

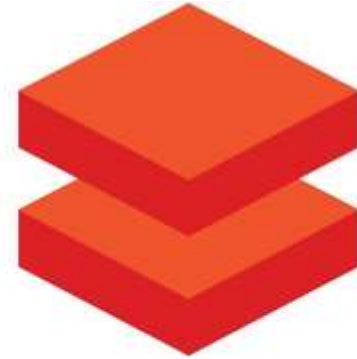
Yana Berkovich Data Platform MVP

Calgary PASS
User Group

Visual Guidance for PowerBI

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databricks®

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Love sharing my insights



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Agenda

PowerBI

Visual Guidance

Design Principals

UI / UX for Reporting

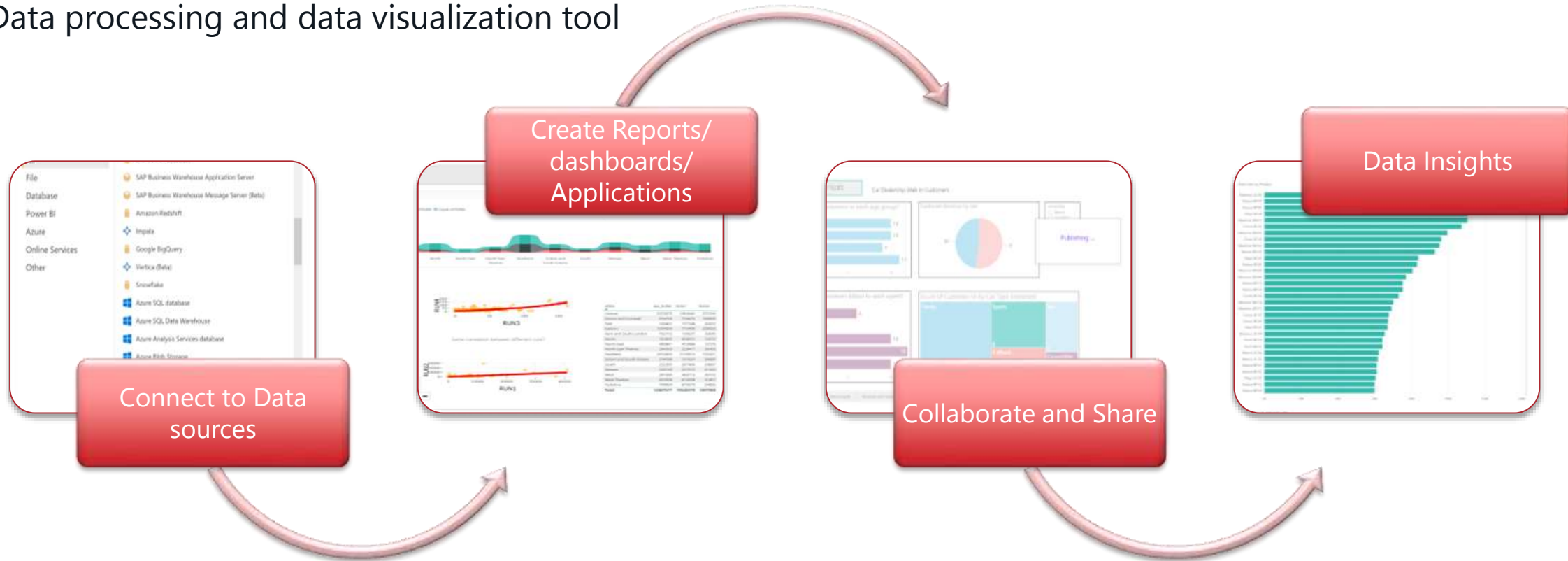
Guidance specific for PowerBI



Intro

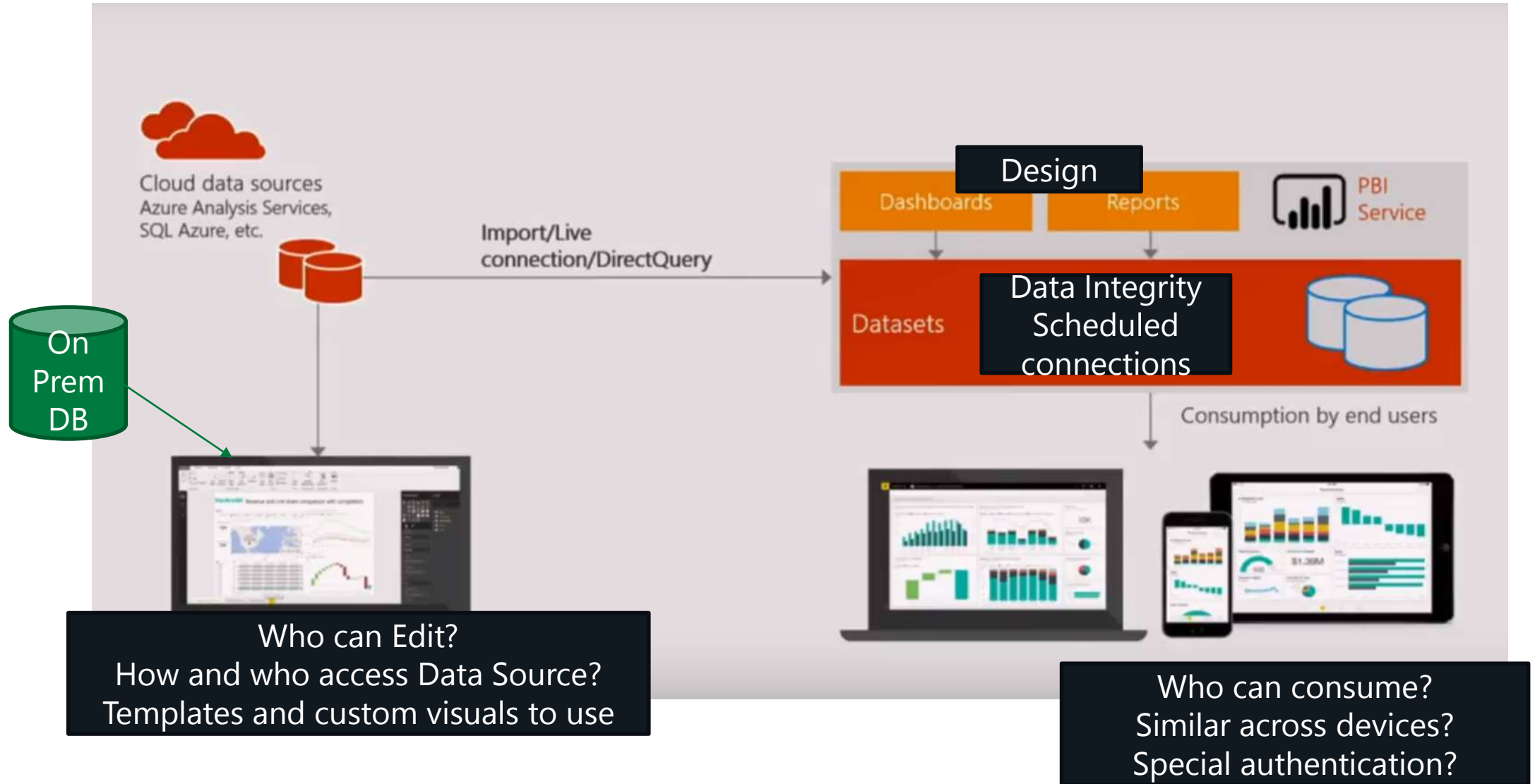
What is PowerBI?

A suite of business analytics tools that deliver insights.
Data processing and data visualization tool



Audience: Business Users & Managers
Users: IT, Finance, HR, Marketing, Manufacturing,
Data Analysts...

How Does it work?



What is currently part of PowerBI

Power BI desktop

Power BI Desktop is the report authoring tool - <https://powerbi.microsoft.com/en-us/desktop>

Access data from various data sources and transform them for your reporting needs

Power BI Service – Pro/ **Premium** (Capacity, Licensing and Monitoring)

Browser based portal - <https://app.powerbi.com>

Share and collaborate with your colleagues and wider audience

PowerBI Report Server

On premise solution for organizational reporting

PowerBI Mobile

Mobile Application, can be connected to your PowerBI on premise or the cloud

PowerBI Data Gateway

Install in your organization, to enable secure data connection (same as for PowerApps)

Embedded Analytics

PowerBI in Azure, set powerBI when needed, in the Azure portal

Use PowerBI REST API & JS to embed in your applications

PowerPlatform AI builder

Why is Visual Guidance needed?

Governance != Guidance

Organizational Culture & Brand

Intuitive UI - A report in a glance

Data Driven Decision support

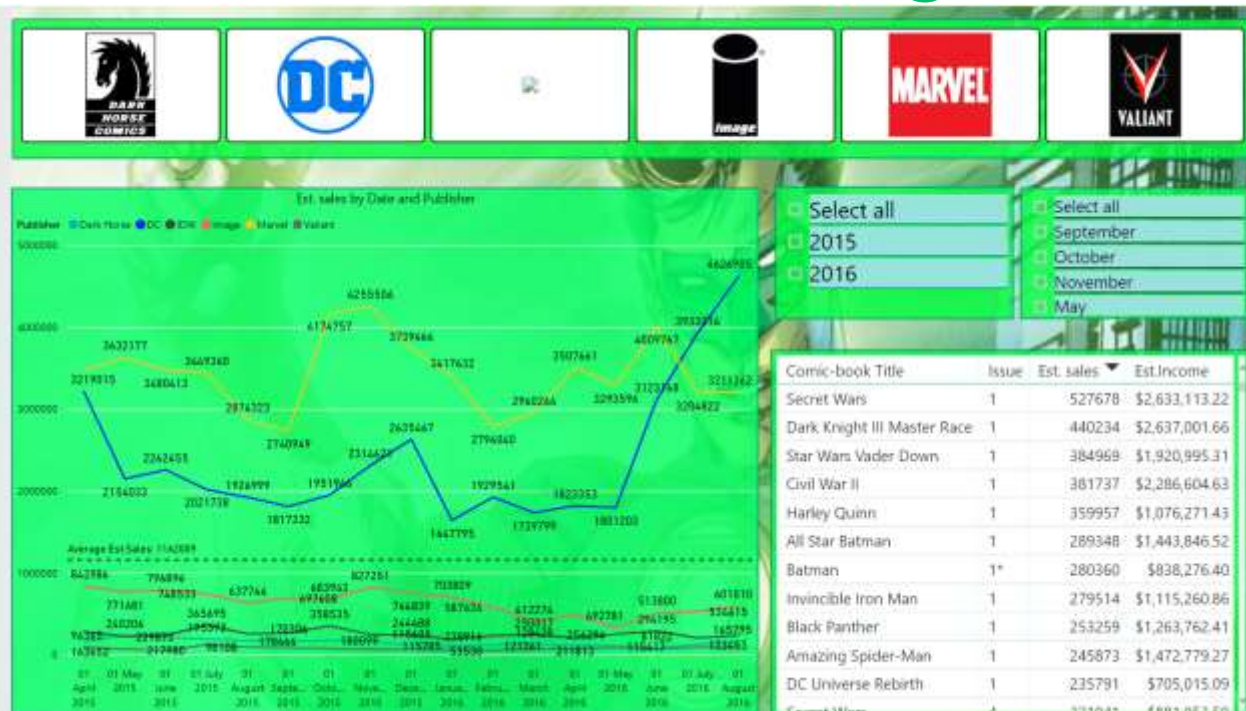
Minimize clutter maximize interaction

It is Self Service BI... everyone can do everything?

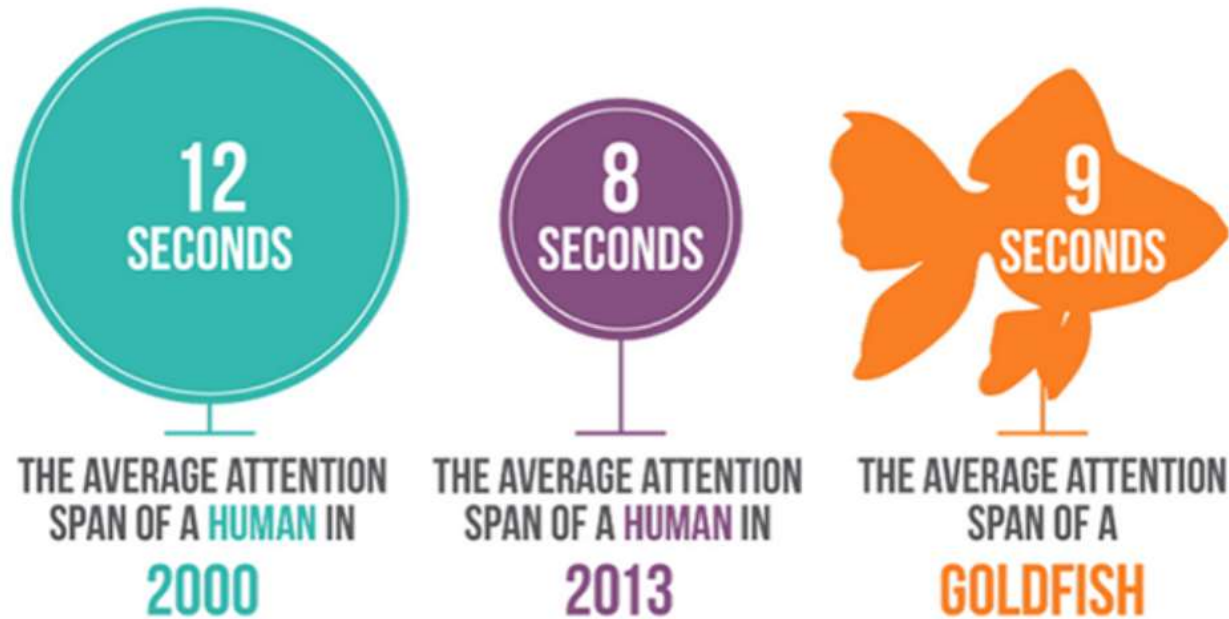
Take a look at the story gallery

Worst PowerBI report...

Yeah that's a thing



Self Service BI...Why guide?



From: [ADOBE Blog](#)

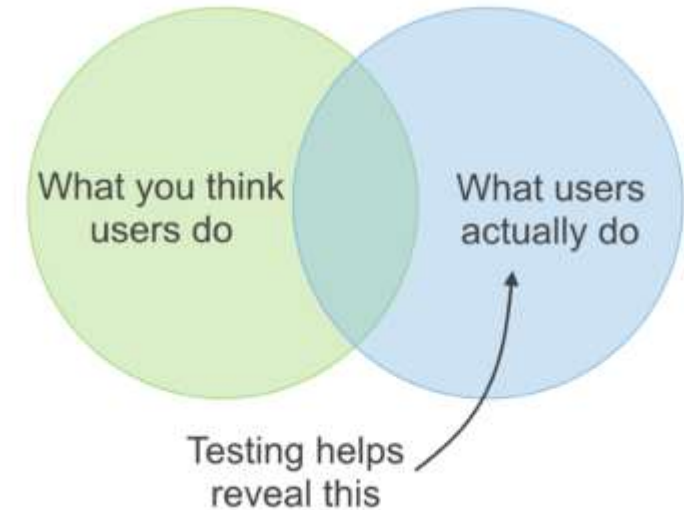


UI UX in Reports

Recommendations for Successful UI

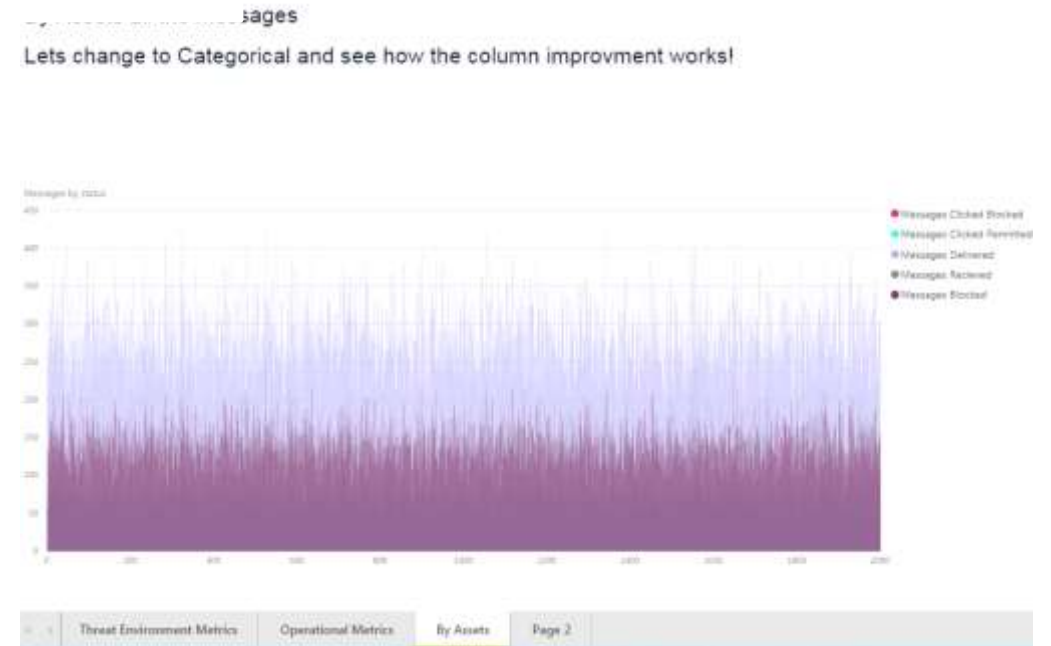
There is a Whitepaper! [LINK](#)

- Place users in control of the interface
- Easy Navigation
- Be predictable - consistency
- Be acknowledging
- Clear concise fonts, titles etc.
- Avoid clutter – clean design
- Be intuitive



Clear insight

What are those reports telling us? Which Business Problem do they solve?



A large, stylized teal graphic on the left side of the slide, consisting of several overlapping, curved, ribbon-like shapes that create a sense of depth and movement.

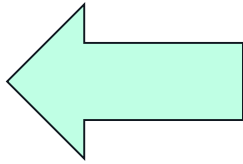
Report Structure guidance for PowerBI

Navigation

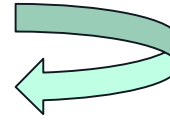
- Tabs
- Bookmarks and buttons
- Tooltips

Intuitive Navigation

Which one is navigate back?



1



2

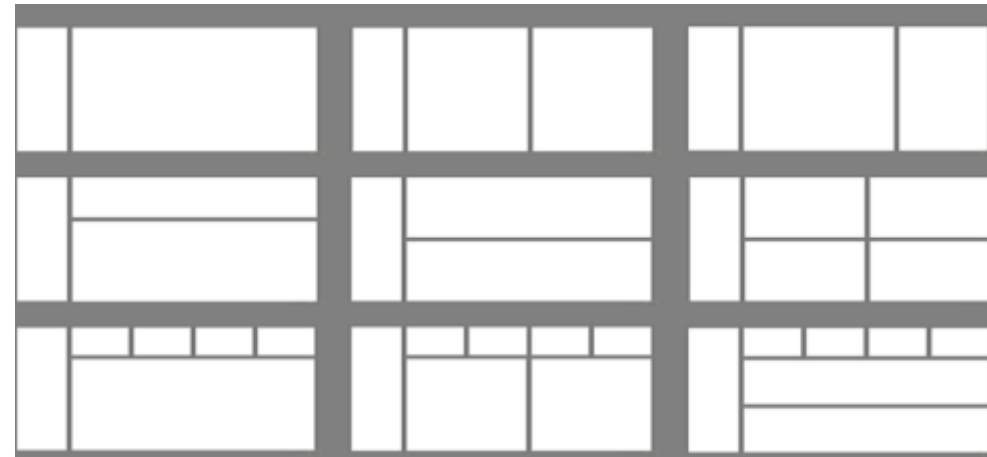
Always communicate in the same place on the page where we are and how to get back

Layout

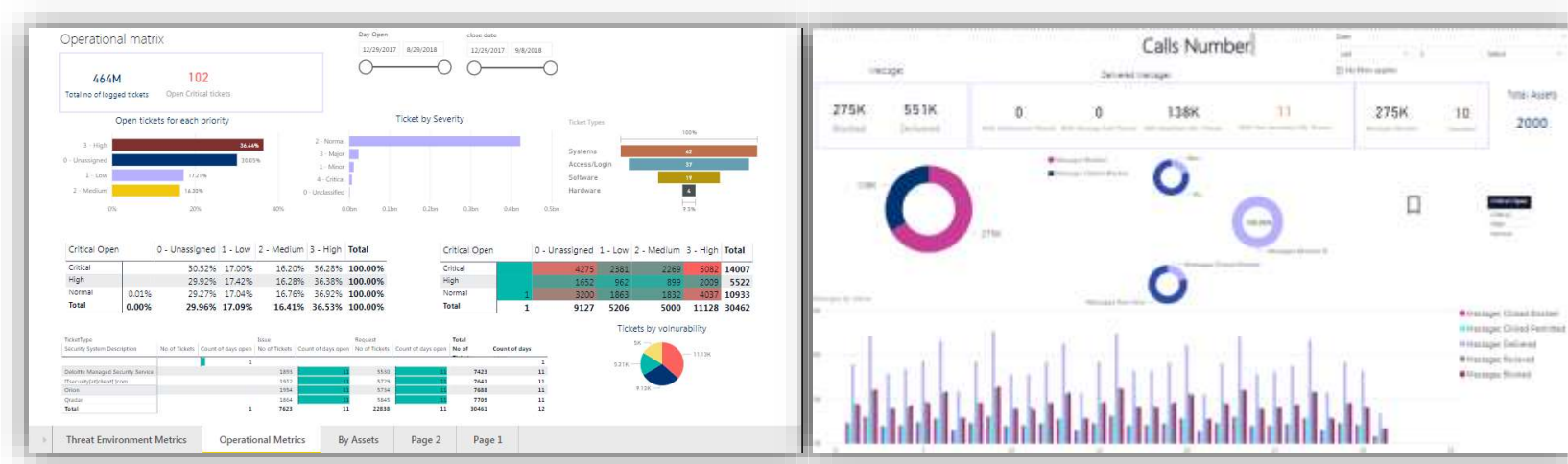
How to divide your canvas?

Once decided, Consistency between reports

Alignment (LTR unless middle East) , order, and proximity



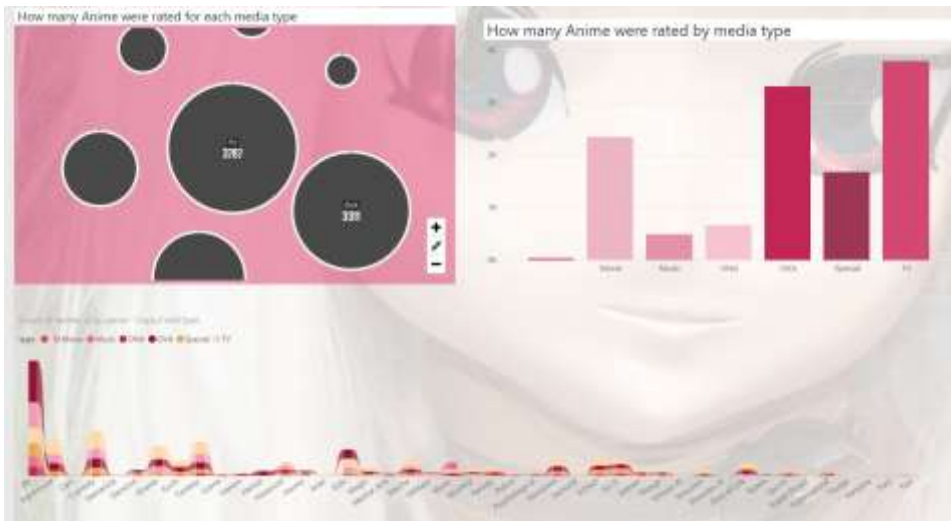
This cannot be page 1 and page 2 of your report



Branding

- Templates - Reports colors, Color scheme, fonts, frame sizes...
- Corporate Layouts – in report server
- Corporate backgrounds and guides
- Corporate Theme can be added

Anime Watching Trends Report



Car Dealership Customers Engagement Report



Colors and Titles

- Custom Expression based formatting [LINK](#) (tutorial)
- Expression based formatting



How to match colors & Theme?

Report Theme Generator
for the UI Designers [LINK](#)

Place users in Control = Self Service BI

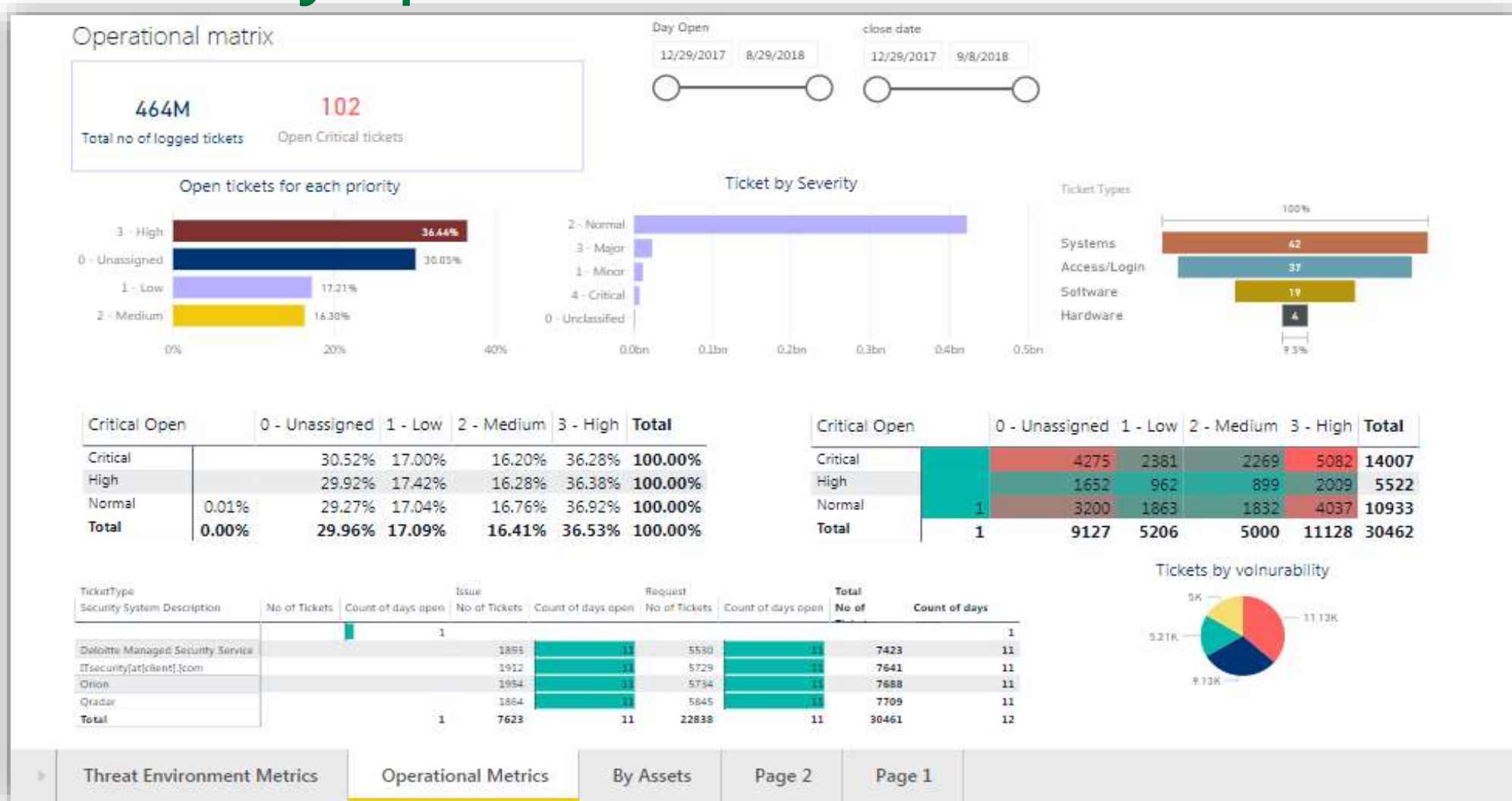
Add interactive features

Add drill downs in a glance

Add

Cluttered Report –

How many questions are answered here?



Quantity vs visibility

- Avoid clutter 1 – 6 or 9 visualizations same as UI
- Avoid clutter – 1 business need or related questions per page
- 1 question per visual – no double axis
- answered in a glance

Size and Font

Font Size – 3 max per report

PowerBI has different sizes for titles, text boxes and charts – pay attention what looks the same

Preferable 1 font type per report play with indent instead

Arial always looks great when in doubt

16pt in titles or 12pt in graphs and tables

10pt for mobile

Mobile Basic rules

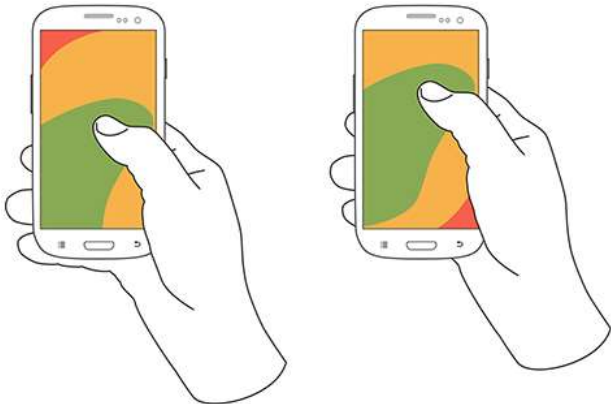
- **Goal Driven Design** – Who are the mobile users? (Construction technician vs BA during a meeting)
- **Usability** – Rank your visuals and don't drag all of them automatically
- **Signifiers** – Identify the critical measure and emphasize, text might be too small to read
- **Performance** – Complicated calculation in the background, maybe add a calculated column or think cached data set

Mobile – Different colors and screen

Finger Friendly – too small filter to select?



Place the active items in the active zone:



Screens are lightened differently – choose more contrasting colors



Sources:

[LINK](#) (Medium UX Planet)

[Prototype.IO](#)

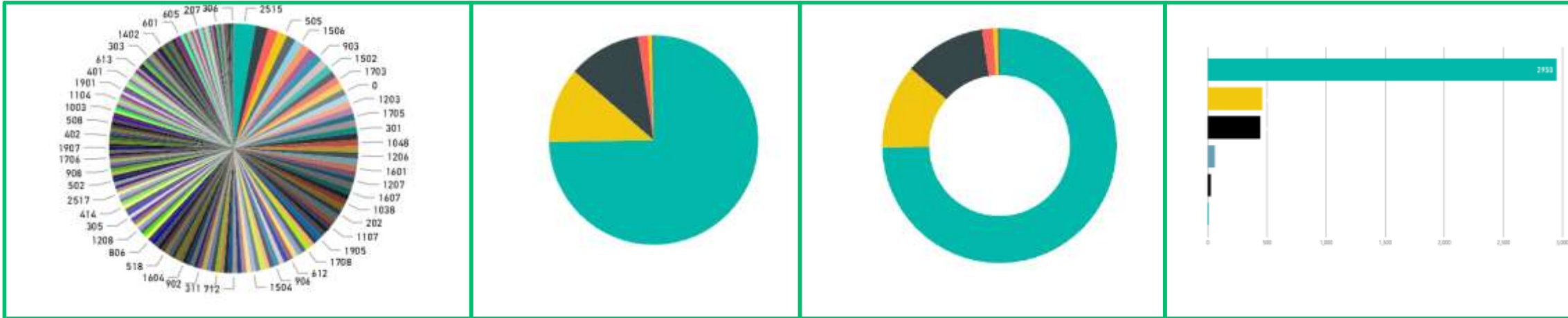
<https://developer.apple.com/design/tips/>

A large, teal-colored abstract graphic on the left side of the slide. It consists of several overlapping, curved, ribbon-like shapes that form a stylized, open 'C' or a large arrow pointing towards the right. The lines are smooth and have a slight gradient.

How to pick my visualization?

Data Visualization

Do not use pie Charts ([Storytelling with data](#))



Use the 9 gestalt principles

Add Tooltip

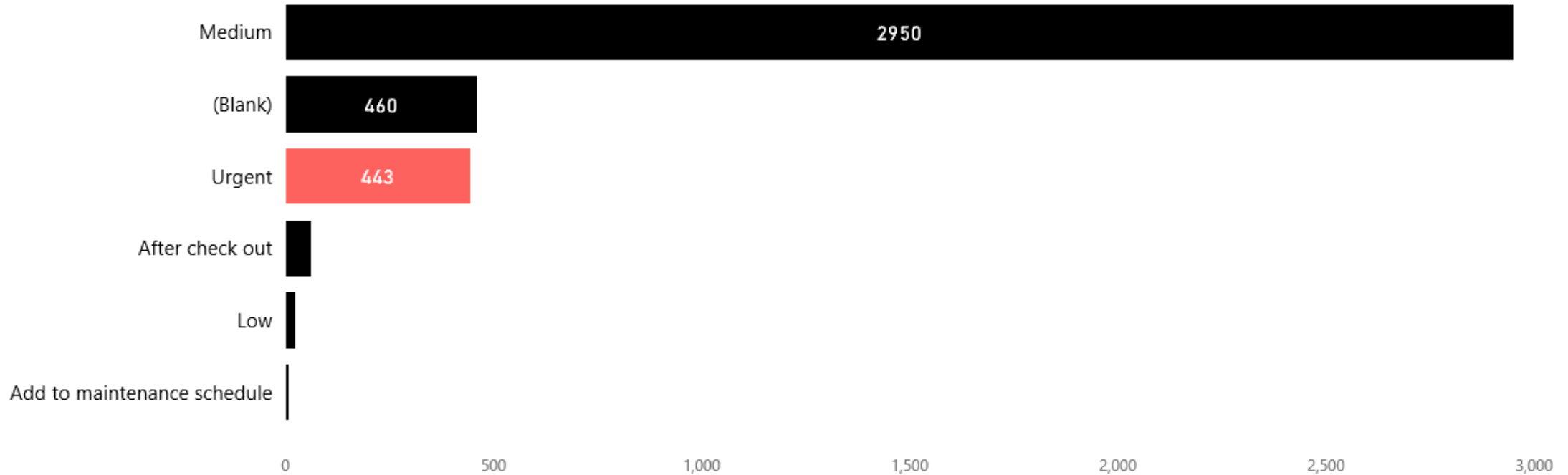
Add Data Labels

Avoid not necessary lines / colors

One glance

Data Visualization - Color

Number of Requests by Priority

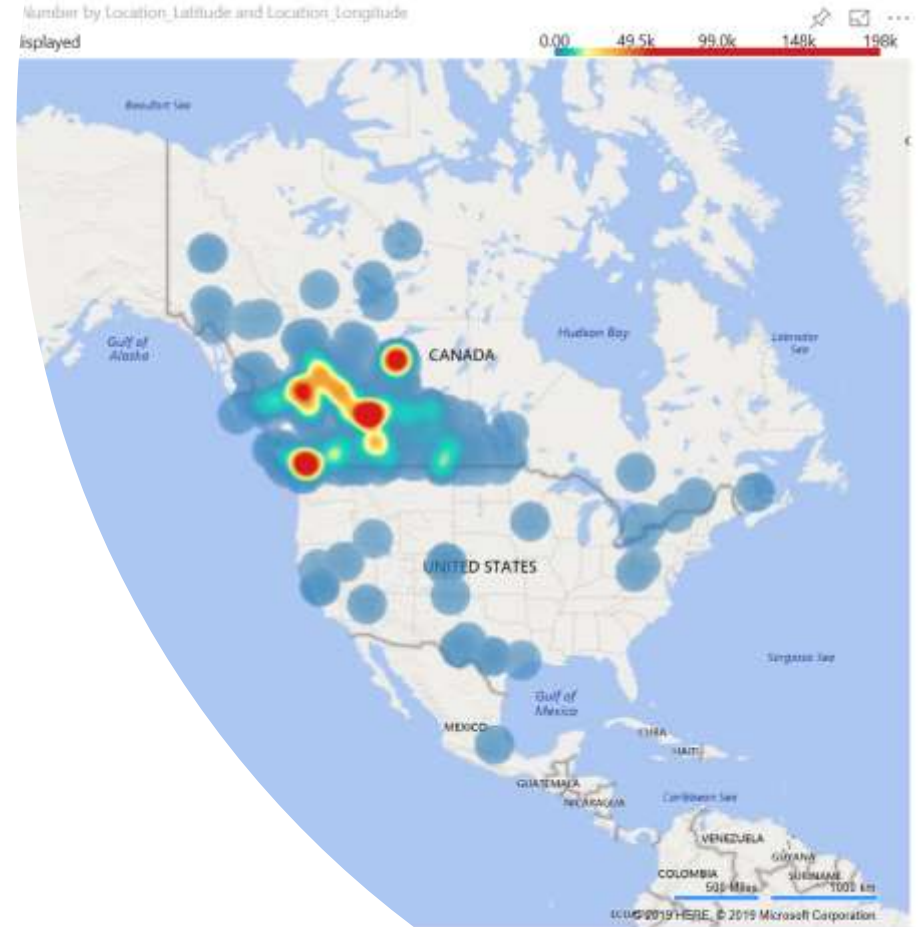
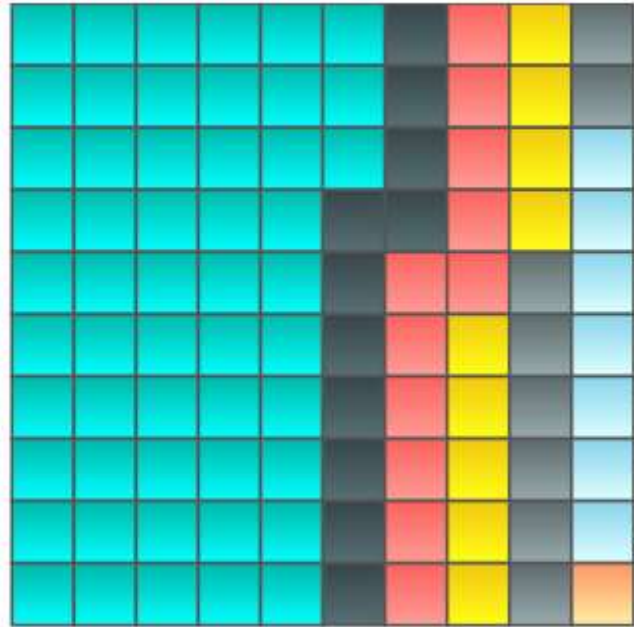


Not only Bar Chart – Use a Heat map!

RUN1 by REGION

REGION

- Anglian
- Yorkshire and North ...
- South East
- South West
- North West
- Midlands
- Wales



Use familiar and intuitive visuals

Most of the people on our industry knows the Gartner Quadrant use it to describe your business problem

- Classify competitors
- Group tickets by type
- Compare performance



Scattered?

Discover outlaws, clear insights

Use color in scatter to emphasize the clusters



A large, teal-colored abstract graphic on the left side of the slide. It consists of several overlapping, curved, ribbon-like shapes that create a sense of depth and movement, resembling a stylized 'S' or a series of connected loops.

Custom Visuals the good and
the better?

What are the custom visuals and where can we find them?

Custom visual [gallery](#)

What can go wrong?

The visual is not added as a default – new report?

Upload visuals from scratch

Filters -Not always filtering and reversing correctly

Usually Themes are not effective

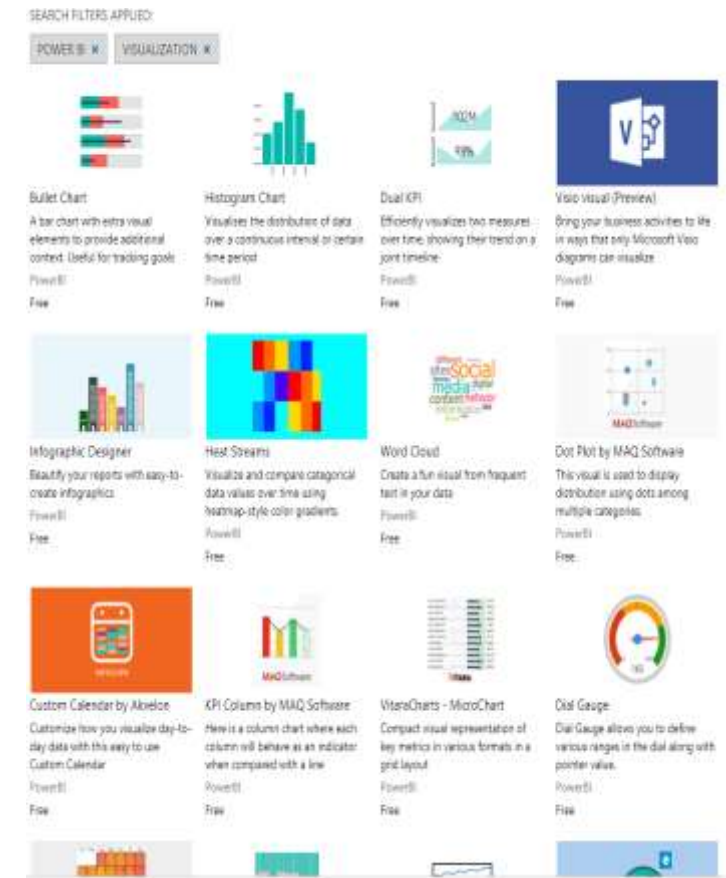
Code might not be updated

Maps support different coordinates

Mobile display

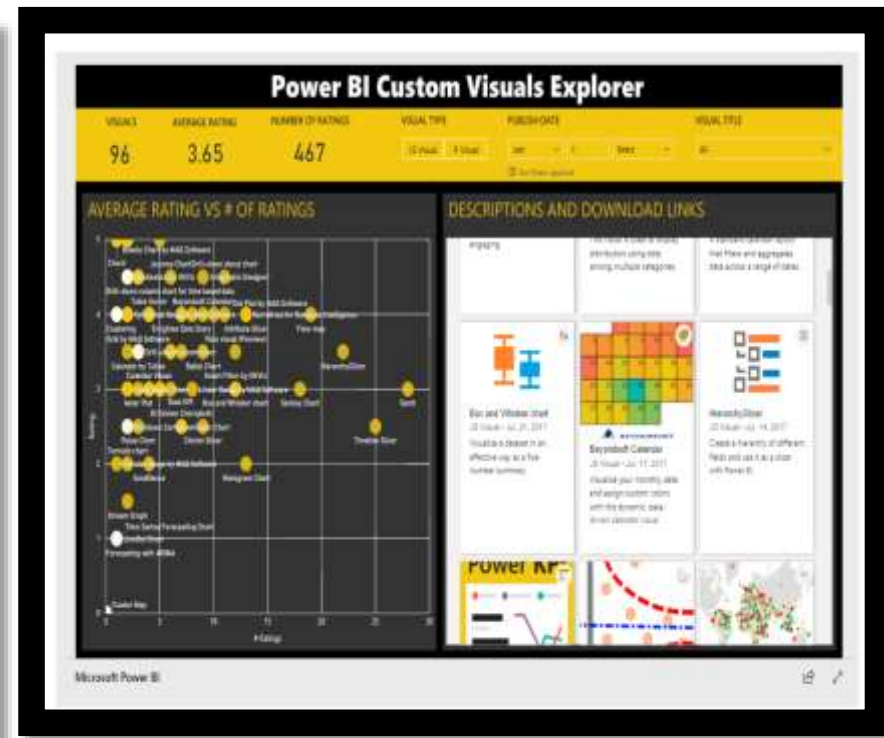
R Scrip installation

Dashboard crashing...



Visuals about visuals






Currently there are 106 visuals in the visual gallery
2 Dashboards in the data Story Gallery describe and classify them



A large, stylized teal graphic on the left side of the slide, resembling a thick, curved arrow or a stylized letter 'C' that points towards the right.

Compare Custom visuals

Comparing Timelines – Sales Report Time page

Picture	Name	Functionality	Usage	Design limitations
	Countdown	Counts down the time until a date	Project management / Product Management till the next event	No Theme support Limited design options
	Bci Calendar	Display 1 measure per date, can contain more measures on tooltip, colors according to kpi's	Manufacture calendar, performance per day track	No Theme support Good design options
	Timeline	Display time hierarchy	Any time filtering needs	No Theme support
	Custom Calendar	Display many measures to compare in a day		Limited Theme support Good design Resets colors when restarting
	TimeBrush	Display columns by time hierarchy similar to time play and columns chart	Stock prices, sales, tracking usage & usability data	

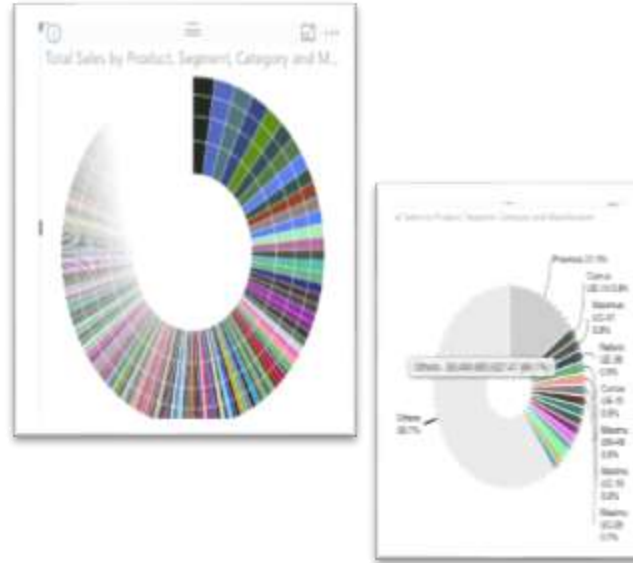
Comparing the dreaded Pies - Sales Report



Ring Chart

Display 2 Measures – primary & Secondary
Great for

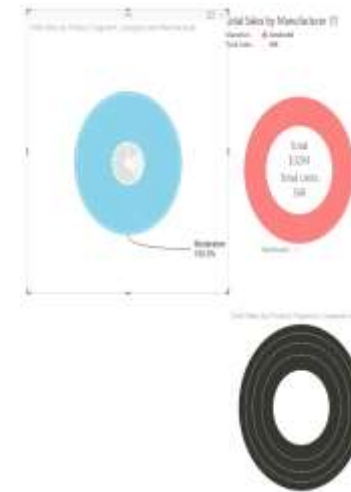
- Filtering and drilling down for complex hierarchy
- Product breakdown



Sun Burst

Display 1 measure for grouped values

- Manufacture calendar
- performance per time
- Color palate....



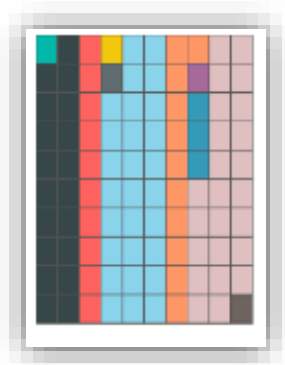
Drill Down Donut Chart

Display time hierarchy, other hierarchy

Any time filtering needs
Preferably Never...

Area Maps

If we are not using the donut what should we consider instead to compare area or quantity?



Brick chart

Colors area according to percentage value
Easier to "count bricks"

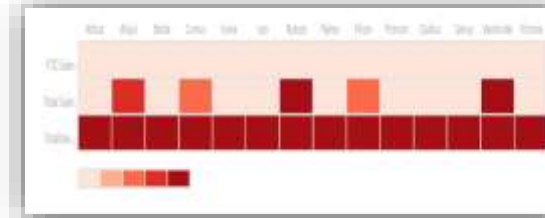
- sales of product
- stock revenue from total



Treemap

Colors area according to percentage value

- sales of product
- stock revenue from total



Drill Down Donut Chart

Display several measures for each category, to compare the results in table

- Compare sales
- Gantt Charts
- Compare Tasks duration



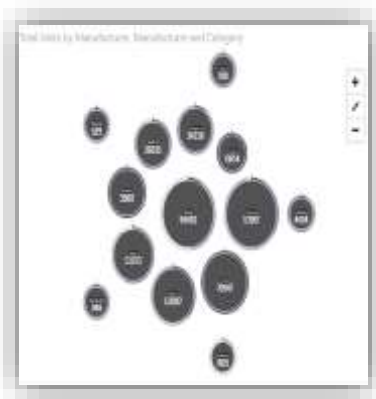
Drill Down Donut Chart

Displays percentage from the total value of each layer

- Scan population
- describe many layers of different sample
- Compare metric size

Bubble & Clusters

Clustering is one of the best ways to group & explore population



Cluster Map

Display 1 measure for grouped values

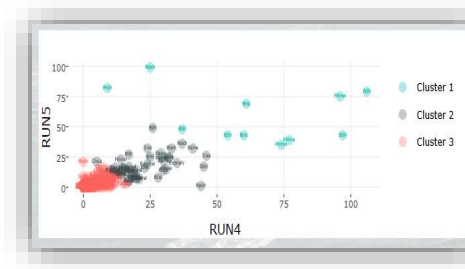
- Detect and review cluster sizes
- Ratings by demography
- Compare group sizes



Dot Plot by MAC

Display several Categories for the bubbles to vary by color and size in each – multiple plots/axis data

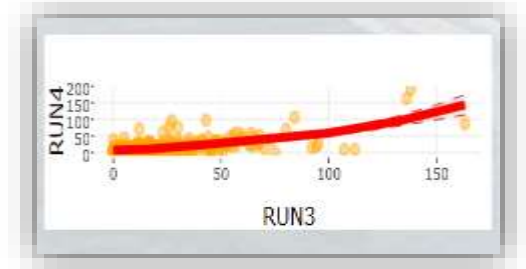
- sales by country
- Different population in different BIN's



Scatter Plot

Display the scatter of dots between 2 measures

- Look for groups
- Look which observation belong to which group
- Compare performance
- Compare populations



Scatter with prediction line

Displays line or lines of correlation between the 2 measures for 1 or multiple populations

- Scan population
- describe 2 measures of different sample
- Basic prediction model of future behavior of observations

Slicers

Mostly replaced by the new filter pane experience



Hierarchy Slicers

Choose hierarchy even without connection, same functionality as filter for hierarchy, can be colored by function

- Categories filtering
- Adding filter on page



Smart Filter

The OOTB filter experience
Has option to be unselected and key display features, can be linked to specific visuals only

- Filter Data on page/visual or in the entire report



Enlighten Slicer

Create tiles instead of simple filter values, great for mobile, can contain pictures

- Tiles Display
- Choose a product from a catalogue



Play Slicer

Play the timeline / Any other field or hierarchy to display all the reports in filter

- Story telling with data
- Behavior via time
- Adding dimension to the visualizations

Newest Visuals

Synoptic Visual – needs an animation file SVG



How to build my own?

PowerBI custom visual designer has retired.

There is a whole repository in GitHub that has the visuals library
<https://github.com/Microsoft/PowerBI-visuals>

A readme file there and you can install VS and try to implement

The user binds data from any of the sources to the visualization

Can build with a specific .json data

There are built in tools (the color menus etc.) that help

Visualization can cross filter and highlight – visuals that meet the users needs

API is exposed

Integration with data and formatting properties

Fork the repo use gulp to build it – JS with D3

Write the visualizations in type script and allows to build unit tests

A large, stylized teal graphic on the left side of the slide, resembling a thick, curved arrow or a stylized letter 'P' pointing towards the right.

Performance Reports

Premium Capacity Advanced Governance Portal

Users
Access
Capacity
Data – Datasets, refresh, measures efficiency, visuals usage
Premium Capacity Metrics
Use as a layout for your performance reports

Power BI Premium Capacity Metrics			
System Summary	Users	110	5
	Access	2175	4953
	Capacity	144.00	8
Dataset Summary	4595		
	000	0	
	11K	15.77	4.63
	1M	943.83	5.93
	16K	184.50	117
	359		
Dataset			



(All pictures from
Microsoft site
PowerBI.com
not customer data)

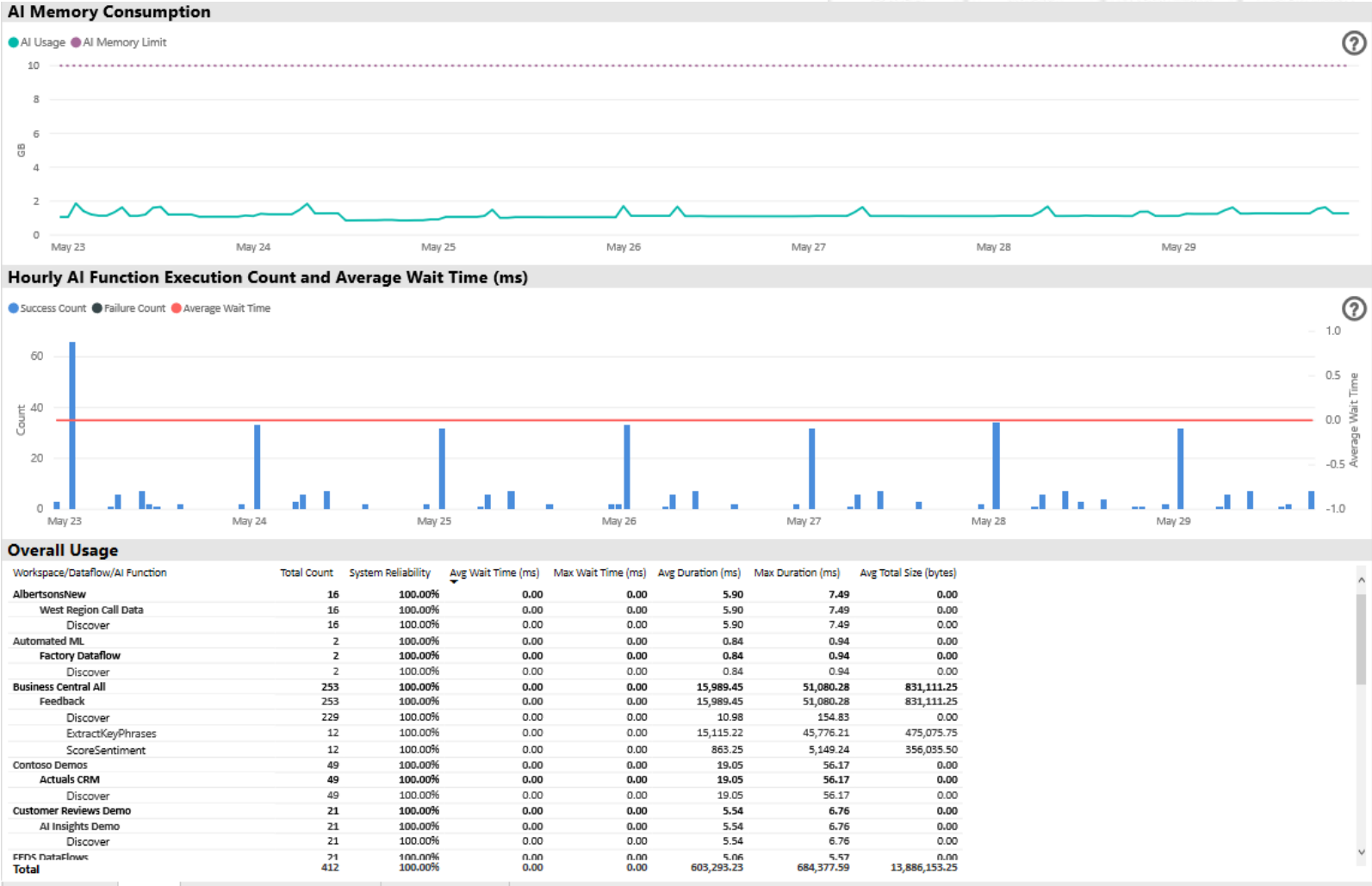
Premium capacity – Monitoring AI

AI metrics are available – full health and monitoring support directly

Number of AI functions executed depends on number of cores

Allows to identify data Flow which consumes the most

AI Summary			
AI Function Executions (Today)	AI Function Executions (All history)	CPU (avg %)	Memory (avg MB)
685	100.00%	84.38	1.87
AI Function Executions (Next Week Forecast)	AI Function Executions (Previous Week Total)	AI Function Executions (Next Week Forecast)	AI Function Executions (Previous Week Total)
0.00	0.00	688.24K	607.05K





Summary

Summary – did we really get here?

We have scanned only 20 or so custom visuals...that's like 20 fish in a sea!

Visuals are great! Try to use and reuse

Add to existing missing functionalities

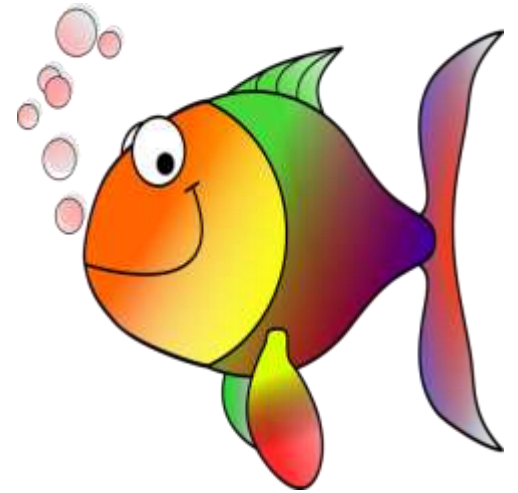
- Theme

- Drill Down

- Navigation

- Performance...

There is so much more to explore...



- Build me a pretty (sexy) report is not a spec!
- Use simplicity as your guidance
- Choose the right visual to your business question
- Always think what is the decision you want to support with your data?



Q & A