Microsoft

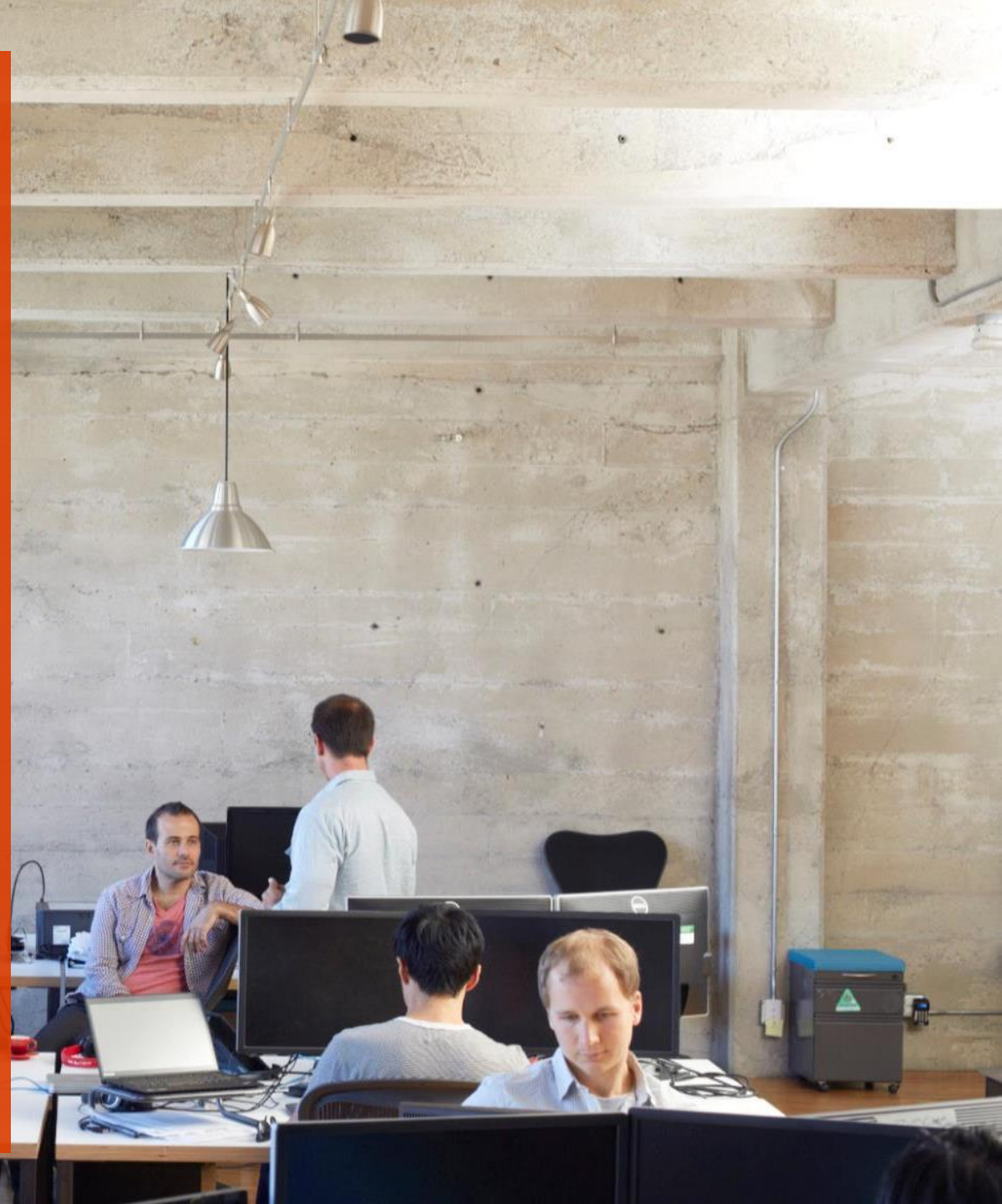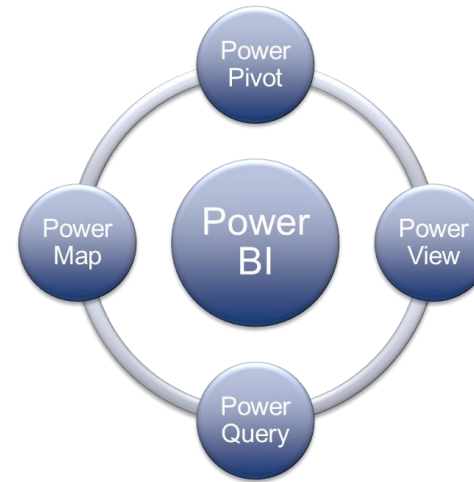# PowerBI using SQL Azure & SQL On-Premises

[George Grammatikos]

[22/04/2017]

What is Power BI ?

✓ Cloud - based data analysis and reporting

✓ Simple and user friendly

✓ Powerful and mature

Power Pivot

Power Map

Power BI

Power View

Power Query

Power BI

BI Analyst

End User

BI Dev

History of Power BI

PowerPivot – Excel add-in using xVelocity(Vertipaq) columnar engine

SQL Server 2012 SSAS Tabular Model

Microsoft BI Semantic Model (BISM)

PowerView

Re-branding to Power BI (notice the space)

SharePoint and Office 365 integration (Q&A, Power Query, and Power Map)

Power BI v2 Preview (December 2014)

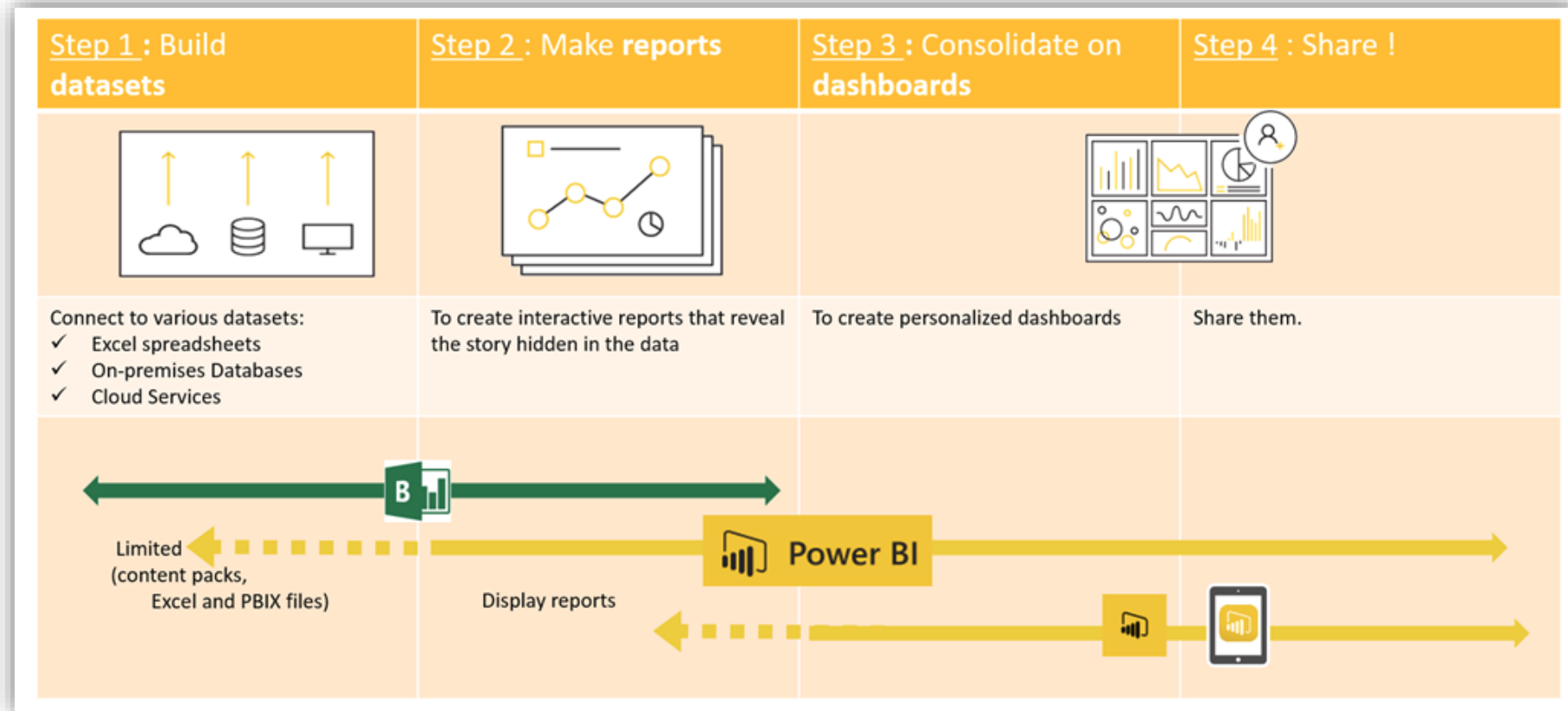Power BI v2 Service & Desktop GA (July 2015)

Power BI Components

- ❑ **Power Query**: Data mash up and transformation tool.

- ❑ **Power Pivot**: In-memory tabular data modelling tool

- ❑ **Power View**: Data visualization tool

- ❑ **Power Map**: 3D Geo-spatial data visualization tool

- ❑ **Power Q&A**: Natural language question and answering engine.

- ❑ **Power BI Desktop**: A powerful companion development tool for Power BI

Power BI Approach

Datasets → Reports → Dashboards

Step 1 : Build datasets	Step 2 : Make reports	Step 3 : Consolidate on dashboards	Step 4 : Share !
Connect to various datasets: ✓ Excel spreadsheets ✓ On-premises Databases ✓ Cloud Services	To create interactive reports that reveal the story hidden in the data	To create personalized dashboards	Share them.

Limited (content packs, Excel and PBIX files)

Display reports

Power BI

Power BI Considerations & Limitations

- **Dataset size limit**

  - 1 GB limit for each dataset in the Power BI service

- **Row limit** *(max number of rows in dataset)*

  - <u>not using Direct Query</u>: 2 billion rows

  - <u>using Direct Query</u>: 1 million rows

- **Column limit** *(max number of columns allowed in a dataset)*

  - 16,000 columns

Power BI Benefits

- ✓ Unlimited access to on-premise and in-cloud data

- ✓ Interactive and stunning visualizations you can share with wide audiences

- ✓ Simplified answers to complex questions

- ✓ Immediate and fruitful collaboration

- ✓ Access to a robust collection of learning materials

- ✓ Reasonable pricing

- ✓ Unlimited connectivity

Power BI Data Sources

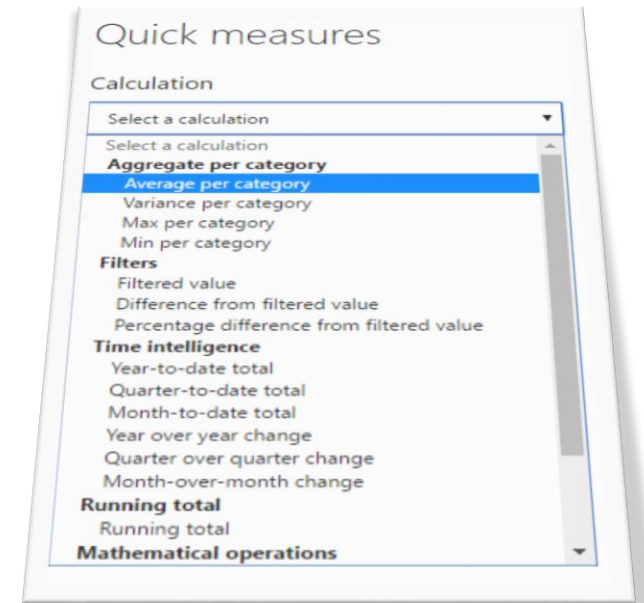|	
Supported On-Premises Data Sources	✓ Access Database ✓ Custom SQL/Native SQL ✓ File(CSV, XML, Text, Excel, Folder) ✓ IBM DB2 Database ✓ MySQL Database ✓ Oracle Database ✓ Sybase Database
Supported On-Line Data Source	✓ AppFigures(Beta) ✓ Azure Blob Store ✓ Azure HD Insight ✓ Azure Marketplace ✓ Azure SQL Database ✓ Azure Table Store
Blank Query *(Query that is not accessing any data source)*	✓ Dynamics CRM Online, ✓ Facebook, ✓ GitHub, ✓ Google Analytics

Power BI Workspace

1. Navigation Bar
2. Dashboard with tiles
3. Q&A question box
4. Widgets
5. Dashboard tile
6. Office 365 app launcher
7. Power BI home
8. Options

DAX (Data Analysis Expressions)

DAX is a functional language, which means the full (`Executed code is contained inside a function`)

DAX Functions	
Aggregation Functions	SUM, AVERAGE, MIN, MAX, SUMX (and other x functions)
Counting Functions	COUNT, COUNTA, COUNTBLANK, COUNTROWS, DISTINCTCOUNT
Logical Functions	AND, OR, NOT, IF, IFERROR
Information Functions	ISBLANK, ISNUMBER, ISTEXT,ISNONTEXT,ISERROR
Text Functions	CONCATENATE, REPLACE, SEARCH, UPPER, FIXED
Date Functions	DATE, HOUR, NOW, EOMONTH,WEEKDAY

Quick measures

Calculation

Select a calculation

Select a calculation
Aggregate per category
  Average per category
  Variance per category
  Max per category
  Min per category
Filters
  Filtered value
  Difference from filtered value
  Percentage difference from filtered value
Time intelligence
  Year-to-date total
  Quarter-to-date total
  Month-to-date total
  Year over year change
  Quarter over quarter change
  Month-over-month change
Running total
  Running total
Mathematical operations

```
Average GEO per ProductName =
AVERAGEX(
    KEEPFILTERS(VALUES('Product'[ProductName]));
    CALCULATE('Sales'[GEO])
)
```

Power BI Desktop Min Requirements

❑ **OS**

    ❑ Windows 7/ Windows Server 2008 R2, or later

    ❑ .NET 4.5

    ❑ Internet Explorer 9 or later , Google Chrome, Mozilla Firefox, Edge

❑ **Memory (RAM)**

    ❑ At least 1 GB available, 1.5 GB or more recommended.

❑ **Display**

    ❑ At least 1440x900 or 1600x900 (16:9) recommended

    ❑ Lower resolutions such as 1024x768 or 1280x800 are not recommended, as certain controls (such as closing the startup screen) display beyond those resolutions.

❑ **CPU**

    ❑ 1 gigahertz (GHz) or faster x86- or x64-bit processor recommended.

Power BI Desktop Gateway

	Personal	On-Premises data
Cloud services it works with	Power BI	Power BI, PowerApps,Azure Logic Apps(Preview), Microsoft Flow
Import data and set up scheduled refresh	✔	✔
Run as an app for users who aren't administrators on the computer	✔	
Run as a single user with your credentials	✔	
Serves multiple users with access control per data source		✔
Support for a live connection to Analysis Services		✔
Monitoring and auditing for gateway and data sources		✔
Publish to Web		Coming soon

On Premises Gateway Requirements

Requirements

Minimum Requirements :

- ❑ .NET 4.5 Framework
- ❑ 64-bit version of Windows 7 / Windows Server 2008 R2 (or later)

Recommended :

- ❑ 8 Core CPU
- ❑ 8 GB Memory
- ❑ 64-bit version of Windows 2012 R2 (or later)

Related Considerations :

- ➢ The gateway cannot be installed on a domain controller
- ➢ You shouldn't' install a gateway on a computer, such a laptop, that may be turned off, asleep,
   or not connected to the internet because the gateway can't run under any of those circumstances.
   In addition, gateway performance might suffer over a wireless network
- ➢ Analysis Services is not required to use the gateway. You can use the gateway to connect to an analysis
- ➢ Services data source.

What can you do with Power BI REST APIs

To do this	Go here
Extend an existing business workflow to push key data into a Power BI dashboard	[Push data into a dashboard](#)
Embed dashboards into a app	[Integrate a dashboard into an app](#)
Embed tiles into a app	[Integrate a tile into an app walkthrough](#)
Embed reports into a app	[Integrate a report into an app walkthrough](#)
Import a Power BI Desktop file	[Import PBIX File](#)
Authenticate a Power BI web app	[Authenticate a Power BI web app](#)
Create a custom visual	[Create custom visuals](#)

Power BI Free Vs Power BI Pro

Feature	Power BI Free	Power BI Pro
Data Capacity	1 GB per user	10 GB per user
Refresh	Daily	Hourly
Streaming Data	10.000 rows per hour	1 million rows per hour
Office 365 Apps Integration	No	Yes

Power BI

Pricing

	POWER BI	POWER BI PRO
Data capacity limit	1 GB/user	10 GB/user
Create, view and share your personal dashboards and reports with other Power BI users	✔	✔
Author content with the Power BI Desktop	✔	✔
Explore data with Natural Language	✔	✔
Access your dashboards on mobile devices using native aps for iOS, Windows and Android	✔	✔
Consume curated content packs for services like Dynamics, Salesforce, and Google Analytics	✔	✔
Import data and reports from Excel, CSV, and Power BI Desktop files	✔	✔
Publish to Web	✔	✔

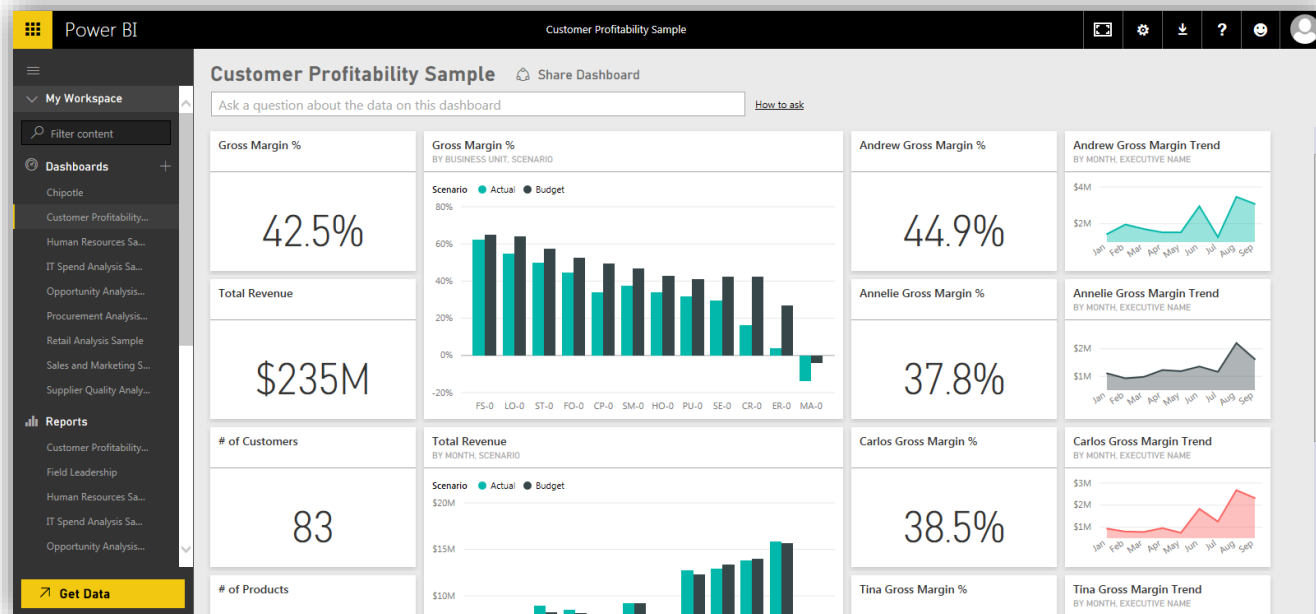| **Data Refresh**		
Consume content that is scheduled to refresh	Daily	Hourly
Consume streaming data in your dashboards and reports	10K rows/hour	1M rows/hour
Consume live data sources with full interactivity		✔
Access on-premises data using the Data Connectivity Gateways (Personal and Data Management)		✔

Collaboration		
Collaborate with your team using Office 365 Groups in Power BI		✔
Create, publish and view organizational content packs		✔
Manage access control and sharing through Active Directory groups		✔
Shared data queries through the Data Catalog		✔

Demo

➢ Power BI Desktop

➢ PowerBI.com

Why Power BI ?

Integration and Sharing	Integrates with O365 Suite
Data Sources and Modelling	Offer a huge number of Data Sources
Custom Visuals	Old Link : Visuals Gallery (Until 30/04/2017) New Link: Office Store
DAX Expressions	Guide : DAX expressions
Cost	11,18 month/user | 134,26 € year/user

Can anybody hear me?

➢ Monthly updates to Power BI Desktop

➢ Post you ideas here https://ideas.powerbi.com/forums/265200-power-bi-ideas

➢ Power BI Support https://powerbi.microsoft.com/en-us/support/

➢ Power BI Community https://community.powerbi.com/

Updates   Ideas   Support   Community

https://www.linkedin.com/in/giorgos-grammatikos-1163758a/

Microsoft