Microsoft Power BI Technical Reference Deck

Level 300

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November 14, 2016

Power BI announcements

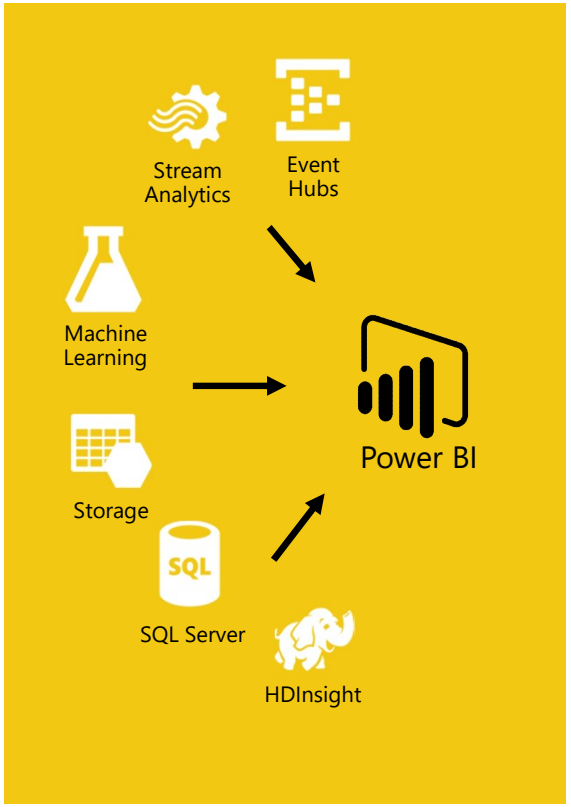
Gartner positions Microsoft as a leader in BI and Analytics Platform

February 2016:

Gartner has positioned Microsoft as a Leader, for the ninth consecutive year, in the Magic Quadrant for Business Intelligence and Analytics Platforms

For further information, read: https://powerbi.microsoft.com/en-us/blog/gartner-positions-microsoft-as-a-leader-in-bi-and-analytics-platforms/

Integration with Azure services



Azure and Power BI have the built-in connectivity and integration to bring business intelligence efforts to life

Integration can be achieved without the need to develop complex solutions:

- Direct connect:
  - Azure SQL Database
  - Azure SQL Data Warehouse
  - Spark on Azure HDInsight
- Power BI Desktop
- Real-time dashboards with Azure Stream Analytics

Note: Direct Connect Azure services were covered earlier in this module

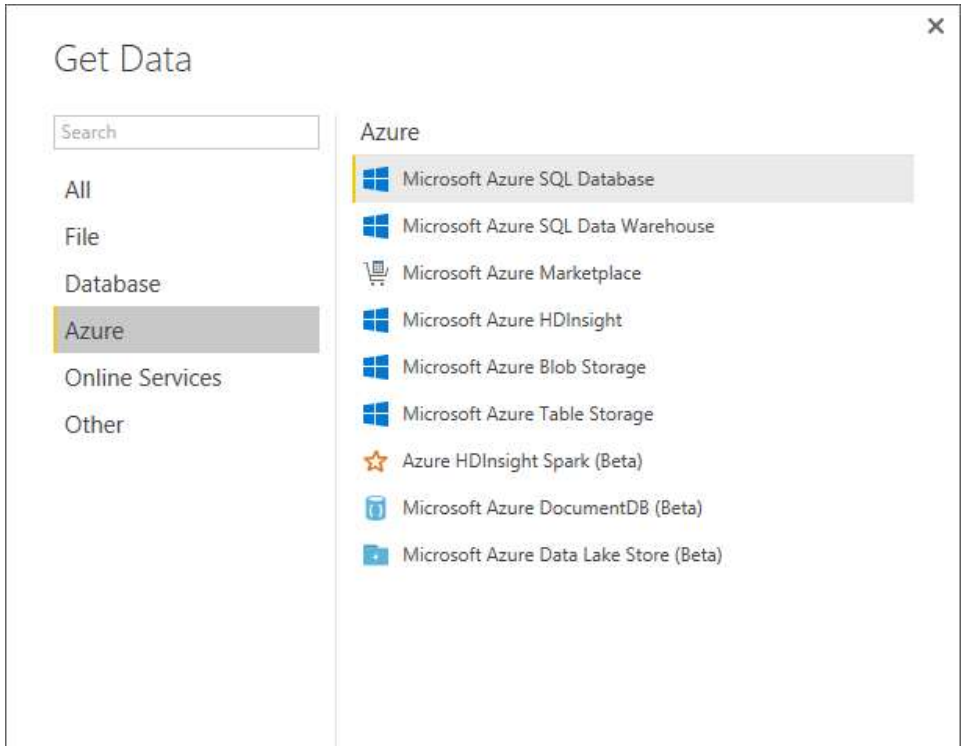
Integration with Azure services

Power BI Desktop

Connect to various Azure services, and create queries

- Queries can be integrated with other data source types, not necessarily Azure
- Datasets sourced from a Power BI Desktop file can be refreshed

Note: Power BI Desktop is covered in detail in the next module

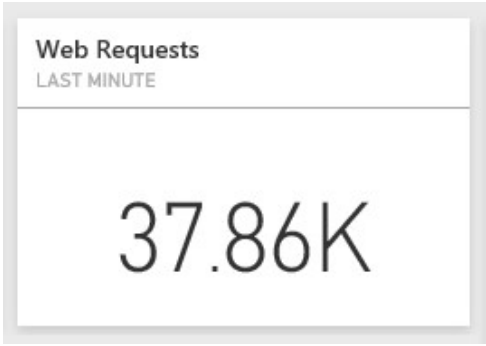


Integration with Azure services

Real-time dashboards with Azure Stream Analytics

Use Azure Stream Analytics to push live, streaming data to Power BI

- Enables real-time dashboards at scale, over data from devices and applications
- Can stream millions of events per second
- Can perform aggregation over time windows



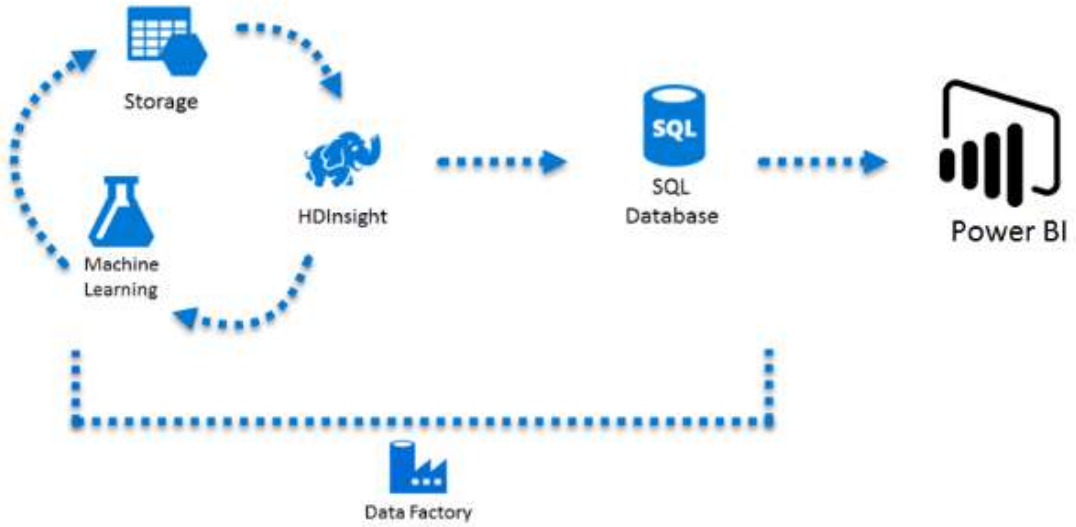
Tip: Use Q&A to ask: “Show Web Requests where Timestamp is last minute”

Integration with Azure services

Advanced analytics

Coalesce Azure services together to drive advanced analytics:

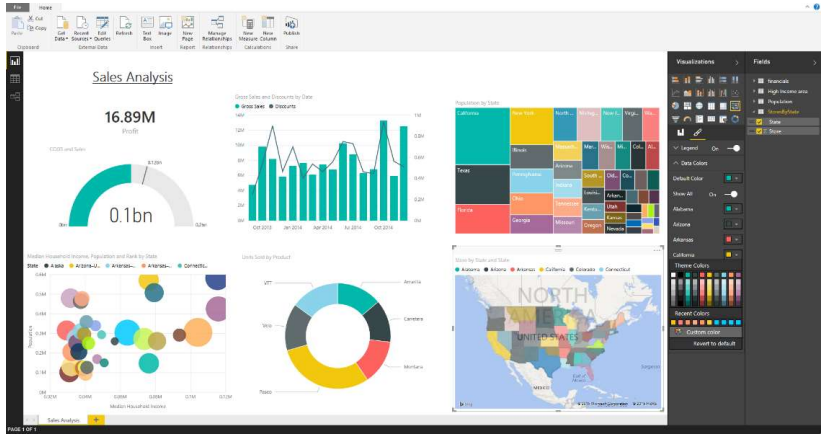
- **Azure HDInsight**: Big Data processing
- **Azure Machine Learning**: Predictive analytics
- **Azure Data Factory**: Orchestration at scale



Introducing Power BI Desktop

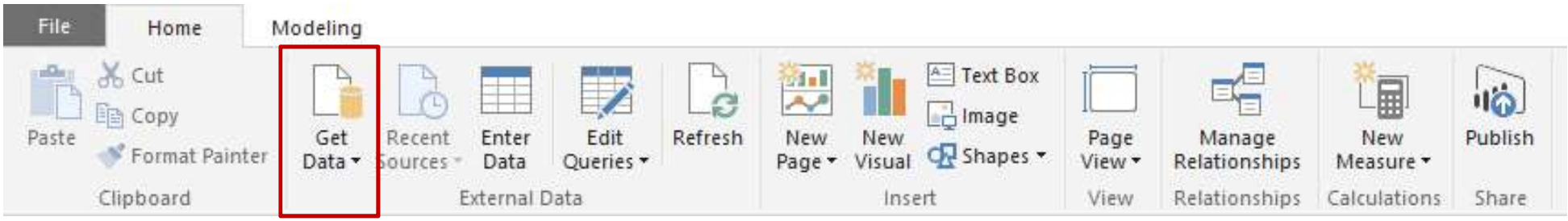
Power BI Desktop is a visual data exploration and reporting tool

- A freely downloadable 32- or 64-bit desktop application optimized for use with the Power BI service
- Integrates proven Microsoft technologies
  - Excel add-ins: Power Query, Power Pivot and Power View
- Enables multiple ways to transform schema and data
- Updated (at least) on a monthly basis



Introducing Power BI Desktop

User experience: Getting data



A query is defined by "getting data"

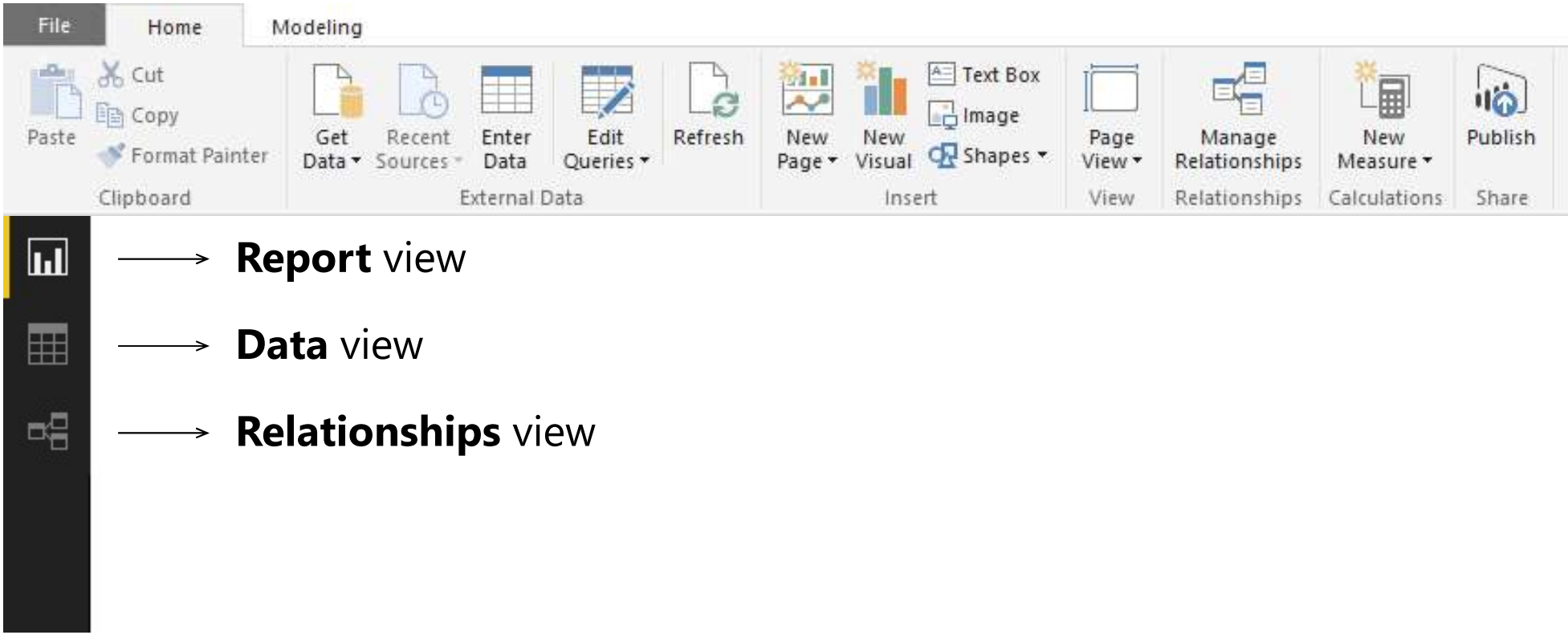
- Source types include File, Database, Azure, Online Services and Other

Data can be simply and quickly loaded "as is"

- Typically: Select type ▶ Define connection ▶ Authenticate ▶ Load
- Optionally, the **Query Editor** can be used to transform queries

Introducing Power BI Desktop

User experience: Three views



Introducing Power BI Desktop

User experience: Report view

Work in Report View to create any number of report pages with visualizations

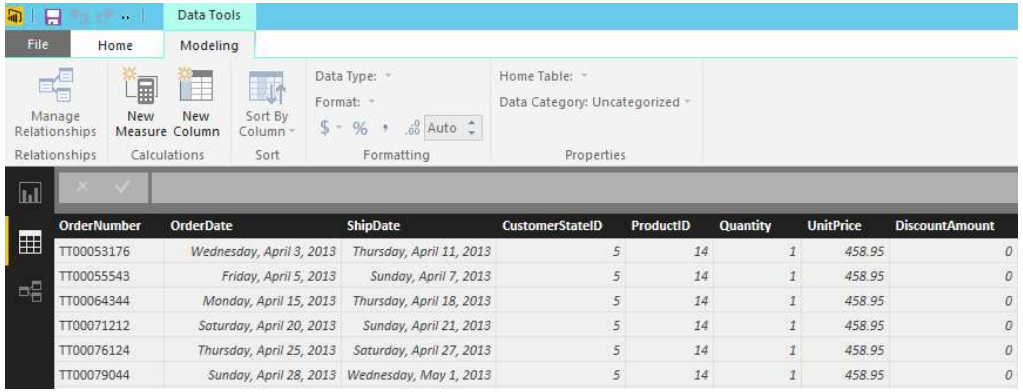
- It provides almost the same design experience as the report Editing View in the Power BI service
- A report will have at least one blank page to start, and any number of pages can be added
- Pages appear, and can be managed, in the navigator pane

Introducing Power BI Desktop

User experience: Data view

Work in **Data View** to inspect, explore, and understand data in the model

- It is a different experience from how you can view tables, columns, and data in **Query Editor**
- This is a view of the data after it has been loaded into the model

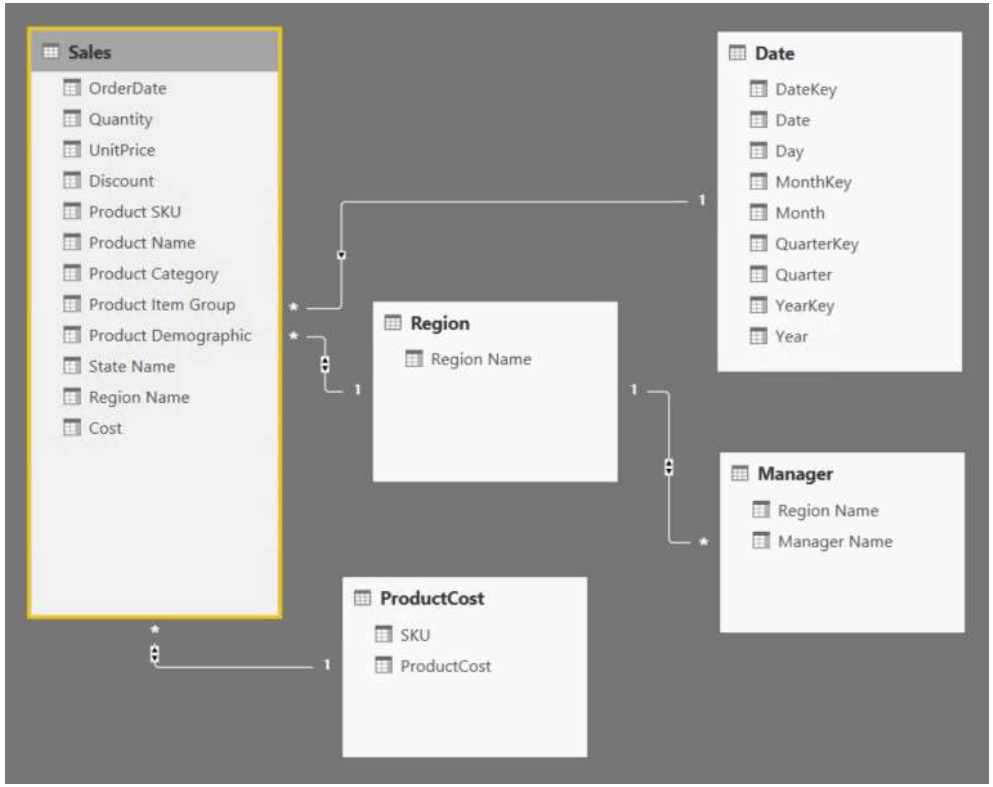


OrderNumber	OrderDate	ShipDate	CustomerStateID	ProductID	Quantity	UnitPrice	DiscountAmount
TT00053176	Wednesday, April 3, 2013	Thursday, April 11, 2013	5	14	1	458.95	0
TT00055543	Friday, April 5, 2013	Sunday, April 7, 2013	5	14	1	458.95	0
TT00064344	Monday, April 15, 2013	Thursday, April 18, 2013	5	14	1	458.95	0
TT00071212	Saturday, April 20, 2013	Sunday, April 21, 2013	5	14	1	458.95	0
TT00076124	Thursday, April 25, 2013	Saturday, April 27, 2013	5	14	1	458.95	0
TT00079044	Sunday, April 28, 2013	Wednesday, May 1, 2013	5	14	1	458.95	0

Introducing Power BI Desktop

User experience: Relationships view

Work in **Relationships View** to view all tables, columns, measures and relationships in the model

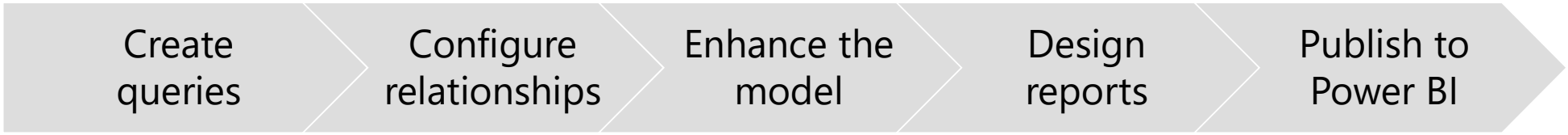


Introducing Power BI Desktop

Complex schemas: Development methodology

In contrast to the simple and quick "get then visualize" approach, more complex schemas may follow this methodology:

1. Create queries and use the **Query Editor** to filter, cleanse and reshape data
2. Configure/refine relationships to establish the foundations of a model
3. Enrich the model with calculation logic and formatting
4. Design interactive reports with a broad range of modern data visualizations
5. Publish solutions directly to the Power BI service



Publishing to Power BI

The Power BI Desktop file can be uploaded to the Power BI service, or published directly

- Publish directly to your workspace or a group

Note, if overwriting an existing dataset:

- If there are two or more datasets with the same name, remove one, or rename the Power BI Desktop file
- Renaming columns or measures can break existing reports or dashboard tiles

Publishing to Power BI

Continued

If row-level security roles have been defined, once published, assign users to roles

Introducing the Power BI online service

Continued

Users engage with the service by using a supported web browser, or mobile application

- Microsoft Edge
- Internet Explorer, 10 or 11
- Chrome desktop, latest version
- Safari Mac, latest version
- Firefox desktop, latest version

Note: Mobile applications will be covered later in this module

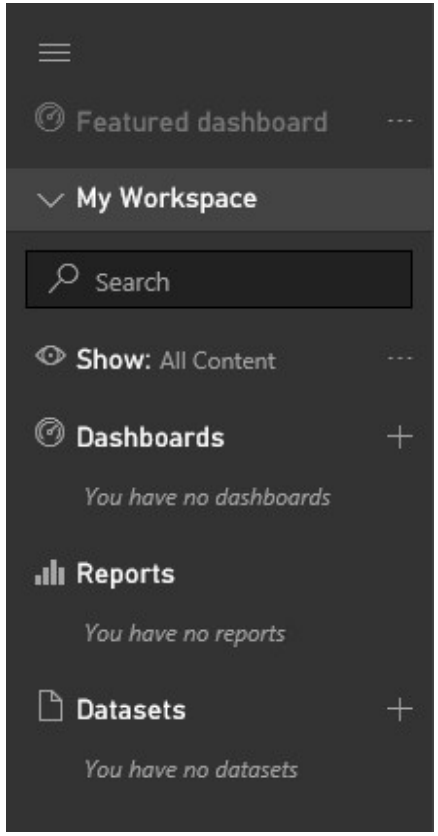
Introducing the Power BI online service

Continued

Users typically work with Power BI “building blocks”:

- Datasets
- Reports
- Dashboards

Use the Navigation Pane to create, or select items of interest

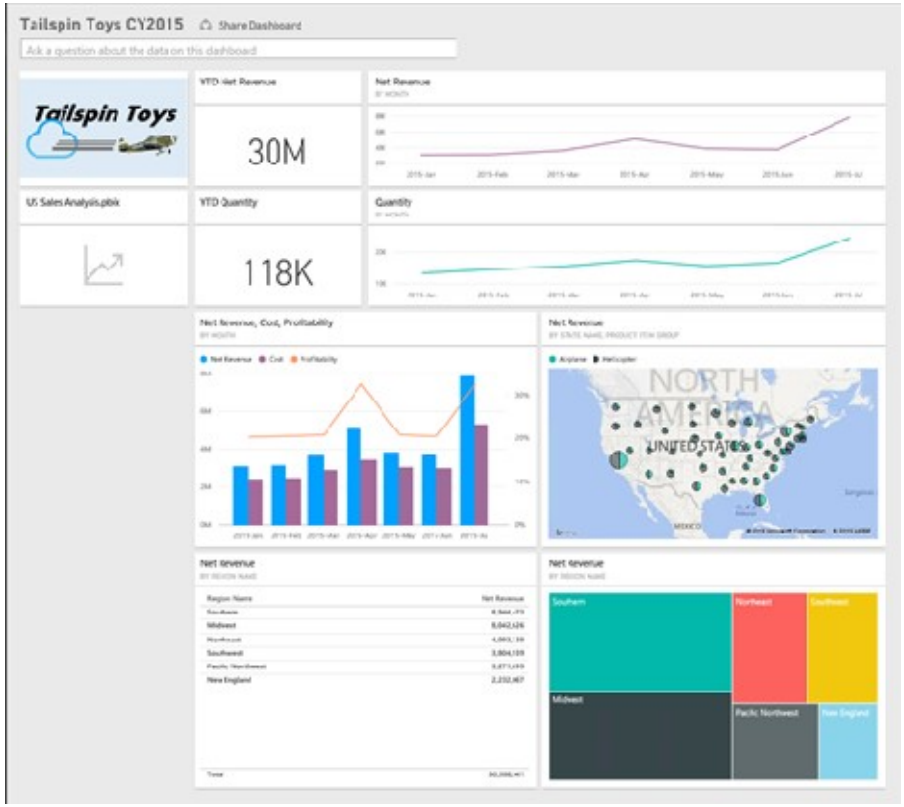


Note: Creating and managing datasets will be covered in the next module

Assembling dashboards

Dashboards display tiles in a single canvas

- A tile is sourced by “pinning” either a report, report visualization, or a Q&A response
- A dashboard can be based on one or more datasets
- Tiles can be resized and repositioned, and their titles/subtitles can be updated
  - Tiles can be sized to 1-5 units wide/high



Assembling dashboards

Continued

Dashboards enable interactivity

- By default, clicking on a tile will drill through to its source
- However, a custom link (URL) can be set to override this default behavior

Dashboard tiles can reflect live, real-time data

- For non real-time datasets, tile thumbnails are automatically cached every 15 minutes

Dashboards can be displayed in Full Screen Mode

- Additionally, all tiles can be displayed by using Fit to Screen

Note: Live dashboards can be achieved with Azure Stream Analytics integration or the Power BI REST API. Both topics are covered later in this course.

Exploring with Q&A

In the dashboard canvas, use Q&A to ask natural language questions

- The dashboard must contain at least one tile to connect to a dataset, and
- Only cloud-based cached datasets are supported

Q&A helps formulate an appropriate question

- Q&A will format your question with suggestions, auto-complete, and even spelling corrections
- Featured questions can be added to datasets
- Only English questions are supported

Exploring with Q&A

Continued

Begin by asking "Show..."

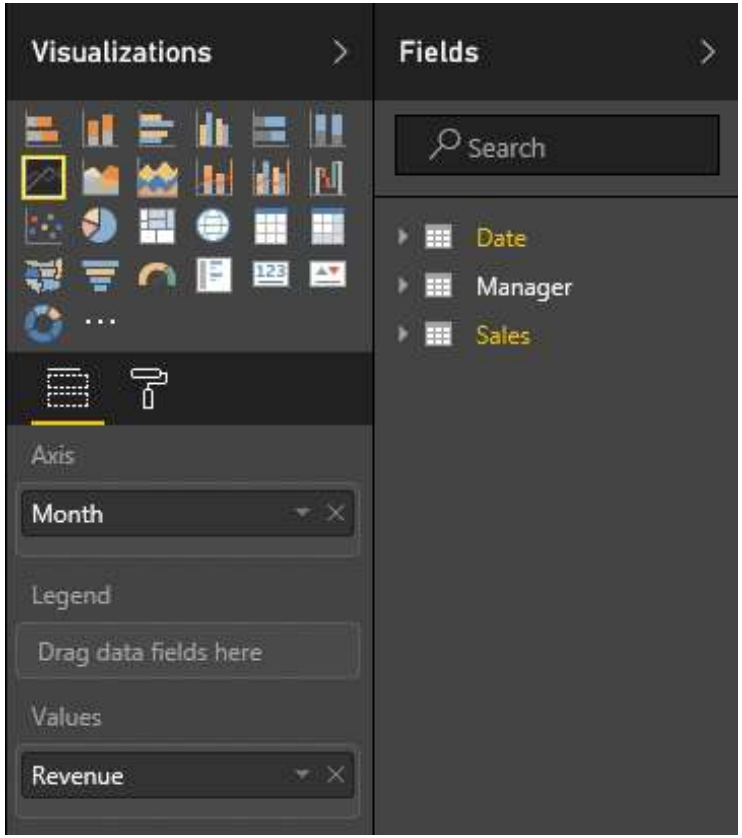
- For example:
  - Show <table>
  - Show <aggregate function><numeric column>
  - Show <measure> by <column>
  - Show <column> where <column> is before <date value>
  - Show <measure> where <column> is before <date value> sorted by <measure>
  - Show <measure> where <datetime column> is [this | last] [year | month | hour | minute | second]

Optionally, Q&A responses can be:

- Customized by using the **Visualizations** or **Fields** panes
- Pinned to the dashboard

Exploring with Q&A

Example



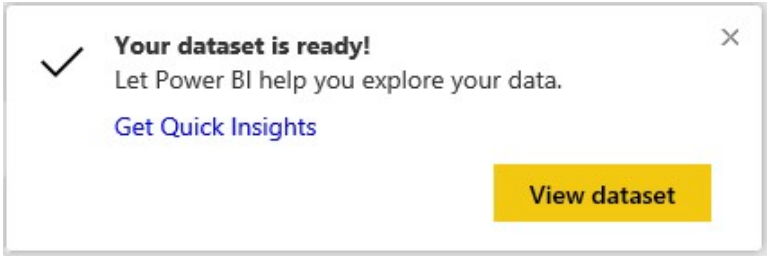
Source: US Sales Analysis

Describing additional capabilities

Quick Insights

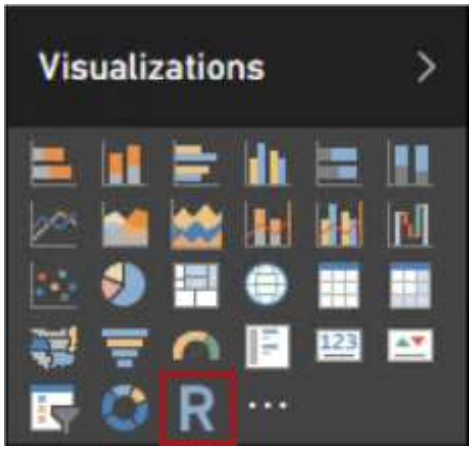
Use Quick Insights to generate interesting interactive visualizations based on your data

- Can be run on entire dataset (Quick Insights), or on a specific dashboard tile (Scoped Quick Insights)
- Presents up to 32 separate insights in a special Quick Insights canvas
- Insights can be pinned to dashboards, and to continue further, additional Quick Insights can be run on the insights



Describing additional capabilities

Generating R visuals



R visuals render from R script, accepting input fields

Benefits:

- Leverage the voluminous and growing number of out-of-the-box plots available in R
- Easily customize R visuals by developing the script
- Combine advanced analytics in visuals
- Interact with R visuals in Power BI Desktop (filter, and cross-filter are supported)

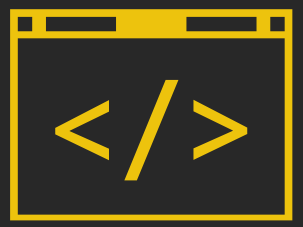
Azure Power BI Embedded

Azure Power BI Embedded is an Azure service, enabling the integration of Power BI reports into apps

Azure Power BI Embedded

Create compelling interactive reports

Embed easily for faster time to value



Deploy quickly and manage with ease

Azure Power BI Embedded

Key attributes

- Easily author interactive reports without writing any code using Power BI Desktop
- Choose modern visualizations out-of-the-box or customize without building them from scratch for your reports
- Easily embed interactive visuals in your app using REST APIs and the Power BI SDK
- Ensure consistent high-fidelity data experiences on any device
- Use your existing authentication and authorization methods
- Speed up time to value without redesigning your existing app
- Pay only for what you use with no upfront costs

Create your own Power BI reports

- Download data from data.gov or use your own data
- Start by authoring your reports on Power BI Desktop
- Experiment with custom visuals if applicable
- Identify three key insights from your data
- Publish report to the cloud
- Create a dashboard and pin a couple insightful visuals from your reports
- Generate “Quick Insights” on powerbi.com and pin additional findings to the dashboard
- Visit dashboard. Use Natural Language Query to ask questions