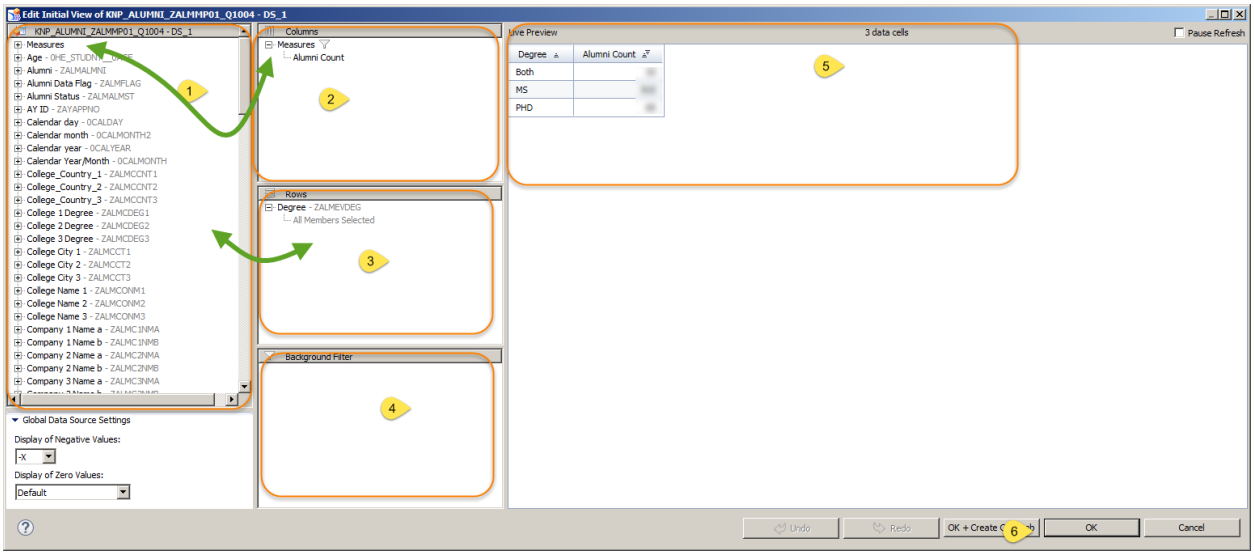


Next…

Right click on the added Query and select "Edit Initial View"

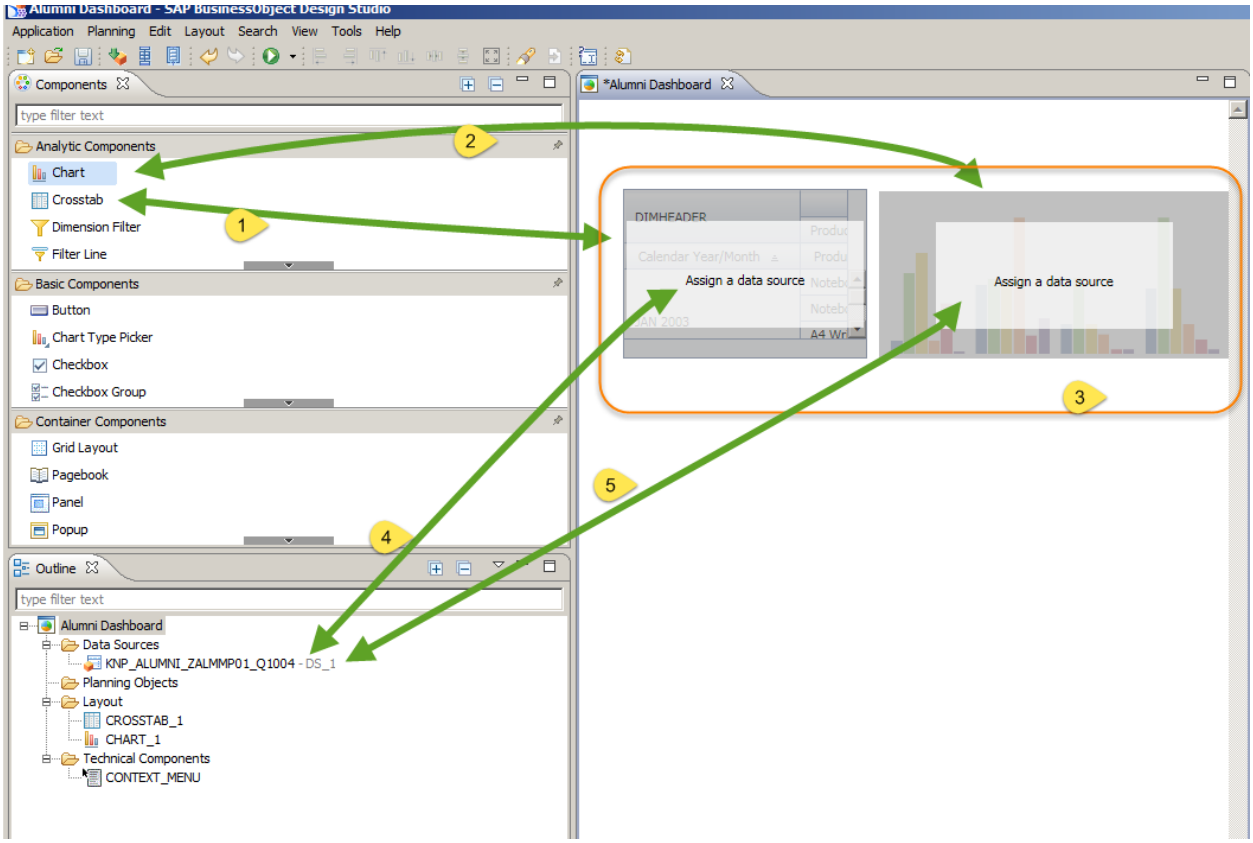


In the Edit Initial View, you set the required dimensions and measures and the background filters required for the dashboard output, by dragging and dropping. Only the selected dimensions and measures will be used for the dashboard.

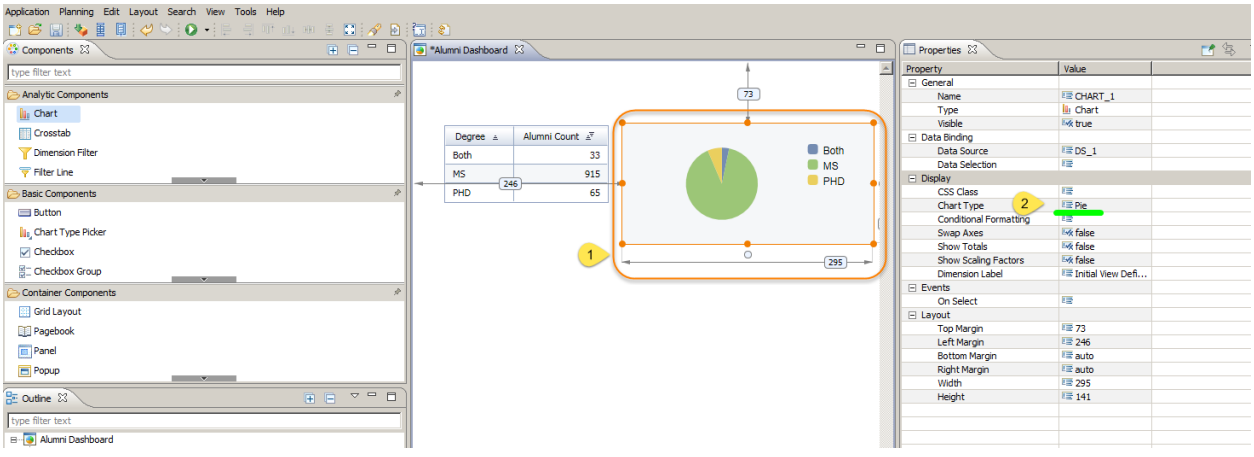


And click ok to continue.

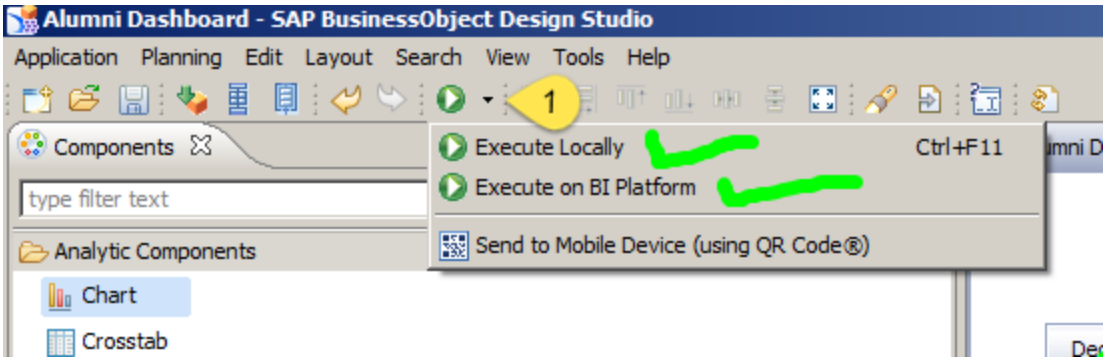
Next, drag and drop the required Dashboard Components and drop in the Design Canvas. See screen shot below. In the screen shot below a Cross Tab and a Chart component is added in the design canvas. Once you drag the components in the canvas you can resign the components as per the required design. Notice that the system prompts to assign a data source to the components. You can then click on the datasource and drag and drop it on the components.



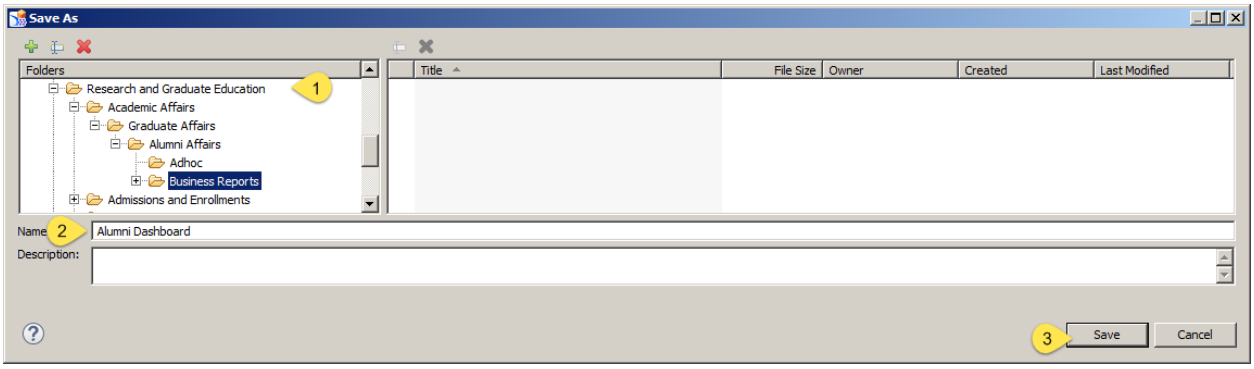
Notice once you assign the datasource, you see the output of the datasource. Once this is assigned, you can set the required properties to the required behavior of the components. In this case below, click on the chart component and set the chart type to Pie.



Once you design the output as required, you can preview the output by clicking on the Execute icon. (Screen shot below).



And then save it to the platform.



Once you save it to the platform, you can logon on the BI Launchpad and execute the dashboard built using Design Studio from the saved location.

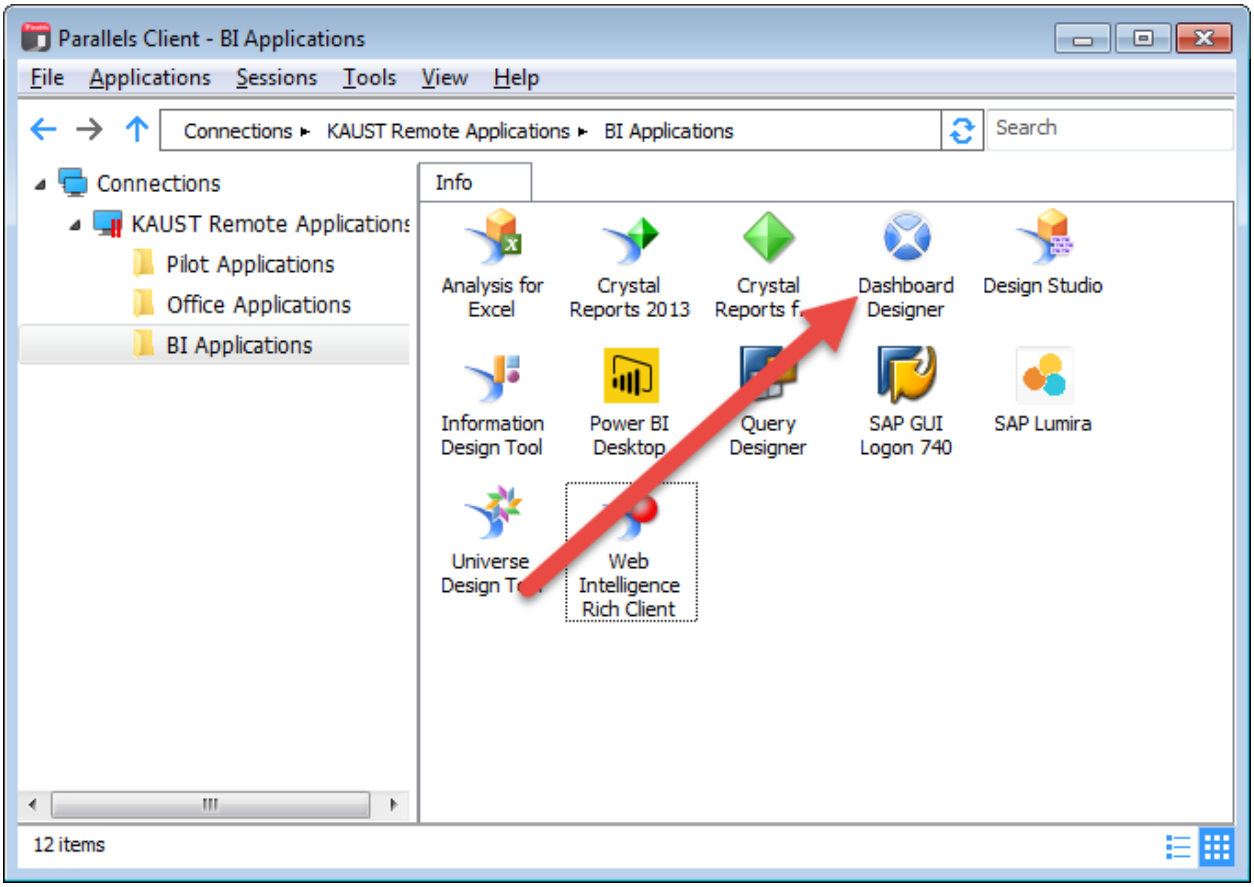
Dashboard Design

Dashboard Design Application is a similar application to Design Studio. It is also meant to create Dashboards for Executives and Managers or for Operational Purposes. The application consists various Dashboard Components, similar to Design Studio, viz., charts, graphs, and buttons, that our bound to data sources. These components display the data in a compact and visual manner. Unlike Design Studio, Dashboard Design Application, has an Excel Spreadsheet component embedded in the Application. This embedded spreadsheet component is used to push the data on the spread sheet from the data sources, and then later used to bind with the dashboard components from the spreadsheet to the components for displaying the data in a visual components. This also give the flexibility to use the Excel Formulas (Not all, but Most of the Excel Formulas are supported), for performing the calculations and lookup required for the Dashboard Logic.

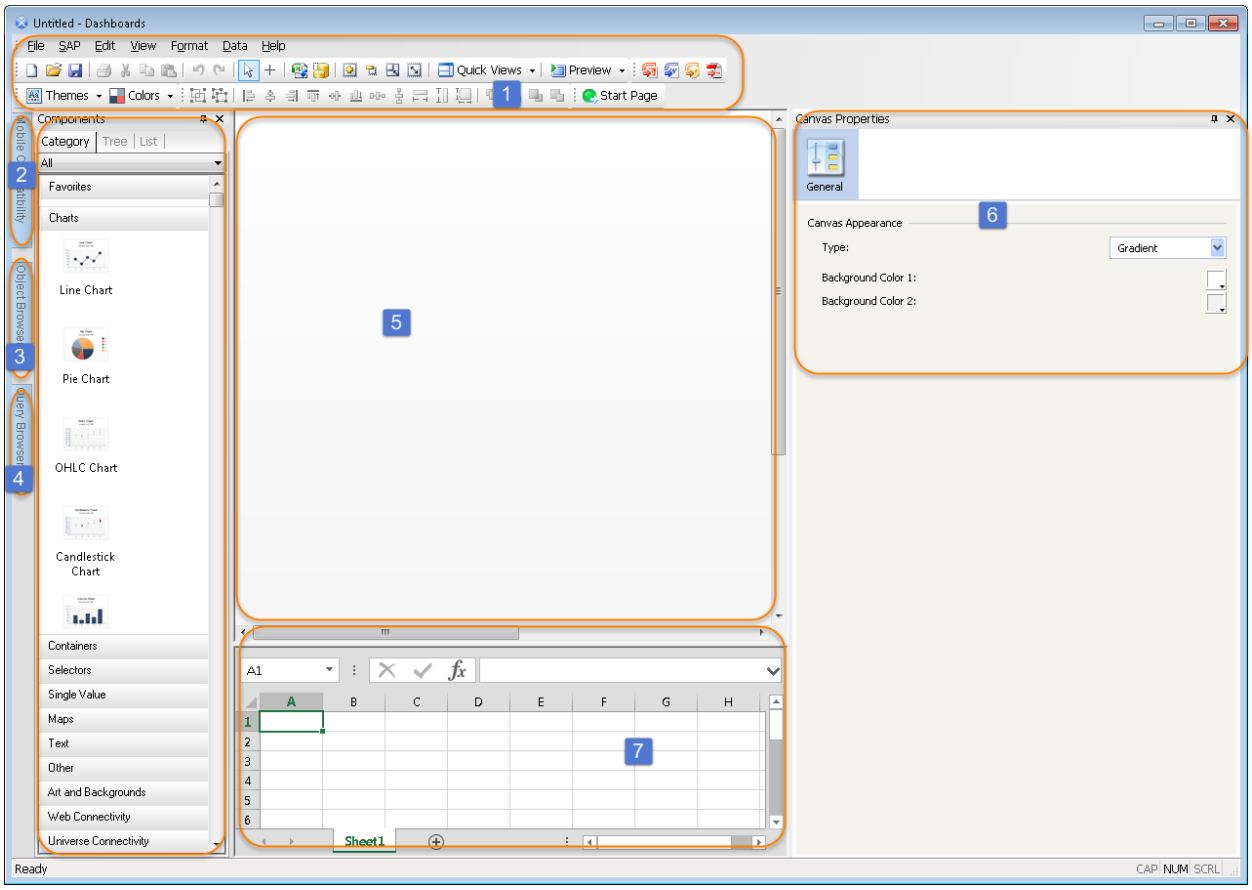
The Report/output document created in Dashboard Design is called a Dashboard file, this will have an extension of .xlf. From the application you can also generate a standalone .swf file and share it to users for usage. If the data in the dashboard xlf is not connected to the BI Platform, the generated swf file is readily usable. If the data in the dashboard xlf files is connected to the BI platform, the generated swf file will prompt for the system name, user id and password.

With Dashboard Design tool, you can bind the data to BEx Queries or you can build a standalone dashboard based on excel data only.

To Launch the Dashboard Design Tool, it can be found in parallels client:

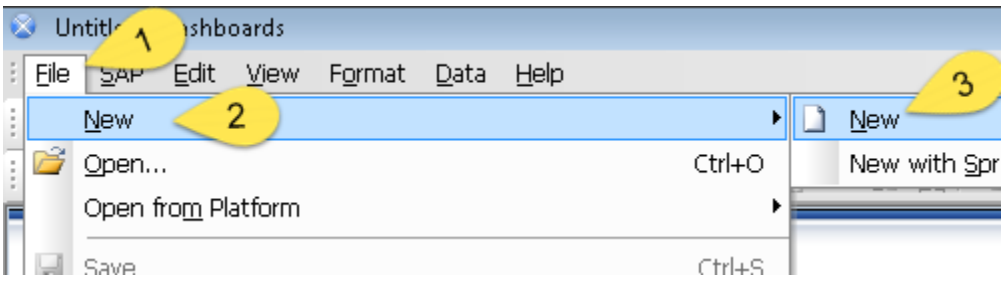


Following are the Components of Dashboard Design Application

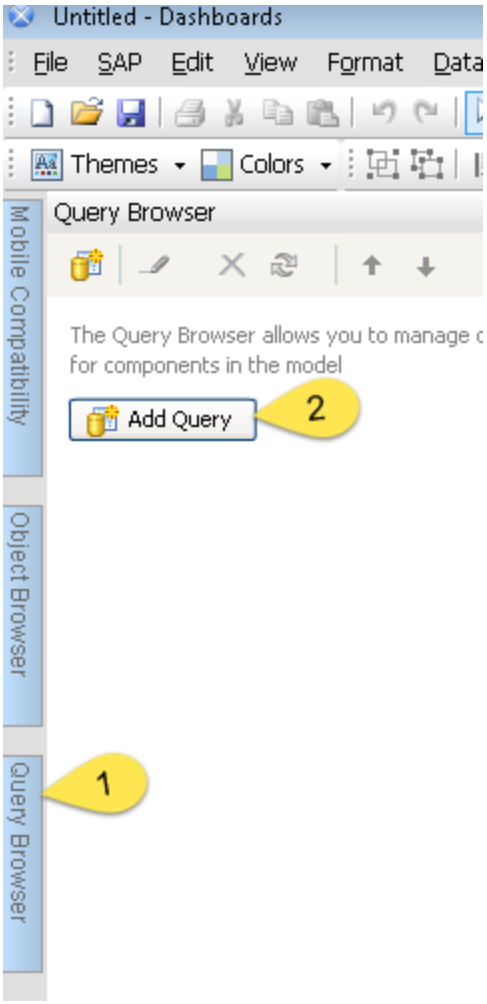


1) File and Toolbar Menu
2) Mobile Compatible Components
3) Object Browser for list of charts, graphs, selectors etc.
4) Query Browser for Data Binding
5) Dashboard Canvas for the actual Dashboard Layout and design
6) Canvas Components Properties, to set the properties of the components used.
7) Spreadsheet component to push the data to excel and further bind this excel data to components from the Canvas component properties.

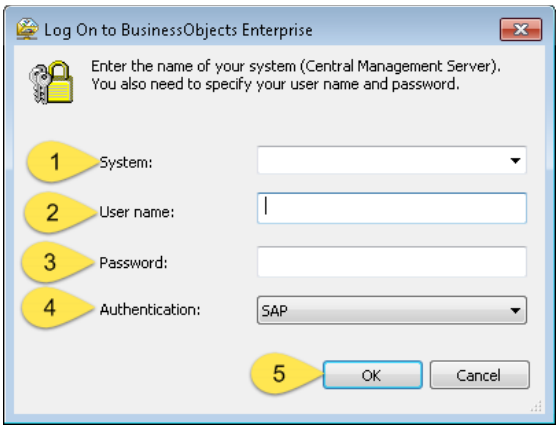
Once the Dashboard Design Application is launched, click on the File Menu and Select New and New to create a new Dashboard.



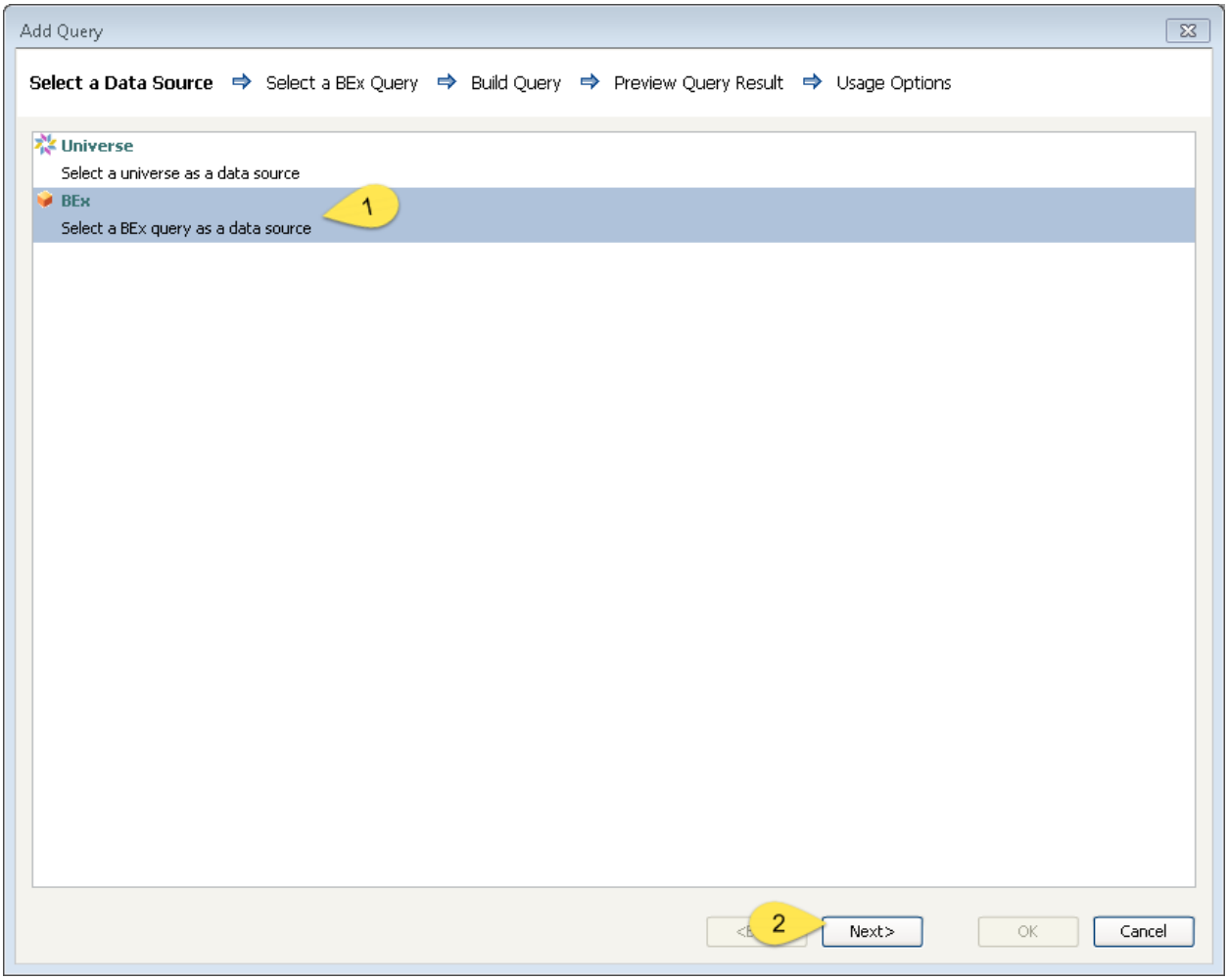
Click on Query Browser to add a Query (to select data from Datawarehouse).



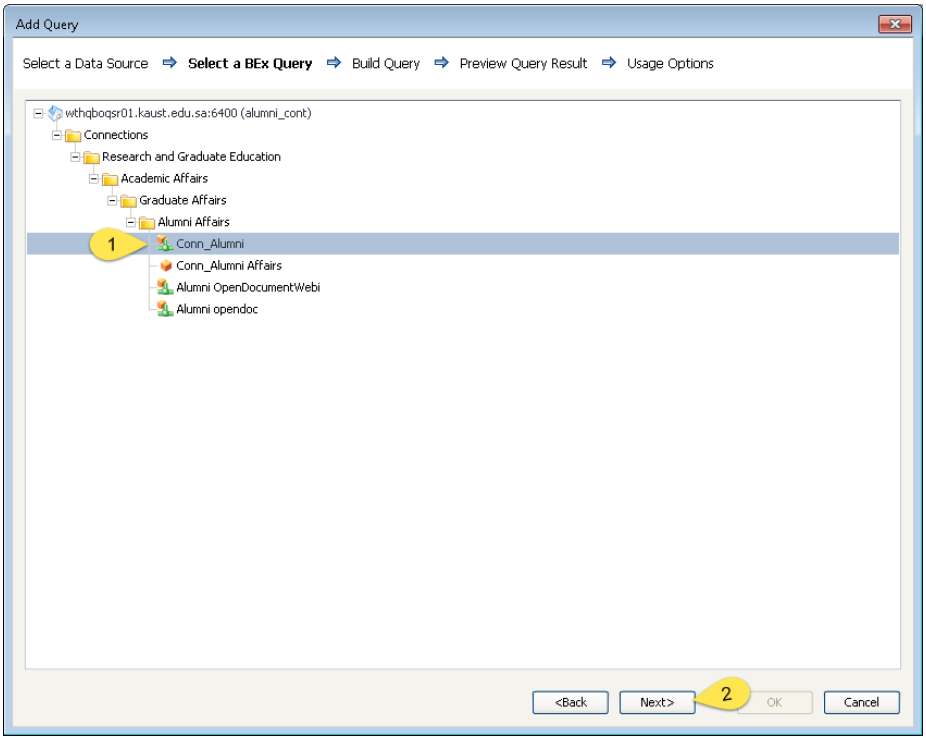
System will prompt for the login credentials for the BI Platform. Enter the required system name of the Server (Dev/QA or PRD), User name, Password and Select the required Authentication to login.

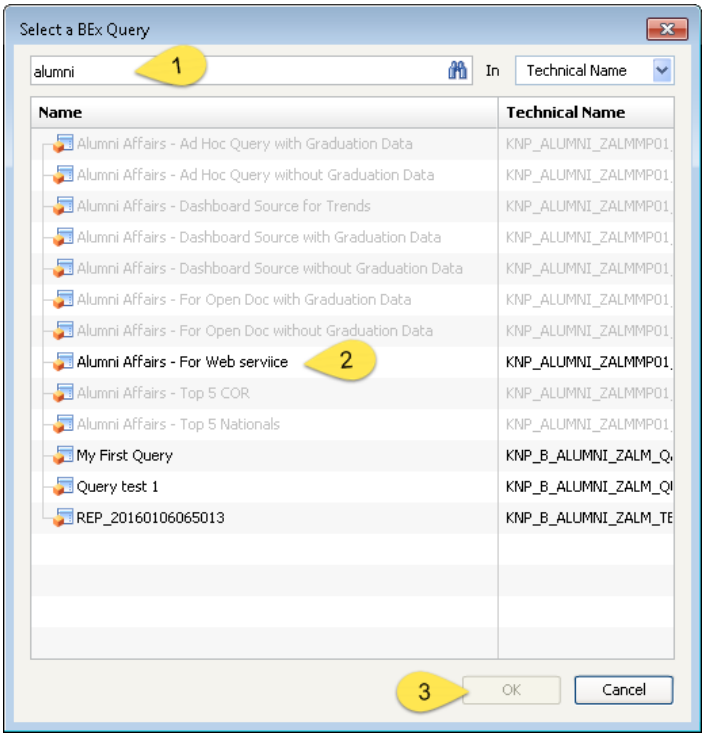


In the Add Query Dialog Box select the Semantic layer, either or BEx Query or Universe, in our Case it is BEx Query. Click on BEx and click on Next to



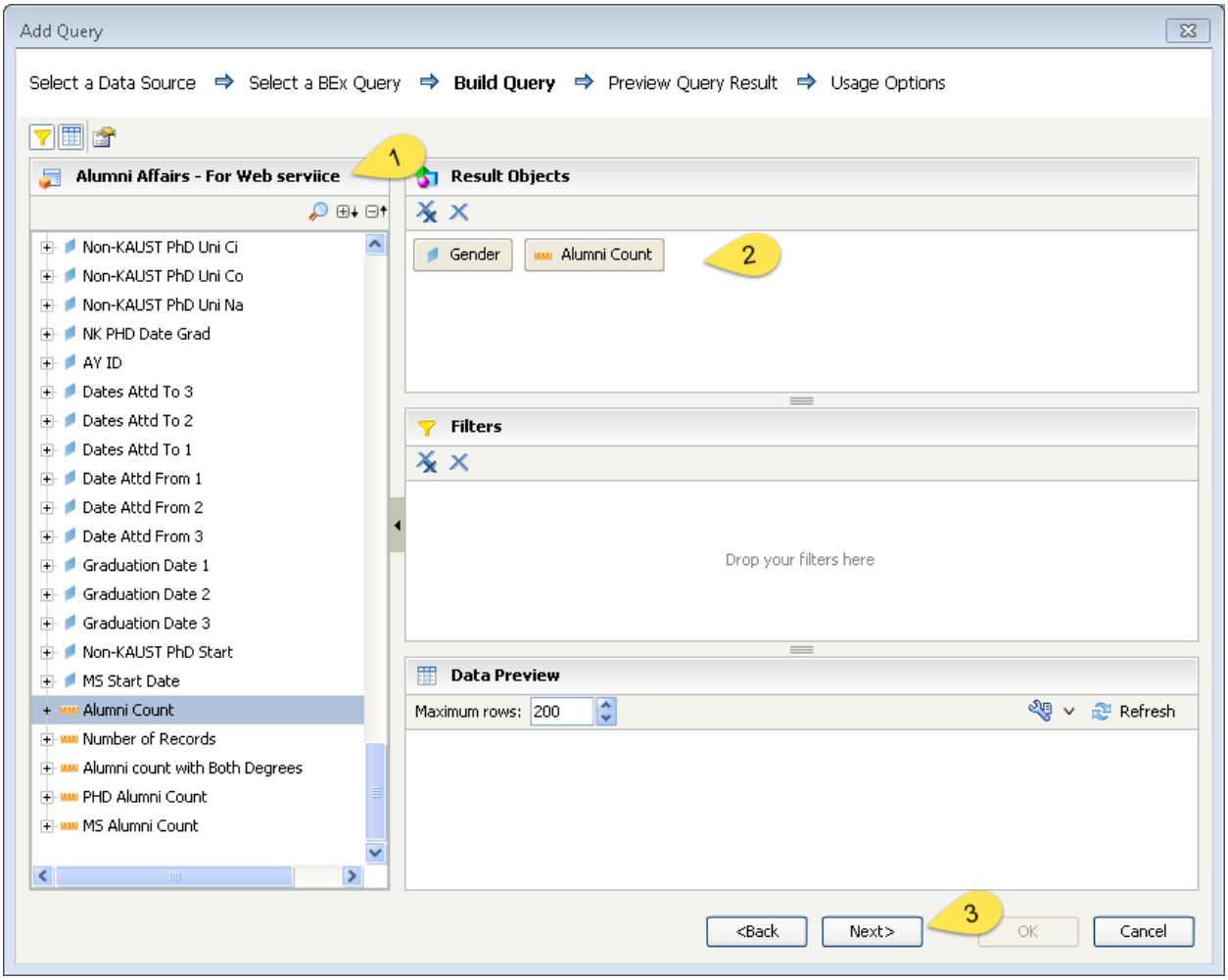
From the authorized folder structure, Navigate to find and select the authorized "Connection" to the Datawarehouse. Select the





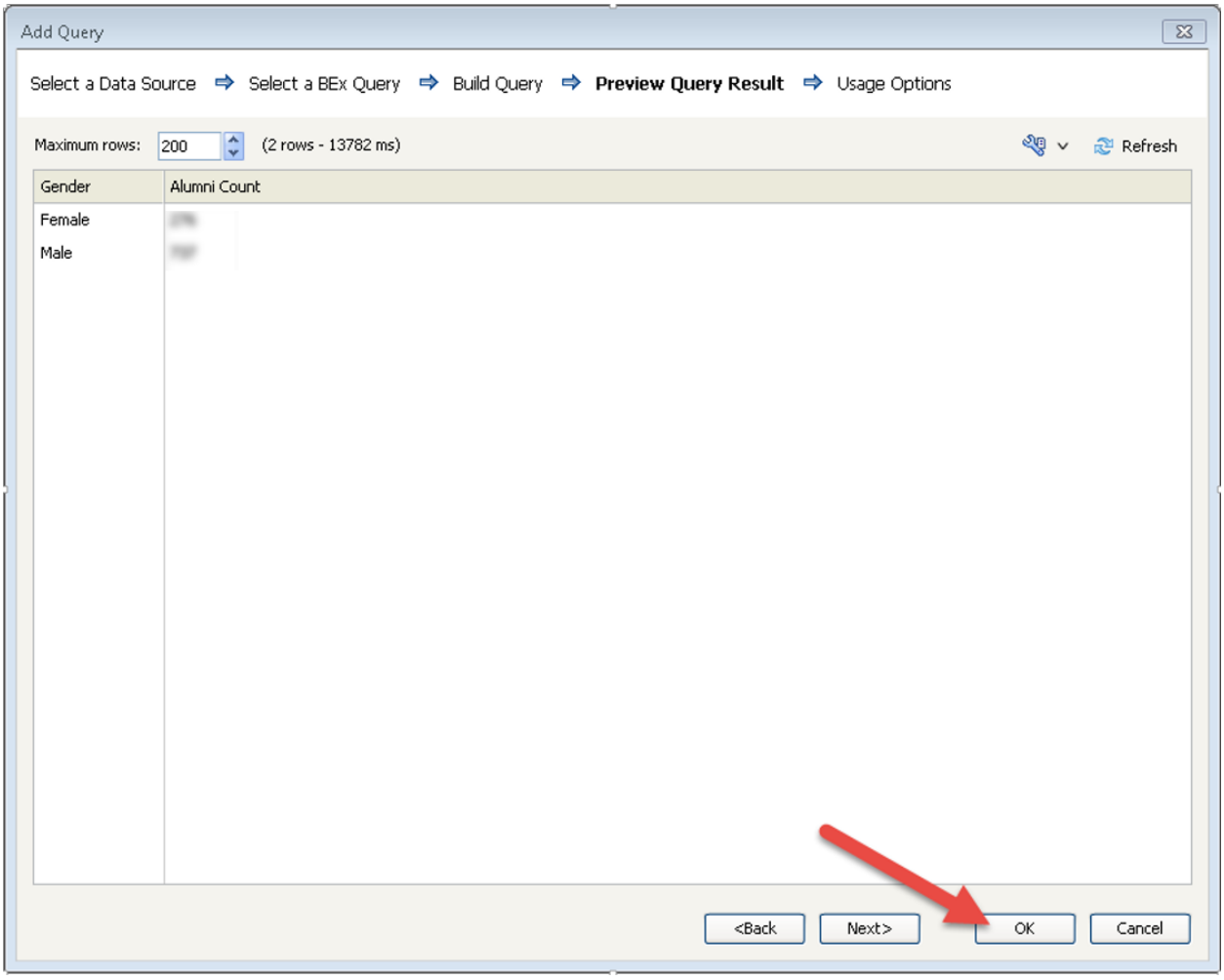
In the Select BEx Query dialog box, search for the required query. You can search by the Technical Name or the Query Description. Select the required Query and then click OK to continue.

This opens in the similar Dimension and Measure selection dialog box.



Select the required dimension and measures and set the required query filters for the dashboard data output and click next to continue.

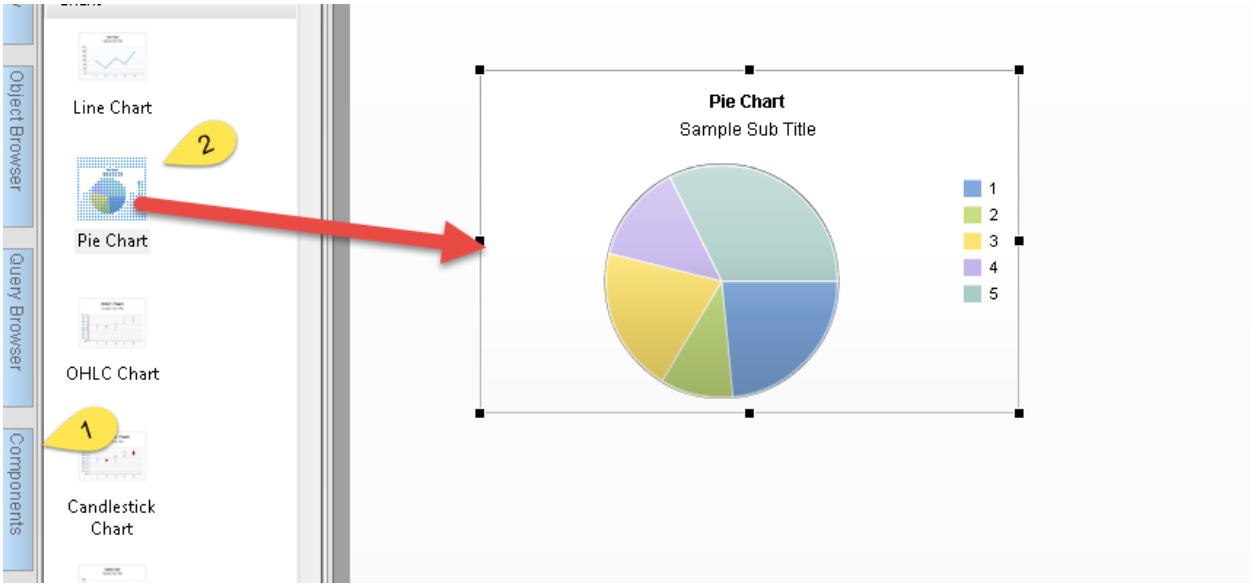
In the next dialog box you will see the data as it will be fetched based on the filters and selected dimensions and measures and this will be the source to bind the data directly to components or to push the data to excel spreadsheet.



Review the data and click OK to continue.

Next Add a Chart Component and clicking on the Components and selecting the required chart component. Drag and Drop the chart component in the Canvas area.

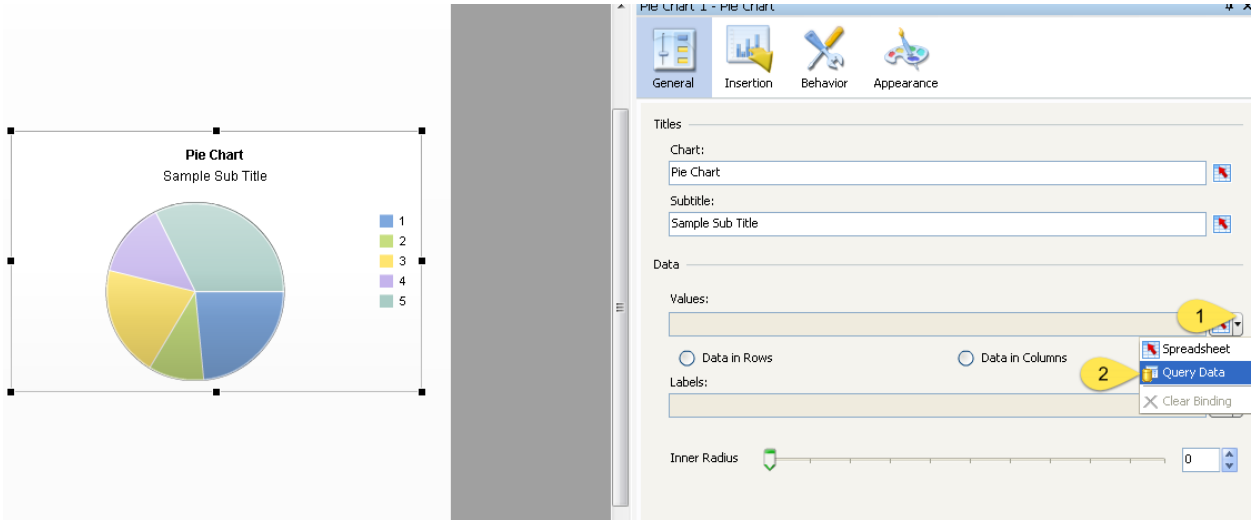
1- Click on Components
2- Drag and Drop a Pie Chart



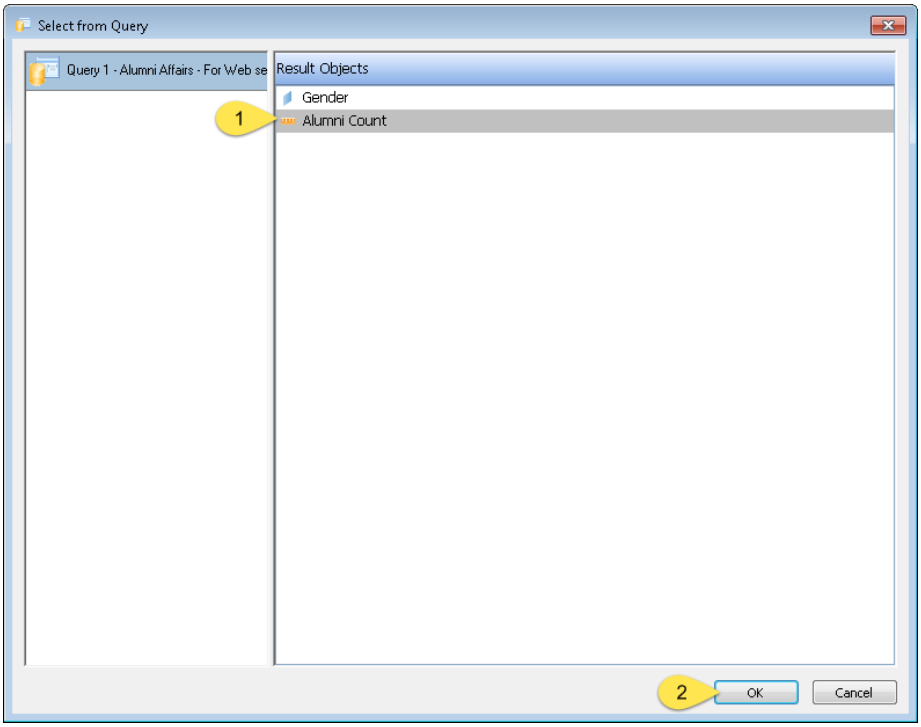
Place the cursor selection on the component and set the properties to bind the data to the component from the query.

Follow the steps below:

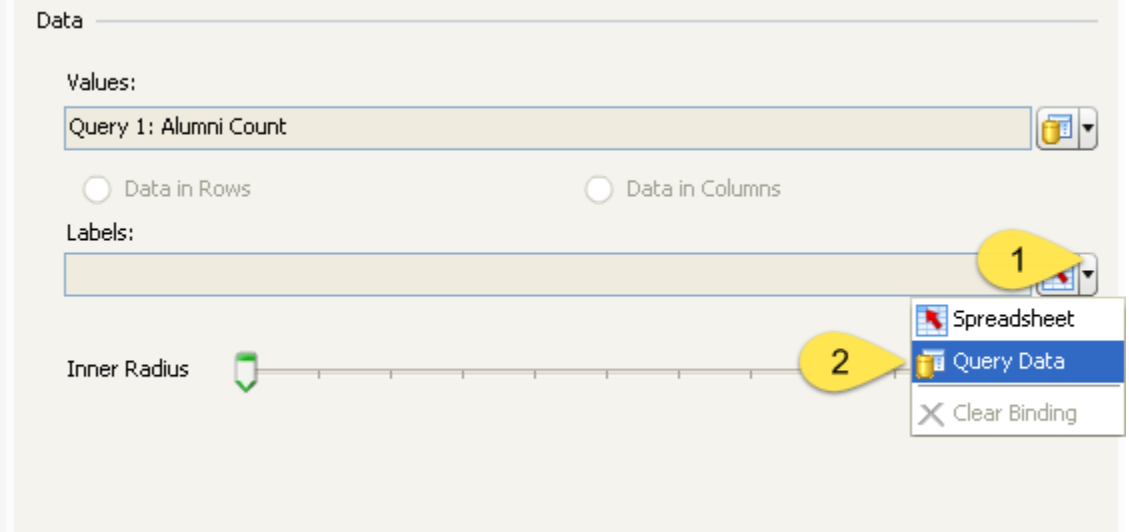
1- Click on the small arrow to bind Values
2- Click on Query Data



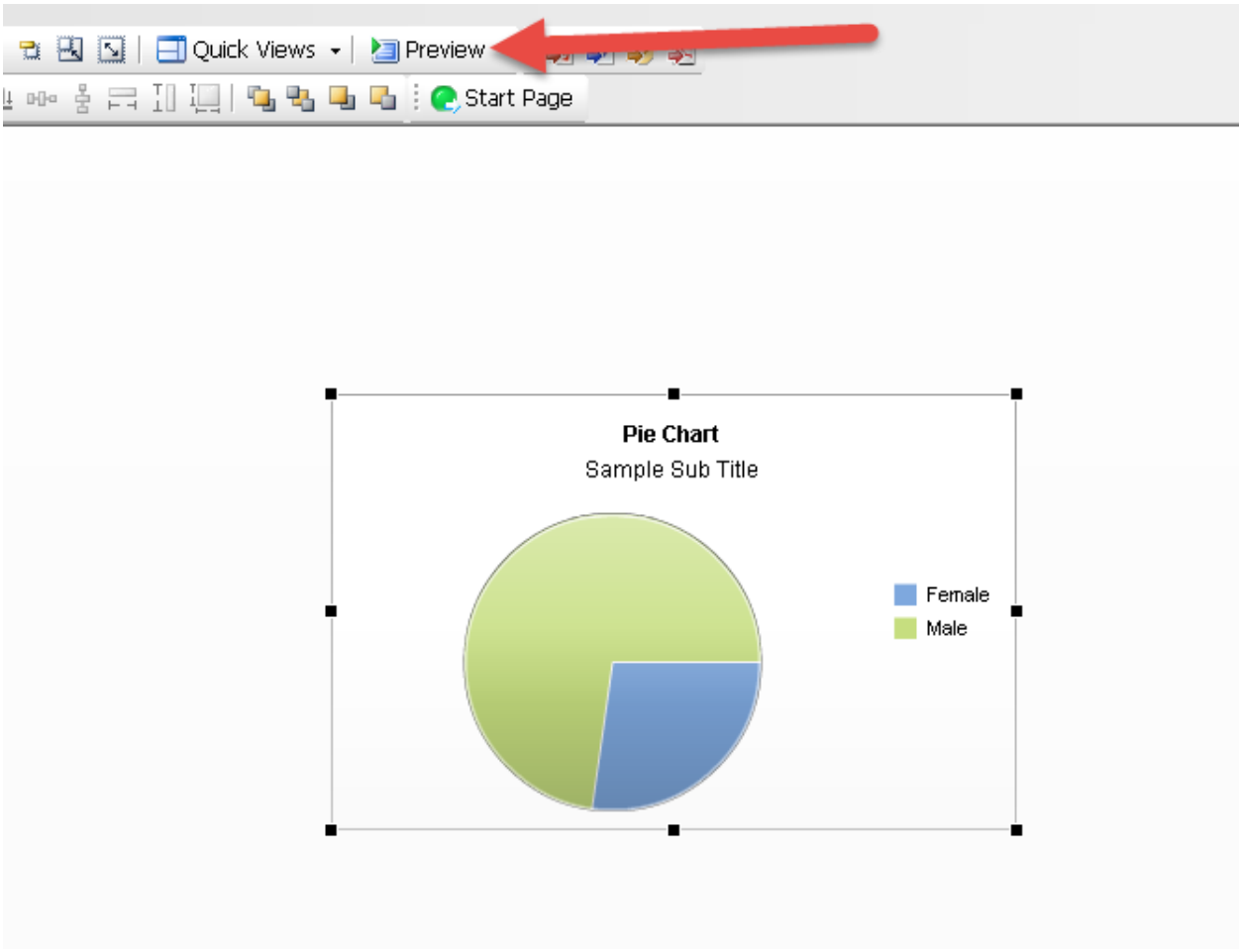
1- Click on the Measure
2- Click Ok



1- Click on the small arrow to bind Labels
2- Click Query Data

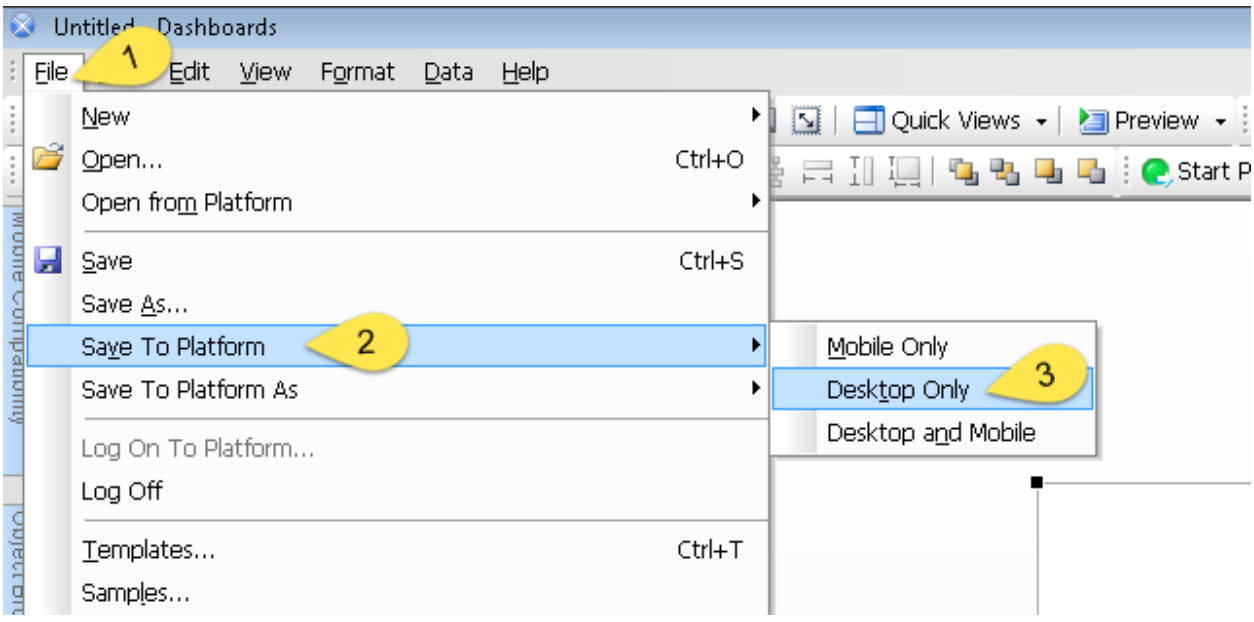


Once the Dimension and Measure are bound with the data. Click on Preview to view the dashboard output.

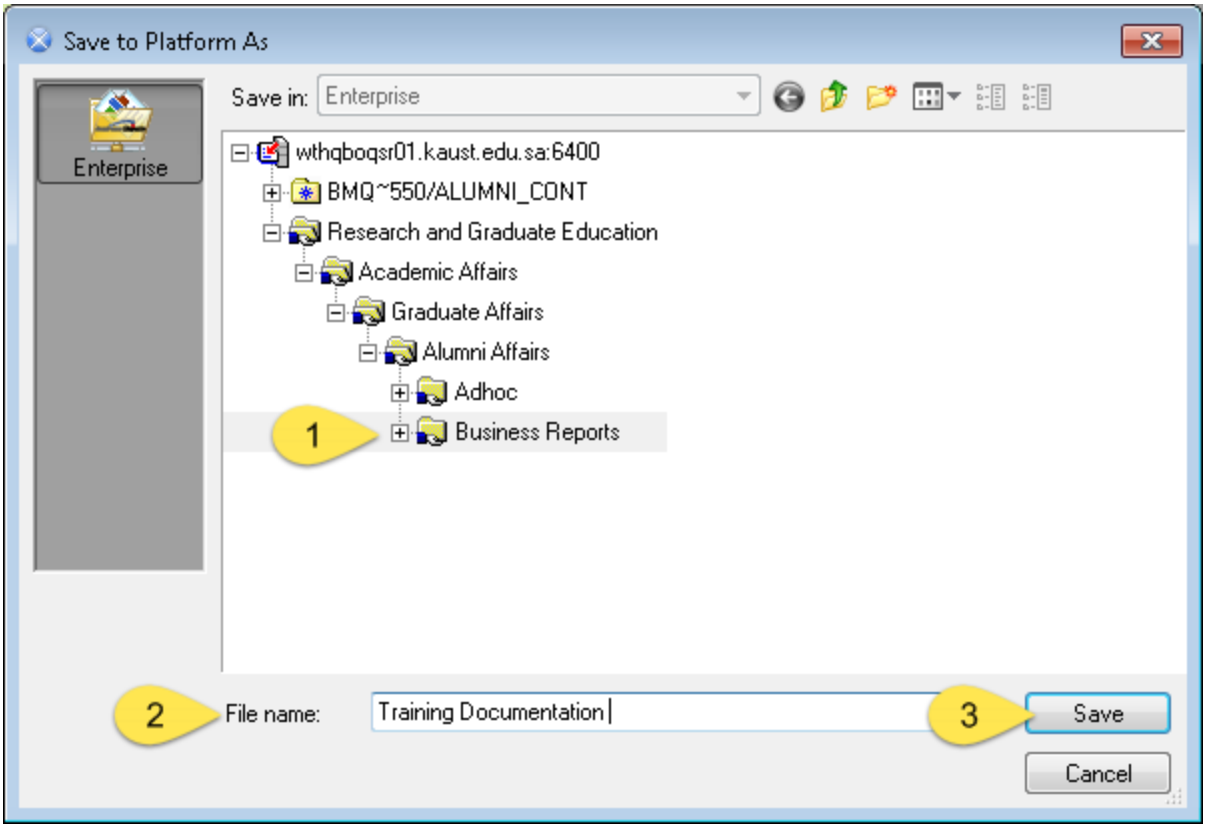


This way you can place the required components and design the dashboard layout.

Next to save the dashboard on the platform, follow the below steps:



1- Select the authorized folder to save the dashboard
2- Mention the Dashboard name
3- Click a Save

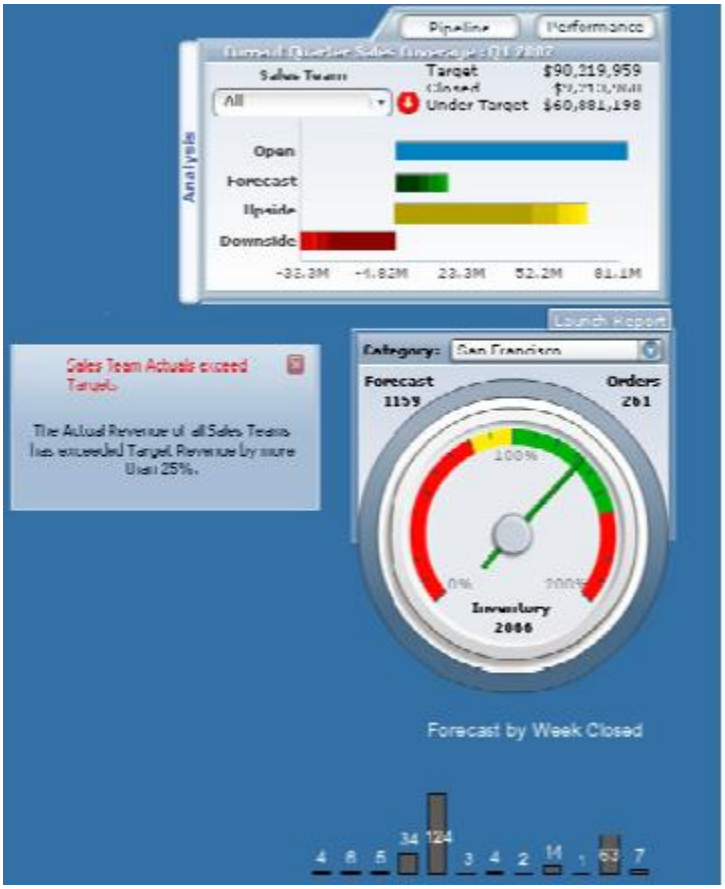


Once the Dashboard is saved on the BI Platform, any user can login into BI Launchpad and navigate to the Dashboard Saved location and execute the dashboard, to view the dashboard.

Widgets

A Widget is a small desktop application that allows easy and fast access to frequently used Dashboards or WebI Blocks. This application needs to be configured once, and then the application provides an Always-On, intelligent information on the desktop and accelerate decision making right from Executive Dashboard to Operational level Usage, right on their desktops. It makes key information simple to access and easy to monitor.

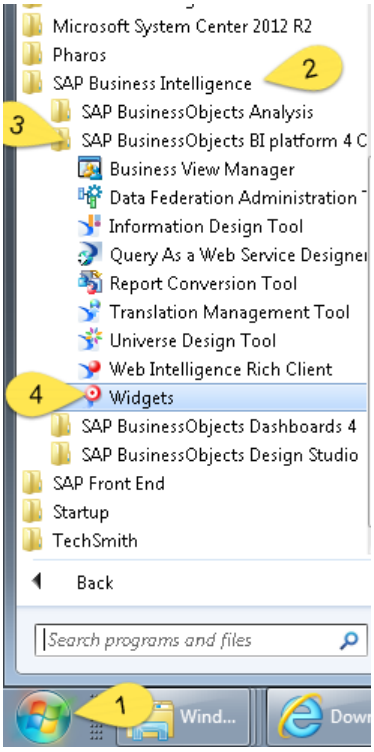
Example of a Widget:



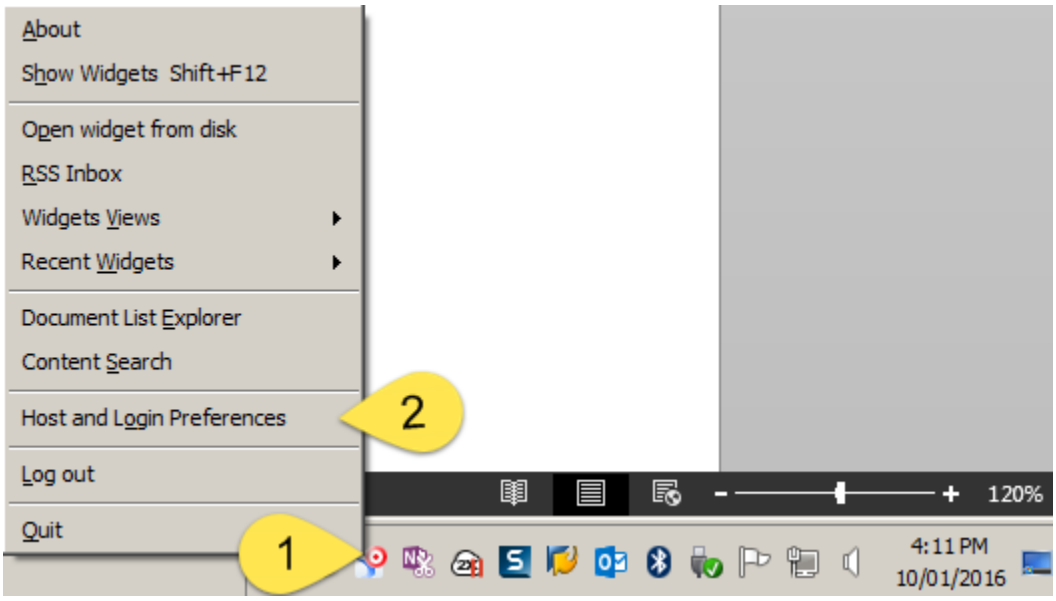
Please note, that it is expected that the required output a report/dashboard is already created and published to the BI Platform.

Follow the steps below to configure the Widgets:

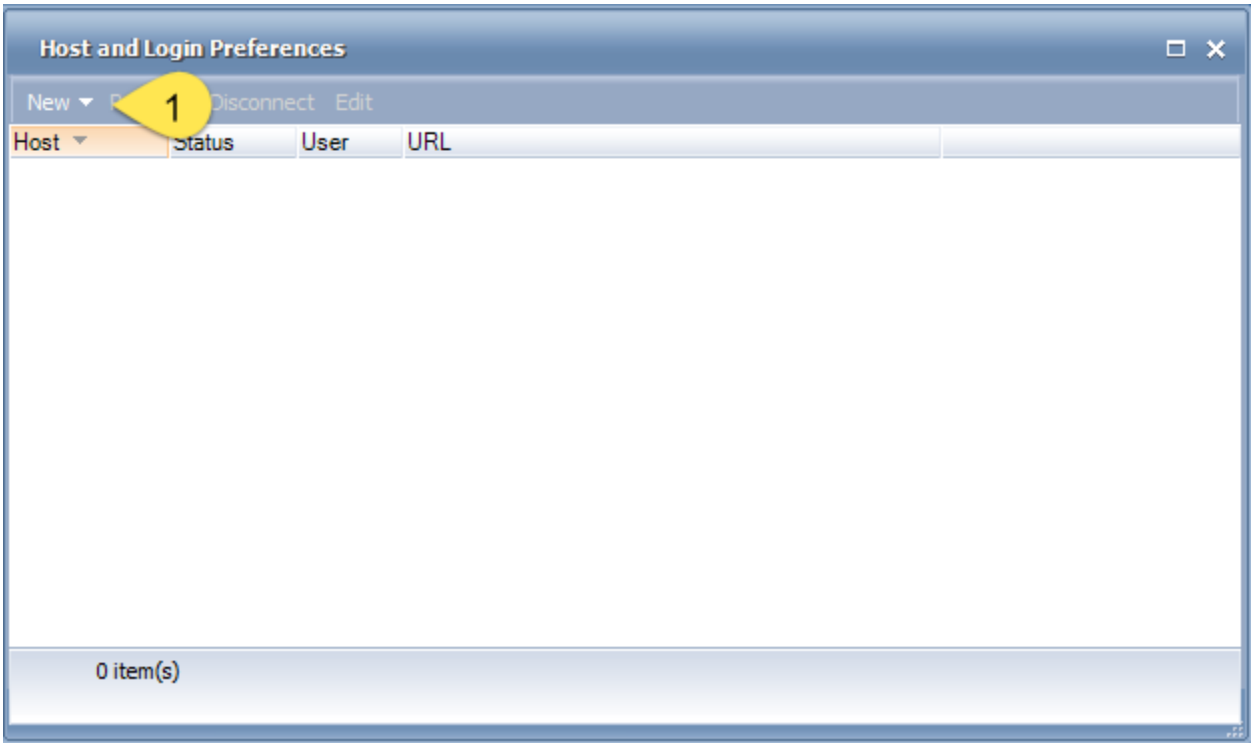
Launch the application from the Start Menu.



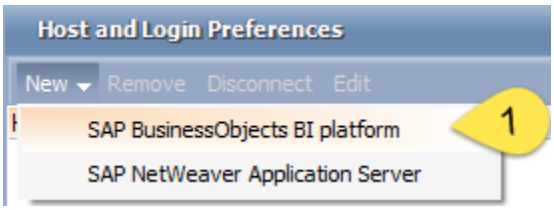
Once the application is launched, the Widget icon appears on the Task Bar. Right click on the Widget Icon and select Host and Login Preferences.



The Host and Login Preferences Dialog box appears. Click on New to create a connection.

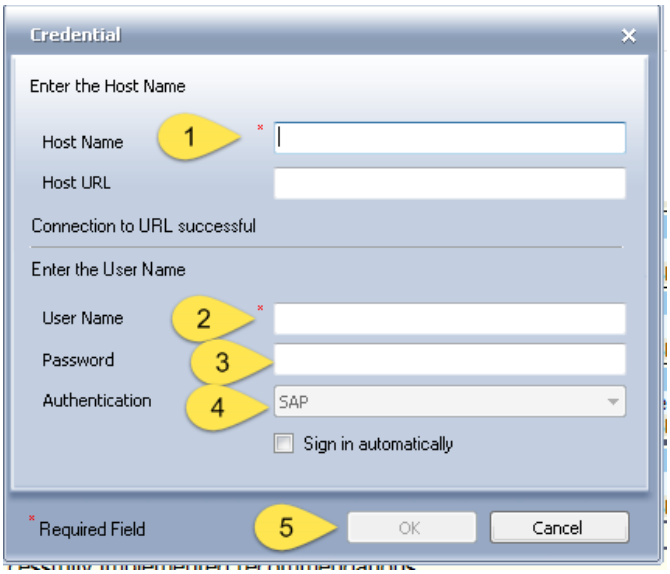


And select the BI Platform.



Enter the host name as per the required Dev/QA or Production system from the connections route chart.

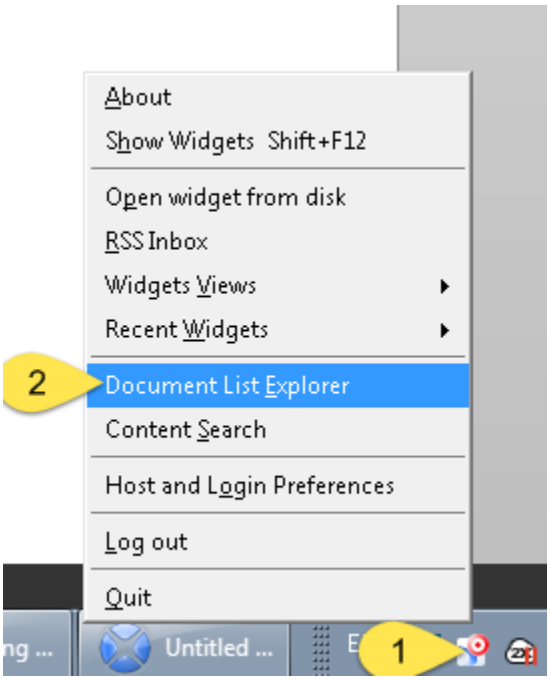
Note, it is the best way to copy and paste the host name from the chart instead of typing it.



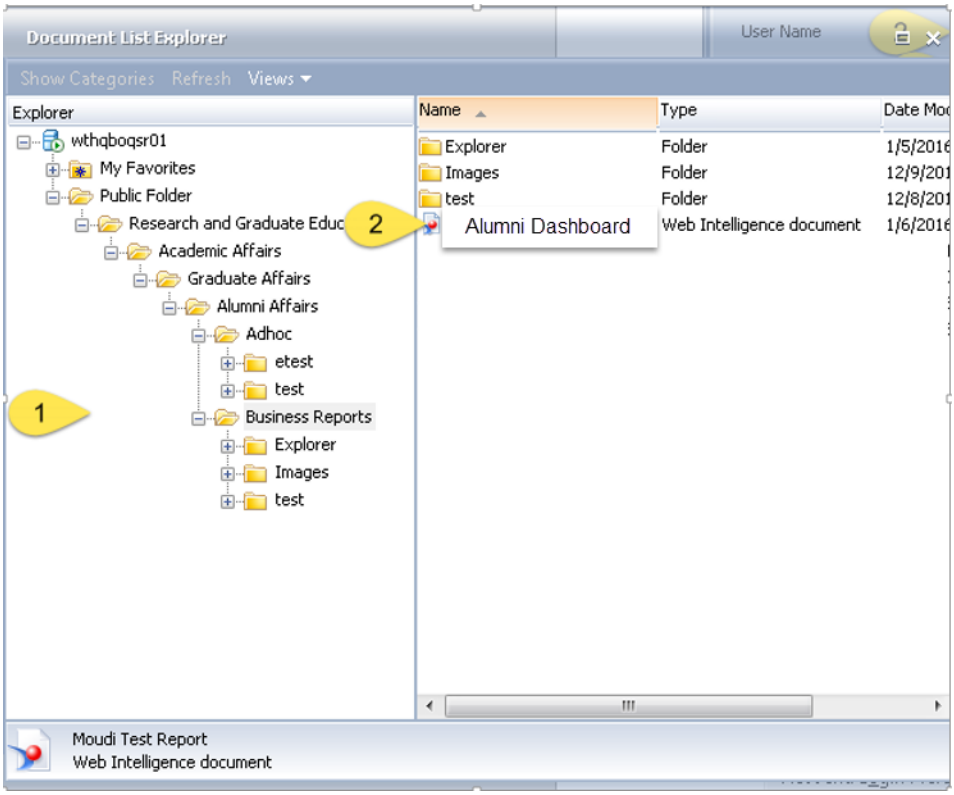
Enter the username, password and then select the authentication.

Next step is to select the required Dashboard or WebI Block to display on the Widgets View. To add a WebI block to the Widget view, right click on the Widget on the task bar and select Document List Explorer.

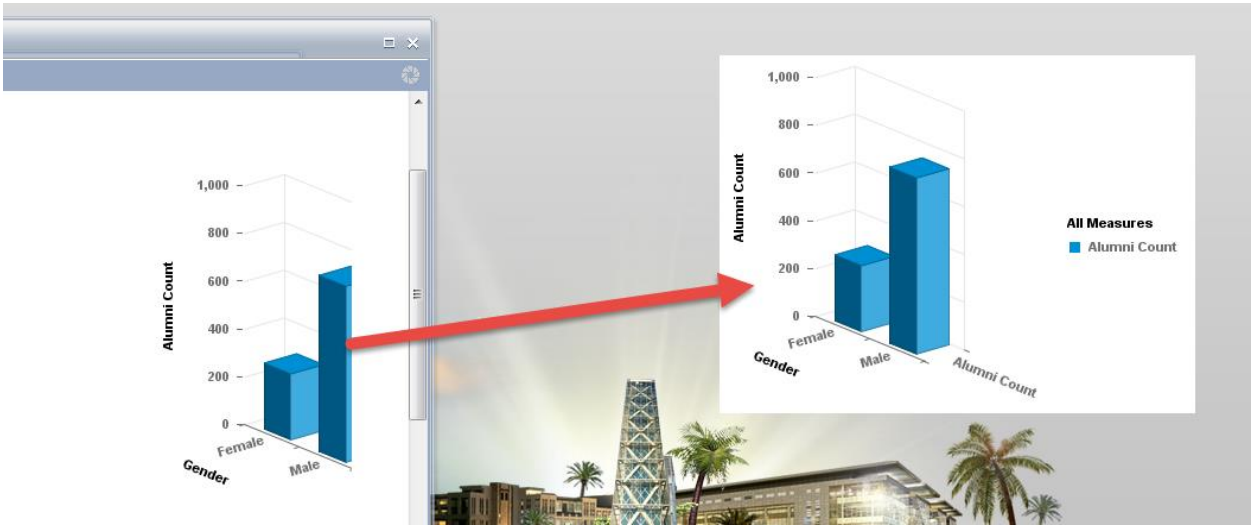
1- Right click on the Widget Icon
2- Click Document List Explorer



1- Navigate through the authorized folder structure and find the required report/dashboard.
2- Double Click the required report

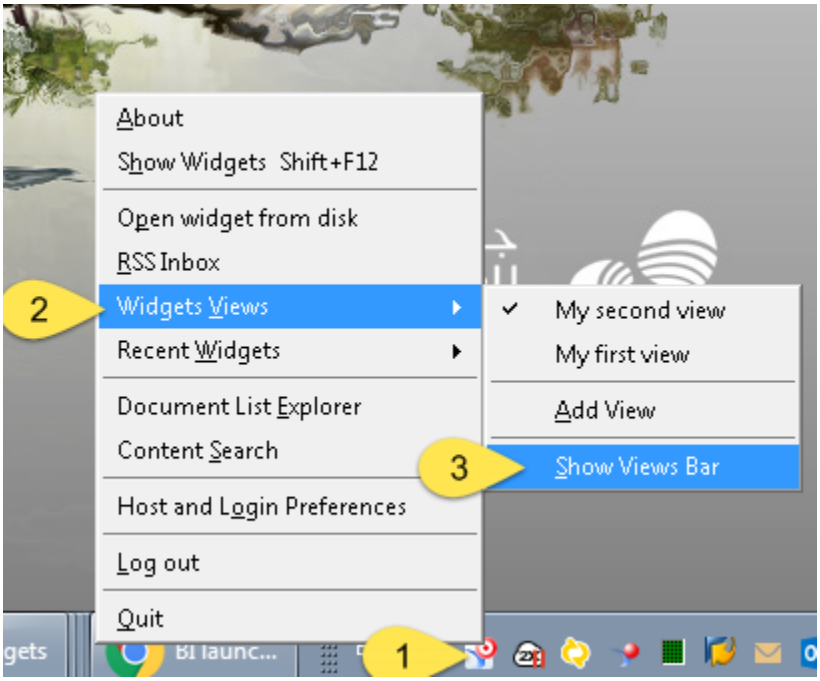


Once the report opens in a new windows, Drag and drop the required component to your desktop. That is it, your widget is ready for use.



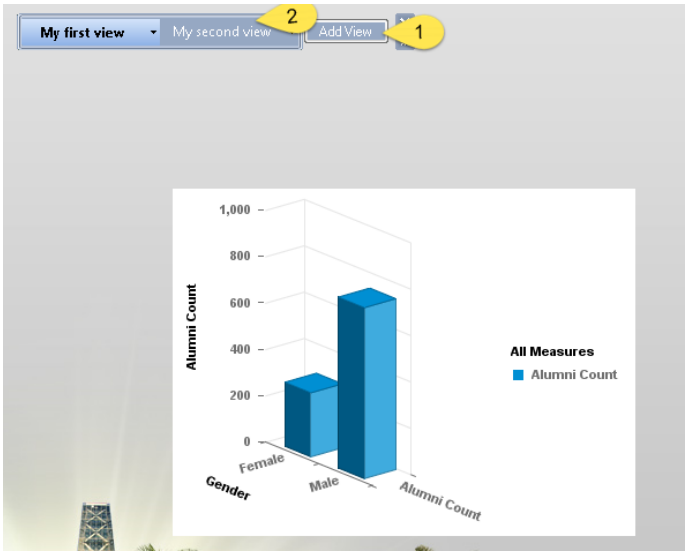
If you need to add additional more components to the Widget Views, you can right click on Widget on the Task Bar and Select Widgets Views and Select Show Views Bar.

1- Right click the Widgets icon
2- Widgets Views
3- Show Views Bar



This will open the Views Bar, and you can click on Add View and keep adding your Widget Views from the earlier step. Further you can also rename the Views Bar as per your own preferences.

1- You can click on Add View and drag and drop another component
2- You can also navigate through views by clicking on them

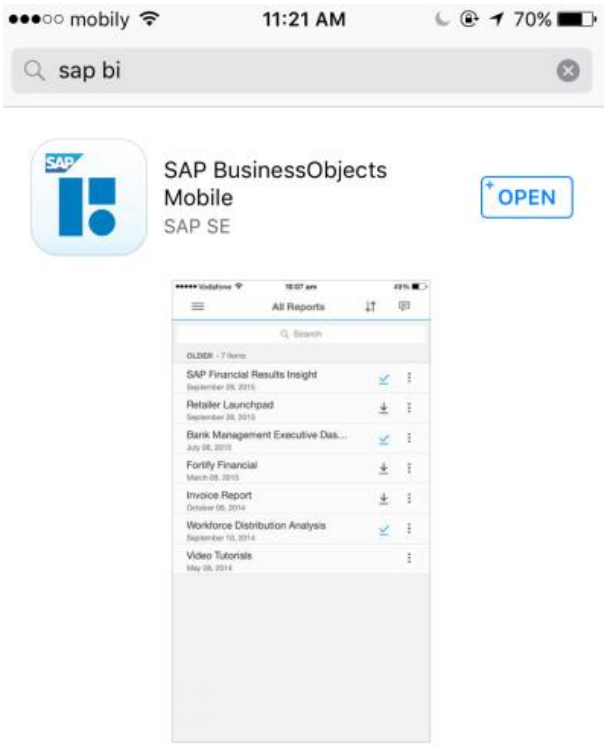


BI Mobile

The Information Content created and published on the BI platform can be accessed using the SAP BI Mobile App.

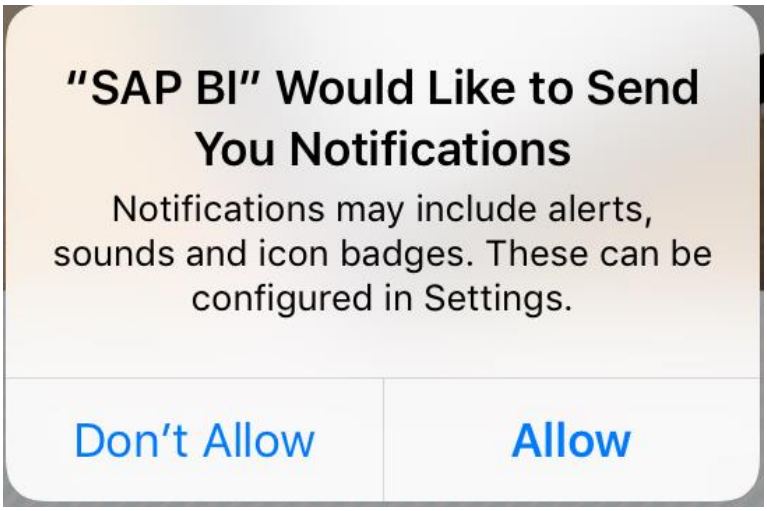
The first step is to install the BI Mobile App. Follow the steps to install the Mobile App:

From the Apple App Store, search for SAP BI

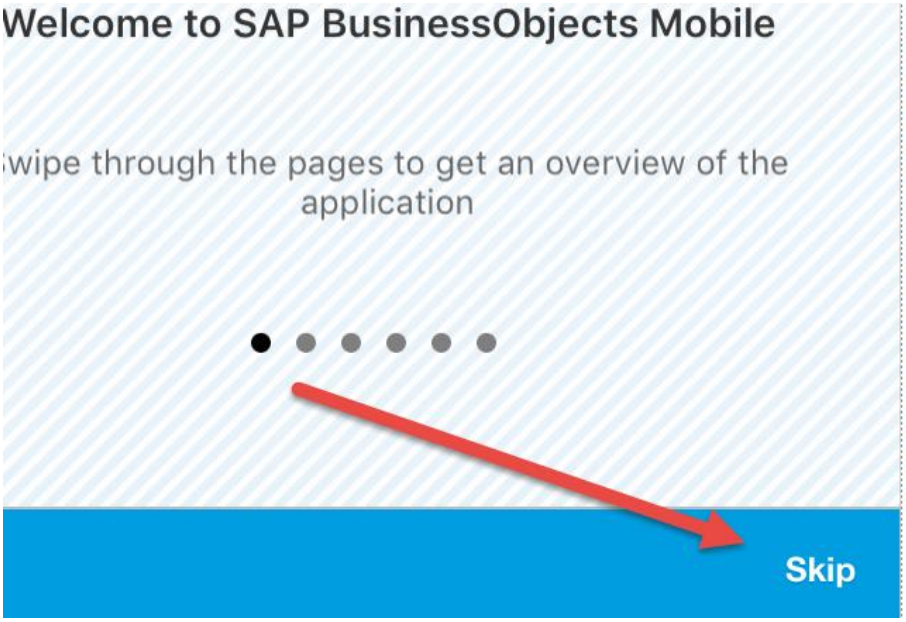


Install it and open it.

Tap on "Allow"



Then, if you need you can swipe through the quick help or tap on "Skip"

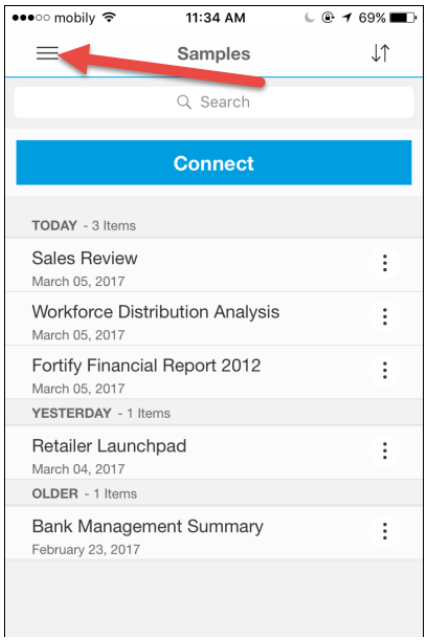


There are two ways of Creating Connection to BI Server:

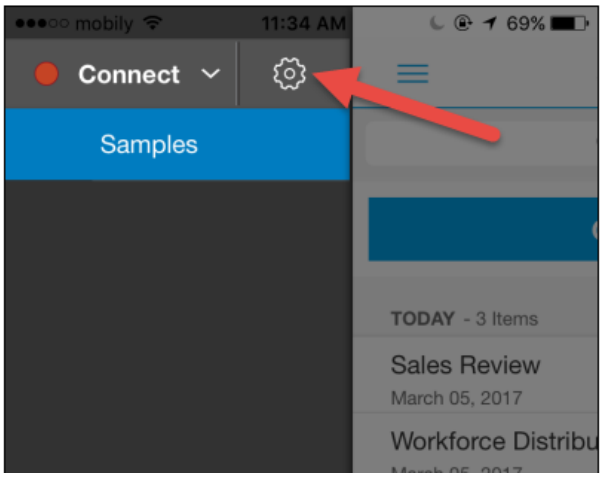
1) **Using QR Code**
2) **Manual Steps**

1. Connection via QR Code

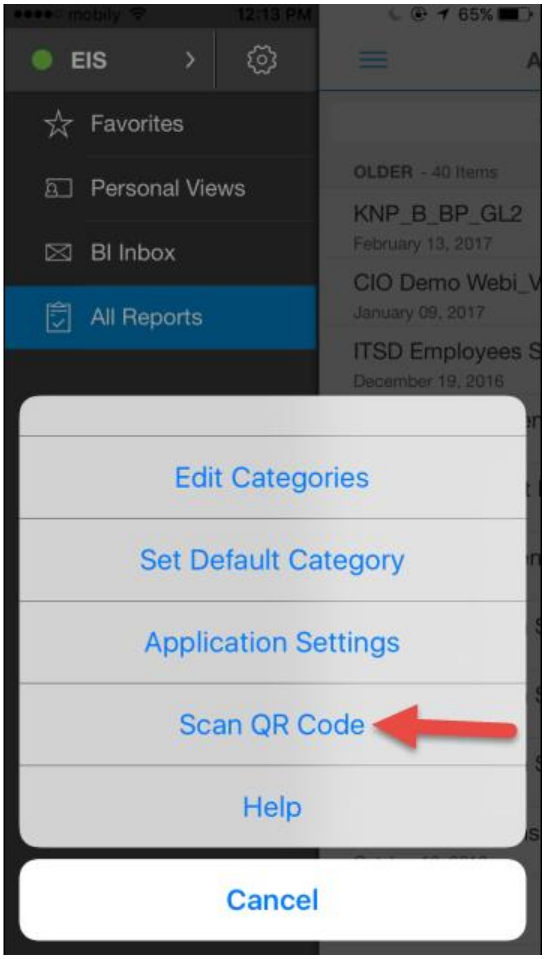
In the main screen tap on the button below



Tap on the cogwheel

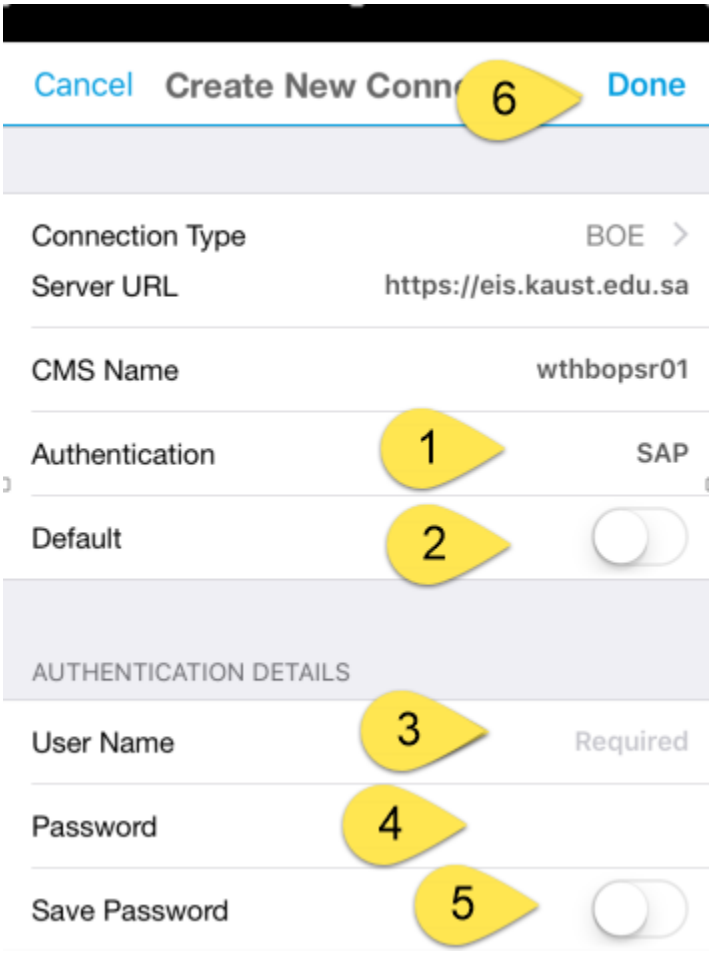


Then tap on Scan QR Code:



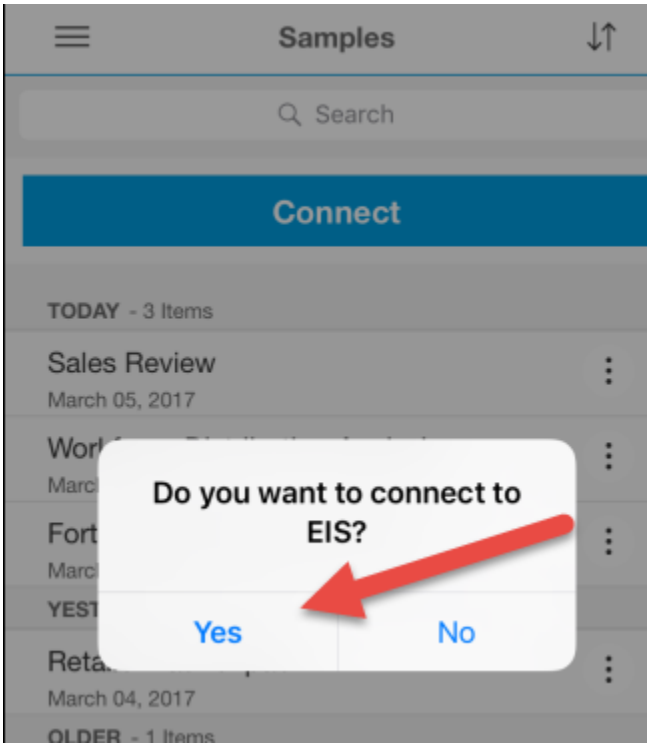
Scan the Code Below:

And Input your User Name and Password then tap on “Done”.

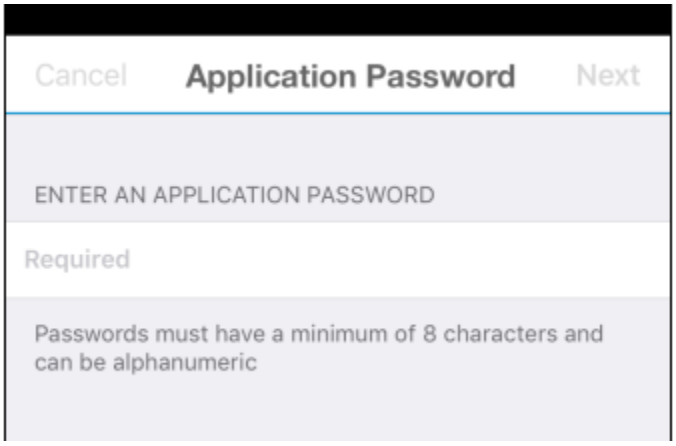


1- Authentication: SAP or Windows AD
2- Set as Default
3- User Name: “Your User Name”
4- Password: Put you SAP password if you chose SAP in step number 1, or Email Password if you chose Windows AD
5- Save Password: Enable it

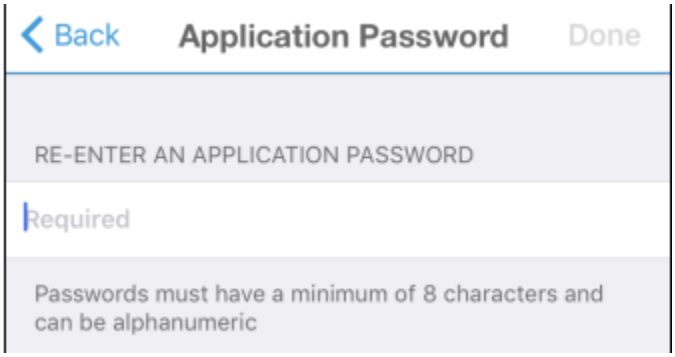
Tap “Yes” to connect to BI Server



You will be prompted to input an application password, enter any password you prefer

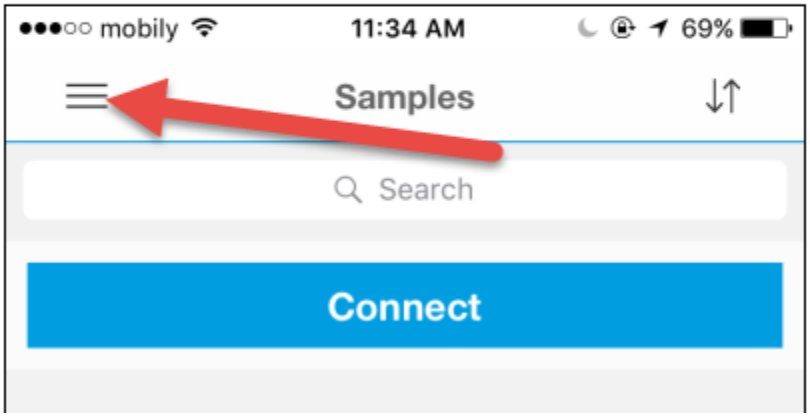


Then re-enter the password

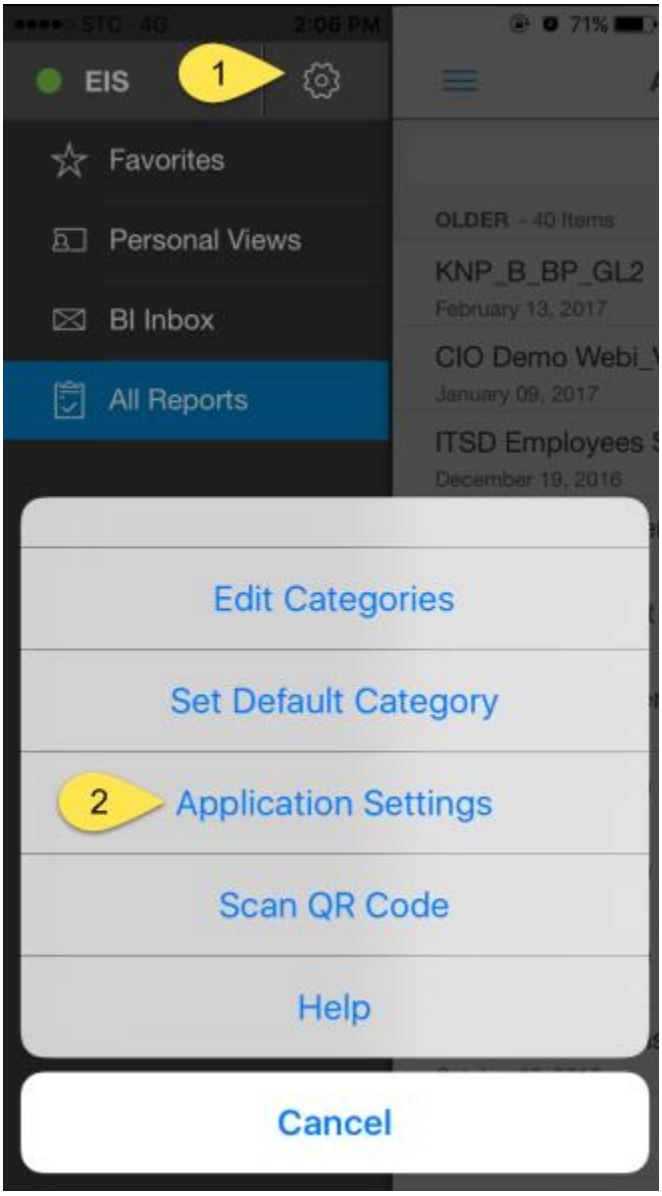


You can also enable finger print authentication as below:

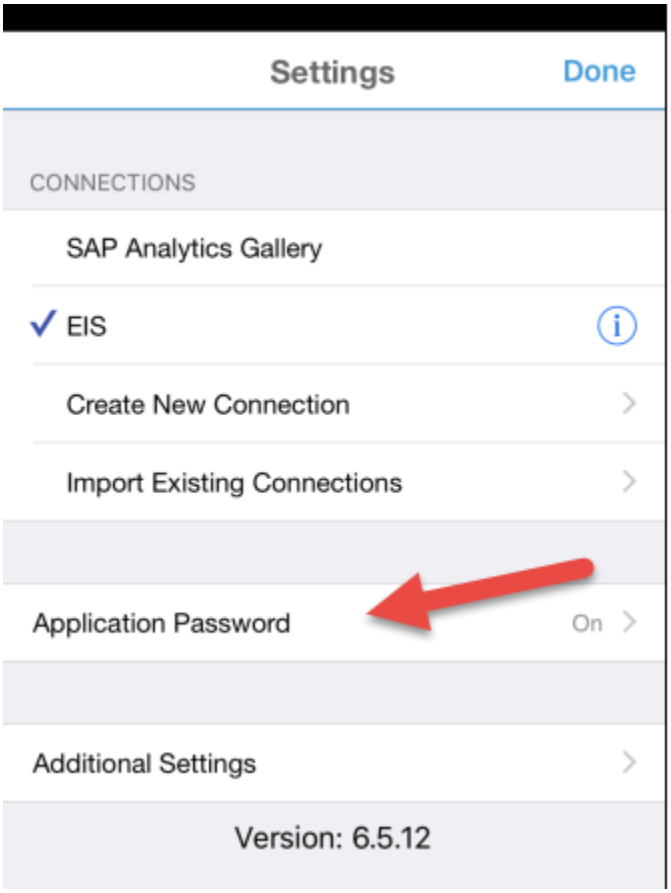
In the main screen click on the button below



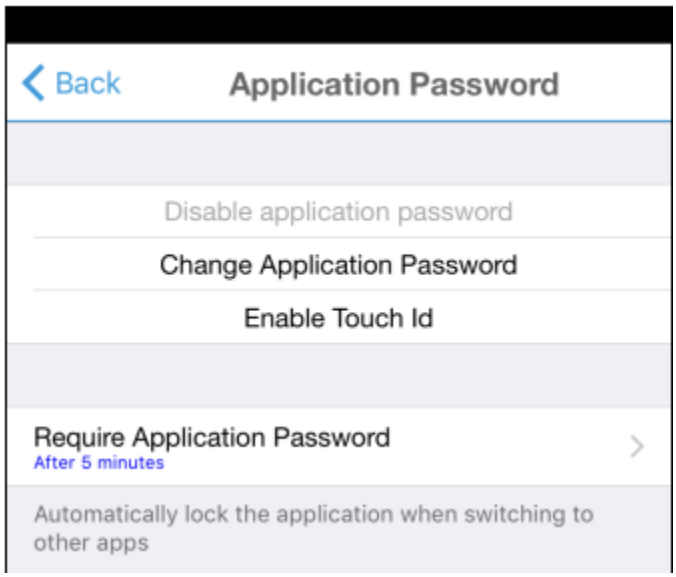
Tap on the cogwheel, then Application Settings



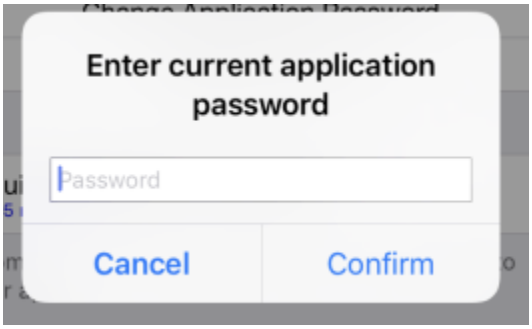
Tap on Application Password



Enable Touch Id



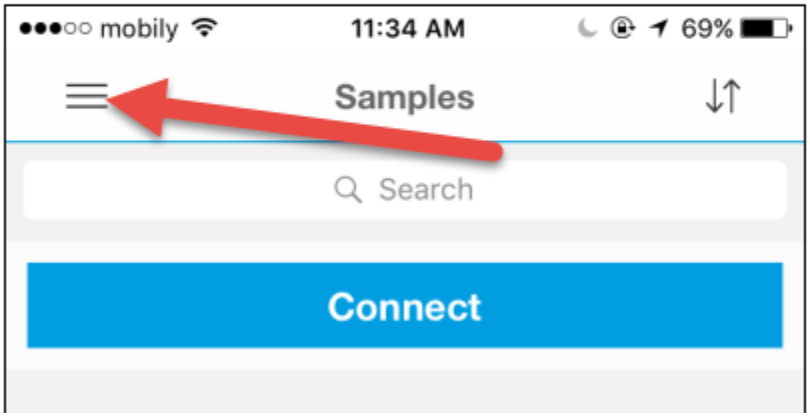
Then enter the application password that you have defined in a previous step and tap on “Confirm”.



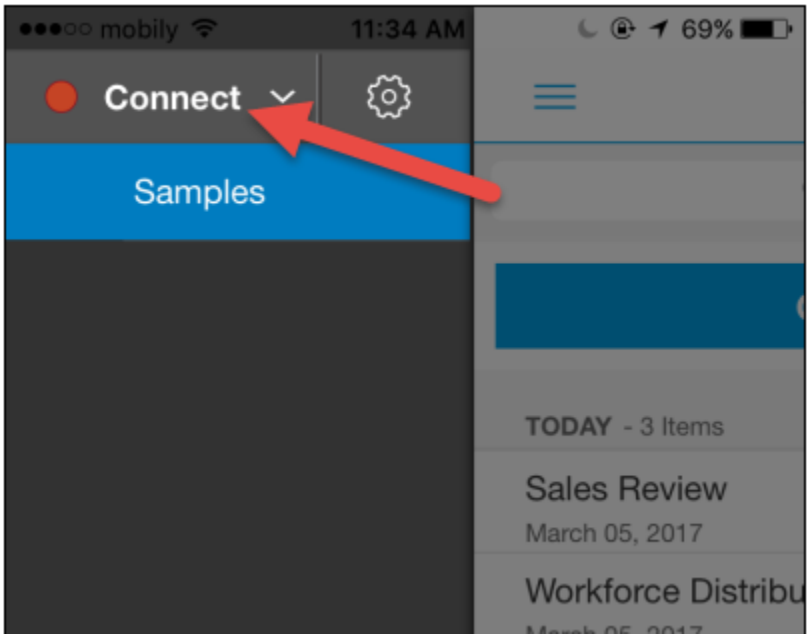
The system will connect to the BI Server and you can access the authorized Mobile Dashboards/Reports built by your respective Department’s Data Controllers.

2. Connection via Manual Steps

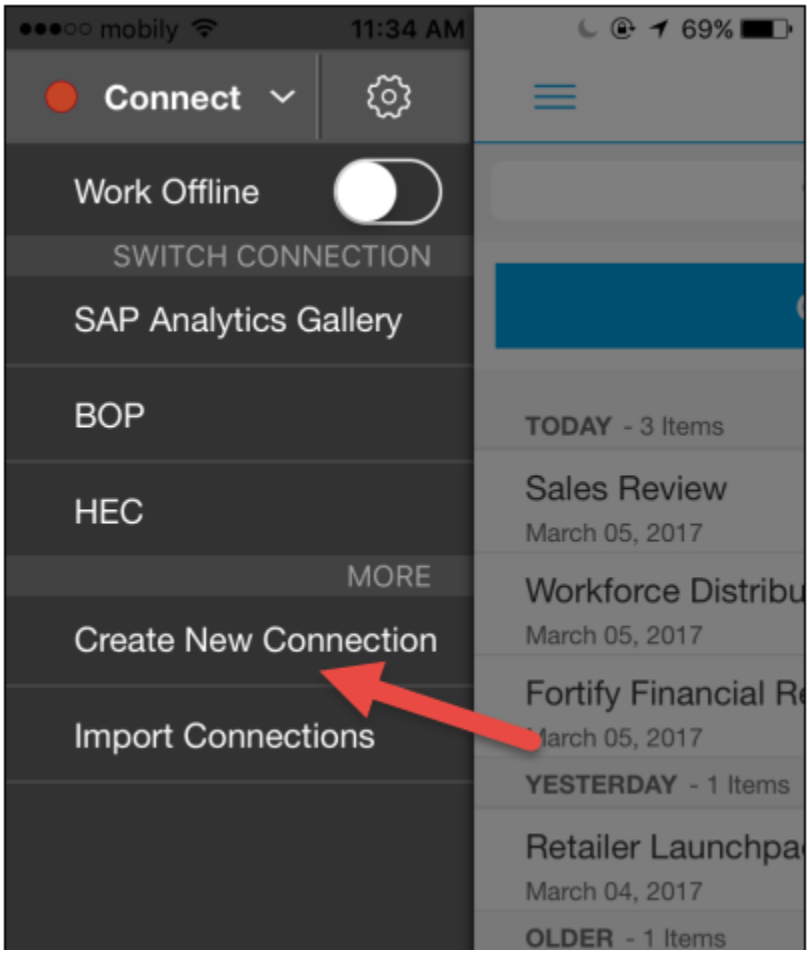
In the main screen click on the button below

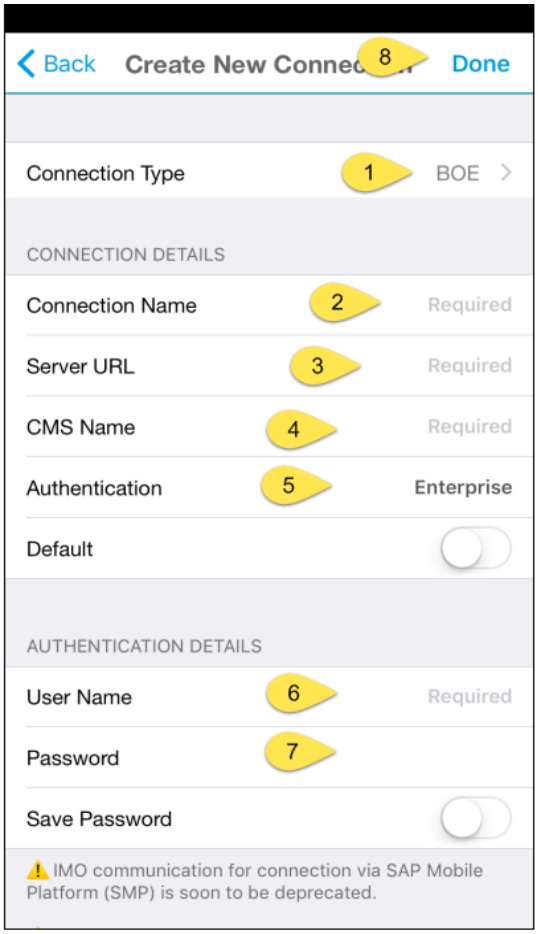


Tap on "Connect"



Tap on “Create a New Connection”



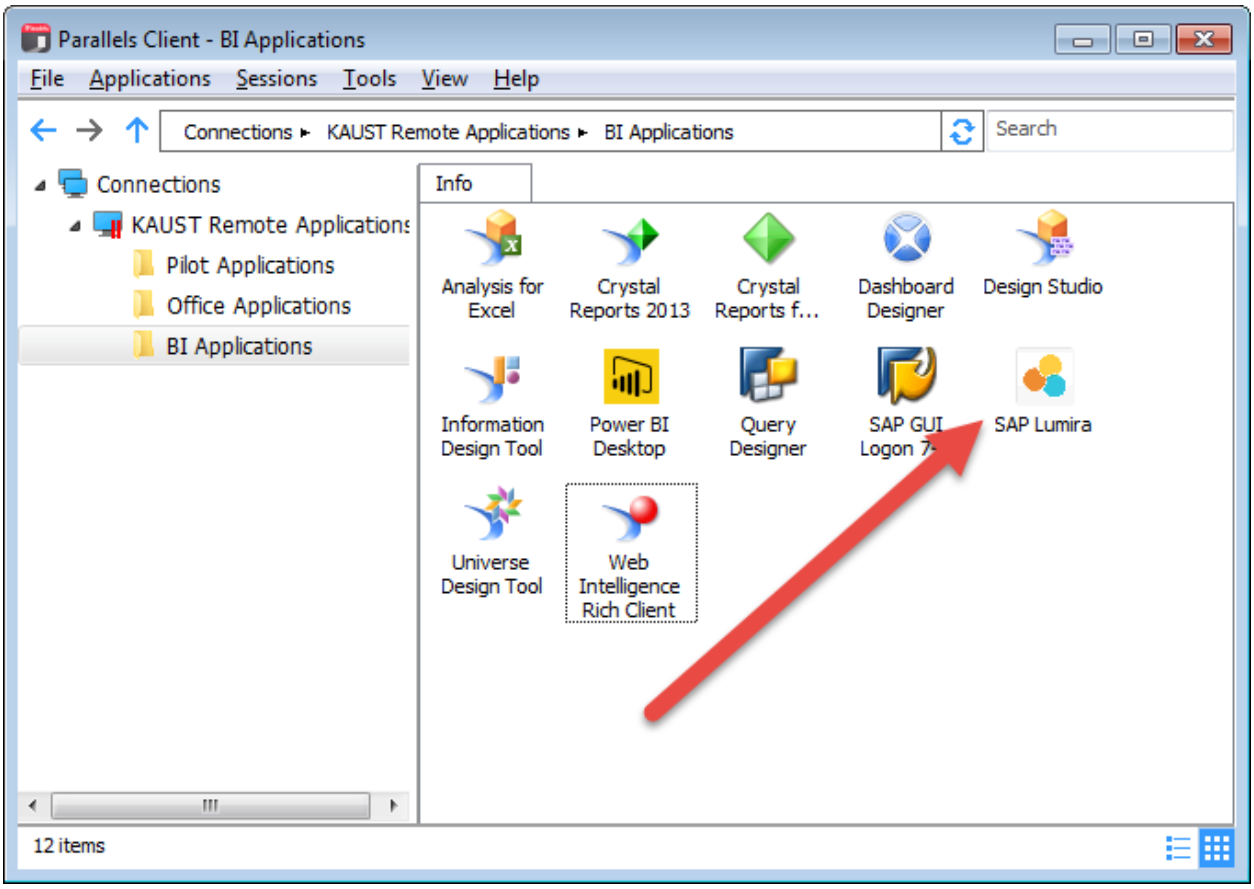


1- Connection Type : BOE
2- Connection Name: EIS
3- Server URL: https://eis.kaust.edu.sa
4- CMS Name: wthbopsr01
5- Authentication: SAP or Windows AD
6- User Name: "Your User Name"
7- Password: Put you SAP password if you chose SAP in step number 5, or Email Password if you chose Windows AD
8- Tap "Done" and confirm to connect to Server.

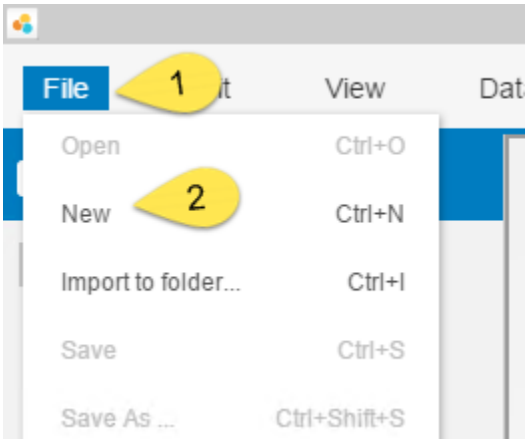
The system will connect to the BI Server and you can access the authorized Mobile Dashboards/Reports built by your respective Department's "Data Controllers".

SAP Lumira

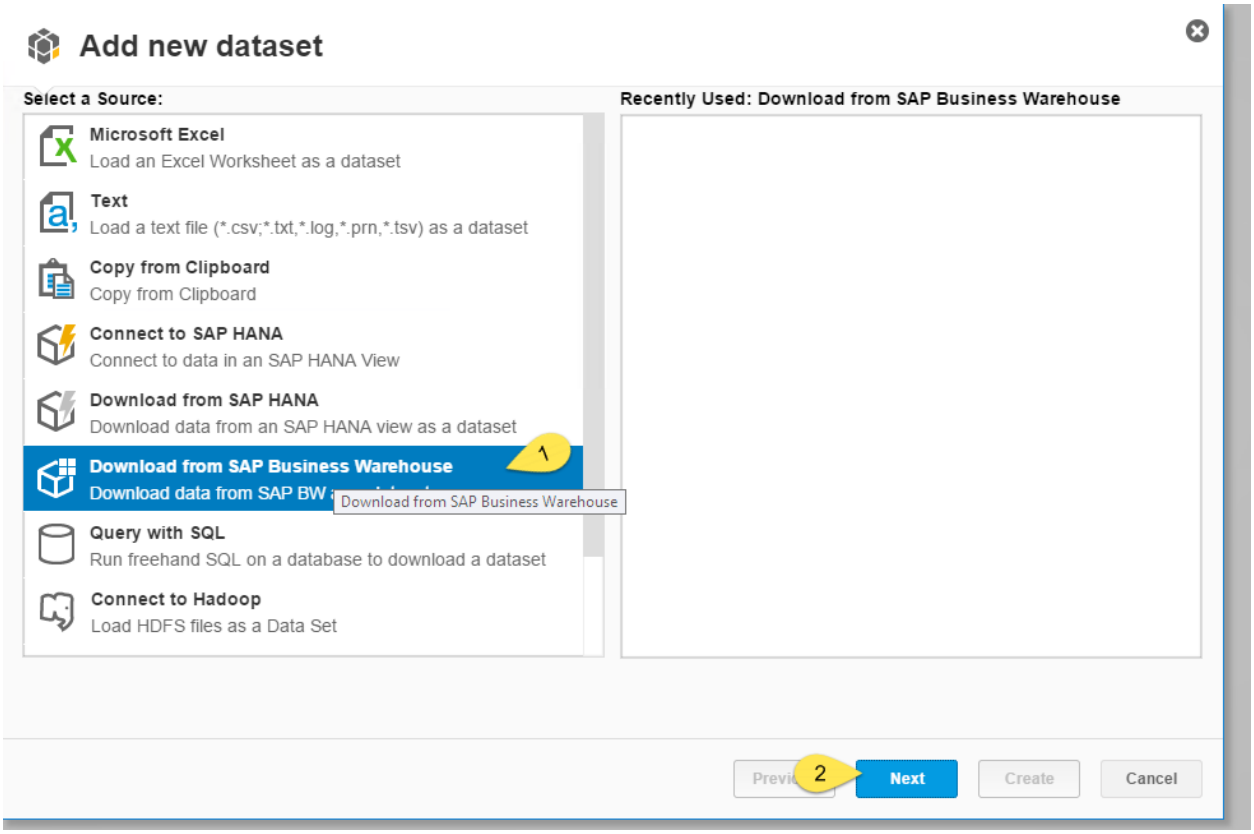
To Launch Lumira, open it from parallels client:



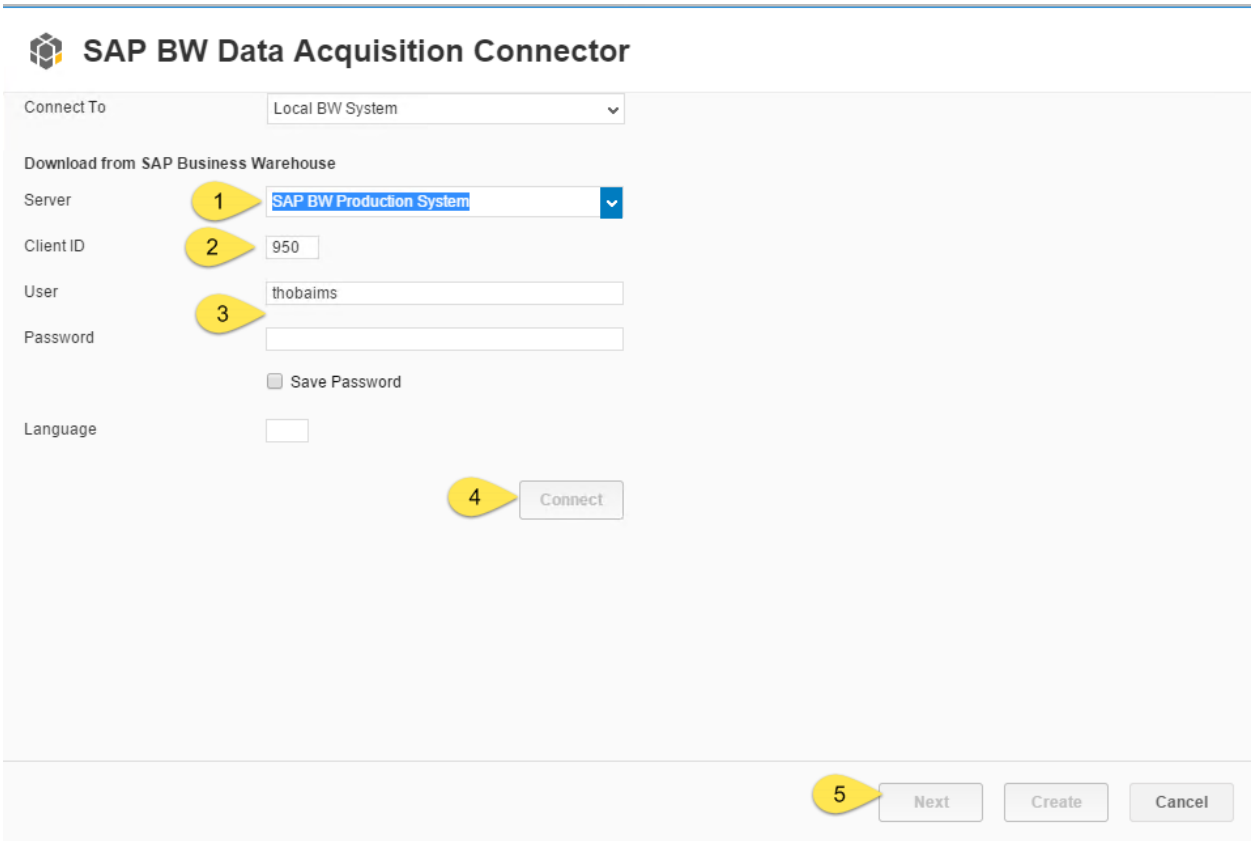
To create a new report follow the below steps:



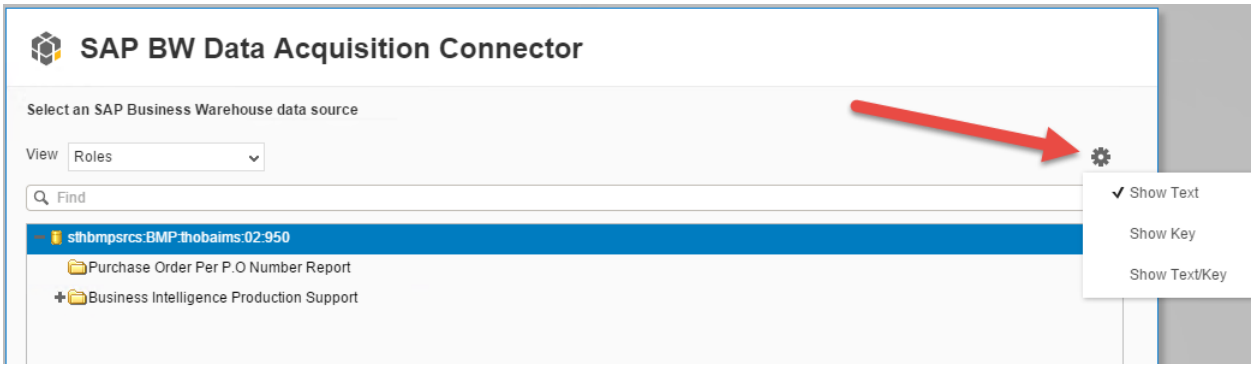
Select you data source, in the below example the source is BW



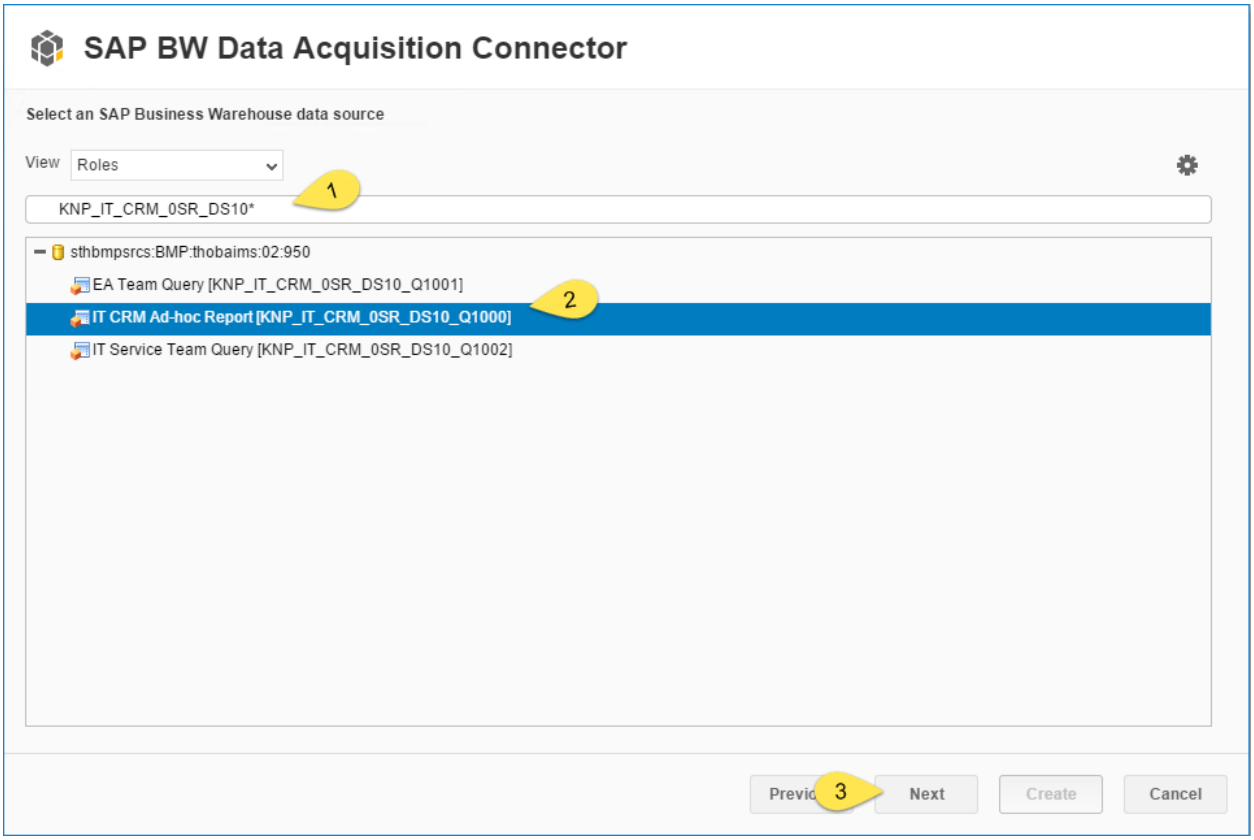
Connect to the SAP BW Production System by following the below steps



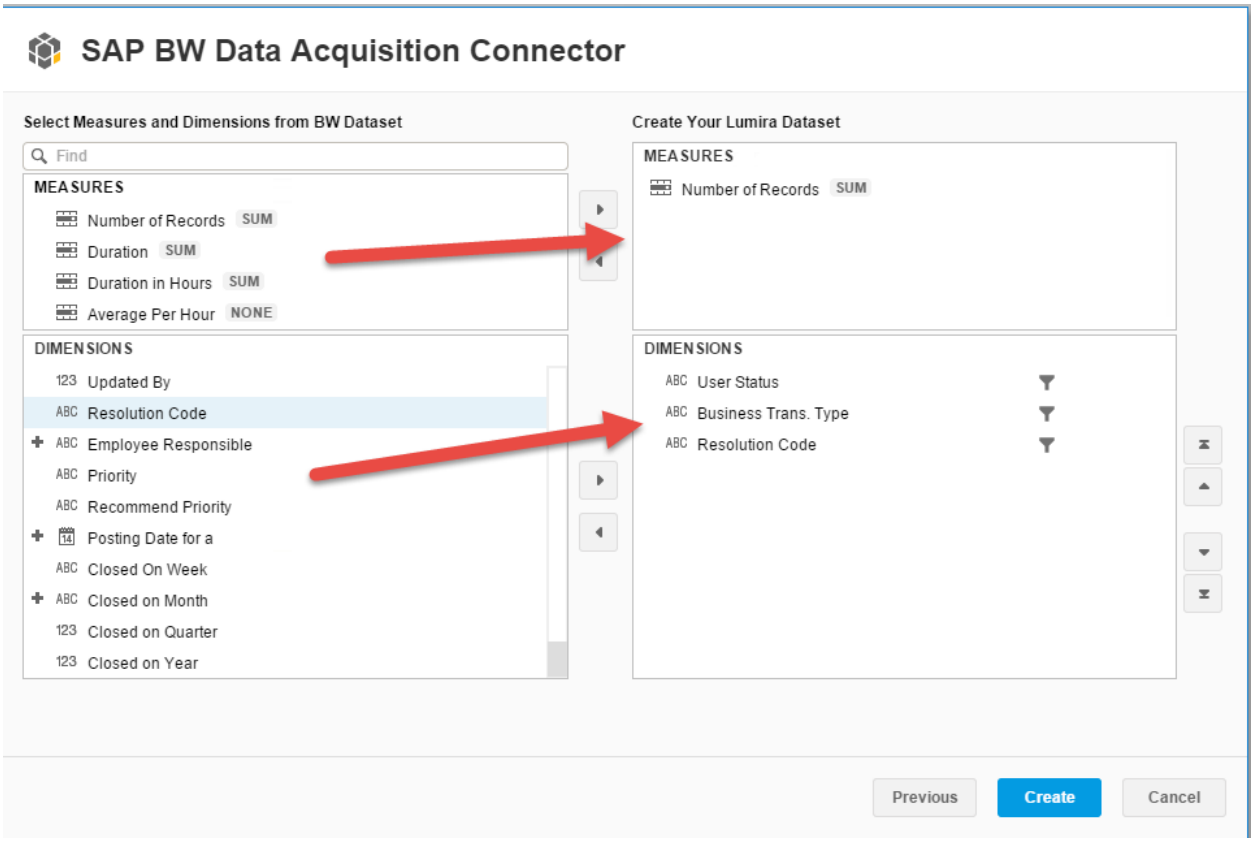
Show the technical names of the queries by clicking on the cogwheel below



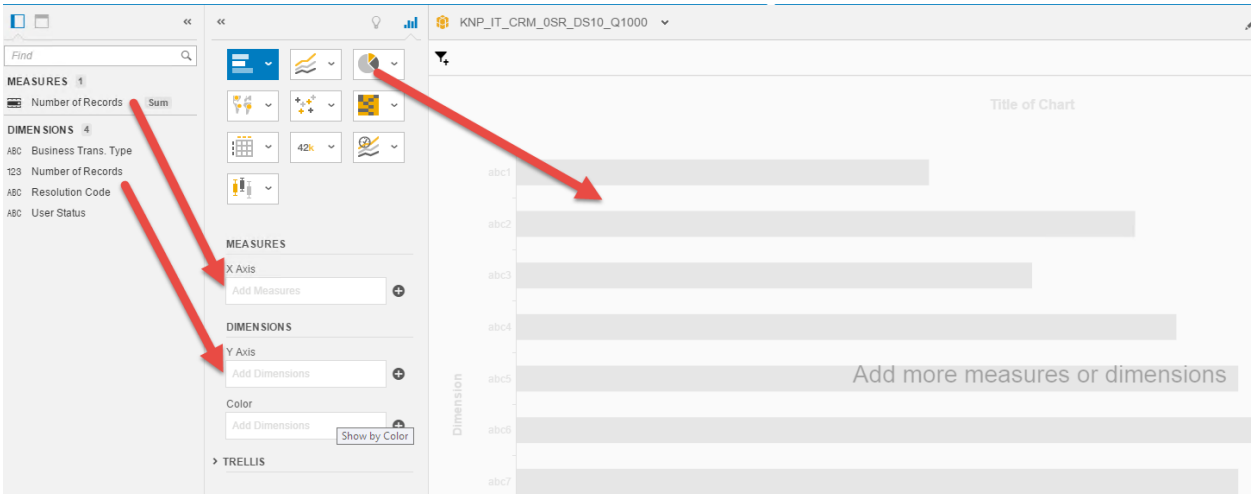
Put your query name then search for it, then click on it and click next

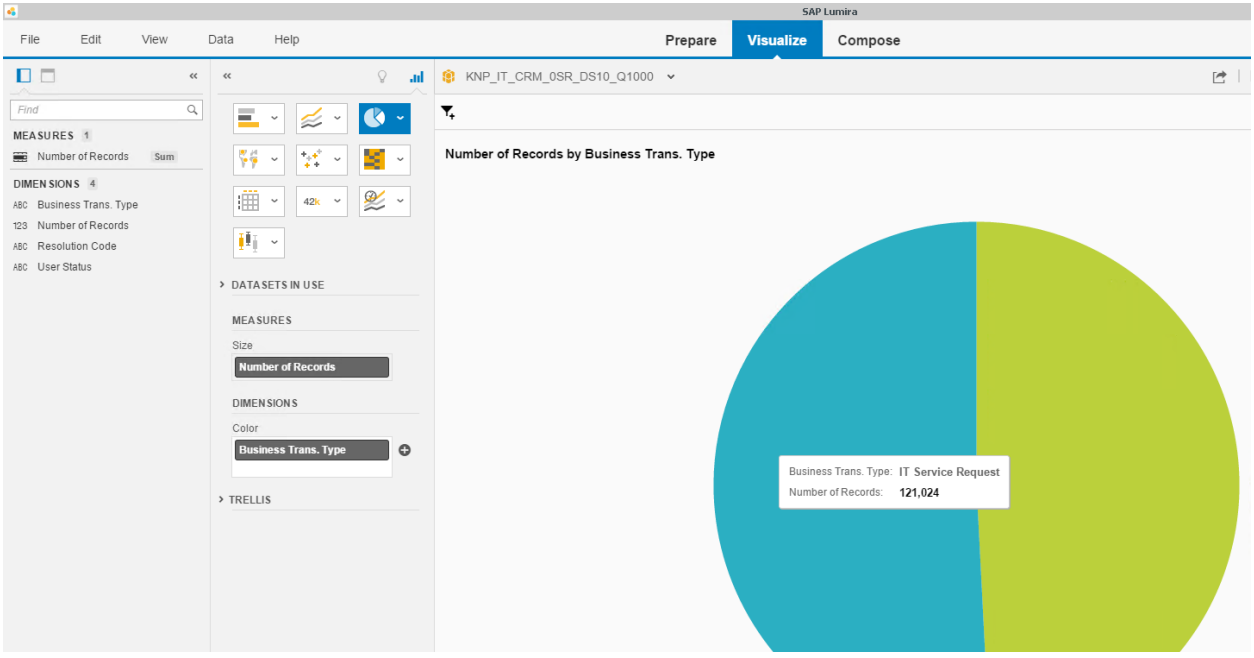


Pick the required dimensions and measures

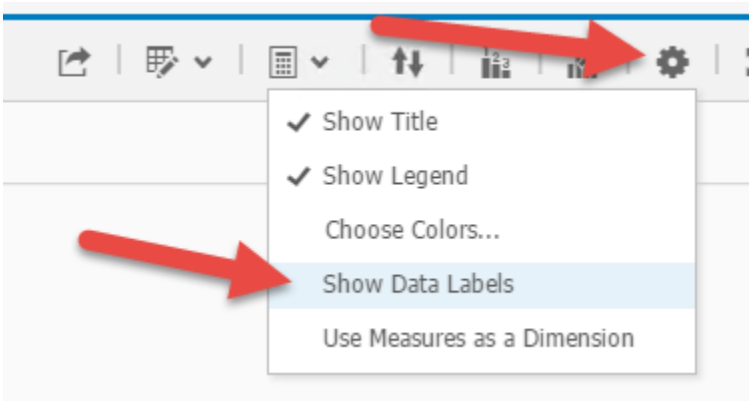


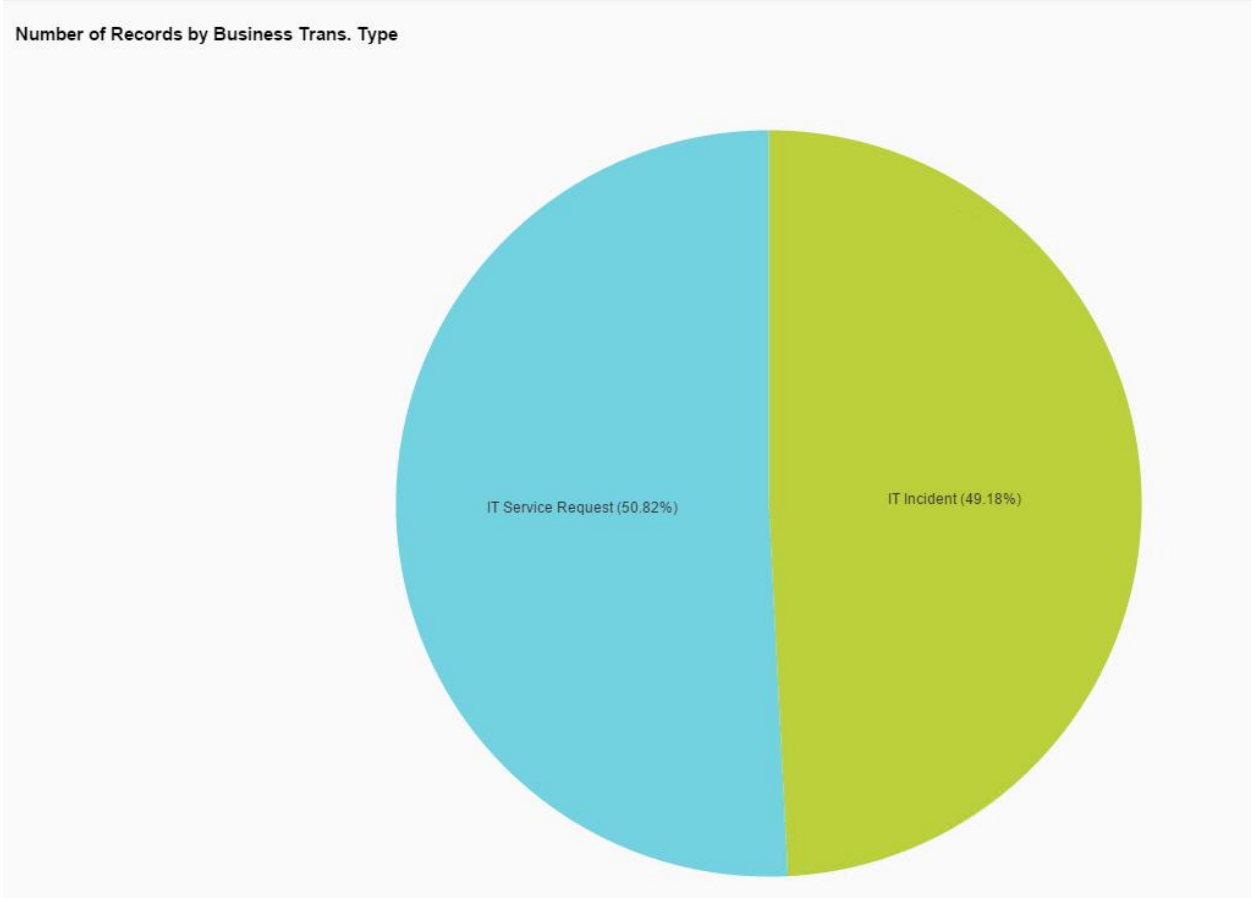
Select the chart type then add your dimensions and measures



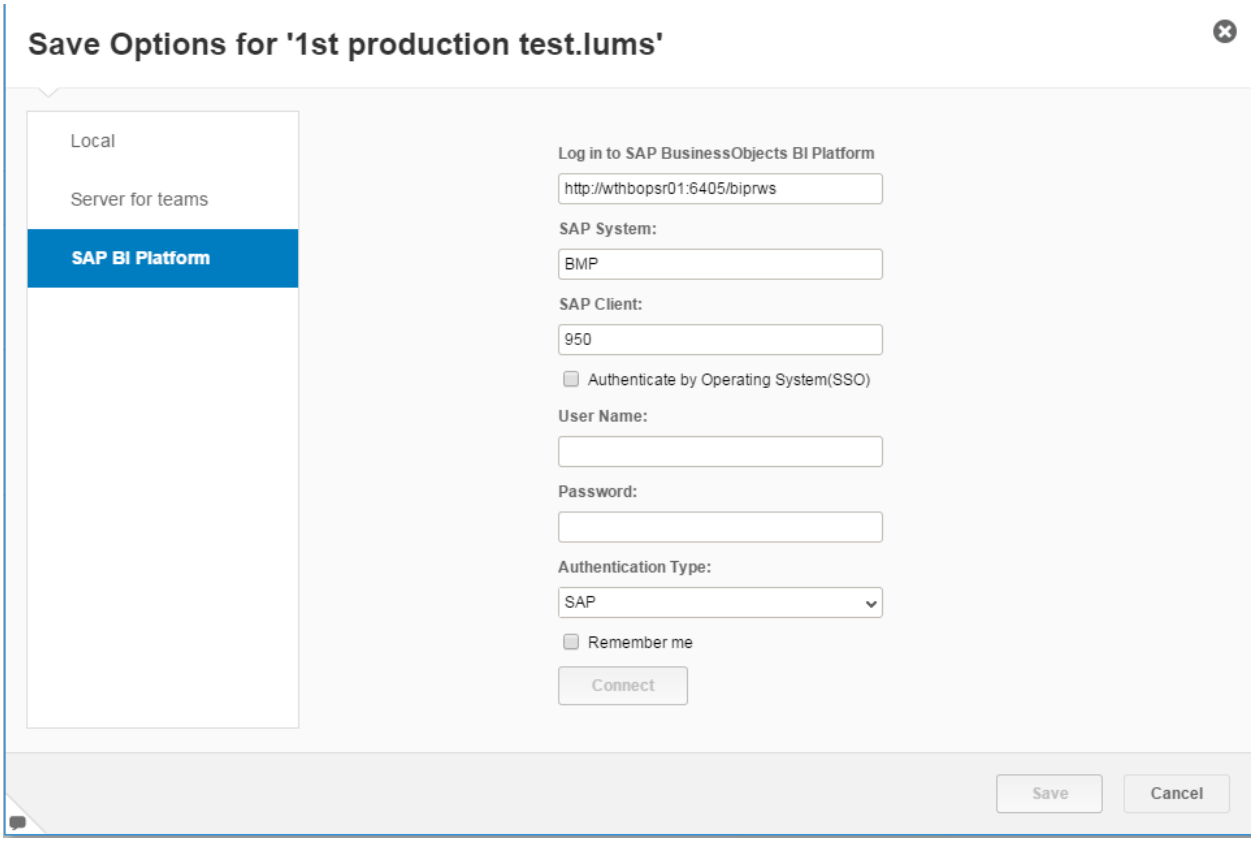


To show labels on the charts follow the below steps:



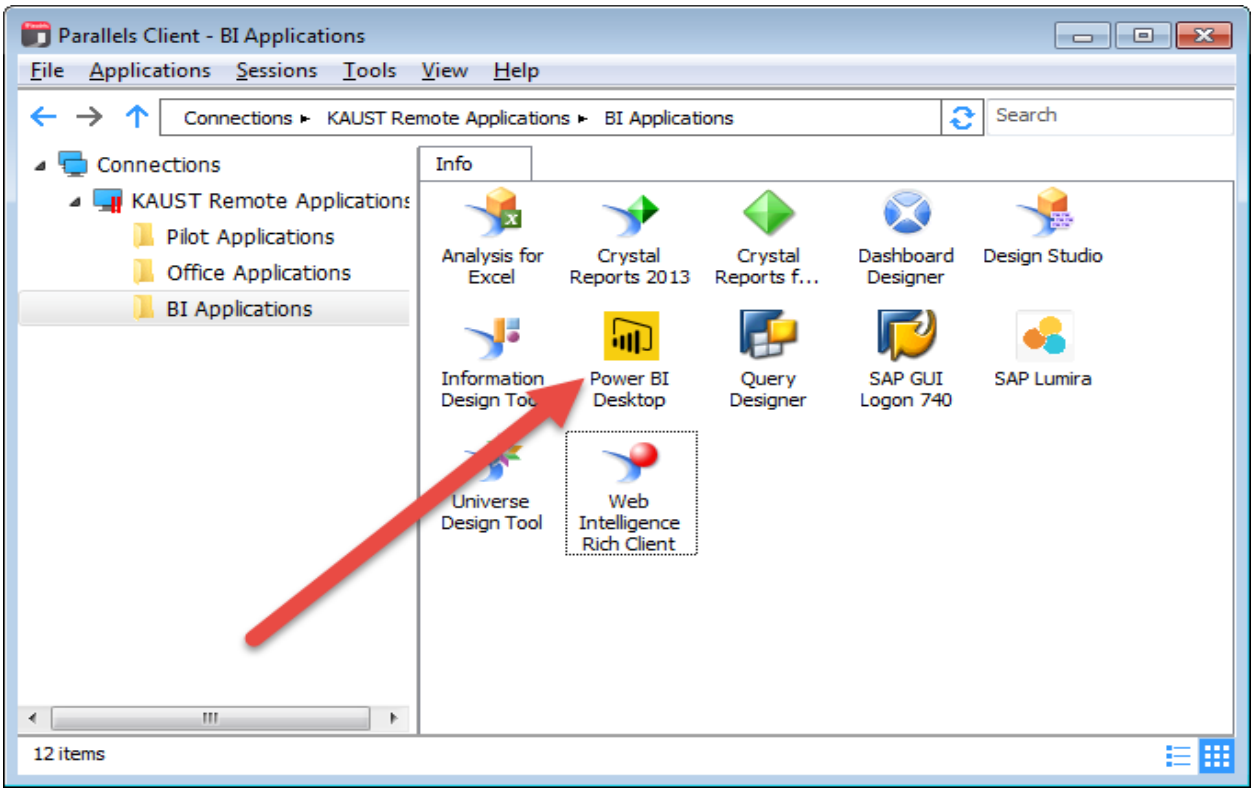


Below are the details when you plan to save a Lumira file into the server

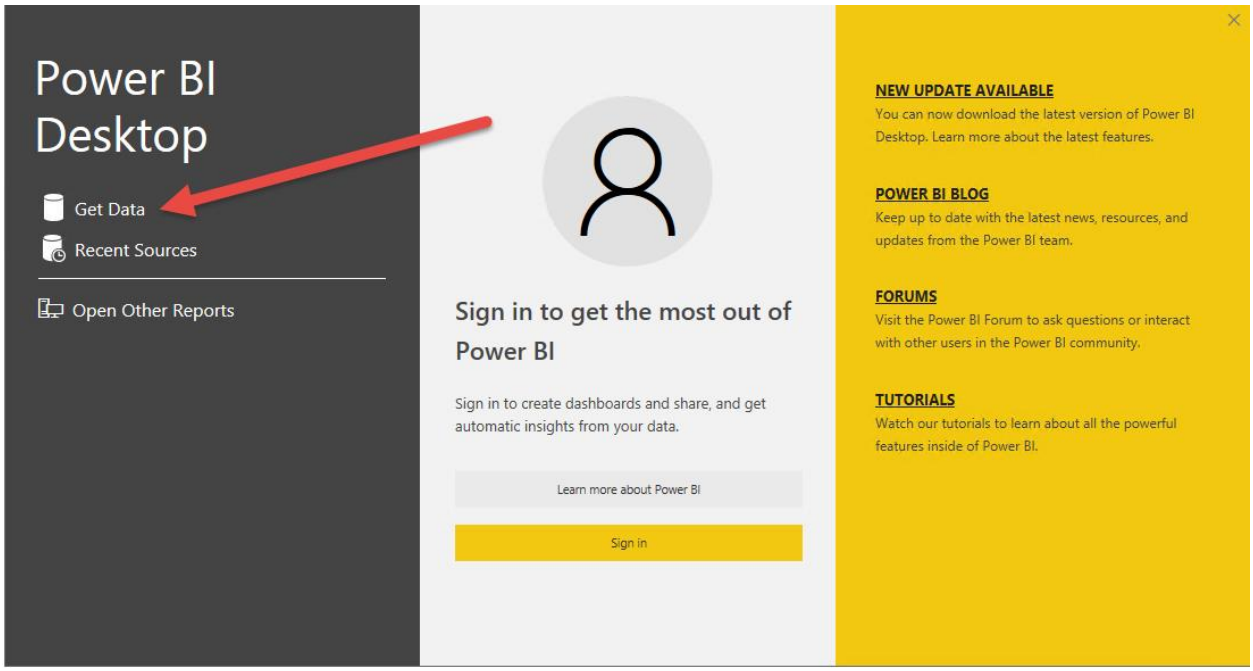


Power BI

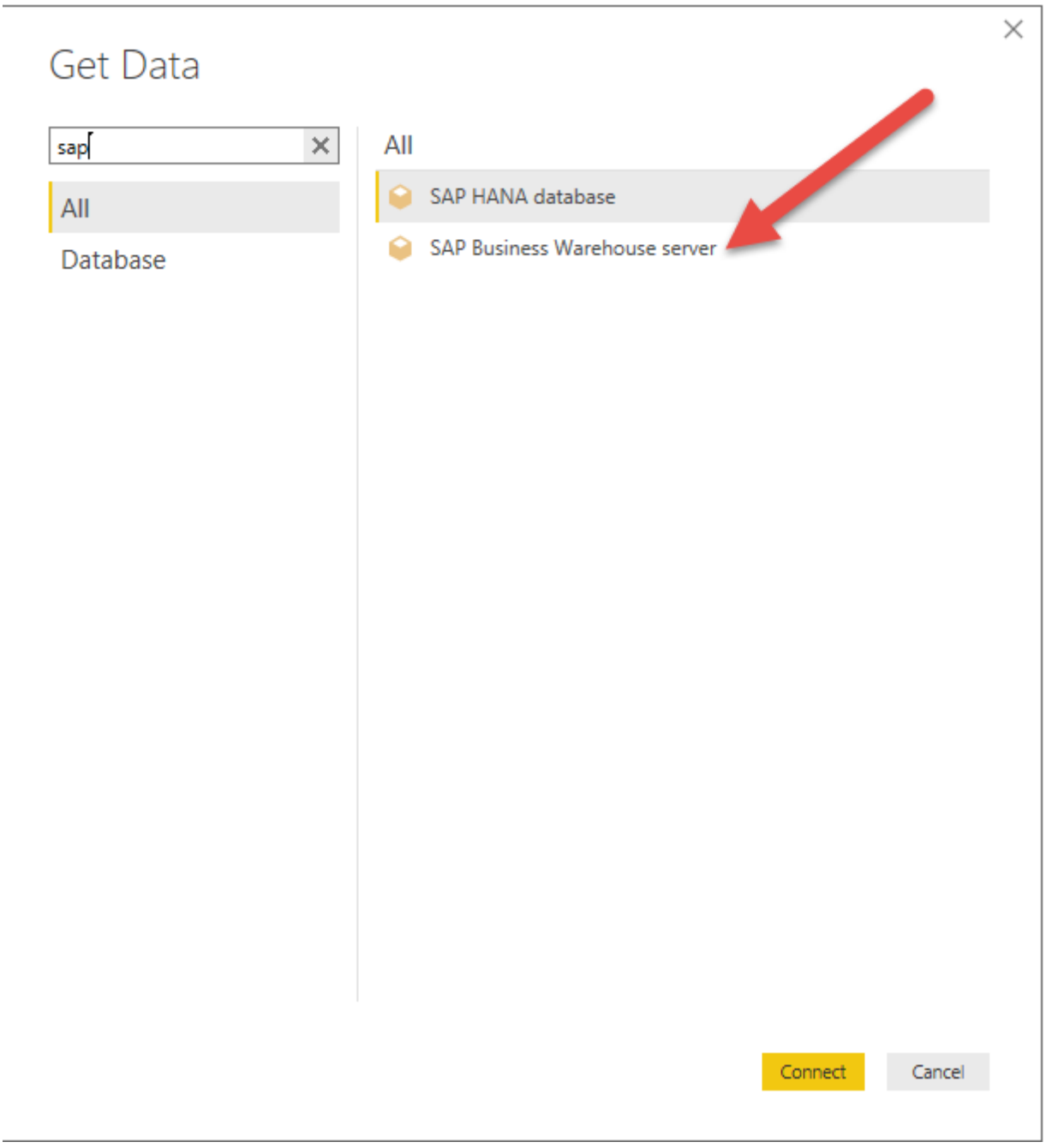
To Launch Power BI open it from parallels client:



From the main screen click on get data

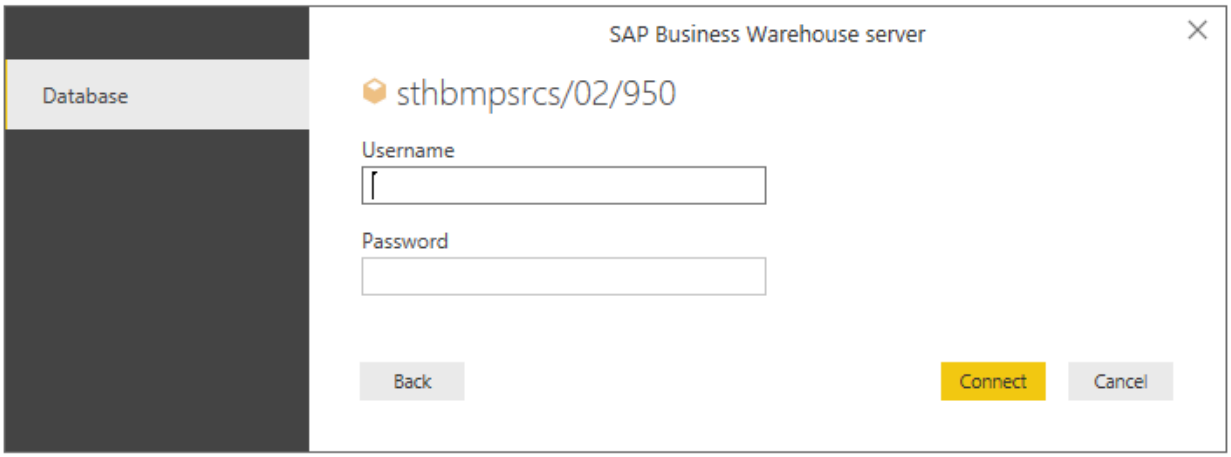


Choose your data source, in the below example it will be SAP BW

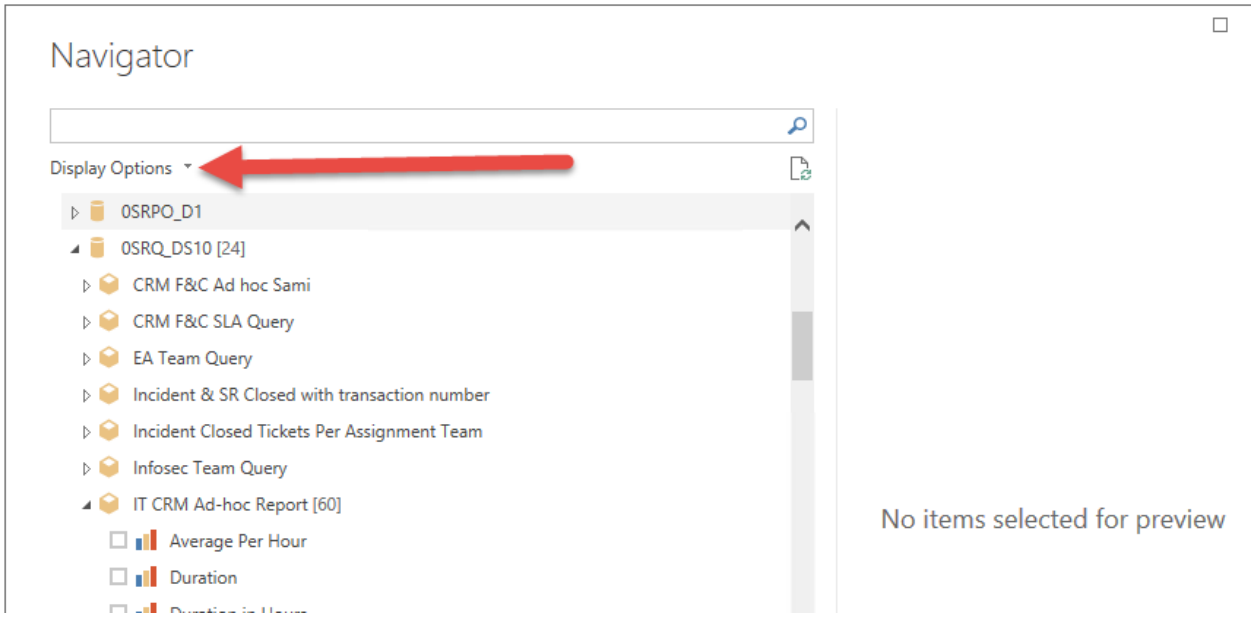


Below is the SAP BW production information

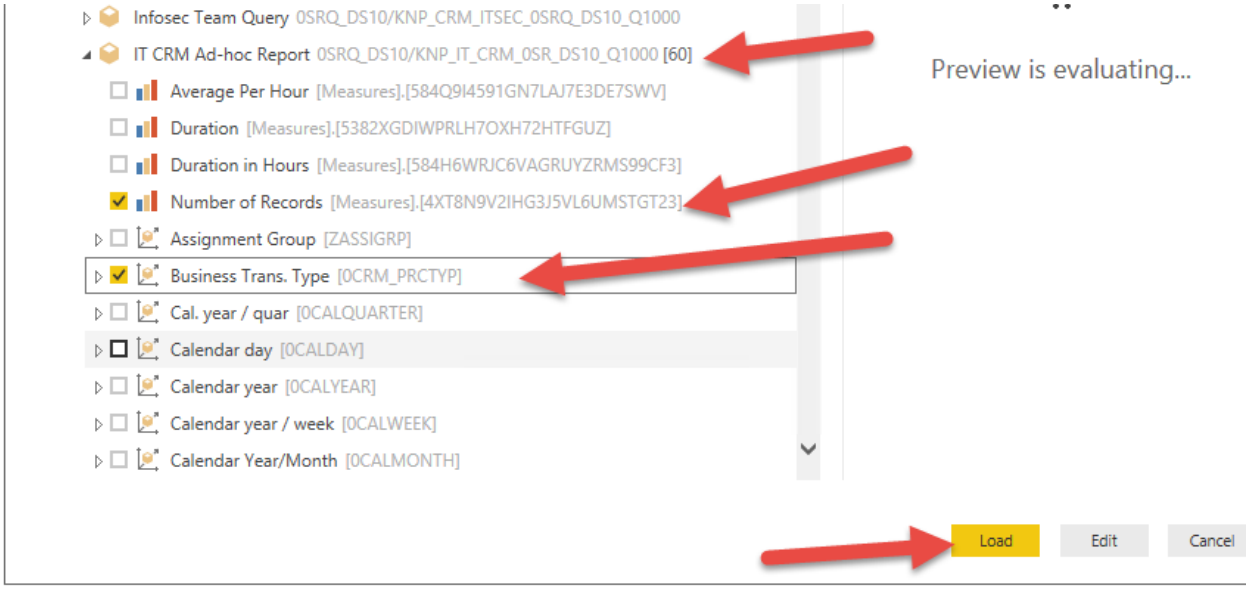
Then input your credentials



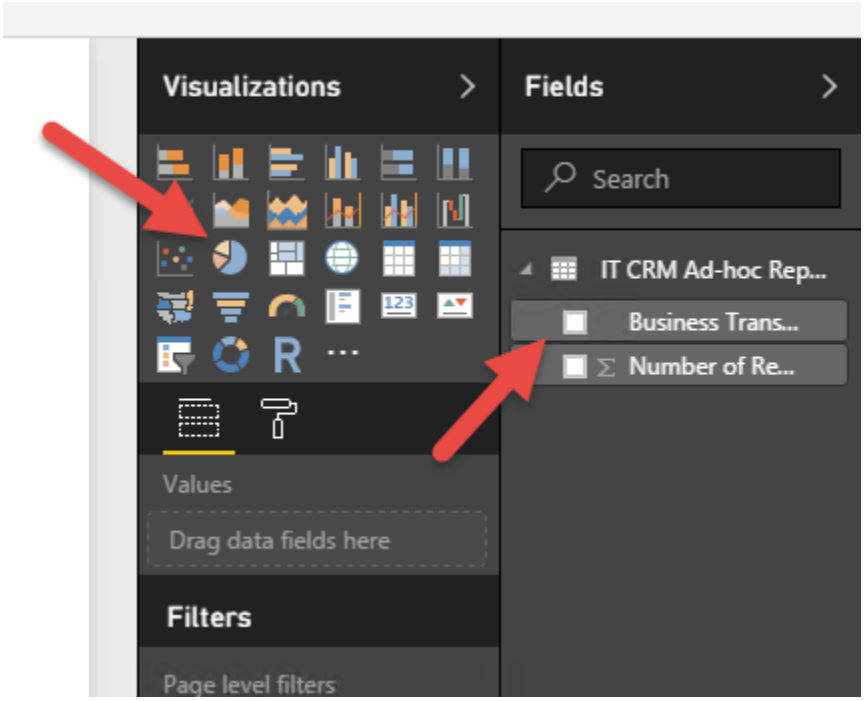
From the navigator, click on "Display Options" to show technical names

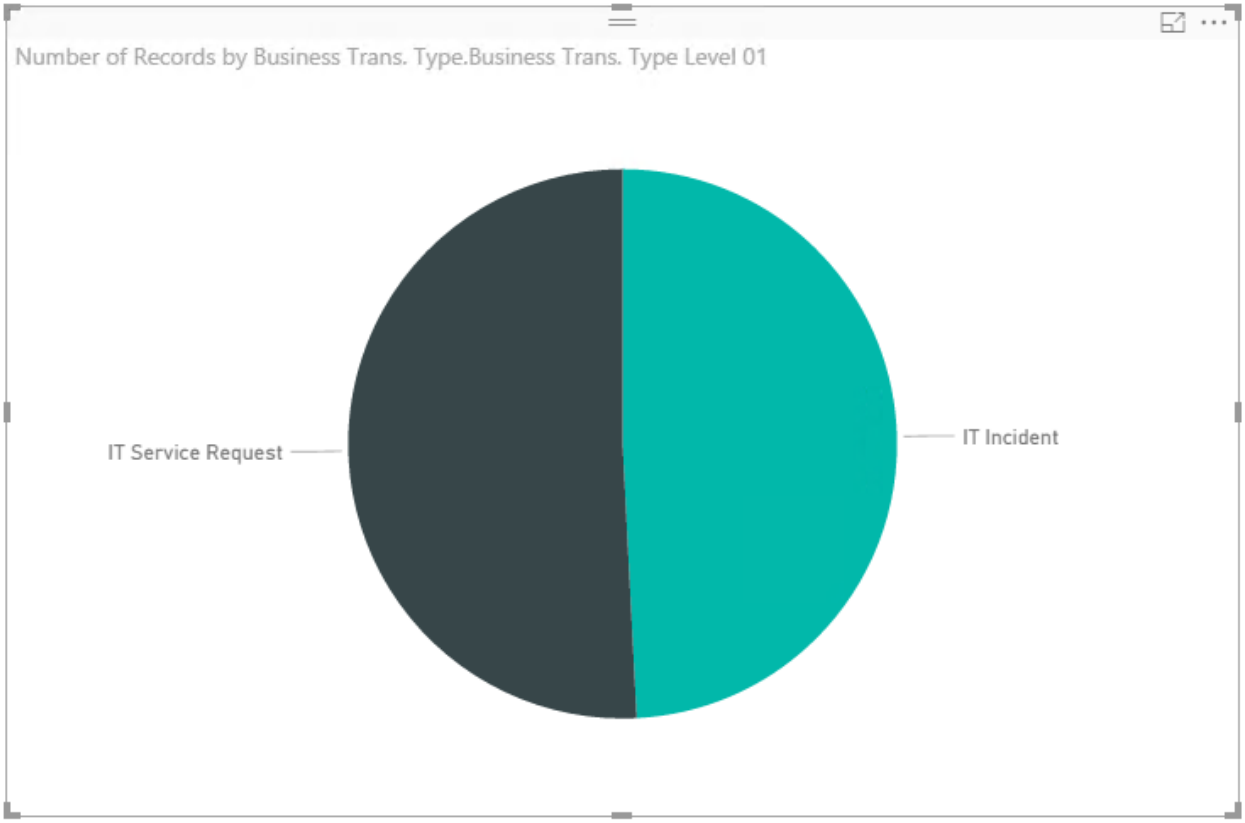


Find your query then pick the required Dimensions and Measures



Pick a visualization and the required Dimensions and Measures





Reporting Tools – Web Based

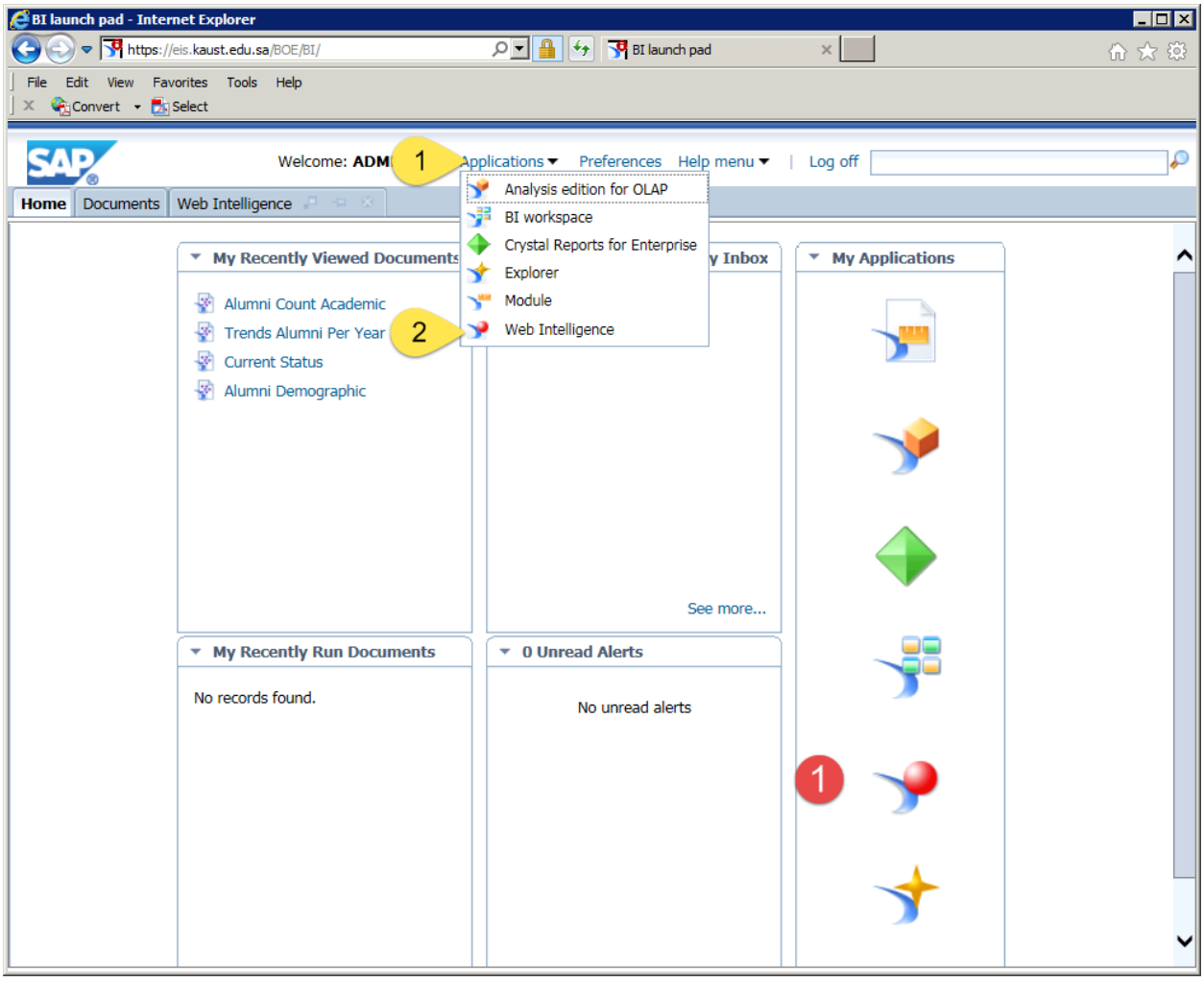
Web Intelligence

Web Intelligence (WebI) is an ad hoc data analysis tool. This tools is available on Web as well as Client based installation. It connects to various data sources including a normal Excel Spreadsheet. However the prime data source in KAUST is via a Business Explorer (BEx) Query.

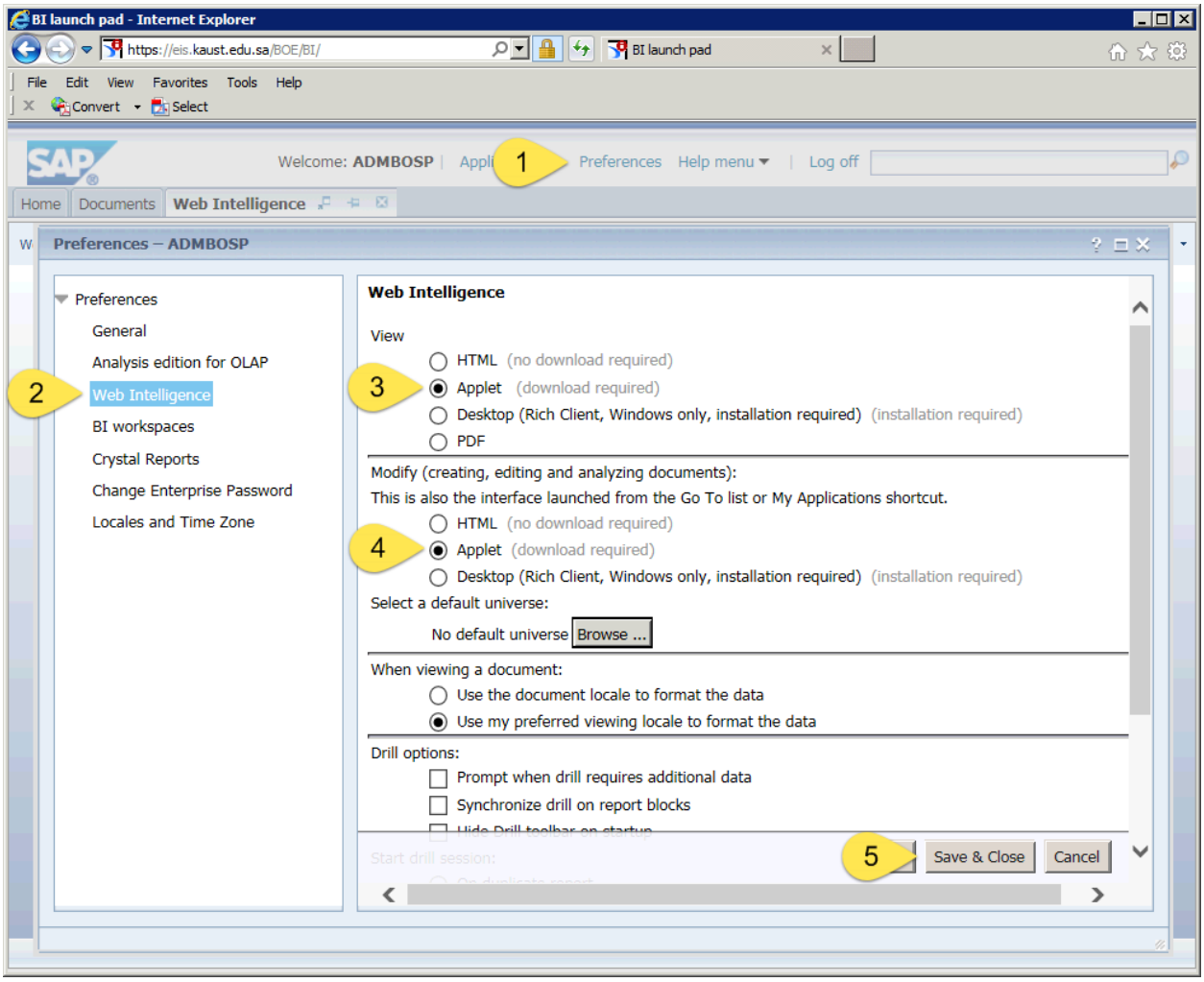
The Report/output document created in Web Intelligence tool is called Web Intelligence Document. From the BI Launchpad, where the WebI document is saved, you can right click the document and schedule the document for an automated refresh and send the document to different destination of email, BI Inbox.

Note the supported browser for designing a WebI Report with BEx Query is Internet Explorer, which is installed with a Java Virtual machine, with the Preferences of WebI set to Applet. (See Screen shot below). Other browsers can be used for viewing the already built and published WebI report on the BI Platform.

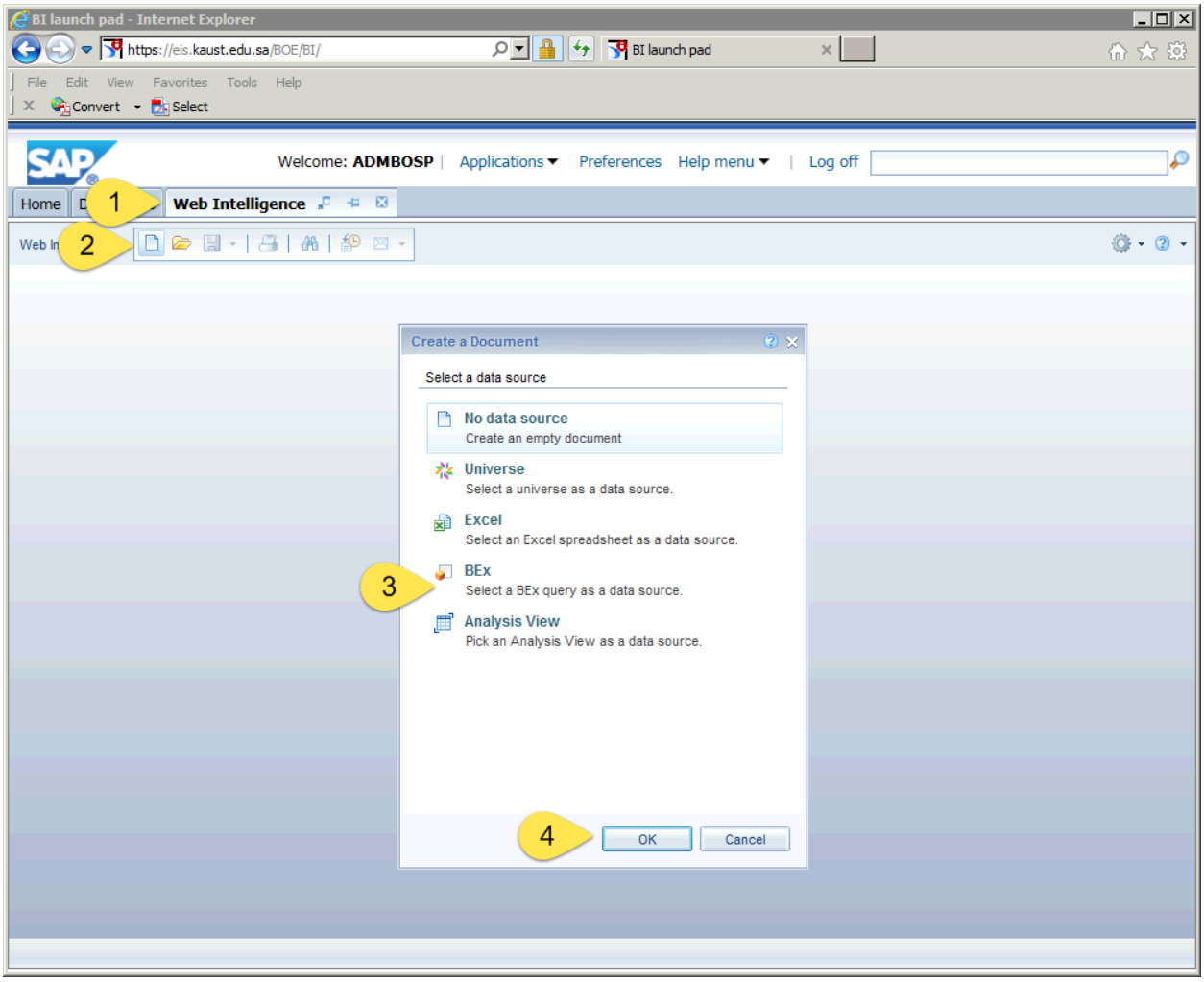
You can launch Web Intelligence from the BI Launchpad Applications Dropdown or from the My Applications Panel, by clicking on the Web Intelligence icon.



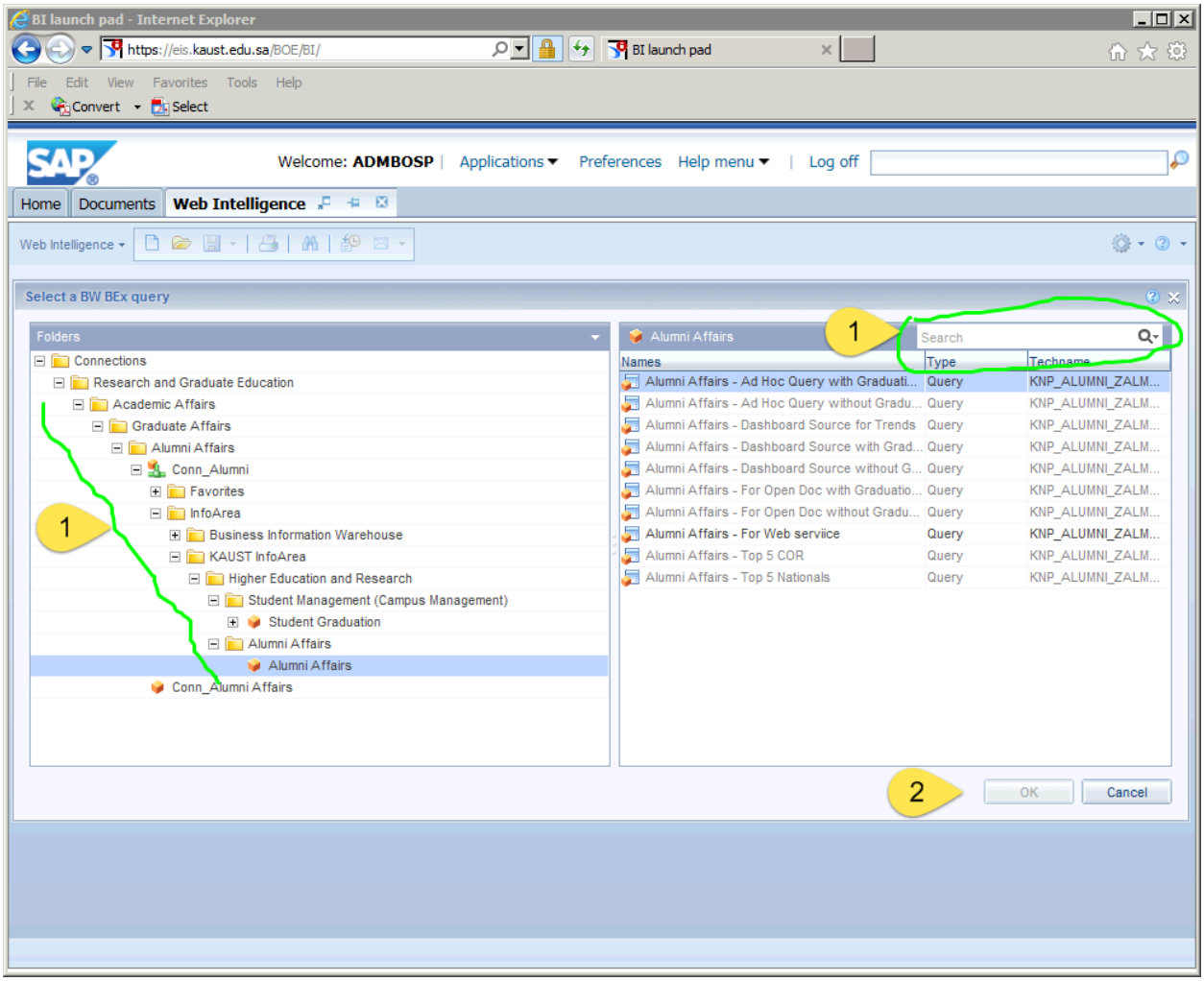
If you using WebI for designing a report using BEx Query, ensure to set the Preferences to Applet.



Once you set the preferences, reload the page by refreshing the page and then relaunch WebI. Once the WebI is launched it opens in a Tab adjacent to the Home & Documents Tab.



Once you click OK, system prompts for the selection of the required BEx Query. Based on your access levels, the folders will be displayed and you can navigate the folders or search with BEx Query with the Query Description or with the Technical Name, by clicking on the Search Lens.



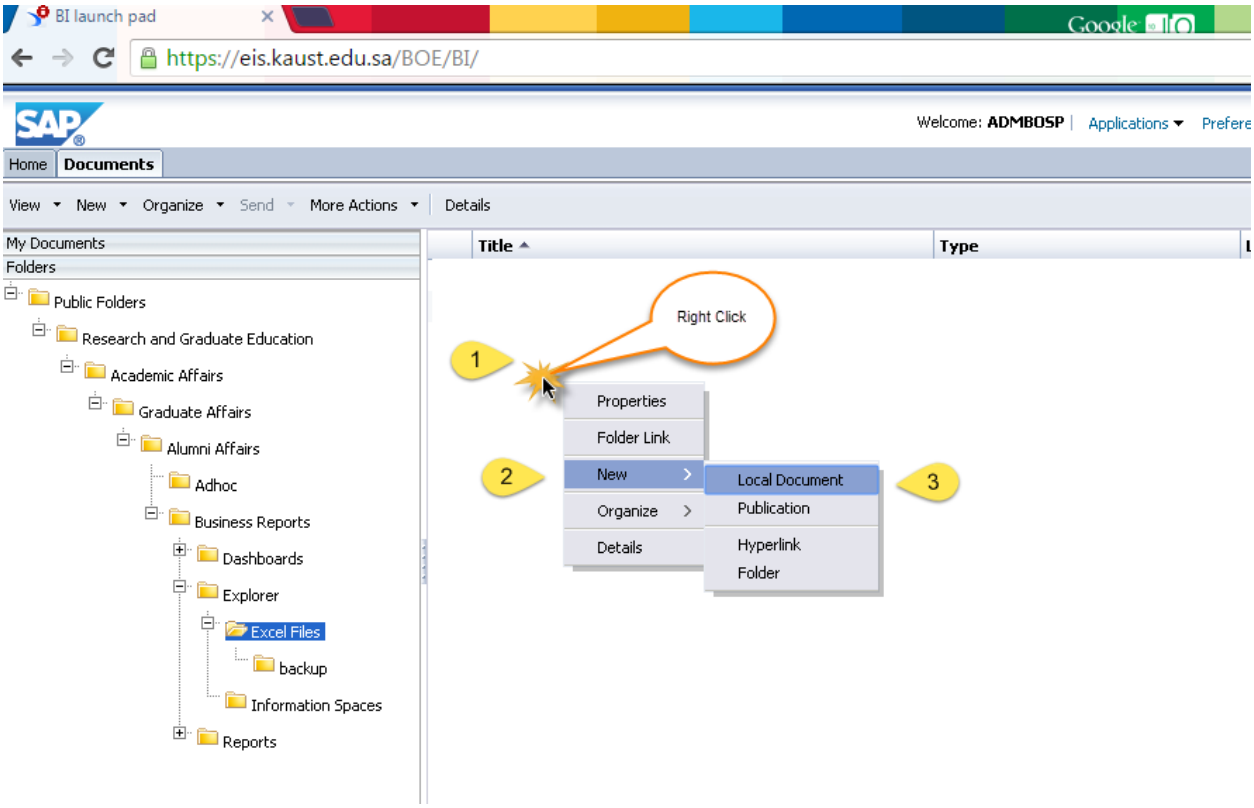
Next steps will be similar to WebI Rich Client

Explorer

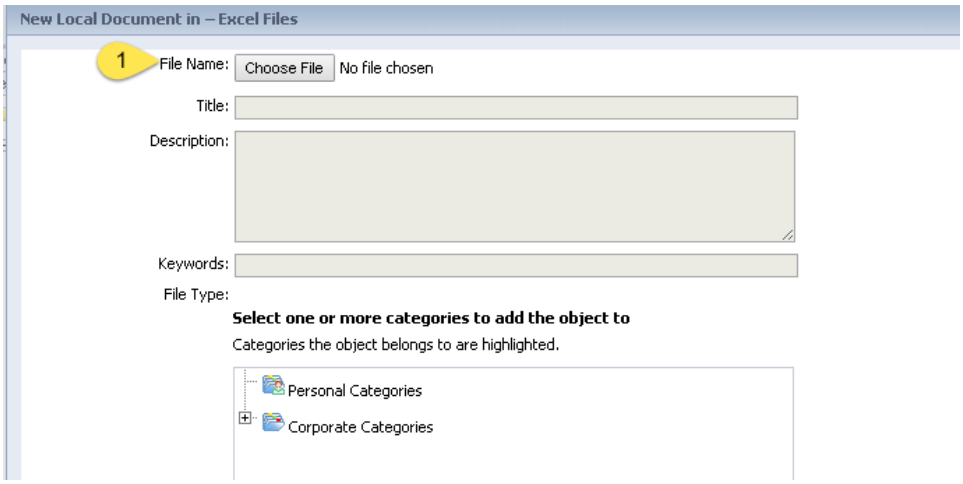
Business Objects Explorer is a data discovery application that allows you to retrieve answers to your business question from the data quickly and readily. You can upload any Business data with the right Dimensions and Measures using excel spreadsheet and get answers to the questions on the data readily using Explorer.

The output report/document created in Explorer is called an Information Space. A subset or a different view of the Same "Information Space" can be further saved as "Explorer View Sets".

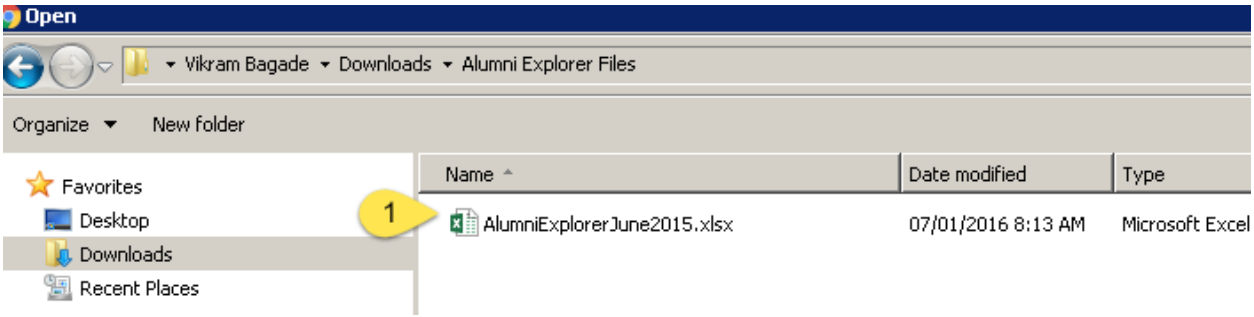
To use Explorer, first you need to prepare your data in Spreadsheet and upload it to the BI Launchpad and place it in the required folder. Follow the screen shot accordingly.



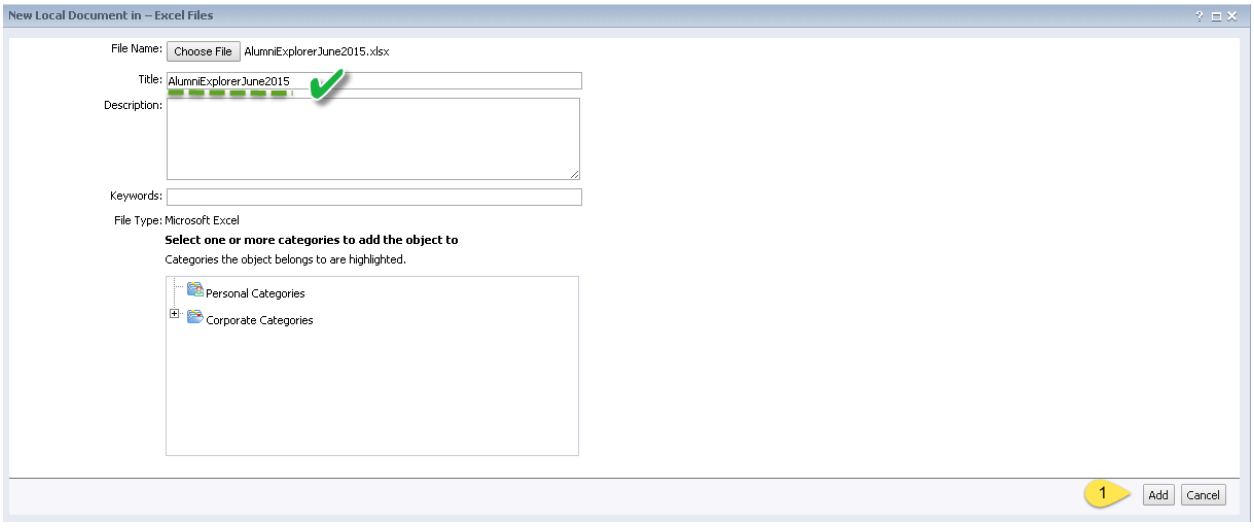
Navigate to the right authorized folder and Right click on the white area and select new > local document.



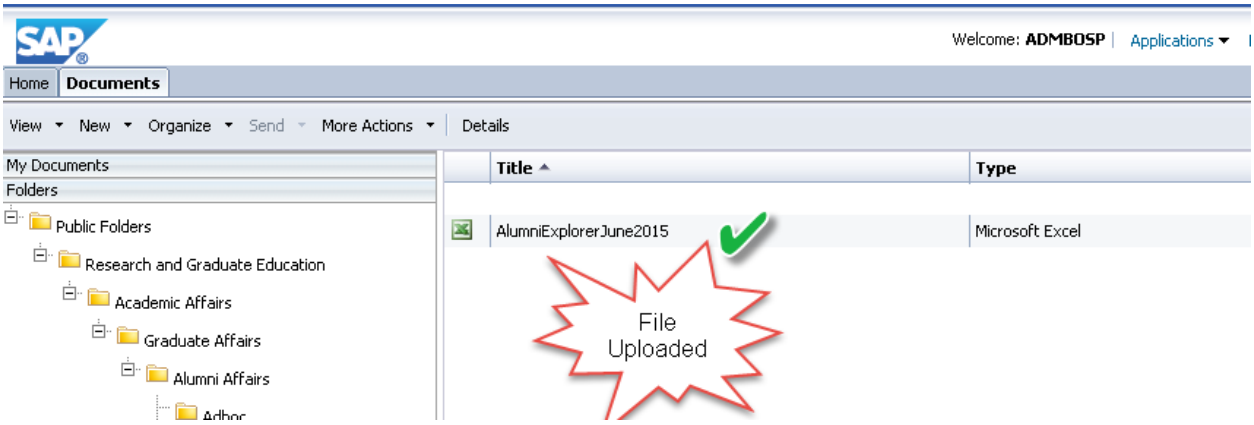
Choose the file from the local computer location, by clicking on Choose File.



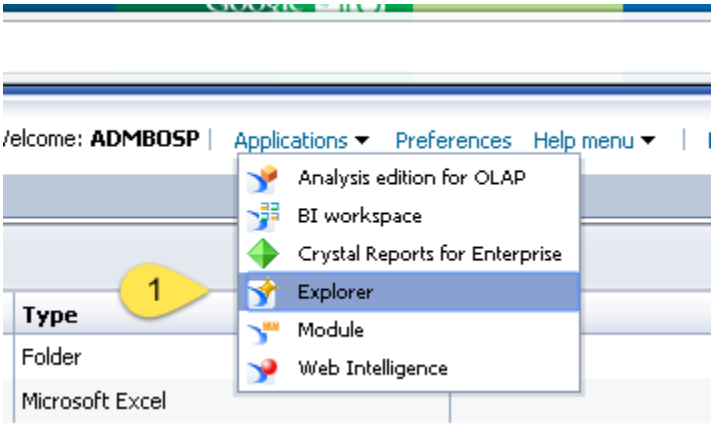
Navigate to the relevant path and select the file with the right data. Once the file is selected, notice the file name appears on the Title. Then click on Add.



The will be uploaded in the BI Launchpad folder.

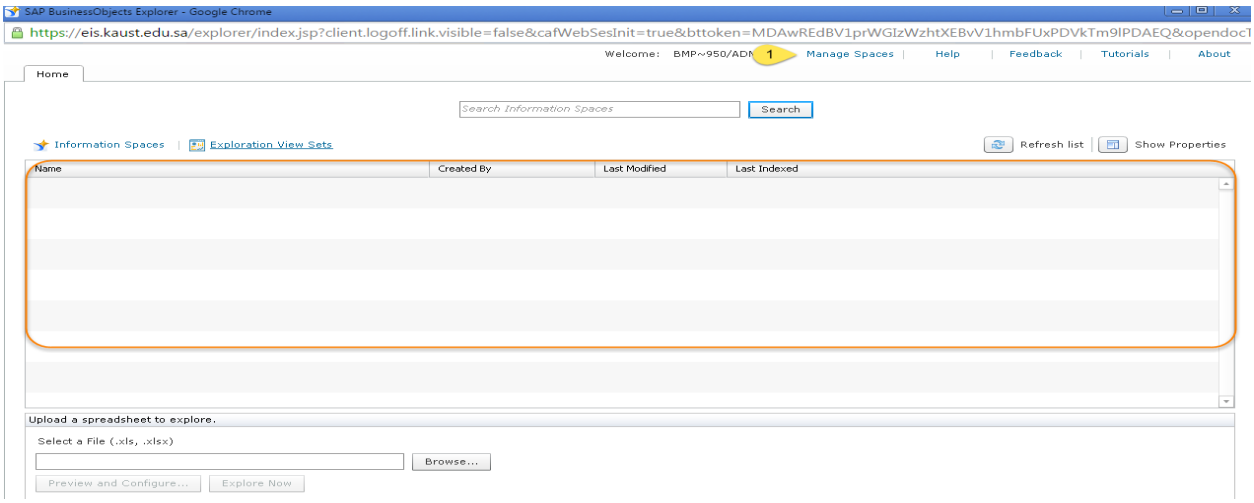


Next launch the Explorer Application from the Applications Drop Down or from the My Applications Frame.

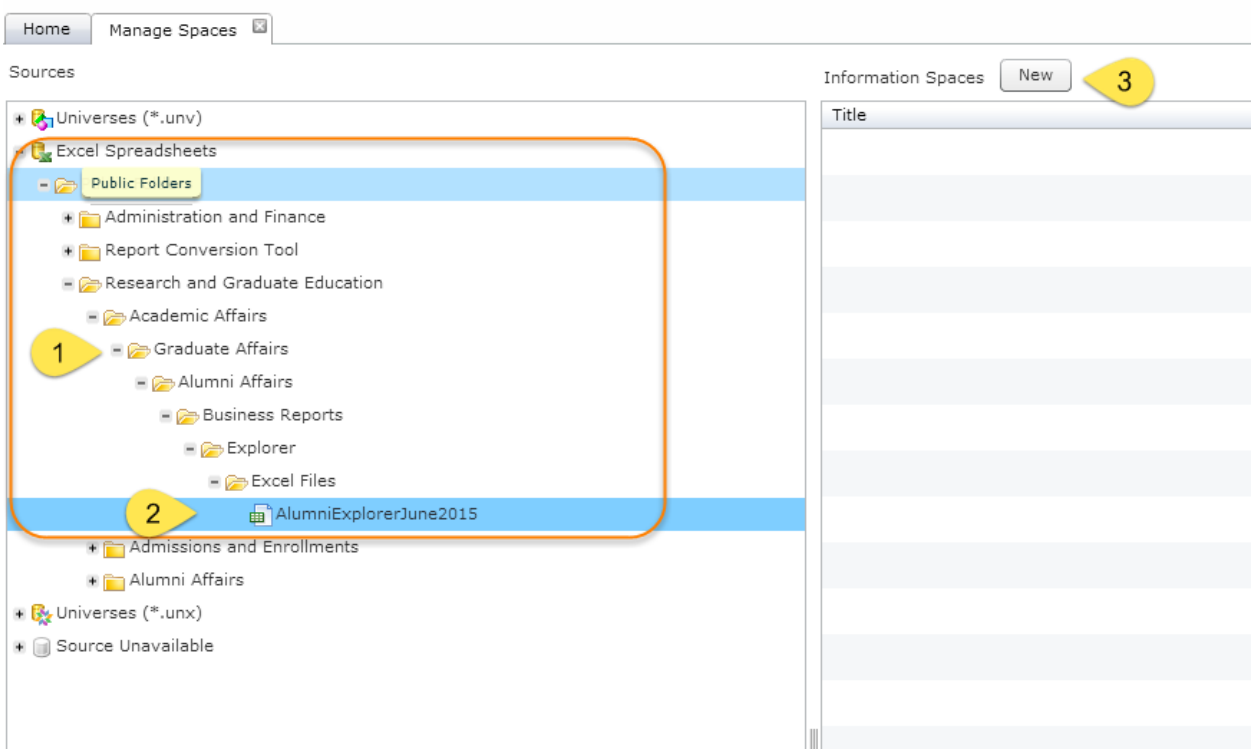


This opens in a new Window with a Home Tab. Notice that there are no Information Spaces or Exploration View Sets. Once you have created the Information Spaces or Exploration View Sets, it will be available in the Home Tab.

Click on Manage Spaces to create a new Information Space, click on Manage Spaces on this screen.

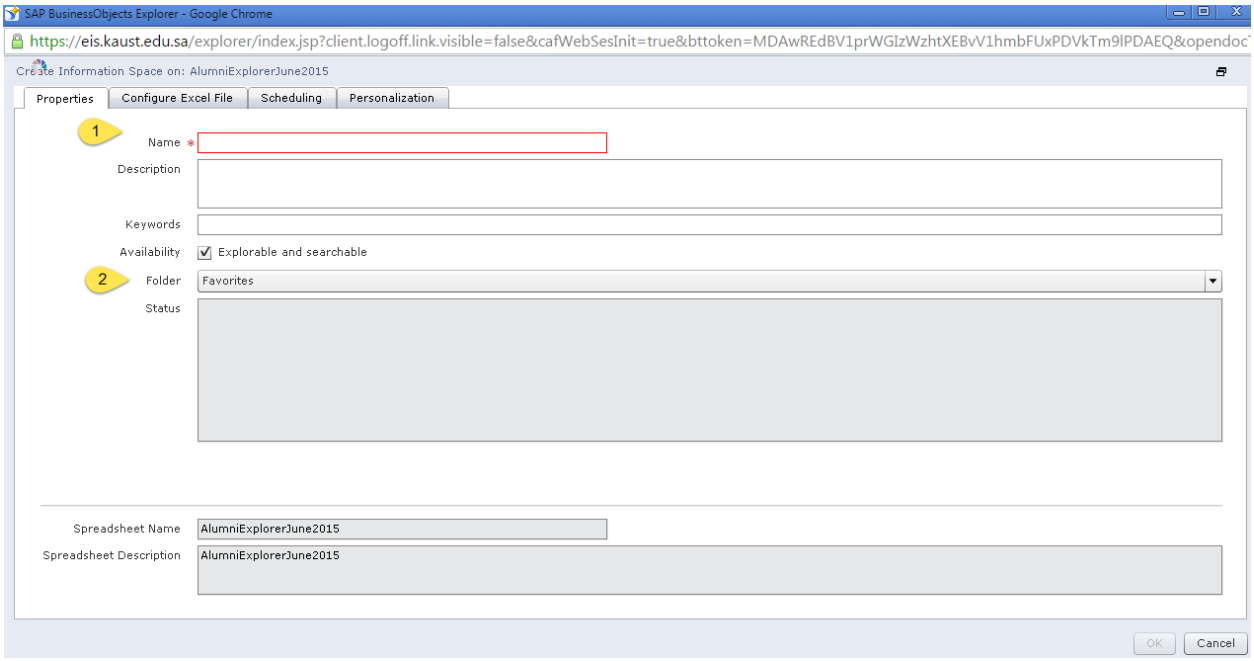


A new tab opens adjacent to the Home Tab.

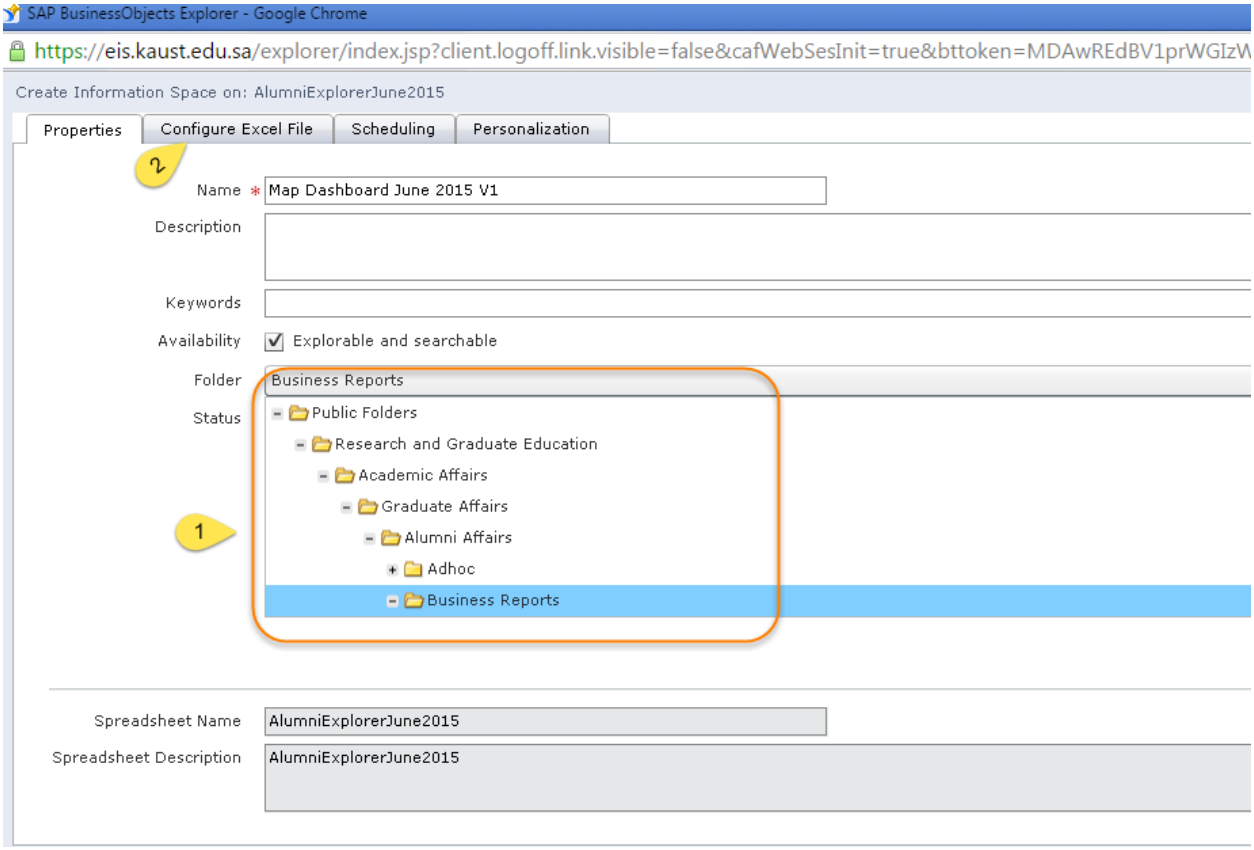


Navigate to the location where the Excel data required for Exploration is placed and select the excel file and then click on New. This opens in a new window.

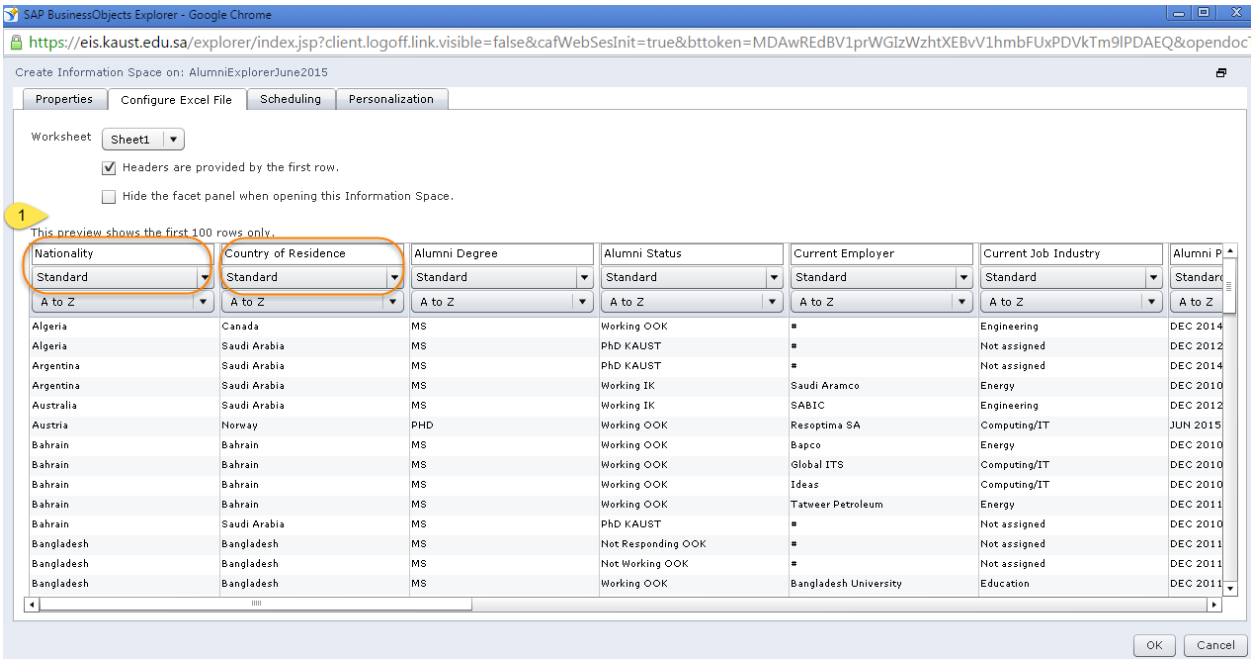
Enter the name of the Information Space and the location in the Public Folder to save the Information Space.



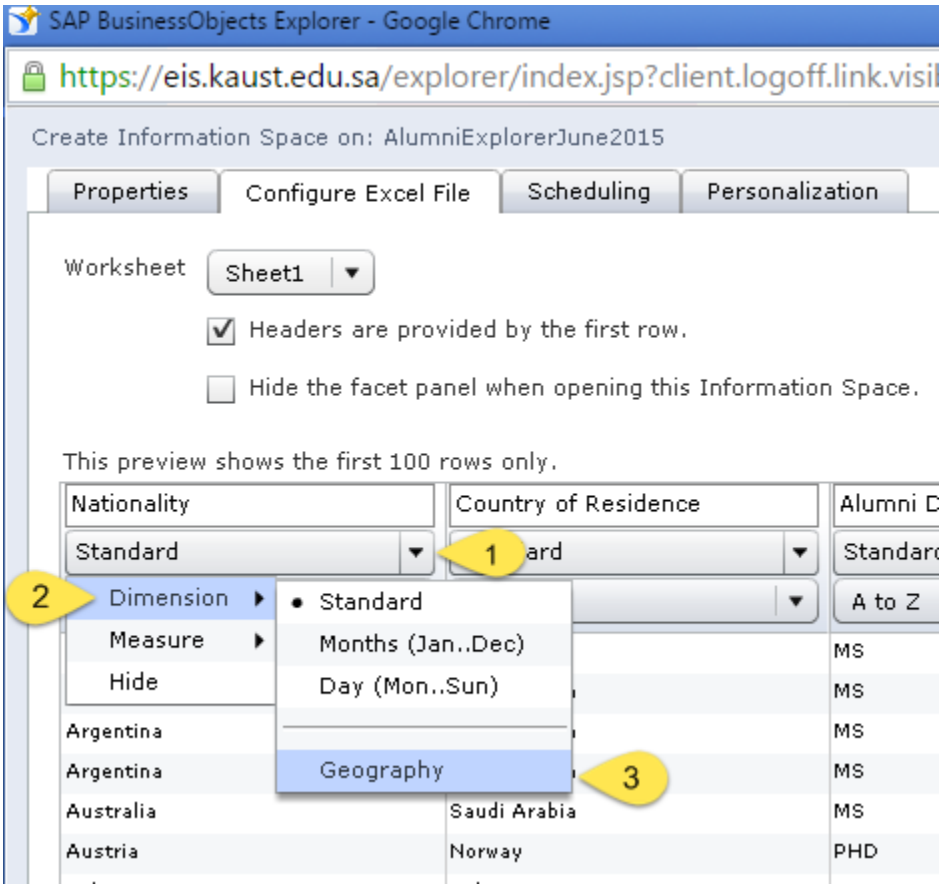
Click on folder and navigation to the location where the Information Space needs to be saved and then click on Configure Excel File



In the Configure Excel Tab. System displays all the dimensions and measures you need for exploration and their respective Aggregation behavior can be set. For Nationality and Country of Residence, these nature of this dimension can be set to Geography, so that the data can be analyzed on Geographical Maps.



Follow the steps to set the Geography Dimension.



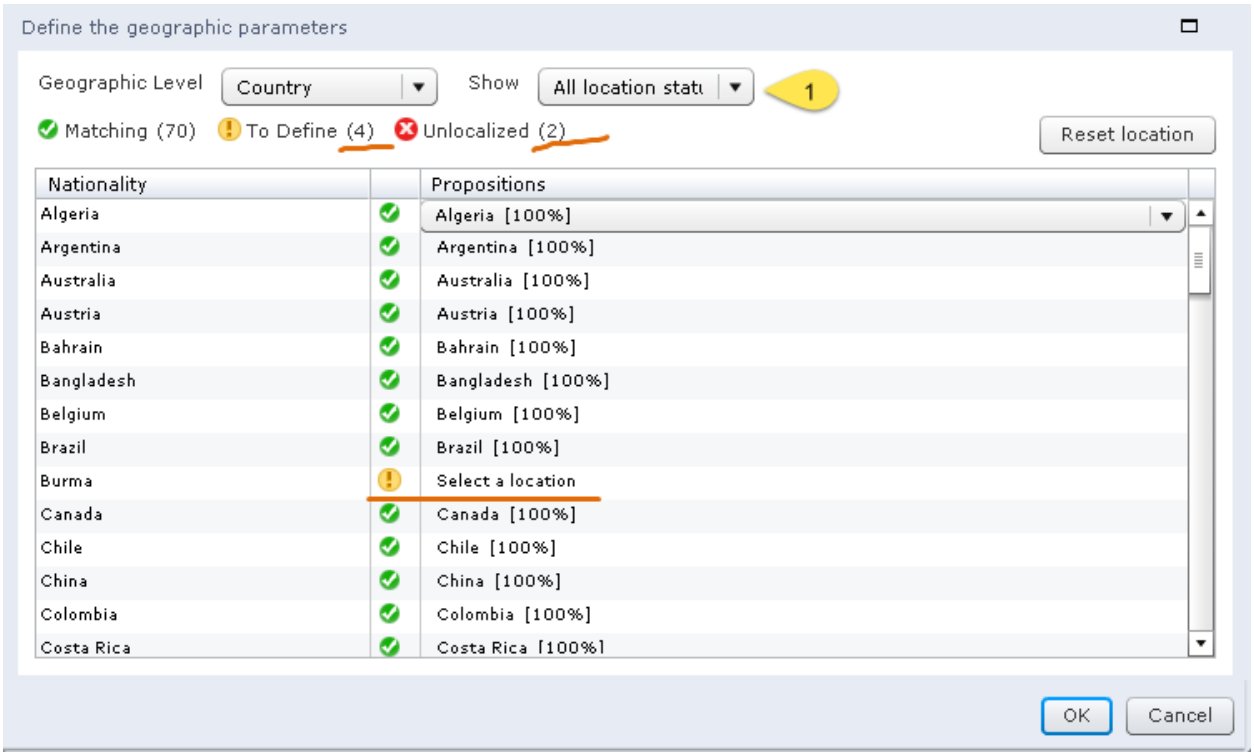
Once you select Geography, a new dialog box appears, where you will need to ensure all the country names are getting mapped with the names available in the system. For Example Russian Federation can be mapped to Russia Country.

Click on Load to continue. Once you click load, you will see all the country names in the excel spreadsheet which are in sync with the names available in the system. The ones which are not matching, system will create three data sets:

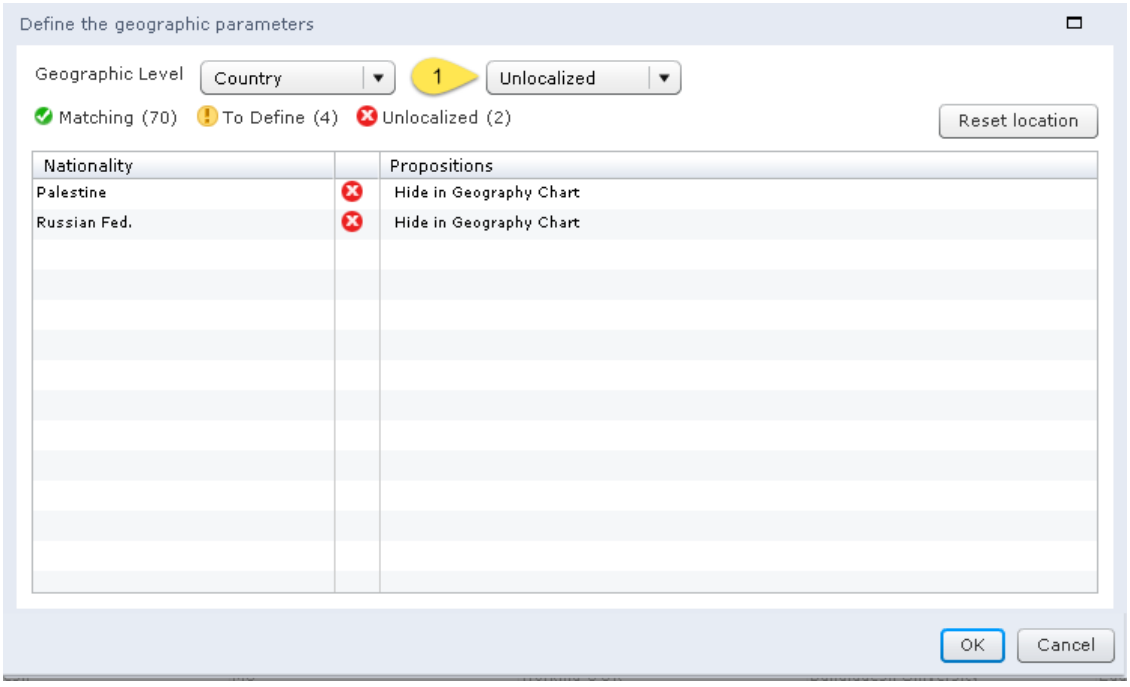
1) Matching (These are the names which have found the 100% match)
2) Unlocalized (These are the names which the system did not find any match) and
3) To Define (These are the names which the system has found any match)

We will need to ensure the Unlocalized and To Define are set the right country names. If this is not done, they will not appear on the maps.

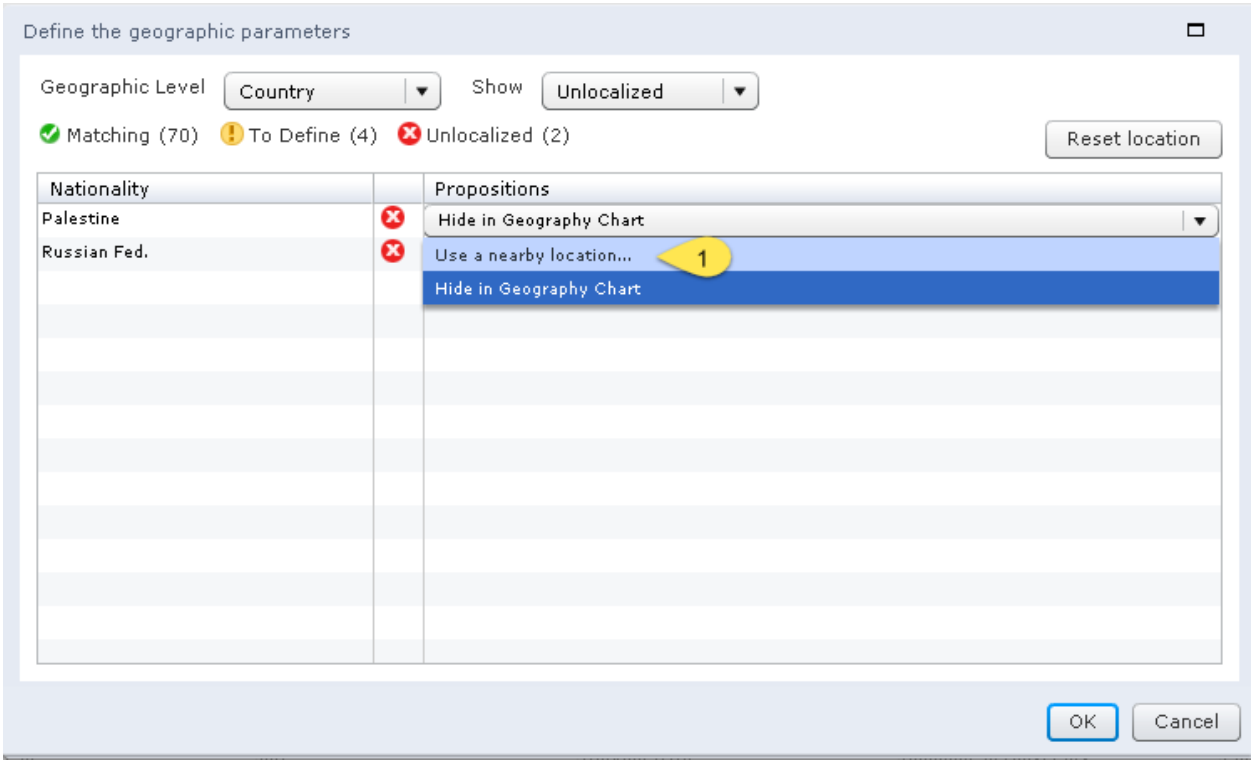
Follow steps to set the right country names: Click on All Location Status small triangle and select Unlocalized.



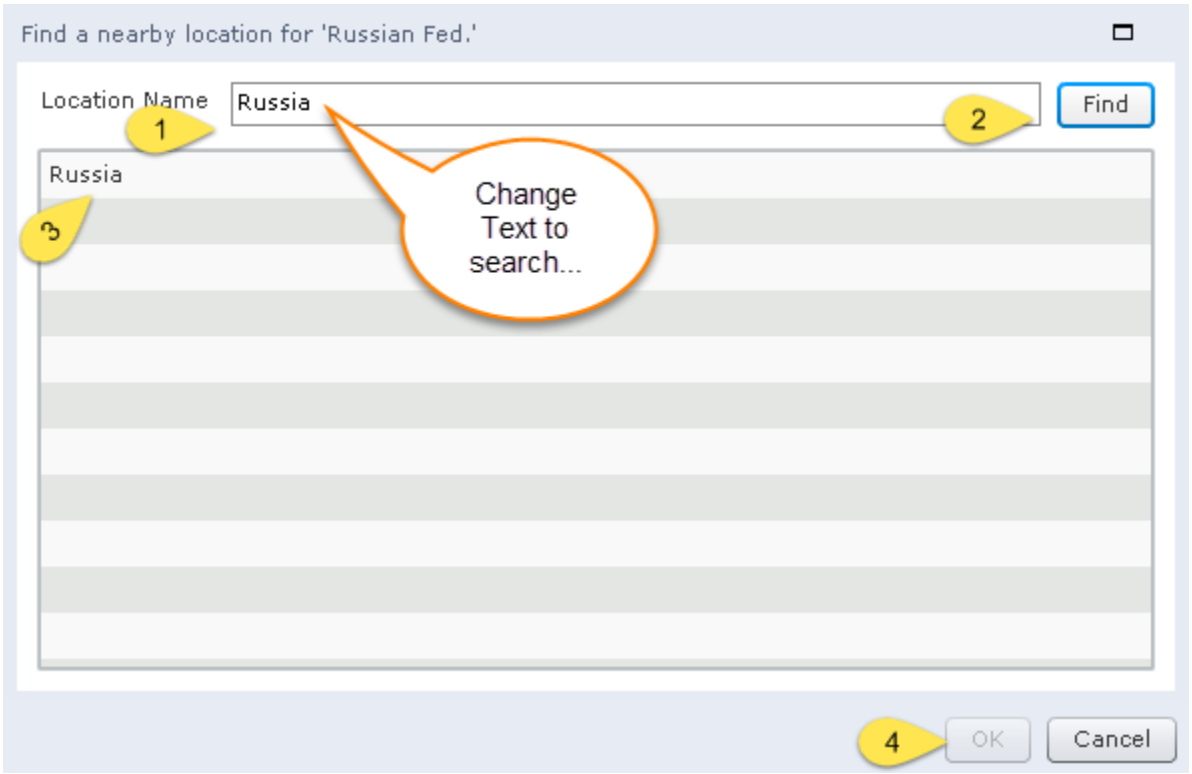
You can see some count names appear.



To set the right country, click on the Hide in Geography Chart and select user nearby location.



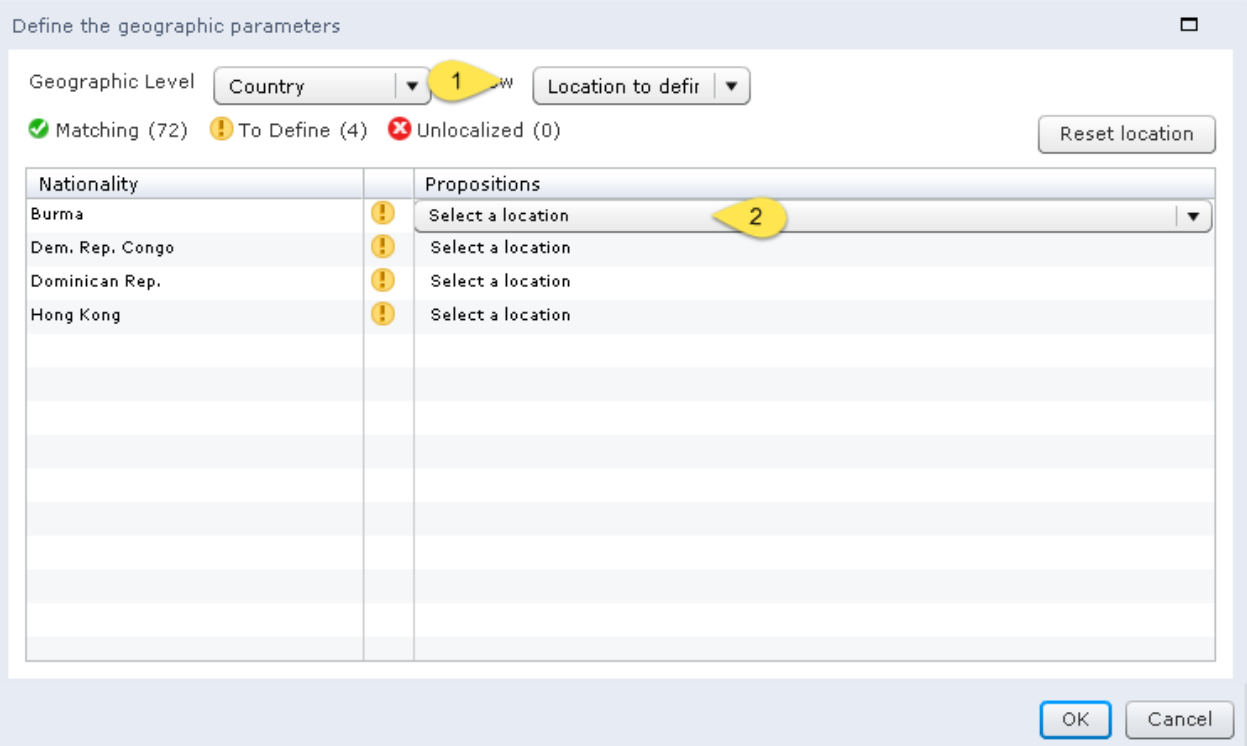
Type the expected name of the country you need to find and click on find.



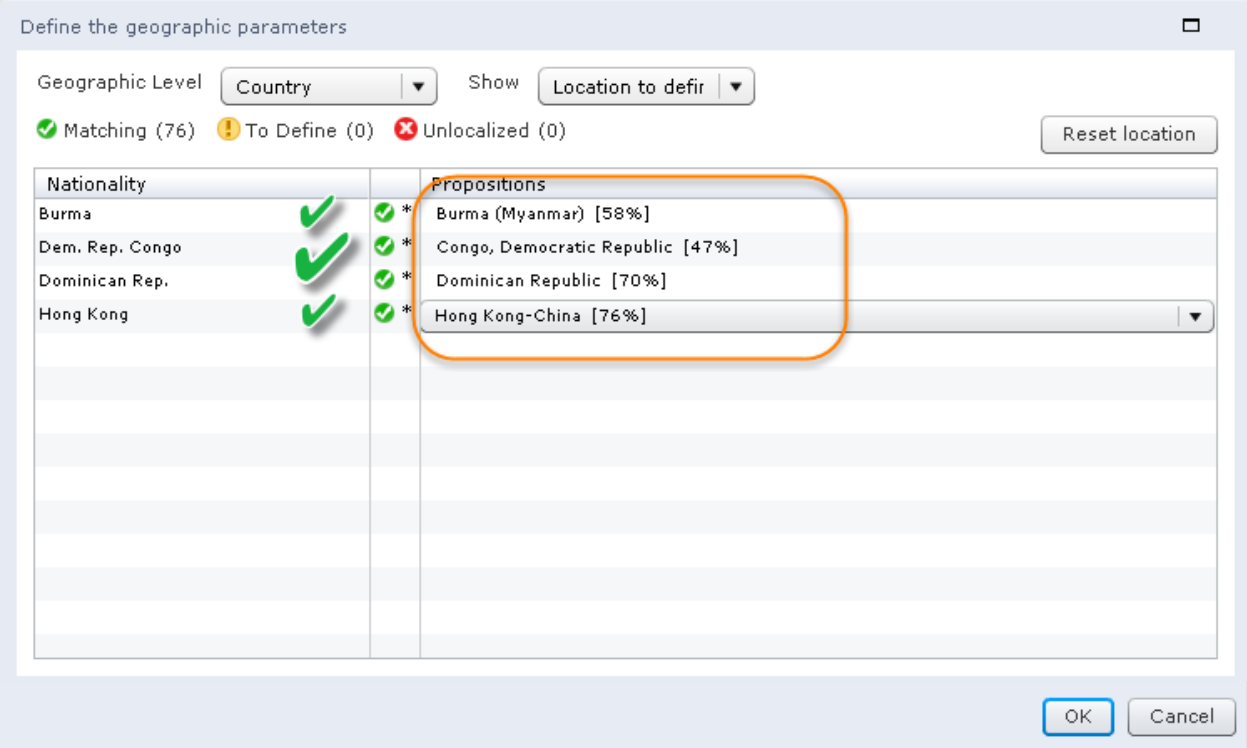
Once you find your country, select the country and click OK. The system will map the Unlocalized country to the Matching country names.

This way perform the same step for all the Unlocalized Country Values and ensure all are having a matching country names.

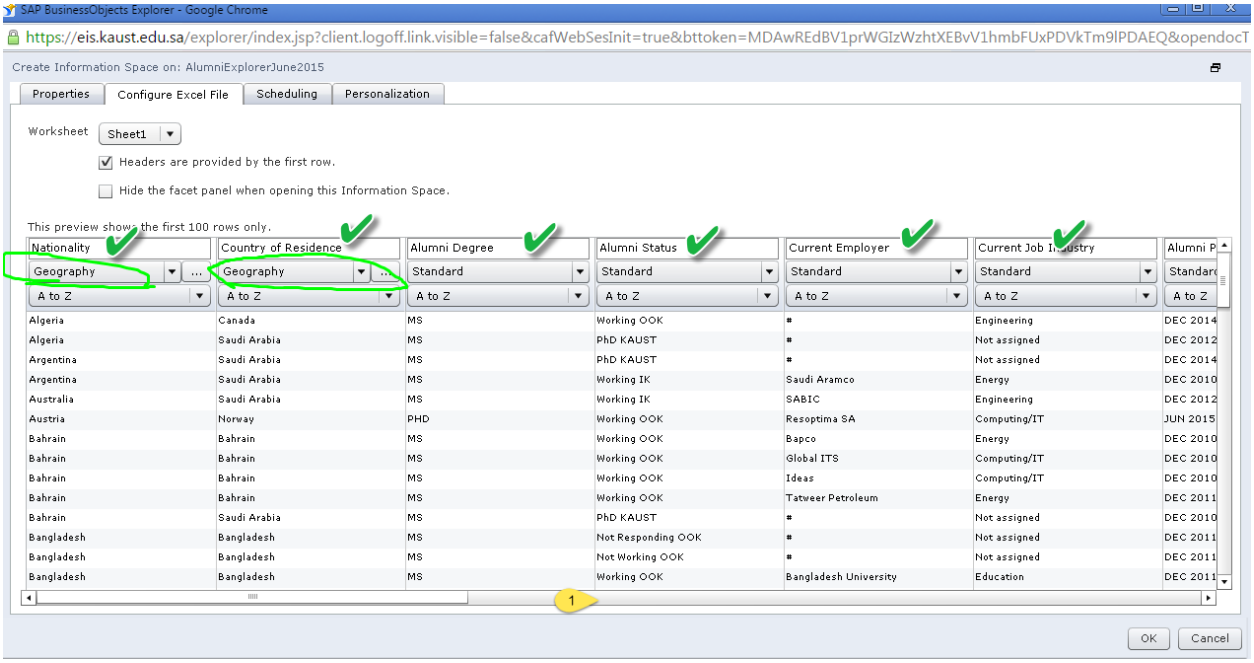
Next Select Location to define and Click on Select a location.



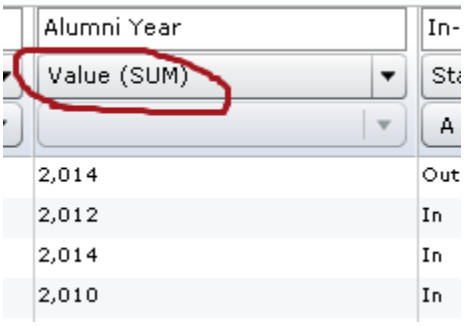
And select the appropriate country name and match it.



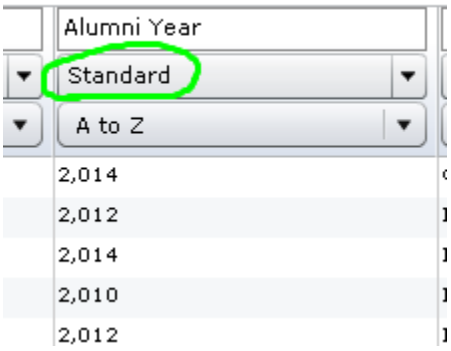
Once all country names are matched, click ok. System will come back to the original Configuration screen. Here you ensure that all the dimension are set to right Aggregation.



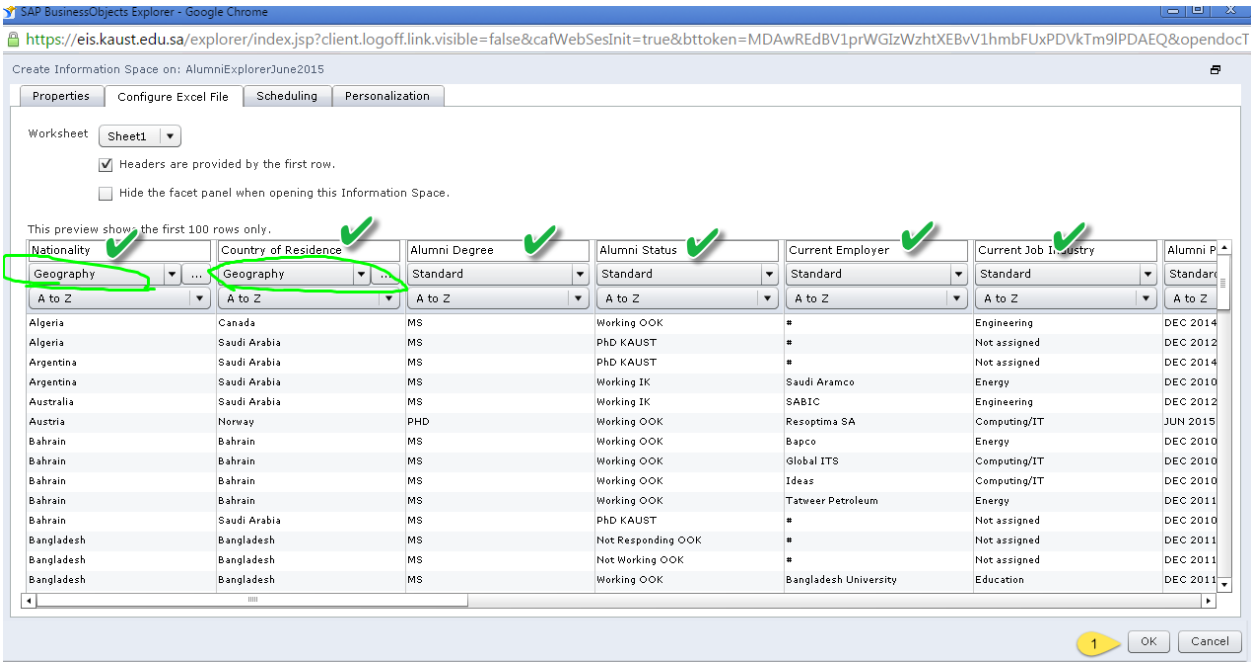
Note that sometimes Year may be treated as Summation aggregation by the system as this is numeric value, you can click on the small triangle and select Standard for Year.



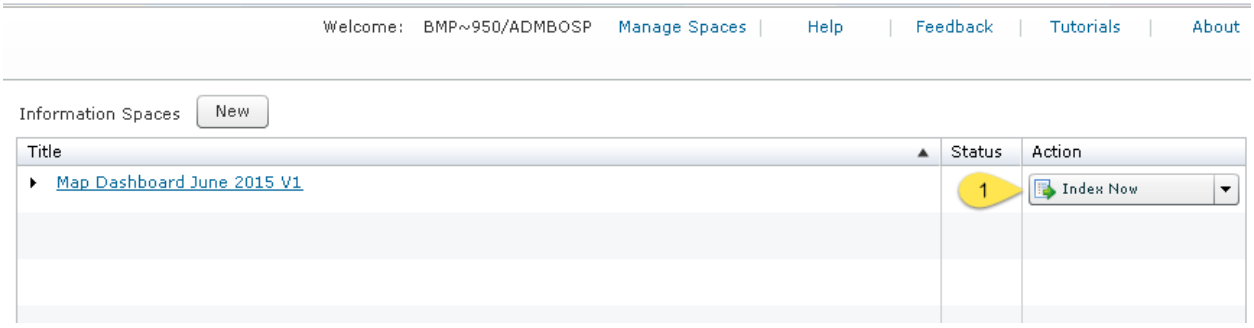
Click on Value Sum and change to Standard for Year Dimension.



Once this is all complete click ok to continue. This will complete the configuration part of the Spreadsheet.

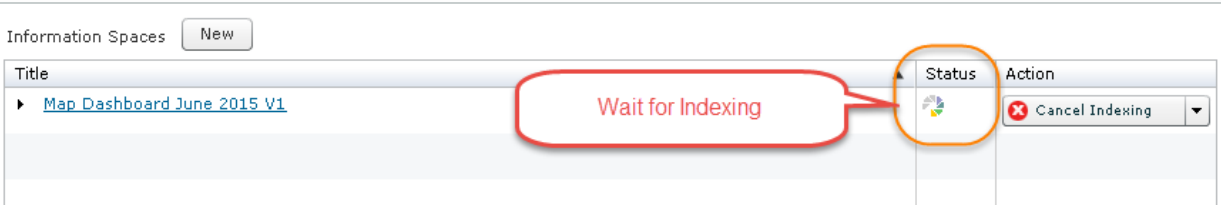


Once you click ok, the information space is created and you can see this in the Information Spaces Listing.

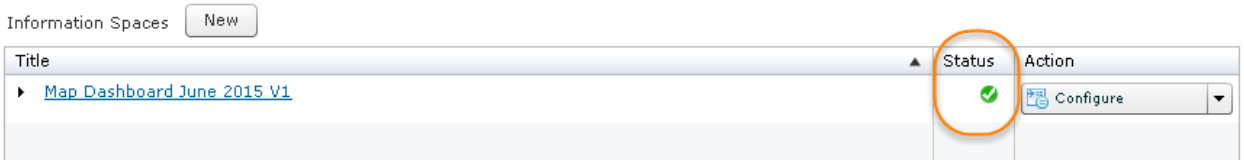


Click on Index now, so that the system will Index the Data and will make the data available in the Information Space for analysis.

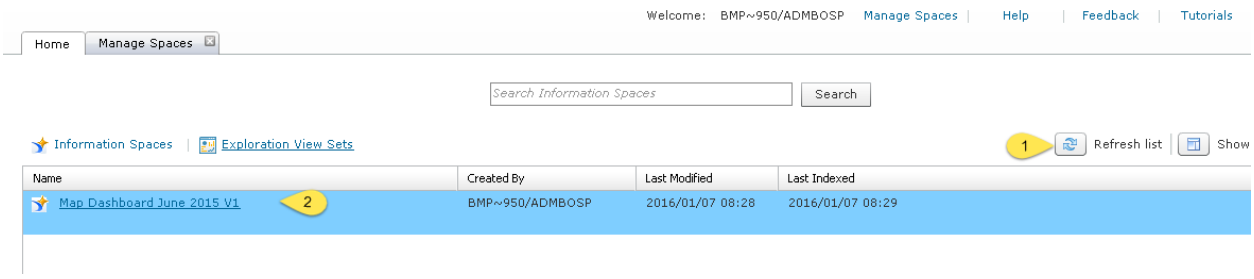
Once you click on Index now. Wait for some time..



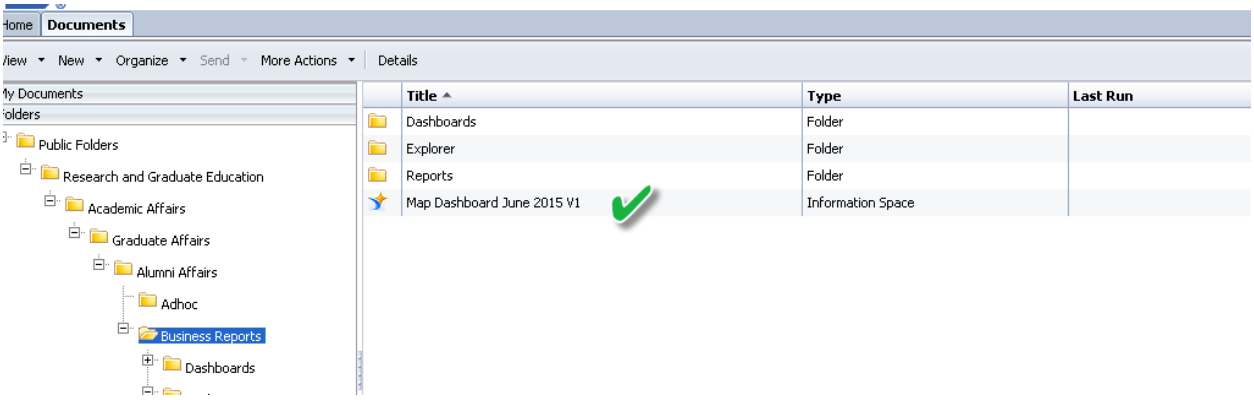
Once indexing is complete, you will see the status Green. And this Information space is available for exploration.



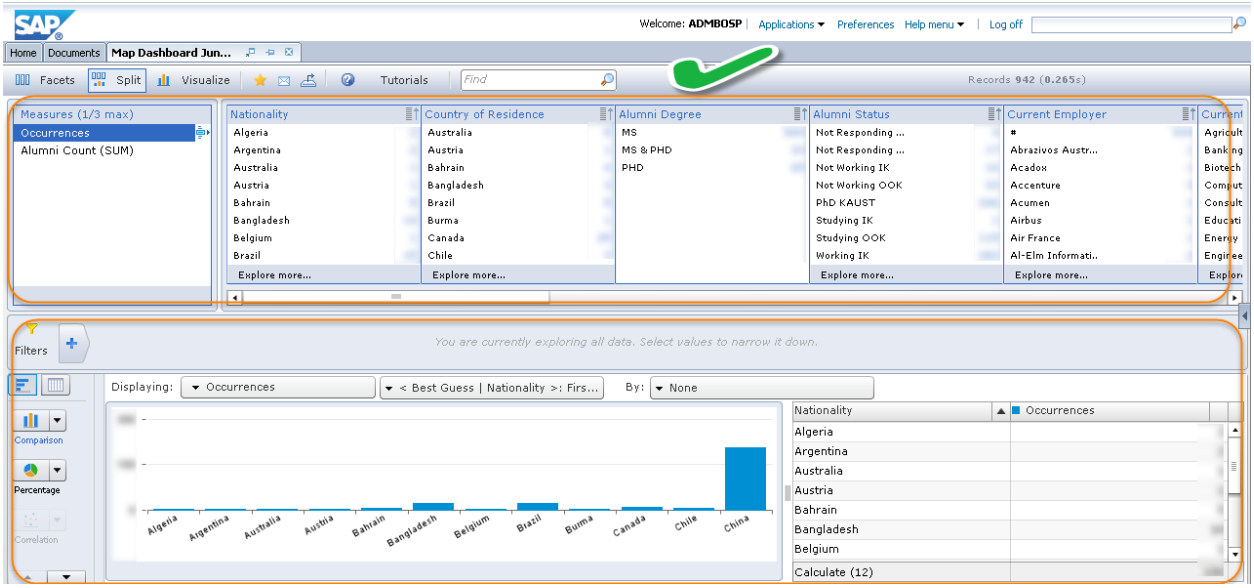
The saved information space will also be available in the Home Screen, once you click on Refresh List.



The information space will also be available on the BI Launchpad in the location where it was saved during Configuration using Manage spaces.



Navigate to the Information Space and double click to open the Information Space. This opens the Information Space in a new window and you are ready to use it.

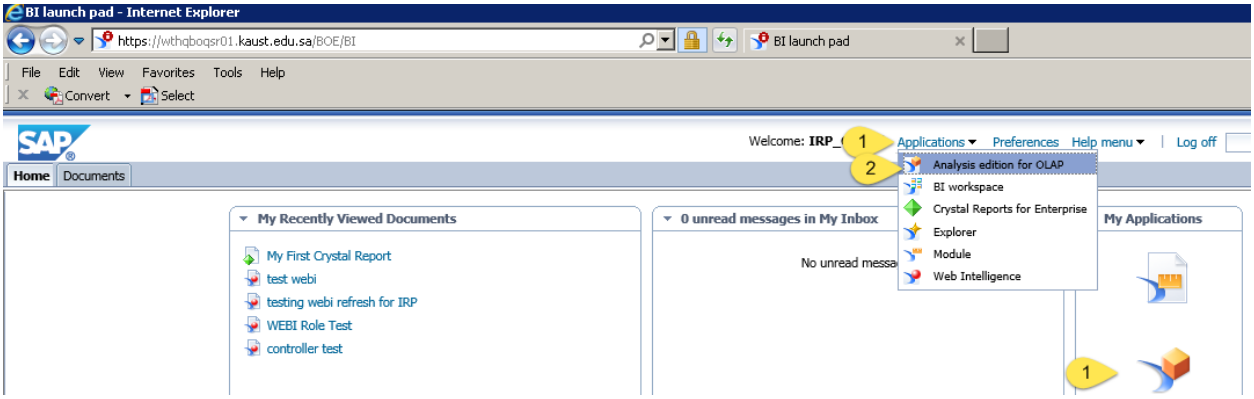


Analysis Edition for OLAP

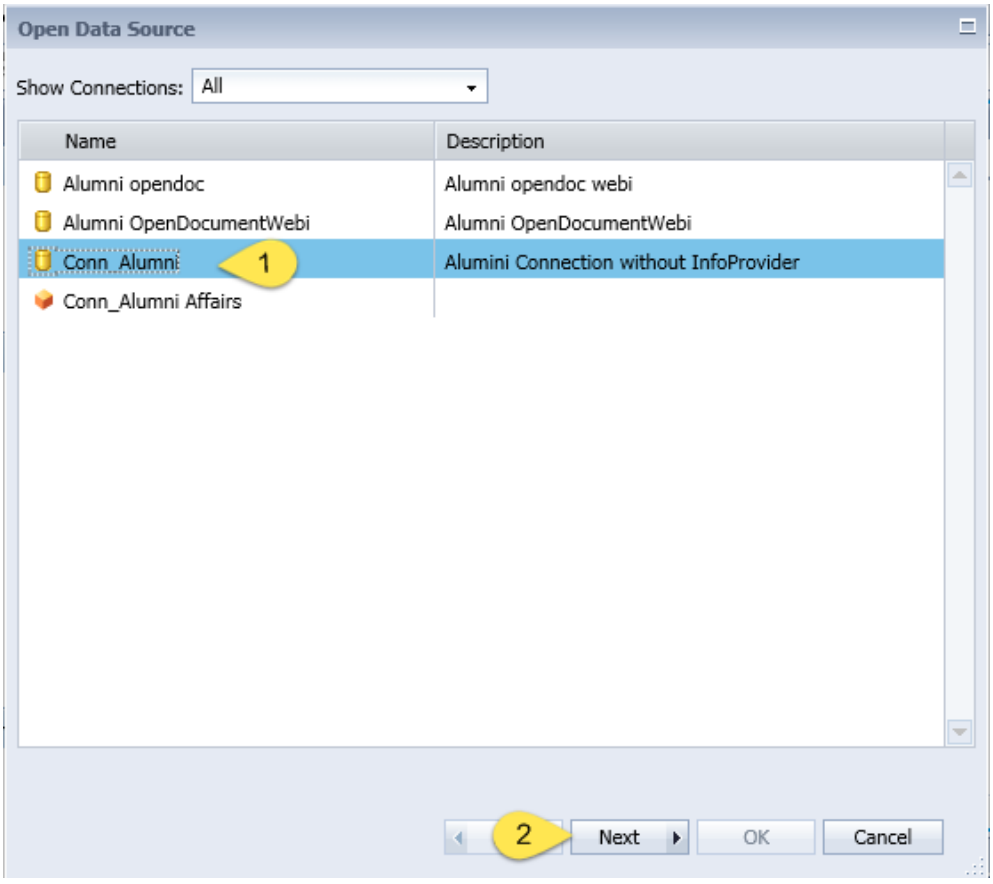
Analysis Edition for OLAP is a web based, ad hoc analysis tool for data based only on BEx queries. The data can be analyzed using this application and can be saved as different views. You have the features of embedding more than one Query as a datasource and analyzing the data based on the two different queries.

The output report/document created in Analysis Edition for OLAP is called an Analysis Workspace.

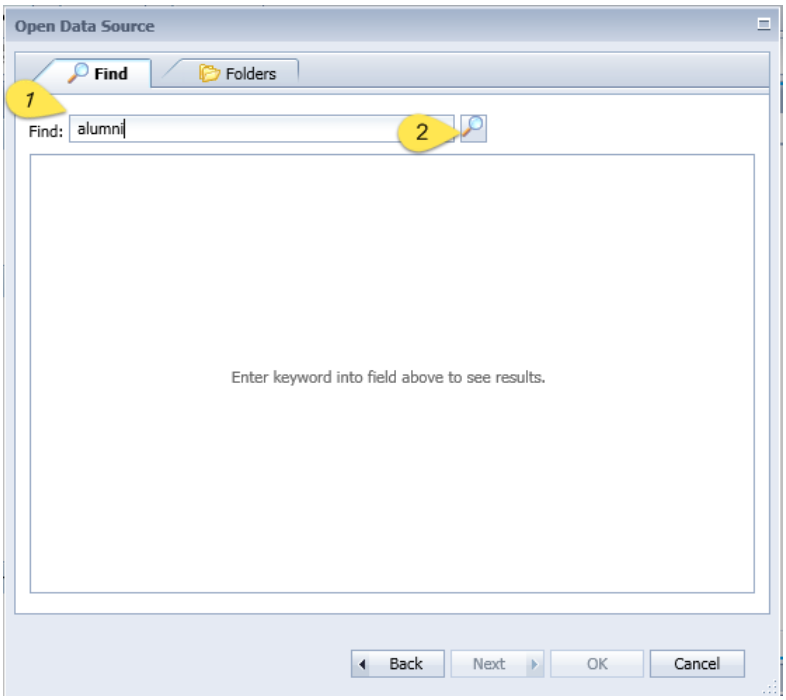
To Launch Analysis Edition for OLAP, Select Analysis edition for OLAP from the Application Drop Down or from My Applications Frame.



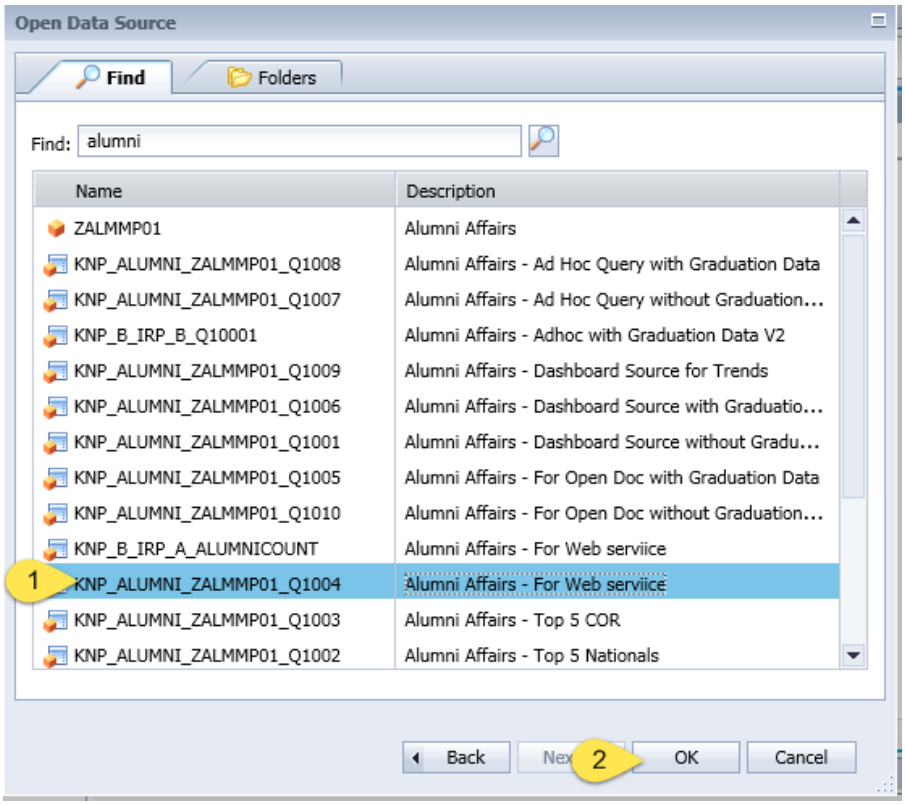
A new window appears, select the authorized "connection" for your required Semantic Query and click Next.



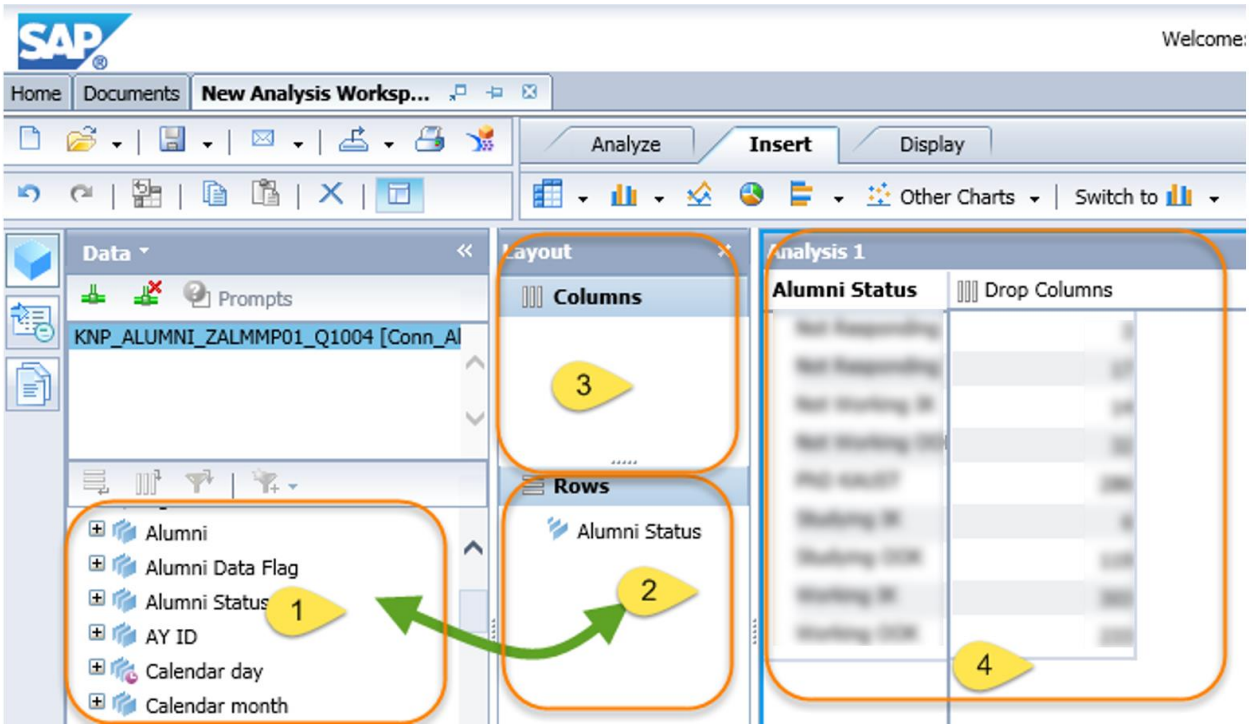
In the next screen, search for the required Query name and click on the lens



System finds the matching queries. Select the required query and click ok to continue.

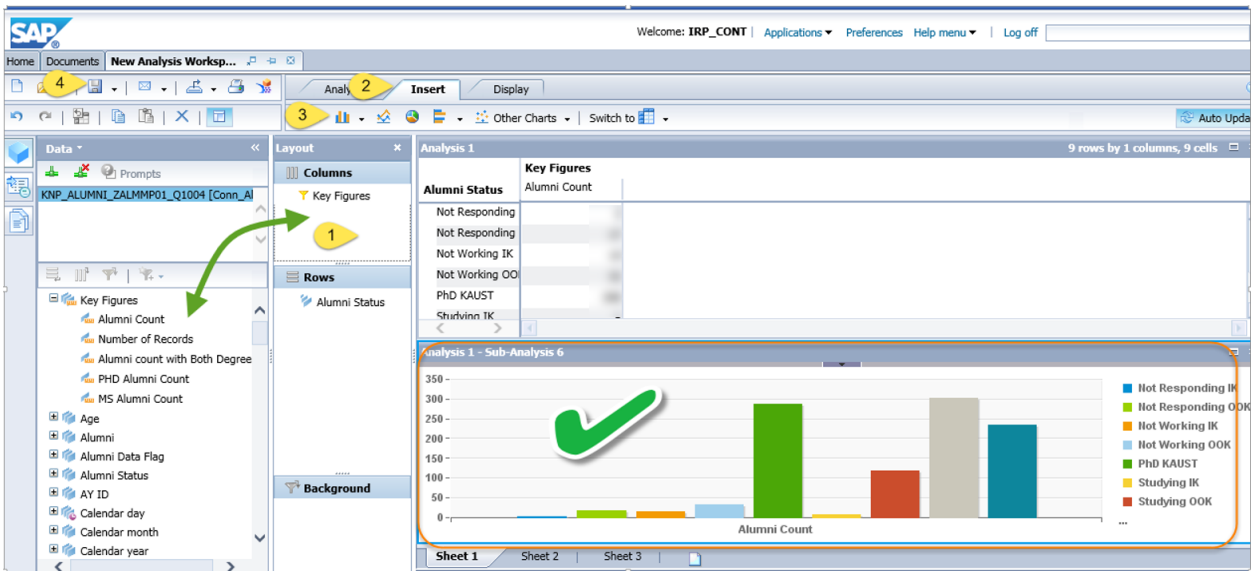


This opens the First Screen of the application,

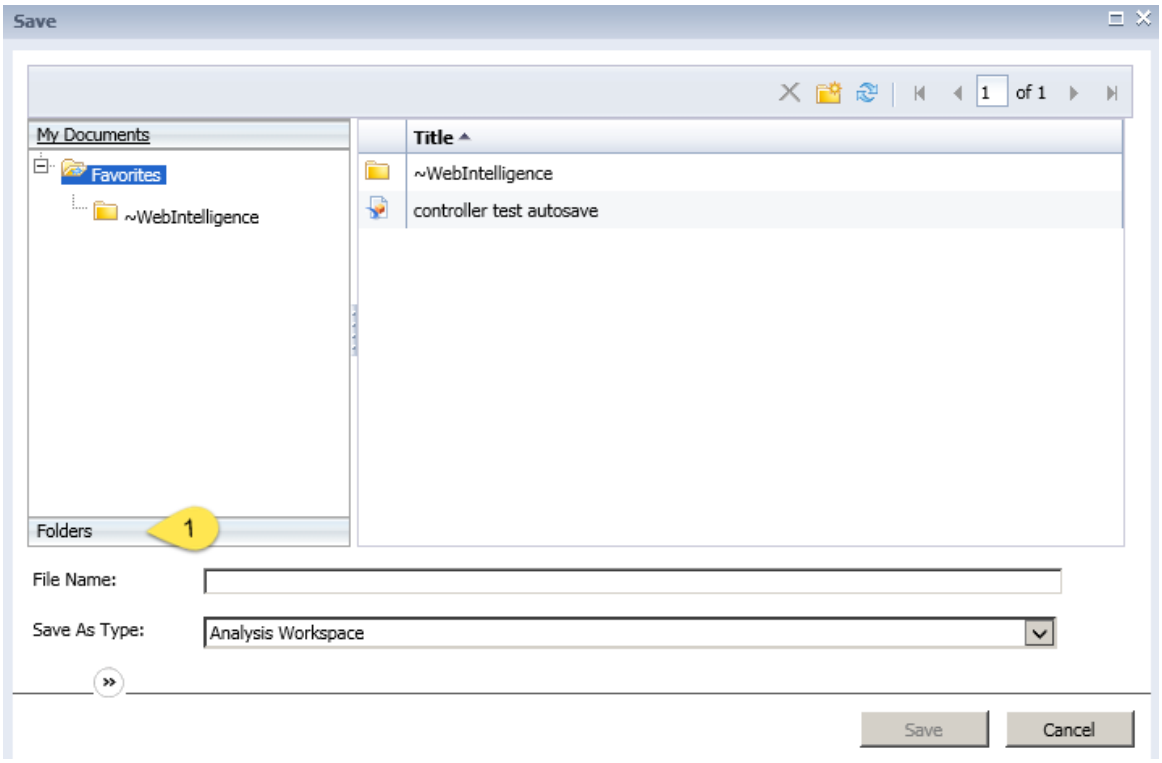


In this screen, unlike the other tools, you can see the meta data, that is all the dimension and measures (Key figures) are in this same screen, plus you have the rows and columns as well as the result in the same screen.

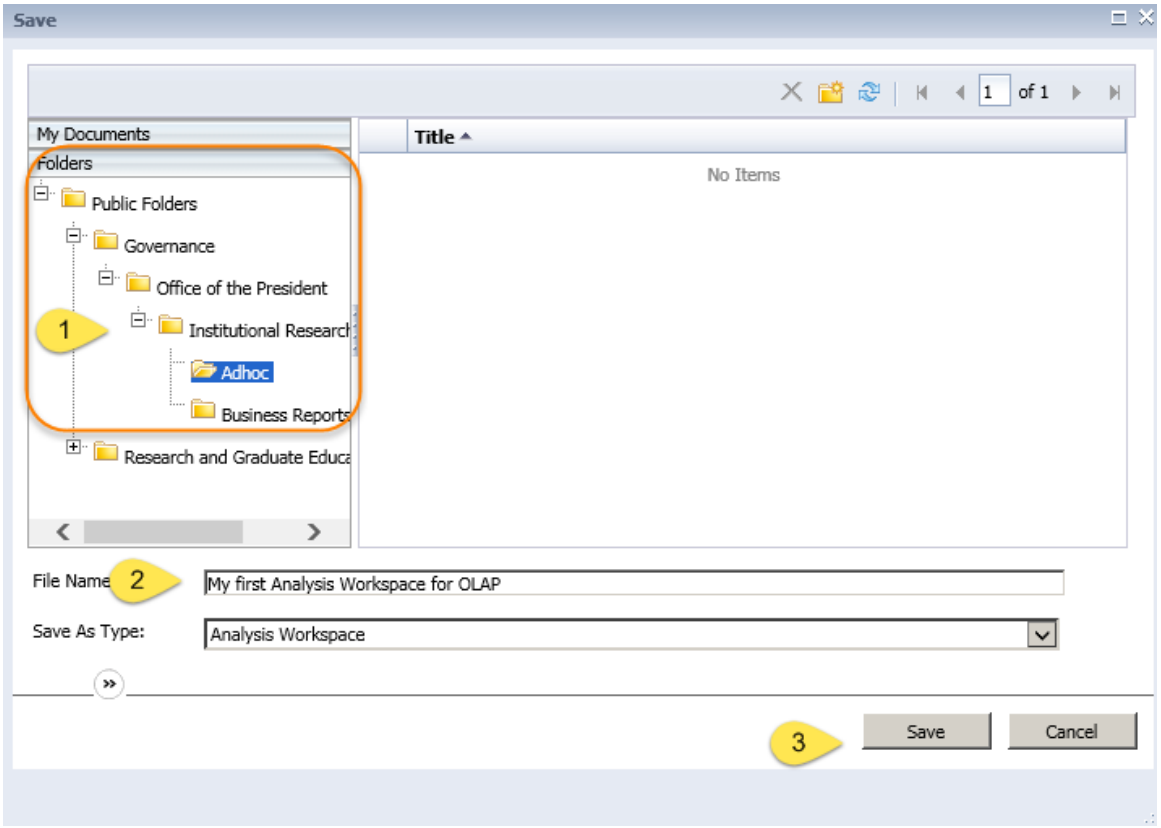
You can select the dimensions and key figures, and drag and drop to the required rows or columns and you can see the output in the Analysis Frame. You can also add the required visual graphs in the same screen with the below steps.



Once you have achieved your required view, you can save this Analysis Workspace on the BI Launchpad in the required location.



Navigate to the required authorized folder and mention the file name and click save. You have created your first Analysis Workspace.



References & Online Help Documents

Below are the SAP Official Help and Online Blogs:

BI Launchpad:

http://help.sap.com/businessobject/product_guides/sbo41/en/sbo41sp5_bip_bilaunchpad_en.pdf

http://scn.sap.com/docs/DOC-19231

Query Designer:

https://help.sap.com/saphelp_nw73/helpdata/en/9d/76563cc368b60fe10000000a114084/content.htm?frameset=/en/9d/76563cc368b60fe10000000a114084/frameset.htm&current_toc=/en/14/e7d13f7fb44c21e10000000a1550b0/plain.htm&node_id=3&show_children=false

http://scn.sap.com/community/business-explorer

Web Intelligence:

http://scn.sap.com/community/businessobjects-web-intelligence

http://help.sap.com/businessobject/product_guides/sbo42/en/sbo42sp1_webi_user_guide_en.pdf

WebI Tips for Mobile - http://scn.sap.com/community/mobile/businessobjects/blog/2014/11/15/guidelines-for-designing-webi-reports-for-sap-businessobjects-mobile

Analysis Office for Excel

http://help.sap.com/businessobject/product_guides/AMS20/en/20SP4_aaoffice_user_en.pdf

http://scn.sap.com/community/businessobjects-analysis-ms-office

http://scn.sap.com/docs/DOC-7679

Crystal Reports for Enterprise

http://help.sap.com/businessobject/product_guides/sbo41/en/sbo41sp5_crj_usergde_en.pdf

http://scn.sap.com/community/crystal-reports

http://scn.sap.com/docs/DOC-8013

Design studio

http://help.sap.com/businessobject/product_guides/AAD15/en/ds_15SP02_end_user_en.pdf

http://scn.sap.com/docs/DOC-30272

http://scn.sap.com/community/businessobjects-design-studio

Dashboard Design

http://help.sap.com/businessobject/product_guides/sbo41/en/sbo41sp5_dashd_user_en.pdf

http://scn.sap.com/community/businessobjects-dashboards

http://scn.sap.com/docs/DOC-7946

Widgets

http://help.sap.com/businessobject/product_guides/boexir31SP3/en/xi31_sp3_bi_widget_en.pdf

Lumira

http://help-legacy.sap.com/businessobject/product_guides/vi01/en/lum_131_user_en.pdf

https://wiki.scn.sap.com/wiki/pages/viewpage.action?pageId=449287573

Microsoft Power BI

https://powerbi.microsoft.com/en-us/documentation/powerbi-service-get-started/

https://powerbi.microsoft.com/en-us/guided-learning/

https://community.powerbi.com/

Explorer

http://help.sap.com/businessobject/product_guides/sbo41/en/sbo41sp5_exp_user_en.pdf

Analysis Edition for OLAP

http://help.sap.com/businessobject/product_guides/sbo41/en/sbo41sp7_aolap_user_en.pdf

http://scn.sap.com/community/businessobjects-analysis-olap