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SUBJECT, MATERIAL & VIDEOS

VIDEOS PROVIDED

POWER BI

- Power Platform Understanding
- Power BI Definitions
- Power BI Components [Power Query, Pivot, View, Map]
- Data warehouse layers and tools
- Power BI Data Sources in Real-Time
- Power BI in Existing Projects

MSBI

IS, AS, RS & MDS

POWER BI

SERVER, DESKTOP & DAX

Trainings:

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ONLINE

FAST TRACK

ONE ON ONE

PROJECT TRAINING

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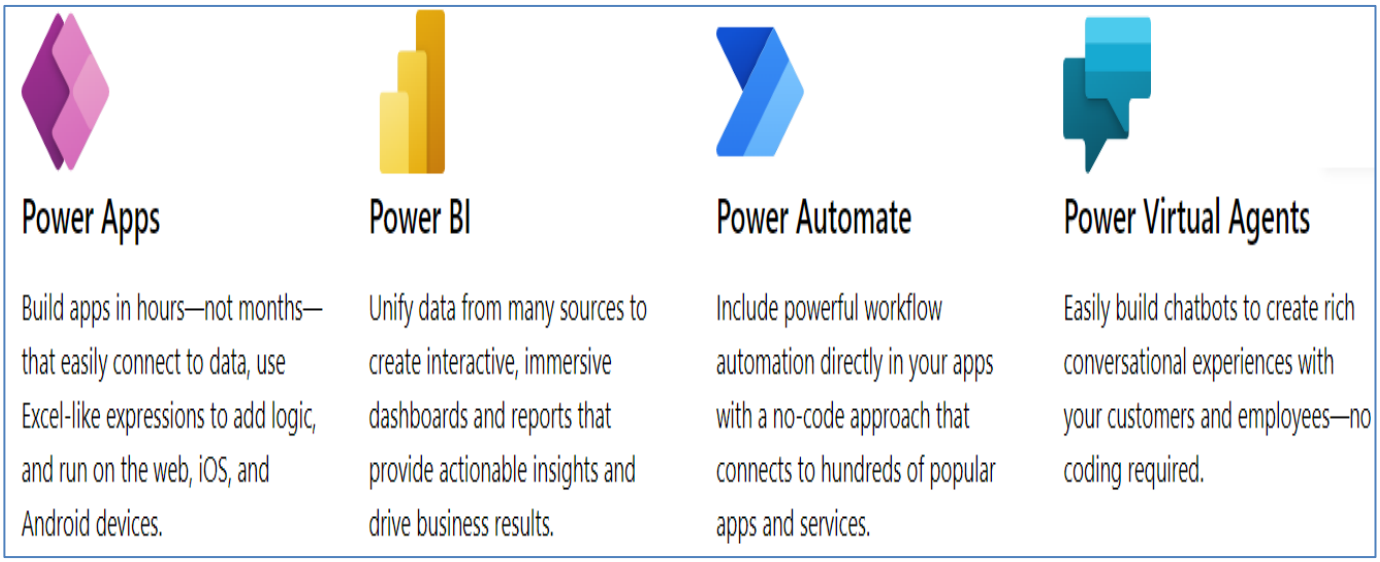
POWER PLATFORM

Microsoft Power Platform is a line of business intelligence, app development, and app connectivity software applications. Microsoft developed the Power Fx low-code programming language for expressing logic across the Power Platform. It also provides integrations with GitHub and Teams.



- Microsoft Flow [Power Automate]
- Microsoft Power Apps
- Microsoft Virtual Agent
- Microsoft Power BI

POWER PLATFORM

Power BI Others	Power BI Projects & Case Studies
REST Understanding Mobile APPS Understanding Microsoft Flow & Apps Practice with Examples	Two Projects [Retail & Financial] Multiple Case Studies Project Environments in Real-time FAQS Discussion

Power BI Cloud Operations	Power BI On-Premise Operations
Power BI Desktop & DAX Power Query, Pivot, View Power BI Service [app.powerbi.com]	Power BI Report Server Desktop Paginated Reports, Report Builder Power BI Report Server

Microsoft Power BI [Single Line: Retrieves data and generate Reports and Dashboards]

POWER BI Abbreviation:

"Powering BI"

Adding Power to BI

POWER BI Pronunciation:

POWER BI "SSBI Application / Software / Service"

MICROSOFT Corporation definition:

Power BI is a "business analytics service" that "delivers insights" to enable "fast, informed decisions."

- **Transform data into stunning visuals and share them with colleagues on any device.**
- **Visually explore and analyze data—on-premises and in the cloud—all in one view.**
- **Collaborate on and share customized dashboards and interactive reports.**
- **Scale across your organization with built-in governance and security.**

Microsoft Flow [Power Automate] [Single Line: Automate the process by creating flows]

Microsoft Flow is a process and task automation tool that helps connect different applications and services together. ... **Microsoft** itself defines **Flow** as a tool to "create automated workflows between your favorite apps and services to get notifications, synchronize files, collect data and more"

Microsoft Power Apps: [Single Line: Generate Mobile Friendly and Tab Friendly Apps with less / low code]

Power Apps is a suite of apps, services, connectors and data platform that provides a rapid application development environment to build custom apps for your business needs. ... Further, apps built using **Power Apps** have a responsive design, and can run seamlessly in browser or on mobile devices (phone or tablet).

Microsoft Virtual Agent [Single Line: Generate Chot bot applications with less code and easy approach]

Power **Virtual Agents** lets you create powerful chatbots that can answer questions posed by your customers, other employees, or visitors to your website or service. These bots can be created easily without the need for data scientists or developers.

POWER BI FEW SCIENTISTS DEFINITION

POWER BI [MICROSOFT POWER BI] –SSBI

DEFINITION

POWER BI is a

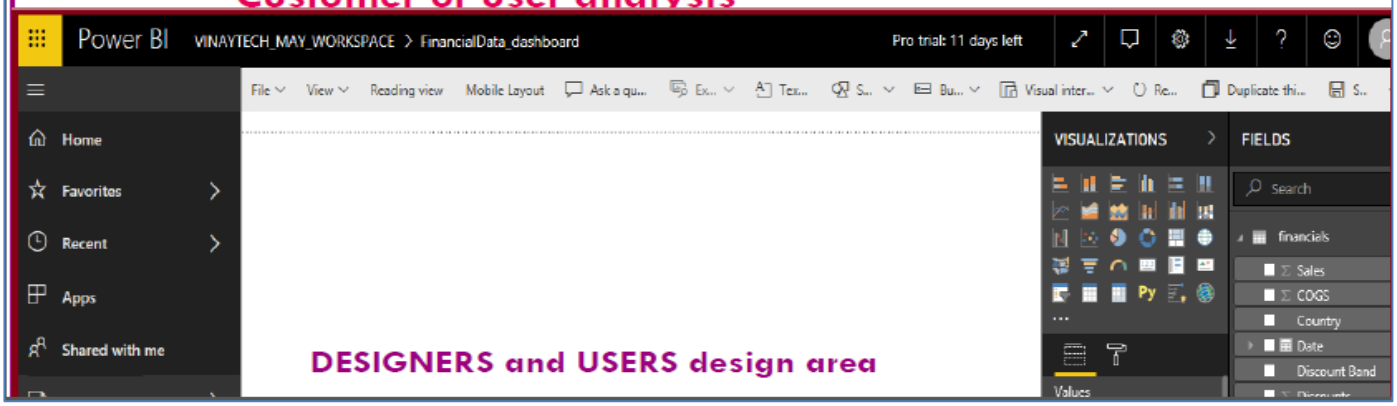
" SELF SERVICE,
Cloud based and On-Premises,
Any Type of Data load,
Data Model Supportive,
Analytical, and
Visualization Reporting tool "

Designed for DWH & BI solution, and Data "Insights and Analytics".

POWER BI [MICROSOFT POWER BI] –SSBI

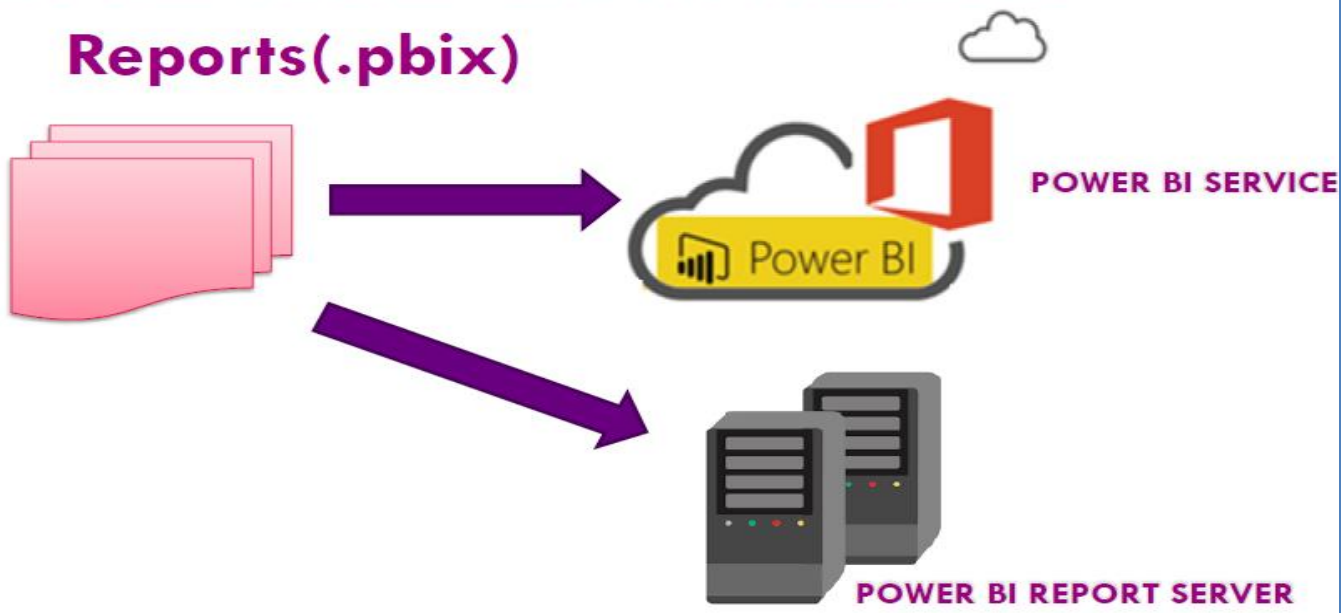
SELF SERVICE

Personal Analysis
Team Analysis
Corporate Analysis
Designer Analysis ***
Customer or user analysis ***



POWER BI [MICROSOFT POWER BI] –SSBI

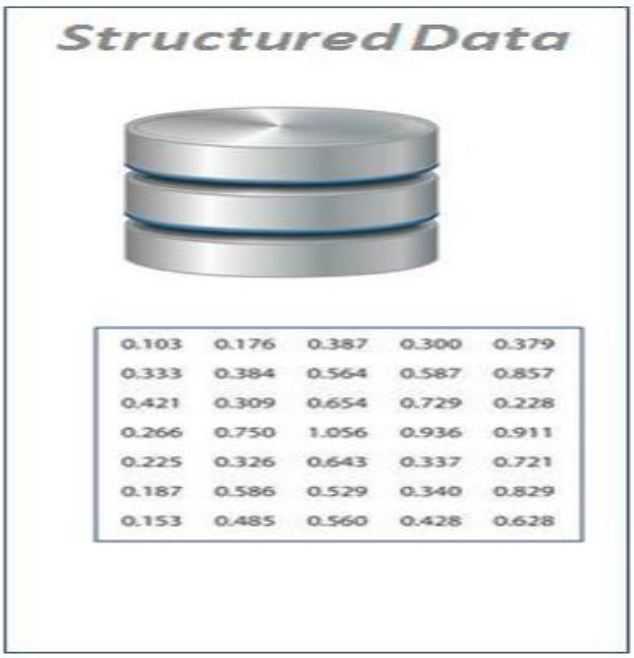
CLOUED BASED OR ON-PREMISES

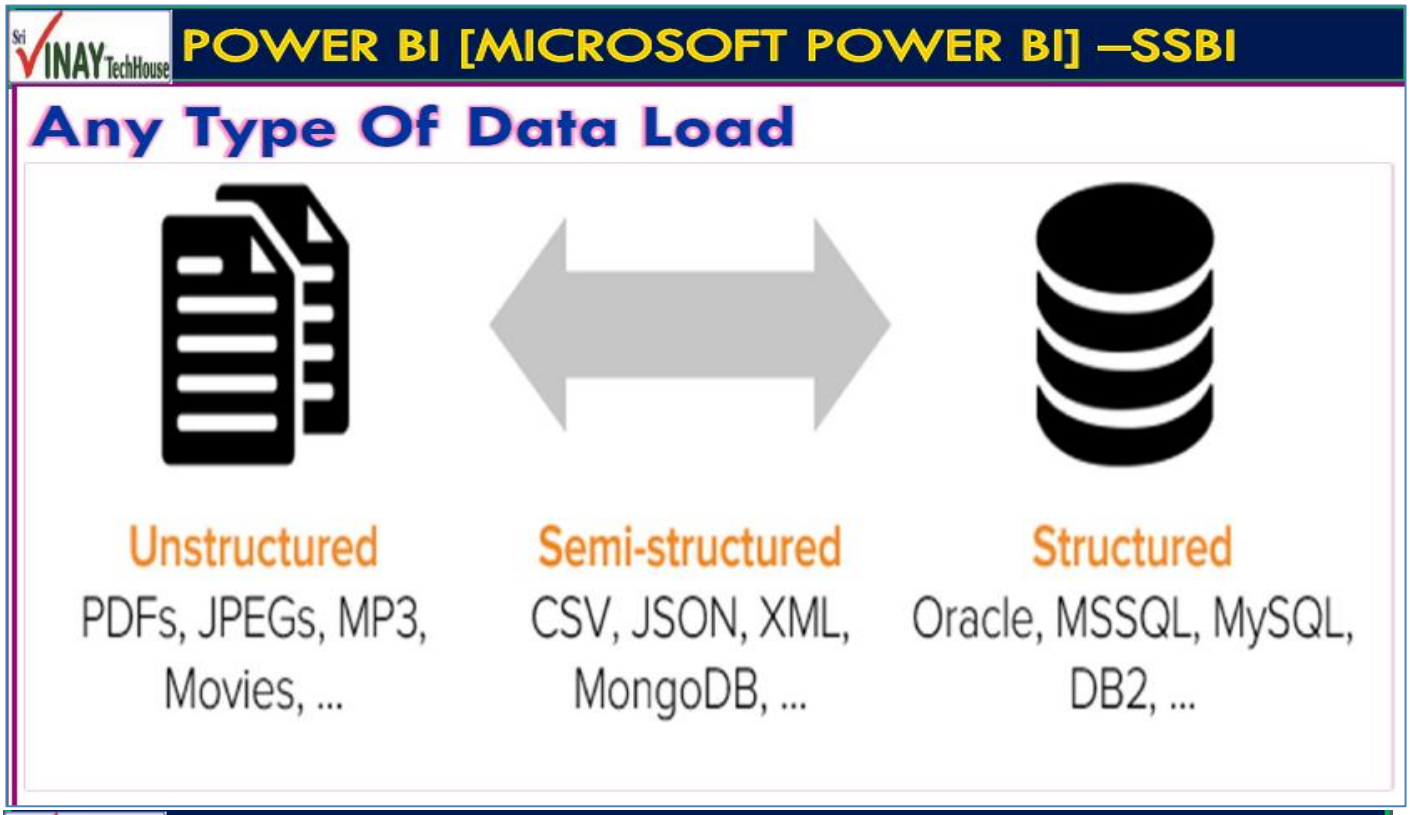


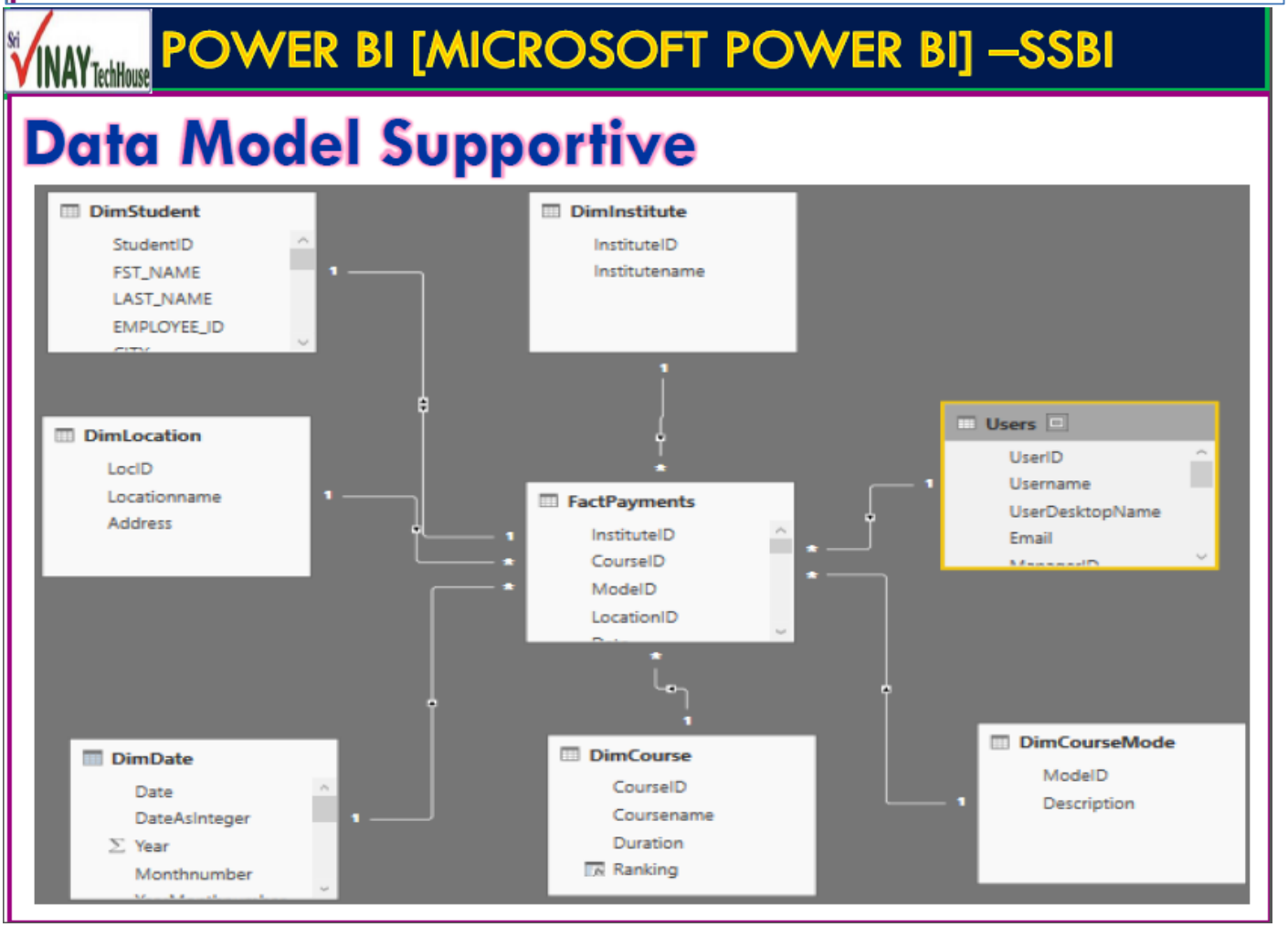
POWER BI [MICROSOFT POWER BI] –SSBI

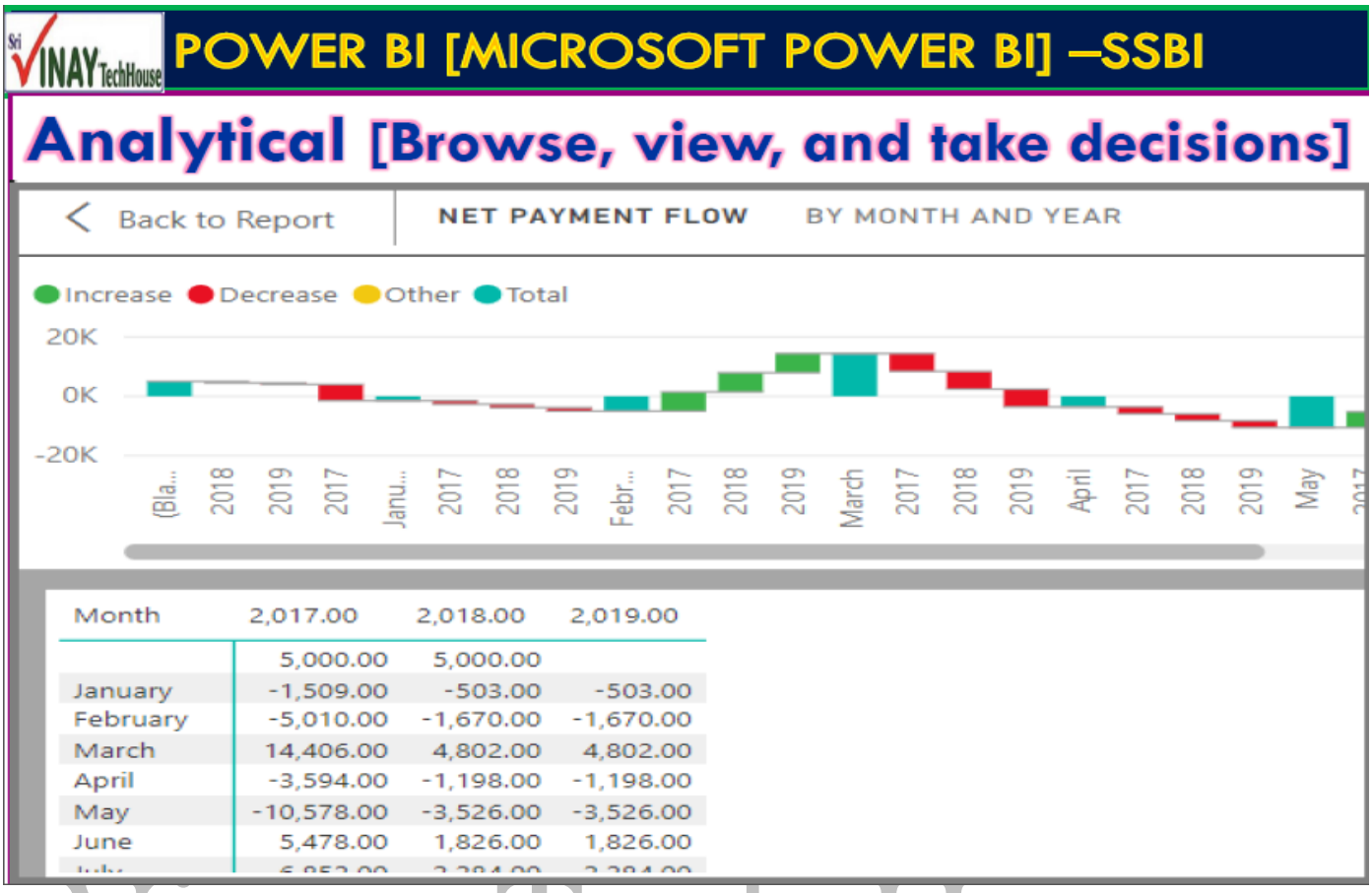
Any Type Of Data Load

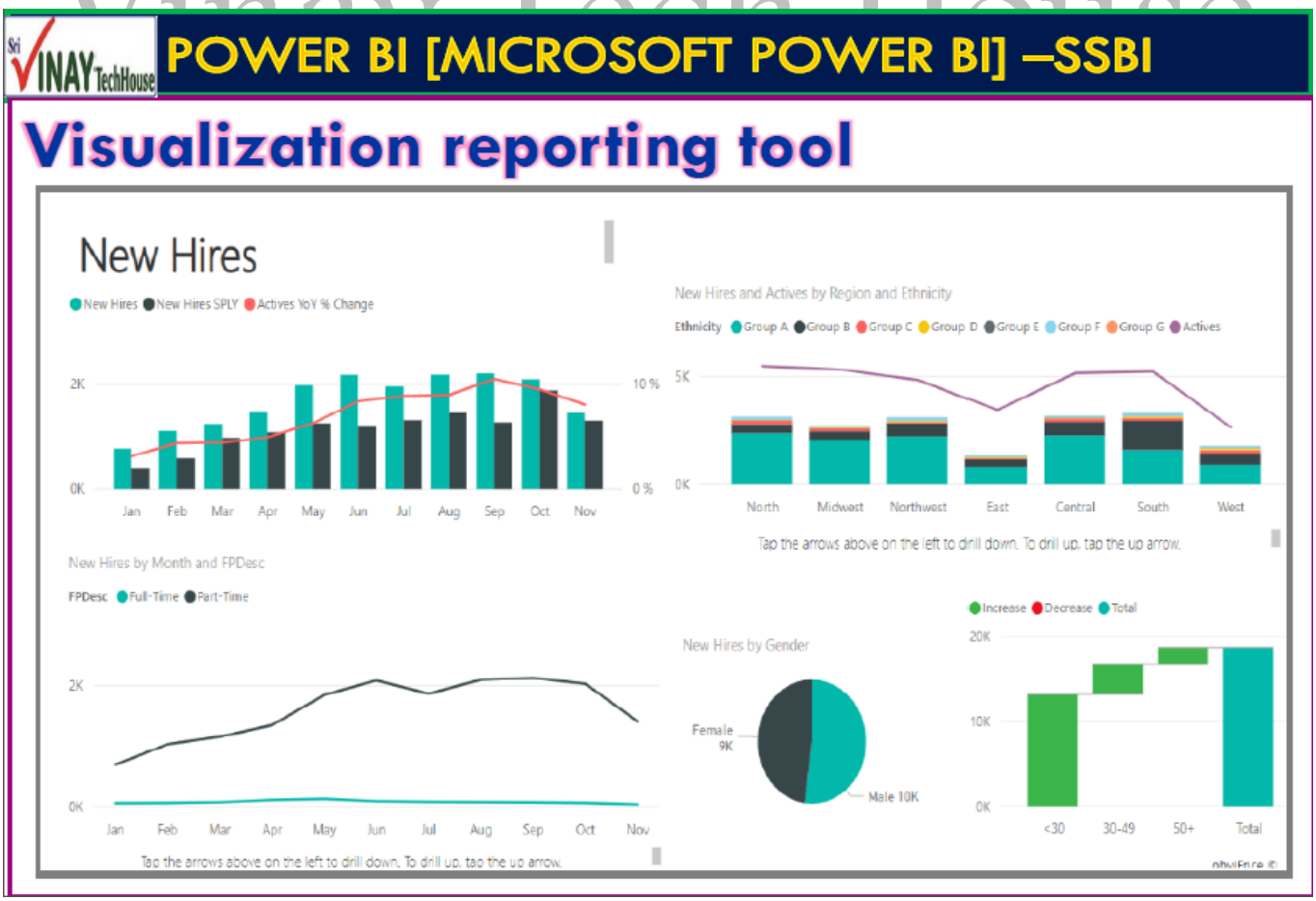
a) Structured b)Semi-Structured c)Unstructured

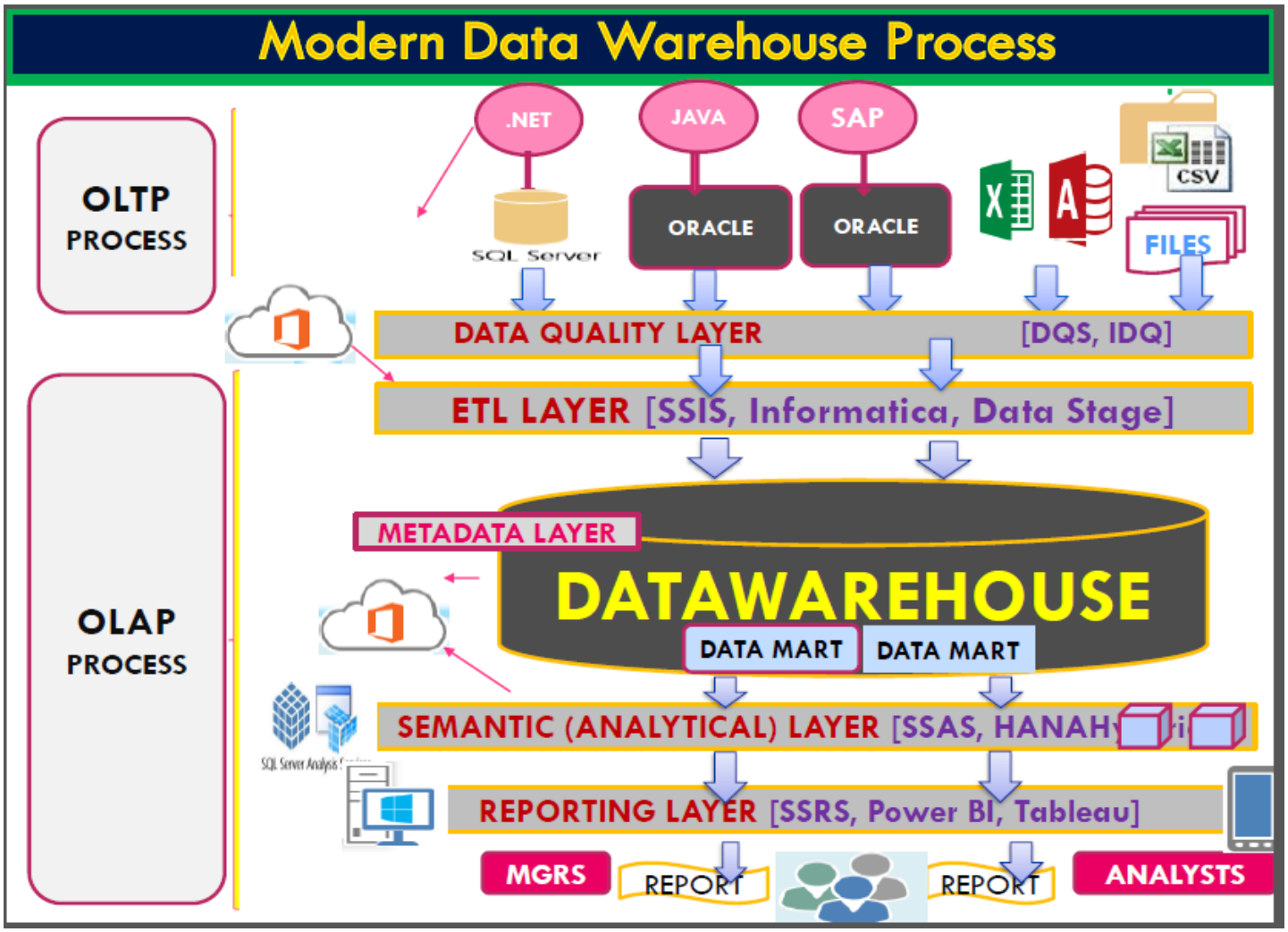



POWER BI [MICROSOFT POWER BI] –SSBI
Any Type Of Data Load
Unstructured
PDFs, JPEGs, MP3, Movies, ...
Semi-structured
CSV, JSON, XML, MongoDB, ...
Structured
Oracle, MSSQL, MySQL, DB2, ...


POWER BI [MICROSOFT POWER BI] –SSBI
Data Model Supportive
DimStudent
StudentID
FST_NAME
LAST_NAME
EMPLOYEE_ID
DimInstitute
InstituteID
Institutename
DimLocation
LocID
Locationname
Address
FactPayments
InstituteID
CourseID
ModelID
LocationID
Users
UserID
Username
UserDesktopName
Email
DimDate
Date
DateAsInteger
Year
Monthnumber
DimCourse
CourseID
Coursename
Duration
Ranking
DimCourseMode
ModelID
Description







DATAWAREHOUSE LAYERS EXPLANATION AND TOOLS USED

DATA WAREHOUSE:

Data "**Huge Storage**"

Usually a database acts like warehouse if it stores more data.

Databases used for warehouses: Teradata, Oracle, SQL Server, DB2, Sybase etc...

ETL LAYER: Extract Transform Load

Retrieves the data, apply Transformations, and then Loads the data.

Tools:

Informatica, Datastage, Abinitio, ODI, Talend, SAS-ETL, Pentaho ETL, Azure Data Factory etc...

SEMANTIC LAYER:

Converts normal data into decision making data.

There are two types of decision conversion

a) Multidimensional data presentation

b) Tabular data presentation

Tools: SSAS, Hyperion Essbase, SAP BO Cubes etc...

REPORTING LAYER:

Represents the data with visuals by creating Reports and Dashboards [Chart, Matrix, Table, KPIs, Gauges etc...]

Tools:

SSRS, Power BI, Cognos, SAP BO, Microstrategy, OBIEE, SAS, Tableau, Qlik View etc...

DATA QUALITY LAYER:

Ensures data quality of before processing through ETL by "profiling", "scrubbing", and "cleansing"

Tools:

DQS [Data Quality Services], IDQ [Integrated Data Quality].

METADATA MANAGEMENT LAYER:

Manages master data or metadata of the objects in the data warehouse.

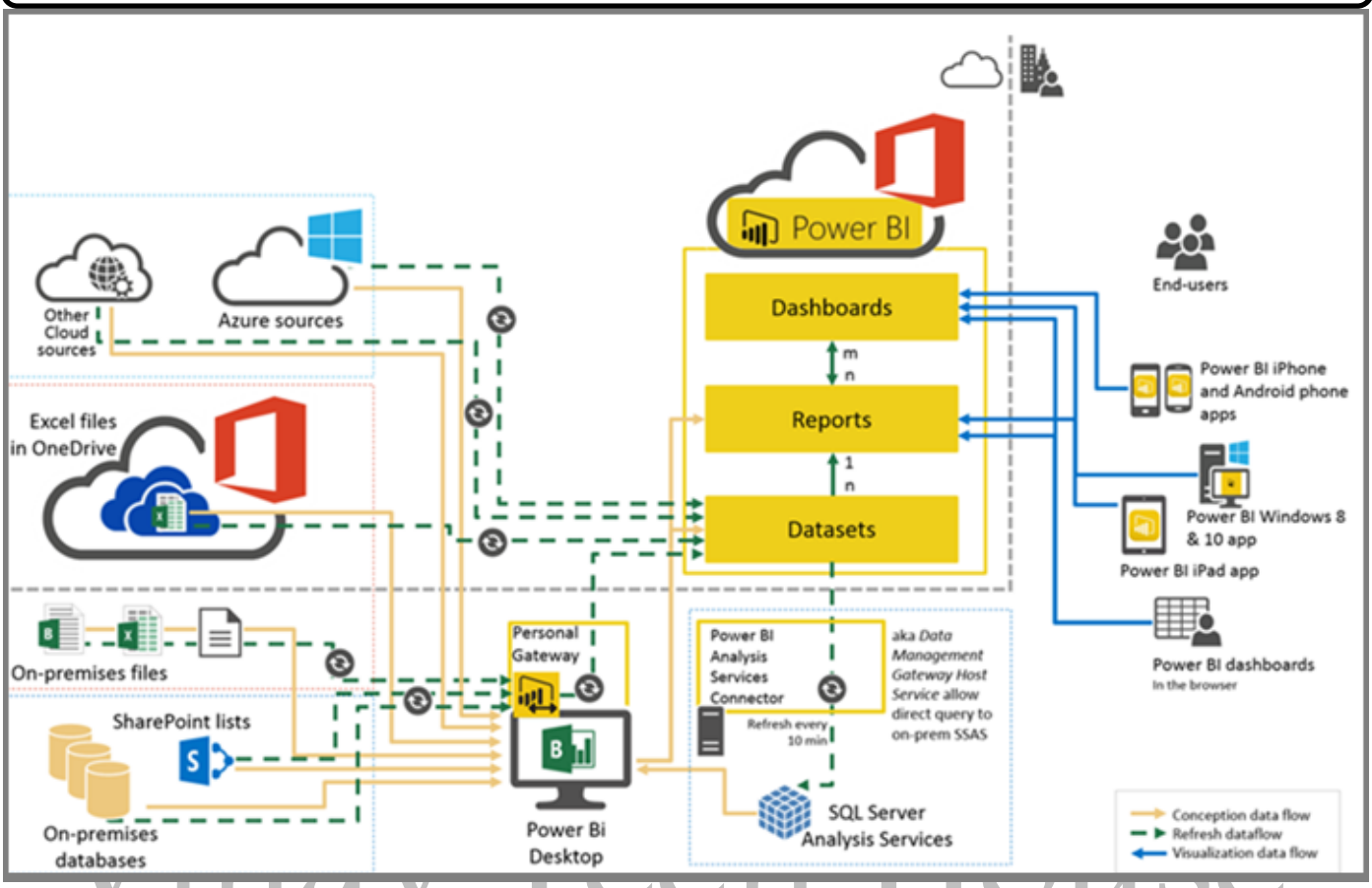
Tools:

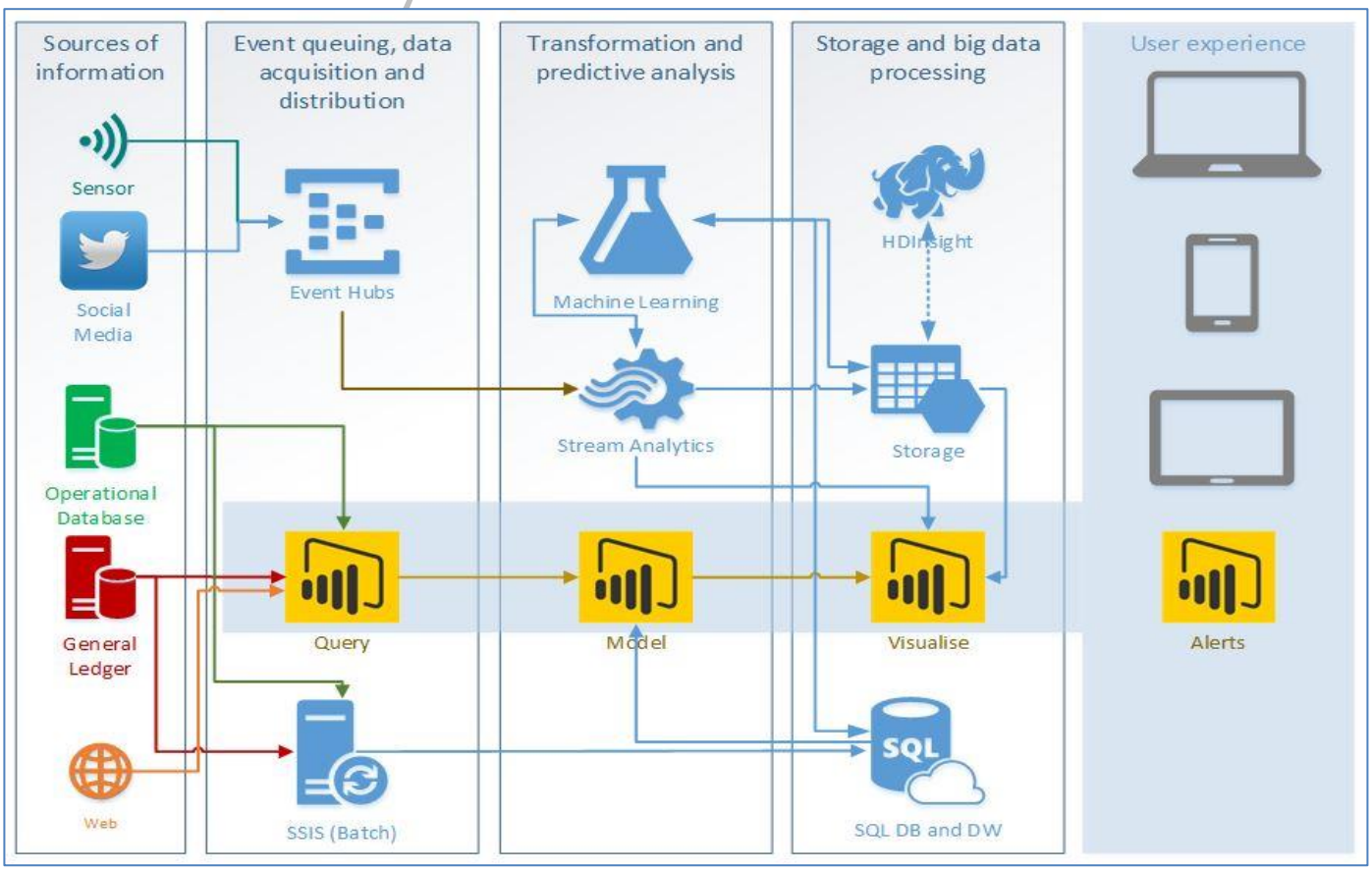
MDS, MDM.

BI Process, Power BI, MSBI, other BI tools

	Suite		SSBI Tool
Getting Data [Extract Transform Load] [**ETL layer**]	**SSIS**	Informatica, Datastage Talend, ODI etc...	**Power Query** [70%] for ET (no Load)
Maintain Huge Storage [**Data warehouse**]	**SQL SERVER**	Teradata, Oracle, DB2	**Power BI Dataset** Medium [1GB]
Data Conversion and Model Area [**Semantic layer]**	**SSAS**	Hyperion, SAP BO, SAP HANA, etc...	**Power Pivot** [60-70%]
Data presentation Area [**Reporting layer**]	**SSRS**	Microstrategy, Cognos, BO,Crystal Reports etc...	**Power View**

DATA FEEDS, POWER BI PROCESS, AND POWER BI INSIGHTS & ANALYTICS





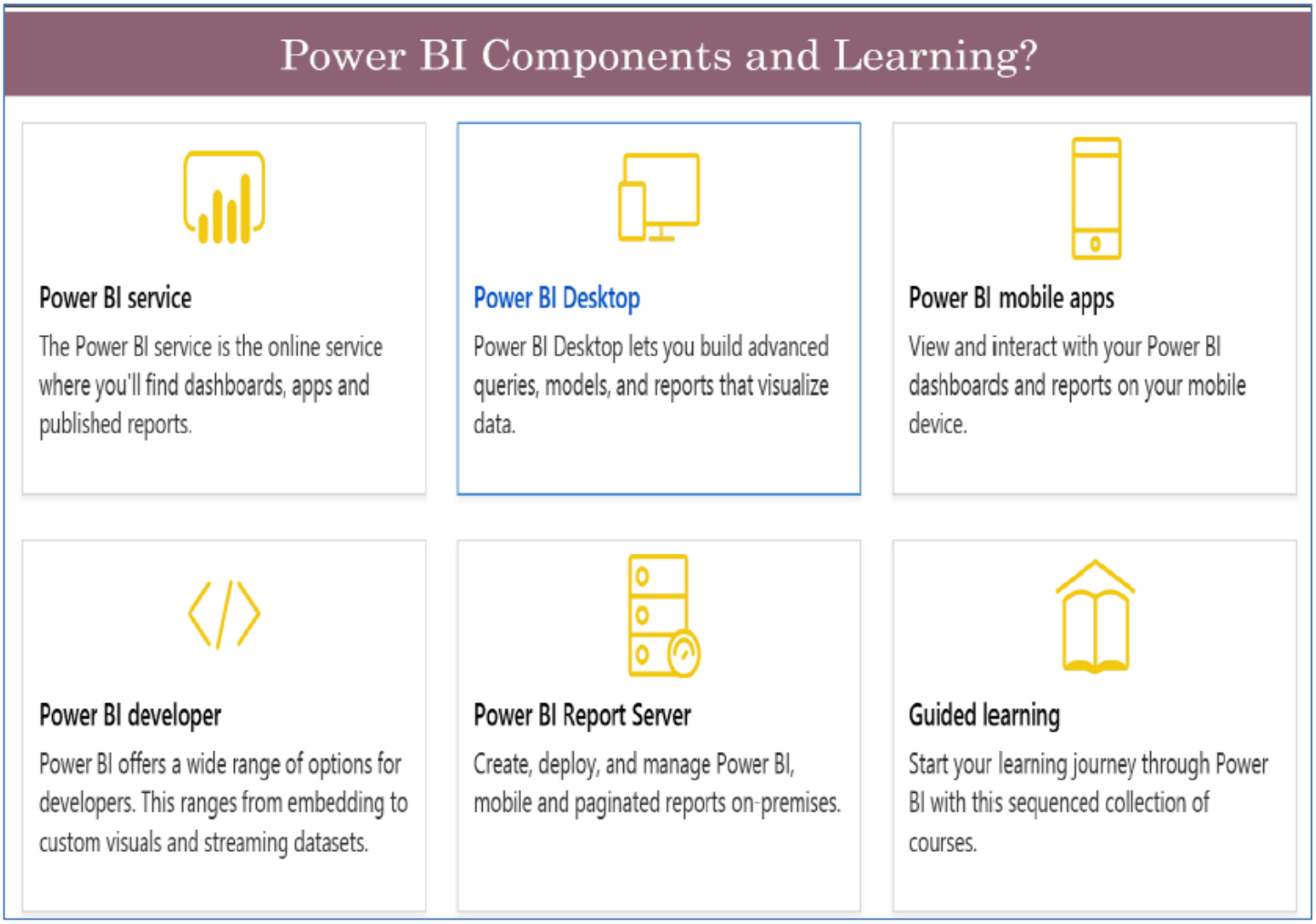
CAPABILITY COMPRISONS OF TABLEAU, QILKVIEW, AND POWER BI

Capabilties Overview

Our comparison of Tableau. QlikView and Microsoft Power BI considers the visualizations, analytics, OLAP, document management, decision services and integration features of the three systems. Tableau is the superior visualization tool and QlikView holds the advantage in analytics, but Power BI tops the competition for its decision services and integration capabilities.

	+ableau	QlikView	Power BI
Data Visualization *Data is presented visually for easy interpretation.*	✓ ADVANTAGE	✓	✓
Analytics *Information is quantified and evaluated for a portrait of company trends and future possibilities.*	✓	✓ ADVANTAGE	✓
Online Analytical Processing (OLAP) *OLAP functionalities provide access to databases and web-based analysis.*	✓	✓	✓
Document Management *Convert reports into different file formats and share analytical findings.*	✓	✓	✓
Decision Services *Financial management features provide analysis of monetary information.*	✓	✓	✓ ADVANTAGE
Integrations *The ability to connect with other systems provides multiple sources and functionalities.*	✓	✓	✓ ADVANTAGE
Big Data Integration *Access big data programs for comprehensive analysis.*	✓	✓	✓ ADVANTAGE

POWER BI IMPORTANT COMPONENTS [OVER ALL]



a) Power BI Desktop: Retrieves**,** Loads, Transforms, Models and Generate reports.

b) Power BI Service: Cloud Service for managing reports and dashboards, and providing schedules. This service under the control of Microsoft.

c) Power BI Server:
Standalone on premises server [similar to SSRS], controlled by the customer.

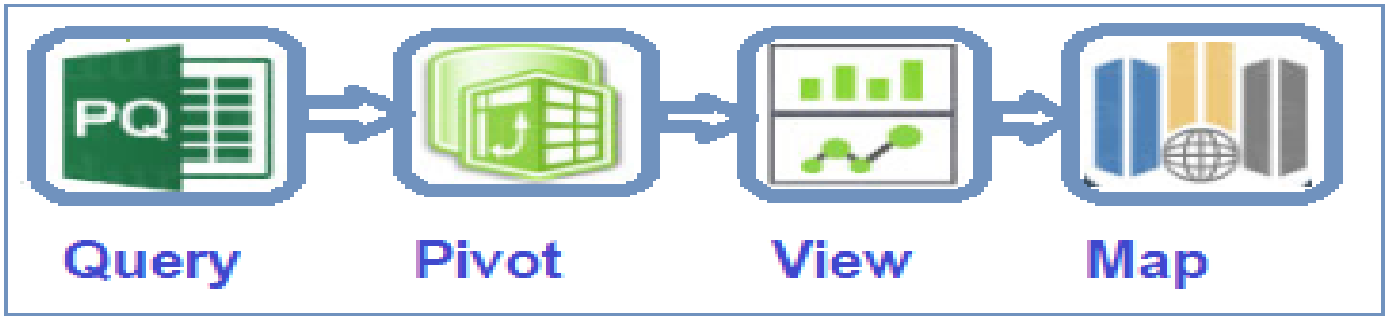
d) Power BI Mobile Application: Helps to create Mobile Friendly reports.

e) Power View: Report Building component

f) Power Pivot: Data Load, Transform, Model and Data Presentation. [Chart, Table]
g) Power BI Gateway: To establish connection to the Databases for Live Refresh / Scheduled Refresh

h) Power BI Desktop for Report Server : Specially designed to create report server reports.

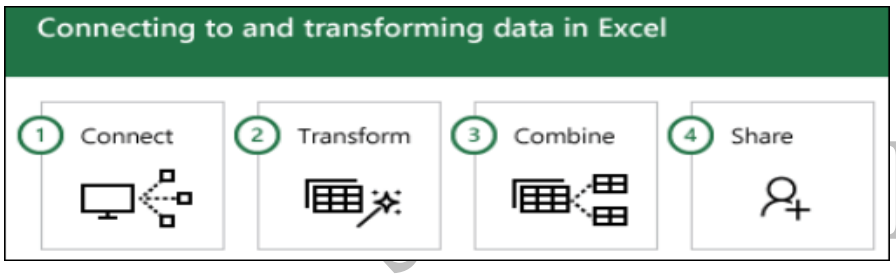
POWER BI DESKTOP IMPORTANT COMPONENTS



Power Query [Single line: Extract and Transform component]

Power Query is a **data connection technology** that enables you **to discover, connect, combine, and refine data sources to meet your analysis needs.** Features in Power Query are available in Excel and Power BI Desktop.

Using Power Query often follows a few common steps.



Power Pivot [Single Line: Establishes relationships between queries / tables]

Power Pivot is a **data modeling technology** that lets you create data models, establish relationships, and create calculations. With Power Pivot you can work with large data sets, build extensive relationships, and create complex (or simple) calculations, all in a high-performance environment, and all within the familiar experience of Excel.

Power View [Single line: Generate visuals or insights from the created model]

Power View is a **data visualization technology that lets you create interactive charts, graphs, maps, and other visuals that bring your data to life. Power View is available in Excel, in SharePoint, SQL Server, and Power BI.**There are a few system requirements for Power View, based on which version of Excel, SharePoint, or SQL Server you use. The visualizations in Power View are also available in Power BI and the Power BI Designer.

Power Map [Single Line: Generate maps]

Power Map is a **3D data visualization tool for Excel** that provides an immersive experience for making discoveries in data that might never be seen in traditional 2D tables and charts. **Power Map** lets you plot geographic and temporal data visually, analyze that data in 3D, and create cinematic tours to share with others.

Other components

Microsoft PowerApps

PowerApps is an initiative by Microsoft that allows developers and nontechnical users to build mobile applications from selectable templates. Using Microsoft Azure, the platform as a service offering, and built-on development tools that target nontechnical users (this suite of tools was formerly known as Project Siena), users can create, manage and share business apps on iOS, Android and Windows devices. Microsoft rolled out PowerApps in late 2015.

The objective of PowerApps is to enable business users to build new capabilities via apps, without requiring that they have code expertise. Microsoft touts an intuitive visual design for PowerApps, with drag-and-drop functionality and a familiar look and feel taken from applications like PowerPoint.

PowerApps has connections to various Microsoft-based and third-party applications, including Microsoft SQL Server, SharePoint and OneDrive in the Office 365 productivity suite, as well as Dropbox, Google Docs, SAP, Oracle and Dynamics CRM.

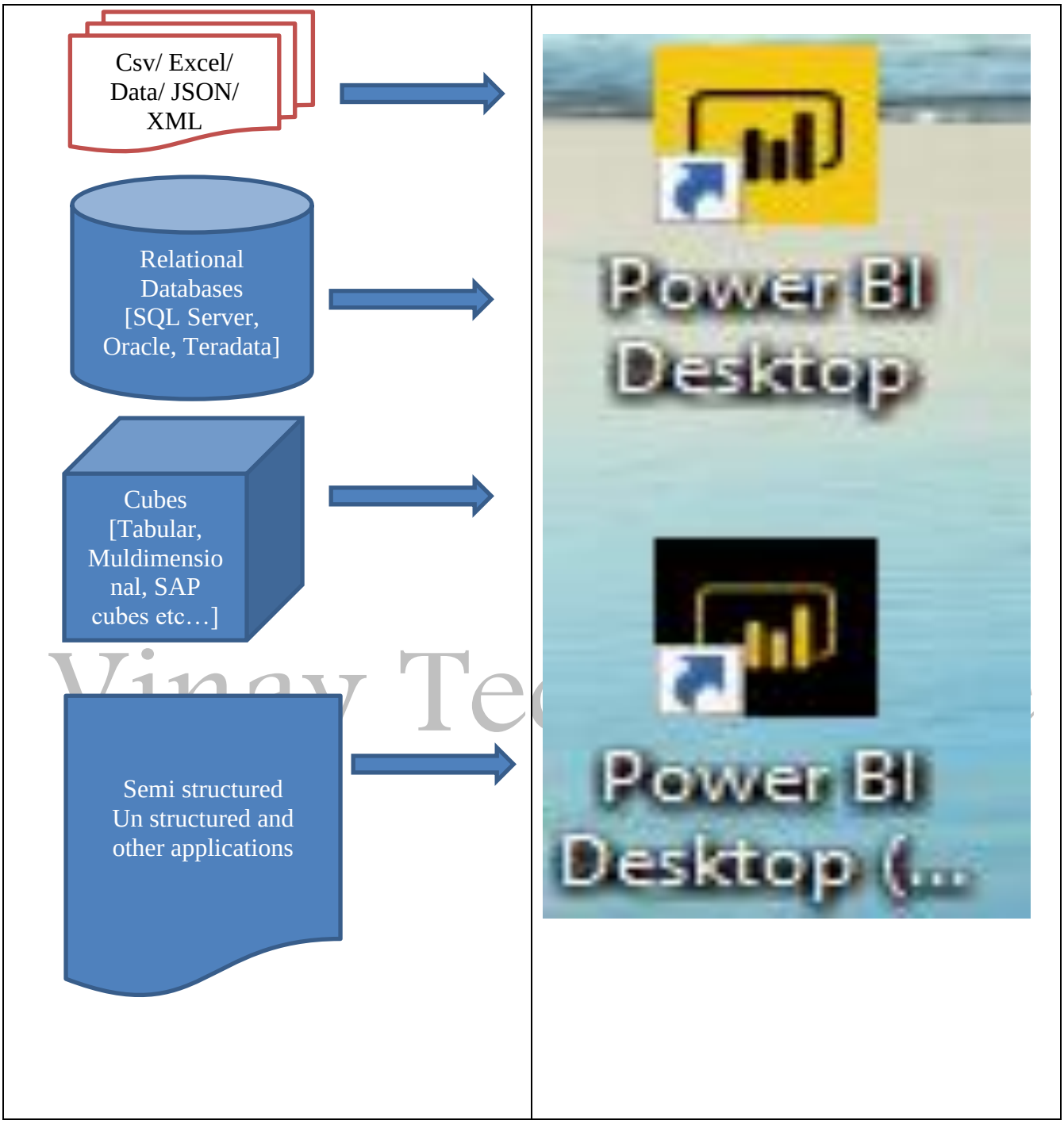
Application programming interfaces to enable these data connections, as well as the apps themselves, are hosted on Microsoft Azure.

Microsoft Flow

Microsoft Flow is cloud-based software that allows employees to create and automate workflows and tasks across multiple applications and services without help from developers. Automated workflows are called **flows**. To create a **flow**, the user specifies what action should take place when a specific event occurs.

Microsoft Flow is a new workflow management tool for automating workflows across applications and services by connecting web services, files, and cloud-based data. It empowers users to create workflows to decrease time-consuming tasks or processes that automate approvals, send/receive notifications, synchronize files, or collect, organize and update data.

REL-TIME POWER BI PROJECTS ENVIRONMENT AWARENESS & DATA FEEDS



Most frequently used Data feeds in Power BI [Trainer's experience]?

1. Files

File [.out, .txt etc...]

Csv File [Comma Separated Value file]

Excel [.xls, .xlsx]

Json: Java Structured Object Notation File [extended with .json]

2. Databases [Relational Databases]

Database [SQL Server (more), Oracle, Teradata, MySQL Database, Amazon RedShift etc.]

Query based retrieval (select statement and get data)

View based (select statement inside view will get data)

Procedure based (select statement inside procedure will get data)

3. Cube Databases [Tabular /multi-dimensional]

SSAS Cubes [Tabular and Multidimensional] and SAP HANA

Analysis Services Cube retrieval

On-Premises

Cloud [Azure]

4.Data retrieval from Web Applications

5.Data retrieval through Python scripting

6.Data retrieval from other web applications through **REST API** protocols [Service now, Face Book, Google Analytics, etc...]

Why companies maintain cubes for decision support?

Cubes hold two or multidimensional information.

There are two types of cubes

1) Tabular Cube [MSBI- Analysis Services]:

a. Data in the format of relational tables

b. Aggregates and calculations created **faster**

c. For less volumes of data and quick analysis of data, tabular cubes are advantage.

2) Multidimensional Cube [MSBI-SSAS, SAP BW and other areas]:

a. Data in the format of dimensional structures [schemas]

b. Aggregates and calculations created

C. For more volumes of data, more calculations and aggregates

Trainer's experience***

Trainer has **5 tabular cubes with size of 10-20GB,** which are suitable for daily reporting.
Trainer has one **multidimensional cube with size of 40GB,** which are suitable for daily reporting, monthly reporting.

Why cubes sizes are less? What about historical data?
Always cubes hold current data [last one month / quarter / year]. So in **GBs**.
Whereas Data warehouses **hold years and years data**. So in **TBs or PBs.**

Explain storage hierarchy? [K-Kilo / thousand, M-Mega, T- Tera, P-Peta]
1 Byte= 8 Bits
1KB=1024Bytes
1MB=1024KB [Kilo byte]
1GB=1024MB[Mega byte]
1TB=1024GB [Giga byte]
1PB=1024TB [Tera byte]

What is the size of your warehouse?
Small companies: 10-100TB
Medium: 100TB-1 PB
Large: 1Peta +
What kind of storages Data Lake support?

Minimum Pbs storage.

7. Cloud storages

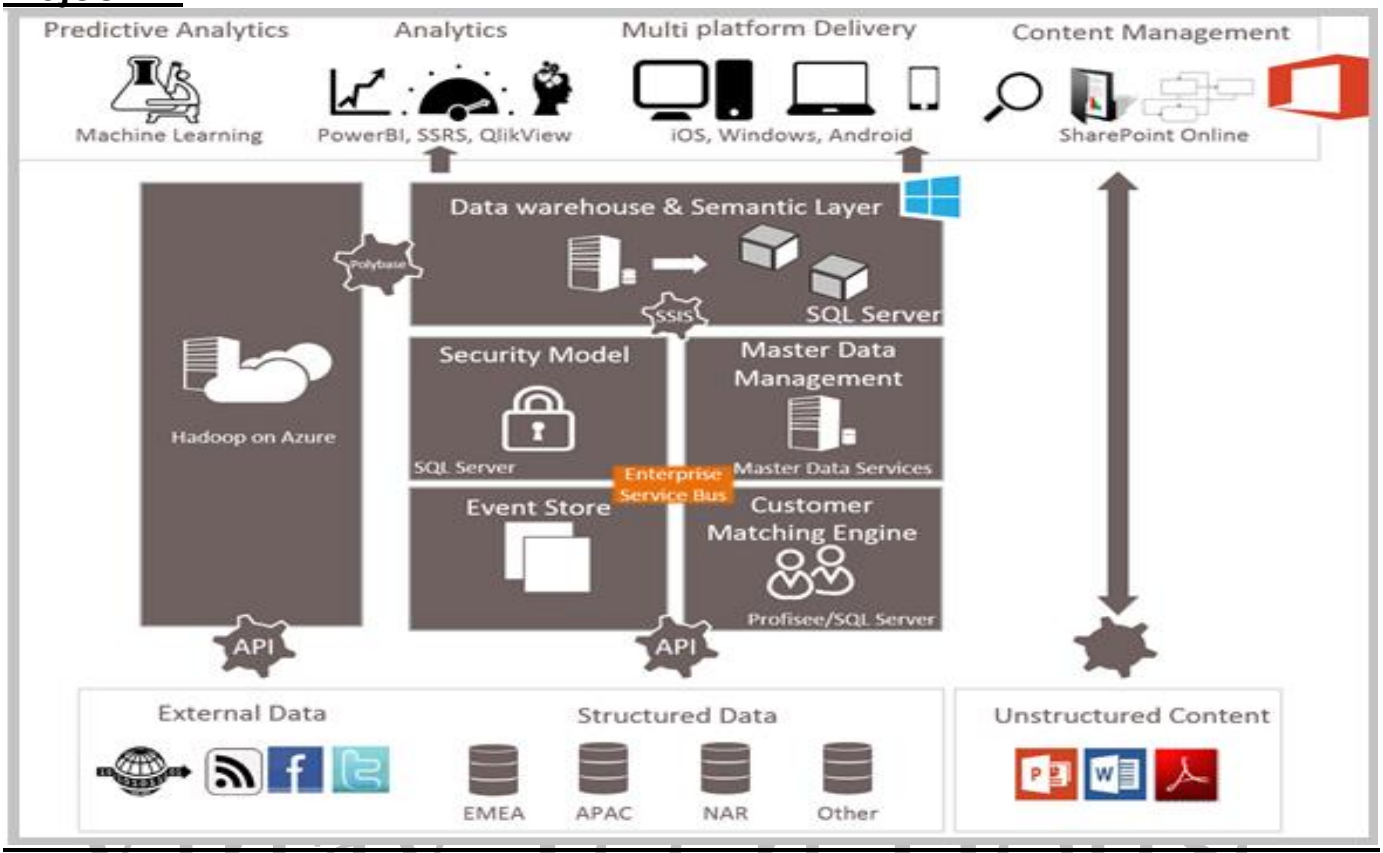
Azure cloud: To work with SQL Databases, Lakes and Analysis Services
RedShift
WorkDay
Amazon

8.Web Data

Web Urls

REAL TIME PROJECT FLOWS

Project #1



Project #2