



MICROSOFT POWER BI



- At minimum, a computer with 2-cores and 4GB RAM running Windows 8 / Windows Server 2008 R2, or later
- **Display:** At least 1440x900 or 1600x900 (16:9) recommended.
- **Internet connectivity:** You must have the ability to connect to the Internet outside your organization
- **Microsoft Power BI Desktop installed:** you should have downloaded and installed Power BI Desktop from the Microsoft Store <https://www.microsoft.com/en-us/p/power-bi-desktop/9ntxr16hnw1t> or from the download center <https://go.microsoft.com/fwlink/?LinkId=521662>.
- Microsoft Power BI Desktop requires Internet Explorer 10 or later.
- **Signup for Power BI:** Go to <http://aka.ms/pbidiadtraining> and sign up for Power BI with a business email address. If you cannot sign up for Power BI, let the instructor know.
- If you have an existing account, please go to <https://powerbi.microsoft.com> and **Sign in** using your **Power BI account**

WHAT IS ANALYTICS





amazon

Uber

The world is changing

NETFLIX



1 How much data is generated every minute?

Source: Domo

 **41,666,667**

messages shared
by WhatsApp users

 **1,388,889**

video / voice calls made
by people worldwide

 **404,444**

hours of video streamed
by Netflix users

 **347,222**

stories posted by Instagram users

 **150,000**

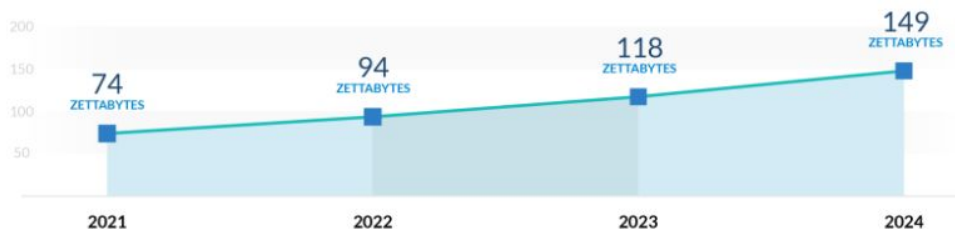
messages shared by Facebook users

 **147,000**

photos shared by Facebook users

2 Estimated Data Consumption from 2021 to 2024

Source: IDC / Statista



3 Data Growth in 2021

Sources: TechJury, Internet Live Stats, Cisco, PurpleSec

 **2 TRILLION**

searches on Google by the end of 2021

 **1.134 TRILLION MB**

volume of data created every day

 **3,026,626**

emails sent every second, 67% of which are spam

 **278,108 PETABYTES**

global IP data per month by the end of 2021

 **230,000**

new malware versions created every day

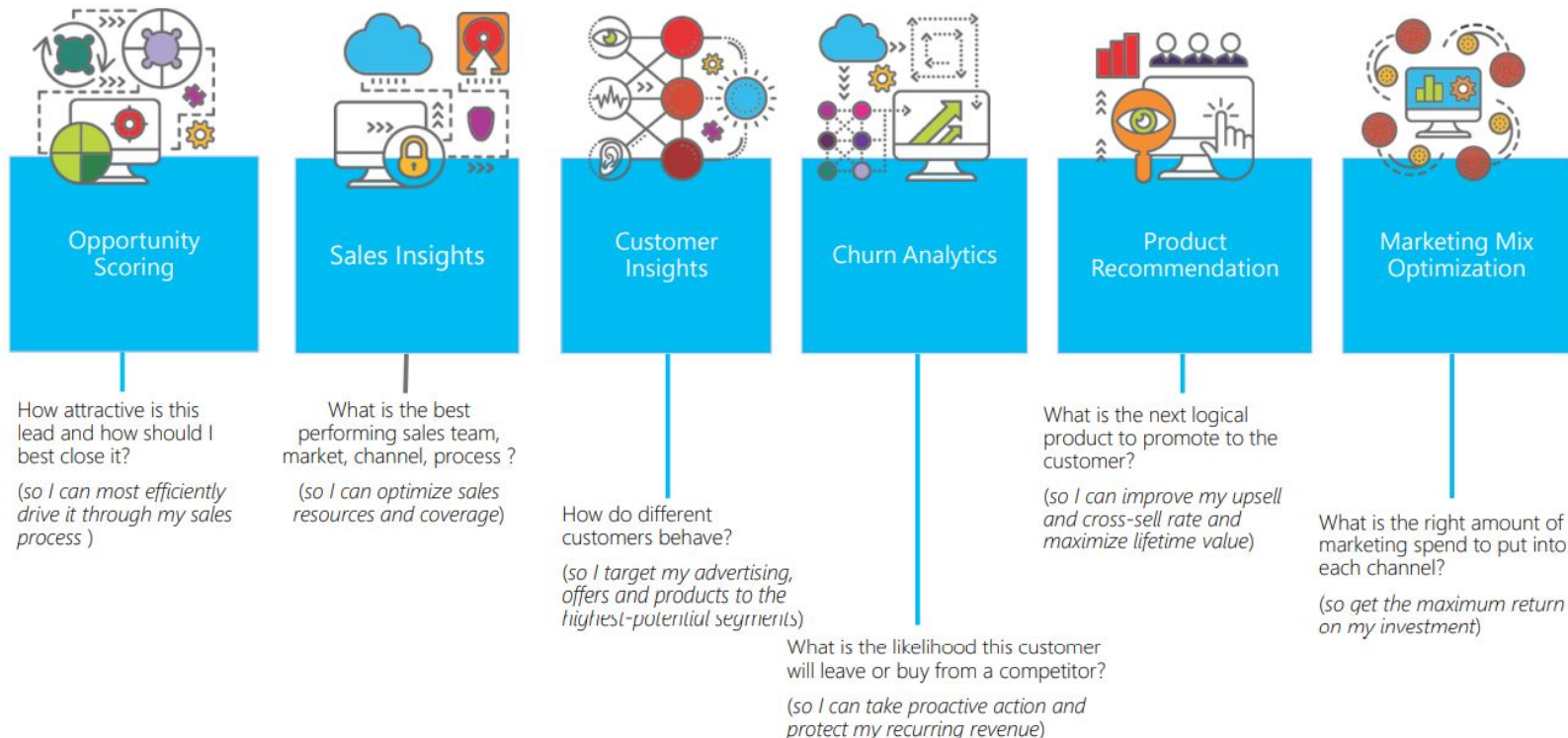
 **82%**

share of video in total global internet
traffic at the end of 2021



Applications that transform Sales

- High-yield use cases:



Applications that transform Finance

High-yield use cases:



Forecasting

What are the range of outcomes I can expect?
(so I can most efficiently plan and allocate resources)



Fraud

Which transactions are suspicious?
(so I can efficiently monitor and prevent it)



Risk

How risky is this customer or project ?
(so I can prepare for and mitigate adverse events)

Auditing

Current State

We are overwhelmed by the amount of data our organization must manage, process, and analyze.

We do not have the IT capabilities to integrate, store and process the data coming from many sources.

Desired Future State

We can manage and process unlimited amounts of data, providing the insight we need to align our strategy and execution.

We can easily integrate data from different sources cutting across sales, finance, payroll, healthcare charge, supply chain, marketing and operations...

Our focus has shifted from controlling data to being the steward of data and insights.

Auditor



We are also looking to...

- Generate strategic analyses, enterprise risk assessments and business insights
- Develop internal audit plans and suggest quality improvements
- Create predictions and warnings for C levels and stakeholders

Accounting

Prescriptive Analytics: What should I do?

- *What-if scenarios*
- *Recommendations, Optimizations*

- *Machine Learning/ Deep Learning*
- *Rules*
- *Optimization*
- *Simulation*

Predictive Analytics: What will happen?

- *Predictive modelling for customers preferences and desires*
- *Real-time business and customer analytics, predictive models*
- *Sales Forecast, Financial Forecast, Project Appraisals, Trend Analysis, Budget Prediction*

- *Machine Learning/ Deep Learning*
- *Data Modelling*
- *Forecasting*
- *Big Data*

Diagnostic Analytics: Why did it happen?

- *Data Analytics & Data Mining*
- *Deep-dive to detail level of analytics*
- *Anomaly / Fraud Detection*
- *Patterns and Problems in large data sets*

- *Statistics*
- *Data Mining*
- *Machine Learning*
- *Scoring*

Descriptive Analytics: What has happened?

- *Summarizing and interpreting raw data*
- *Sales Performance, Inventory Stock, Cost Per Customer...*
- *General Ledger, Account Payables, Account Receivables, Fixed Assets, Budgetary Control...*
- *MTD, YTD, Growth %, Target Achievement, Run Rate, YTG, % vs Forecast...*

- *OLAP*
- *BI*
- *Visualization*
- *Dashboard*
- *ETL*

Value

Time

MUCH MORE THAN DASHBOARDS

SUMMARY OF TOOLS

DASHBOARDS & REPORTING

“Visible”

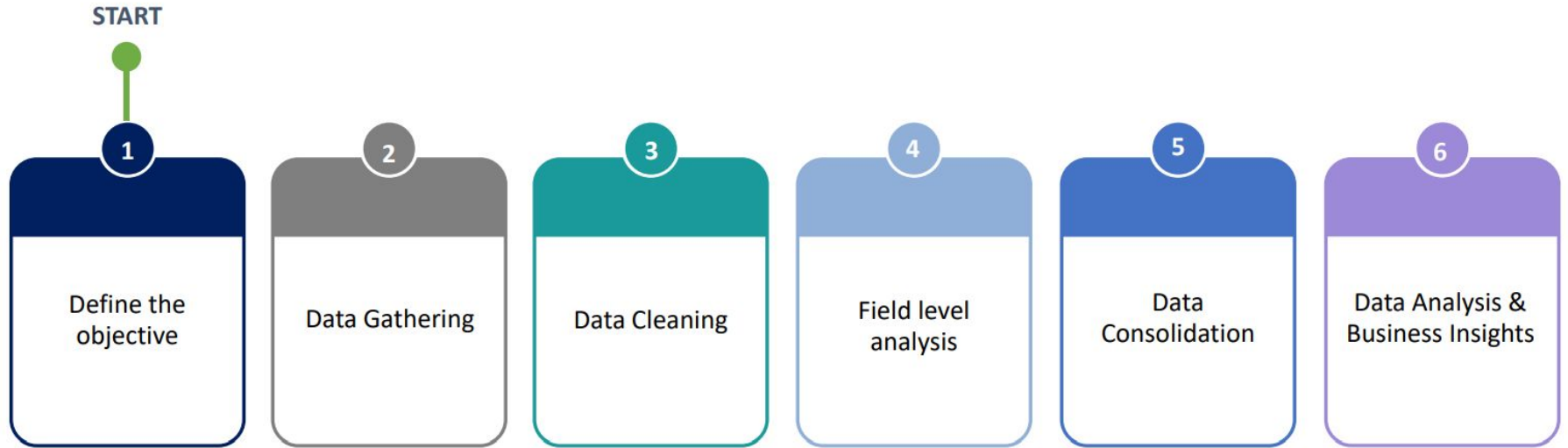


PLUMBING

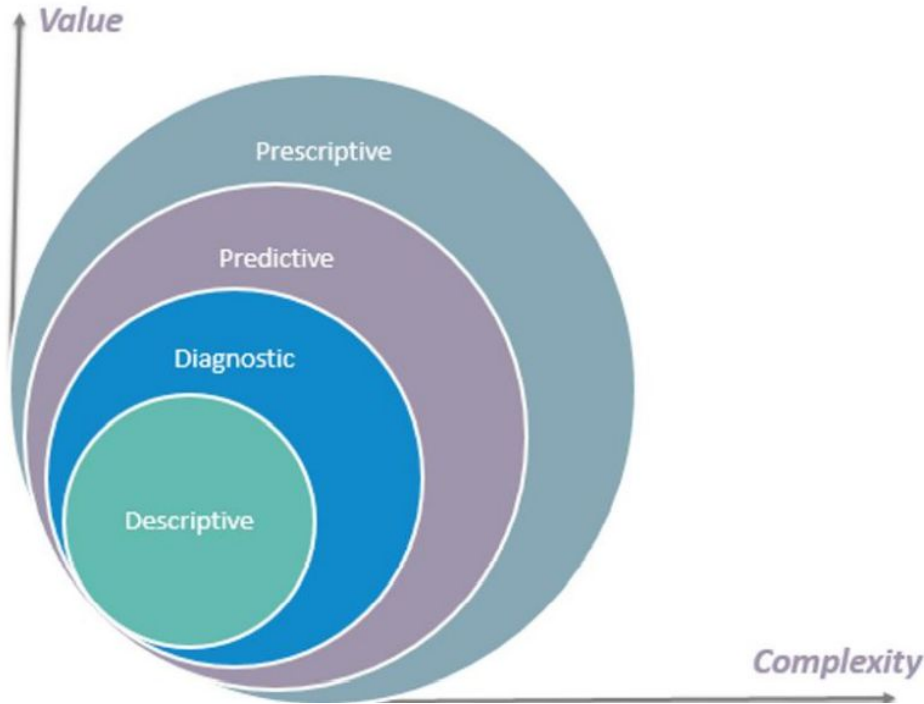
Under the surface
Significant time, resources and
expertise requires

Data Warehouse/ Data Lake Design
Data Mapping & Transformation from
Multiple Applications
Analytic Models, KPIs, Metrics
Much More...

Data Analytics Process



What is Analytics ?



Descriptive: What's happening in my business?

- Comprehensive, accurate and live data
- Effective visualisation

Diagnostic: Why is it happening?

- Ability to drill down to the root-cause
- Ability to isolate all confounding information

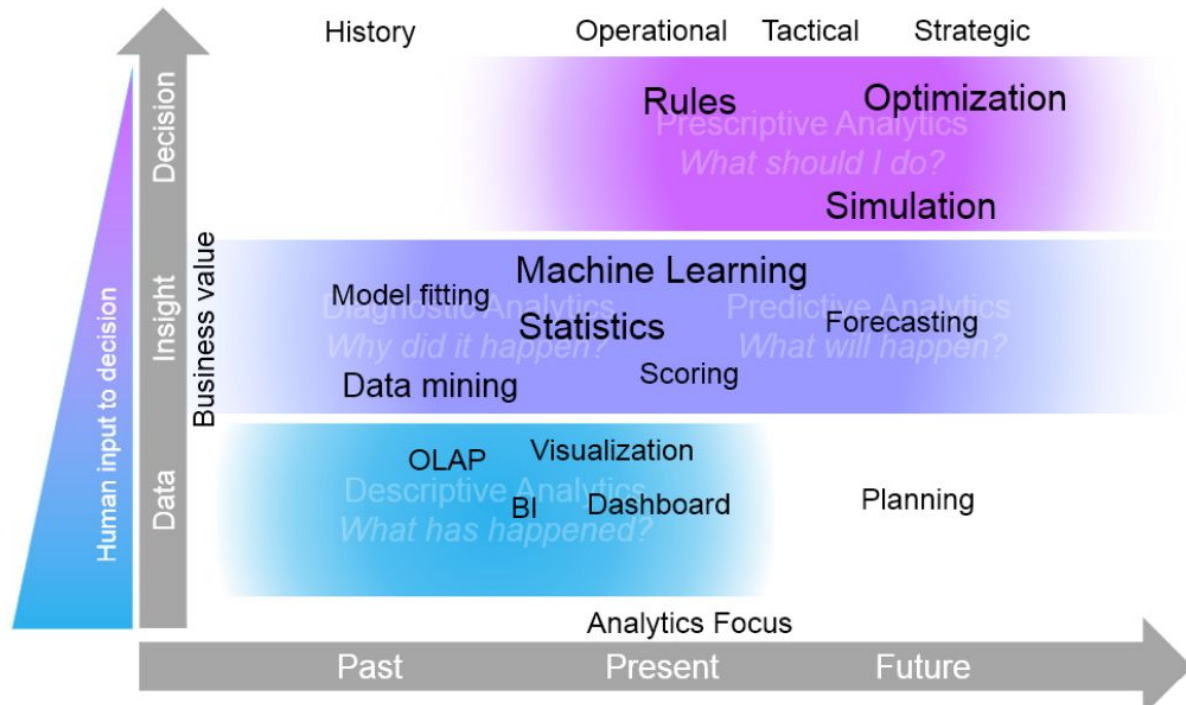
Predictive: What's likely to happen?

- Business strategies have remained fairly consistent over time
- Historical patterns being used to predict specific outcomes using algorithms
- Decisions are automated using algorithms and technology

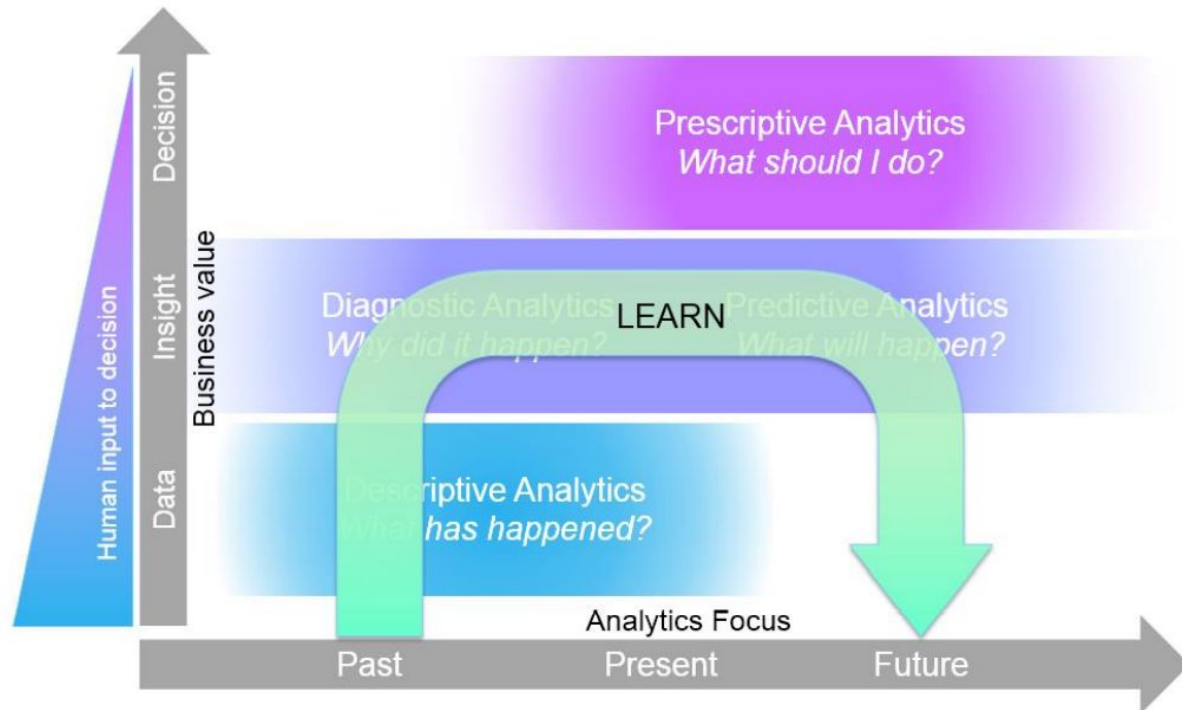
Prescriptive: What do I need to do?

- Recommended actions and strategies based on champion/challenger testing strategy outcomes
- Applying advanced analytical techniques to make specific recommendations

What is Data Analytics ?

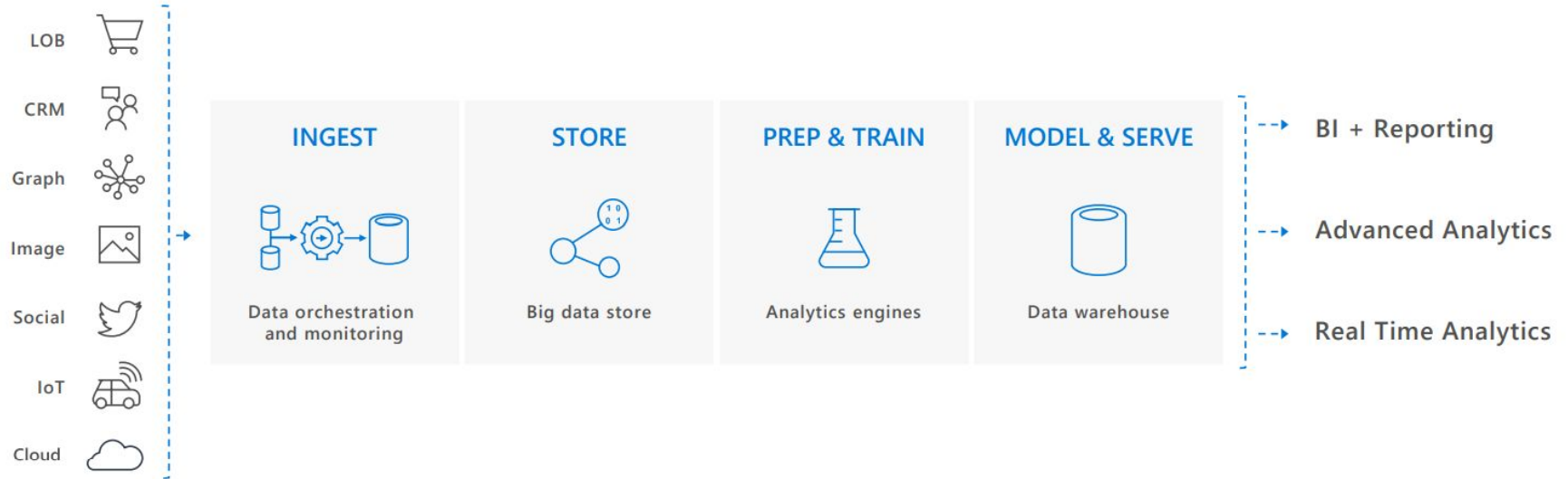


What is Data Analytics ?



Source: <http://ibm.co/1gJyfI3>

ANALYTICS SCENARIOS



DAILY SELL OUT

SELL OUT

21,442K

SELL OUT YTD

18,379K

GROWTH % vs LM

-54.60%

GROWTH % vs LY

-38.47%

TARGET ACHIEVEMENT

60.05%

ASO

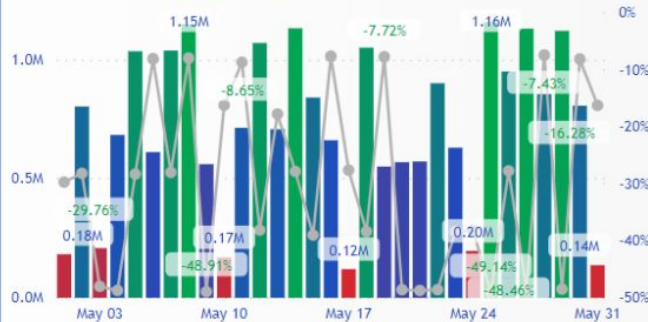
674K

DATE

- ☐ 2019
☒ 2020
☐ Jan
☐ Feb
☐ Mar
☐ Apr
☒ May
☐ Jun
☐ Jul
☐ Aug
☐ Sep
☐ Oct
☐ Nov
☐ Dec

SELLOUT TRENDING

● Sell Out Qty ● Sell Out Qty Growth % vs LY



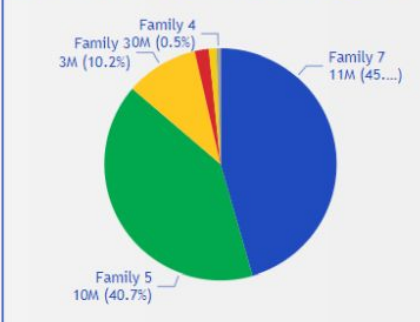
SELLOUT BY CHANNEL

● Sell Out Qty ● Sell Out Qty Growth % vs LY



SELLOUT BY PRODUCT

● Family 7 ● Family 5 ● Family 3 ● Family 1 ● Family 6



PROVINCE

All

DISTRIBUTOR

All

PRODUCT FAMILY

All

Province	Sell Out Qty	ADS	ASO	ASO Growth % vs LY	Target	vs Target	Remaining vs Target	Remaining Avg/Day	YTD	Growth % vs LM	Growth % vs LY	Sell Out / Sell In
Hồ Chí Minh	4,466,153	259,325.01	61,628	114%	8,910,042.74	70.17%	3,550,659.14	1,775,329.57	5,359,384	-36.53%	-38.46%	77.94%
Phú Yên	3,582,723	115,571.69	74,496	92%	5,102,232.99	50.16%	2,031,327.99	247,937.75	4,094,540	-36.65%	-7.57%	74.69%
Quảng Trị	3,582,679	77,046.85	37,920	114%	3,985,436.31	49.94%	1,995,059.31	599,454.25	1,990,377	-27.16%	-48.72%	85.64%
Hà Nội	1,661,643	64,321.65	101,558	105%	3,315,523.12	90.21%	1,653,880.62	328,447.56	1,993,971	-18.71%	-7.63%	54.32%
Bình Dương	1,020,451	27,431.48	31,115	92%	1,709,586.28	69.64%	178,909.48	429,605.14	1,020,451	-26.88%	-48.83%	49.40%
Yên Bái	987,665	50,976.26	54,327	114%	1,978,487.60	59.90%	200,690.60	297,878.30	1,580,264	-53.90%	-48.54%	140.74%
Đà Nẵng	953,736	39,555.87	25,470	114%	1,366,488.80	49.85%	685,248.80	342,624.40	953,736	-18.84%	-39.03%	72.09%
Huế	816,267	26,331.18	34,650	91%	915,450.45	49.54%	189,880.05	185,636.33	544,178	-17.97%	-8.79%	76.63%
Long An	590,303	11,901.27	44,496	98%	736,527.29	60.11%	293,799.89	73,112.05	516,515	-37.00%	-7.80%	92.58%
Hải Phòng	572,847	24,638.58	34,900	117%	949,819.75	60.31%	90,549.25	236,223.63	477,373	-26.27%	-17.78%	64.01%
Cà Mau	430,997	13,903.11	24,205	113%	482,517.85	49.62%	51,521.35	121,537.67	239,443	-53.80%	-38.47%	97.40%
An Giang	396,232	17,894.33	51,430	117%	789,989.64	70.22%	235,265.54	78,009.67	633,970	-20.11%	-17.54%	83.38%
Total	24,505,688	889,319.32	745,625	105%	30,607,868.91	50.04%	15,291,813.91	4,582,695.96	27,568,899	-36.45%	-48.73%	90.40%



CROSS SELLING DEEP DIVE

23/05/2016

6/06/2018

Product Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Product 1		22%	21%	19%	21%	14%	7%	6%	5%	10%	7%	8%	25%	27%
Product 2	21%		17%	21%	22%	15%	6%	9%	6%	8%	7%	9%	25%	25%
Product 3	23%	20%		22%	23%	14%	7%	8%	6%	6%	8%	8%	26%	27%
Product 4	20%	23%	21%			14%	7%	8%	7%	8%	7%	9%	26%	26%
Product 5	20%	22%	20%	20%		18%	8%	8%	6%	7%	10%	7%	25%	26%
Product 6	19%	21%	17%	18%	26%		7%	9%	6%	7%	8%	10%	24%	28%
Product 7	20%	17%	18%	18%	26%	14%		11%	5%	7%	6%	7%	29%	26%
Product 8	18%	25%	21%	21%	24%	19%	11%		5%	8%	4%	8%	24%	27%
Product 9	20%	24%	22%	23%	24%	16%	6%	7%		9%	9%	9%	36%	16%
Product 10	27%	23%	16%	21%	19%	14%	7%	8%	7%		4%	9%	26%	25%
Product 11	19%	22%	21%	18%	30%	17%	6%	4%	7%	4%		9%	26%	25%
Product 12	20%	22%	17%	22%	18%	18%	6%	7%	6%	8%	8%		24%	30%
Product 13	20%	21%	19%	20%	22%	14%	8%	7%	8%	7%	8%	8%		27%
Product 14	21%	21%	19%	19%	22%	16%	7%	8%	3%	7%	7%	9%	27%	
Product 15	20%	20%	19%	17%	23%	15%	6%	7%	6%	8%	7%	9%	26%	26%
Product 16	23%	24%	20%	19%	21%	17%	5%	6%	7%	9%	9%	8%	26%	27%
Product 17	20%	24%	21%	20%	21%	16%	9%	8%	6%	6%	7%	7%	25%	28%
Product 18	22%	24%	22%	21%	26%	16%	6%	7%	8%	7%	8%	8%	26%	29%
Product 19	19%	25%	20%	20%	21%	17%	9%	7%	6%	7%	7%	7%	28%	27%

Product Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Product 1		164	159	141	160	105	52	48	40	74	53	60	189	201	183	120
Product 2	164		136	166	172	117	45	68	48	61	59	68	197	203	184	121
Product 3	159	136		151	157	94	48	56	45	42	56	53	182	187	170	103
Product 4	141	166	151		159	101	47	57	47	57	48	66	185	185	155	99
Product 5	160	172	157	159		143	67	65	49	52	83	56	202	211	204	110
Product 6	105	117	94	101	143		37	51	33	37	46	54	135	158	135	85
Product 7	52	45	48	47	67	37		29	12	18	16	17	76	67	58	28
Product 8	48	68	56	57	65	51	29		14	22	12	22	64	73	62	32
Product 9	40	48	45	47	49	33	12	14		18	18	19	74	33	51	35
Product 10	74	61	42	57	52	37	18	22	18		12	23	70	67	71	44
Product 11	53	59	56	48	83	46	16	12	18	12		24	72	69	67	46
Product 12	60	68	53	66	56	54	17	22	19	23	24		74	91	79	42
Product 13	189	197	182	185	202	135	76	64	74	70	72	74		256	239	132
Product 14	201	203	187	185	211	158	67	73	33	67	69	91	256		234	136
Product 15	183	184	170	155	204	135	58	62	51	71	67	79	239	234		154
Product 16	120	121	103	99	110	85	28	32	35	44	46	42	132	136	154	
Product 17	101	125	106	104	109	85	44	42	30	30	37	34	128	143	133	66
Product 18	116	129	118	110	135	86	31	39	41	39	41	44	135	151	119	71
Product 19	90	117	96	96	101	79	43	33	28	33	33	35	131	125	116	75

Customer Names	Total Sales	Total Product Purchases
Timothy Barnes	\$390,811.00	10
Russell Grant	\$365,860.20	8
Gerald Porter	\$350,778.50	11
Frank Larson	\$341,331.50	9
Johnny Willis	\$321,807.70	8
Martin Montgomery	\$321,265.00	10
Raymond Cruz	\$297,272.30	9
Roger Morrison	\$296,743.00	11
Justin Cook	\$291,959.20	7
Walter Gonzalez	\$285,788.50	9
Total	\$346,326,691.70	30

TOTAL SALES BY PRODUCT

Product 26	\$33M
Product 25	\$31M
Product 14	\$22M
Product 13	\$21M
Product 5	\$19M
Product 15	\$19M
Product 4	\$16M

TOTAL POTENTIAL CROSS SELL (>20%)

Product 18	10
Product 8	9
Product 9	9
Product 16	9
Product 17	9
Product 19	9
Product 22	9
Product 23	9

Expense Management

Department

All

Region

All

Country

All

Expense Variance to budget (\$) by categ...



Actual (\$)	VTB (\$)	VTB (%)
\$199.5M	\$858K	-1.5%

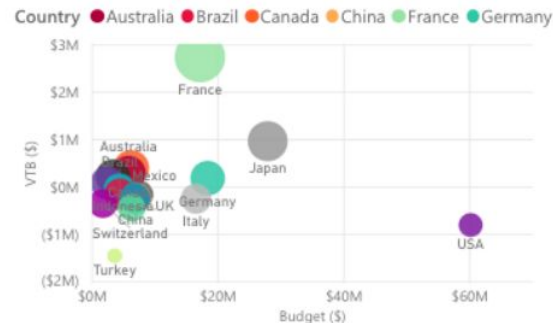
Expense Variance to budget (\$) by channel



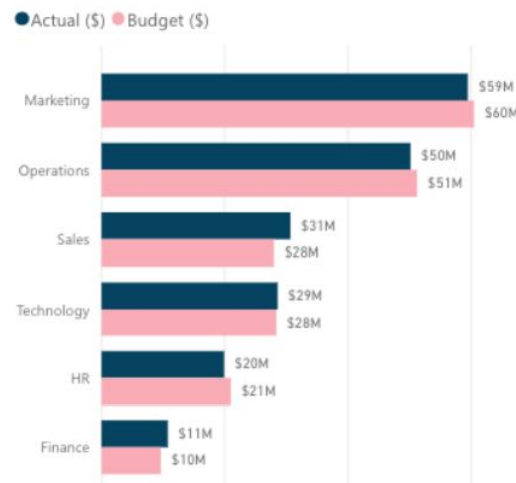
Expenses by country

Country	Actual (\$)	Budget (\$)	YoY (\$)	VTB (\$)	Average of V
USA	\$59,312,555	\$60,116,557	\$3,763,526.1	(\$804,001....	-0.1
Japan	\$28,853,365	\$27,882,355	\$1,005,189.7	\$971,009.97	-2.1
France	\$19,861,429	\$17,114,641	\$3,709,170.1	\$2,746,788...	2.1
Germany	\$18,539,070	\$18,346,053	\$4,490,723.8	\$193,017.14	3.1
Italy	\$16,257,004	\$16,501,948	\$2,177,082.9	(\$244,944....	-8.1
Korea	\$7,077,088	\$7,237,068	\$1,954,752.9	(\$159,980....	-6.1
China	\$6,667,457	\$6,896,030	\$3,415,836.3	(\$228,572....	-2.1
Canada	\$6,600,430	\$6,192,896	\$2,626,420.0	\$407,533.73	-2.1
India	\$6,524,969	\$6,757,166	\$3,699,399.6	(\$232,196....	2.1
Australia	\$6,050,180	\$5,749,313	\$4,490,197.5	\$300,867.07	5.1
UK	\$5,835,903	\$6,268,326	\$2,353,720.7	(\$432,423....	2.1
Spain	\$4,282,540	\$4,325,230	\$1,917,568.4	(\$42,690.14)	-6.1
Brazil	\$4,236,666	\$4,371,828	\$4,031,019.9	(\$135,162....	-0.1
Mexico	\$3,504,258	\$3,279,243	\$2,788,697.2	\$225,015.79	-0.1
Indonesia	\$2,446,189	\$2,351,443	\$2,068,810.5	\$94,745.68	-3.1
Total	\$199,510,...	\$198,651,6...	\$48,836.7...	\$858,471.53	-1.1

Expense Variance to budget (\$) by country



Actual (\$) and Budget (\$) by department



POWER BI

INTRODUCTION



What is Power BI?

Power BI is a collection of software services, apps, and connectors that work together to turn your unrelated sources of data into coherent, visually immersive, and interactive insights. Your data may be an Excel spreadsheet, or a collection of cloud-based and on-premises hybrid data warehouses. Power BI lets you easily connect to your data sources, visualize and discover what's important, and share that with anyone or everyone you want.

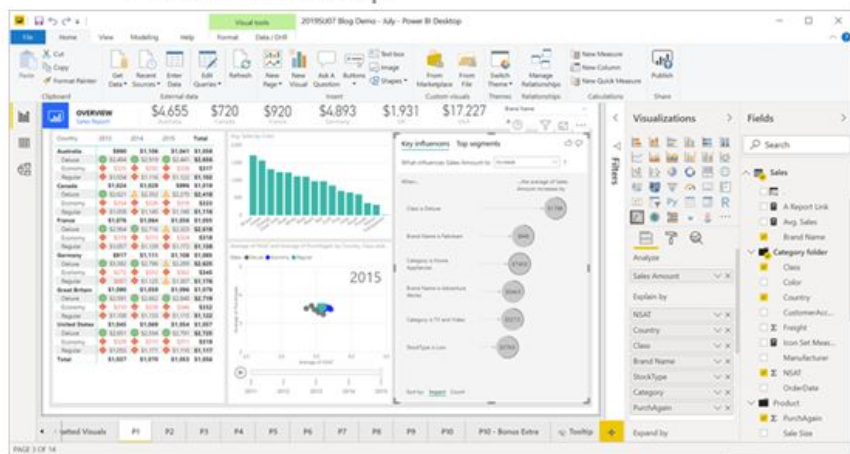


The parts of Power BI

Power BI consists of several elements that all work together, starting with these three basics:

- A Windows desktop application called Power BI Desktop.
- An online SaaS (*Software as a Service*) service called the Power BI service.
- Power BI mobile apps for Windows, iOS, and Android devices.

Power BI Desktop




Power BI service



Power BI Mobile





For example, you might primarily use the Power BI service to view reports and dashboards. Your number-crunching, business-report-creating coworker might make extensive use of Power BI Desktop or Power BI Report Builder to create reports, then publish those reports to the Power BI service, where you view them. Another coworker, in sales, might mainly use the Power BI phone app to monitor progress on sales quotas, and to drill into new sales lead details.



The flow of work in Power BI

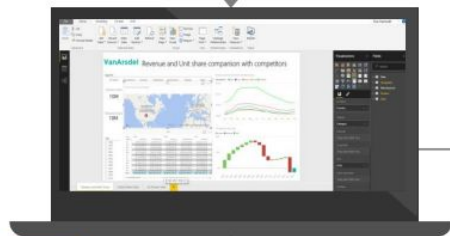
One common workflow in Power BI begins by connecting to data sources in Power BI Desktop and building a report. You then publish that report from Power BI Desktop to the Power BI service, and share it so business users in the Power BI service and on mobile devices can view and interact with the report.



Cloud data sources
Azure Analysis Services,
SQL Azure, etc.



Scheduled refresh/Live
connection/DirectQuery



PBI Desktop



On-prem data sources
Analysis Services, SQL Server, etc.



Group
OneDrive



On-Premises Gateway



Consumption by end users

Dashboards

Reports

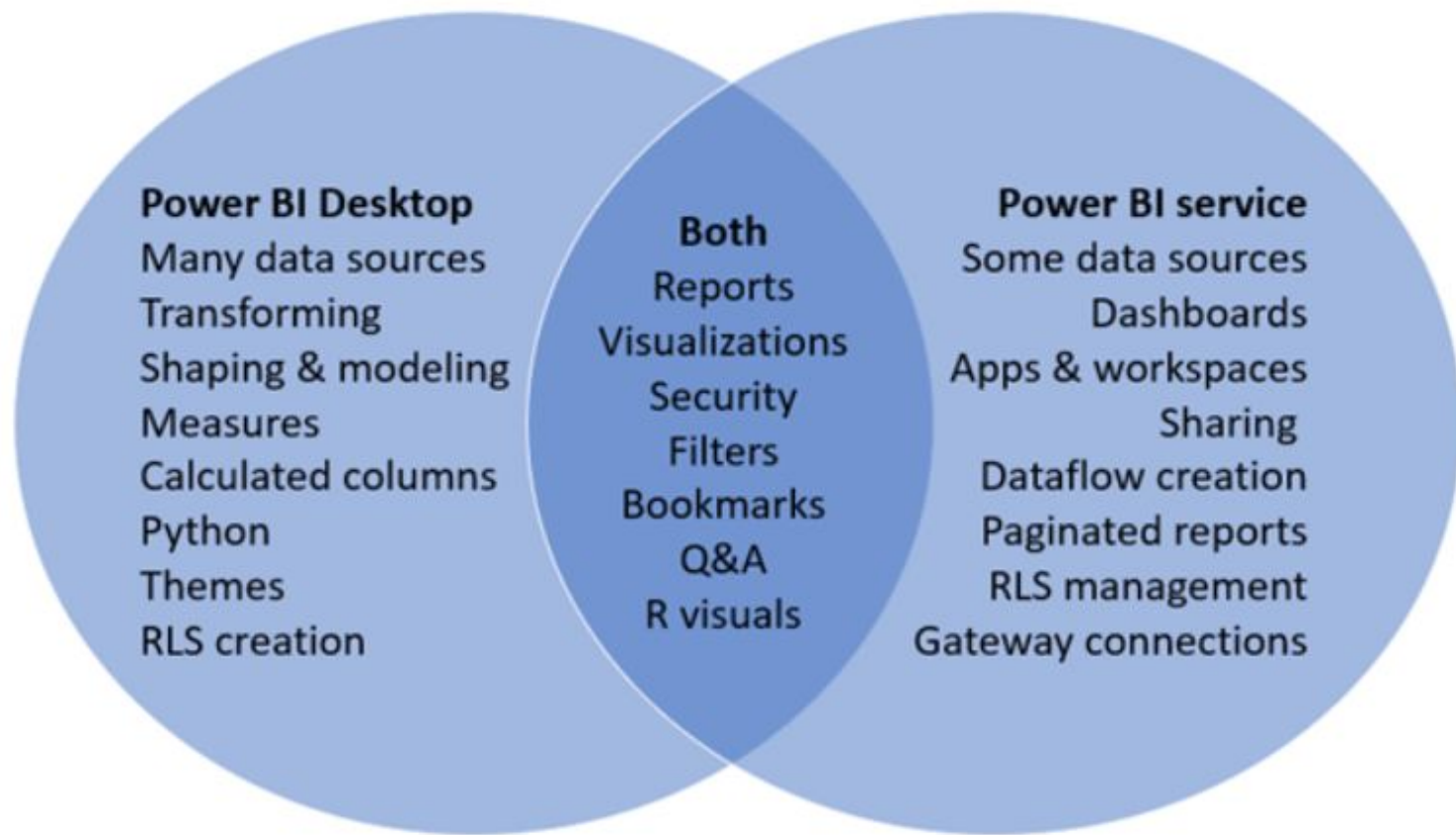


PBI Service

Analysis Services
(Hosted by Power BI)



Scheduled refresh/
Live connection/
DirectQuery



Data sources



SaaS solutions

e.g. Marketo, Salesforce, GitHub, Google Analytics



Organizational

**Corporate data sources
or external data services**



On-premises Data



Azure services

Azure SQL, Stream Analytics...



Excel files



Power BI Desktop files

**Data from files,
databases, Azure, and
other sources**

Connect to 115+ data sources, both on-premises and cloud

Data from Applications

- o SaaS services that you already use

Data from your organization

- Content published by others in your org (Datasets and Dataflows)

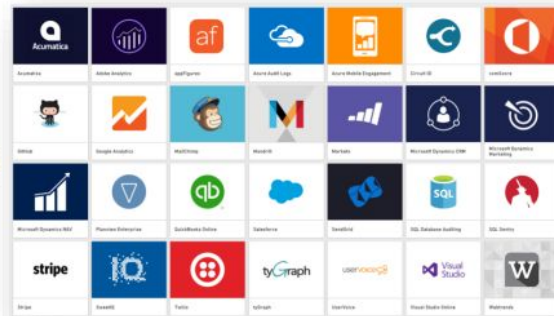
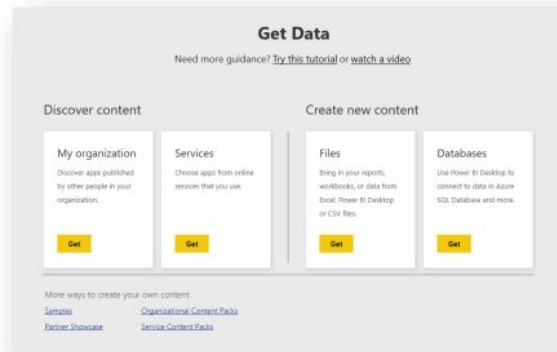
Big data and more

- Azure data services, e.g. SQL DW, ADLS.
- On-premises data sources, e.g. Oracle & SSAS

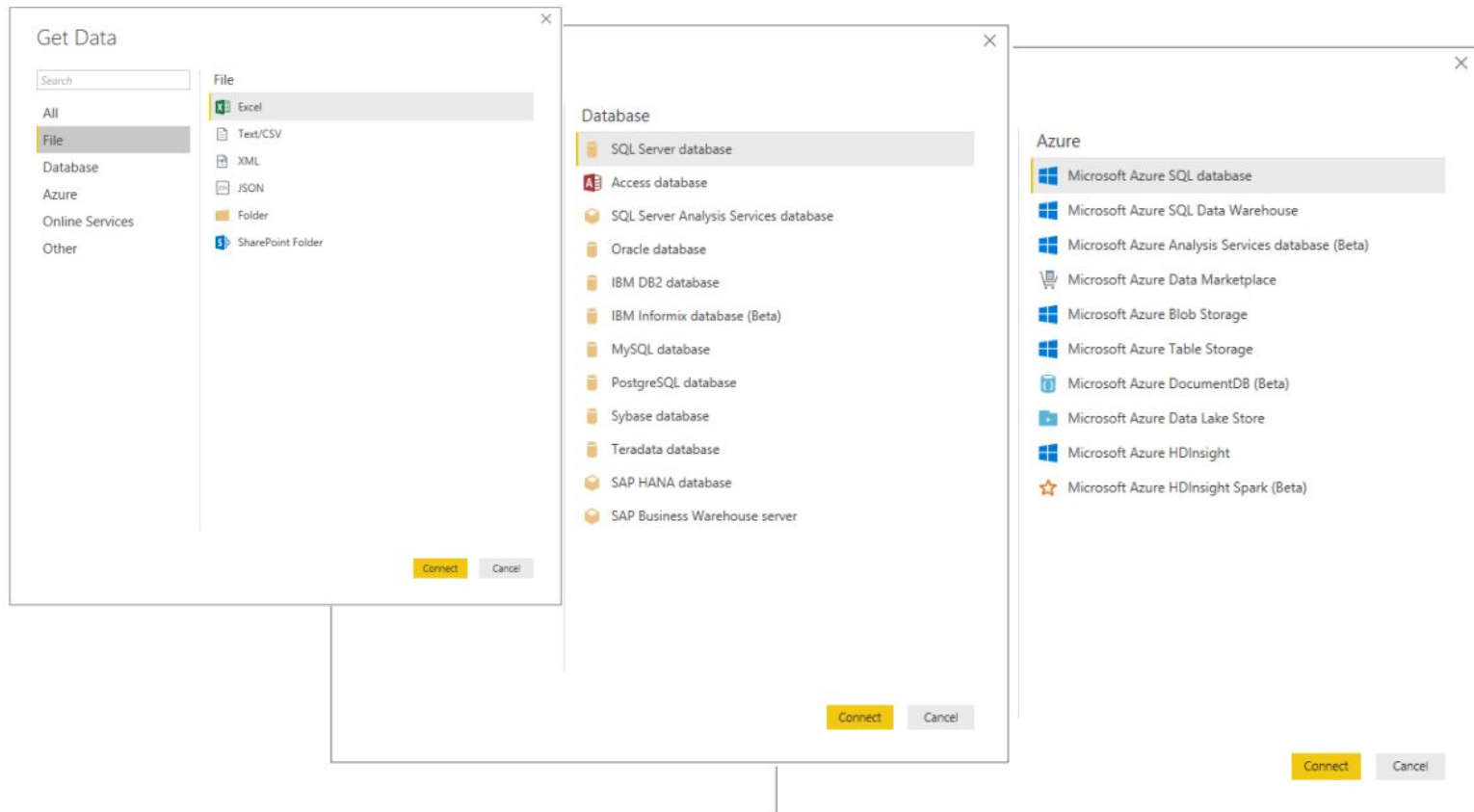
Data from files

- Import data from Text, CSV, Excel and Power BI Desktop files

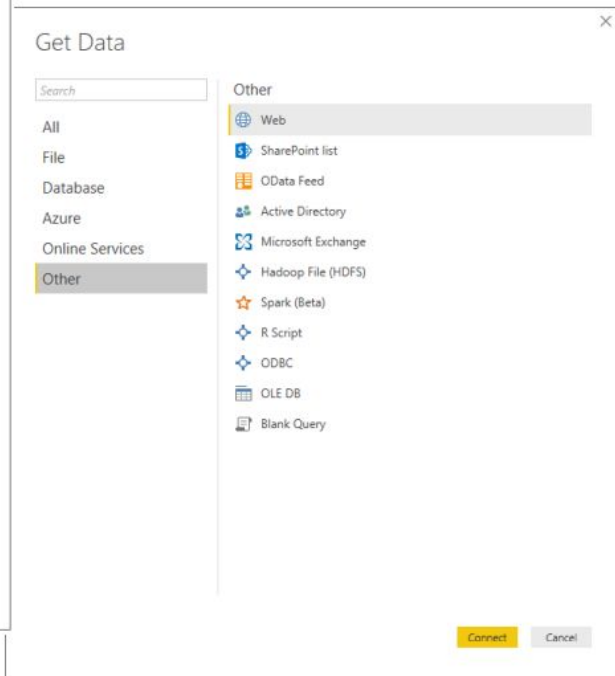
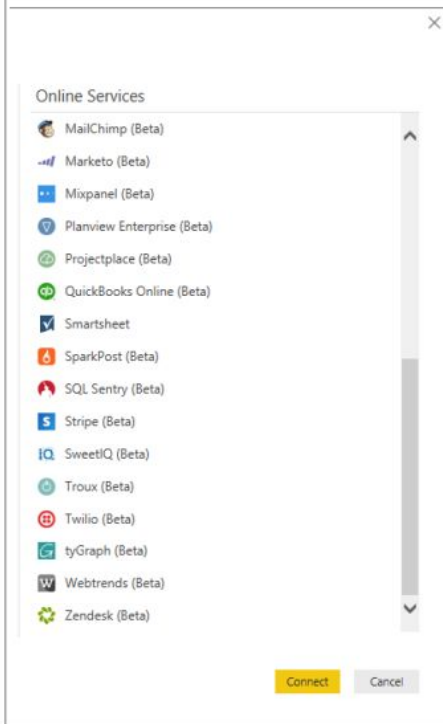
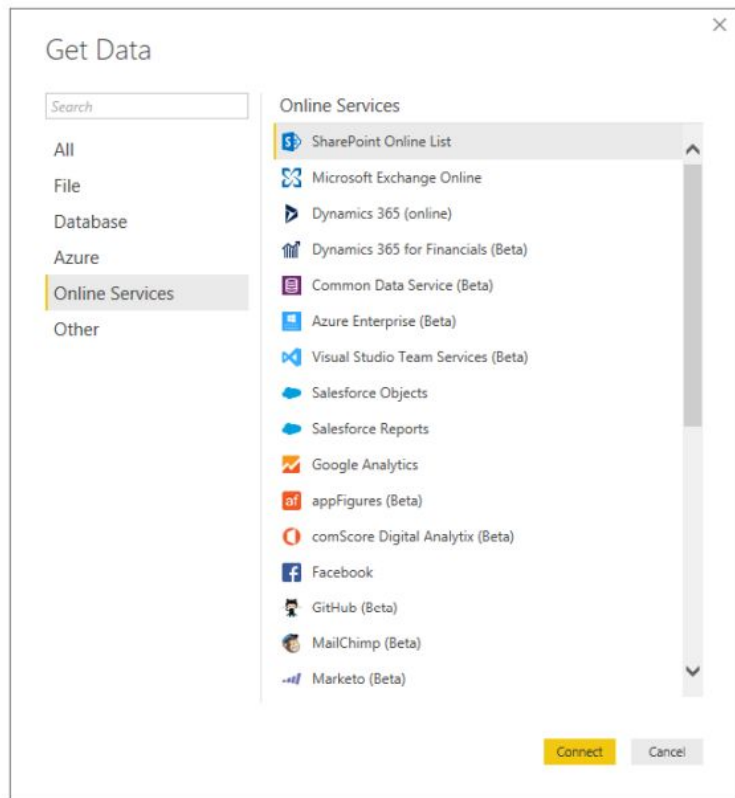
Access all your **DATA**



Power BI—connect to wide variety of sources



Power BI—connect to wide variety of sources



Clean and mash-up your **DATA**

Prepare



Explore



Visualize



Share & collaborate



Consolidate data from a broad range of sources

- Merge or append queries to combine data from multiple queries into a single query

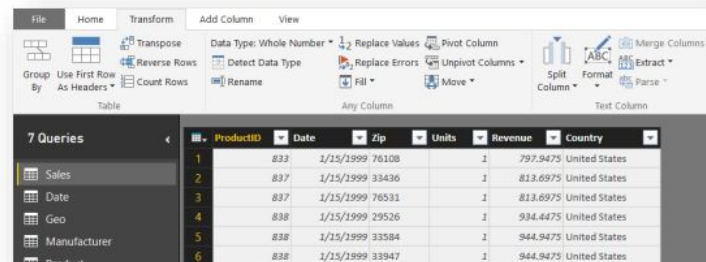
Transform data to fit your needs using intuitive UI

- Select data for inclusion
- Cleanse data and remove errors

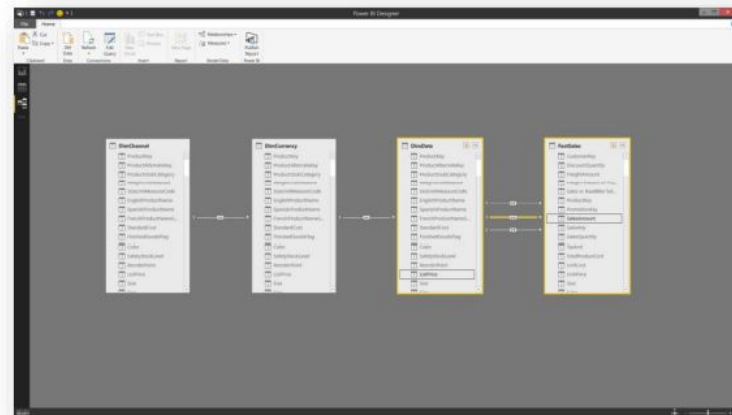
Define calculations to generate new fields for use in reports

Develop advanced analytics using a combination of measures and relationships

- Uncover correlations, highlight exceptions and understand business outcomes



	ProductID	Date	Zip	Units	Revenue	Country
1	833	1/15/1999	76108	1	797.9475	United States
2	837	1/15/1999	33436	1	813.6975	United States
3	837	1/15/1999	76531	1	813.6975	United States
4	838	1/15/1999	29526	1	934.4475	United States
5	838	1/15/1999	33584	1	944.9475	United States
6	838	1/15/1999	33947	1	944.9475	United States



Prepare



Explore



Visualize



Share & collaborate



Visualize data in a variety of ways

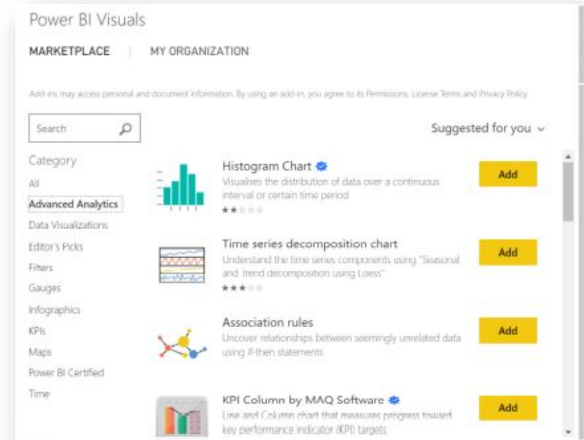
Growing number of visualization types

- Donuts, basic area, waterfall, filled maps, tree maps, funnel, gauges combo charts and more
- Custom visuals available from Power BI Visuals Marketplace
- Tools to develop, test, package new custom visuals

Visualizations on report page are connected – select value in one visualization to change other visualizations

Full screen pop out mode for report visuals to show additional details

Visualize your DATA



Bring your story to life with **DATA**

Save Power BI Desktop report files and easily publish them to powerbi.com

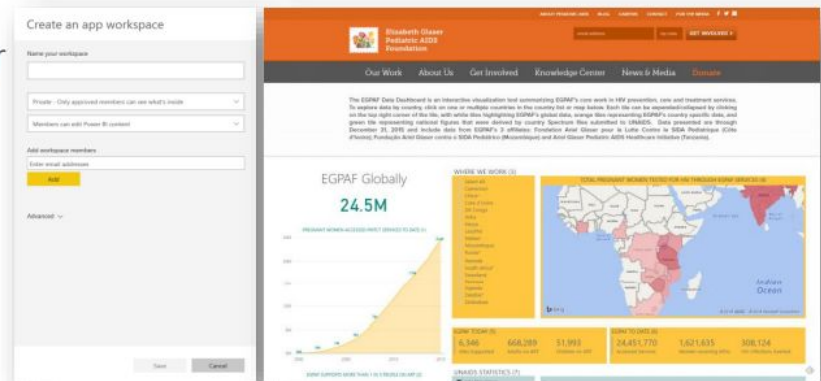
Access dashboards using native mobile apps for Windows, iOS and Android

Share as appropriate with other Power BI users in your organization

Package your reports in apps for easy consumption and control

Easily embed interactive Power BI visualizations in blog posts, websites, through emails or social media

Publish to web





February 2020

A Magic Quadrant Leader in Analytics & BI Platforms*



*Gartner "Magic Quadrant for Analytics and Business Intelligence Platforms," by James Richardson, Rita Sallam, Kurt Schlegel, Austin Kronz, Julian Sun 11 February 2020

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