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Power BI Dashboards | Beginner

Your Guides: David Zywiec and Sankhadeep Dhar

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

Session Goal and Objectives

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

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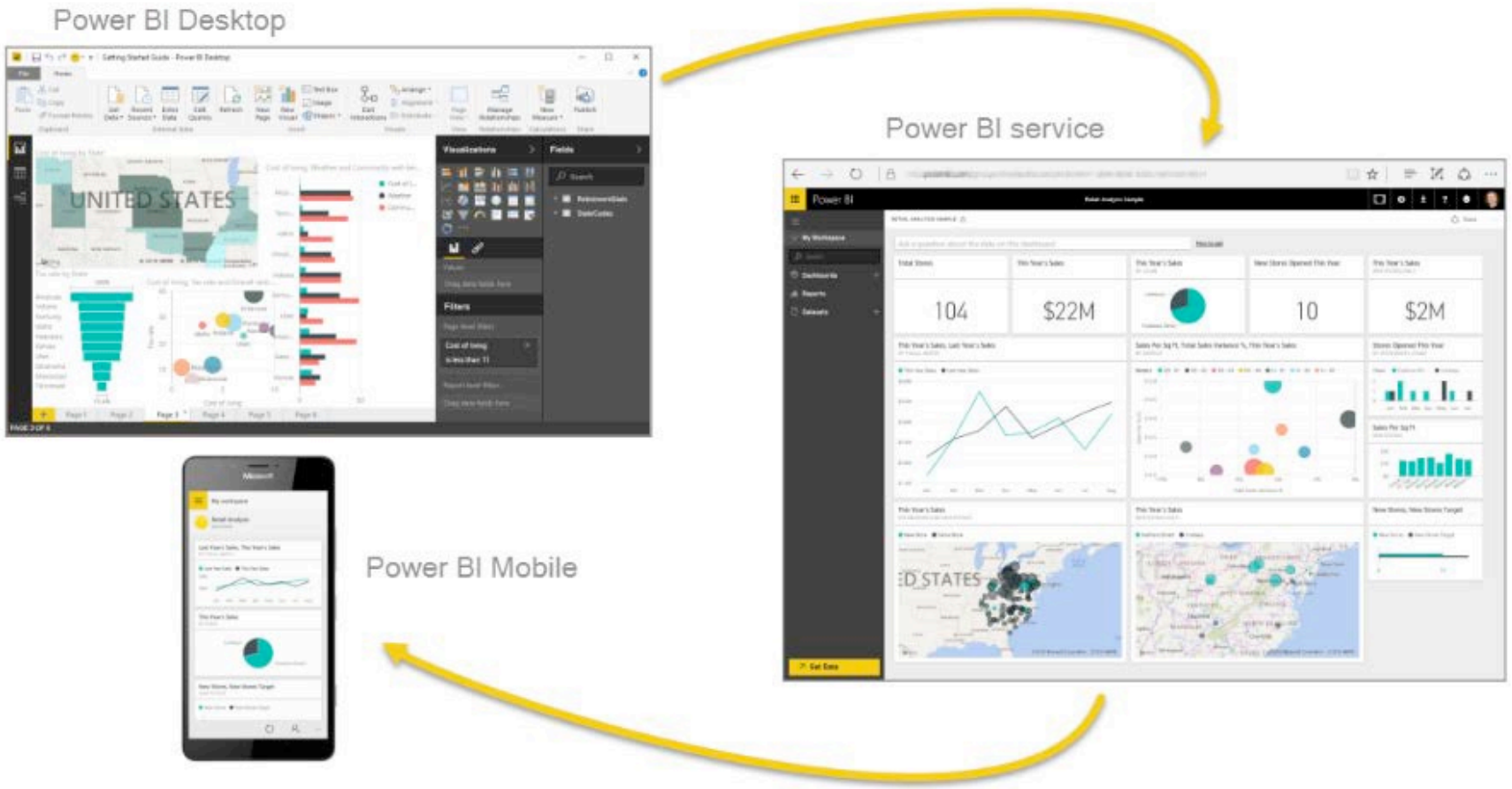
Overview

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

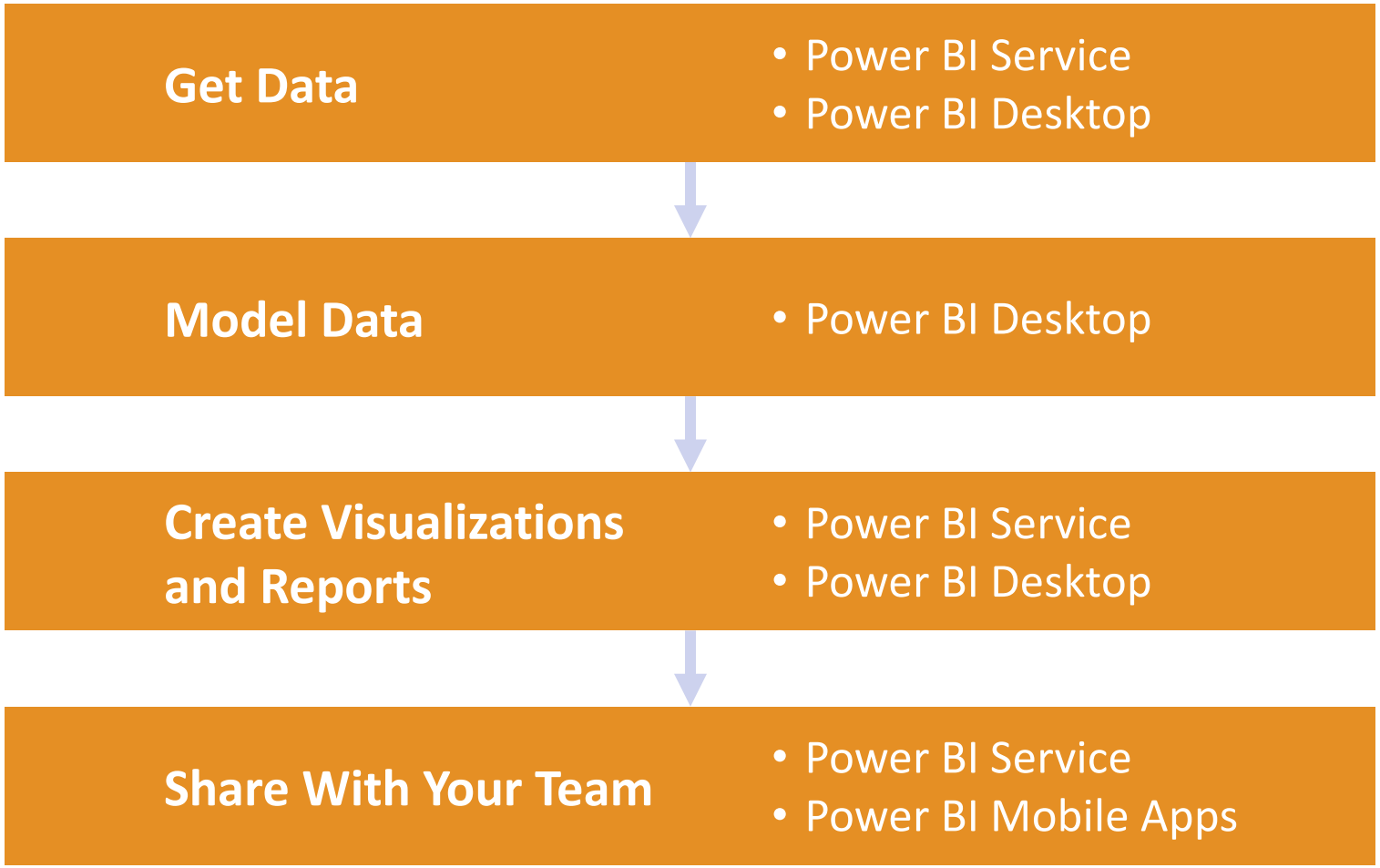
Overview

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

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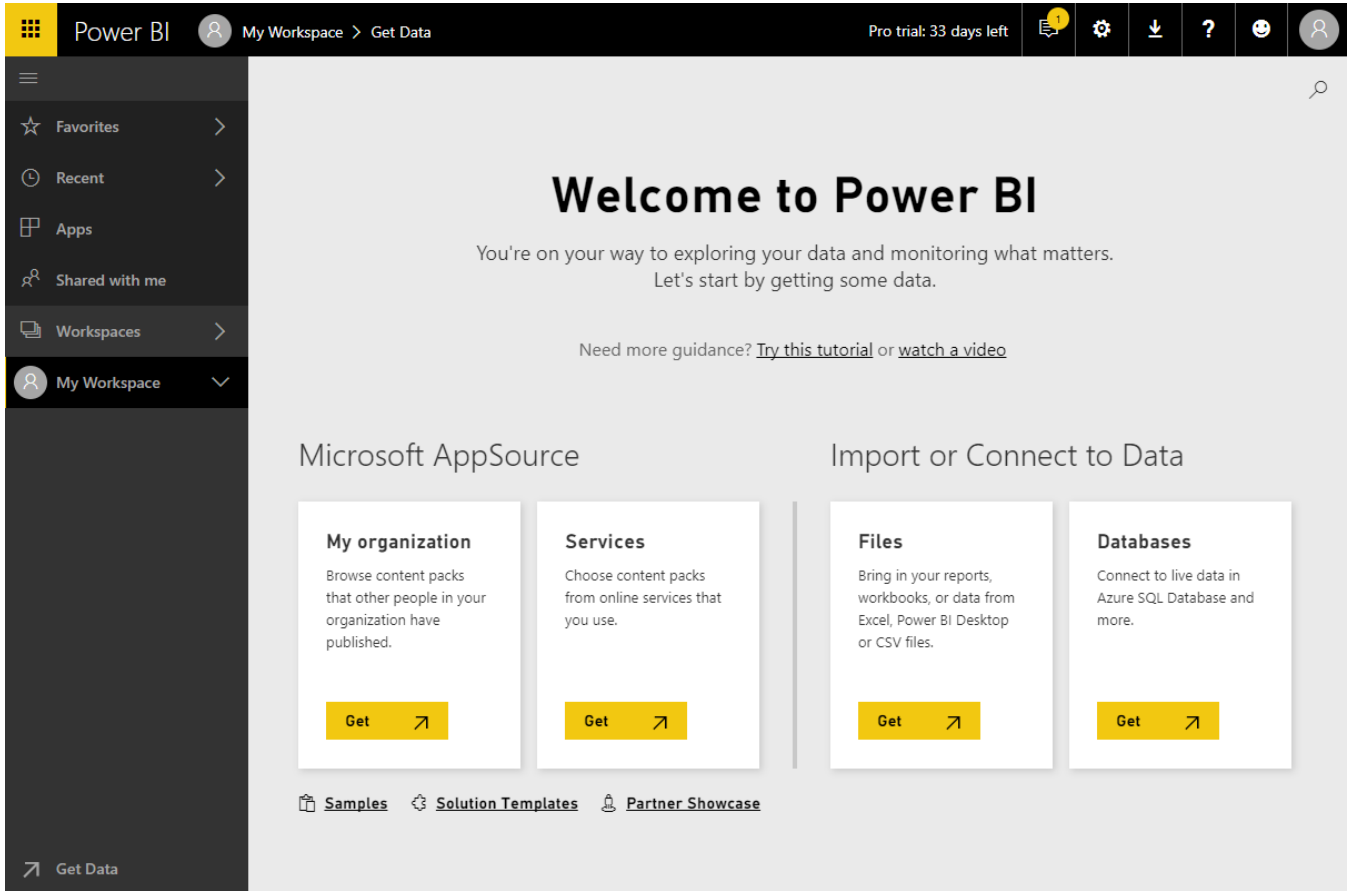
Connecting to Data Sources

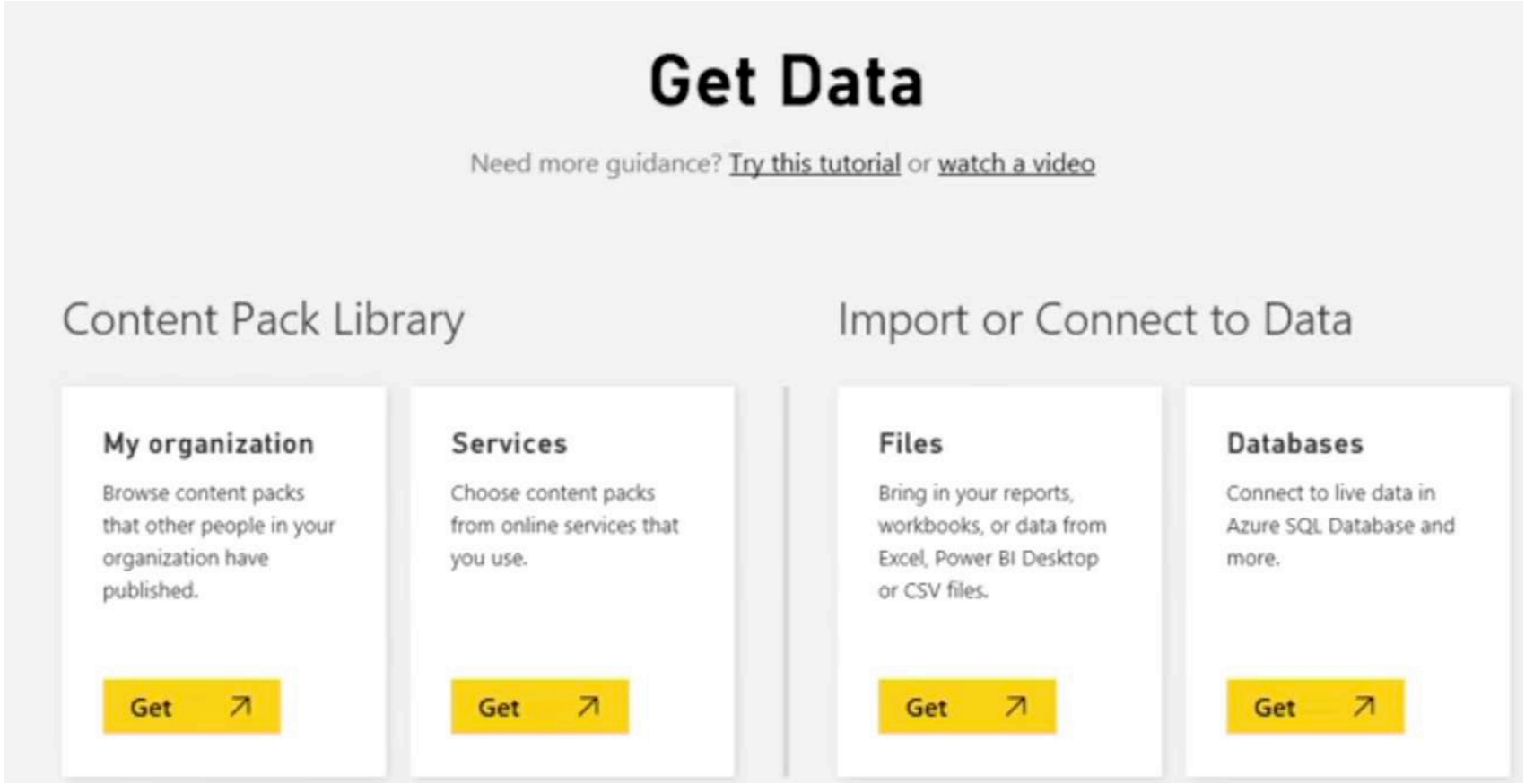
Power BI Service Navigation



Connecting to Data Sources

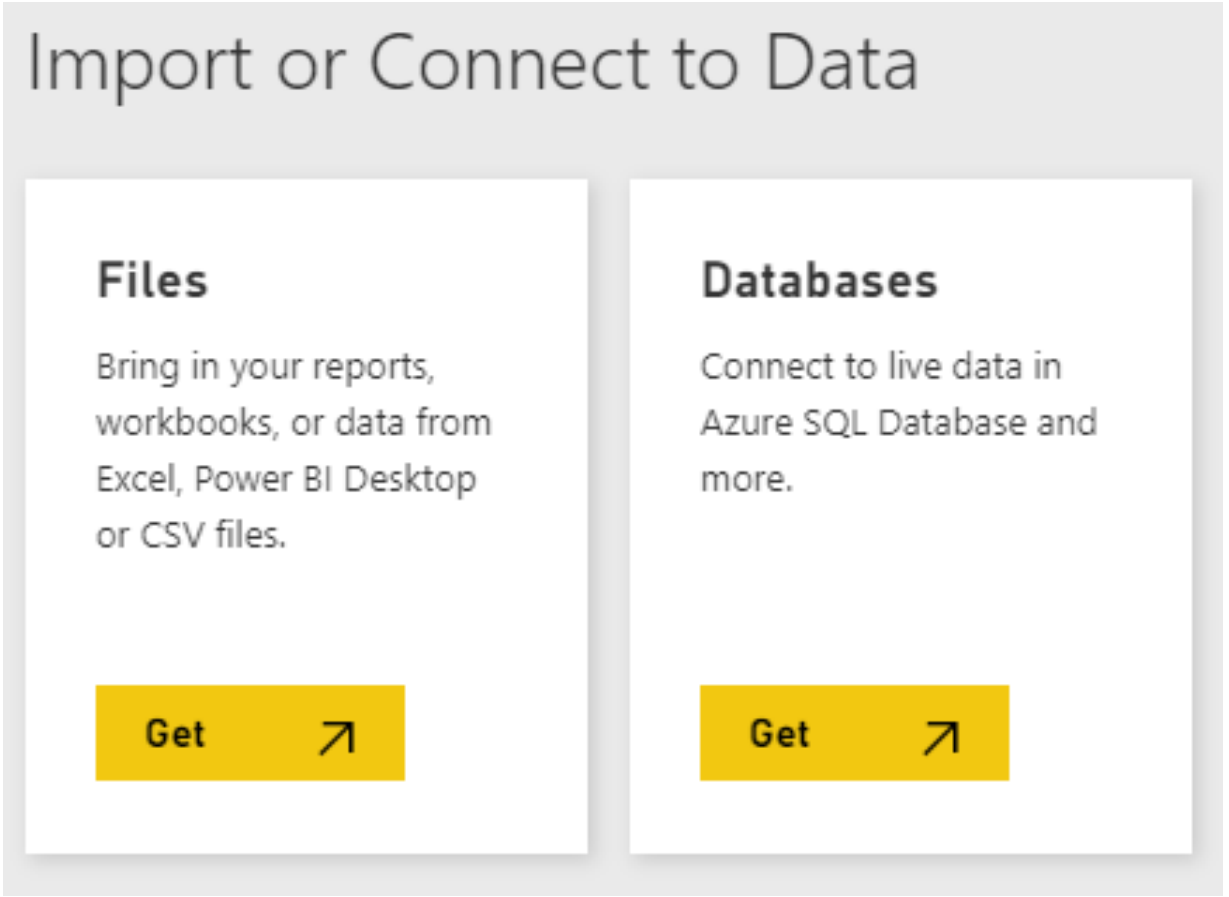
Options to Connect to Sources

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



Connecting to Data Sources

Creating a Data Connection



Reports and Dashboards

- Dashboard Components
- Options to Share Reports and Dashboards

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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

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

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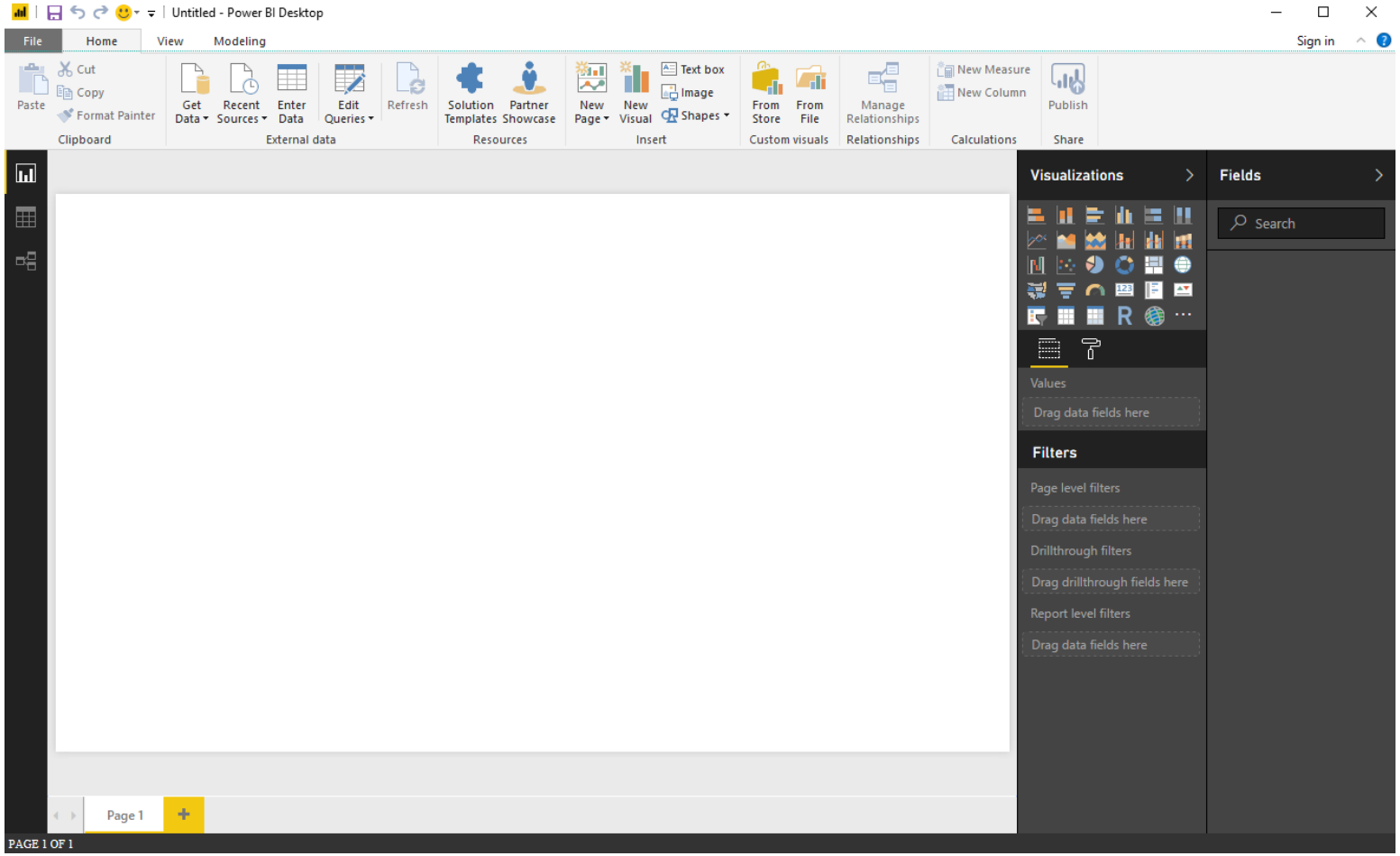
Creating a Report

Power BI Desktop Navigation

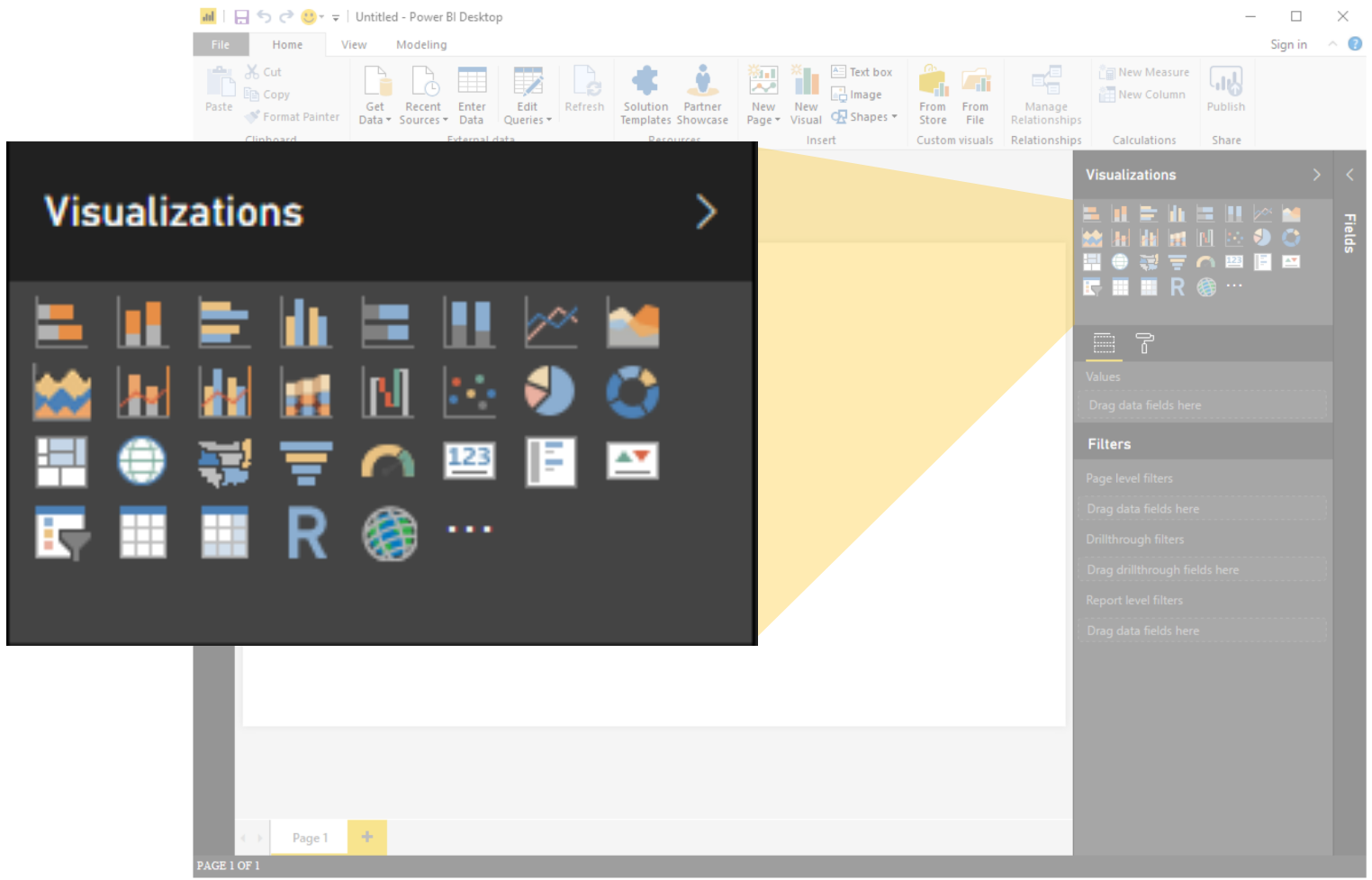


Reports and Dashboards

Dashboard Components

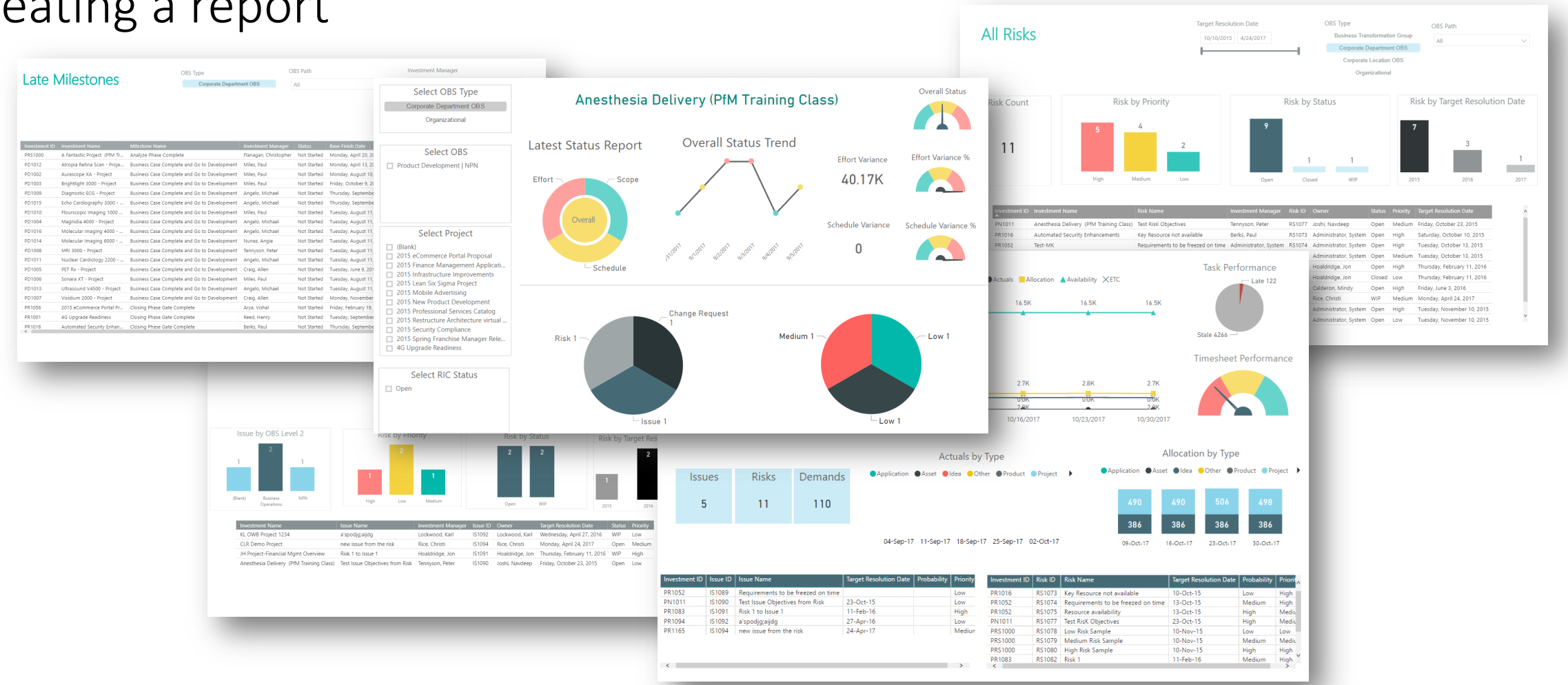
Chart Visualizations

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



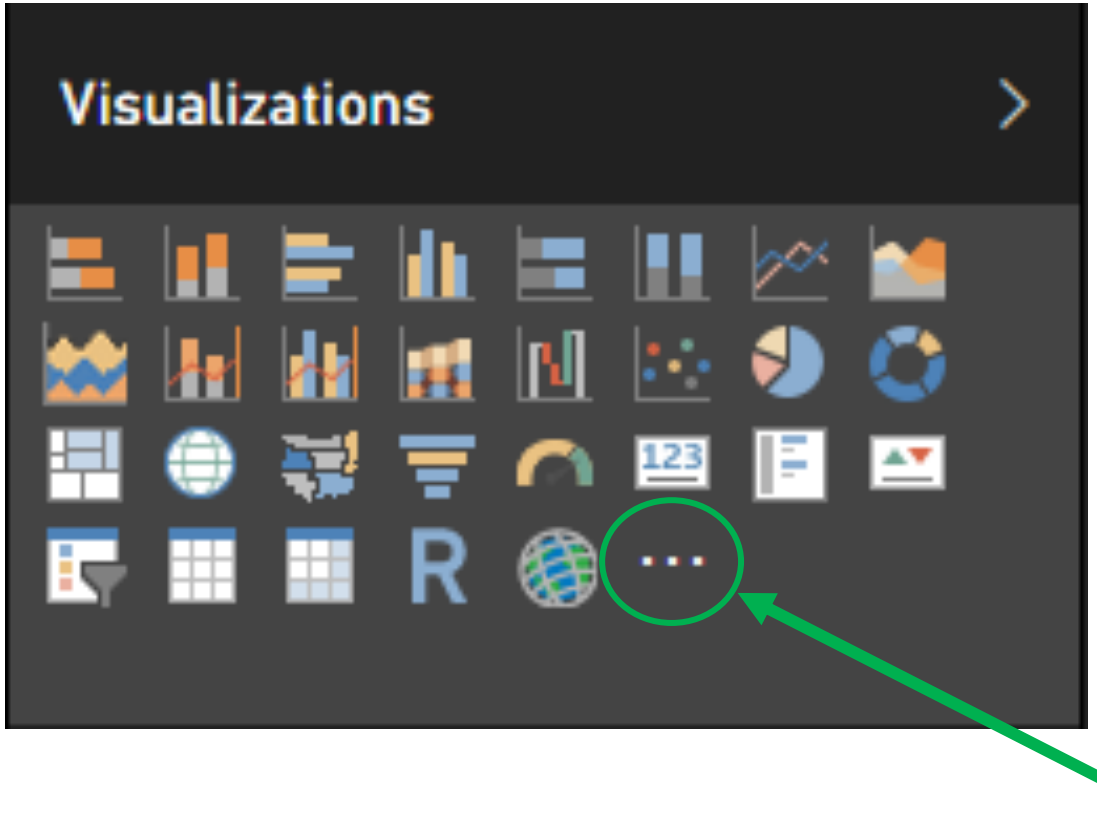
Creating a Report

Creating a report



Visuals

Examples of Custom Visuals



Data Import Options

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

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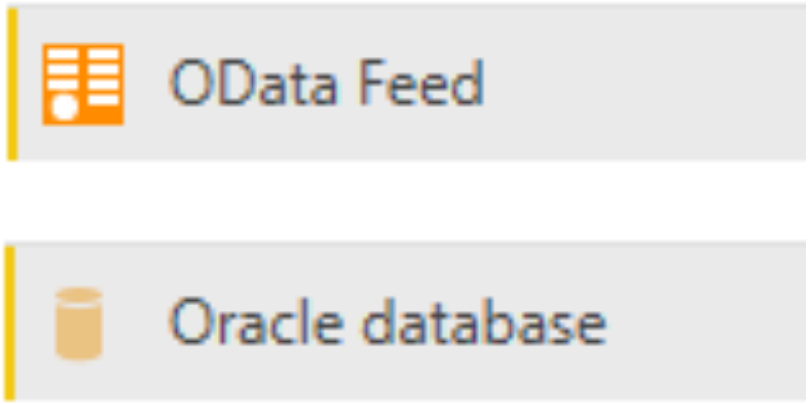
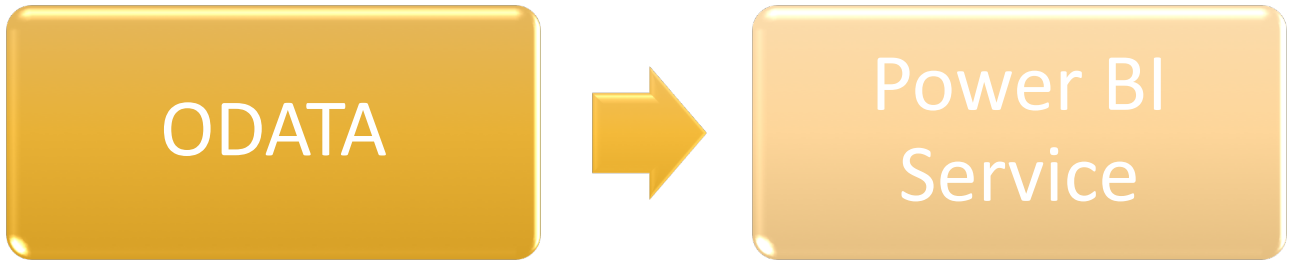
Data Import Options

Connecting to ODATA and Oracle Server and Extracting Data

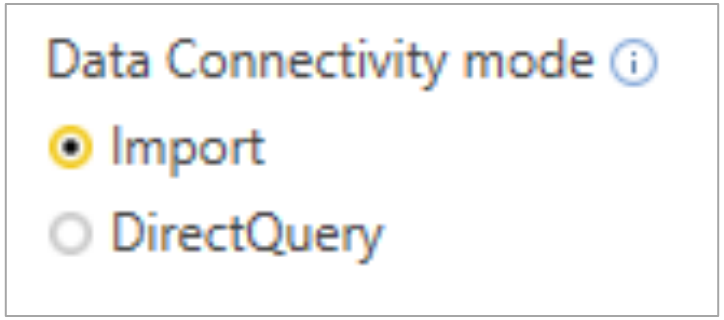


Data Refresh – On Premise vs On Demand CA PPM



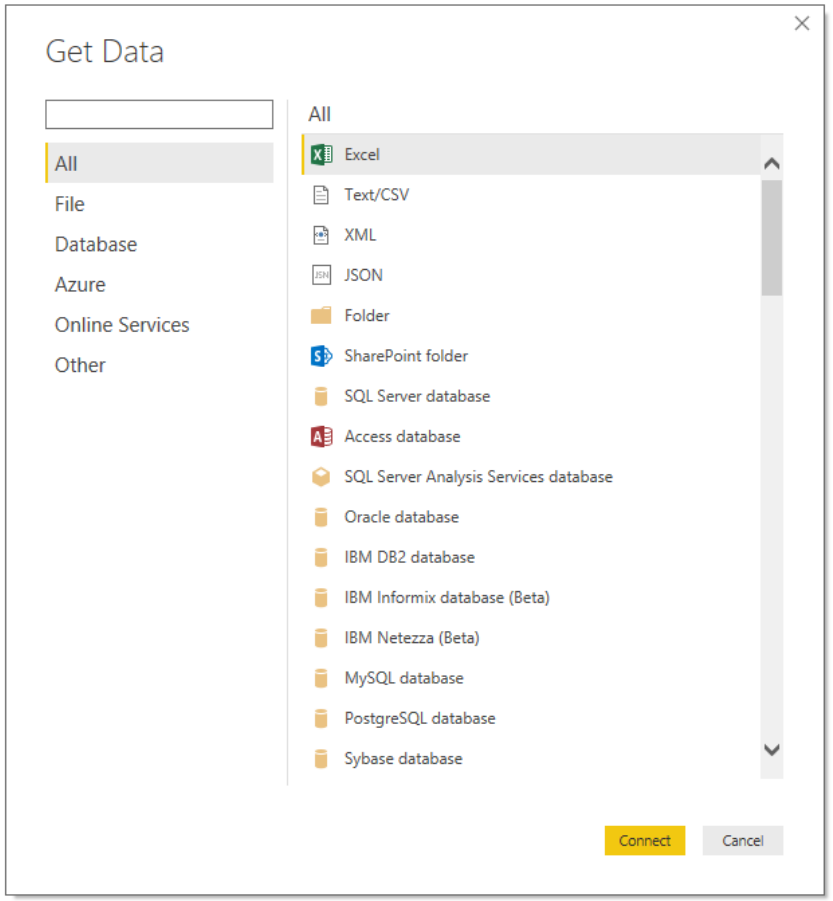
Data Import Options

DirectQuery vs. Import [Oracle]



Data Import Options

Connecting to a Source



Data Transformation

- Data Transformation Components
- Data Modeling

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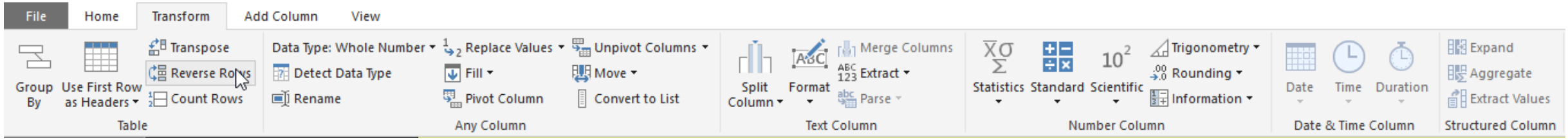
Data Transformation

Data Transformation Components

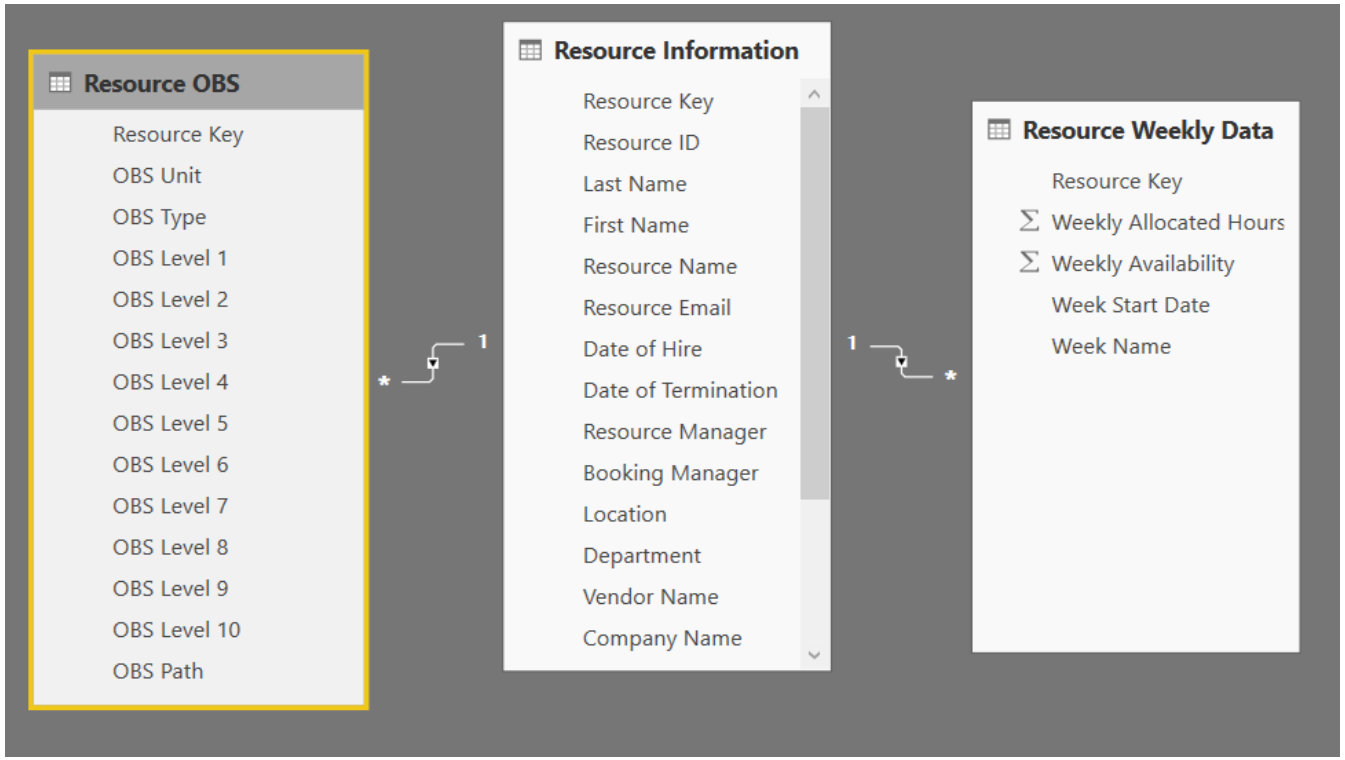
- Use first row as header
- Split the field or concatenate fields
- Replace values null with blanks
- Group data
- Pivot/unpivot columns
- Aggregate functions
- Format columns



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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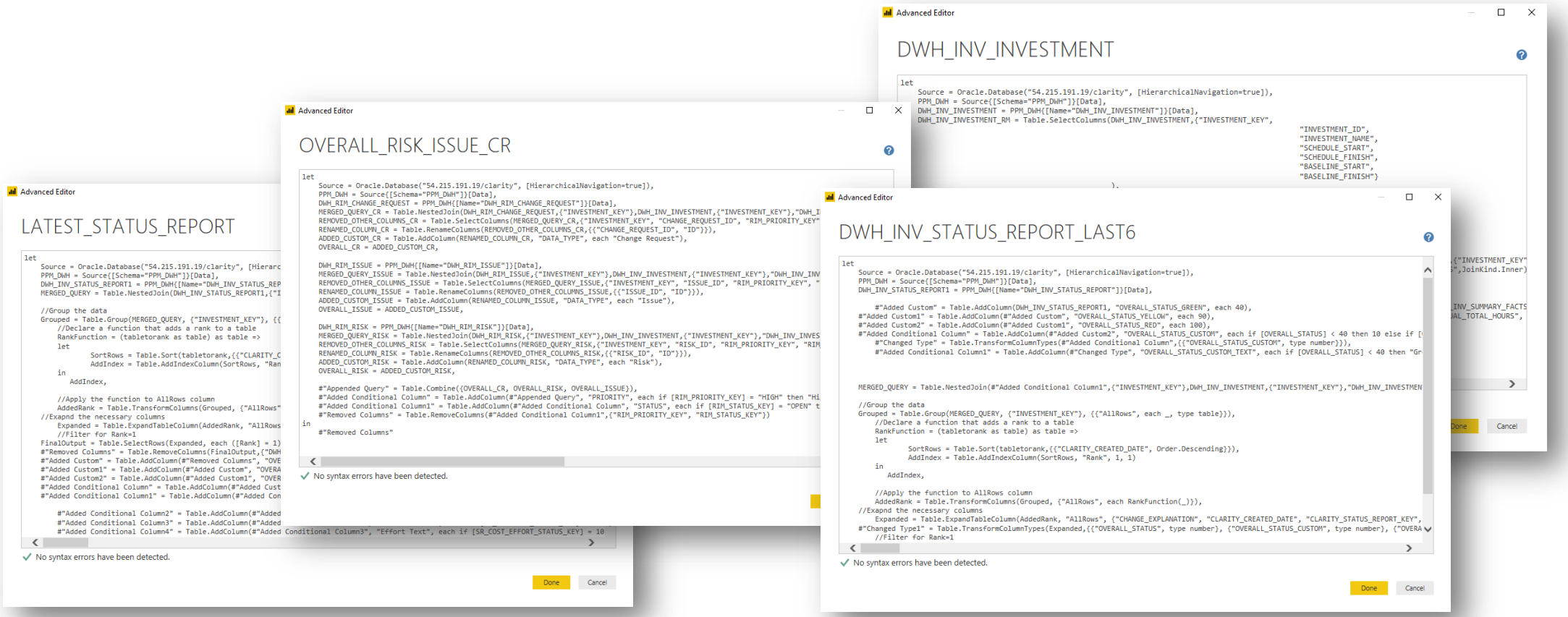
Data Transformation - Advanced

Creating your own M script for your next advanced report

Data Transformation - Advanced

M Script Examples



DAX in Power BI

- Introduction to DAX Language
- When to use M vs. DAX
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DAX in Power BI

Introduction to DAX Language

DAX: Data Analysis eXpression Language

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

DAX in Power BI

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 here.

DAX in Power BI

Examples

External data | Resources | Insert | Custom visuals | Relationships | 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,
AND(TimeSheet[PERIOD_START_DATE] <= TODAY(), TimeSheet[PERIOD_START_DATE] >= TODAY()-28))), "Band1", 33, "Band2", 66, "End Value", 100)
```

```
NumberOfIssues = countrows(RELATEDTABLE(Issue))+0
```

DAX in Power BI

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

DAX in Power BI

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.

SQL

```
select *
From dwh_tme_sheet
```

is equivalent to:

DAX

```
EVALUATE
TimeSheet
```

```
select *
from dwh_tme_sheet
where RESOURCE_KEY = 5003126
and is_adjustment = 0
```

can be written as:

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

```
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 )
)
```

DAX in Power BI

Example: Summarize/Group By

SQL

```
select resource_key, resource_name, count(timesheet_key)
from dwh_tme_sheet
group by resource_key, resource_name
```

is written as:

DAX

```
EVALUATE
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
```

is written as:

```
EVALUATE
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 ()
      )
   )
)
```

DAX in Power BI

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:

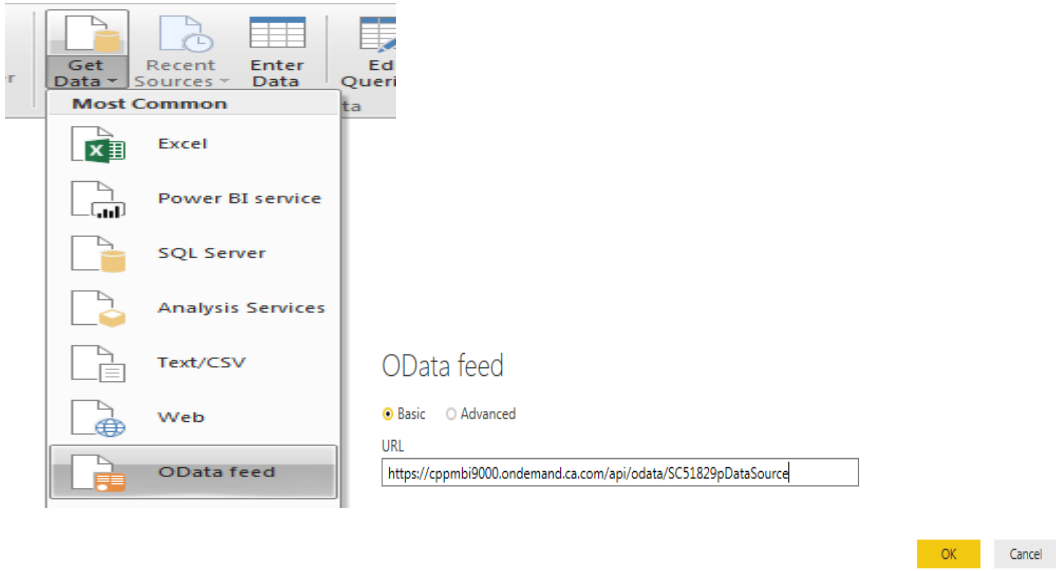
```
EVALUATE
ADDCOLUMNS ( Project, "Number of Task", COUNTROWS ( RELATEDTABLE ( Task ) ) )
```

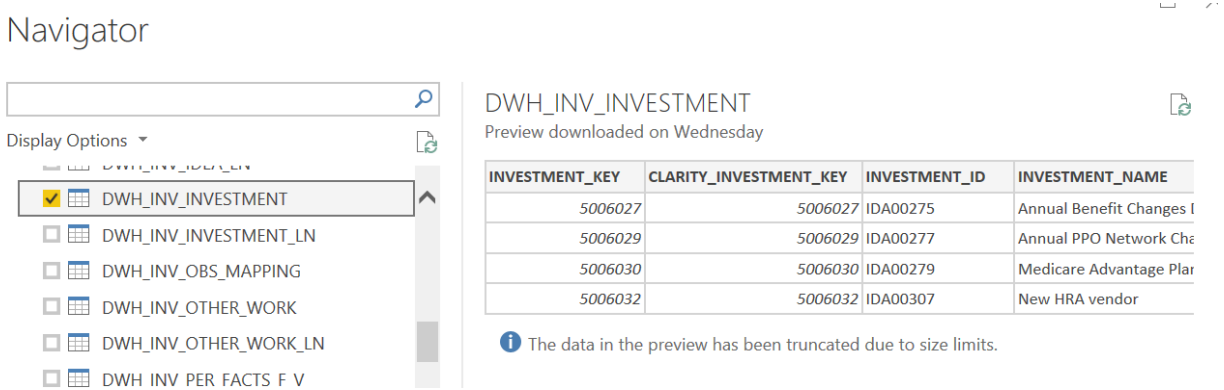
****RELATEDTABLE** uses the data model relationship to find the table joins. Avoid using this and use explicit join conditions.

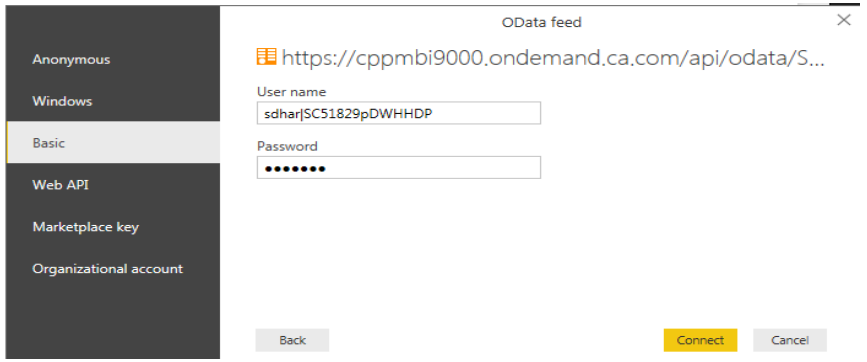
Create a Dashboard by connecting to Odata Feed

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



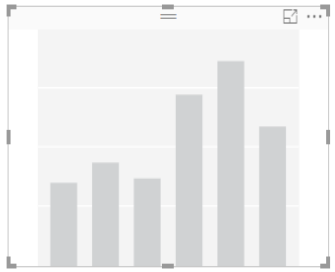


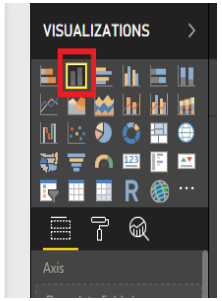


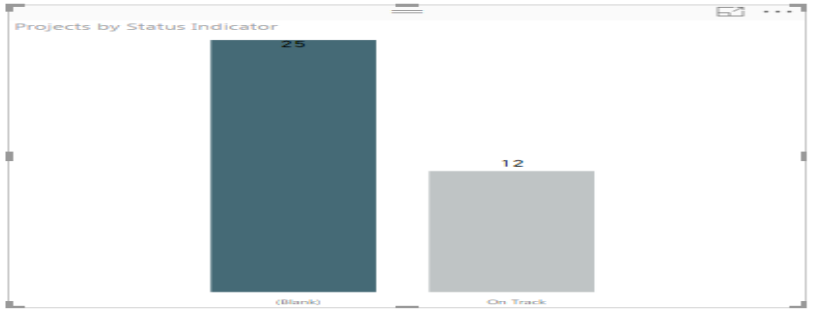
- Selected Tables gets loaded and power BI canvas opens up.

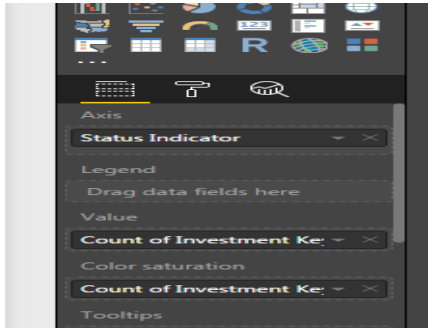
Create a Dashboard by connecting to Odata Feed

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

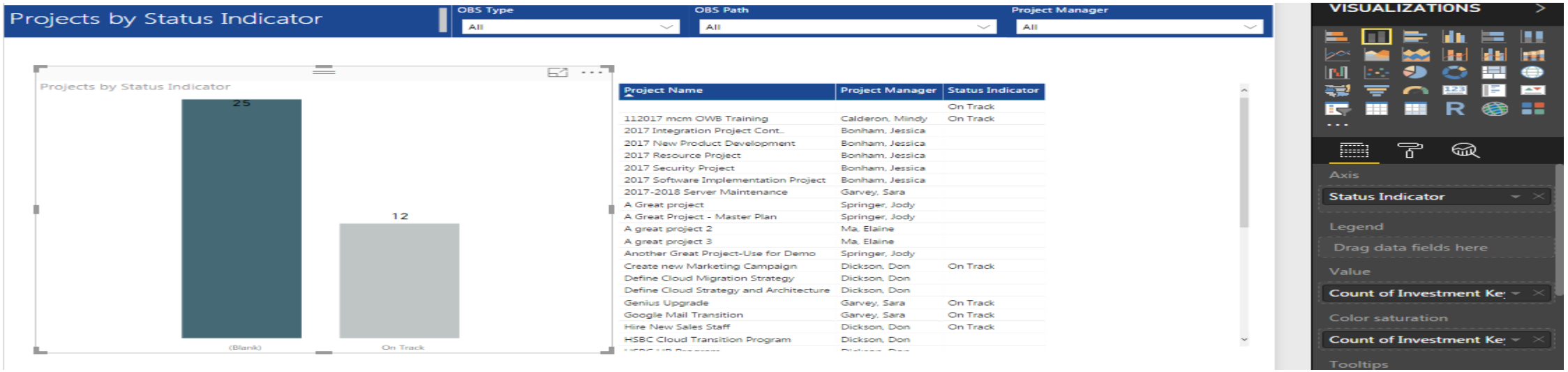








- You can group related visualizations under a single dashboard. Save the dashboard after completion.



Questions?

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Let Rego be your guide.

Thank You For Attending regoUniversity

Instructions for PMI credits

- Access your account at pmi.org
- Click on **Certifications**
- Click on **Maintain My Certification**
- Click on **Visit CCR's** button under the **Report PDU's**
- Click on **Report PDU's**
- Click on **Course or Training**
- Class Name = **regoUniversity**
- Course Number = **Session Number**
- Date Started = **Today's Date**
- Date Completed = **Today's Date**
- Hours Completed = **1 PDU per hour of class time**
- Training classes = **Technical**
- Click on **I agree** and **Submit**

Let us know how we can improve!
Don't forget to fill out the class survey.

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