

From Data to Decisions using Power BI

Prepared by Eng. Ahmed Hussein, MBA,
PfMP®, PMP®, CMP APMG

Course

Lecture 01



Eng. Ahmed Hussein, MBA, PfMP®, PMP® and APMG-Change Management Practitioner

- Lecturer and management consultant with >30 years of executive management experience
- Lecturing experience over 15 years on:
 - Portfolio/ Program / Project Management,
 - Strategic Management and Organizational Change Management and Business Transformation,
 - Business Analytics and Performance Improvement
- Over 20 years in Data Analysis and Business Intelligence
- Worked as DGM for Strategy and Change Management at a major Egyptian bank, Planning Director at a Regional Supply Chain company, and Commercial Administration Director at a manufacturing company, I was responsible for setting, monitoring, and improving organizational and departmental performance using KPIs, OKRs and utilizing the latest business intelligence tools.



Lecture
01

Course Overview

- Organizations today generate vast amounts of data, but turning that data into meaningful insights requires the right tools and skills.
- This hands-on course is designed to help business professionals leverage Microsoft Power BI to transform raw data into interactive reports, compelling visualizations, and executive dashboards that support informed decision-making.
- Participants will learn how to use Power BI to connect to multiple data sources, prepare and model data, create impactful visualizations, develop key performance indicators (KPIs), and build interactive dashboards tailored to business needs.
- Through practical demonstrations, real-world business scenarios, and guided exercises, learners will gain the confidence to analyze business performance, uncover actionable insights, and communicate findings effectively to stakeholders.



Lecture 01

Course Learning Outcomes

1

Use Power BI to connect, clean, and transform data from multiple sources into structured datasets for analysis.

2

Create interactive reports and dashboards in Power BI that effectively monitor business performance and key performance indicators (KPIs).

3

Apply Power BI's data modeling and analytical capabilities to explore trends, identify patterns, and generate actionable business insights.

4

Design professional data visualizations and executive dashboards using Power BI to support strategic and operational decision-making.

5

Publish, share, and communicate insights through Power BI reports and dashboards, enabling collaboration and data-driven decision-making across the organization.

Course Schedule and Topics

Lecture	Lecture Topic
Lecture 1	Power BI Overview
Lecture 2	Connecting and Preparing Data
Lecture 3	Data Modeling for Business Reporting
Lecture 4	Creating Powerful Visualizations
Lecture 5	Calculations and Business Metrics with DAX
Lecture 6	Interactive Dashboards and User Experience
Lecture 7	Advanced Business Analysis Techniques
Lecture 8	Real-World Department Use Cases
Lecture 9	Publishing, Sharing, and Collaboration
Lecture 10	Capstone Project and Executive Presentation
	Final Exam



Power BI Overview

Lecture 01

Prepared by
Eng. Ahmed Hussein

Oriental
Lecture

What we will cover

1. Business Intelligence Overview
2. Introduction to Power BI
3. Signing up and Installing Power BI

Lecture

01

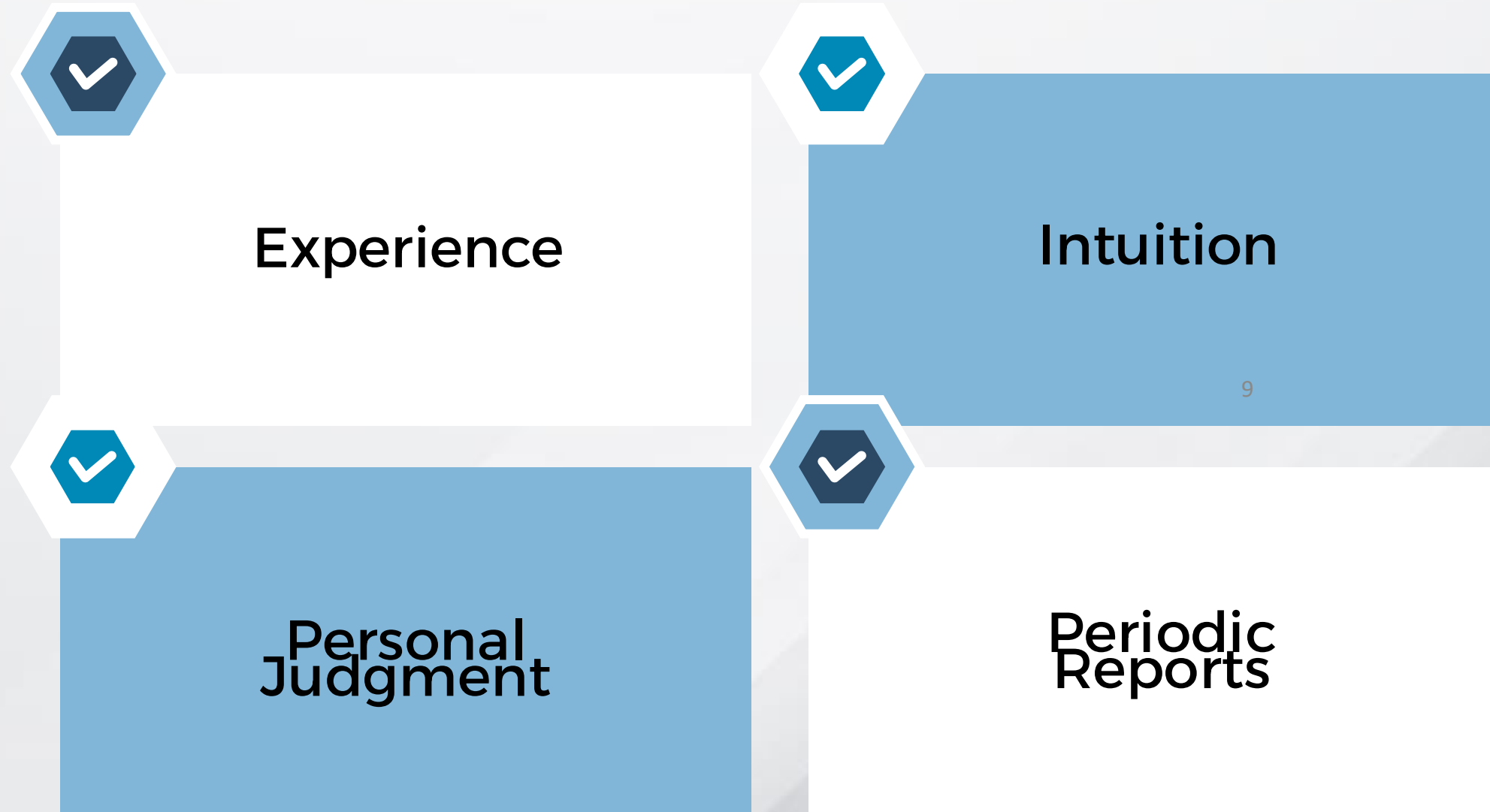
1. Business Intelligence Overview



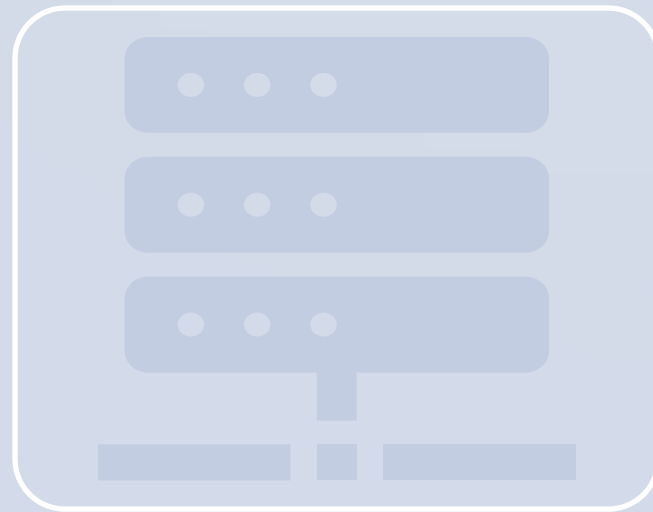
What Is Business Intelligence?

Historically, managers relied on traditional approaches to make business decisions.

While experience remains valuable, today's business environment generates massive volumes of data that require new tools and methods.



Why Organizations Fail with Data?



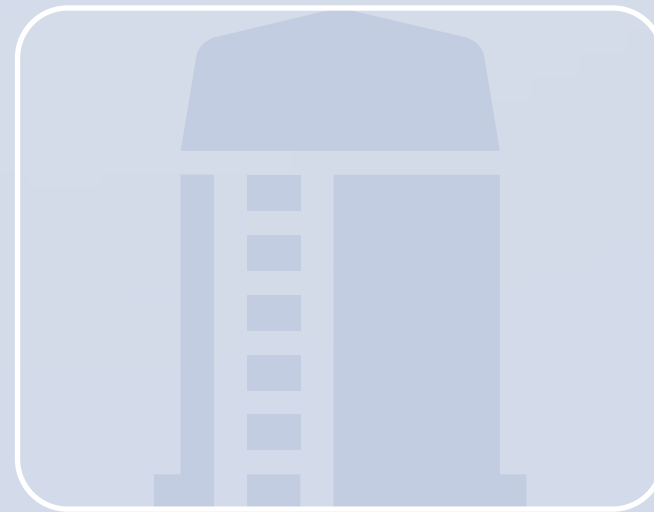
Too Much Data

Organizations often collect everything.

Examples:

- Sales data
- Customer data
- Operational data
- Marketing data

The challenge is turning data into meaningful information.



Data Silos

Departments operate independently.

Examples:

- Finance systems.
- Sales systems.
- Operations systems.

As a result:

No single version of the truth exists.

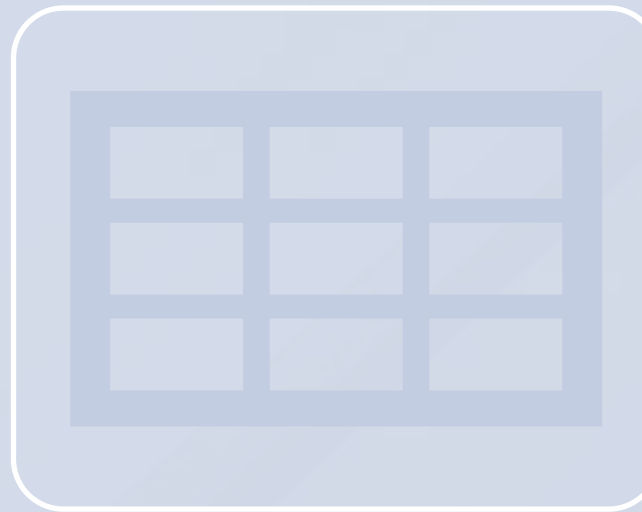


Poor Data Quality

Common issues:

- Missing values
- Duplicate records
- Inconsistent formats

Poor-quality data leads to poor decisions.



Reporting without Analysis

- Many reports answer: "What happened?"
- Few answer: "Why did it happen?" or "What should we do next?"



Lack of Data Culture

Organizations fail when:

- Leaders ignore data
- Decisions are based solely on opinions
- Teams don't trust reports

Organizations Today Need Tools That Can:



Collect Data

Today's business environment generates massive volumes of data. Organizations need efficient tools to gather information from multiple sources, databases, and systems into centralized repositories.



Organize Data

Raw data must be structured and categorized effectively. Modern tools help sort, clean, and arrange data into meaningful formats that enable quick access and reliable storage for future use.



Analyze Data

Beyond collection and organization, businesses need to extract insights from their data. Analytical tools identify patterns, trends, and correlations that inform strategic decisions and drive growth.

Modern BI Capabilities



Visualize Data

Convert complex datasets into intuitive charts, graphs, and dashboards that reveal patterns and trends at a glance, making information accessible to all stakeholders.



Support Decisions

Empower leaders with real-time insights and data-driven recommendations, replacing guesswork with evidence-based strategies for confident decision-making.



Transform Insights

Turn massive volumes of raw data into actionable business intelligence, bridging the gap between information overload and strategic clarity.

Lecture
01

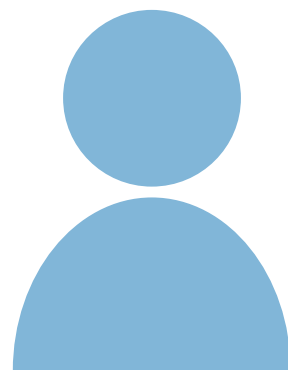
A New Generation of BI

Today, BI extends to everyone

1st wave

Technical BI

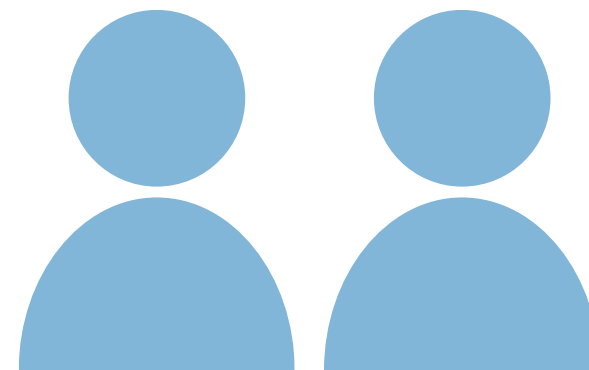
IT to end user



2nd wave

Self-service BI

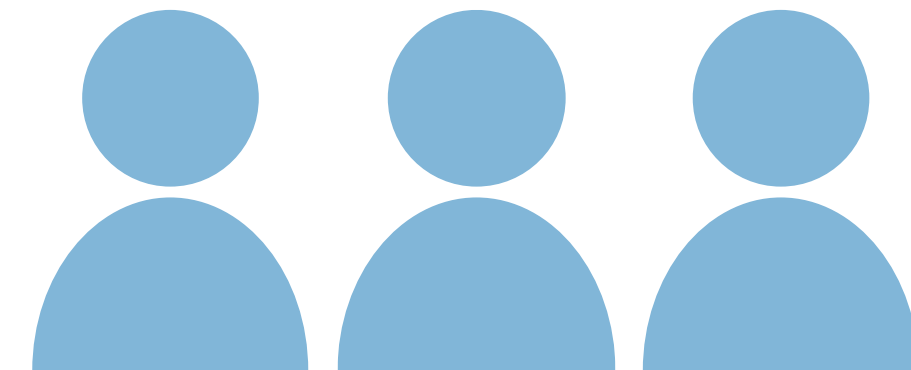
Analyst to end user



3rd wave

End User BI

Everyone



Understanding Data, Information, and Insights

Data

Data consists of raw facts.

Example:

Date	Product	Sales
Jan 1	Product A	\$500
Jan 2	Product A	\$600
Jan 3	Product A	\$450

These numbers alone have little meaning.

Information

Information occurs when data is organized.

Example:

Total monthly¹⁴ sales = \$18,000,
Reduction of 30% from last month

Now we understand performance.

Insight

Insight explains why something happened.

Example:

Sales dropped because the highest-value customers purchased less frequently.

This is actionable.

Lecture
01

Example of Data, Information, and Insight

Data

Customer Complaints
Increased

Decision

Information

Complaints increased by
15% in the last quarter.

Redesign the process and retrain staff.

Insight

Most complaints
originated from a new
service process.

Lecture
01

What is Business Intelligence?

Business Intelligence (BI) refers to the processes, technologies, and tools used to transform raw data into meaningful information that supports business decisions.

Simple Formula:



Examples of Problems that Business Intelligence Solves

Retail	Banking	Telecom	Healthcare
Which products generate the highest profit?	Which customers are likely to leave?	Which regions have the highest customer complaints?	Which departments have the longest waiting times?
Which stores are underperforming?	Which products generate the most revenue?	Which network issues affect customer satisfaction?	Which treatments produce the best outcomes?
Which customer segments are most valuable?			

Key Business Intelligence Benefits

Better Decisions

- Managers make decisions based on facts rather than assumptions.

Faster Decisions

- Information becomes available immediately.

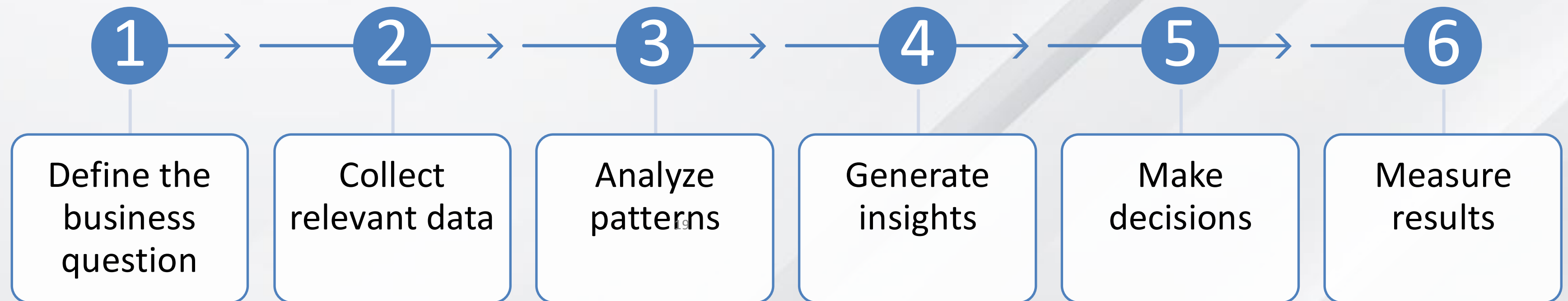
Improved Performance

- Organizations can identify inefficiencies and opportunities.

Competitive Advantage

- Businesses respond faster to market changes.

Data Driven Decision Framework



Lecture

01

2. Introduction to Power BI



Lecture

01

What is Power BI?

Power BI is Microsoft's cloud-based business analytics platform that helps you turn data into actionable insights. Used by business users, report creators, or developers, Power BI offers integrated tools and services to connect, visualize, and share data across your organization.

- Connect data
- Analyze data
- Create visualizations
- Build dashboards
- Share insights



Lecture
01

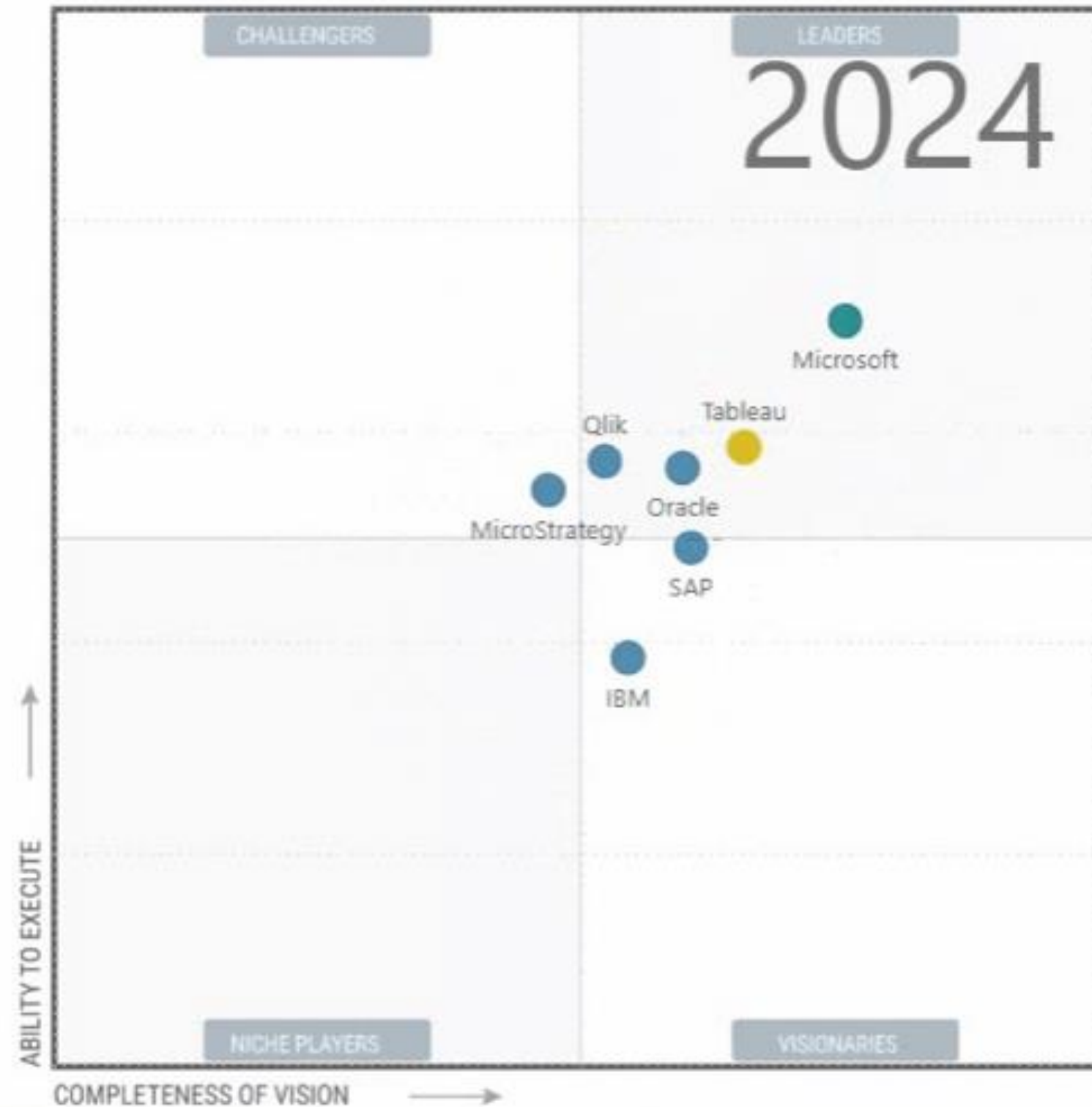
Power BI and Microsoft Fabric

- Power BI is a core component of Microsoft Fabric
- Microsoft Fabric is an all-in-one analytics platform that includes Power BI as one of its core workloads.



Gartner positions Microsoft as a leader in BI and Analytics Platform

Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms

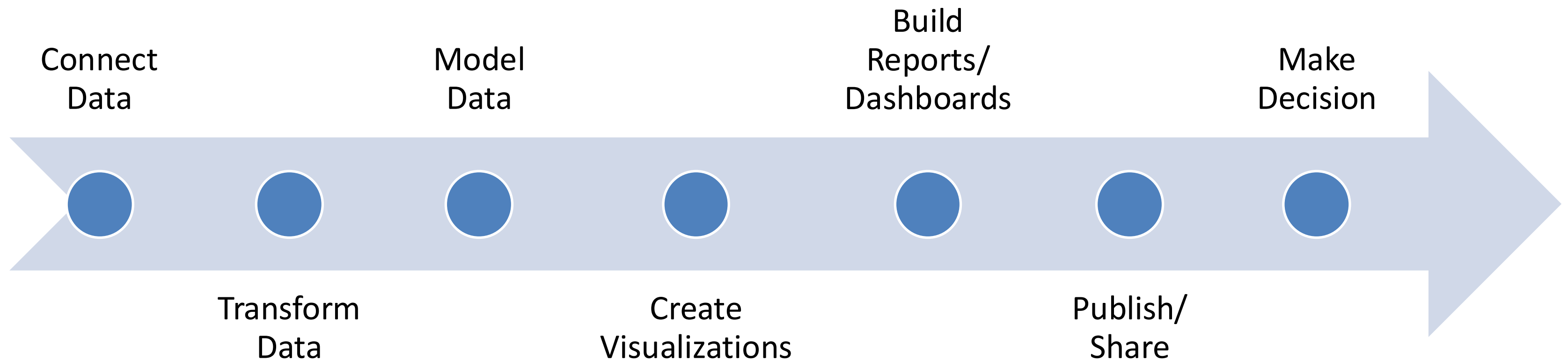


Reports vs. Dashboards, What is the Difference?

Aspect	Reports	Dashboards
Purpose	Answer detailed business questions	Answer executive and strategic questions
View	Multiple pages	Single-page view
Level of Detail	Detailed data exploration	High-level overview
Interactivity	Interactive analysis with drill-down capabilities	Summary-focused with key metrics
Primary Audience	Analysts, managers, and operational users	Executives and senior leaders
Focus	Detailed analysis and investigation	KPIs and performance monitoring
Example	Sales analysis by product, region, and customer	CEO Monthly Performance Dashboard
Analogy	Detailed Book	Executive Summary
Summary	Help users understand what happened and why through detailed analysis.	Help leaders quickly understand how the business is performing at a glance.

Lecture
01

Power BI Workflow



Lecture
01

Power BI Core Components



Power BI Desktop

A free application for Windows that lets you connect to, transform, and visualize your data.

* Available for Windows only.



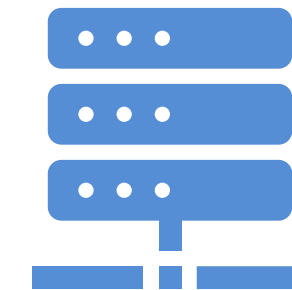
Power BI Service

An online service (SaaS) where users publish reports and dashboards, share insights, and collaborate with colleagues.



Power BI Mobile

Available for Windows, iOS, and Android devices, these apps allow users to access and interact with their data on the go.

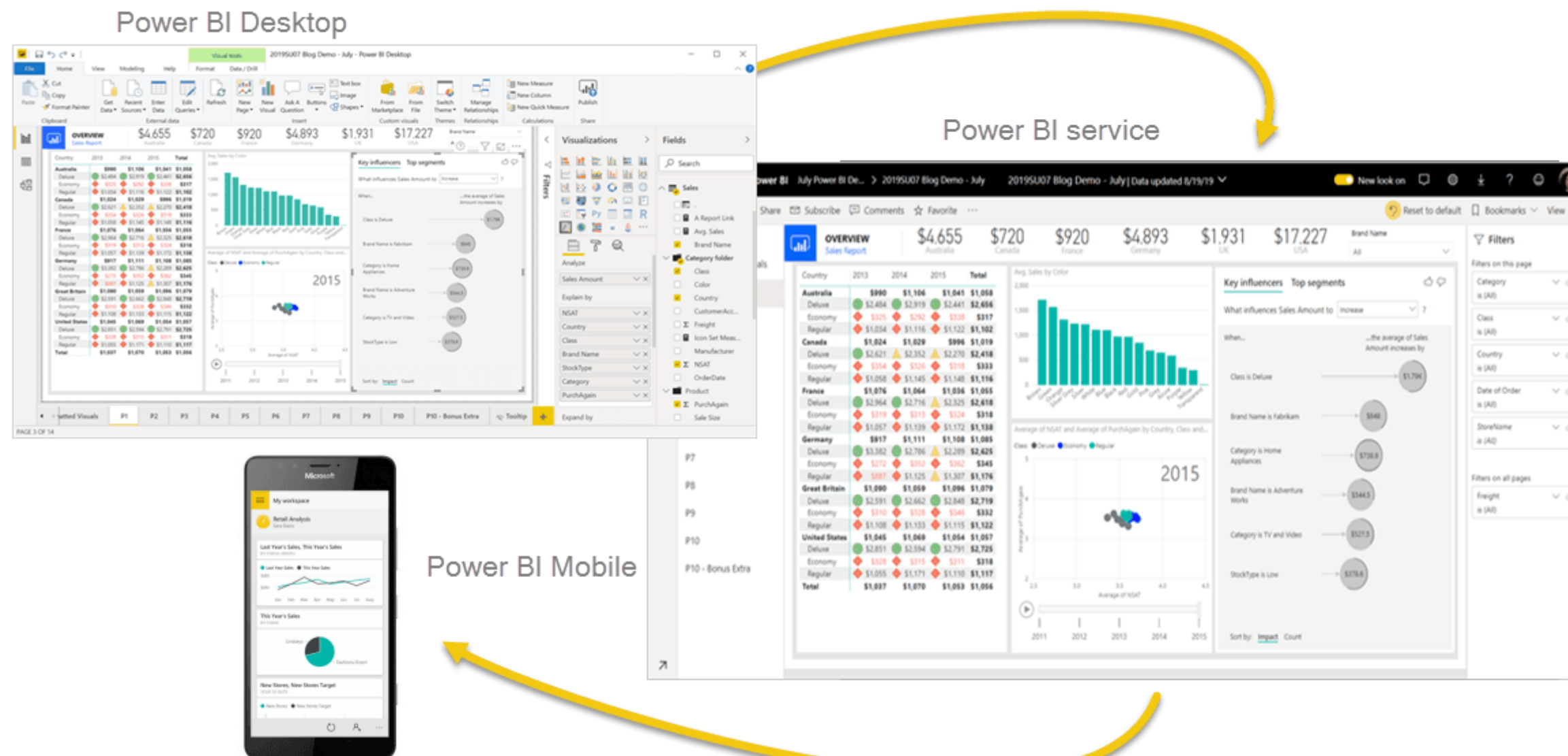


Power BI Gateway

Gateways are used to sync external data in and out of Power BI, ensuring reports and dashboards are always current.

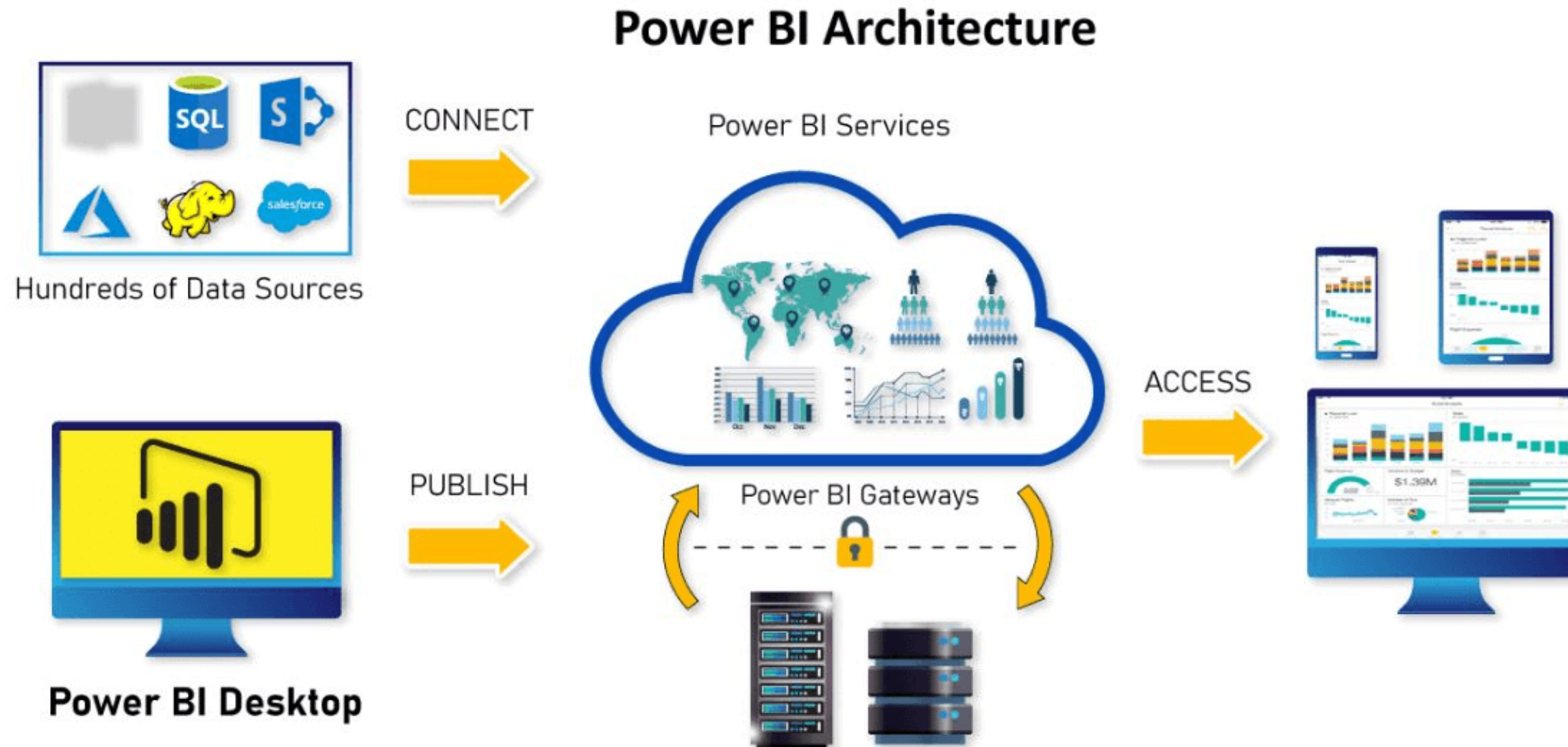
Lecture 01

Power BI Core Components



Lecture
01

Power BI Architecture



Power BI Licensing

Compare business intelligence plans and pricing

Power BI

Microsoft Fabric

Free account

Free

Try for free

Create rich, interactive reports that put visual analytics at your fingertips.

- Included in Microsoft Fabric free account
- No credit card required
- Upgrade to Pro or Premium to share reports

Power BI Pro

\$14.00

user/month, paid yearly

Buy now

Access Power BI reports shared with you and publish your own for an even bigger impact.

- Publish and share Power BI reports
- Included in [Microsoft 365 E5](#) and [Office 365 E5](#)
- Available to buy now with a credit card¹

Power BI Premium Per User

\$24.00

user/month, paid yearly

Buy now

License data professionals with access to enterprise-scale features.²

- Includes all the features available with Power BI Pro
- Access larger model sizes
- More frequent refreshes
- Available to buy now with a credit card¹

Power BI Embedded

Variable

See pricing

Contact sales

Create customer-facing reports, dashboards, and analytics in your own applications.

- Brand Power BI reports as your own
- Automate monitoring, management, and deployment
- Reduce developer overhead

Understanding License Capabilities

Capability	Free license	Pro license	PPU license
View shared content in Premium capacity	Yes	Yes	Yes
View shared content in non-Premium workspaces	No	Yes	Yes
Create content in My workspace	Yes	Yes	Yes
Publish to app workspaces	No	Yes	Yes
Share content with others	No	Yes	Yes
Use PPU-only features	No	No	Yes

Lecture

01

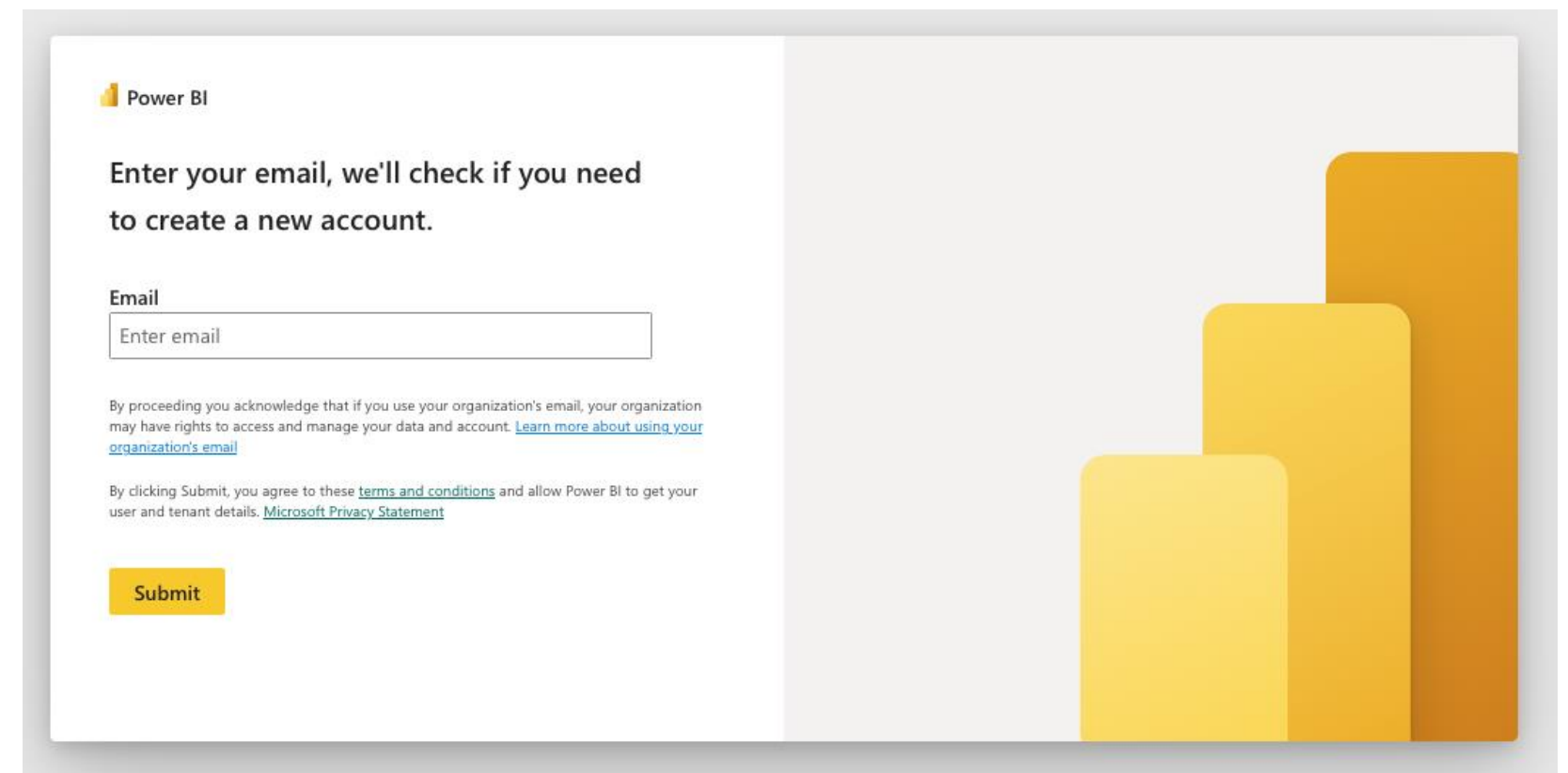
3. Signing up and Installing Power BI



Lecture
01

Signing Up for Power BI

- Sign up is for free.
- **Power BI works only with an organizational account, associated with a work or school email address.**
- Go to: app.powerbi.com

A screenshot of the Power BI sign-up page. The page has a white background with a grey sidebar on the right containing three yellow bars of increasing height. The main content area is white and contains the following text: "Power BI" with a small icon, "Enter your email, we'll check if you need to create a new account.", an "Email" label, a text input field with the placeholder "Enter email", and a "Submit" button. Below the input field, there is a paragraph of small text: "By proceeding you acknowledge that if you use your organization's email, your organization may have rights to access and manage your data and account. [Learn more about using your organization's email](#)". Below this, another paragraph of small text: "By clicking Submit, you agree to these [terms and conditions](#) and allow Power BI to get your user and tenant details. [Microsoft Privacy Statement](#)".

Power BI

Enter your email, we'll check if you need to create a new account.

Email

Enter email

By proceeding you acknowledge that if you use your organization's email, your organization may have rights to access and manage your data and account. [Learn more about using your organization's email](#)

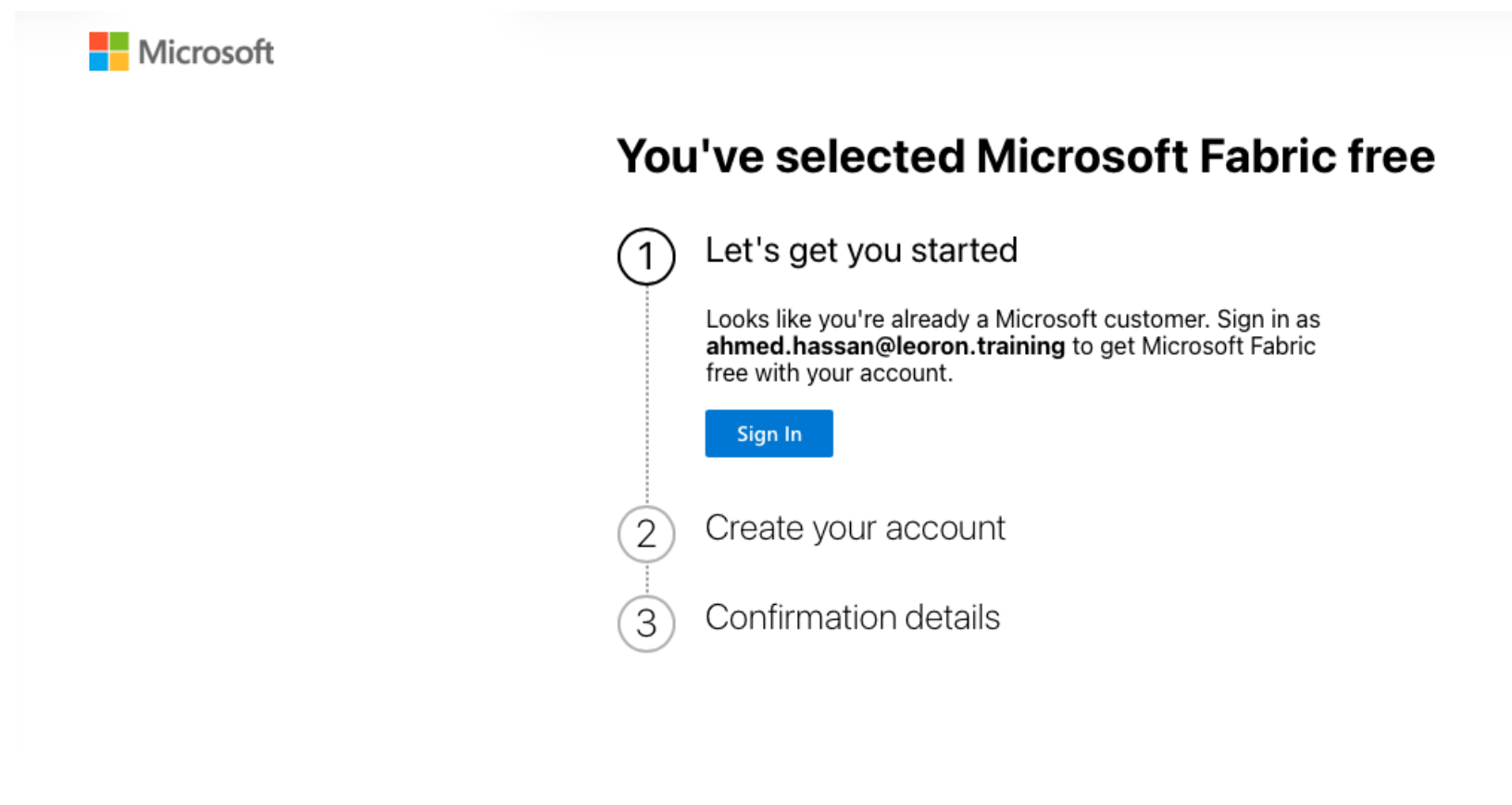
By clicking Submit, you agree to these [terms and conditions](#) and allow Power BI to get your user and tenant details. [Microsoft Privacy Statement](#)

Submit

Lecture
01

Signing Up for Power BI

- Enter your account details



 Microsoft

You've selected Microsoft Fabric free

- 1 Let's get you started
Looks like you're already a Microsoft customer. Sign in as **ahmed.hassan@leoron.training** to get Microsoft Fabric free with your account.
[Sign In](#)
- 2 Create your account
- 3 Confirmation details

- Click "Get Started" Button

- 2 Create your account

Hi **Ahmed**,
We need just a little more information before you get started

Email

Country or Region *

Job title *

Company name *

Business phone number *

I understand that Microsoft may contact me about my trial.

I will receive information, tips, and offers about Power BI, solutions for businesses and organizations, and other Microsoft products and services. [Privacy Statement](#).

☐ I would like Microsoft to share my information with select partners so I can receive relevant information about their products and services. To learn more, or to unsubscribe at any time, view the [Privacy Statement](#).

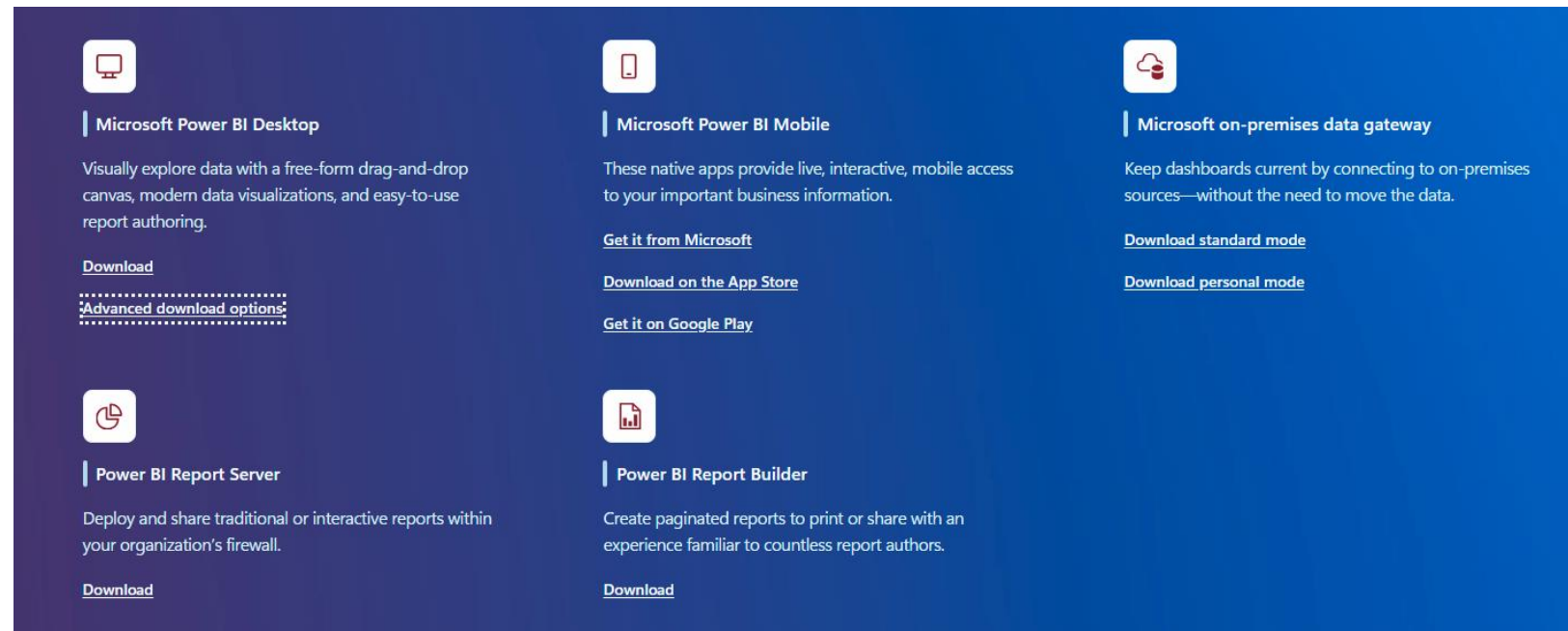
By choosing **Get Started**, you agree to our [terms and conditions](#) and [Privacy Statement](#).

[Get Started](#)

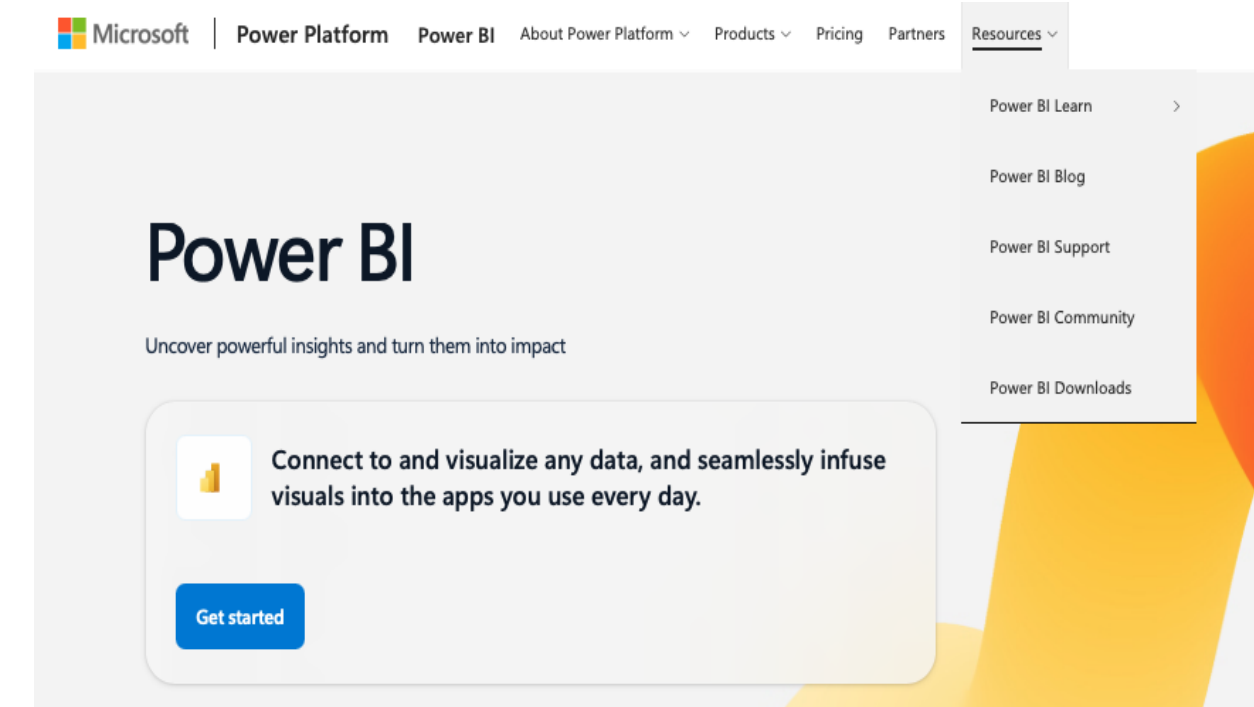
Lecture
01

Downloading Power BI

- Go to: [Microsoft Power BI Website](https://powerbi.microsoft.com)
- Navigate to Resources → Downloads
- Choose your Version



 Microsoft Power BI Desktop Visually explore data with a free-form drag-and-drop canvas, modern data visualizations, and easy-to-use report authoring. Download Advanced download options	 Microsoft Power BI Mobile These native apps provide live, interactive, mobile access to your important business information. Get it from Microsoft Download on the App Store Get it on Google Play	 Microsoft on-premises data gateway Keep dashboards current by connecting to on-premises sources—without the need to move the data. Download standard mode Download personal mode
 Power BI Report Server Deploy and share traditional or interactive reports within your organization's firewall. Download	 Power BI Report Builder Create paginated reports to print or share with an experience familiar to countless report authors. Download	



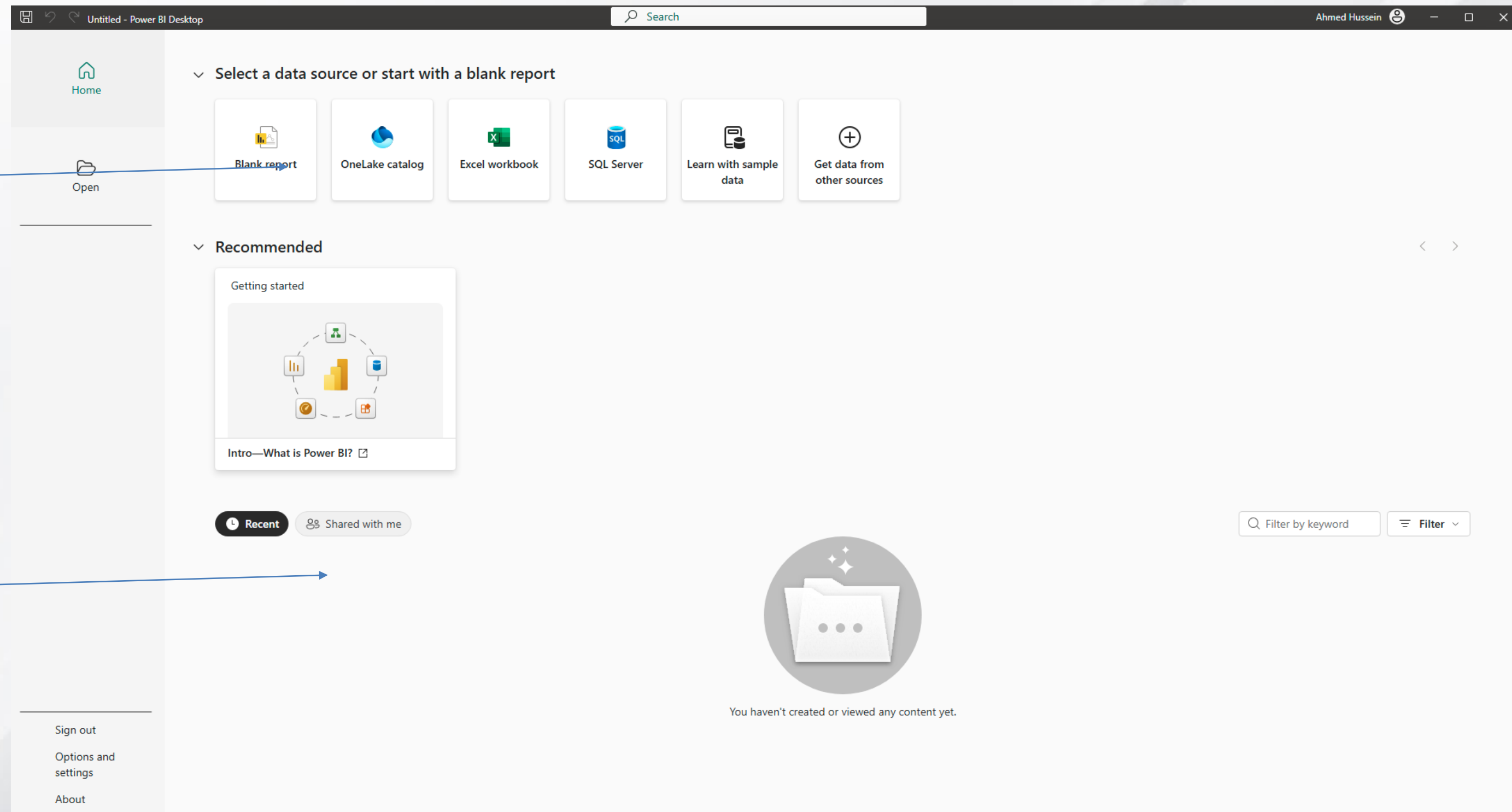
- Run the EXE installer and follow the setup steps.

Power BI Desktop Overview

Power BI Home Page

Click to Create Blank Report

Saved Reports are shown here



Power BI Desktop Overview

Get Data

Report View

Table View

Model View

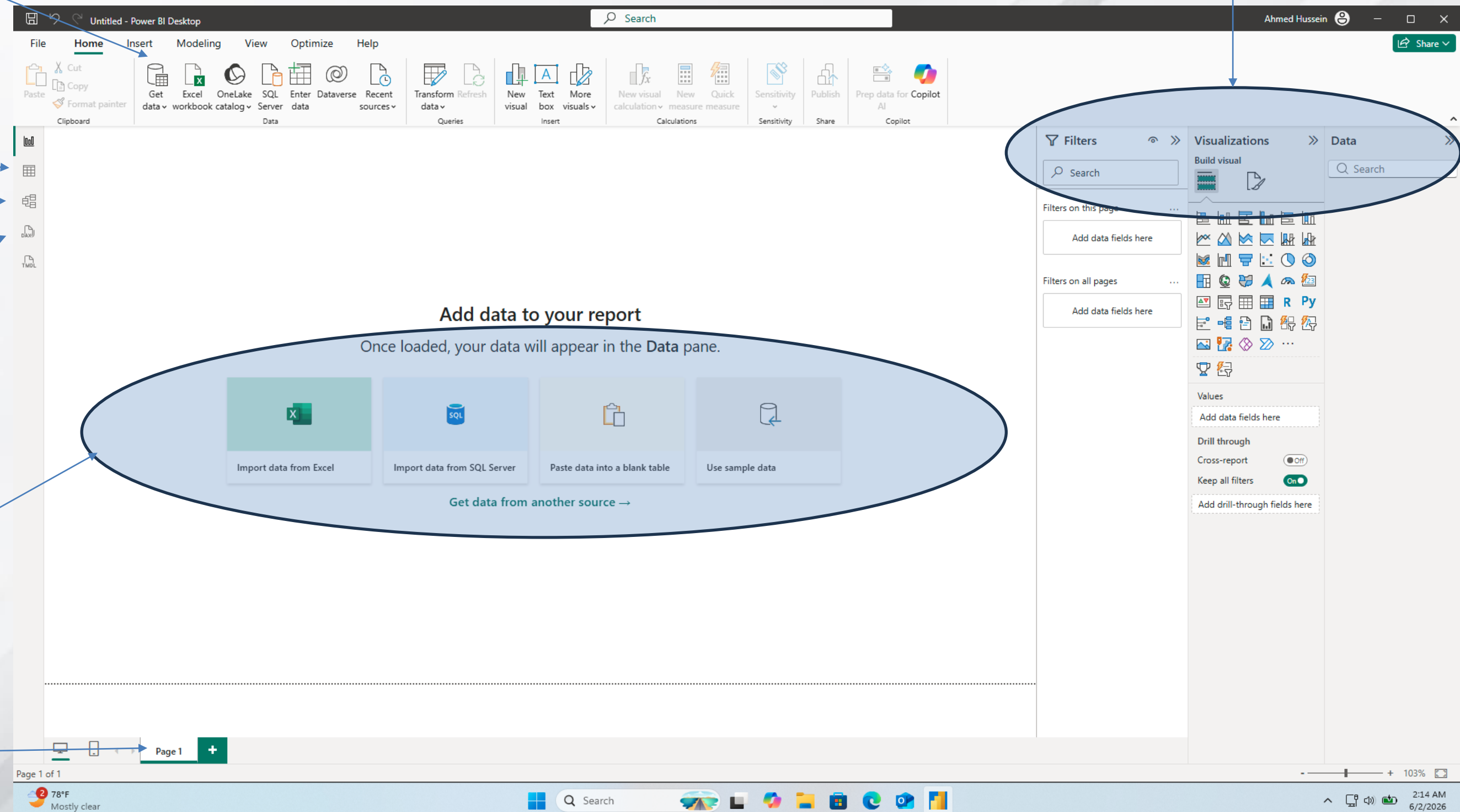
DAX Query View

Most Common Data Sources

Report Page #, Add Page

Power BI Blank Report

Panels



Exercise:

- Sign-Up for Power BI Free and create your account
- Download Power BI Desktop
- Install/Setup Power BI on your Desktop
- Get acquainted with Power BI Interface

Lecture

01

Exercise



Lecture
01

Key Points

Data alone does not create value, Information explains what happened, and Insights explain why it happened.

Business Intelligence supports better and faster decisions leading to competitive advantage.

Power BI transforms business data into actionable insights.

Power BI has 4 core components: Power BI Desktop, Power BI Service, Power BI Mobile, and Power BI Gateway.

Signing up is free using your work or school/university account

Lecture 02:

- Connecting and Preparing Data



Lecture
01

Next Lecture



Thank You