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Power BI Dashboards Beginner

Your Guide: Robert Newell

- Take 5 Minutes
- Turn to a Person Near You
- Introduce Yourself
- Business Cards



Course Outline

Overview

- What is Power BI
- Power BI Components
- Data Flow

Connecting to Data Sources

- Power BI Service Navigation
- Options to Connect to Sources
- Creating a Data Connection

Reports and Dashboards

- Dashboard Components
- Options to Share Reports and Dashboards

Creating a Report

- Power BI Desktop Navigation
- Creating a Simple Report Using Power BI Application
- Examples of Using Custom Visuals

Data Import Options

- Connecting to ODATA and Oracle Server and Extracting Data
- DirectQuery vs. Import

Data Transformation

- Data Transformation Components
- Data Modeling

Data Transformation - Advanced

- Creating your own M script for your next advanced report
- M Script Examples

DAX in Power BI

- Introduction to DAX Language
- When to use M vs. DAX
- Examples



Course Goal: To provide an overview of Power BI functionality in conjunction with CA PPM data.

Course Objectives: You will learn how to:

- Understand How Power BI Works with CA PPM Data
- Connect to Data Sources
- Create Reports and Dashboards
- Create and Modify M and DAX Scripts



Overview

- What is Power BI
- Power BI Components
- Data Flow



Power BI is a dashboard tool from Microsoft that lets you connect to variety of data sources and create visually stunning and interactive dashboards.





Overview

Power BI has 3 main components:





Overview

Data Flow





Connecting to Data Sources

- Power BI Service Navigation
- Options to Connect to Sources
- Creating a Data Connection





Power BI Service Navigation





Connecting to Data Sources

Options to Connect to Sources

- SaaS solutions
- Azure services
- Custom content packs
- Custom connections
- On-premise SAS data
- Excel workbooks
- CSV files
- Power BI Desktop files

Content Pack Library Import or Connect to Data My organization Services Files Databases Choose content packs Bring in your reports, Connect to live data in Browse content packs that other people in your from online services that workbooks, or data from Azure SQL Database and Excel, Power BI Desktop organization have you use. more. or CSV files. published. 7 7 7 7 Get Get Get Get

Get Data

Need more guidance? Try this tutorial or watch a video

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Creating a Data Connection

Import or Connect to Data

Files

Get

Bring in your reports, workbooks, or data from Excel, Power BI Desktop or CSV files.

7

Databases

Get

Connect to live data in Azure SQL Database and more.

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Reports and Dashboards

- Dashboard Components
- Options to Share Reports and Dashboards



Dashboard Components

• Dashboard are high level view of some key KPI of one or more reports. Reports are pin to live page which then adds it to a new or existing Dashboard

Reports and Dashboards

Options to Share Reports and Dashboards

- Publish reports to the web
- Share dashboards
- Duplicate and modify shared dashboards (personal versions)
- Export to multiple formats
- Print
- QR code

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Reports and Dashboards

Steps to Share

Publish to Web

- Do not use this option as it will allow access to dashboard to public **Share**
 - Grant/Revoke access to colleagues in the organization
 - It will warn you if you have entered an email address outside the organization

Create Workspaces (Pro only)

- Public or Private groups
- Edit or View only groups

Create Apps (Pro Only)

- Entire Organization
- Specific Individual or Groups

Creating a Report

- Power BI Desktop Navigation
- Creating a Simple Report Using Power BI Application
- Examples of Using Custom Visuals





Power BI Desktop Navigation

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Clipboard External data	Resources Insert	Custom visuals Relationships Calculati	ions Share	
			Visualizations >	Fields >
			Image: state	₽ Search
← Page 1 +				



Dashboard Components

Chart Visualizations

- Bar chart
- Column chart
- Line chart
- Are chart
- Pie chart
- Combo chart
- Bubble chart
- Scatter chart
- Donut chart
- Gauge chart
- Funnel chart
- Waterfall chart



Creating a Report



Creating a report Target Resolution Date OBS Type OBS Path All Risks Business Transformation Group All Corporate Department OBS ORS Type Late Milestones Corporate Department OBS Select OBS Type Overall Status Anesthesia Delivery (PfM Training Class) Risk by Target Resolution Date Risk by Priority Risk by Status Corporate Department OBS Organizational **Overall Status Trend** Latest Status Report Select OBS A Fantastic Project (PfM Tr., Analyze Phase Complete Flanagan, Christopher Not Started Monday, April 20, 20 Effort Variance % Effort Variance Not Started Monday, April 13, 20 Atropia Retina Scan - Proje... Business Case Complete and Go to Development Miles. 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Business Case Complete and Go to Development Angelo, Michael Not Started Tuesday, August Select Project Automated Security Enhancements Key Resource not available Berks, Paul RS1073 Administrator, System Open High Saturday, October 10, 2015 Molecular Imaging 6000 -Business Case Complete and Go to Development Nunez, Angle Not Started Tuesday, August 1 (Blank) 0 Requirements to be freezed on time Administrator, System RS1074 Administrator, System Open High Tuesday, October 13, 2015 PD1008 MRJ 3000 - Project Not Started Tuesday, August 2015 eCommerce Portal Proposal Medium Tuesday, October 13, 2015 Nuclear Cardiology 2200 -Business Case Complete and Go to Development Angelo. Micha Not Started Tuesday, August 2015 Finance Management Applicati. PET Rx - Project - Schedule Task Performance Open High Thursday, February 11, 2016 Business Case Complete and Go to Development Craig. Aller Not Started Tuesday, June 9, 2015 Infrastructure Improvements Sonara XT - Project Not Started Tuesday, August PD1006 Business Case Complete and Go to Development Miles, Paul Allocation Availability XETC Closed Low Thursday, February 11, 2016 Late 122 2015 Lean Six Sigma Project Litrasound V4500 - Project Business Case Complete and Go to Development Angelo. Micha Not Started Tuesday, August Open High Friday June 3, 2016 2015 Mobile Advertising Visidium 2000 - Project Rusiness Case Complete and Go to Development Craio Allen Not Started Monday Novem Medium Monday, April 24, 2017 W/ID 2015 New Product Development 16.5 16.5K 16.58 PR1056 2015 eCommerce Portal Pr. Closing Phase Gate Complete Arya, Vishal Not Started Enday February 1 High Tuesday, November 10, 2015 2015 Professional Services Catalog Change Request PR1001 Reed, Henry Not Started Tuesday, Septembe 4G Upgrade Readiness Closing Phase Gate Complete Tuesday, November 10. 2015 2015 Restructure Architecture virtual. Open Low Automated Security Enhan... Closing Phase Gate Comple Berks, Paul 2015 Security Compliance Medium Low 1 Stale 4266 -2015 Spring Franchise Manager Rele.. Risk 1 4G Upgrade Readiness Timesheet Performance Select RIC Status 2.8K 2.7K 🗌 Open 10/16/201 10/23/2017 10/30/201 Issue 1 - Low 1 Allocation by Type Actuals by Type Asset Idea Other Product Project Applicatio ● Application ● Asset ● Idea ● Other ● Product ● Project ● Risks Demands Issues 5 11 110 Lockwood, Karl Wednesday, April 27, 2016 W/P Low 04-Sep-17 11-Sep-17 18-Sep-17 25-Sep-17 02-Oct-17 CLR Demo Project new issue from the risk Rice. 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Visuals



Examples of Custom Visuals





Data Import Options

- DirectQuery vs. Import
- Connecting to ODATA and Oracle Server and Extracting Data



Data Import Options



Connecting to ODATA and Oracle Server and Extracting Data













Data Import Options

<u>*</u>

DirectQuery vs. Import [Oracle]

Data Connectivity mode 🛈

Import

DirectQuery





Connecting to a Source





Data Transformation

- Data Transformation Components
- Data Modeling



Data Transformation

Data Transformation Components

- Use first row as header
- Split the field or concatenate fields
- Replace values null with blanks
- Group data
- Pivot/unpivot columns
- Aggregate functions
- Format columns



Data Transformation

Data Modeling

- Import multiple tab from Excel or Create multiple queries
- Join the tables





Data Transformation -Advanced

- Creating your Own M Script
- M Script Examples

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Data Transformation - Advanced

Creating your own M script for your next advanced report





Data Transformation - Advanced

M Script Examples

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- Introduction to DAX Language
- When to use M vs. DAX
- Examples

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Introduction to DAX Language

DAX: Data Analysis eXpression Language

Unlike M, DAX is an expression language and mostly uses formulas similar to **Excel**.

When to use M vs. DAX

- You will use M mostly for data transformation joining/union tables, adding columns, pivot/unpivot
- You will use DAX mostly for writing analytical queries like sum, average, running total etc.
- With M you can fetch data from source and add it to PBI data model. DAX works with data that has been already added to PBI data model.
- Because DAX and M have been built independently (M is part of power query suite and DAX is part of SSAS/power pivot suite), identical things can be achieved using both – join/union, custom column etc. My approach is to use DAX for items which cannot be easily achieved using M – example average, sum, calculating %.

There is a DAX studio which can be used to write and test DAX expressions before using in PBI. Download it <u>here</u>.

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Examples

Externar data nesources insert custom visuais neiauonsnips calculations share	
Timesheet_Perc = ADDCOLUMNS(CALCULATETABLE(SUMMARIZE(TimeSheet , TimeSheet[RESOURCE_KEY], TimeSheet[RESOURCE_NAME], "Perc", (IF(ISBLANK(COUNT(TimeSheet[TIMESHEET_KEY])),0,COUNT(TimeSheet[TIMESHEET_KEY]))/4)	~
*100), FILTER(TimeSheet, OR(TimeSheet[TIMESHEET_STATUS_KEY]=4, TimeSheet[TIMESHEET_STATUS_KEY]=1)), FILTER(TimeSheet, TimeSheet[PERIOD_FINISH_DATE]>= TimeSheet[CLARITY_UPDATED_DATE]), filter(TimeSheet, March 1997)	
AND(TimeSheet[PERIOD_START_DATE] <= TODAY(), TimeSheet[PERIOD_START_DATE] >= TODAY()-28))), "Band1", 33, "Band2", 66, "End Value", 100)	

NumberOfIssues = countrows(RELATEDTABLE(Issue))+0



Example: Calculate % of timesheets submitted on time for last 4 weeks

TIMESHEET data is added to model.

Created another table using DAX which contains the percentage data:

```
ADDCOLUMNS (
 CALCULATETABLE (
    SUMMARIZE (
     TimeSheet,
     TimeSheet[RESOURCE KEY],
     TimeSheet[RESOURCE_NAME],
     "Perc", (COUNT (TimeSheet[TIMESHEET KEY])/4)
       * 100
    FILTER (
     TimeSheet,
     OR (TimeSheet[TIMESHEET STATUS KEY] = 4, TimeSheet[TIMESHEET STATUS KEY] = 1)
    FILTER (
     TimeSheet,
     TimeSheet[PERIOD FINISH DATE] >= TimeSheet[CLARITY UPDATED DATE]
    FILTER (
     TimeSheet
     AND (
       TimeSheet[PERIOD_START_DATE] <= TODAY (),
       TimeSheet[PERIOD START DATE]
         >= TODAY () - 28
  "Band1". 33.
  "Band2", 66,
  "End Value", 100
```

You will mostly use **SUMMARIZE**, **CALCULATETABLE** and **FILTER** to pull information from datamodel

Example: Convert SQL to DAX



EVALUATE is not used in PBI. Instead you use = Filters in **CALCULATETABLE** are always in logical AND Filters in FILTER can be put in AND/OR.

Select ADJUSTMENT_KEY, APPROVED_BY From dwh_tme_sheet

is equivalent to:



EVALUATE

SUMMARIZECOLUMNS (TimeSheet[ADJUSTMENT_KEY], TimeSheet[APPROVED_BY], TimeSheet)

You can combine CALCULATETABLE and FILTER:

EVALUATE CALCULATETABLE (TimeSheet, FILTER (TimeSheet, TimeSheet[RESOURCE_KEY] = 5003126), FILTER (TimeSheet, TimeSheet[IS_ADJUSTMENT] = 0)



Example: Summarize/Group By

<pre>select resource_key, resource_name, count(timesheet_key)</pre>
from dwh_tme_sheet
group by resource_key, resource_name

is written as:

CAX EVALUATE SUMMARIZ

SQL

SUMMARIZE (TimeSheet, TimeSheet[RESOURCE_KEY], TimeSheet[RESOURCE_NAME], "Count", COUNT (TimeSheet[TIMESHEET_KEY])

Now, add a few filter conditions:

select resource_key, resource_name, count(timesheet_key)
from dwh_tme_sheet
where TIMESHEET_STATUS_KEY in (4,1)
and PERIOD_FINISH_DATE >= CLARITY_UPDATED_DATE
and PERIOD_START_DATE between (sysdate-28) and sysdate
group by resource_key, resource_name

```
EVALUATE
                           CALCULATETABLE (
is written as:
                             SUMMARIZE (
                               TimeSheet,
                               TimeSheet[RESOURCE_KEY],
                               TimeSheet[RESOURCE NAME],
                               "Count", COUNT ( TimeSheet[TIMESHEET KEY] )
                             ),
                             FILTER (
                               TimeSheet,
                               OR (TimeSheet[TIMESHEET_STATUS_KEY] = 4, TimeSheet[TIMESHEET_STATUS_KEY] = 1)
                             ),
                             FILTER (
                               TimeSheet,
                               TimeSheet[PERIOD_FINISH_DATE] >= TimeSheet[CLARITY_UPDATED_DATE]
                             ),
                             FILTER (
                               TimeSheet,
                               AND (
                                 TimeSheet[PERIOD START DATE]
                                   >= TODAY () - 28,
                                 TimeSheet[PERIOD_START_DATE] <= TODAY ()
```

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Example: Use ADDCOLUMNS to add new columns

```
EVALUATE
ADDCOLUMNS (
 CALCULATETABLE (
   SUMMARIZE (
     TimeSheet,
     TimeSheet[RESOURCE KEY],
     TimeSheet[RESOURCE NAME],
     "Count", COUNT ( TimeSheet[TIMESHEET KEY] )
    ),
    FILTER (
     TimeSheet,
     OR (TimeSheet[TIMESHEET STATUS KEY] = 4, TimeSheet[TIMESHEET STATUS KEY] = 1)
    ),
    FILTER (
     TimeSheet,
     TimeSheet[PERIOD FINISH DATE] >= TimeSheet[CLARITY UPDATED DATE]
    ),
    FILTER (
     TimeSheet,
     AND (
       TimeSheet[PERIOD START DATE]
         >= TODAY () - 28,
       TimeSheet[PERIOD START DATE] <= TODAY ()
  "COL1", 100,
  "COL2", 200
```

Number of Tasks for Each Projects:

```
EVALUATE
```

ADDCOLUMNS (Project, "Number of Task", COUNTROWS (RELATEDTABLE (Task)))

****RELATEDTABLE** uses the data model relationship to find the table joins. Avoid using this and use explicit join conditions.



Create a Dashboard by connecting to Odata Feed



Cancel

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Here are the steps to create a dashboard:

- Open your Power BI Desktop instance
- Select OData feed option under GetData
- Enter the Odata URL provided by your admin and click on OK.
- Enter the username & password and click on Connect to authenticate.
- Odata Table Navigator opens up. Select the tables required for your dashboard and click on Load Navigator

Display Options 👻	ې ۵	DWH_INV_INV Preview downloaded	ESTMENT on Wednesday		
		INVESTMENT_KEY	CLARITY_INVESTMENT_KEY	INVESTMENT_ID	INVESTMENT_NAME
DWH_INV_INVESTMENT	^	5006027	5006027	IDA00275	Annual Benefit Changes
DWH_INV_INVESTMENT_LN		5006029	5006029	IDA00277	Annual PPO Network Cha
DWH_INV_OBS_MAPPING		5006030	5006030	IDA00279	Medicare Advantage Pla
DWH_INV_OTHER_WORK		5006032	5006032	IDA00307	New HRA vendor
DWH_INV_OTHER_WORK_LN		1 The data in the	preview has been truncated	due to size limits.	
DWH INV PER FACTS F V					

• Selected Tables gets loaded and power BI canvas opens up.





Create a Dashboard by connecting to Odata Feed



• Select the required visualization and drag the fields from the tables on to the settings to generate a meaningful visualization.



• You can group related visualizations under a single dashboard. Save the dashboard after completion.

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		112017 mcm OWB Training	Calderon, Mindy On Track	
		2017 Integration Project Cont.	Bonham, Jessica	
		2017 New Product Development	Bonham, Jessica	
		2017 Resource Project	Bonham, Jessica	
		2017 Security Project	Bonham, Jessica	
		2017 Software Implementation Project	Bonham, Jessica	
		2017-2018 Server Maintenance	Garvey, Sara	
		A Great project	Springer, Jody	
	12	A Great Project - Master Plan	Springer, Jody	
		A great project 2	Ma, Elaine	
		A great project 3	Ma, Elaine	
		Another Great Project-Use for Demo	Springer, Jody	
		Create new Marketing Campaign	Dickson, Don On Track	
		Define Cloud Migration Strategy	Dickson, Don	
		Define Cloud Strategy and Architecture	Dickson, Don	
		Genius Upgrade	Garvey, Sara On Track	
		Google Mail Transition	Garvey, Sara On Track	
		Hire New Sales Staff	Dickson, Don On Track	
		HSBC Cloud Transition Program	Dickson, Don	
(Blank)	On Track	LICEC LIE Browners	Distance Data	



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