



Power Saturday

6 juin 2020, Online

**La conférence #Data, #PowerBI,
#PowerPlatform, #O365, #M365,
#Teams et bien plus encore**





AI Capabilities in Power BI to make AI accessible for everyone

Marc Lelijveld

[Q](#) Alle [Video's](#) [Afbeeldingen](#) [Boeken](#) [Nieuws](#) [Meer](#) [Instellingen](#) [Tools](#)

Ongeveer 119 000 000 resultaten (0,21 seconden)



Artificial Intelligence in 2020, waar moeten business leaders ...

Emerce - 23 jan. 2020

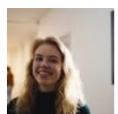
Artificial Intelligence is veelomvattend: van het spelen van games tot gezichtsherkenning en zelfrijdende auto's. De meeste mensen realiseren ...



Nieuw op Youtube: hoe maak je een Songfestival-liedje met ...

NPO 3FM - 23 jan. 2020

Een serie van de VPRO waarbij er wordt uitgezocht of het mogelijk is om met **artificial intelligence** een liedje te schrijven dat net zo goed is als ...



4 dingen waar je als ondernemer niet omheen kunt als je ...

Business Insider - 24 jan. 2020

Strategiespecialist Nathalie Post van DEUS stelde op basis van de interviews het rapport 10 Commandments to create value with **artificial intelligence** samen.



NEDERLAND LOOPT GEVAARLIJK ACHTER QUA ...

Persberichten.com (persbericht) (Blog) - 23 jan. 2020

Amsterdam, 23 januari 2020 – "Nederland dreigt een achterlopend en afhankelijk land te worden qua kunstmatige intelligentie." Dat is de ...



Dominante rol voor **artificial intelligence** in IT-trends 2020

Customer Talk - 16 jan. 2020

En hoewel er voor 2020 een hoop voorspellingen worden gedaan over de nieuwste trends en invloeden, is **artificial intelligence** zonder twijfel ...



AI Is About to Spark a Radical Shift in White Collar Work. But ...

TIME - 23 jan. 2020

But the latest wave of advancements in **artificial intelligence** may bring the prospect of machine replacement beyond blue collar work.



Artificial intelligence works its way into supply chains

ZDNet - 23 jan. 2020

Adding **artificial intelligence** to supply chains is delivering tangible benefits for companies putting it in place. Recent research out of McKinsey ...



ALL IMAGES VIDEOS MAPS NEWS | MY SAVES

- Topverhalen
- Zaken
- Entertainment
- Nederland
- Wetenschap/techniek
- Sport
- Wereld

Artificial Intelligence in 2020, waar moeten business leaders op letten?

Artificial Intelligence is veelomvattend: van het spelen van games tot gezichtsherkenning en zelfrijdende auto's. De meeste mensen realiseren zich niet eens hoe vaak AI achter de schermen werkt om ...

Emerce | 1d



Dominante rol voor **artificial intelligence** in IT-trends 2020

En hoewel er voor 2020 een hoop voorspellingen worden gedaan over de nieuwste trends en invloeden, is **artificial intelligence** ...

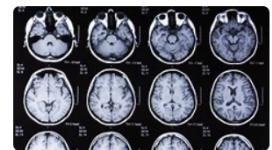
customertalk.nl | 9d



Aandeel **artificial intelligence** (AI) in de modeindustrie naar verwachting meer dan 36 procent gegroeid in 2027

New York - De waarde van **artificial intelligence** (AI) in de modeindustrie bedroeg wereldwijd 270 miljoen dollar (242 miljoen ...

FashionUnited | 8d



Trifork helpt detacheerde The Employment Group met AI

Trifork ontwikkelde hiervoor samen met The Employment Group(TEG) en PwC het digitale matchingplatform Boest. Dit platform ...

Emerce | 2d



Vrouw? Computer says no

Artificial Intelligence (AI) valt niet meer weg te denken uit ons dagelijks leven. De personal assistant op je smartphone, ...

De Morgen | 19h



Marc Lelijveld

Data & AI consultant
Macaw Netherlands



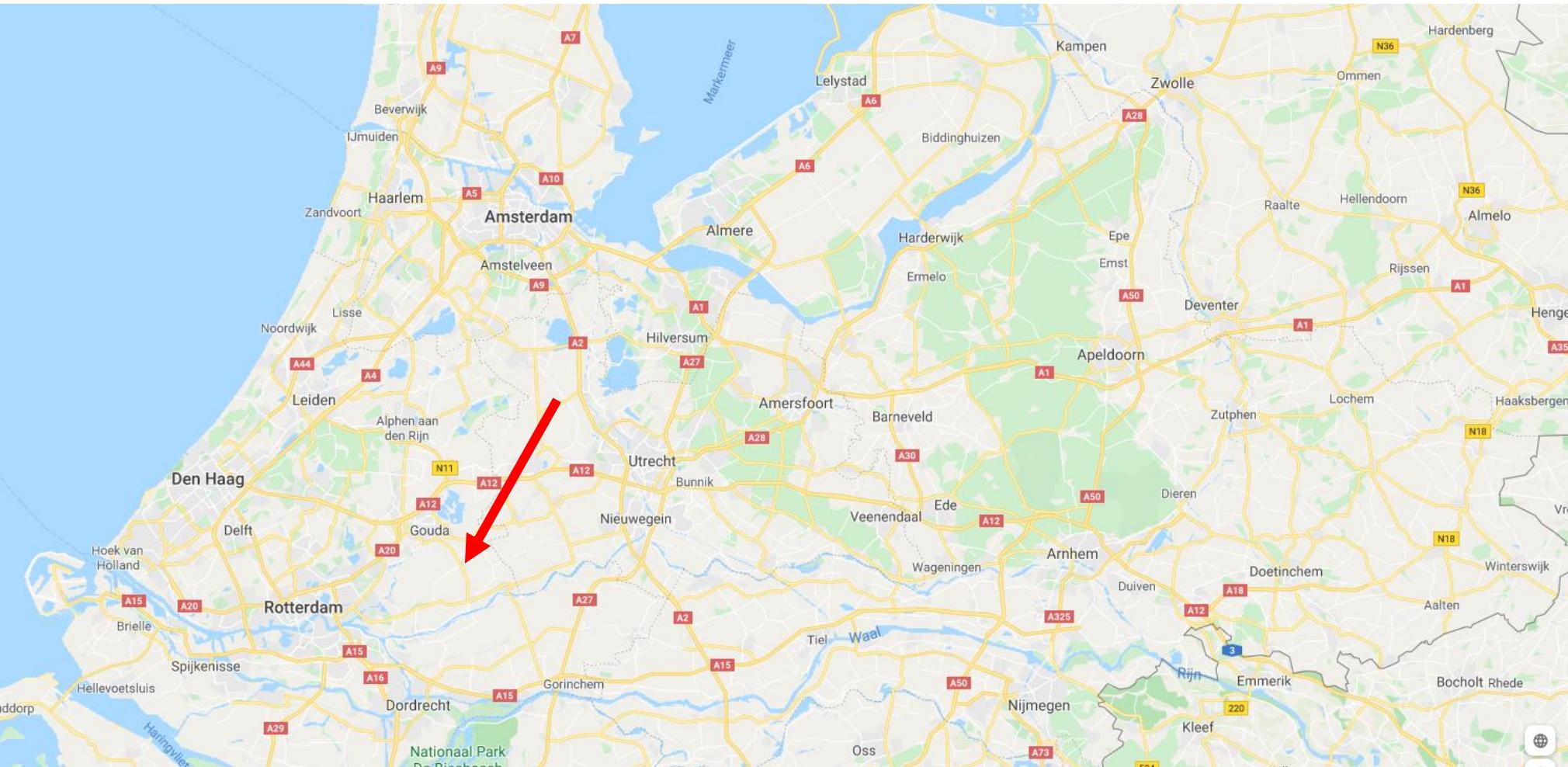
✉ Marc.Lelijveld@outlook.com

🐦 @MarcLelijveld

linkedin.com/in/MarcLelijveld

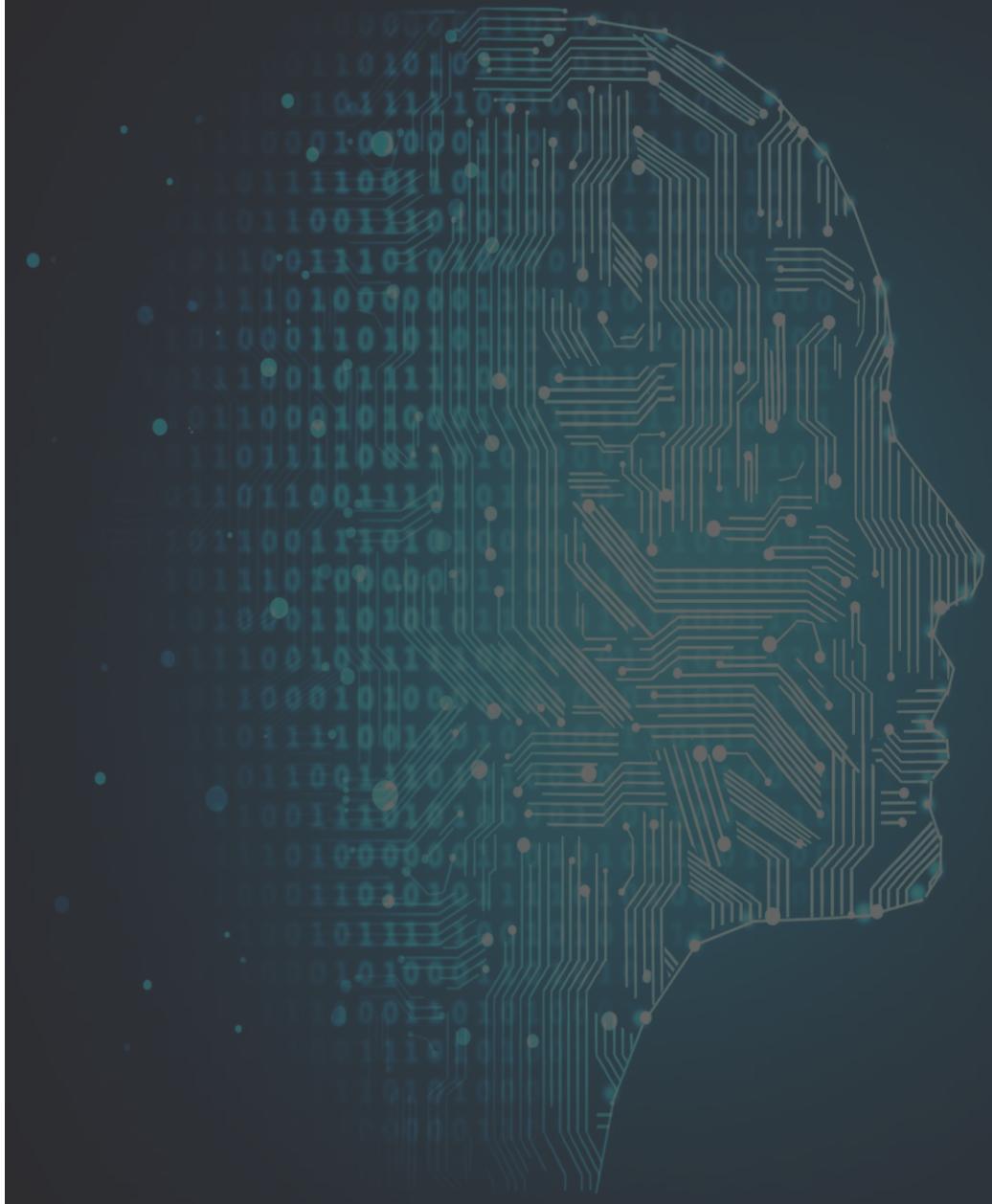
🌐 Data-Marc.com





What we cover today

- Introduction to AI
- Reporting & dashboarding now a days
- AI in Power BI
- Demo time!



Artificial Intelligence



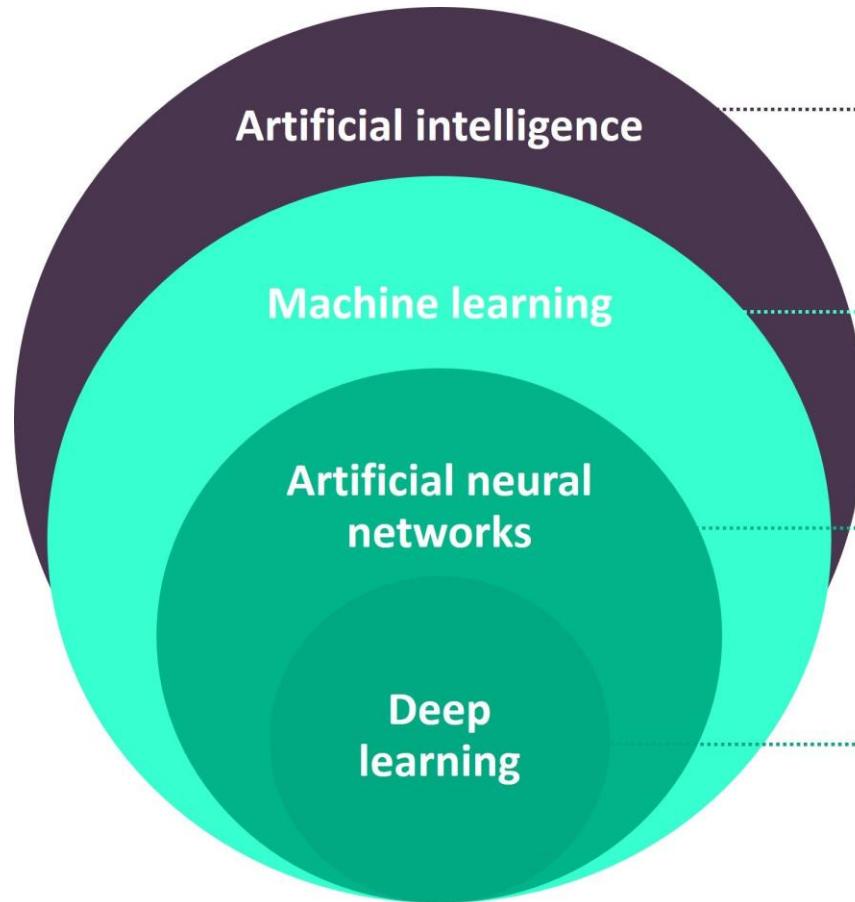
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For me as a newbie in this area



Artificial intelligence (AI)

Any techniques that enable machines to solve a task in a way like humans do

Machine learning (ML)

Algorithms that allow computers to learn from examples without being explicitly programmed

Artificial neural networks (ANN)

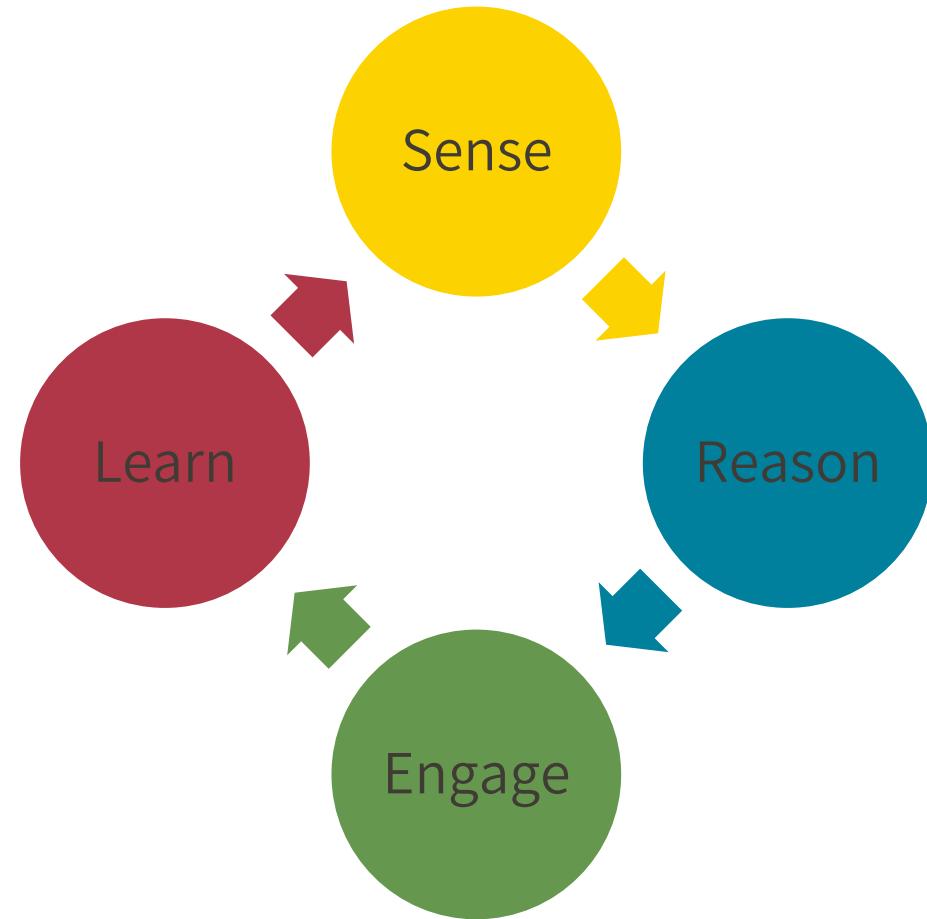
Brain-inspired machine learning models

Deep learning (DL)

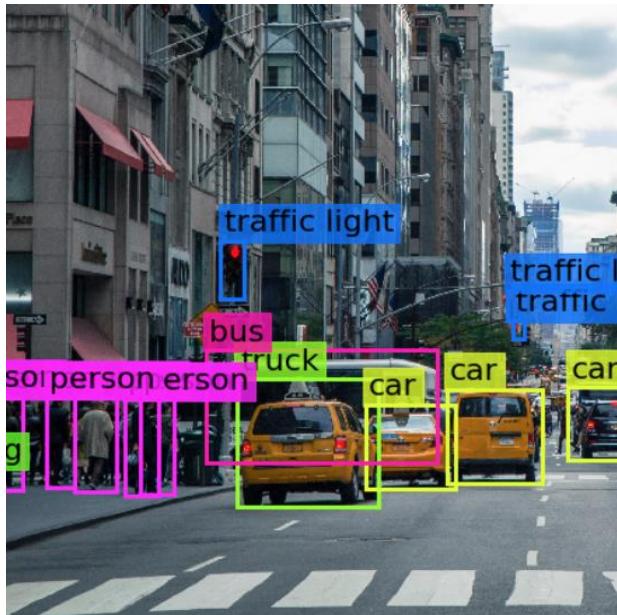
A subset of ML which uses deep artificial neural networks as models and automatically builds a hierarchy of data representations



Artificial Intelligence



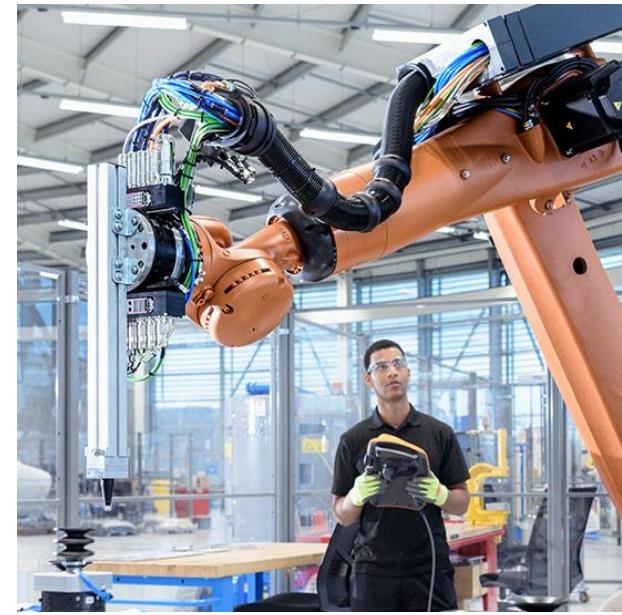
Ability to sense, reason, engage and learn!



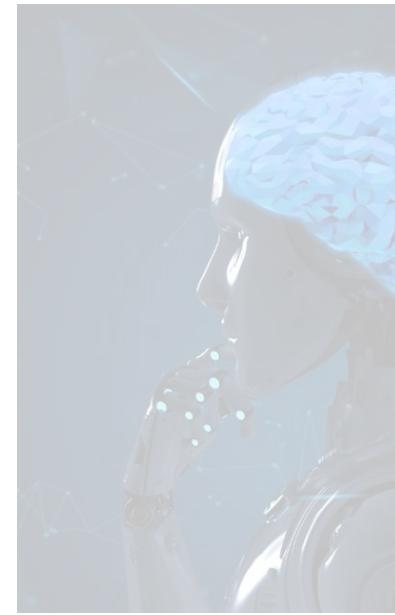
Computer vision



Voice recognition



Robotics



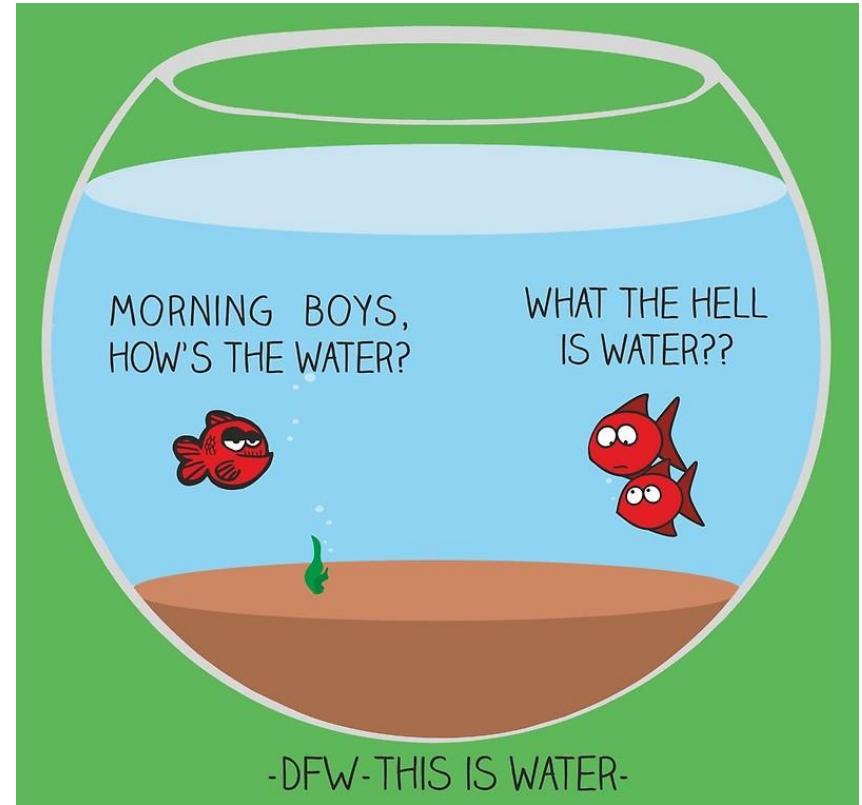
And more....

AI != Innovation

Does not understand the real world!

But Artificial Intelligence can:

- Learn
- Optimize
- Detect patterns
- Inform
- Inspire



AI lives in water, yet it doesn't know what water is.
David Foster Wallace



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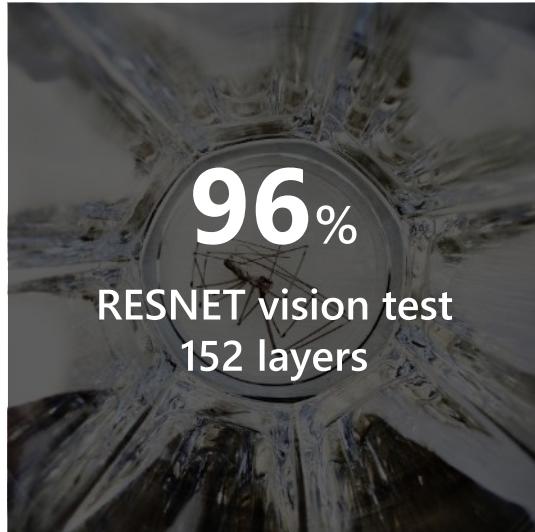
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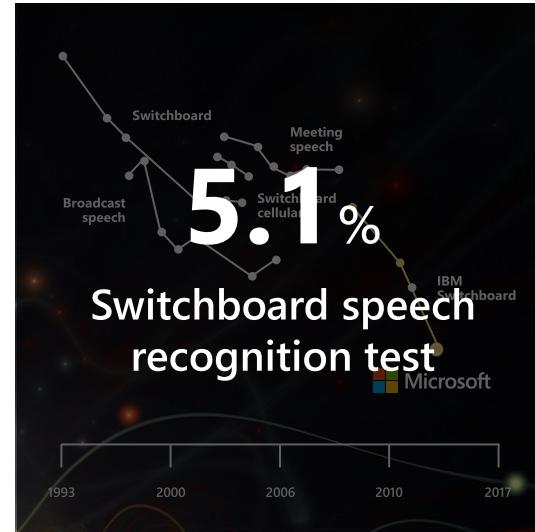


Microsoft AI breakthrough

Vision



Speech



Language



2016

Object recognition
human parity

2017

Speech recognition
human parity

March 2018

Machine translation
human parity

January 2018

Machine reading
comprehension
human parity



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The world's first AI whisky



Aqua vitae. Uisce beatha. Whisky - May 2019

“We want the AI to create a recipe that tastes good enough to win awards... we want to discover recipes that will never have occurred to a person”

Sales data

70

Azure
Cognitive
Services

million
recipes

Customer preferences

Azure
cloud platform

Ingredients of
award-winning
blends



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Reporting and dashboarding



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Everyone engages with ~~software~~ Power BI



Types of reporting



Describe



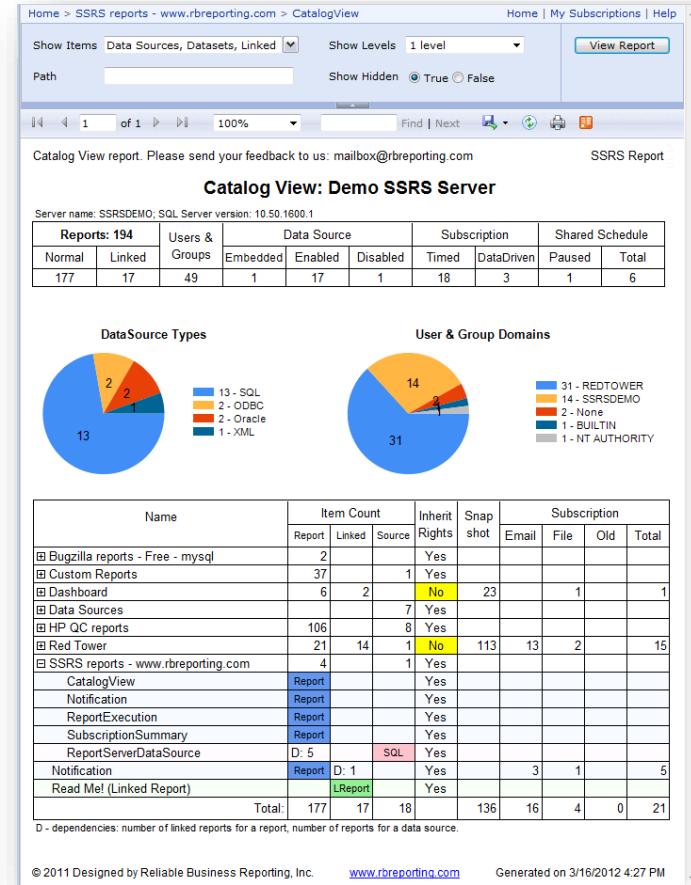
Declare



Explore

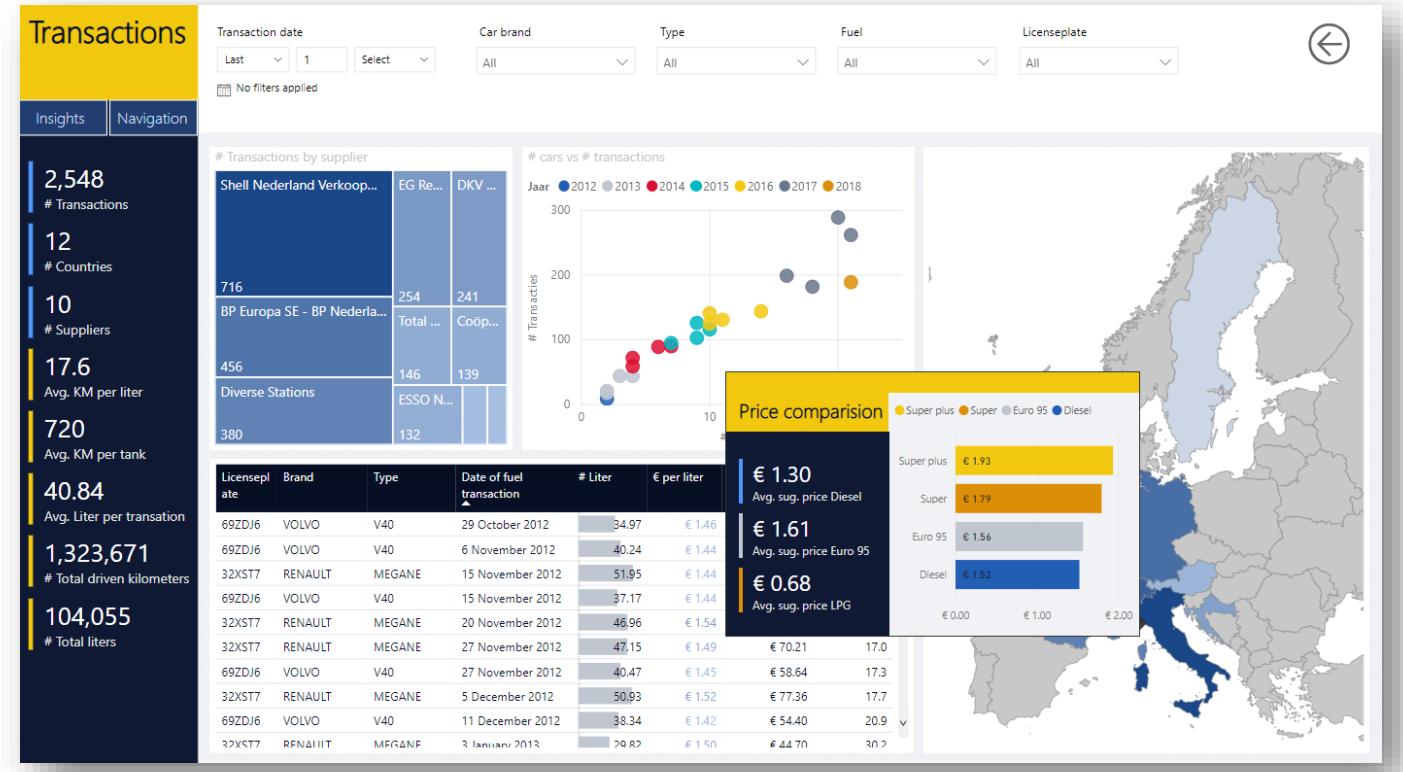
Reporting in the past

- Static
- Paginated
- Textual



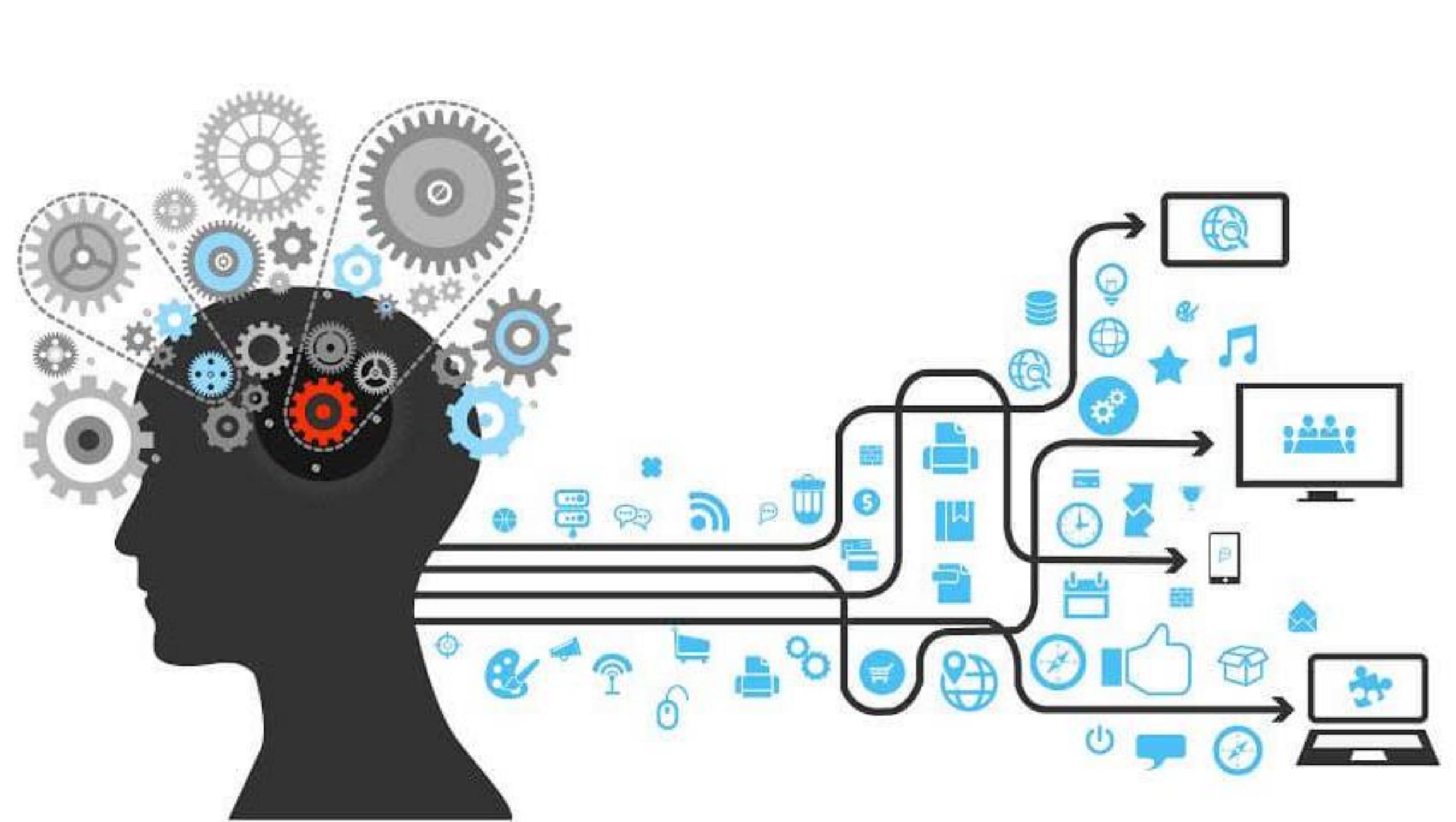
Intuitive reporting

- Clear navigation
- Consistent across pages
- Interactive experience
- High-level > detailed level



BUSINESS INTELLIGENCE





AI in Power BI



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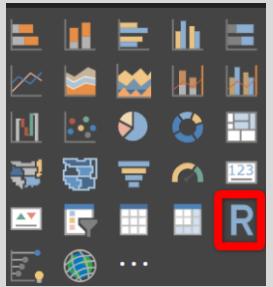
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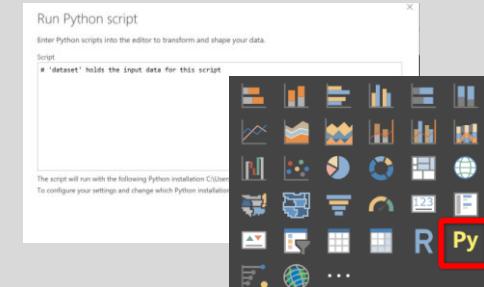


Power BI advanced capabilities

Desktop
Run R in
Power BI
visuals



Desktop
Phyton in
Visuals +
Power
Query



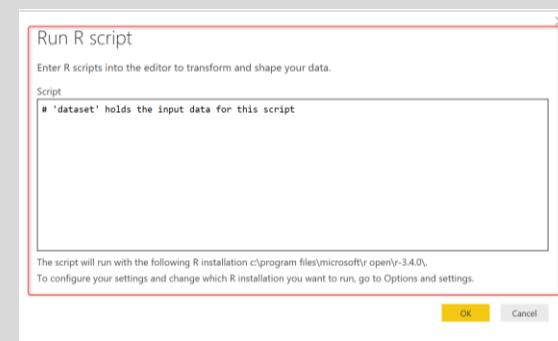
2015

2016

2018

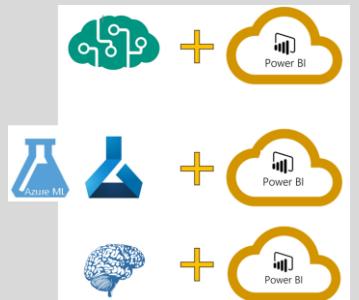
2019

Desktop
R in
Power
Query



Premium features

- AI in dataflows
- Key Influencer
- Azure Auto ML
- ML Studio



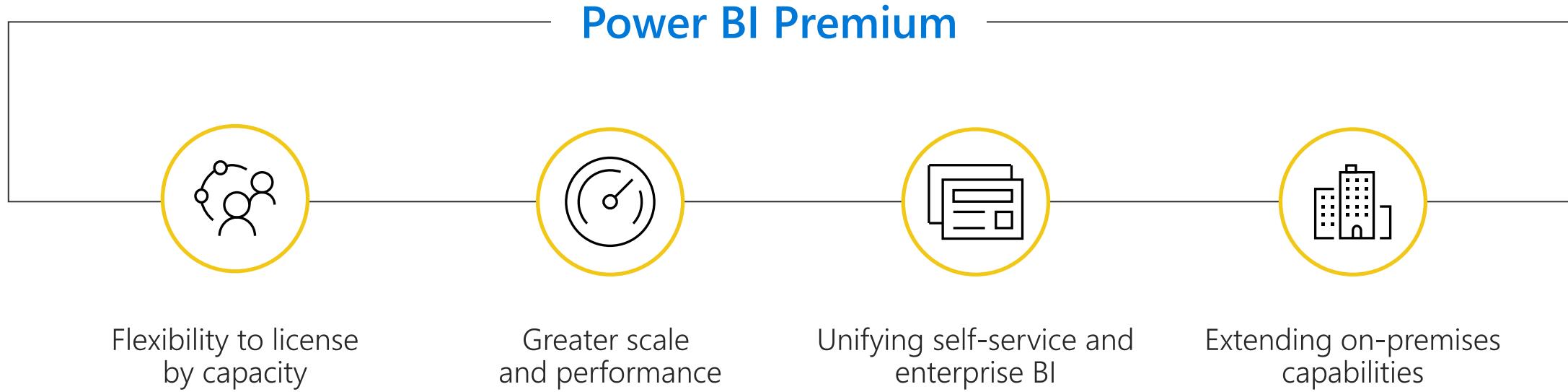
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Part of Power BI Premium



Dedicated resources in the cloud

AI in Power BI



End users



Analysts



BI Professionals



Data Scientists

Natural Language

Automated Insights

CAPABILITIES

- Quick Insights
- Q&A
- AI Visualizations

AI Enrichment

AI Transformations

CAPABILITIES

- Sentiment analysis
- Key phrase extraction
- Image detection

ML Models

Model Deployments

CAPABILITIES

- Predictions
- Classifications

Extends for Data
Scientists

CAPABILITIES

- R
- Phyton

Azure ML
Integrations

CAPABILITIES

- Auto ML

Make AI available for everyone!

Goal	How?
Help Business Users understand their data	Q&A
	Quick Insights
	Key Drivers
	Clustering



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Make AI available for everyone!

Goal	How?
Help Business Users understand their data	Q&A
	Quick Insights
	Key Drivers
Help Analysts prepare their data	Clustering
	Forecasting
	Cognitive Services
Automated ML	Automated ML
	R Integration



Make AI available for everyone!

Goal	How?
Help Business Users understand their data	Q&A
	Quick Insights
	Key Drivers
Help Analysts prepare their data	Clustering
	Forecasting
	Cognitive Services
Make it easy for Data Scientists and Analysts to collaborate	Automated ML
	R Integration
	Python Integration
	Azure ML Integration

Demo time!

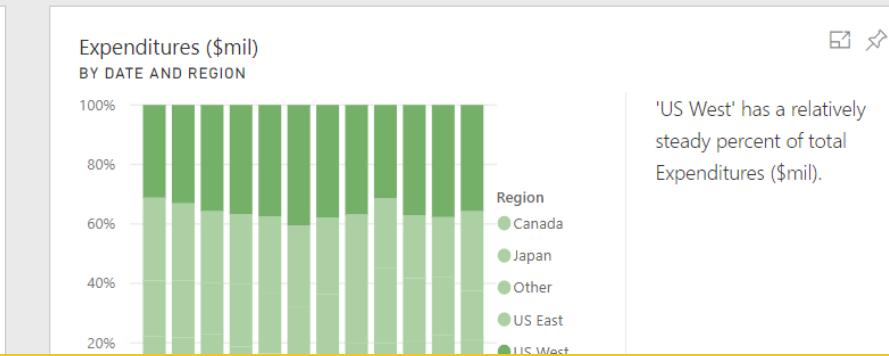
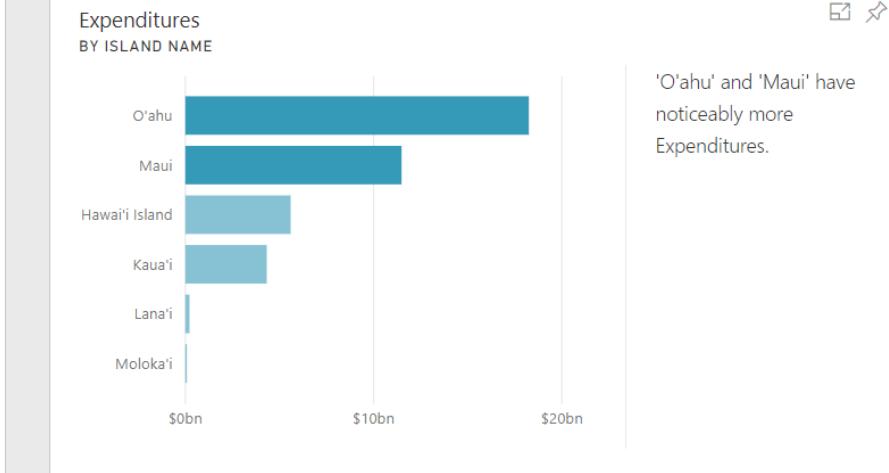
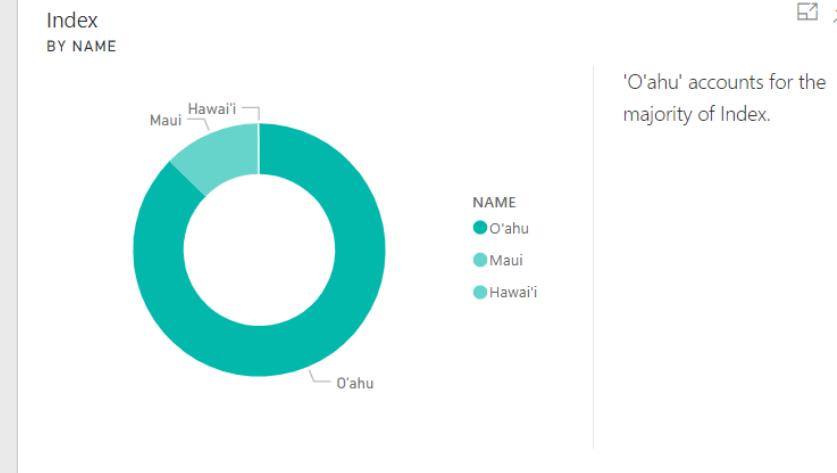
Because life is boring without risks



Demos

- Quick insights
- Power BI Natural Language Query
- Explain increase / decrease
- Analyze distribution
- Key influencer visual
- Decomposition tree
- AI Insights (in dataflows)





Quick Insights

show me average trip length for the last year

show me average trip length YoY% for the last year

show me expenditures for the last year

show me expenditures YoY% for the last year

show me spending per trip (PP) for the last year

number of seasons

Ask a related question

Clear

Add this question

Visits by Date and Region

Region Canada Japan Other US East US West

450K

400K

350K

300K

250K

200K

150K

100K

50K

0K

\$1M

\$2M

\$3M

\$4M

\$5M

\$6M

\$7M

\$8M

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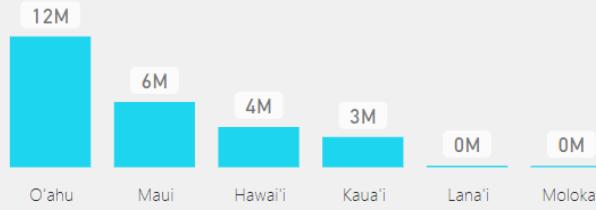
\$279M

\$280M

\$281M

27,5M Visitors **948K** Arrivals per month **\$39,9bn** Expenditures

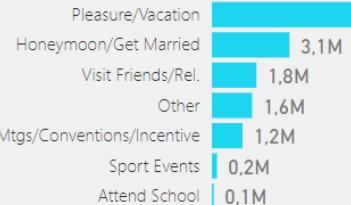
VISITS BY ISLAND



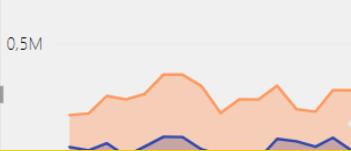
SPENDING PER TRIP (PP)



TRIP PURPOSE



VISITS BY REGION



Visits

BY DATE, REGION AND TRIP PURPOSE

'Pleasure/Vacation' accounted for the majority of the increase among Trip Purpose, offsetting the decrease of 'Visit Friends/Rel.'. The relative contributions made by 'Pleasure/Vacation' and 'Visit Friends/Rel.' changed the most.

● Increase ● Decrease ● Total ● Other



This feature is in preview. [Learn more](#)

The ribbon interface shows the following sections:

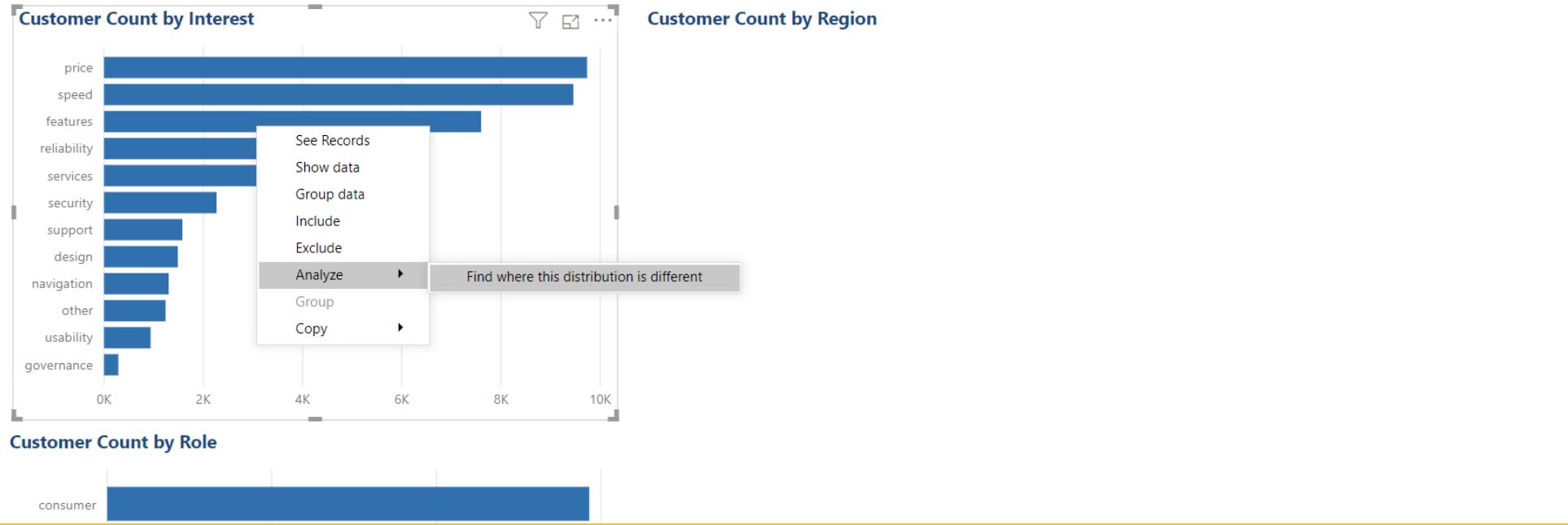
- Expenditure Statistics
- Island Weather
- Islands
- Major Market Areas
- Table
- Trip Purpose Statist...

Explain Increase / decrease

NEW CUSTOMERS

New Customers (February)

45.218



Axis

Theme:

Legend: Add data fields here

Value: Count of Customer ID

Tooltips: Add data fields here

Drillthrough

Cross-report: Off

Keep all filters: Off

Add drillthrough fields here

Analyze distribution



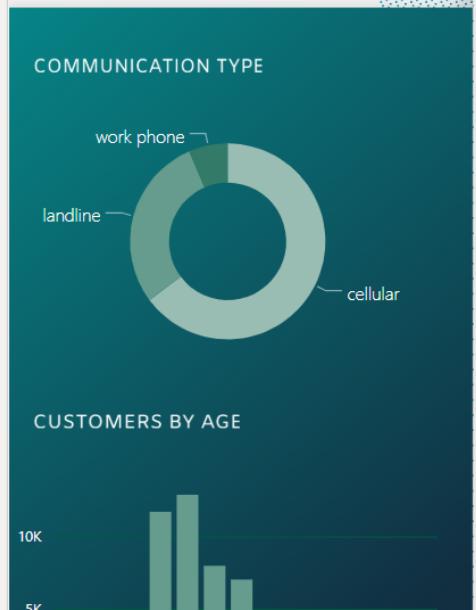
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GUEST ANALYTICS



Filters on all pages ...

Add data fields here

Values

Add data fields here

Drillthrough

Cross-report

Off

Keep all filters

On

Add drillthrough fields here

Key Influencer Visual



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ProductName	Sales Amount
Fabrikam Budget Movie-Maker 1" 25mm E400	\$10.550
Fabrikam Budget Moviemaker 1" 25mm E400	\$50.996
Fabrikam Budget Movie-Maker 1/2" 3mm E300	\$8.208
Fabrikam Budget Moviemaker 1/2" 3mm E300	\$42.158
Fabrikam Budget Movie-Maker 1/3" 8.5mm E200	\$11.508
Fabrikam Budget Moviemaker 1/3" 8.5mm E200	\$34.182
Fabrikam Budget Movie-Maker 2/3" 17mm E100	\$13.120
Fabrikam Budget Moviemaker 2/3" 17mm E100	\$31.130
Fabrikam Business Videographer 1 25mm M600	\$24.030



Decomposition Tree

ENTITY NAME

▶  Language Detection

▶  Key Phrases

▶  Sentiment Score

AI Insights (in dataflows)

Airbnb analysis



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Cognitive services



Vision



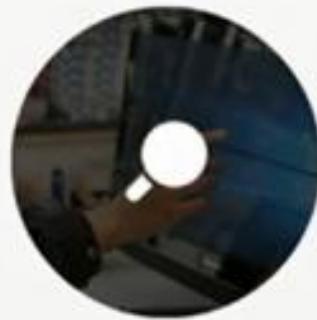
Speech



Language



Knowledge



Search

Pervasive application of AI

New capabilities that make AI accessible for everyone

- Text analytics and image recognition through Azure Cognitive Services integration
- Key driver analysis helps surface what drives an outcome
- Enable business analysts to create new ML models through Automated ML
- Seamless collaboration between business analysts and data scientists through Azure ML integration

The screenshot shows the Power BI Entities screen. The left sidebar has icons for Home, Entity, Machine learning models, and Data flow. The top navigation bar shows 'Power BI' and 'AI test > SalesOpportunities'. The main area displays a table with columns: ENTITY NAME, ENTITY TYPE, and ACTIONS. The entities listed are:

ENTITY NAME	ENTITY TYPE	ACTIONS
Account	Custom	[Edit, Brain, Gear, List]
Contact	Custom	[Edit, Brain, Gear, List]
Lead	Custom	[Edit, Brain, Gear, List]
Opportunity	Custom	[Edit, Brain, Gear, List]
OpportunityProduct	Custom	[Edit, Brain, Gear, List]
Product	Custom	[Edit, Brain, Gear, List]
SystemUser	Custom	[Edit, Brain, Gear, List]

Chambre Simple

★ 4.45 (96) · Batignolles, Paris, Île-de-France



Room in boutique hotel hosted by Nathalie

1 guest · 1 bedroom · 1 bed · 1 bath



€52 / night

★ 4.45 (96)

CHECK-IN 06/06/2020	CHECKOUT 06/07/2020
GUESTS 1 guest	

€52 x 1 night €52
 Service fee ⓘ €0
 Occupancy taxes and fees ⓘ €2

Total €54

Sparkling clean

8 recent guests said this place was sparkling clean.

Great location

100% of recent guests gave the location a 5-star rating.

Cancellation policy

Cancel before 2:00 PM on Jun 6 and get a full refund, minus the first night and service fee.

Share Save

★ 4.45 (96 reviews)

Cleanliness

4.7

Accuracy

4

Communication

4.8

Location

4

Check-in

4.7

Value

4

Umaar
February 2020

Great location, only 4 minutes from Metro. Very clean and staff is great too!

Alyssa
February 2020

Good value for an affordable, quick one-night stay. The one man at the front desk was very kind, though he did take about 40min to assist with check in. Rooms are very small but clean and the best part of this boutique hotel was the breakfast - the baguette bread and the fresh grapefruit juice were lovely! Location is good - not far from the metro stop. (And also a short metro ride to Sacre Coeur.)

Viola
December 2019

great location! I just needed a bed to sleep on for a layover. It was perfect.

[Show all 96 reviews](#)

Accuracy

Location

Value

Anais
February 2020

Wouldn't recommend this place even for just one night, it is too noisy and also very bright even with all the curtains closed and people are smoking in the hotel

Beto
January 2020

This was one of the most incredible finds on Airbnb. This adorable hotel is so centrally located and truly a great value. I can't recommend it enough. One thing that is important to keep in mind, because it is a hotel it's likely you won't get the exact room they show in the pictures here on Airbnb. While it's generally the same, I thought the actual room I was getting was a bit bigger like the one in the pictures. That being said, it's not a complaint but an observation. I would stay here again

Elitza
August 2019

Very small and comfortable room. No AC, just fan. Shower stall- clean bathroom. Big windows. Comfy bed. Super nice staff. You can metro/bus/walk anywhere from there.



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Recap

- AI is more than BI
- AI != Innovation
- Inspire, optimize and detect patterns
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The cheat sheet is a yellow booklet titled "Power BI Cheat Sheet". It includes sections for "Power Query", "Data Model", and "DAX". Each section contains "Tips & Tricks" and additional resources. The "DAX" section is particularly detailed, listing 17 tips from various sources. The booklet also features a "macaw" logo at the bottom right.

Power Query

Tips & Tricks

- Give every step an explanatory name and merge steps of the same type, for better manageability.
- Some people prefer to not use spaces in the name of a step, for a better M coding experience.
- Give queries and columns user-friendly names, as they will become part of your data model.
- Make sure that each column has the correct data type. Making the model smaller and faster.
- Remove columns you are not going to use in your report. Prefer 'Remove Other Columns' above the 'Remove Columns' option, for lower risk that structural changes in your data source break the query.
- Maximize the use of Query Folding for faster and more efficient queries. With Query Folding, multiple transformations are merged as one query and then sent to the source. If 'View Native Query' is not available, Query Folding has stopped before that step.
- In general, prefer 'Import' over 'DirectQuery'. Unless the amount of data is too large to import, or where there are other requirements (like real-time insights).
- Use Date From instead of DateTime.Date to extract a date from another field, and to make sure Query folding won't break. More info on this blog post: <http://bit.ly/DateFrom>.
- Turn off 'Enable Load' for queries/tables that you don't need in the Data Model.
- Re-use Power Query code and lower impact on your data source by using Power BI Dataflows.
- Turn on the Formula Bar so you get familiar with Power Query (M) code.
- Automatically beautify all column names in a query, e.g. "CustomerName" → "Customer Name". Note: he also has a function to replace underscores in all column names automatically.

Code examples (don't forget that Power Query / M is case-sensitive!)

- if > 0 then A else B
- try A/B otherwise 0
- #table("Text", "Text", {{[1,2],{3,4}}})
- DateTime.LocalNow()
- Date.From(DateTime.LocalNow())
- Excel.WorkbookWeb.Contents("url/[filename.xlsx]", null, true)
- #shared to list all functions and get PQ documentation

Resources

- Power Query M Formula Reference: <http://bit.ly/PQMReference>. Repo by Imke Feldmann with a lot of custom Power Query functions: <https://github.com/ImkeF/M/>.

Data Model

Tips & Tricks

- Always use a separate Date table in your data model. Mark it as a Date Table.
- Only use DAX Calculated Columns when it's not possible to create it using Power Query. This improves clarity and manageability of your report as transformations are located where you expect them. It also improves query speed of the model and reduces refresh duration.
- Give measures a prefix (%_ # _).
- Use abbreviations like YTD, LY, PY, PP as a suffix, to keep the base fields together in the sort order.
- Hide columns that are needed but are irrelevant for the user.
- For each measure column in your data model, make a DAX Calculated Measure instead of using the Default Summarization; then hide the original column. This way all measures will have the same icon. And it enables you to easily change the calculation in the future (e.g. adding a filter condition).
- Always use the table name when you refer to a column, for example: "Product'[Category]".
- Use IsInScope to get prevention by 0, and to improve the speed of your divisions.
- In DAX (uncomment DAX lines by pressing Alt + Shift + A or CTRL + /, and Shift + Enter for line breaks).
- Use aggregations to keep your model small and performant, and still have all detailed data available.
- Use Tabular Editor to make changes to your Power BI file (currently unsupported by Microsoft). Also, make sure to check-out its best-practices analyzer.
- Avoid bi-directional cross filtering and make use of measure filters <http://bit.ly/MeasureFilters>.
- For very large models, group measures or fields in display folders for better usability.
- Use DAX Studio to capture all DAX queries executed on your Premium Capacity.
- Keep your PBI desktop file fast and small by using TOP N (<http://bit.ly/ImproveReportBuilding>) and switch underlying data source in PBI service after publishing (<http://bit.ly/ParameterizeDataSource>).
- Increase the readability of your DAX calculations: <https://www.daxformatter.com>.
- Use DAX Studio to analyze and tune your calculations: <http://daxstudio.org>.
- Find all about DAX expressions: <https://daxguide.com>.
- Use Tabular Editor to easily build and manage your models: <https://tabulareditor.github.io>.

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