

# Reference Solution Architecture

Data Architecture – Enterprise Data Warehouse (EDW) and Data Lakehouse

Analyze and Deliver – Power BI and Data Analytics

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# Building a Data Driven Organization

**Enabling Self Service** - building Data Models and organizing visualizations to support end-users creating their own dashboards and finding their own insights.

**Storytelling with Data** – Insights on how to be most effective with visualizations of data.

**Citizen Data Scientists** – BI professionals who have mastered one of the Modern Analytics and BI toolkits could be looking to adopt data science skills.

**Advanced Analytics** – solid Descriptive Statistics are required so the underlying data supports the ability to effectively develop and deploy AI and ML models.

**Data Literacy Programs** – building business user's abilities to analyze data and practices.

# Why “Data Warehousing” in the Cloud?

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Scalability

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MPP – Massive Parallel Processing

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Cost

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No Capital Expense

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No Hardware Maintenance

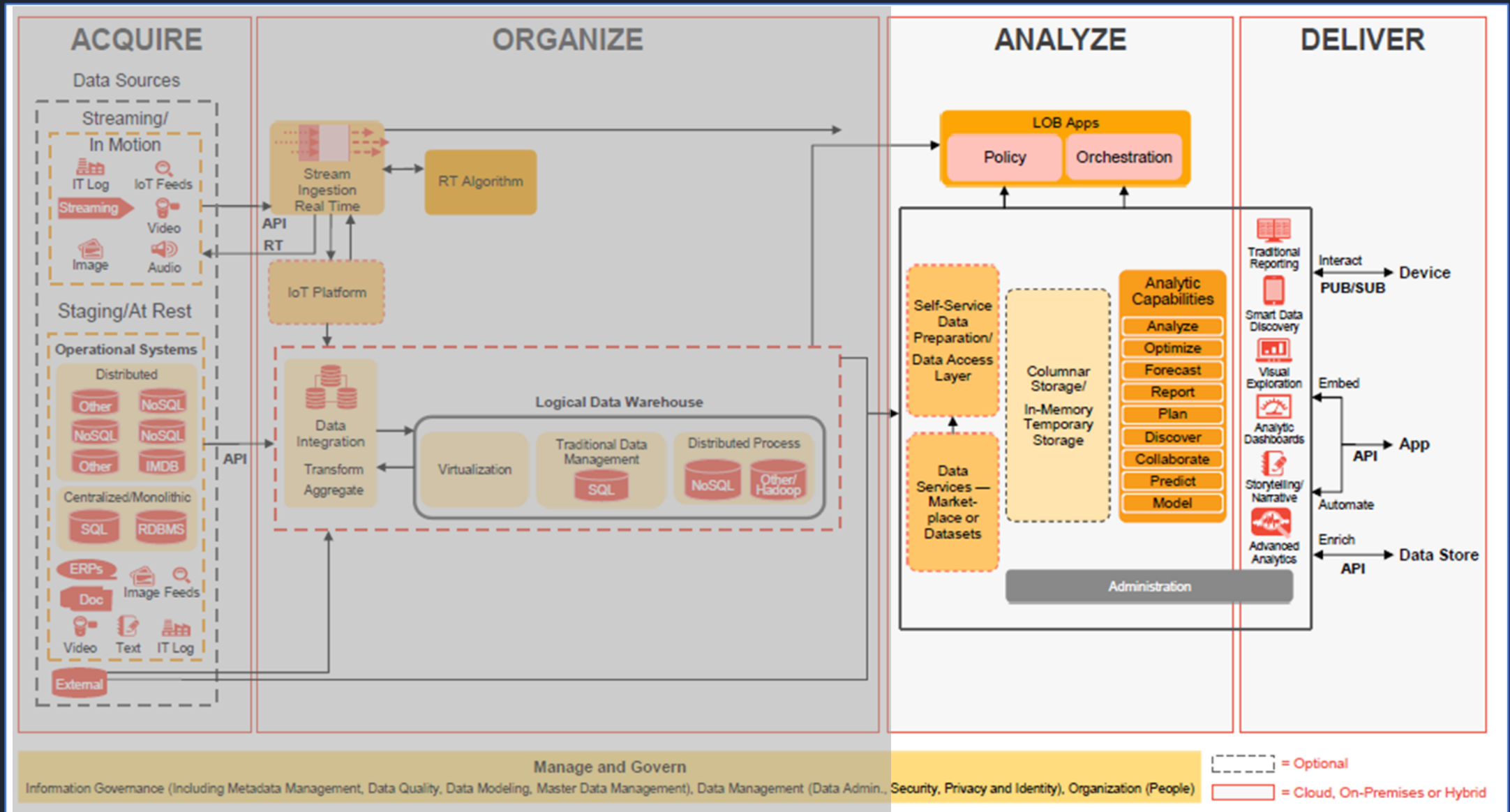
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Integration with other services (SaaS)

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Time to Market

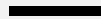
# Analyze and Deliver



# Overview

## Power BI Environment

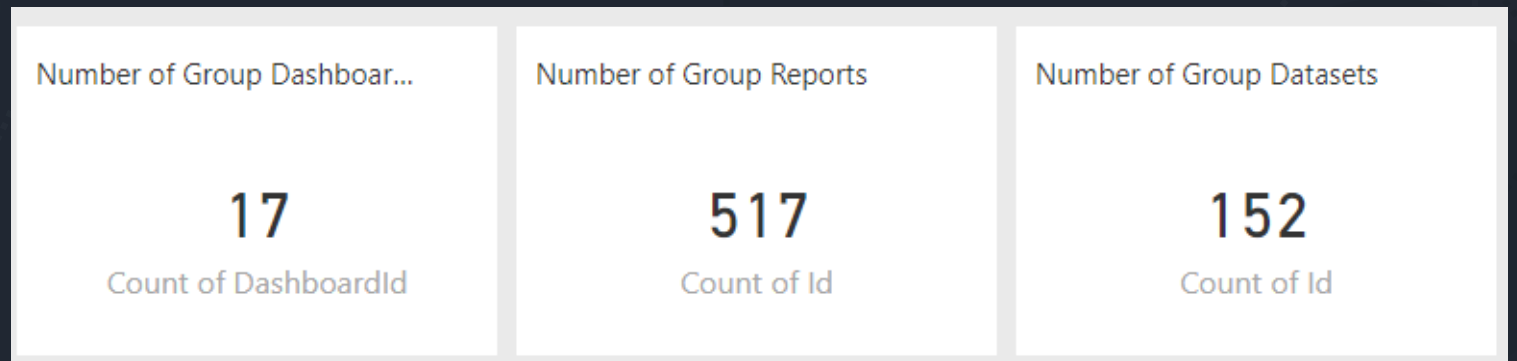
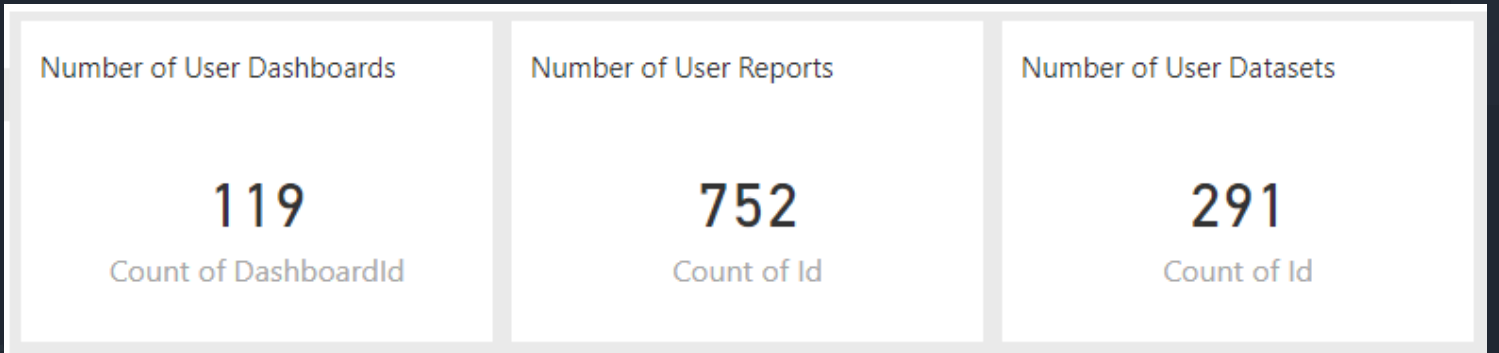
- Power BI Services and Power BI Pro licensing
- Power BI Reporting – moving from Datasets in Power BI Service and on-premise SQL Server to Azure Infrastructure
- Data Warehouse requirements for improved BI, Data and Analytics
  - Centralized Data Repository for Enterprise Data
  - Secure and Scalable
  - Performance Improvements
  - Reporting and Analytics Improvement
  - Adoption of R and Python integration



# Power BI Environment

## Power BI Service - Tenant

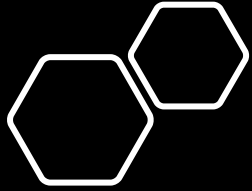
- Datasets
- Reports
- Data Sources
- Workspaces
- Apps
- Data Mart



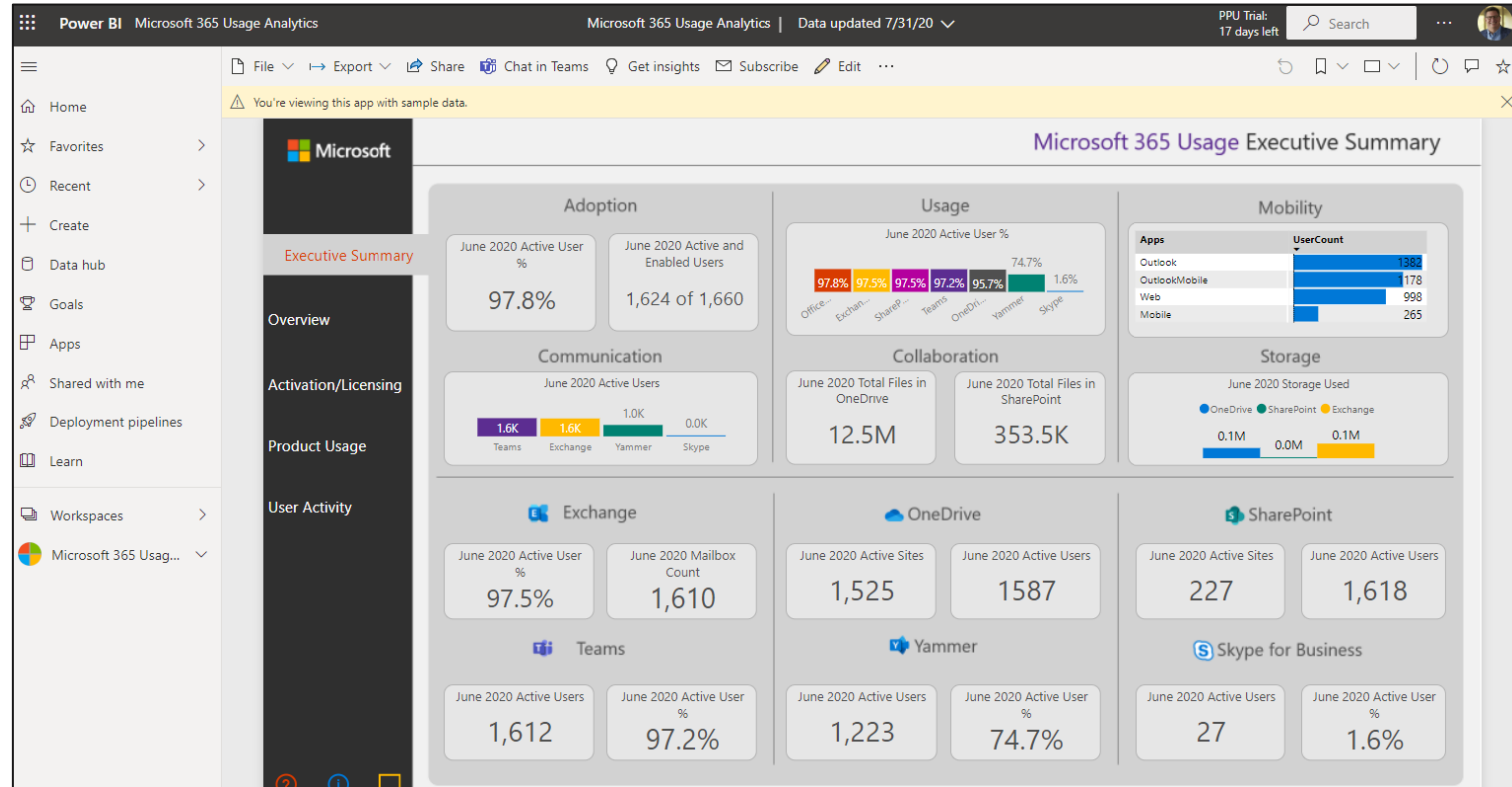
# Power BI Security - Microsoft 365 Admin Portal

- Security –Azure Active Directory and Microsoft 365 for **Authentication**
- **Authorization** is currently managed at the Workspace level in Power BI – with the development of the Data Warehouse it is strongly encouraged to leverage existing Azure Active Directory Groups as much as possible.
- Power BI supports Microsoft Governance including Sensitivity Labels.

The screenshot displays the Power BI Admin portal interface. At the top, the header shows 'Power BI Admin portal' on the left and 'PPU Trial: 17 days left' and a search bar on the right. The left navigation pane includes 'Home', 'Favorites', 'Recent', 'Create', 'Data hub', 'Goals', and 'Apps'. The main content area is titled 'Admin portal' and lists several options: 'Tenant settings', 'Usage metrics', 'Users' (highlighted), 'Premium Per User', 'Audit logs', 'Capacity settings', 'Refresh summary', and 'Embed Codes'. A prominent yellow button labeled 'Go to Microsoft 365 Admin Center' is visible in the main content area. A large, semi-transparent circle is overlaid on the right side of the interface.

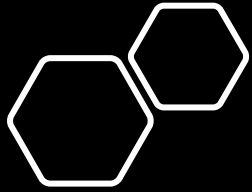


# Microsoft 365 Usage Analytics



<https://docs.microsoft.com/en-us/microsoft-365/admin/usage-analytics/enable-usage-analytics?view=o365-worldwide>





# Dataset Review

Bravo for Power BI

HCTN Dataset ERF

Analyze Model

Format DAX

Manage Dates

Export Data

### HCTN Dataset ERF

Your dataset is **589.34 MB** large and contains **603** columns, **189** of which are not referenced within the model.

Search Column

VPAX

COLUMN	TABLE	CARDINALITY	SIZE	WEIGHT
Smaller columns...		7.42 M	463.27 MB	79%
Job Order Link	JobOrder	266.90 K	31.45 MB	5%
hc_audithistoryid	AsgnAuditHistory	516.48 K	26.20 MB	4%
hc_audithistoryid	HotlistHistory	441.43 K	23.48 MB	4%
ChangeDateTime	HotlistHistory	330.95 K	22.54 MB	4%
hc_audithistoryid	JOAuditHistory	409.60 K	22.40 MB	4%
		9.38 M	589.34 MB	100%

Unreferenced columns can generally be removed from the model to optimize performance. Before removing them, make sure you are not using these columns in any reports, which Bravo cannot determine.

Bravo for Power BI

HCTN Dataset ERF

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Export Data

### HCTN Dataset ERF > Manage Dates

Calendar Interval Dates Holidays Time Intelligence

Choose a calendar template to apply to this model. Bravo will create the required tables or update them while keeping the existing relationships intact.

**Calendar Template**

Select *Monthly* for calendar based on different number of months. Set *Weekly* for 445-454-544-ISO calendars. Use *Custom* for flexible calendars of variable length.

Standard

**First Month of the Year**

For *Weekly* ISO, set *January*.

January

Sample Data

DATE	YEAR	YEAR QU...	YEAR QU...	QUARTER	YEAR MO...	YEAR MO...	MONTH	MONTH ...	DAY OF ...	DAY OF ...	FISCAL Y...
1/1/2006	2006	8024	Q1-2006	Q1	Jan 2006	24072	Jan	1	1	Sun	FY 2006

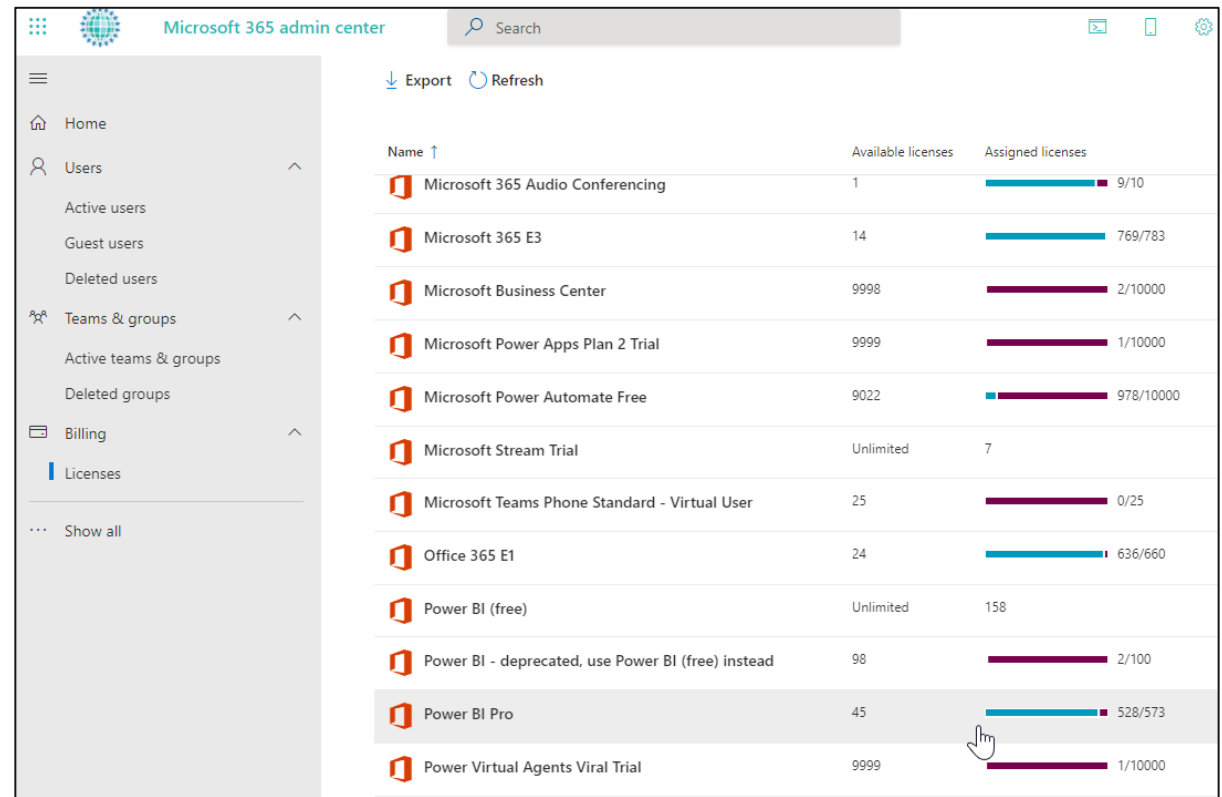
Preview Changes

# Power BI Components

## Power BI Reports, Dashboards, Apps and Workspaces

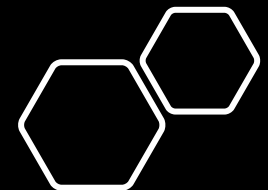
- Reports - generally a detailed summary of the large data set as per the criteria are given by the user. Includes the ability to find insights in the data by slicing and dicing.
- Dashboards - a collection of visuals to tell the story graphically, using charts and graphs, along with features to interact with the end-user.
- Applications - collections of dashboards and reports and publish these collections as apps to your whole organization or to specific people or groups.
- Workspaces - places to collaborate with colleagues to create collections of dashboards, reports, apps, datasets, and paginated reports.

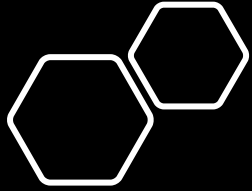
Product Title	Total Licenses	Assigned Licenses
Azure Active Directory Premium P1	15	10
Communications Credits	Unlimited	4
Dynamics 365 Business Central Essentials	65	0
Dynamics 365 Business Central Team Members	5	0
Dynamics 365 Customer Service Enterprise vTrial	10000	1
Dynamics 365 P1 Trial for Information Workers	10000	1
<b>Dynamics 365 Sales Enterprise Edition</b>	<b>932</b>	<b>909</b>
Dynamics 365 Talent: Onboard	10000	0
Microsoft 365 Audio Conferencing	10	9
Microsoft 365 E3	783	769
Microsoft Business Center	10000	2
Microsoft Power Apps Plan 2 Trial	10000	1
Microsoft Power Automate Free	10000	978
Microsoft Stream Trial	Unlimited	7
Microsoft Teams Phone Standard - Virtual User	25	0
Office 365 E1	660	636
Power BI (free)	Unlimited	158
Power BI - deprecated, use Power BI (free) instead	100	2
Power BI Pro	573	528
Power Virtual Agents Viral Trial	10000	1
Visio Plan 2	42	38
Windows 10/11 Enterprise E3 VDA	8	0



# User Adoption

- Licensing
- Power BI Reporting: Tenant and Workspaces
- Self-Service





# Power BI Premium Per User

- Large datasets can be enabled for all Premium P SKUs, Embedded A SKUs, and with Premium Per User (PPU). The large dataset size limit in Premium is comparable to Azure Analysis Services, in terms of data model size limitations.
- A limitation on using PPU is the requirement of end-users to also have a PPU License (\$10 per month on top of their \$10 per month Power BI Pro license).
- The additional performance may be offset by re-balancing the Power BI license configuration at the next renewal date.

Refresh history

Scheduled OneDrive

Details	Type	Start	End	Status	Message
	Scheduled	6/16/2022, 12:03:02 AM	6/16/2022, 1:02:58 AM	Completed	
	Scheduled	6/15/2022, 12:03:03 AM	6/15/2022, 12:27:32 AM	Completed	
	Scheduled	6/14/2022, 12:03:02 AM	6/14/2022, 12:28:07 AM	Completed	
	Scheduled	6/13/2022, 12:03:03 AM	6/13/2022, 12:29:19 AM	Completed	
	Scheduled	6/12/2022, 12:03:03 AM	6/12/2022, 12:28:25 AM	Completed	
	Scheduled	6/11/2022, 12:03:02 AM	6/11/2022, 12:29:17 AM	Completed	
	Scheduled	6/10/2022, 12:03:01 AM	6/10/2022, 12:30:30 AM	Completed	

# Designing Effective Dashboards

The Power BI Team can incorporate update design templates to help with user adoption and understanding.

ENJOY THE NUMERRO DESIGN TOOLKIT

## Welcome to the Numerro Hub

You have full access to browse and download 290+ Numerro Design Toolkit Components

### Templates

Templates are pre-built dashboard designs that integrate many report types to tell a compelling visual story.

[Explore Templates](#)

### Visualizations

Visualizations are beautifully designed charts and visuals for every visualization type that is offered by Power BI.

[Explore Visualizations](#)

### Themes

Themes are carefully crafted visual palettes to help bring your data to life in a consistent and compelling manner.

[Explore Themes](#)

### Grids

Grids help you ensure a clean, clear, and aligned layout for your Power BI reports, equipping you with a consistent structure.

[Explore Grids](#)

### Headers

Headers are elements that help your report users understand the information that is presented easily and quickly.

[Explore Headers](#)

### Navigation Bars

Navigation Bars make it easy for your users to navigate and filter dashboards so your users can get exactly what they need.

[Explore Navigation Bars](#)

# BI Delivery and Center of Excellence approach

## DAR Framework – Dashboards, Analytics and Reporting

- Dashboards - Quick Looks and Monitoring
- Analysis - Discovery and Insights
- Reporting - Traditional Reporting

Center of Excellence – adopting a COE approach will allow for growing the team and the collective competencies.

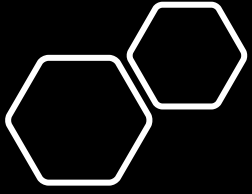
<https://learn.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-overview>

# Analytical Capabilities

## Power BI – Dashboards, Analytics and Reporting

- Analyze
- Optimize
- Forecast
- Report
- Plan
- Discover
- Collaborate
- Predict
- Model

Data Insights and Discovery

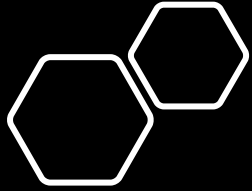


# Dataset Review

Bravo for Power BI

- Data Model Metrics
- DAX Measures and formatting
- Data Volumes

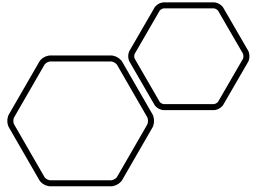




# Dataset Review

Review of existing Power BI Apps with External Tools provides insights to unused data, DAX calculations and records.

# Power BI Security



# Tabular Data Modeling

## Power BI Data Modeling

- Conformed Dimensions
- Calculated Measures
- Interactivity