

TECH TIP

DATA CUBE IN SHELL DASHBOARD ORACLE PRIMAVERA UNIFIER

The ability to view a snapshot of current information is an invaluable feature of project management systems. This data could be focused at the enterprise-level or down to the project-level, and accessed without the need to run a report. Dashboards provide this necessary insight used by senior management as well as project managers and project administration. Unifier has built-in dashboard functionality more commonly known as shell dashboards.

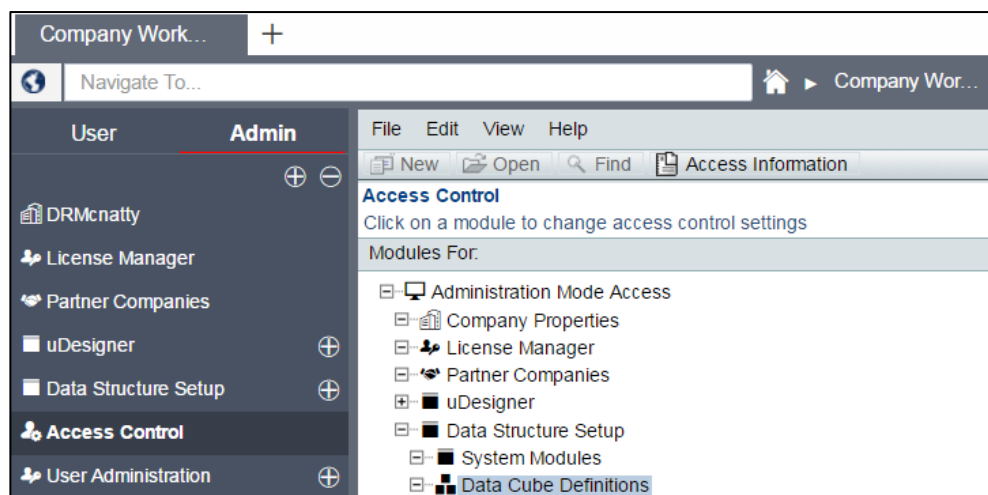
Data cubes are the data source for dashboards known as shell dashboards. In our tech tip we will create a data cube and use it within a user dashboard. This example will count 'Request for Information' business process records for all projects and have the ability to drill-down to the status breakdown per project. The drill-down feature is a very useful feature to provide a lower level detail of the data.

1. Data Cube Creation Permissions

The create permissions must be set for the user(s) or group(s).

Go to the Company Workspace > Admin Mode > Access Control.

Select Administration Mode Access > Data Structure Setup > Data Cube Definitions from the Access Control modules pane.



DATA CUBE IN SHELL DASHBOARD

A window appears which lists the users or groups already assigned with Data Cube Definitions permissions.

Click the 'Add' button.

Permission Settings for: **Data Cube Definitions**

<input type="checkbox"/> First Name	Last Name	Company/Manager	Permission
<input type="checkbox"/> Support			Create/Modify/View

Add... Modify... Remove

Apply OK Cancel

From this window the lower pane lists the two available permissions that can be assigned ('Create/Modify' and 'View'). Click the 'Add Users/Groups' button.

Permissions Setting for: **Data Cube Definitions**

Select Users/Groups

First Name	Last Name	Company/Manager
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Add Users/Groups

Permission Settings:

- ☐ Create/Modify
- ☐ View

OK Cancel

DATA CUBE IN SHELL DASHBOARD

Select the user (our example is Company Administrator) and click the 'Add' button. The user appears in the lower pane. Click the 'OK' button to return to the previous window.

The screenshot shows a window titled 'Users/Groups' with a search bar and a 'List Names from' dropdown set to 'DRMcNatty'. The 'Show By' dropdown is set to 'Users/Groups'. The main area displays a list of users and groups, with 'Company Administrator' selected. The 'Add' button is highlighted, and the 'OK' button is also highlighted.

Name	Company
All Company Users	
All Project Coordinators	
Amy Eich	
Ashley Lin	DRMcNatty
Ben Lee	DRMcNatty
Bill O	DRMcNatty
Brian Criss	DRMcNatty
Cesar Ho	McNatty Construction Services, Inc.
Cesar Hoe	DRMcNatty
Company Administrator	DRMcNatty
Company Administrators	
Contract Coordinators	
Creator	
Darryl Townsend	DRMcNatty
Dnn McNatty	DRMcNatty

Selected Users/Groups

Name
Company Administrator

OK Remove Cancel

DATA CUBE IN SHELL DASHBOARD

Check both permission settings in the lower pane to assign to the user. Click the 'OK' button to return to the previous window.

Permissions Setting for: **Data Cube Definitions**

Select Users/Groups

First Name	Last Name	Company/Manager
Company	Administrator	DRMcNatty

[Add Users/Groups](#)

Permission Settings:

- ☒ Create/Modify
- ☒ View

[OK](#) [Cancel](#)

The window lists the added user (Company Administrator) and its assigned permissions. Click the 'OK' button in this window to complete the settings.

The user can now create, modify and view Data Cubes.

Permission Settings for: **Data Cube Definitions**

<input type="checkbox"/> First Name	Last Name	Company/Manager	Permission
<input type="checkbox"/> Company	Administrator	DRMcNatty	Create/Modify/View
<input type="checkbox"/> Support			Create/Modify/View

[Add...](#) [Modify...](#) [Remove](#)

[Apply](#) [OK](#) [Cancel](#)

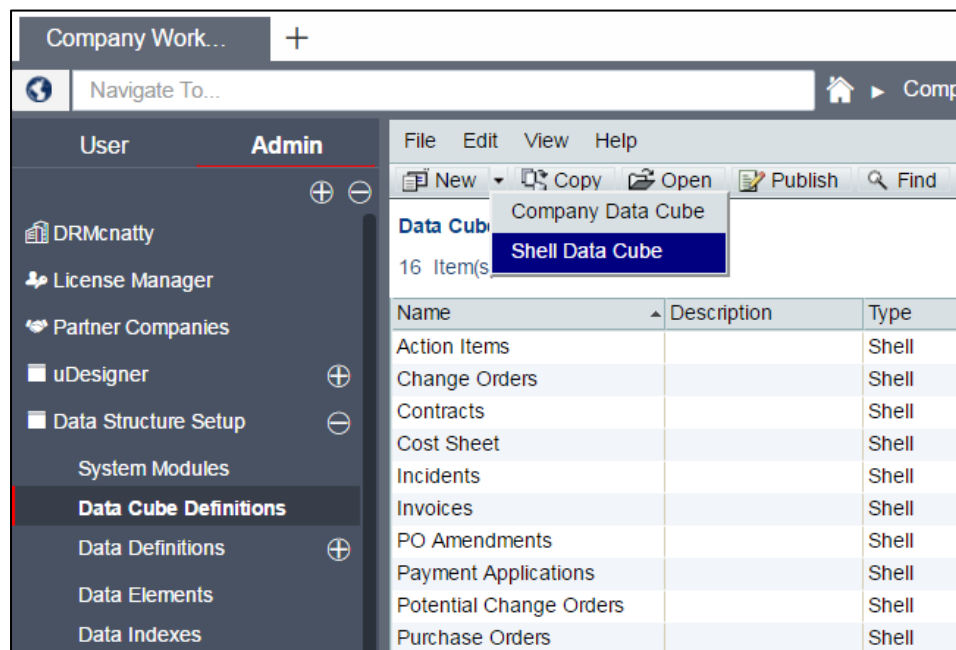
DATA CUBE IN SHELL DASHBOARD

2. Create the Data Cube

Go to the Company Workspace > Admin Mode > Data Structure Setup > Data Cube Definitions.

Click 'New' from the Data Cubes log menu bar. A menu dropdown displays 'Company Data Cube' and 'Shell Data Cube'. In our example we selected Shell Data Cube.

A 'Company Data Cube' is used for company-level custom dashboards which is a specific dashboard feature only supported for legacy clients that used it.

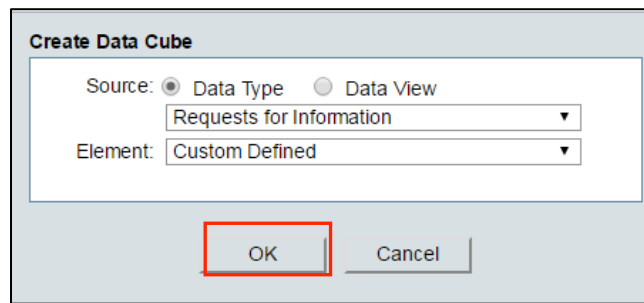


From this popup window there are two source options 'Data Type' and 'Data View'. 'Data Type' provides a list of all published business processes and manager modules. 'Data View' provides a list of published Data Views.

Select 'Data Type' and the 'Requests for Information' business process from the dropdown list. Custom Defined is automatically set for the Element field.

DATA CUBE IN SHELL DASHBOARD

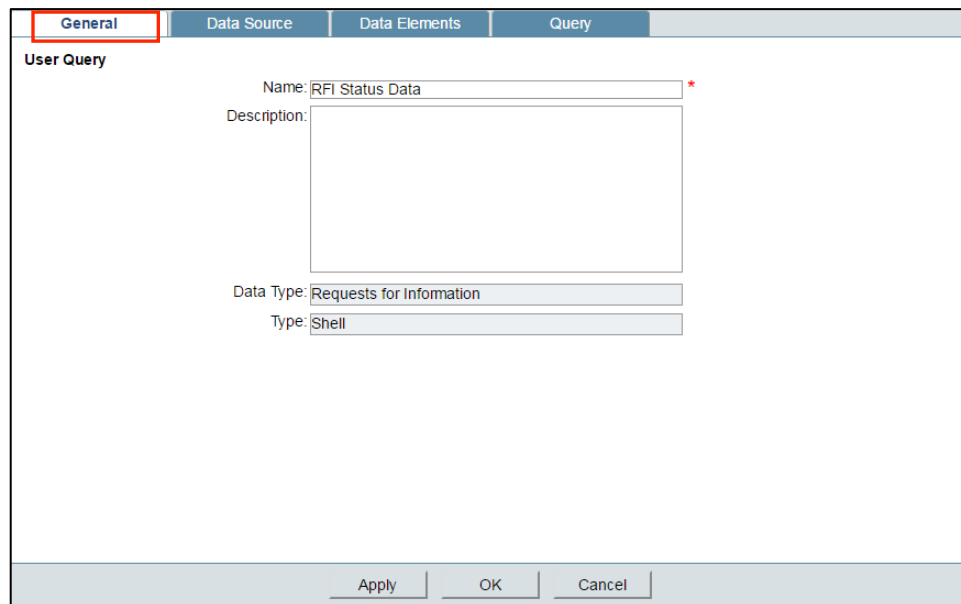
Click the 'OK' button.



The 'Create Data Cube' dialog box is shown. It has a title bar 'Create Data Cube'. Inside, there are two radio buttons: 'Data Type' (selected) and 'Data View'. Below the radio buttons is a dropdown menu showing 'Requests for Information'. Below that is another dropdown menu showing 'Custom Defined'. At the bottom, there are two buttons: 'OK' and 'Cancel'. The 'OK' button is highlighted with a red rectangle.

This new window is where the Data Cube is defined.

Enter an appropriate 'Name' in the General tab.

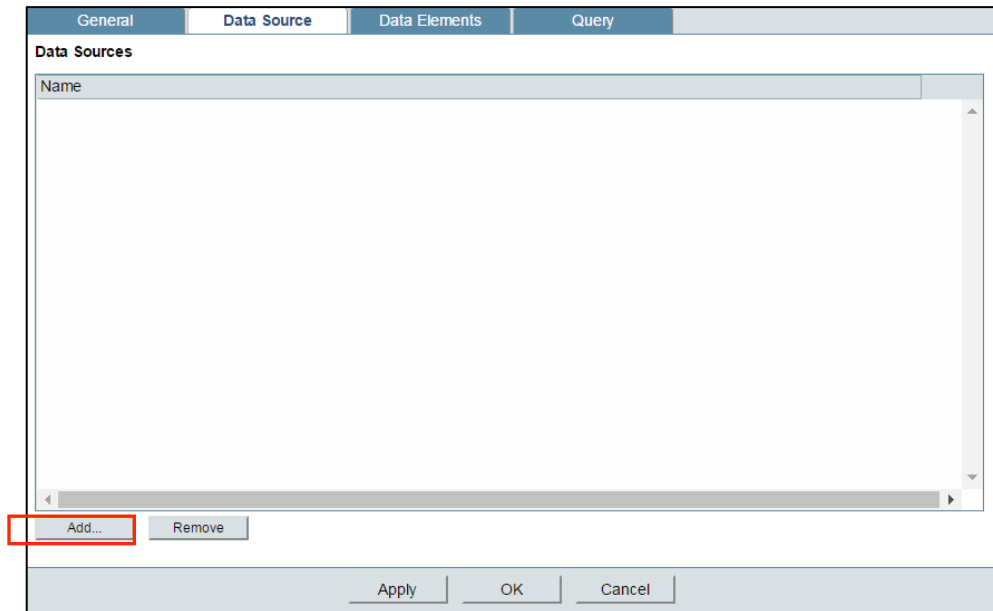


The 'Data Cube' configuration window is shown. It has a tabbed interface with four tabs: 'General', 'Data Source', 'Data Elements', and 'Query'. The 'General' tab is selected and highlighted with a red rectangle. The 'General' tab contains the following fields: 'Name' (with the value 'RFI Status Data' and a red asterisk), 'Description' (a large text area), 'Data Type' (with the value 'Requests for Information'), and 'Type' (with the value 'Shell'). At the bottom, there are three buttons: 'Apply', 'OK', and 'Cancel'.

DATA CUBE IN SHELL DASHBOARD

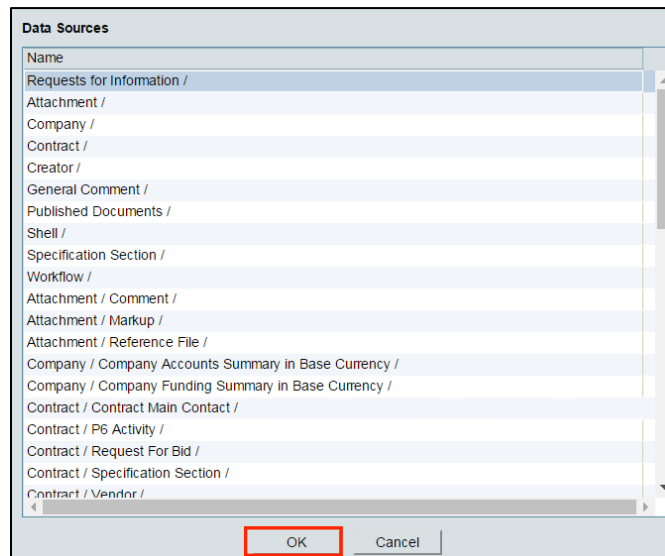
Next is to add which data sources will make up the data cube. These are set in the Data Source tab.

Click the 'Add' button.



This window lists workflow, business processes, shells and any other related data sources. Multiple data sources allow the capture of a wide variety of information associated with the data type business process. The BP selected as the data type will still need to be selected from the list.

For this simple example only the 'Request for Information' data source is selected. Clicking the 'OK' button will return you to the previous window.



DATA CUBE IN SHELL DASHBOARD

'Request for Information' is now displayed as the data source.

The screenshot shows the 'Data Source' tab selected in the Shell Dashboard. The interface has four tabs: 'General', 'Data Source', 'Data Elements', and 'Query'. The 'Data Sources' section contains a list with one entry: 'Requests for Information /'. Below the list are 'Add...' and 'Remove' buttons. At the bottom of the window are 'Apply', 'OK', and 'Cancel' buttons.

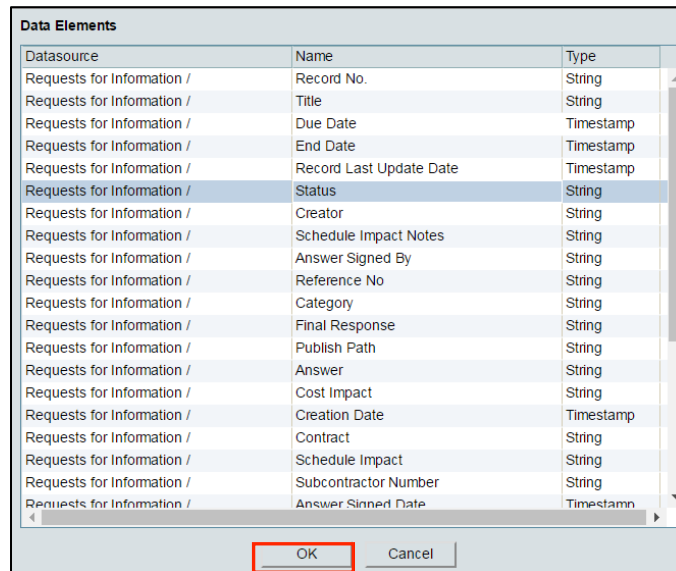
The Data Elements tab is where data elements can be selected. Additionally, calculated fields can also be added from the 'Add Functions..' button. This can create formulas using numeric data elements as well as data calculations.

For this example we are using only data elements. Click the 'Add Elements..' button.

The screenshot shows the 'Data Elements' tab selected in the Shell Dashboard. The interface has four tabs: 'General', 'Data Source', 'Data Elements', and 'Query'. The 'Data Elements' section contains a table with columns: 'Data Source', 'Label', 'Name', 'Type', 'Group', and 'Summary'. Below the table are buttons: 'Add Functions...', 'Add Elements...' (highlighted with a red box), 'Modify...', 'Remove', 'Move Up', and 'Move Down'. At the bottom of the window are 'Apply', 'OK', and 'Cancel' buttons.

DATA CUBE IN SHELL DASHBOARD

The Data Elements list will appear. For what is required for the data cube we will select Project Number and Status and click the 'OK' button'.



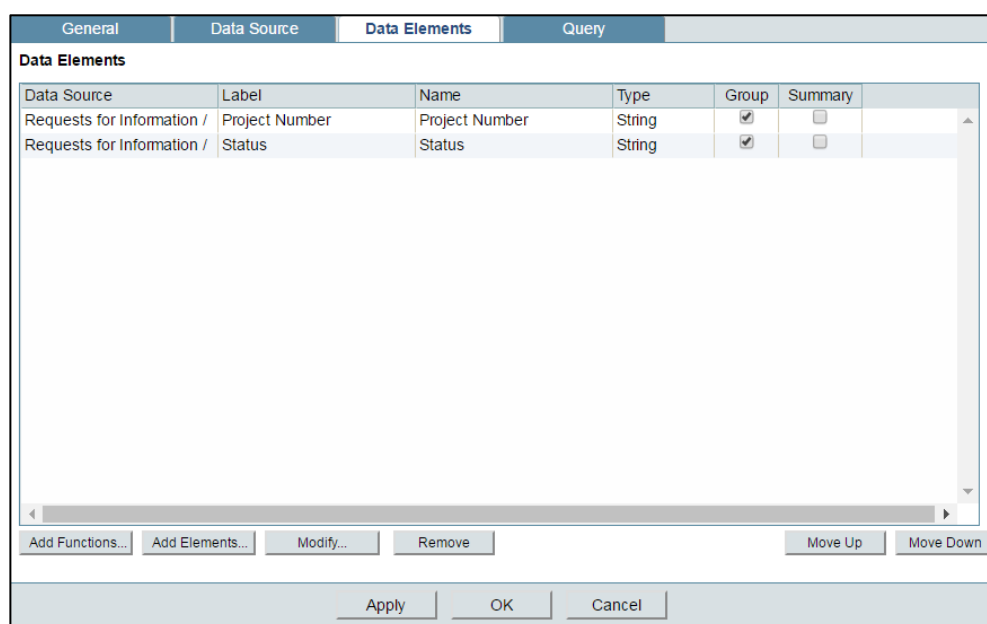
Datasource	Name	Type
Requests for Information /	Record No.	String
Requests for Information /	Title	String
Requests for Information /	Due Date	Timestamp
Requests for Information /	End Date	Timestamp
Requests for Information /	Record Last Update Date	Timestamp
Requests for Information /	Status	String
Requests for Information /	Creator	String
Requests for Information /	Schedule Impact Notes	String
Requests for Information /	Answer Signed By	String
Requests for Information /	Reference No	String
Requests for Information /	Category	String
Requests for Information /	Final Response	String
Requests for Information /	Publish Path	String
Requests for Information /	Answer	String
Requests for Information /	Cost Impact	String
Requests for Information /	Creation Date	Timestamp
Requests for Information /	Contract	String
Requests for Information /	Schedule Impact	String
Requests for Information /	Subcontractor Number	String
Requests for Information /	Answer Signed Date	Timestamp

OK Cancel

Data Elements tab now shows our selection. Two additional columns 'Group' and 'Summary' need to be set.

Project Number and Status will both have Group set which make these available for grouping in the dashboard.

Setting Summary is not required for our example. Summary in the shell dashboard includes basic aggregate functions such as summation, average, minimum or maximum.



Data Source	Label	Name	Type	Group	Summary
Requests for Information /	Project Number	Project Number	String	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Requests for Information /	Status	Status	String	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Add Functions... Add Elements... Modify... Remove Move Up Move Down

Apply OK Cancel

DATA CUBE IN SHELL DASHBOARD

Query tab will be left empty since we do not require the user to enter a query parameter at runtime to filter the output.

Data Name	Label	Condition	Value(s)	AND/OR
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Buttons: Add..., Modify..., Remove, Apply, OK, Cancel

Checkbox: ☐ Show results matching any condition. (Instead of all)

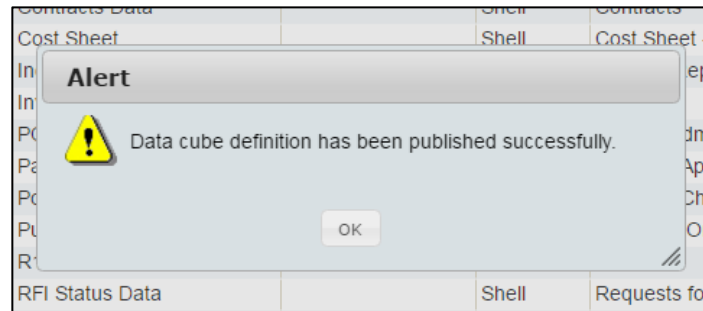
Click 'OK' button to return to the main Data Cubes log.

The data cube must be published before it can be made available in User Mode. Published Date is initially blank. Click the 'Publish' button from the menu bar on the data cube.

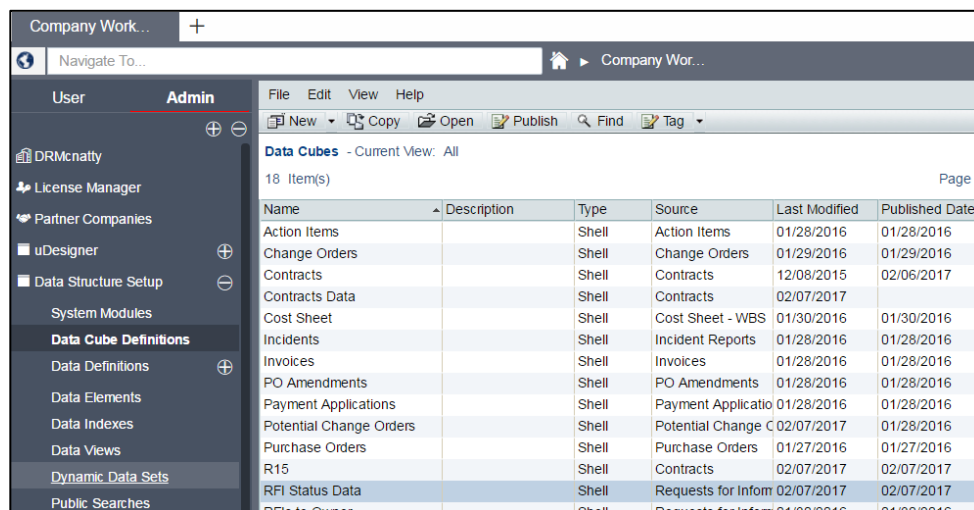
Name	Description	Type	Source	Last Modified	Published Date
Action Items		Shell	Action Items	01/28/2016	01/28/2016
Change Orders		Shell	Change Orders	01/29/2016	01/29/2016
Contracts		Shell	Contracts	12/08/2015	02/06/2017
Contracts Data		Shell	Contracts	02/07/2017	
Cost Sheet		Shell	Cost Sheet - WBS	01/30/2016	01/30/2016
Incidents		Shell	Incident Reports	01/28/2016	01/28/2016
Invoices		Shell	Invoices	01/28/2016	01/28/2016
PO Amendments		Shell	PO Amendments	01/28/2016	01/28/2016
Payment Applications		Shell	Payment Application	01/28/2016	01/28/2016
Potential Change Orders		Shell	Potential Change C	02/07/2017	01/28/2016
Purchase Orders		Shell	Purchase Orders	01/27/2016	01/27/2016
R15		Shell	Contracts	02/07/2017	02/07/2017
RFI Status Data		Shell	Requests for Inform	02/07/2017	
RFIs to Owner		Shell	Requests for Inform	01/30/2016	01/30/2016

DATA CUBE IN SHELL DASHBOARD

A message will appear saying the publishing was successful.



The published date for the data cube is now populated. It should be noted there is no 'Draft' or 'Published' modes so it is important to remember to publish the data cube after any change to its definition.



The screenshot shows the 'Company Work...' application interface. On the left is a sidebar with navigation options: User, Admin, DRMcNatty, License Manager, Partner Companies, uDesigner, Data Structure Setup, System Modules, Data Cube Definitions (selected), Data Definitions, Data Elements, Data Indexes, Data Views, Dynamic Data Sets, and Public Searches. The main area displays a table of 'Data Cubes' with 18 items. The table has columns for Name, Description, Type, Source, Last Modified, and Published Date. The 'Published Date' column is populated for all items.

Name	Description	Type	Source	Last Modified	Published Date
Action Items		Shell	Action Items	01/28/2016	01/28/2016
Change Orders		Shell	Change Orders	01/29/2016	01/29/2016
Contracts		Shell	Contracts	12/08/2015	02/06/2017
Contracts Data		Shell	Contracts	02/07/2017	
Cost Sheet		Shell	Cost Sheet - WBS	01/30/2016	01/30/2016
Incidents		Shell	Incident Reports	01/28/2016	01/28/2016
Invoices		Shell	Invoices	01/28/2016	01/28/2016
PO Amendments		Shell	PO Amendments	01/28/2016	01/28/2016
Payment Applications		Shell	Payment Applicatio	01/28/2016	01/28/2016
Potential Change Orders		Shell	Potential Change C	02/07/2017	01/28/2016
Purchase Orders		Shell	Purchase Orders	01/27/2016	01/27/2016
R15		Shell	Contracts	02/07/2017	02/07/2017
RFI Status Data		Shell	Requests for Inform	02/07/2017	02/07/2017
RFIs to Owner		Shell	Requests for Inform	01/30/2016	01/30/2016

3. Data Cube Creation Permissions

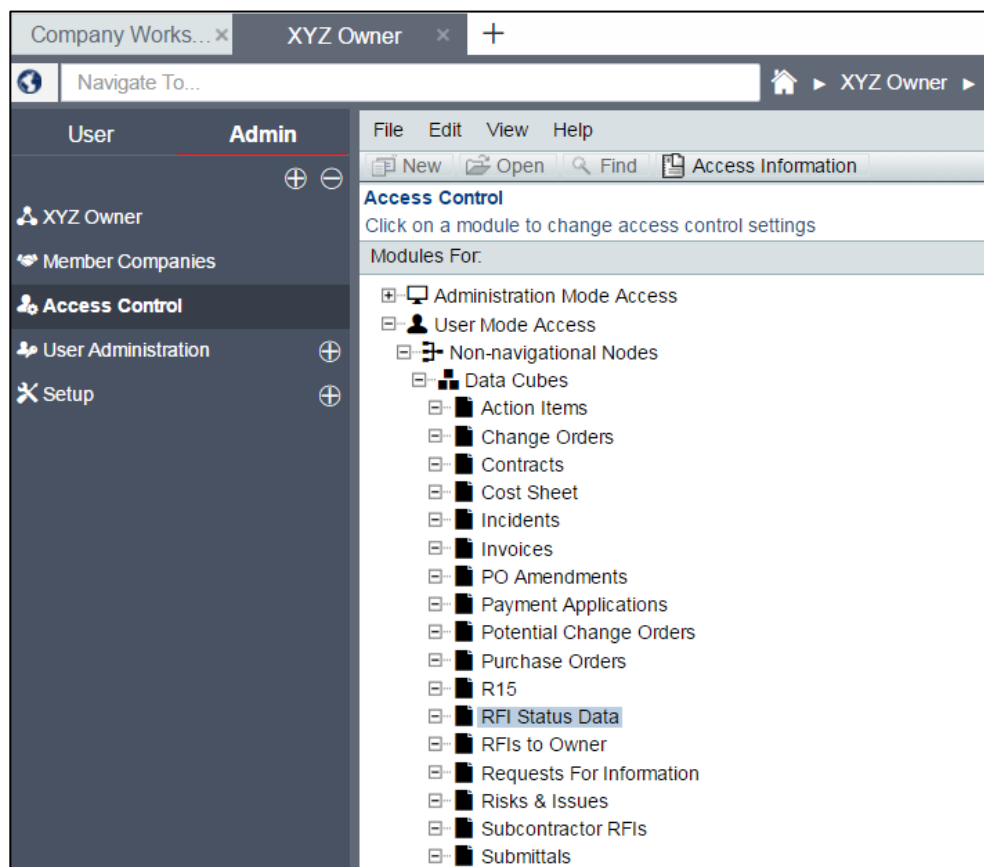
Now that the data cube is available in User Mode, we need to set permissions for its use in a shell.

We want our dashboard example to include data from all projects. To do this means the data cube needs to be accessible from the anchor shell (top of the shell hierarchy) where the dashboard will be created. (for more information on shell hierarchies please reference the previous Unifier Tech Tip on 'Creating Programs'.) Its configuration can be set to include all sub-shells data which is all the projects in the hierarchy.

Go to the anchor shell. In our instance it is XYZ Owner.

Go to XYZ Owner > Admin> Access Control > User Mode Access > Non-navigational Nodes > Data Cubes > RFI Status Data.

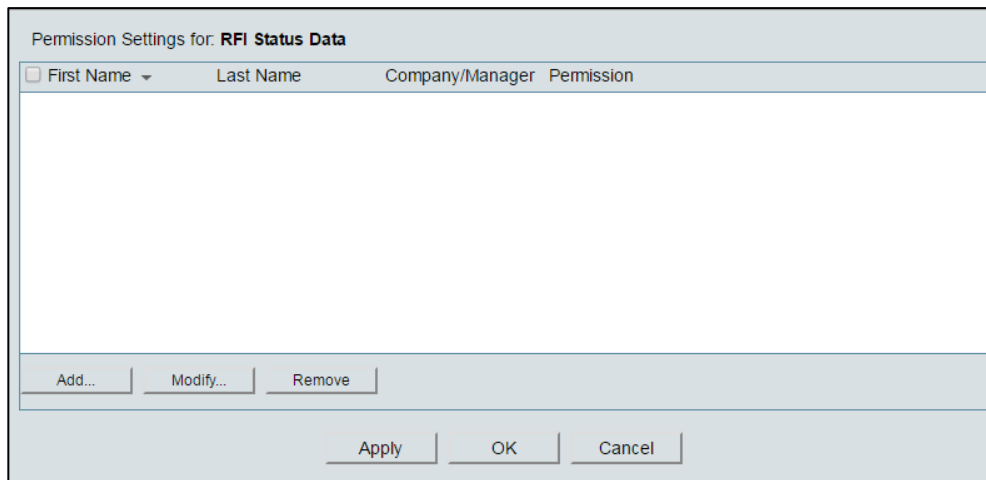
Note: If this data cube was not published it would not be seen in the list.



DATA CUBE IN SHELL DASHBOARD

Selecting the newly available data cube from the list will open its Permission Settings window. Adding users and assigning their permissions uses the same steps as when we assigned the Create/Modify and View permissions at the beginning of this Tech Tip.

Click the 'Add' button.



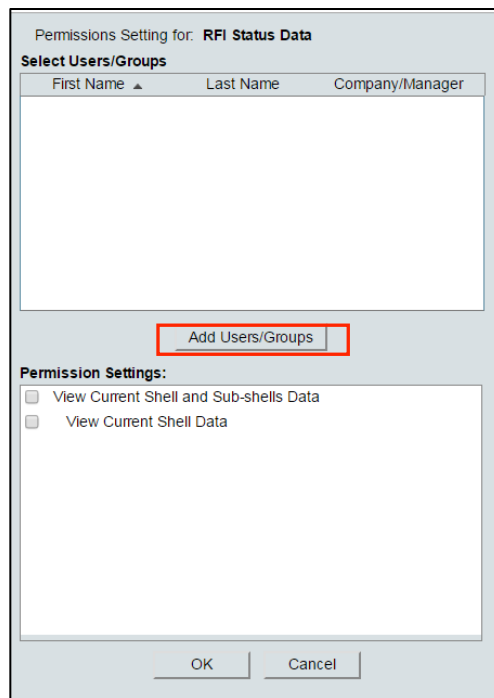
Permission Settings for: **RFI Status Data**

<input type="checkbox"/> First Name	Last Name	Company/Manager	Permission
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Add... Modify... Remove

Apply OK Cancel

Click 'Add Users/Groups' button.



Permissions Setting for: **RFI Status Data**

Select Users/Groups

First Name	Last Name	Company/Manager
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Add Users/Groups

Permission Settings:

- ☐ View Current Shell and Sub-shells Data
- ☐ View Current Shell Data

OK Cancel

DATA CUBE IN SHELL DASHBOARD

Select our user and click the 'Add' button. Company Administrator is used in this example and now appears in the lower pane. Click 'OK' to return to the previous window.

Find List Names from: XYZ Owner Show By: Users/Groups

Users/Groups - Current View: All

18 Item(s) Page 1 of 1 Display 100 Items Per Page

Name	Company
Amy Eich	
Ashley Lin	DRMcNatty
Ben Lee	DRMcNatty
Brian Criss	DRMcNatty
Company Administrator	DRMcNatty
Darryl Townsend	DRMcNatty
Don McNatty	DRMcNatty
Jennifer Morgen	
Jill Lloyd	
Jonathan McNatty	DRMcNatty
Kristian Bar	
Pam Powrie	DRMcNatty
Project Administrators	
Rudy Ising	DRMcNatty
Scott Lonian	

Selected Users/Groups

Name
Company Administrator

OK Remove Cancel

DATA CUBE IN SHELL DASHBOARD

The permissions can now be set to this user. View Current Shell and Sub-shells Data is the permission required. View Current Shell Data is auto-selected since it is a child permission. Click the 'OK' button.

Permissions Setting for: **RFI Status Data**

Select Users/Groups

First Name ▲	Last Name	Company/Manager
Company	Administrator	DRMcNatty

Add Users/Groups

Permission Settings:

- ☒ View Current Shell and Sub-shells Data
- ☒ View Current Shell Data

OK Cancel

Click the 'OK' button.

The data cube is ready for use in the anchor shell.

Permission Settings for: **RFI Status Data**

<input type="checkbox"/> First Name ▲	Last Name	Company/Manager	Permission
<input type="checkbox"/> Company	Administrator	DRMcNatty	View Current Shell and Sub-shells Data/View C...

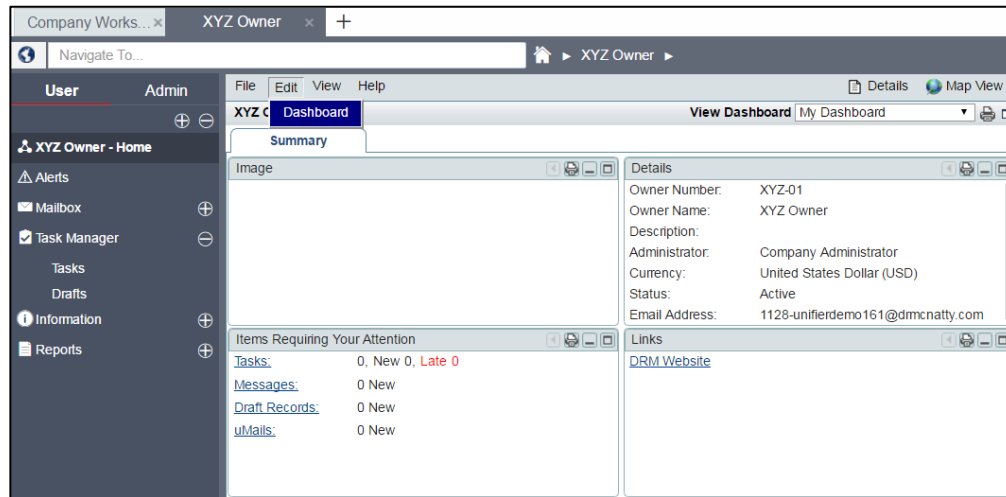
Add... Modify... Remove

Apply OK Cancel

DATA CUBE IN SHELL DASHBOARD

4. Create the dashboard.

Our anchor shell landing page (in User mode) displays the default shell dashboard tab (Summary) with four dashboard sections (referred to as blocks). To create our dashboard (block) we select Dashboard from the Edit menu.



The following window is the Edit Dashboard. The top pane references the dashboard tabs set up. The lower pane references the specific dashboard blocks.

There are five dashboard block types when clicking the 'Add' button:

1. Analytics – data derived from Primavera Analytics platform
2. Custom – data with no drilldown capability
3. Drilldown - data with drilldown capability
4. Portlet – display a URL link
5. Standard – data based on predefined options

DATA CUBE IN SHELL DASHBOARD

For our example “Drilldown” will be selected.

The 'Edit Dashboard' window is shown with the 'Source Details' section. The 'Drilldown...' option is highlighted in the left sidebar. The main table lists various block types and their details.

Block Order	Block Title	Source Name	Block Type	Result Type	Display Type
1	Image	Image	Standard		
	Items Requiring Your At	Items Requiring Your Attention	Standard		
	Details	Details	Standard		
	Links	Links	Standard		

Buttons at the bottom: OK, Cancel, Move Up, Move Down.

The Edit Drilldown Block window appears. Click the ‘Select’ button for the Data Cube field to include the one needed.

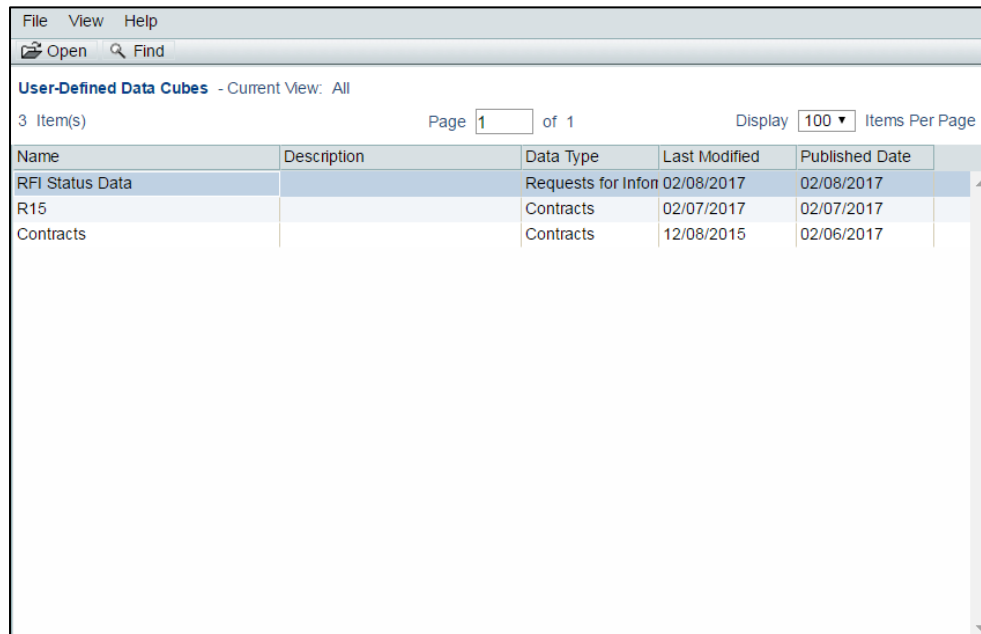
The 'Edit Drilldown Block' window is shown with the 'Report Details' section. The 'Data Cube' field is highlighted, and the 'Select...' button is visible. The 'Drilldown Detail' section is also visible.

Order	Chart Type	Title	Group By	Report On	Value	Result Type
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Buttons at the bottom: Apply, OK, Cancel, Add..., Modify..., Remove, Move Up, Move Down.

DATA CUBE IN SHELL DASHBOARD

Select 'RFI Status Data' from the popup list and click the 'Open' button.

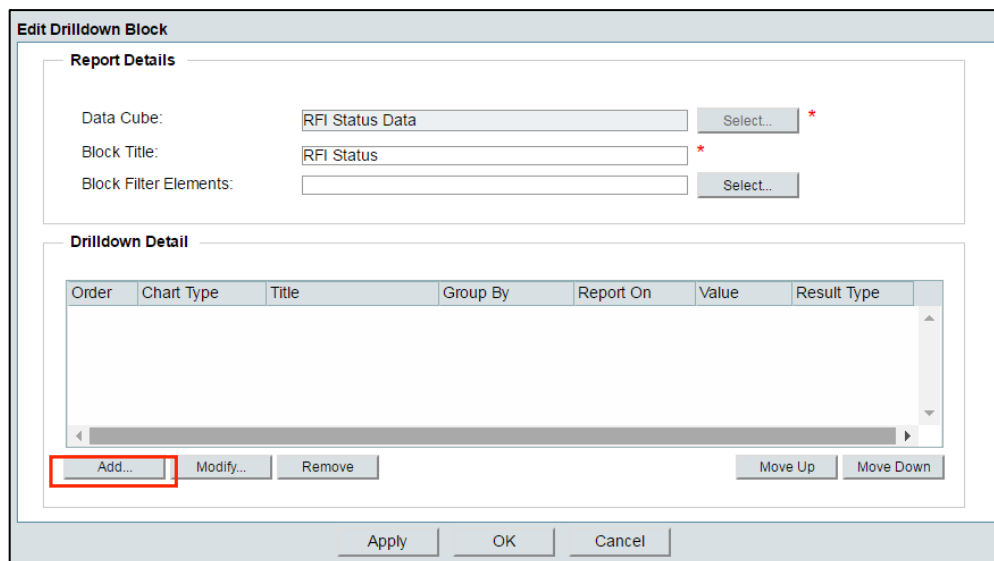


The screenshot shows a window titled 'User-Defined Data Cubes - Current View: All'. It displays a table with 3 items. The table has columns: Name, Description, Data Type, Last Modified, and Published Date. The first item is 'RFI Status Data' with Data Type 'Requests for Information' and Last Modified '02/08/2017'. The second item is 'R15' with Data Type 'Contracts' and Last Modified '02/07/2017'. The third item is 'Contracts' with Data Type 'Contracts' and Last Modified '12/08/2015'.

Name	Description	Data Type	Last Modified	Published Date
RFI Status Data		Requests for Information	02/08/2017	02/08/2017
R15		Contracts	02/07/2017	02/07/2017
Contracts		Contracts	12/08/2015	02/06/2017

The data cube is auto-populated. The Block Title could be changed if required.

To add the dashboard display click 'Add..' button from the Drilldown Detail section.



The screenshot shows the 'Edit Drilldown Block' dialog box. It has two sections: 'Report Details' and 'Drilldown Detail'. In 'Report Details', there are fields for 'Data Cube:' (set to 'RFI Status Data'), 'Block Title:' (set to 'RFI Status'), and 'Block Filter Elements:'. In 'Drilldown Detail', there is a table with columns: Order, Chart Type, Title, Group By, Report On, Value, and Result Type. Below the table are buttons for 'Add...', 'Modify...', 'Remove', 'Move Up', and 'Move Down'. The 'Add...' button is highlighted with a red box.

Order	Chart Type	Title	Group By	Report On	Value	Result Type
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DATA CUBE IN SHELL DASHBOARD

The following will be added to this window:

1. Title: As appropriate.
2. Show Data From: Select 'Sub-shells Only' so we can include all projects data.
3. Display Type: Select Column Chart for this example.
4. Source Grouped By: Based on our Grouping selections from the data cube we will select Project Number.
5. Output Type: Select 'Record Count'.
6. Show Total: Check this box.
7. Decimal Places: Change to 0.
8. Leave other fields as is.

These settings will perform a count of all 'Request for Information' records per project and display as a column chart.

Click 'OK' button to return to previous screen.

Edit Drilldown Details

Title: *

Show Data From: *

Display Type:

Source Grouped By: *

Output Type: ☒ Record Count ☐ Summary Value

Report On:

Summary Type:

Show Result:

Show Total: ☒

Decimal Places:

Currency Format:

DATA CUBE IN SHELL DASHBOARD

The lower level (drilldown) detail needs to be added. Click the 'Add...' button again.

Edit Drilldown Block

Report Details

Data Cube: RFI Status Data Select... *

Block Title: RFI Status *

Block Filter Elements: Select...

Drilldown Detail

Order	Chart Type	Title	Group By	Report On	Value	Result Type
1	Column Chart	Total RFI Count	Project Number			Actual Value

Add... Modify... Remove Move Up Move Down

Apply OK Cancel

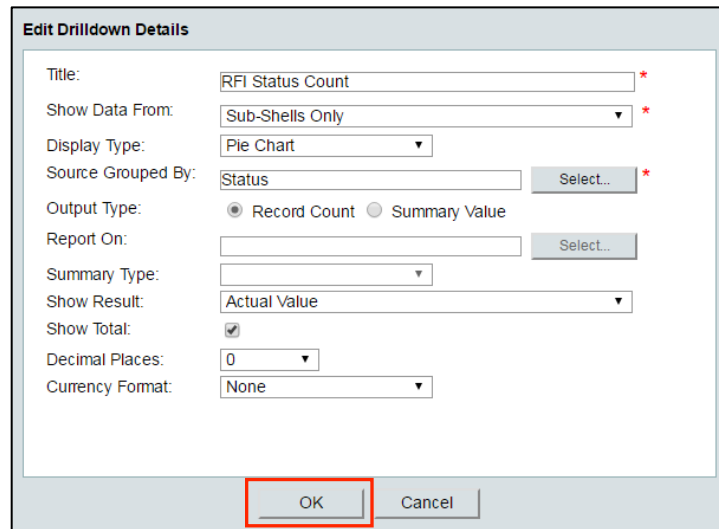
The following will be added:

1. Title: As appropriate.
2. Show Data From: Select 'Sub-shells Only' again.
3. Display Type: Select Pie Chart this time.
4. Source Grouped By: Based on our Grouping selections from the data cube we will select Status.
5. Output Type: Select 'Record Count'.
6. Show Total: Check this box.
7. Decimal Places: Change to 0.
8. Leave other fields as is.

These settings will perform a record count of each status (per project) displayed as a pie chart.

DATA CUBE IN SHELL DASHBOARD

Click the 'OK' button to return to previous screen.



Edit Drilldown Details

Title: RFI Status Count *

Show Data From: Sub-Shells Only *

Display Type: Pie Chart ▼

Source Grouped By: Status Select... *

Output Type: ☒ Record Count ☐ Summary Value

Report On: Select...

Summary Type: ▼

Show Result: Actual Value ▼

Show Total: ☒

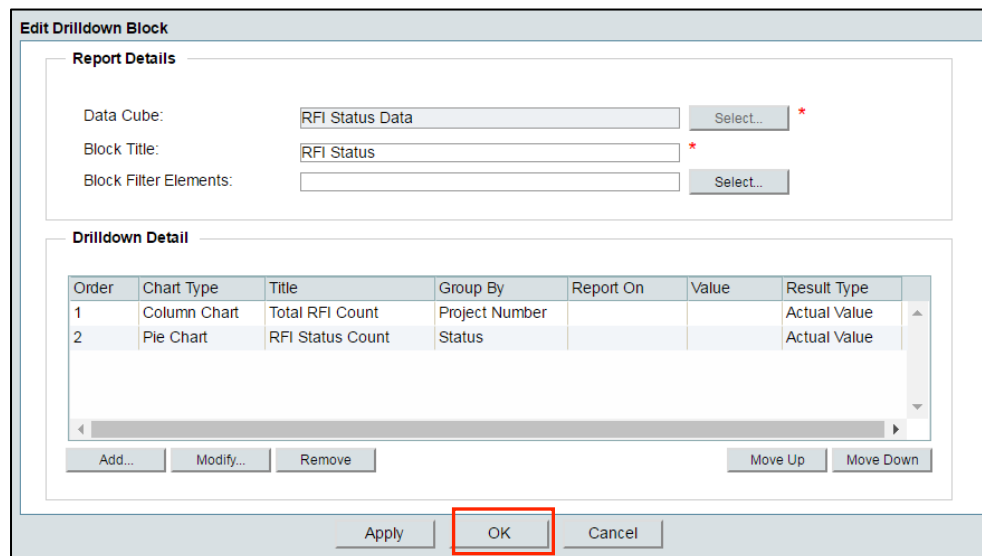
Decimal Places: 0 ▼

Currency Format: None ▼

OK Cancel

The drilldown block is now complete. It is worth mentioning that additional drilldown detail can be added so long as graphical chart types are used. Once a tabular chart is used you cannot add more drilldown details.

Click the 'OK' to return to previous window.



Edit Drilldown Block

Report Details

Data Cube: RFI Status Data Select... *

Block Title: RFI Status *

Block Filter Elements: Select...

Drilldown Detail

Order	Chart Type	Title	Group By	Report On	Value	Result Type
1	Column Chart	Total RFI Count	Project Number			Actual Value
2	Pie Chart	RFI Status Count	Status			Actual Value

Add... Modify... Remove Move Up Move Down

Apply OK Cancel






DATA CUBE IN SHELL DASHBOARD

Select the newly created dashboard block from the Source Details lower pane and continue to click the 'Move Up' button until it reaches the top. The Image block can be moved down using the 'Move Down' button.

Edit Dashboard

Dashboard Layout

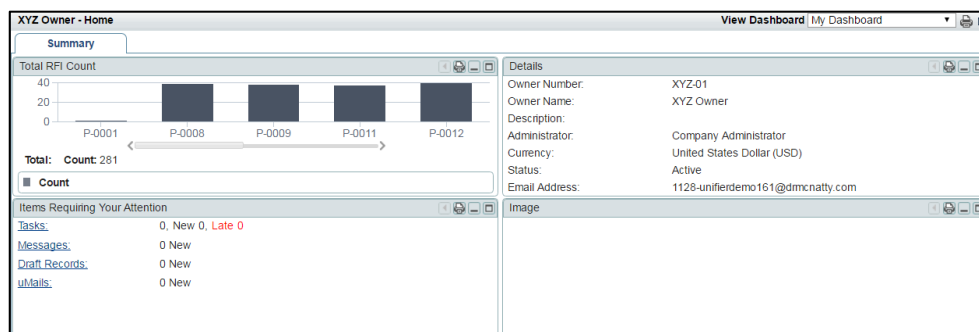
☐ Use Custom Dashboard:

Tab Name	Tab Layout	Show	Filters
Summary		<input checked="" type="checkbox"/>	
Tab2		<input type="checkbox"/>	
Tab3		<input type="checkbox"/>	
Tab4		<input type="checkbox"/>	
Tab5		<input type="checkbox"/>	

Source Details

Block Order	Block Title	Source Name	Block Type	Result Type	Display Type
1	RFI Status	RFI Status Data	Drilldown		
2	Details	Details	Standard		
3	Items Requiring Your At	Items Requiring Your Attention	Standard		
4	Image	Image	Standard		
5	Links	Links	Standard		

Our dashboard can be seen at the top of the Summary tab. Click the 'Maximize' icon in the top right corner of the block to maximize the dashboard.

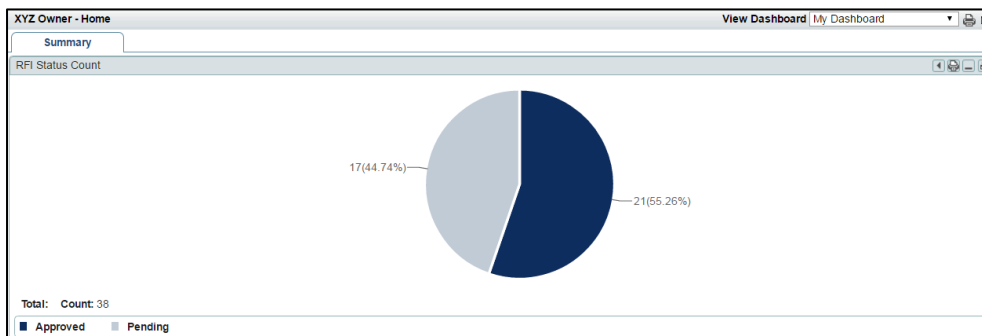


DATA CUBE IN SHELL DASHBOARD

The dashboard is a column chart displaying 'Request for Information' record counts per project. Hover over each column (project) to show the exact record count. Double-click on a column to drill down to the next level of detail.



The next dashboard is the pie chart which breaks down the project's record count by the statuses "Approved" and "Pending".



Dashboards are a great way to track KPIs for project performance. Unifier provides users with the ability to quickly set up dashboards and data cubes without the need for any coding.