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 downloac 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

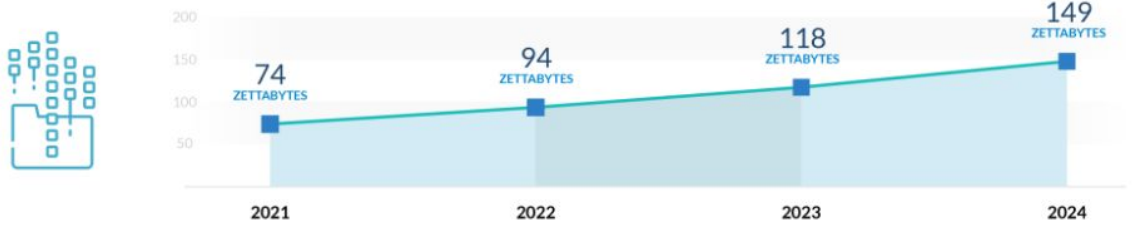
347,222
stories posted by Instagram users

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:

Opportunity Scoring

How attractive is this lead and how should I best close it?

(*so I can most efficiently drive it through my sales process*)

Sales Insights

What is the best performing sales team, market, channel, process ?

(*so I can optimize sales resources and coverage*)

Customer Insights

How do different customers behave?

(*so I target my advertising, offers and products to the highest-potential segments*)

Churn Analytics

What is the likelihood this customer will leave or buy from a competitor?

(*so I can take proactive action and protect my recurring revenue*)

Product Recommendation

What is the next logical product to promote to the customer?

(*so I can improve my upsell and cross-sell rate and maximize lifetime value*)

Marketing Mix Optimization

What is the right amount of marketing spend to put into each channel?

(*so get the maximum return on my investment*)

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…

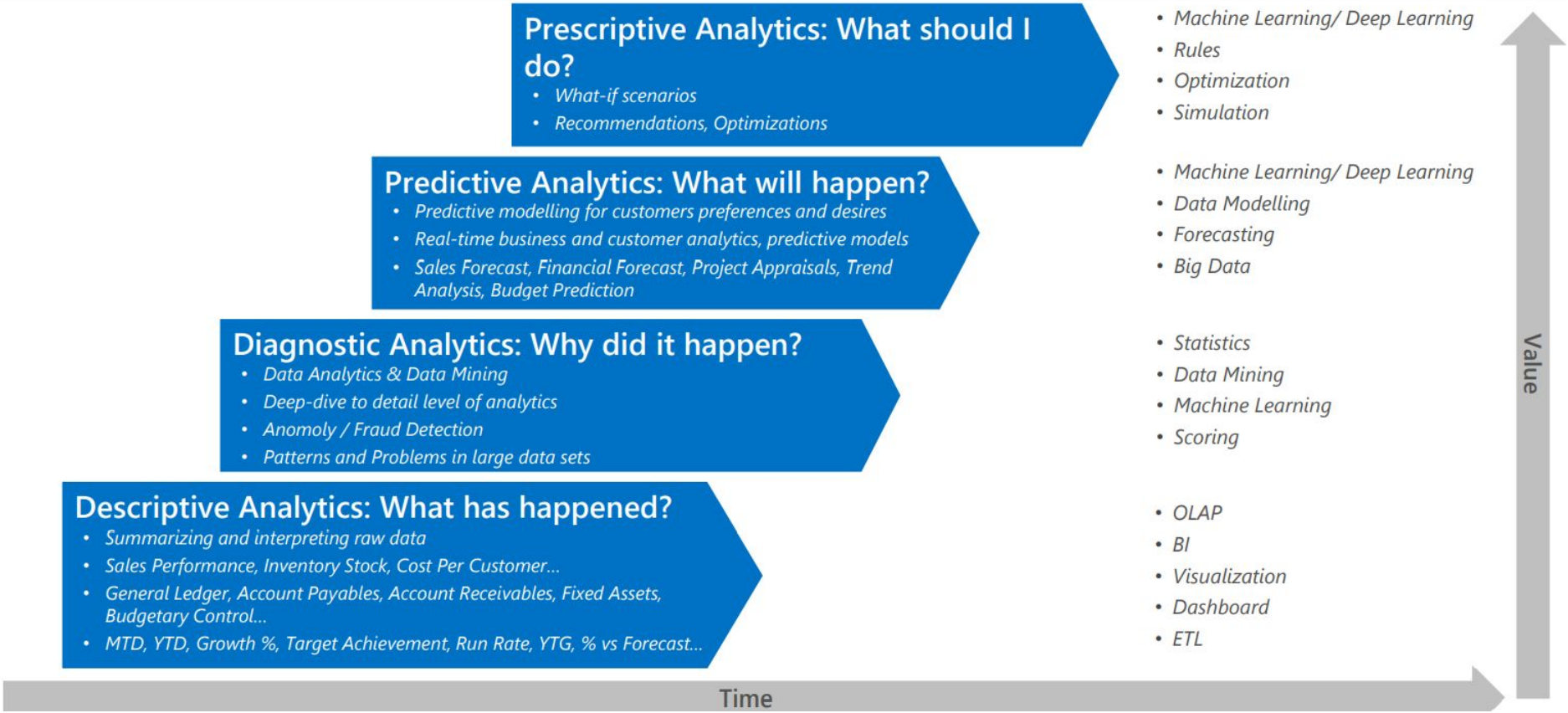
Our focus has shifted from controlling data to being the steward of data and insights.

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
• Anomoly / 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

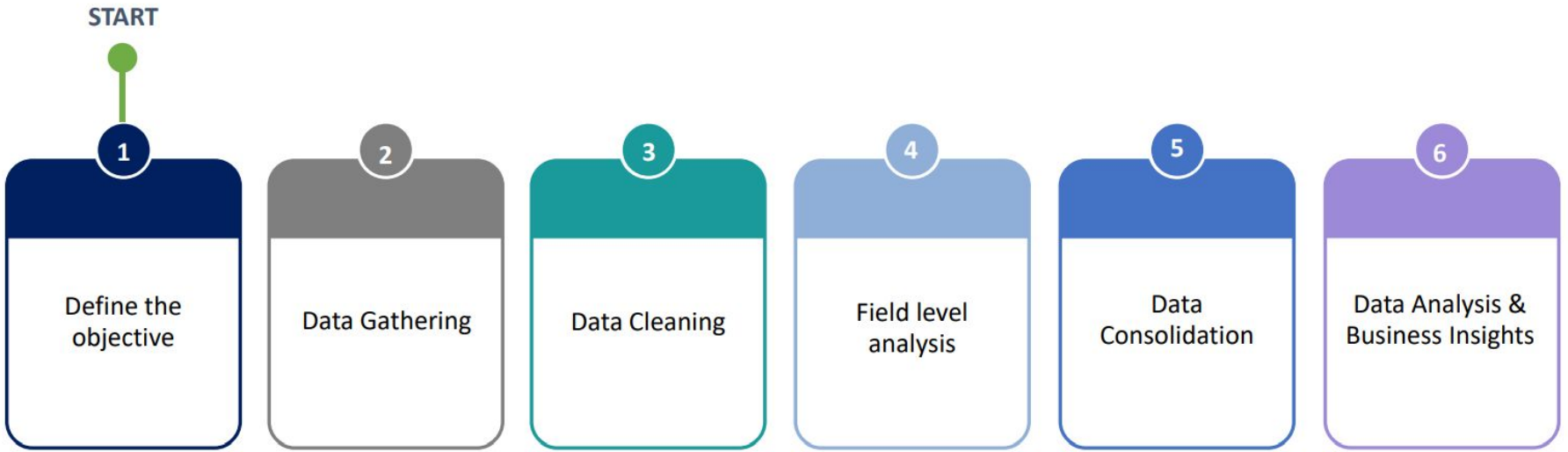
Data Warehouse/ Data Lake Design

Data Mapping & Transformation from Multiple Applications

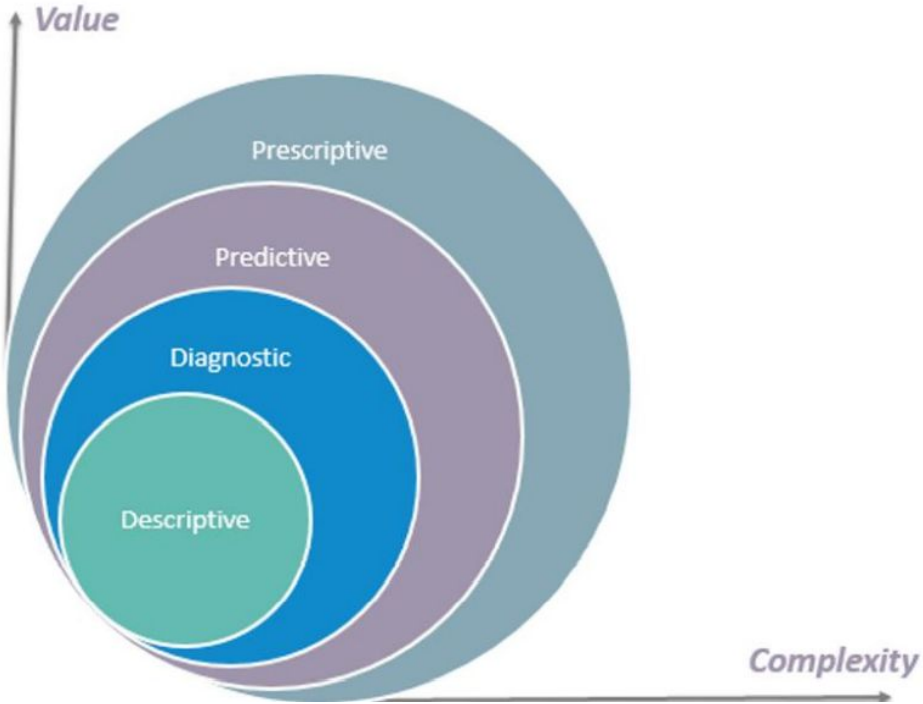
Analytic Models, KPIs, Metrics

Much More…

Data Analytics Process



What is Analytics ?



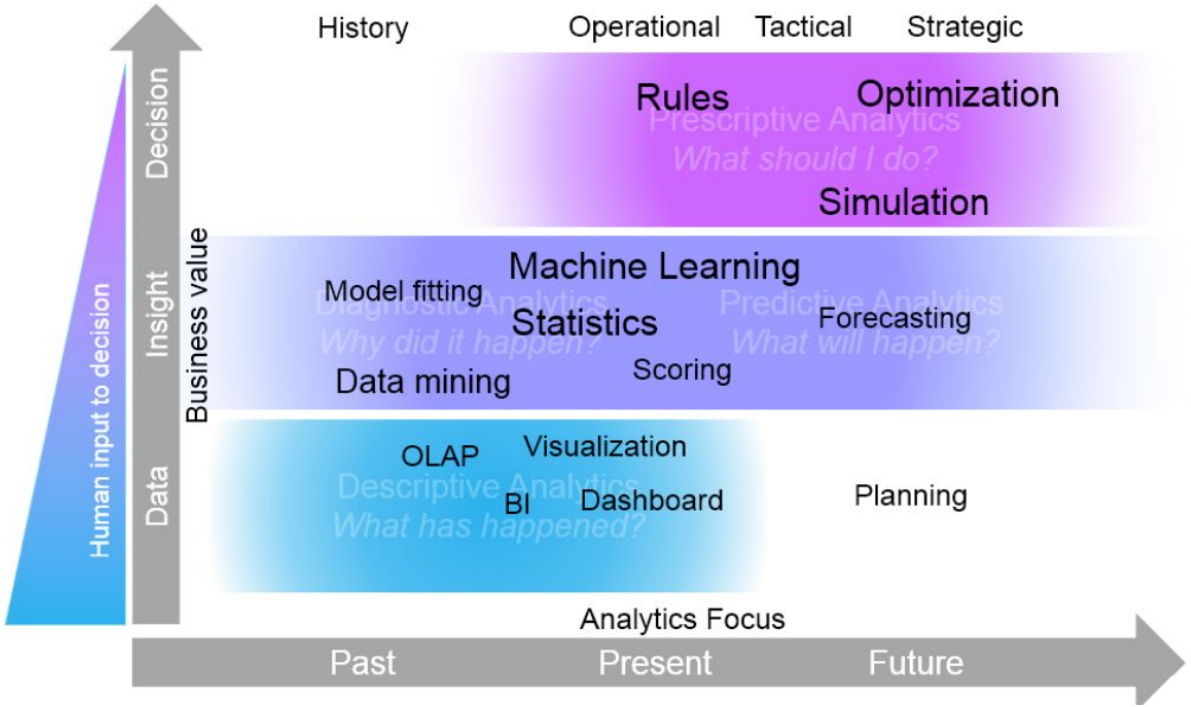
Descriptive: What's happening in my business?
- Comprehensive, accurate and live data
- Effective visualisation

Diagnostic: Why is it happening?
- Ability to drill down to the root-cause
- Ability to isolate all confounding information

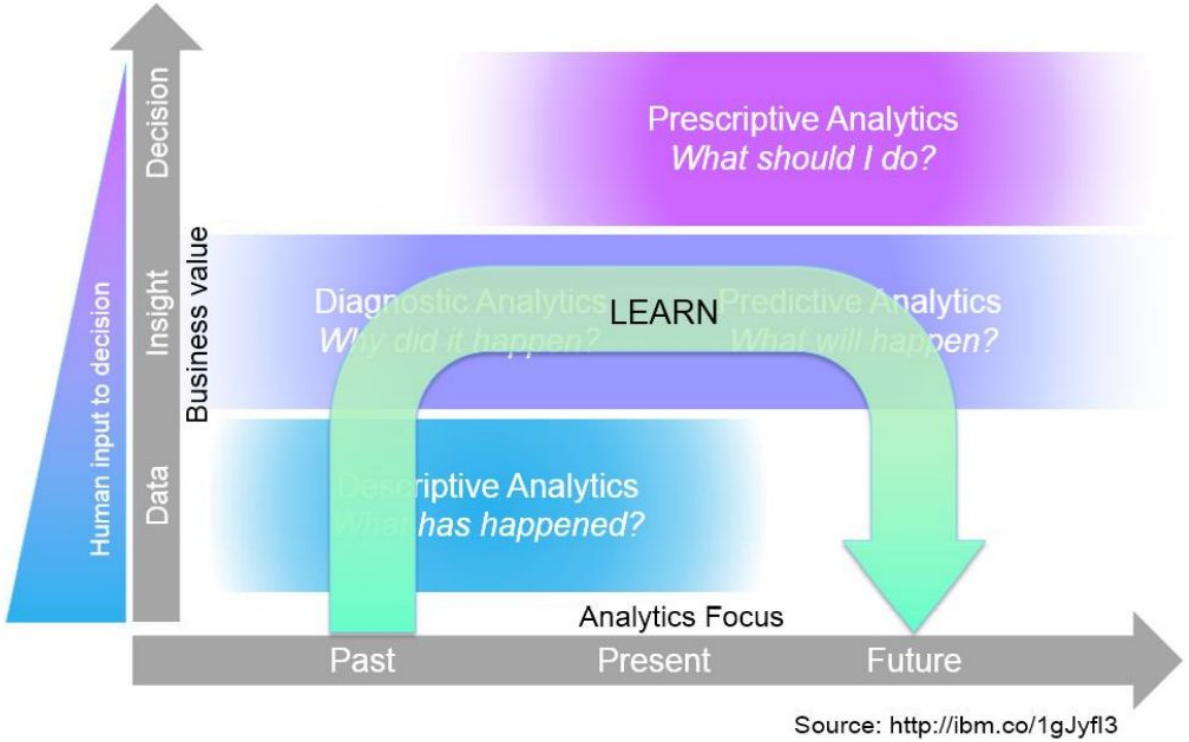
Predictive What's likely to happen?
- Business strategies have remained fairly consistent over time
- Historical patterdns being used to predict specific outcomes using algorithms
- Decisions are automated using algorithms and technology

Prescriptive: What do I need to do?
- Recommended actions and strategies based on champion/ challenger testing strategy outcomes
- Applying advanced analytical techiniques to make specific recommendations

What is Data Analytics ?

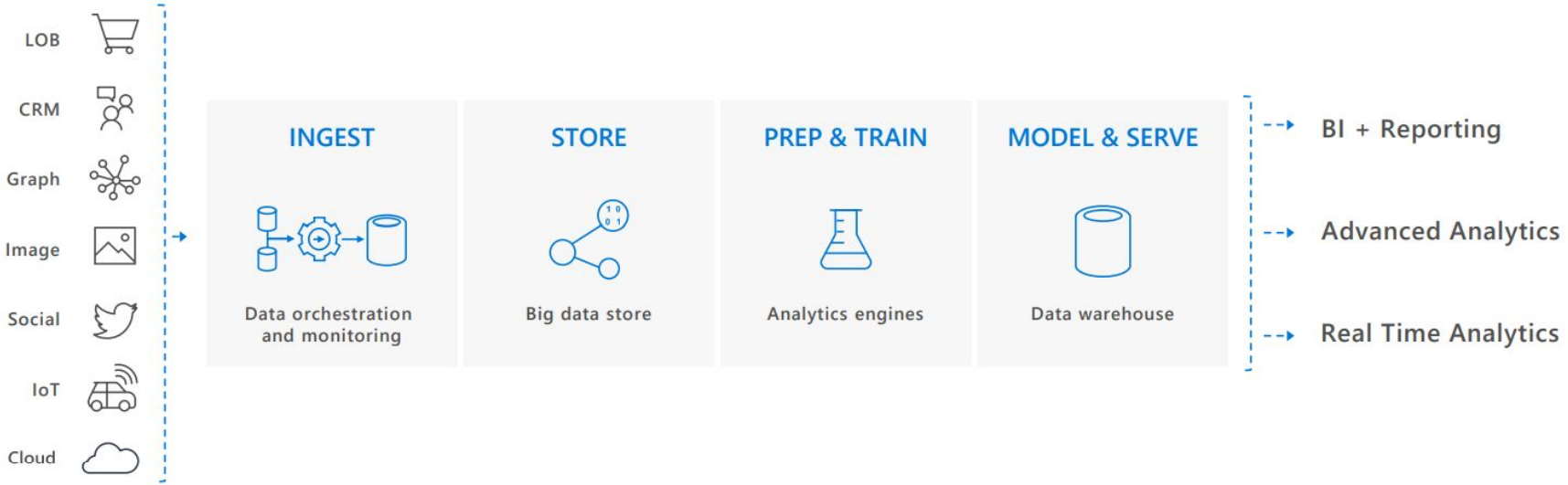


What is Data Analytics ?



Source: http://ibm.co/1gJyfl3

ANALYTICS SCENARIOS



JUST ANALYTICS

DAILY SELL OUT

SELL OUT	SELL OUT YTD	GROWTH % vs LM	GROWTH % vs LY	TARGET ACHIEVEMENT	ASO
21,442K	18,379K	-54.60%	-38.47%	60.05%	674K

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

PROVINCE: All

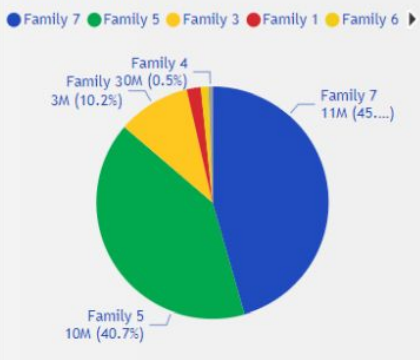
DISTRIBUTOR: All

PRODUCT FAMILY: All

SELLOUT TRENDING

SELLOUT BY CHANNEL

SELLOUT BY PRODUCT



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	52,430	117%	789,989.64	70.22%	235,265.54	78,009.62	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%		22%	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**

Expense Management

Department

All

Region

All

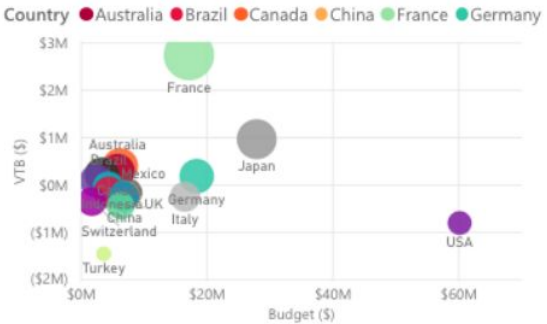
Country

All

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

Expense Variance to budget ($) by channel

Expense Variance to budget ($) by country

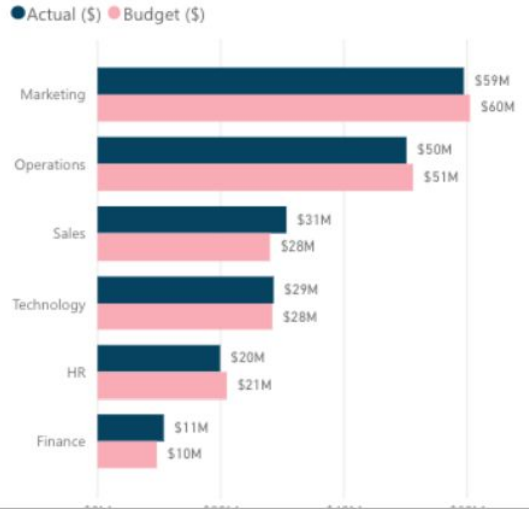


Expense Variance to budget ($) by categ...

Expenses by country

Country	Actual ($)	Budget ($)	YoY ($)	VTB ($)	Average of V
USA	$59,312,555	$60,116,557	$3,763,526.12	($804,001....	-0.9
Japan	$28,853,365	$27,882,355	$1,005,189.70	$971,009.97	-2.1
France	$19,861,429	$17,114,641	$3,709,170.19	$2,746,788...	2.1
Germany	$18,539,070	$18,346,053	$4,490,723.88	$193,017.14	3.1
Italy	$16,257,004	$16,501,948	$2,177,082.95	($244,944....	-8.6
Korea	$7,077,088	$7,237,068	$1,954,752.98	($159,980....	-6.8
China	$6,667,457	$6,896,030	$3,415,836.32	($228,572....	-2.1
Canada	$6,600,430	$6,192,896	$2,626,420.07	$407,533.73	-2.1
India	$6,524,969	$6,757,166	$3,699,399.65	($232,196....	2.5
Australia	$6,050,180	$5,749,313	$4,490,197.59	$300,867.07	5.5
UK	$5,835,903	$6,268,326	$2,353,720.76	($432,423....	2.5
Spain	$4,282,540	$4,325,230	$1,917,568.44	($42,690.14)	-6.9
Brazil	$4,236,666	$4,371,828	$4,031,019.94	($135,162....	-0.5
Mexico	$3,504,258	$3,279,243	$2,788,697.23	$225,015.79	-0.5
Indonesia	$2,446,189	$2,351,443	$2,068,810.56	$94,745.68	-3.4
Total	**$199,510,...**	**$198,651,6...**	**$48,836,7...**	**$858,471.53**	**-1.1**

Actual ($) and Budget ($) by department



POWER BI

INTRODUCTION

What is Power BI?

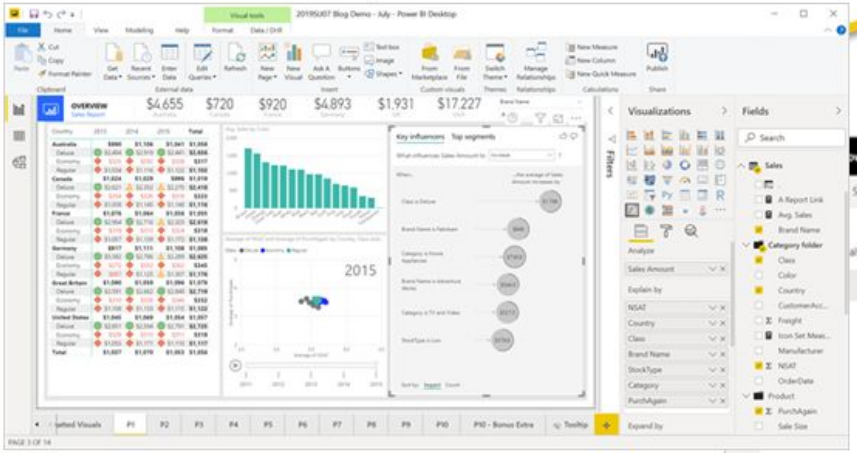
Power BI is a collection of software services, apps, and connectors that work together to turn your unrelated sources of data into coherent, visually immersive, and interactive insights. Your data may be an Excel spreadsheet, or a collection of cloud-based and on-premises hybrid data warehouses. Power 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

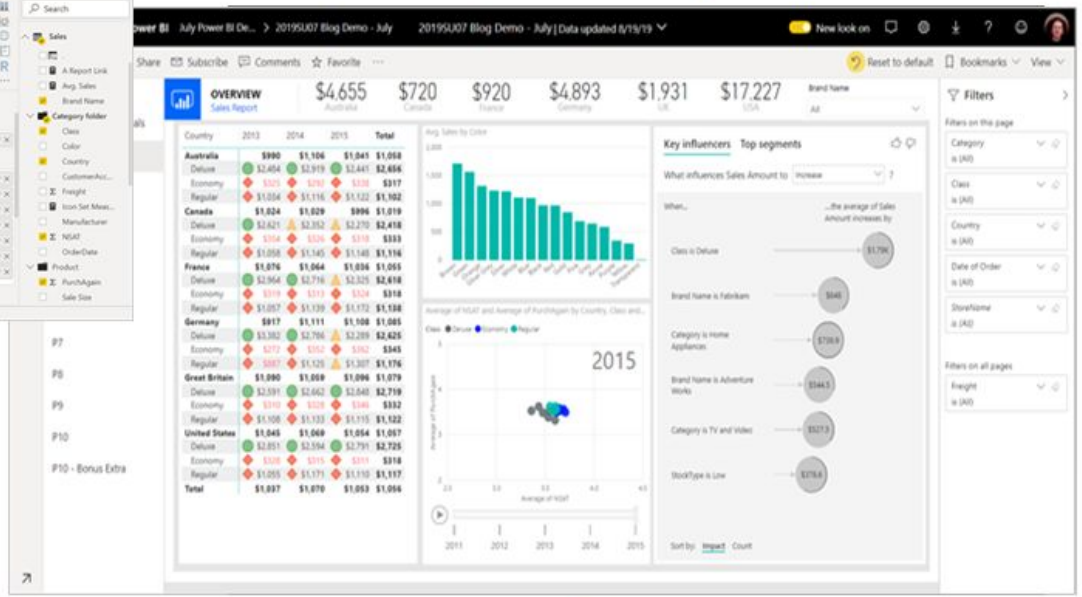
Power BI consists of several elements that all work together, starting with these three basics:

- 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

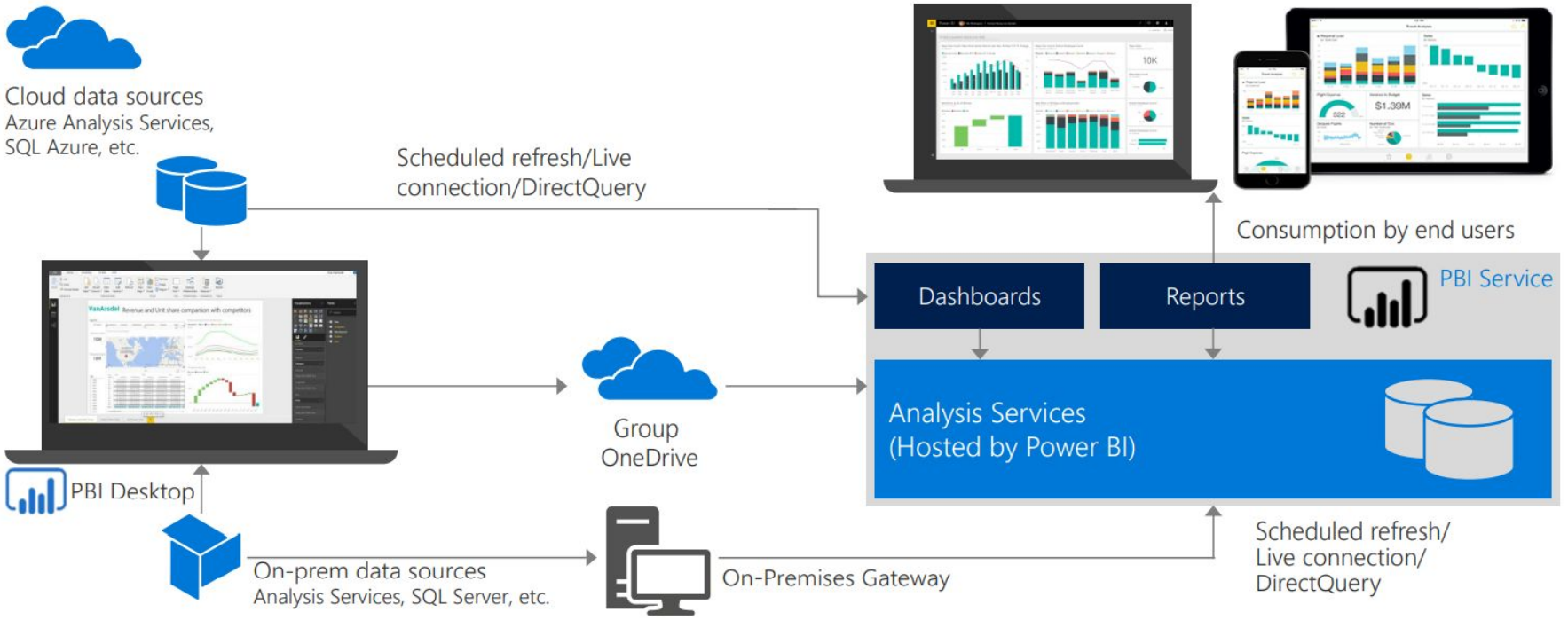


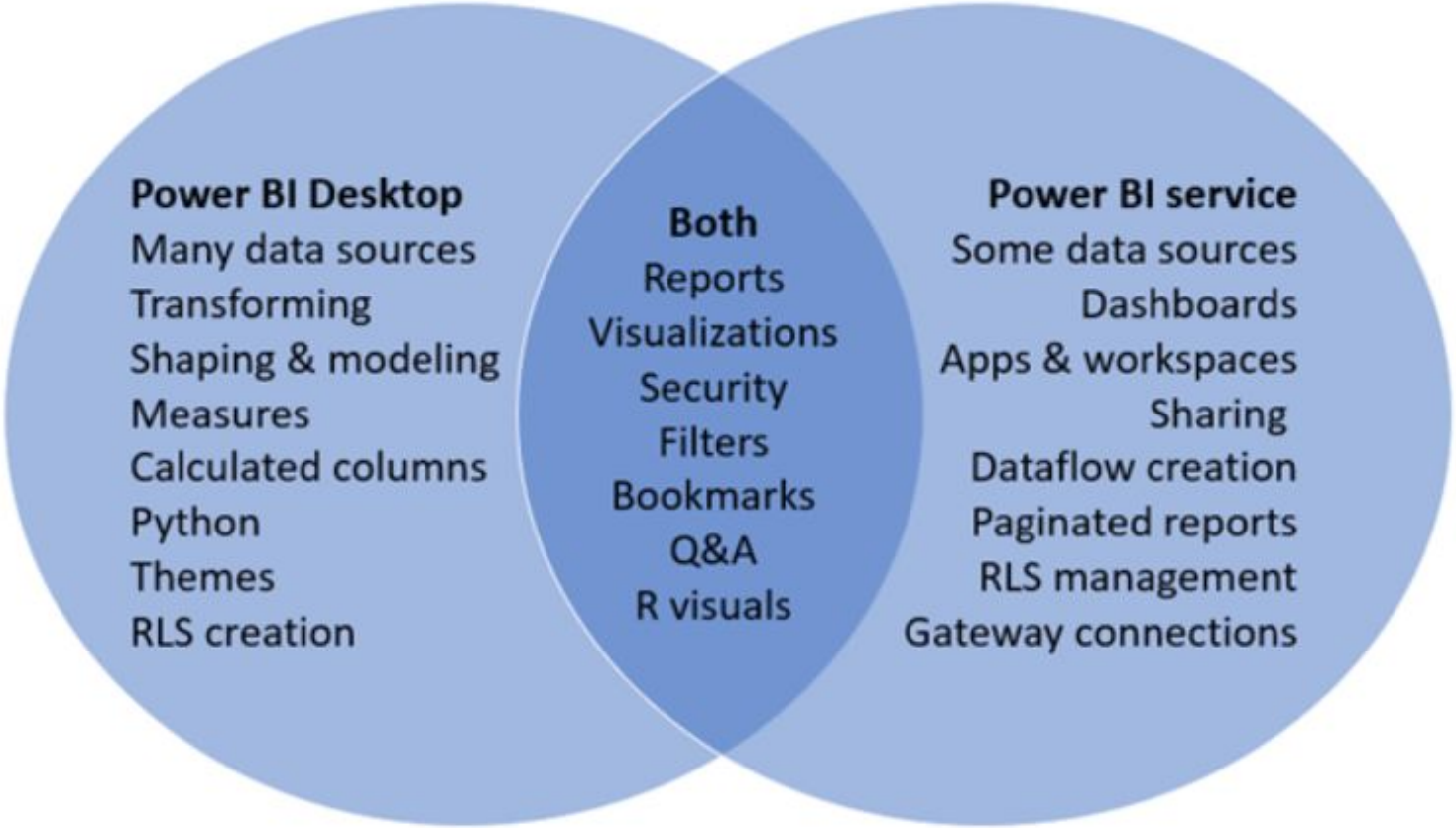
Power BI Mobile

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
Consumption by end users
Dashboards
Reports
PBI Service
Analysis Services
(Hosted by Power BI)
Group
OneDrive
PBI Desktop
On-prem data sources
Analysis Services, SQL Server, etc.
On-Premises Gateway
Scheduled refresh/
Live connection/
DirectQuery


Power BI Desktop
Many data sources
Transforming
Shaping & modeling
Measures
Calculated columns
Python
Themes
RLS creation
Both
Reports
Visualizations
Security
Filters
Bookmarks
Q&A
R visuals
Power BI service
Some data sources
Dashboards
Apps & workspaces
Sharing
Dataflow creation
Paginated reports
RLS management
Gateway connections

Access all your **DATA**

Data sources

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

Organizational
Corporate data sources or external data services

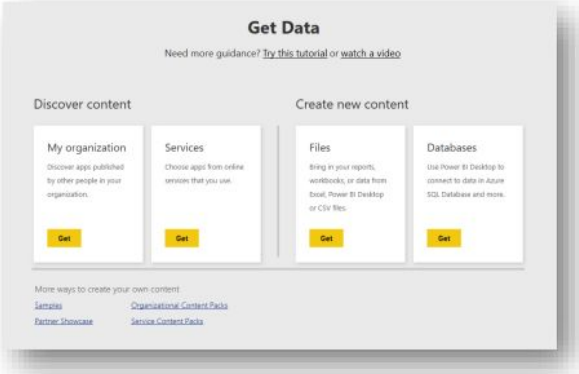
On-premises Data

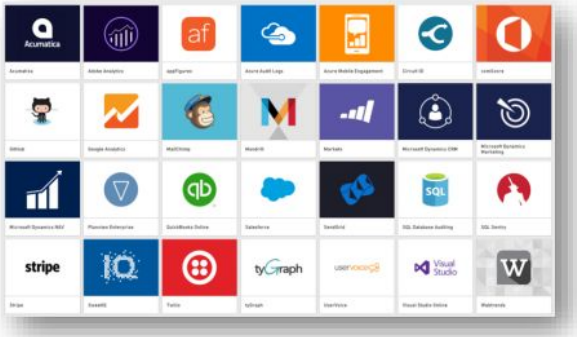
Azure services
Azure SQL, Stream Analytics…

Excel files

Power BI Desktop files
Data from files, databases, Azure, and other sources

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





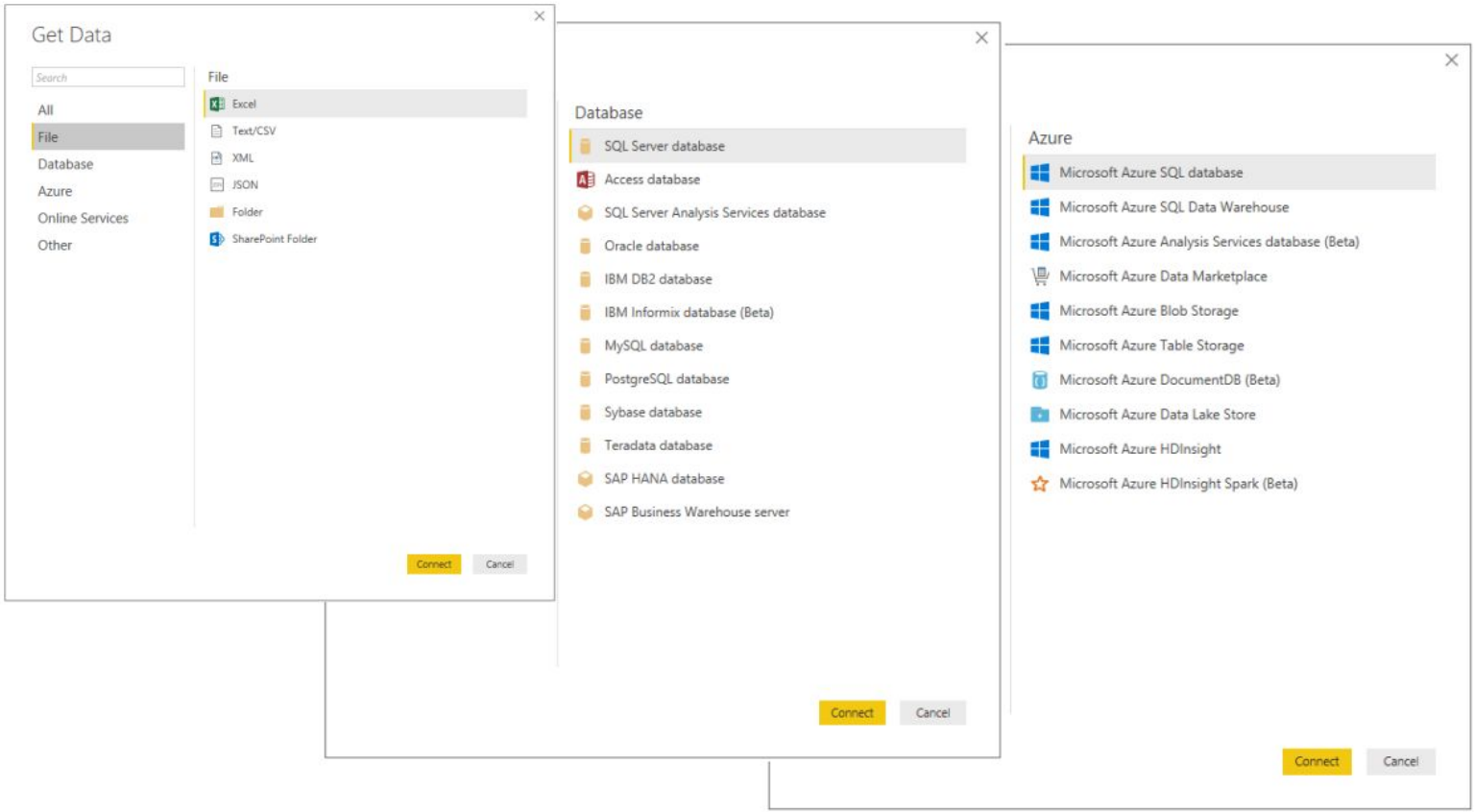
Data from Applications
- SaaS services that you already use

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

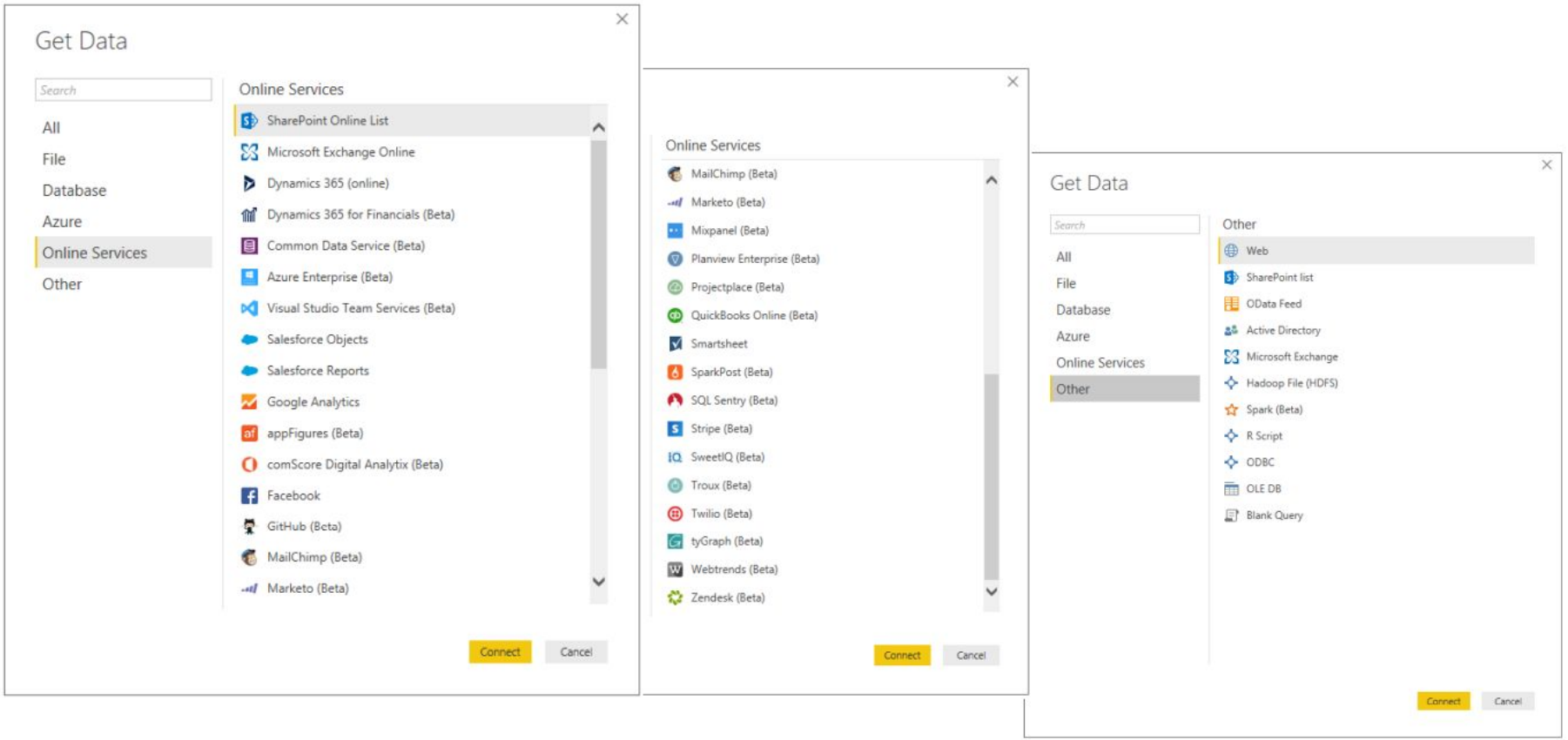
Big data and more
- Azure data services, e.g. SQL DW, ADLS.
- On-premises data sources, e.g. Oracle & SSAS

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

Power BI—connect to wide variety of sources



Power BI—connect to wide variety of sources



Clean and mash-up your **DATA**

Consolidate data from a broad range of sources

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

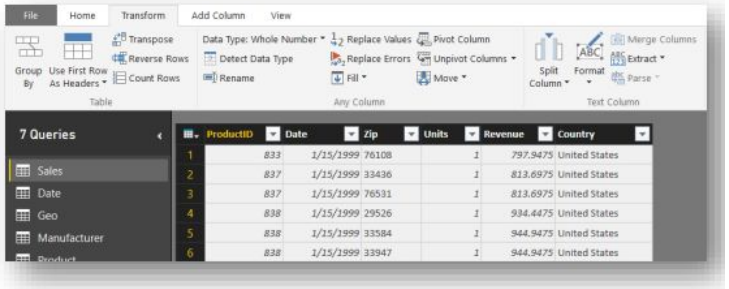
Transform data to fit your needs using intuitive UI

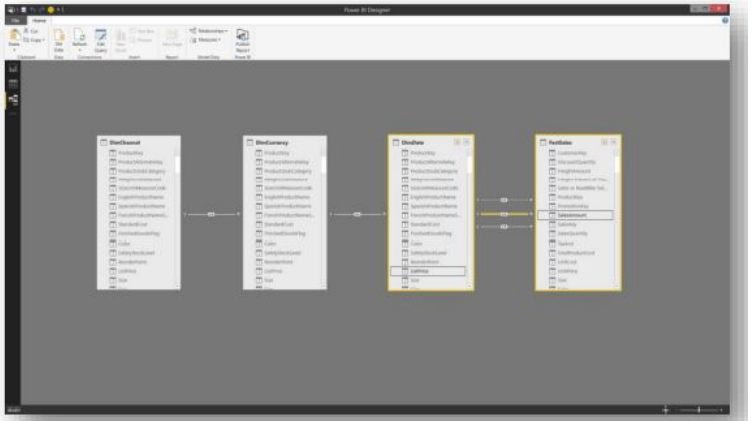
- Select data for inclusion
- Cleanse data and remove errors

Define calculations to generate new fields for use in reports

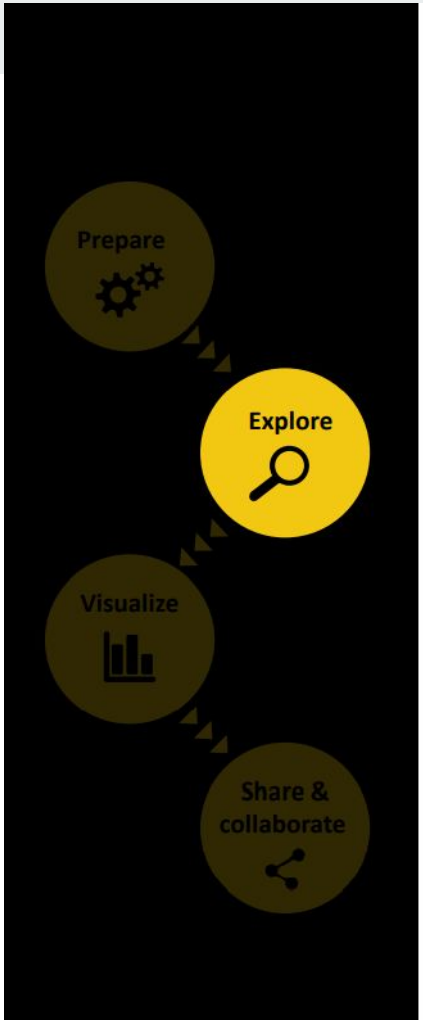
Develop advanced analytics using a combination of measures and relationships

- Uncover correlations, highlight exceptions and understand business outcomes





Explore your **DATA**



Explore data in a variety of ways and across multiple visualizations using drag and drop canvas

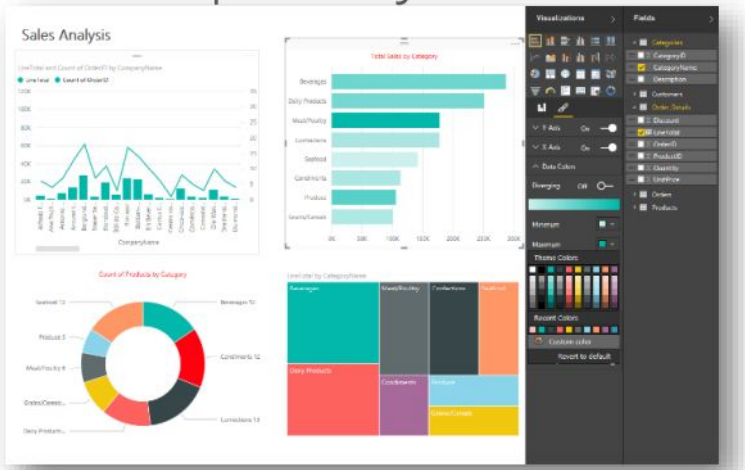
Dig deeper into your reports

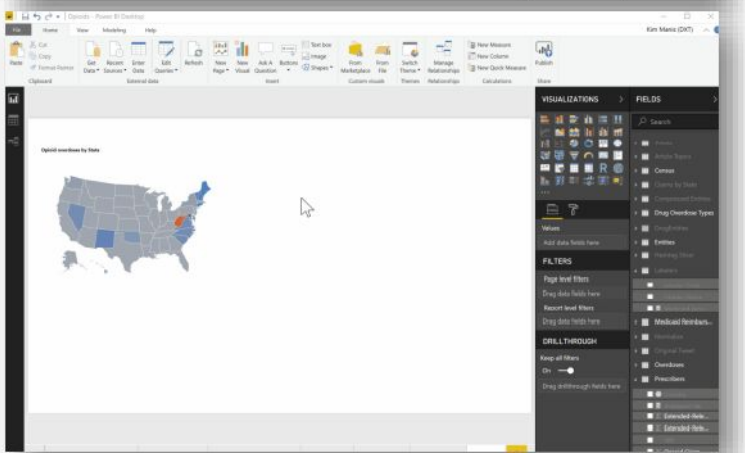
- Drill-down in your hierarchical data
- Filter, sort, hover over and highlight data

Leverage Quick Insights to find insights in your data

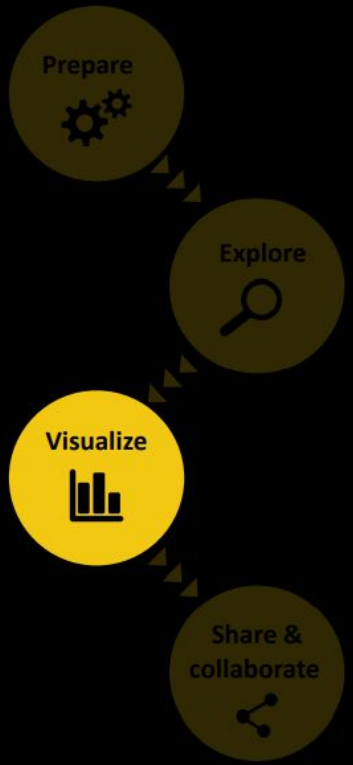
Ask questions of your data in natural language with Q&A

- Type questions in plain language
- Q&A intelligently filters, sorts, aggregates, groups and displays data based on the question





Visualize your DATA



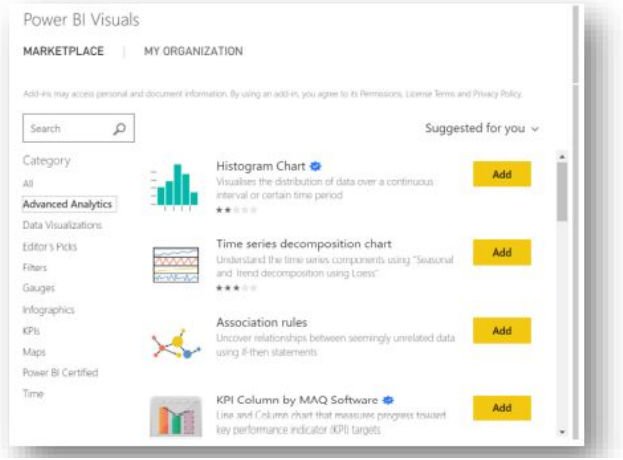
Visualize data in a variety of ways

Growing number of visualization types

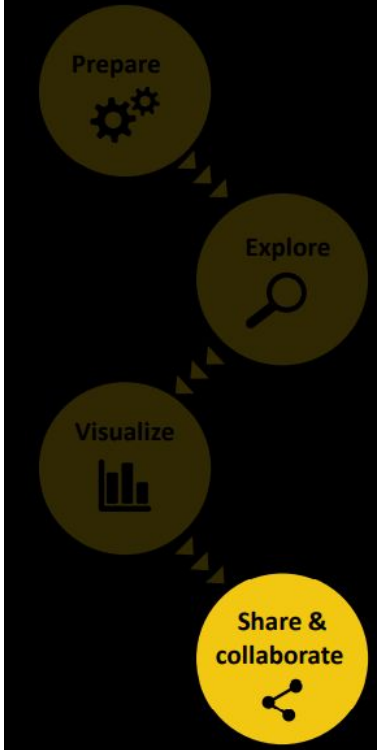
- Donuts, basic area, waterfall, filled maps, tree maps, funnel, gauges combo charts and more
- Custom visuals available from Power BI Visuals Marketplace
- Tools to develop, test, package new custom visuals

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



Bring your story to life with **DATA**



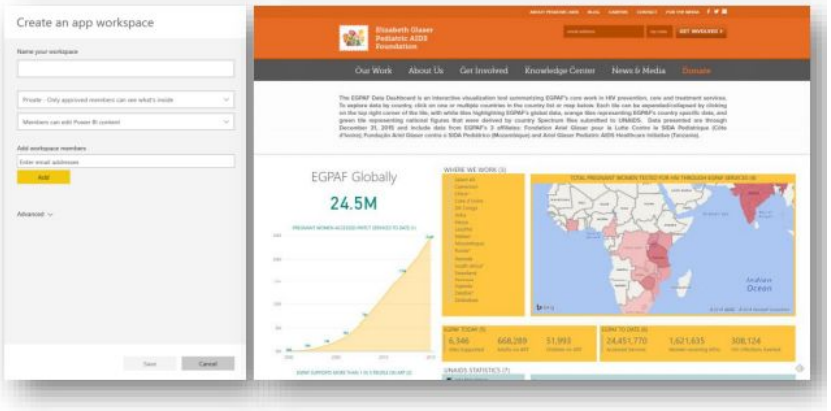
Save Power BI Desktop report files and easily publish them to powerbi.com

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 With Power BI **Publish to web**



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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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