



# 2025 WICPA ACCOUNTING TECHNOLOGY CONFERENCE

YOUR SOURCE FOR KEY UPDATES & INSIGHTS ON TIMELY ISSUES

## HIGHLIGHTED TOPICS:



### ASK THE EXPERTS

Get your burning questions answered by leading experts on all things related to CPA technology



### MICROSOFT 365: SUPERCHARGING CPA PRODUCTIVITY

Uncover the hidden gems of Microsoft 365 to elevate your productivity and streamline your processes



### SMART TECH, SOUND JUDGMENT: NAVIGATING AI RESPONSIBLY

Learn how to balance innovation with ethical obligations to maintain trust and integrity

THURSDAY, DEC. 4 | WICPA OFFICE & WICPA CPE LIVESTREAM

## CONFERENCE AT A GLANCE

**THURSDAY, DEC. 4**

WICPA Office & WICPA CPE Livestream

**7 – 8 a.m.**

Registration & Networking  
Lower Level Foyer

**8 – 8:10 a.m.**

Welcome & Opening Remarks  
Lower Level Conference Center

**8:10 – 9:10 a.m.**

GENERAL SESSION  
Technology Update: Emerging  
Trends That Matter  
Lower Level Conference Center

**9:10 – 9:25 a.m.**

Networking Break  
Lower Level Foyer

**9:25 – 10:40 a.m.**

BREAKOUT SESSIONS  
Excel Accuracy Unleashed:  
Mastering Error Detection  
WICPA Training Center

Microsoft 365: Supercharging  
CPA Productivity  
Lower Level Conference Center

**10:40 – 10:55 a.m.**

Networking Break  
Lower Level Foyer

**10:55 a.m. – 12:10 p.m.**

BREAKOUT SESSIONS  
AI-Powered Excel: Transforming  
Workflows With Copilot  
Lower Level Conference Center

Smart Tech, Sound Judgment:  
Navigating AI Responsibly  
WICPA Training Center

**12:10 – 1 p.m.**

Networking Lunch  
Lower Level Foyer

**1 – 2 p.m.**

GENERAL SESSION  
From Numbers to Narratives:  
Mastering Data Analysis for CPAs  
Lower Level Conference Center

**2 – 2:15 p.m.**

Networking Break  
Lower Level Foyer

**2:15 – 3:30 p.m.**

BREAKOUT SESSIONS  
Crypto at 15: What CPAs Should  
Know Now  
WICPA Training Center

Power BI in Practice: Building  
End-to-End Analytics Solutions  
Lower Level Conference Center

**3:30 – 3:40 p.m.**

Networking Break  
Lower Level Foyer

**3:40 – 4:30 p.m.**

GENERAL SESSION  
Ask the Experts: Panel Discussion  
on Emerging Technologies  
Lower Level Conference Center

**4:30 p.m.**

Closing Remarks &  
Prize Drawings  
Lower Level Conference Center

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## A Technology Performance Company

Your technology performance deserves laser-focused attention.

*CTaccess is an extension of our company. They keep our company on track, prepared for the future and up & running.*



**The Full Spectrum of IT Services.** NO MORE hassles and NO MORE hidden costs. We'll be the most transparent, proactive, and responsive IT partner you'll ever have in your corner.

**What is IT?** When we talk about IT, we're referring to your entire infrastructure: computers, servers, internet, cyber security, email, the cloud, phones, and all the things that keep your company and your people running day to day. Our job is to make sure all of those essential functions are working at their peak and continuously improving so that you can focus on your mission.

*When your technology is running at its peak, you can focus on what you do best. We make that possible.*

### Our IT Services

- **Managed Service Provider**
- **Co-Managed Service Provider**
- **Cyber Security: Managed Security Service Provider**
- **IT Consulting & Project Support**
- **Cloud UCaaS (Phone Systems)**
- **Mac Support**

CYBER  
THREATS ARE  
INCREASING  
EVERY DAY.

75%

of accounting firms believe they would only be able to survive **three to seven days** after a ransomware attack.

Source: [www.cpapracticeadvisor.com](http://www.cpapracticeadvisor.com)



## Choose Ontech to protect your data

1

### Expertise in Cybersecurity

Robust security for your sensitive data

2

### Compliance with Regulations

AICPA Code of Conduct & IRS Guidelines

3

### Proactive Monitoring/Support

Respond quickly to minimize downtime

4

### Customized Solutions

Designed to meet specific CPA firm needs

5

### Training & Awareness

Helping your staff recognize cyber threats



Ontech's tailored solutions and transparent billing make us the ideal choice for CPAs and accountants. Don't wait to safeguard your data. Contact Ontech Systems today for a **FREE risk assessment** of your network!

# 75%

of accounting firms believe they would only be able to survive **three to seven days** after a ransomware attack.

Source: [www.cpapracticeadvisor.com](http://www.cpapracticeadvisor.com)

CPA firms are increasingly targeted due to their access to sensitive financial information. Since 2014 reported data breaches of CPA firms have increased **over 80%** with ransomware extortion incidents rising to **over 40%** since 2018.

## Choosing Ontech to manage your CPA firm's IT & protect your data can offer several advantages:

- Expertise in Cybersecurity:** Our staff specializes in cybersecurity to ensure your firm's sensitive financial data is protected against the latest threats. We always implement robust security measures & regular security audits.
- Compliance with Regulations:** Ontech helps ensure your firm complies with industry regulations and standards, such as the AICPA Code of Professional Conduct and IRS guidelines for safeguarding taxpayer data.
- Proactive Monitoring and Support:** We provide continuous monitoring to detect & respond to potential threats quickly. This proactive approach minimizes downtime and keeps your operations running smoothly.
- Customized Solutions:** Our team offers tailored IT solutions to meet the specific needs of CPA firms. This includes secure cloud services, data backup and recovery, and network management.
- Training and Awareness:** They also provide training for your staff to recognize and respond to cyber threats, enhancing your firm's overall security posture.

*Our tailored solutions, transparent billing, and commitment to minimizing technical issues make it an ideal choice for CPA's and accountants. Let us help safeguard your critical data!*



**Get a free risk assessment of your firm's network today at [www.ontech.com](http://www.ontech.com)!**

# FTC SAFEGUARD CHECKLIST

WHO'S AFFECTED & WHAT'S REQUIRED



The **FTC Safeguards Rule** applies to “**financial institutions**”, including:



Car Dealerships



Retailers



Tax Preparers



Accounting Firms



Loan Companies



Any Business **Collecting Financial Data!**

## Here's What's Required To Stay Compliant:



### Designate a Qualified Individual

Assign someone (**internal or outsourced**) to be responsible for your information security program.



### Conduct a Risk Assessment

Identify internal and external risks to customer data. This is ongoing, **not a one-time event!**



### Train Your Team

Security is everyone's responsibility, so your employees need ongoing training on data protection and phishing awareness. **We can help with this!**



### Monitor Your Service Providers

If you outsource IT, payroll, marketing, or data processing, **those vendors must also comply.**



### Keep It Updated

**Regularly review** and **adjust** your security program as your business or threats evolve.



### Implement Safeguards

Based on your risk assessment, put the right controls in place. **These typically include:**

- Access controls (who can access what, and why)
- Encryption of customer data
- Multi-Factor Authentication (MFA)
- Secure data disposal policies
- Logging and monitoring access and activity



### Create an Incident Response Plan

Be ready with a plan if (**or when**) a data breach occurs. The FTC expects a **structured response strategy.**

## Why It Matters: *Non-compliance can lead to:*



Hefty fines



Damaged reputation



Loss of trust with customers

Luckily, we help local businesses like yours **navigate FTC requirements with confidence!**

**NEED HELP GETTING COMPLIANT?**



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help@p3ctech.com



# TRACK YOUR CPE WITH THE WICPA'S CPE TRACKER

The CPE Tracker is an easy to use tool created to keep track of all your CPE in one convenient location.

- Automatically tracks WICPA formal learning activities
- Add any non-WICPA CPE courses
- Print reports for any reporting period

**To get started, visit  
[wicpa.org/cpetracker](http://wicpa.org/cpetracker)**



# Technology Trends Update: Emerging Trends That Matter



Set your browser to  
**HIGGINS.CNF.IO**  
For interactive polling  
and Q & A

Presented By  
John H. Higgins, CPA.CITP  
Higgins Advisory, LLC - Rochester, Michigan

# Learning Goals



- Understand key technology trends for enhancing efficiency and decision-making processes for CPAs
- Recognize opportunities for you to embrace these technologies to improve your professional skills and career opportunities

Set your browser to  
**HIGGINS.CNF.IO**  
For interactive polling  
and Q & A

# John H. Higgins, CPA.CITP

## Strategic Technology Advisor



[john@higginsadvisoryllc.com](mailto:john@higginsadvisoryllc.com)

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Nationally recognized thought leader, advisor, author and speaker on CPA technology
- Strategic technology advisor to the profession w/ 35+ years of experience
- Founded and sold two CPA technology advisory startups
- Former National Mid-market Technology Partner - BDO
- CPA Practice advisor Top 25 Thought Leader for the CPA profession
- AICPA Business & Industry Hall of Fame Inductee
- Past Chair of the Michigan Association of CPAs
- Passionate advocate for the CPA profession!

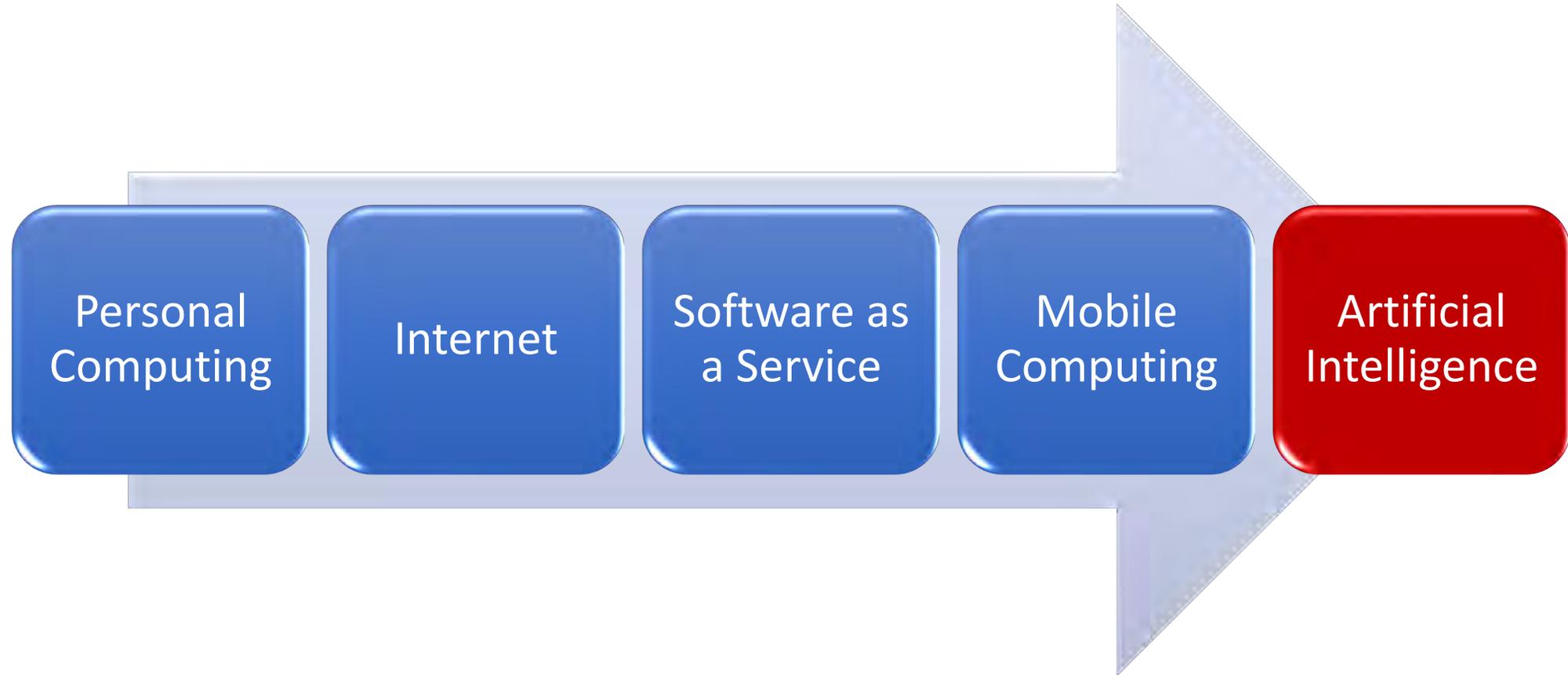
# Presentation Outline

- Technology Trends Overview – The Big Picture
- Artificial Intelligence
- Application Software Trends
- Blockchain, Smart Contracts & Digital Assets
- Challenges & Opportunities for CPAs

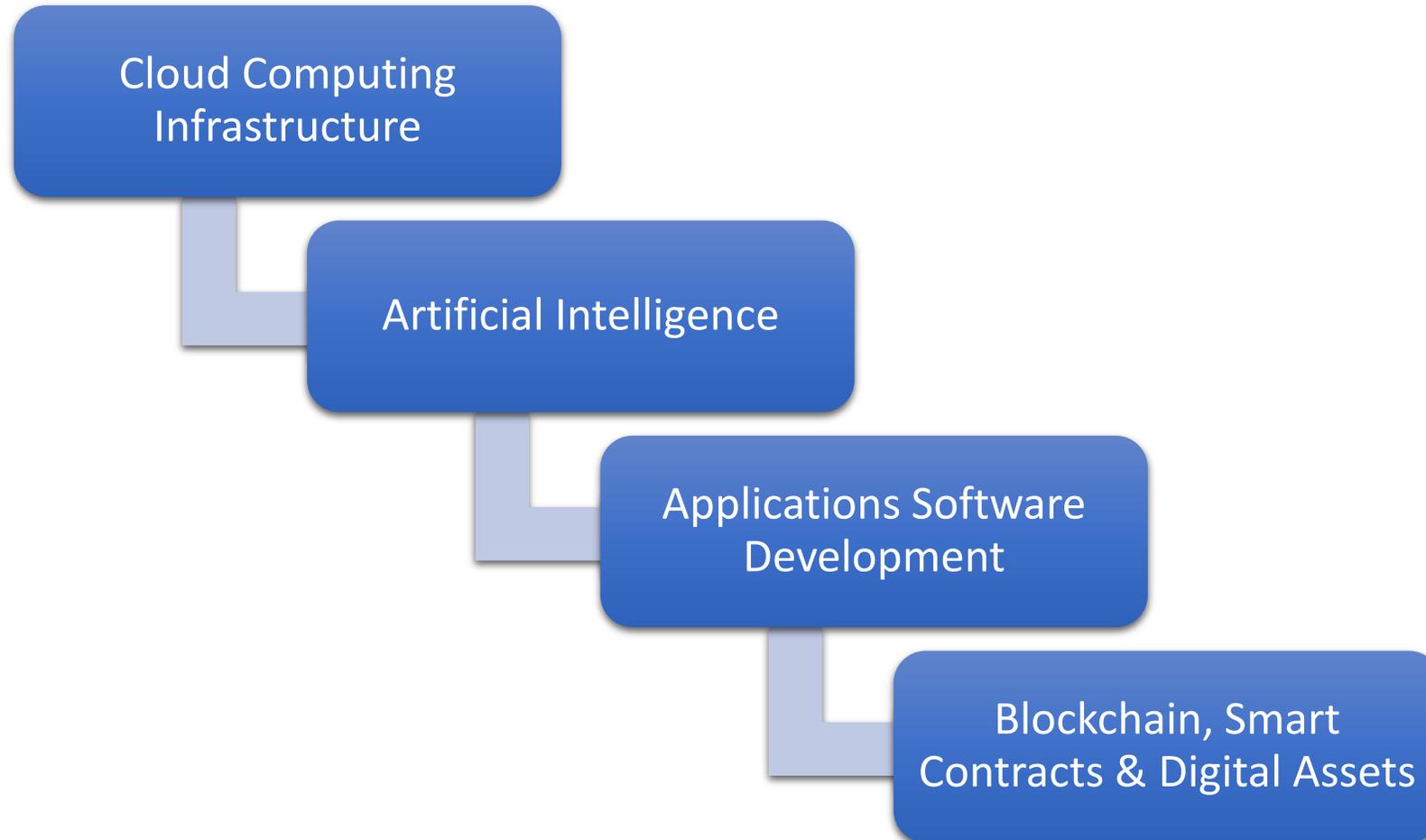
# TECHNOLOGY TRENDS OVERVIEW – THE BIG PICTURE



# Evolution of Modern Business Technology



# Current Technology Megatrends



# Today's Technology Challenges

Developing an understanding of opportunities

Pace and timing of adoption

Integration into current workflows

Transformation of required skillset

Data privacy concerns

Strategic planning and budget allocation

Integration of artificial intelligence & humanity

# ARTIFICIAL INTELLIGENCE

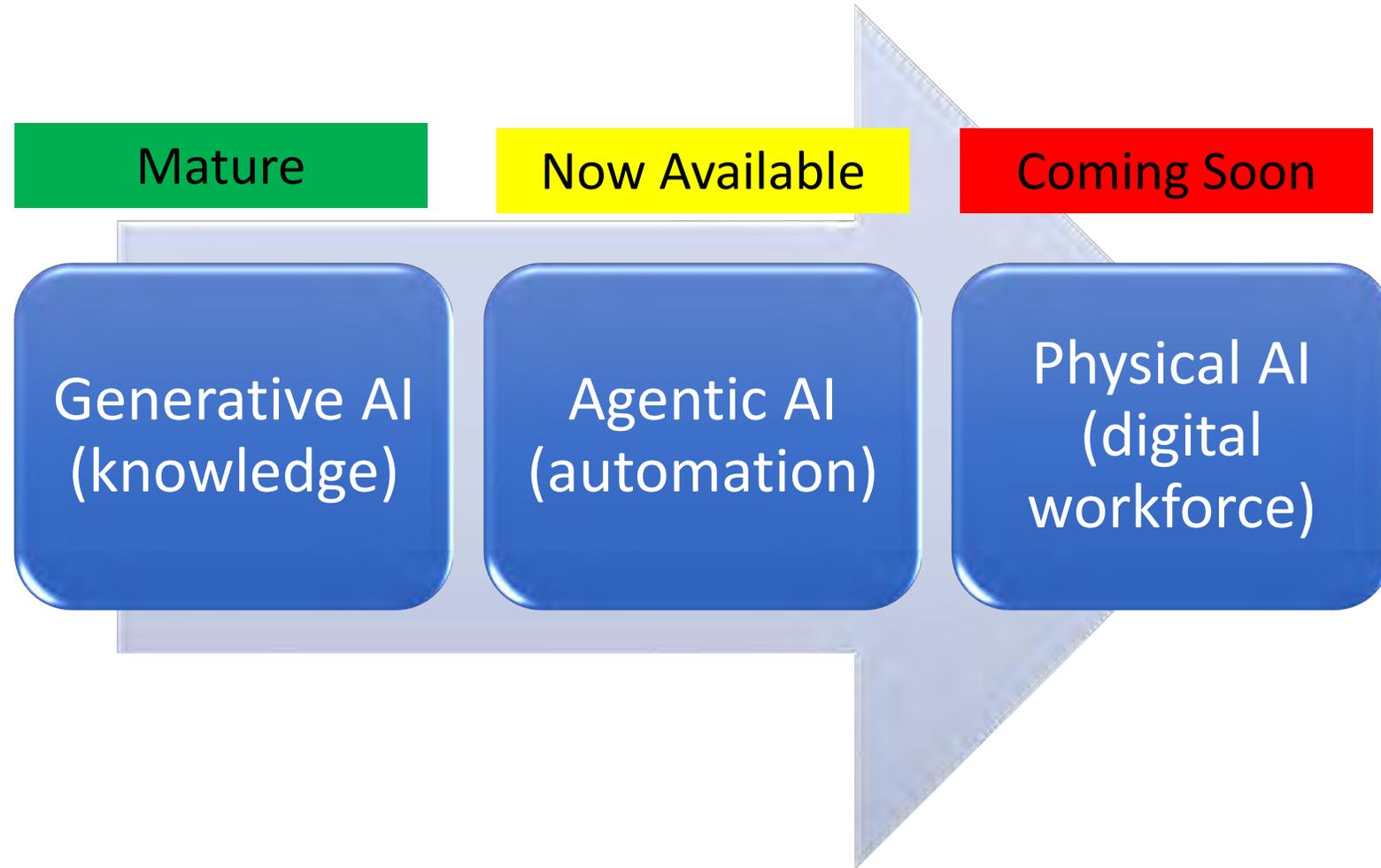


# Salesforce and AI

This is the first time in Salesforce 25-year history that we are budgeting for zero increase in our software engineering team. AND we are projecting a 30% increase in productivity from our existing team!

Marc Benioff, CEO & Co-Founder  
Salesforce

# AI Technology Evolution



# Microsoft and AI

I think the notion that business applications exist, that's probably where they'll all collapse, right in the agent era!

Satya Nadella, Chairman and CEO  
Microsoft

# Key AI Infused Trends

Autonomous  
Everything

Vibe Coding

Intelligent  
Wearables

Humanoid Robots

BCI (Brain  
Computer  
Interface)

Artificial General  
Intelligence (AGI)

Artificial Super  
Intelligence (ASI)

Disintermediation

# AI Technology Ingredients

## Raw Materials

- Processors
- Energy
- Data Centers

## Cloud Infrastructure

- AWS (Amazon)
- Azure (Microsoft)
- Google Cloud

## Foundation LLM Models

- ChatGPT (Open AI)
- Gemini (Google)
- Grok (xAI)
- Llama (Meta)

## Application DLM Models

- Tax
- Audit
- Accounting
- Copilot
- Industry / Enterprise

# Popular Generative AI Apps

- [ChatGPT \(OpenAI\)](#)
- [Claude \(Anthropic\)](#)
- [Copilot \(Microsoft\)](#)
- [Gemini \(Google\)](#)
- [Llama \(Meta\)](#)
- [Perplexity AI](#)
- [xAI \(Elon Musk\)](#)

# Multimodal Generative AI

## Inputs

- Text
- Audio
- Video
- Images

## Outputs

- Text
- Audio
- Video
- Images

# Agentic AI – The Next Frontier

Autonomous systems  
that execute tasks  
without constant  
oversight

Optimize processes and  
solve problems

Assess information  
within a given context  
and apply reasoning to  
determine the most  
effective course of action

# Agentic AI Examples

- **Smart Home Manager** – An agentic AI adjusts lighting, temperature, and security settings based on user habits, weather conditions, and occupancy, optimizing comfort and energy efficiency without manual input.
- **Smart Email Assistant** – An agentic AI monitors your inbox, prioritizes important emails, drafts replies, schedules meetings, and follows up on unanswered messages—all without needing constant input.

# Physical AI – The Future



- AI-powered robots interacting with the physical world
- Combines AI, IoT sensors, and automation for real-world tasks
- Bridges digital intelligence with physical action
- Adapts, learns, and performs tasks autonomously



Humanoid Robot Demo

# The AI Arms Race

- \$100m plus signing bonuses
- \$400b annual capital expenditures
- Mega data centers everywhere
- Energy any way they can get it



# AI Segment Summary

- AI is the most transformative technology ever!
- The technology is evolving very rapidly
- Learning how to leverage it provides a substantial competitive edge
- We are still at the infancy of AI technology

# APPLICATION SOFTWARE TRENDS



# Software Categories



# Trends In Software Applications

All applications continue the move to SaaS

Cross vendor integration is simplified and more prevalent

Specific business process solutions outpace enterprise solutions

Integrated dashboard reporting is “table stakes” to be competitive

Embedded AI capabilities are evolving rapidly

# CPA Practice Solutions



# CPA Practice Solutions Trends

Wolters Kluwer / Thompson Reuters / Intuit dominate market share

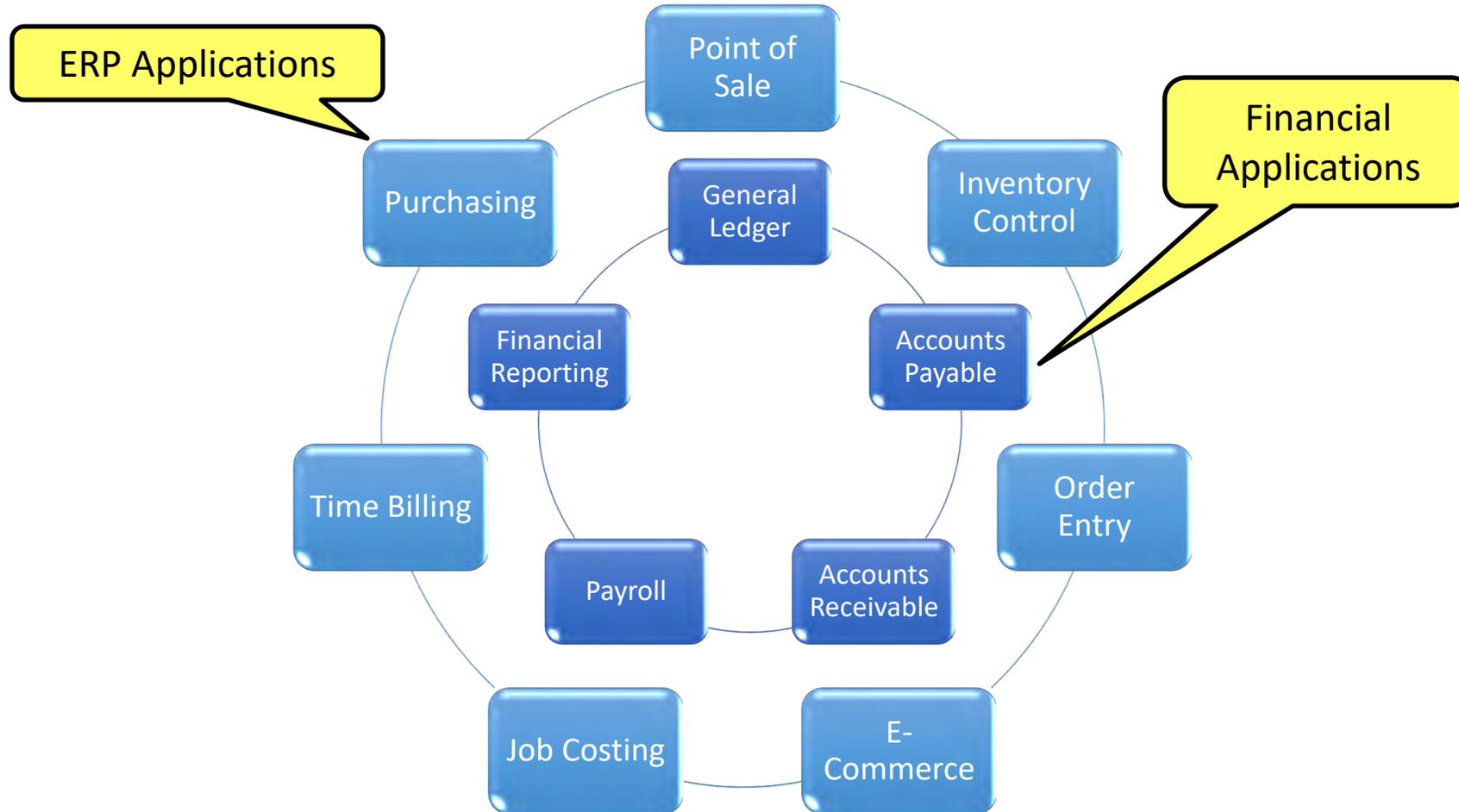
Dynamic Audit Solution (DAS) from CaseWare is progressing slowly

Abundance of startup solution providers

A lot of activity in AI based tax document organizers

Over abundance of niche applications

# Business Enterprise Solutions



# Business Enterprise Solutions Trends

- [NetSuite](#) / [MS Dynamics](#) / [Sage Intacct](#) / [SAP](#) / [Intuit](#) lead the financial and ERP market
- Emphasis on business process specific solutions
  - ✓ Customer Service – [Salesforce](#)
  - ✓ Workflow Automation – [ServiceNow](#)
  - ✓ Corporate Tax Compliance – [Avalara](#)
  - ✓ Cash Management – [Bill](#)
  - ✓ Expense Management - [Concur](#)

# KPI Dashboards – The New Reporting Model



# Create Visual Dashboards

## Measures

- Metrics / results to display

## Visuals

- How to present the metrics
- Data table vs. chart

## Filters

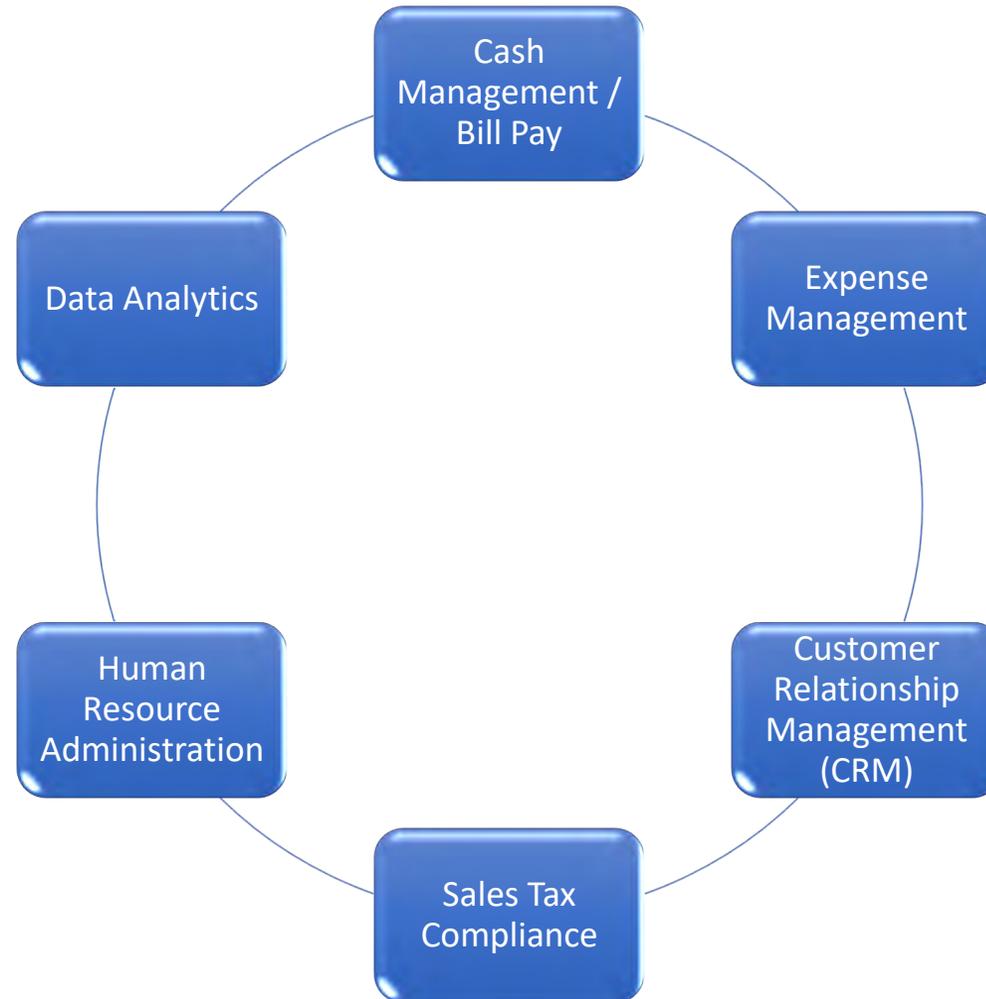
- Select data subsets to measure
- Embedded or user managed

# KPI Dashboard Example

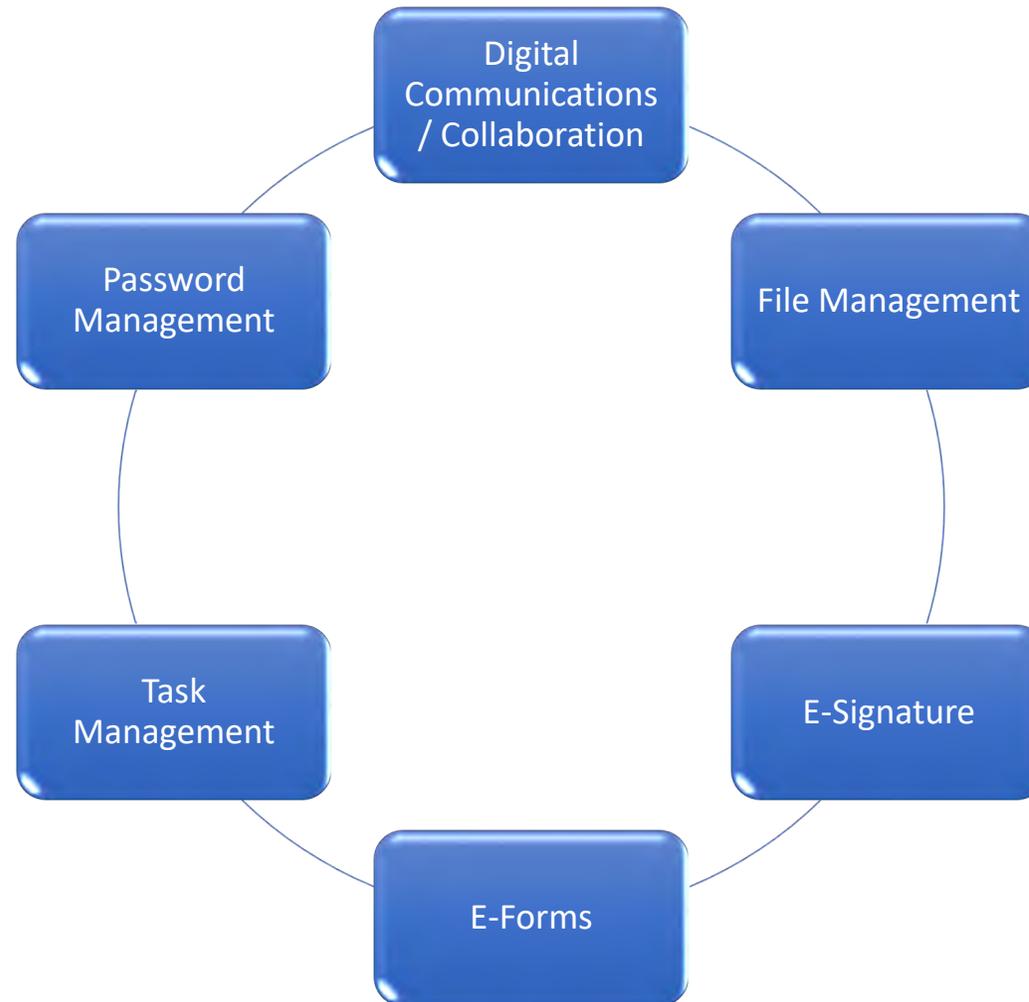


Real-world Examples

# Business Process Solutions



# Personal Productivity Solutions







Blockchain is a revolutionary way to  
validate, record and preserve  
information digitally and enables  
smart contracts

# Existing and Emerging Blockchain Applications

- Cryptocurrency
- Smart Contracts
- Supply Chain Management
- Real Estate
- Healthcare Records
- Voting systems



Smart contracts are self-executing digital agreements with predefined terms, automatically enforced on a blockchain without intermediaries.

# Smart Contracts



- Automatic self executing contracts
- Written in programming code
- Deployed and run on a blockchain
- Transparent for participants
- Ethereum is the leading platform in the deployment of smart contracts

# Smart Contract Example (Not-for-Profit Grant Disbursement )

## **Step 1: Funding Setup**

Foundation deposits \$250,000 into a blockchain-based smart contract with milestone triggers.

## **Step 2: Milestone Triggers**

Tranche 1 (\$100k): After board-approved budget validated by auditor.

Tranche 2 (\$100k): After 50,000 meals verified via API.

Tranche 3 (\$50k): Upon mid-year report submission; otherwise funds revert.

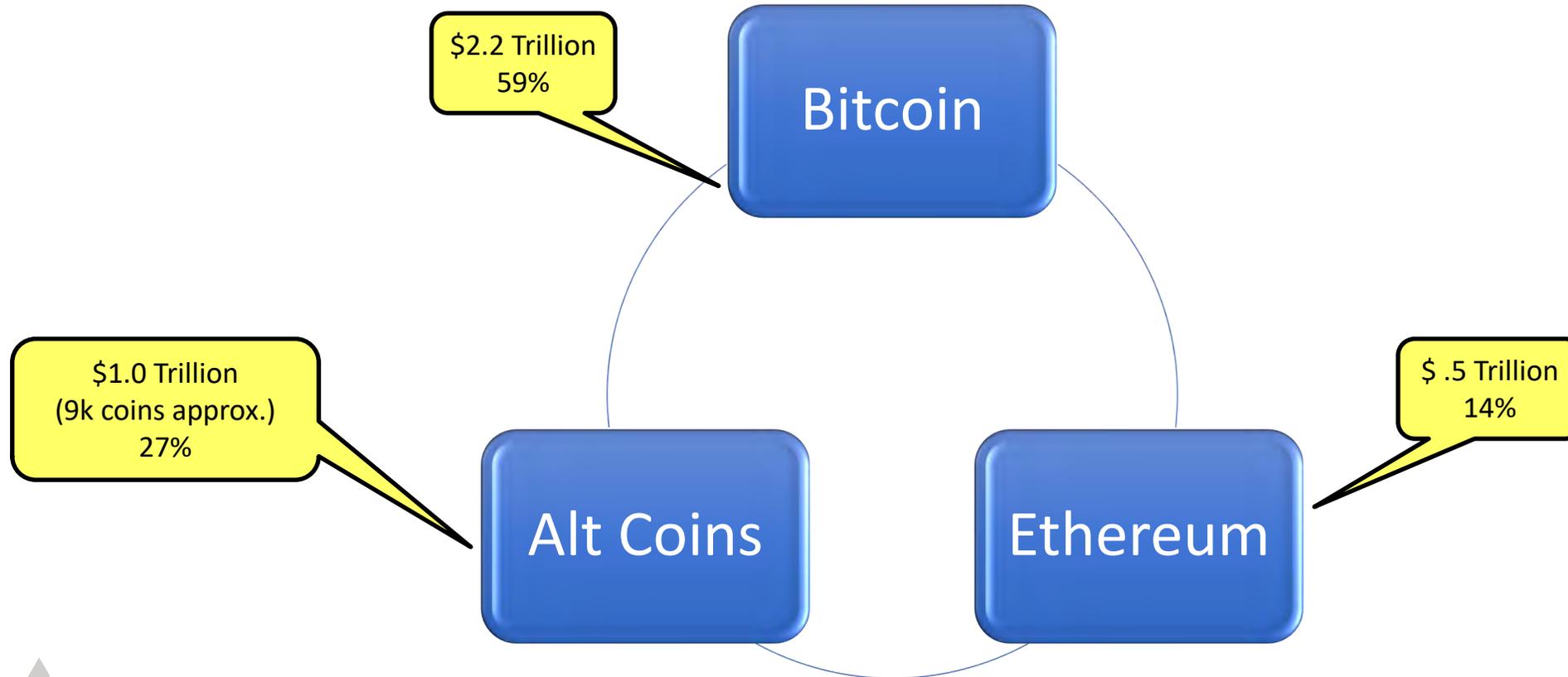
## **Step 3: Automated Execution**

Contract verifies inputs, logs all events immutably, and transfers funds automatically.



- Digital assets are electronic representations of value
- Cryptocurrencies are decentralized digital money
- Tokens represent ownership rights on blockchains.

# Bitcoin, Ethereum & Alt Coins – Market Cap



# CHALLENGES & OPPORTUNITIES FOR CPAS



Unprecedented  
opportunity to  
maximize  
productivity

Multitude of paths  
to provide client  
advisory services

Learning has never  
been easier

Clients will be  
better informed

Developing AI skills  
is imperative

Client fee models  
need to tie to  
results, not efforts

# Questions ?



# Thank you!!!

Let's connect on LinkedIn →





**Wisconsin Institute of  
Certified Public Accountants**

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# Excel Accuracy Unleashed: Mastering Error Detection

Developed by Bryan L. Smith, CPA.CITP, CISA

**In Waukesha, WI on December 4, 2025, 9:25-10:40am**



## Bryan L. Smith, CPA.CITP, CISA

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- Owner DataSmithPro, LLC
- Co-founder of CPA Crossings, LLC
- Strategic technology advisor to CPAs w/ 40+ years of experience
- Nationally recognized author and presenter on CPA technology
- Extensive knowledge and experience in proper Excel design techniques as well as helping CPAs build spreadsheets that are accurate
- As a Certified Information Systems Auditor (CISA), spent a considerable amount of time auditing and validating thousands of Excel spreadsheets
- Developed various data analysis and Microsoft Power BI courses and has worked with multiple organizations to train and coach staff on proper data analysis techniques
- Masters of Science in Information Assurance (MSIA)

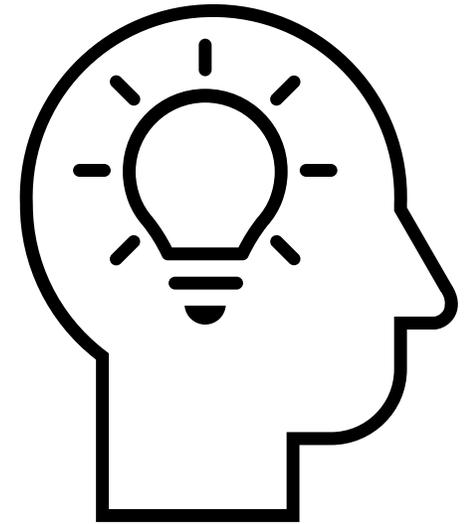
# Presentation Outline

Click links to navigate to  
specific section ----->



- [Understanding Common Excel Errors](#)
- [Advanced Formulas and Functions](#)
- [Data Validation Techniques](#)
- [Error Tracing and Auditing Tools](#)
- [Wrap-Up](#)

# Understanding Common Excel Errors



The slides in this presentation contain many screenshots of the Excel application in order to demonstrate particular features and functionality.

These screenshots were taken during the development of this course. However, Microsoft updates the apps regularly and it becomes difficult to constantly update the screenshots. Therefore, please note that screenshots may vary from your actual version, but the overall functionality remains the same.

Note About Screen Shots

# Errors In Excel

Research shows 80%+ of spreadsheets have errors

- The more complex, the higher the %

A lot going on in people's spreadsheets

- Many errors go nowhere
- Decisions aren't being made from errors
- Quick Google search finds billions in financial losses due to errors in spreadsheets

Overconfidence that if there is no error message it is accurate

# When Formulas Result in Errors

Certain types of errors will provide messages

Not ALL errors have messages

Excel uses the # sign for build-in errors in formulas

- These are the easiest to find and fix

Formulas errors that don't result in #errors are hard to find

- Provides false sense of accuracy

# #Errors

Error Message	Explanation
#N/A	This error indicates that a value is not available to a function or formula. MOST commonly found in Lookup functions where the lookup value is not in the list.
#DIV/0!	This error indicates a number is divided either by zero (0) or by a cell that contains no value.
#NAME?	This error indicates a name is used but it has not been defined or you are using an older version of Excel & spreadsheet contains a new formula (will be preceded with _xlfn.).
#VALUE!	This error indicates the formula includes cells that contain different data types. (i.e., the formula is expecting a number and it contains text.).
#REF!	This error indicates the formula refers to an invalid cell. MOST commonly found when a row or column is deleted when a value in that range is used in a formula.
#NULL!	In Excel formulas, the space character works as an intersection operator. An error occurs when you specify an intersection of two areas (ranges) on a worksheet that do not intersect.
#NUM!	This error indicates that a formula or function contains invalid numeric values. HERE FV is less than PV so PMT should be negative number.
#CALC!	This error occurs when Excel's calculation engine encounters a scenario it does not currently support. MOST often related to array formulas. HERE the FILTER function returns an empty array.
#SPILL!	This error occurs when a Dynamic Array Formula spills into non-empty cells.
#SPILL!	This error can also occur when a Dynamic Array Formula is used in Excel Tables.
#####	This error occurs when the column width for the subject cell is not enough to contain the value you're trying to fit in.

# Finding #Errors

Use formula to check for errors

Use Find & Search - Go To Special

Use Find - Find All

Use Formula Auditing - Error Checking

Create a Visual Basic Macro that finds and highlights

# Finding #Errors - Use Formula to Check For Errors

Using SUM function on a range that contains an error, returns error

- SUM function calculates no matter what are in cells in the range

Use ISERROR with IF to provide custom message

Best used with a range of formulas or a table

Not efficient to use when there are many Worksheets

- Best to use another Error Checking method

# Finding #Errors - Example: Use Formula to Check For Errors

	A	B	C	D	E	
1						
2	<b>Use Formula to Check For Errors</b>					
3	<b>Description</b>	<b>Formula Result*</b>	<b>FORMULATEXT</b>			
4	SUM on a Range	#SPILL!	=SUM(ErrorResults!D12:L26)			
5	SUM on a Table	#N/A	=SUM(Table1[#All])			
6	SUM on a Sheet	#N/A	=SUM(ErrorResults!1:1048576)			
7	SUM on a Workbook	#N/A	=SUM(ErrorResults:Sheet1!1:1048576)			
	SUM on Workbook with Hidden Sheets					
8						
9	SUM on Workbook with Hidden Sheets, manually change formula	#VALUE!	=SUM(Sheet1:Sheet2!1:1048576)			
10						
11						
12	<b>* NOTE: Formula Result will display FIRST error, starting top left and working Row by Row.</b>					
13						

# Finding #Errors - Use Find & Search - Go To Special

Selects ALL cells that include #Error

Use Fill Color to highlight selected cells

Works on only ONE Worksheet at a time

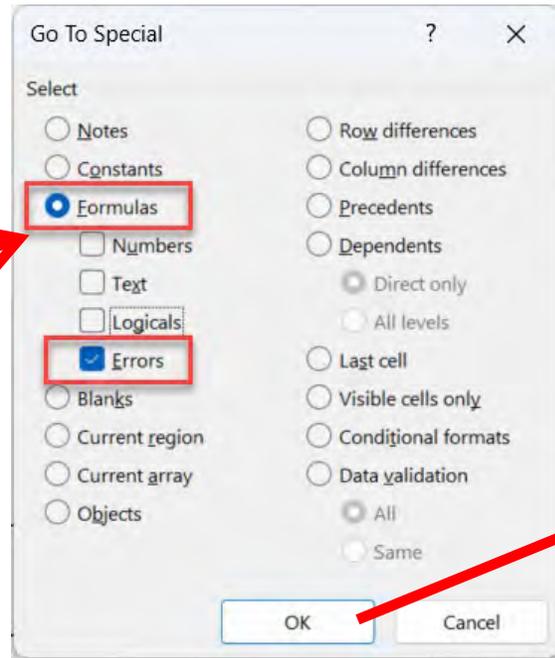
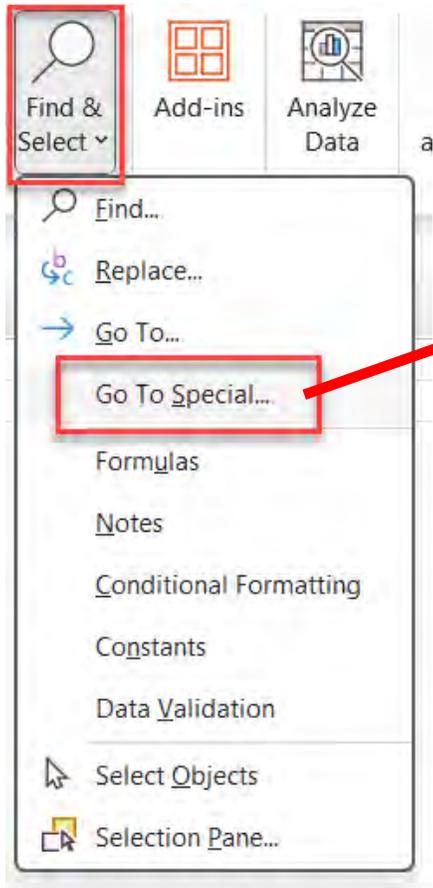
- You would have to repeat process for each Worksheet
- Not efficient to use when there are many Worksheets

After highlighting, would have to hunt down cells

- Could use the Find feature to Find highlighted cells

# Finding #Errors - Example

## Use Find & Search - Go To Special



	A	B	C	D	E	F	G
1							
2							#VALUE!
3	#VALUE!						
4				#VALUE!			
5							
6							
7		#VALUE!					
8							
9							
10				#VALUE!			
11	#VALUE!						
12							

# Finding #Errors - Example

## Use Find & Search - Go To Special (Highlighted)

The image illustrates the process of finding #VALUE! errors in Excel using the Find & Search feature. The spreadsheet shows several cells containing #VALUE! errors, which are highlighted in yellow. The 'Theme Colors' palette is open, showing the 'Standard Colors' section with a yellow color selected. The 'Find and Replace' dialog box is open, with the 'Format...' button highlighted. The 'Find Format' dialog box is also open, with the 'Fill' tab selected and a yellow color chosen. Red arrows indicate the flow of the process: from the spreadsheet to the 'Find & Search' menu, then to the 'Find and Replace' dialog, then to the 'Find Format' dialog, and finally back to the spreadsheet.

# Finding #Errors - Use Find - Find All

Find what: = #\*!

- With "\*" being a wildcard
- So starts with # and ends with !

Within: = Workbook

Look in: = Values

Finds ALL matching values in "visible" sheets

Does NOT find matching values in "hidden" sheets

# Finding #Errors - Example

## Use Find - Find All

	A	B	C	D
1				
2			#VALUE!	
3				
4			#1	
5				
6				

Find what: = #\*!  
does not find #1

Can now select each row to go to and view/fix #Error

Note 1: Find boxes are remembered until ALL workbooks are closed

Note 2: Find dialog box will "float" as you work in Excel

Book	Sheet	Name	Cell	Value
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$3	#DIV/0!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$5	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$A\$6	=#REF!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$6	#REF!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$7	#NULL!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$8	#NUM!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$9	#CALC!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$10	#SPILL!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$B\$11	#SPILL!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$A\$14	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	ErrorResults		\$K\$15	#SPILL!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	FormulaCheckErrors		\$B\$4	#SPILL!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	FormulaCheckErrors		\$B\$9	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	GoToSpecial		\$G\$2	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	GoToSpecial		\$A\$3	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	GoToSpecial		\$D\$4	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	GoToSpecial		\$B\$7	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	GoToSpecial		\$D\$10	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	GoToSpecial		\$A\$11	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	GoToSpecial		\$B\$98	#VALUE!
Oxls115w2_PM01_FindingErrors_v2405_1.xlsx	FindAll		\$C\$2	#VALUE!

# Finding #Errors - Use Formula Auditing - Error Checking

On the Formulas Ribbon

Finds each error

- Provides some help with each #Error type

Finds other errors per Error Checking Rules

Works on only ONE Worksheet at a time

- You would have to repeat process for each Worksheet
- Not efficient to use when there are many Worksheets

# Finding #Errors - Example

## Use Formula Auditing - Error Checking



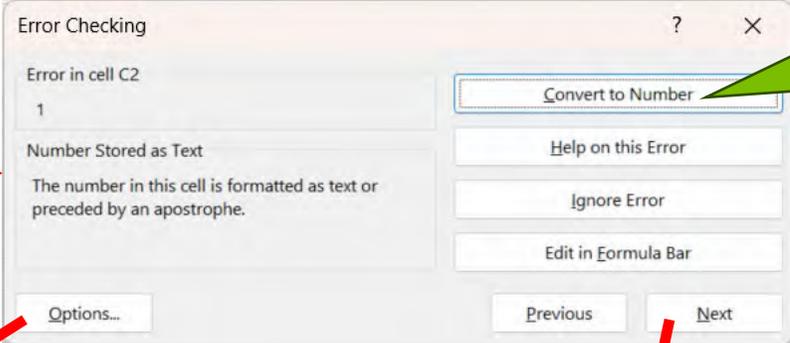
**Formulas** Data Review View Automate Developer Add-ins Help Acrobat Power Pivot

Lookup & Reference Math & Trig More Functions

Name Manager Defined Names

Trace Precedents Trace Dependents Remove Arrows Evaluate Formula Formula Auditing

**Error Checking**



Error in cell C2

1

Number Stored as Text

The number in this cell is formatted as text or preceded by an apostrophe.

Options...

Convert to Number

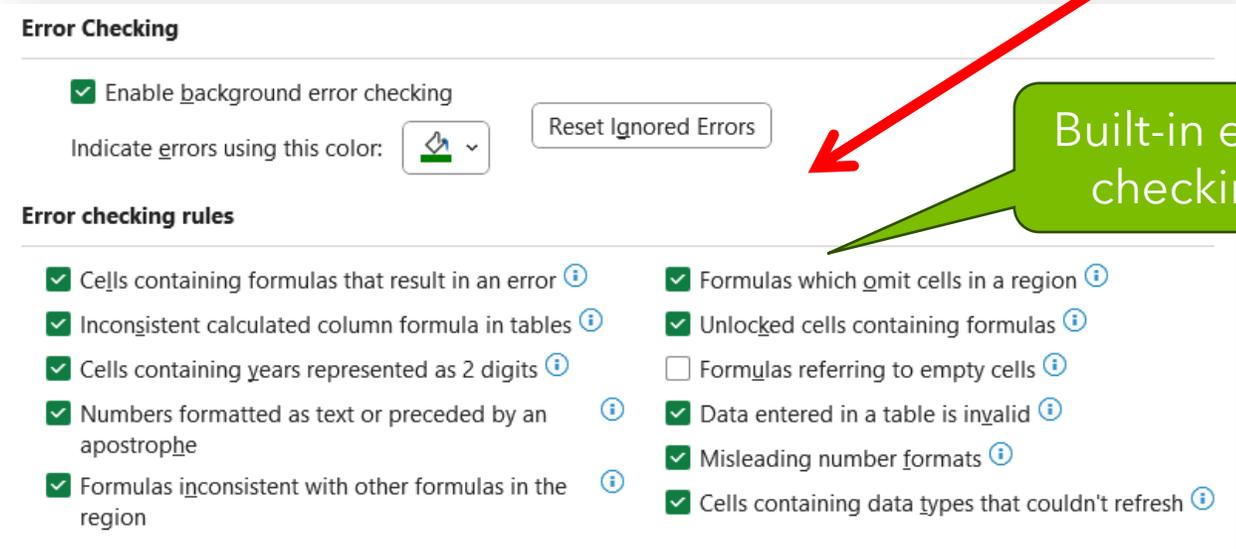
Help on this Error

Ignore Error

Edit in Formula Bar

Previous Next

Stops at ALL built-in error checks



**Error Checking**

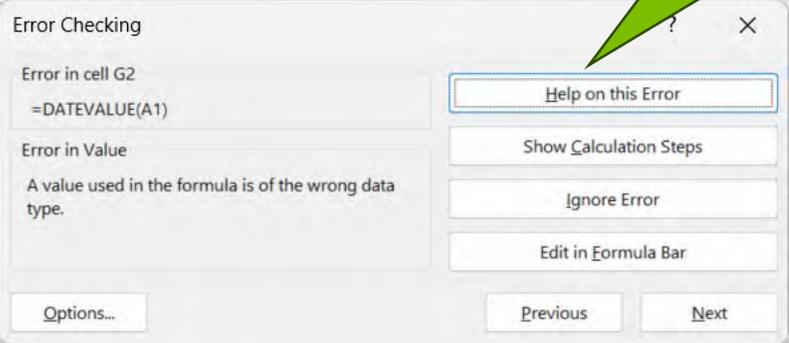
Enable background error checking

Indicate errors using this color:  Reset Ignored Errors

**Error checking rules**

<input checked="" type="checkbox"/> Cells containing formulas that result in an error	<input checked="" type="checkbox"/> Formulas which omit cells in a region
<input checked="" type="checkbox"/> Inconsistent calculated column formula in tables	<input checked="" type="checkbox"/> Unlocked cells containing formulas
<input checked="" type="checkbox"/> Cells containing years represented as 2 digits	<input type="checkbox"/> Formulas referring to empty cells
<input checked="" type="checkbox"/> Numbers formatted as text or preceded by an apostrophe	<input checked="" type="checkbox"/> Data entered in a table is invalid
<input checked="" type="checkbox"/> Formulas inconsistent with other formulas in the region	<input checked="" type="checkbox"/> Misleading number formats
	<input checked="" type="checkbox"/> Cells containing data types that couldn't refresh

Built-in error checking



Error in cell G2

=DATEVALUE(A1)

Error in Value

A value used in the formula is of the wrong data type.

Options...

Help on this Error

Show Calculation Steps

Ignore Error

Edit in Formula Bar

Previous Next

Provides "some" help

# Finding #Errors - Create a Visual Basic Macro

## Need to learn Visual Basic

- Can be complex
- Could use AI (ChatGPT/Copilot) to help you write code

## To keep with Workbook, but save a .xlsm file

- Makes it harder to share

## Beyond the scope of this course to write the code

- However, we will look at an example

# Finding #Errors - Example

## Create a Visual Basic Macro

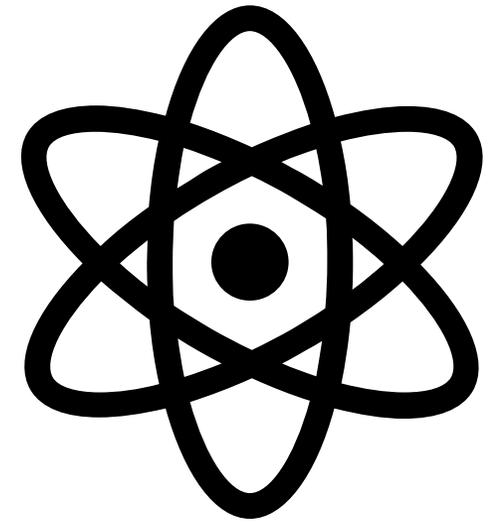
**I used ChatGPT with the following message:**

Create excel macro that finds formula errors in all sheets including hidden sheets of a workbook and create a new sheet that has a hyperlink to each error

Result of Visual Basic Macro

	A	B	C	D	E	F
1	Sheet	Cell	Error			
2	ErrorResults	<a href="#">\$B\$2</a>	#N/A			
3	ErrorResults	<a href="#">\$B\$3</a>	#DIV/0!			
4	ErrorResults	<a href="#">\$B\$4</a>	#NAME?			
5	ErrorResults	<a href="#">\$B\$5</a>	#VALUE!			
6	ErrorResults	<a href="#">\$B\$6</a>	#REF!			
7	ErrorResults	<a href="#">\$B\$7</a>	#NULL!			
8	ErrorResults	<a href="#">\$B\$8</a>	#NUM!			
9	ErrorResults	<a href="#">\$B\$9</a>	#CALC!			
10	ErrorResults	<a href="#">\$B\$10</a>	#SPILL!			
11	ErrorResults	<a href="#">\$B\$11</a>	#SPILL!			
12	ErrorResults	<a href="#">\$A\$14</a>	#VALUE!			
13	ErrorResults	<a href="#">\$K\$15</a>	#SPILL!			
14	HiddenError	<a href="#">\$B\$3</a>	#VALUE!			
15	FormulaCheckError:	<a href="#">\$B\$4</a>	#SPILL!			
16	FormulaCheckError:	<a href="#">\$B\$5</a>	#N/A			
17	FormulaCheckError:	<a href="#">\$B\$6</a>	#N/A			
18	FormulaCheckError:	<a href="#">\$B\$7</a>	#N/A			
19	FormulaCheckError:	<a href="#">\$B\$9</a>	#VALUE!			
20	GoToSpecial	<a href="#">\$G\$2</a>	#VALUE!			
21	GoToSpecial	<a href="#">\$A\$3</a>	#VALUE!			
22	GoToSpecial	<a href="#">\$D\$4</a>	#VALUE!			
23	GoToSpecial	<a href="#">\$B\$7</a>	#VALUE!			

# Advanced Formulas and Functions



# Functions for Error Detection

## 2 Categories

- IF functions
- IS functions

IF functions return value based on condition

IS functions return TRUE or FALSE based on condition

- Need to use IF functions to return a value
- Use SUMPRODUCT to test array/range

# IF Functions

**IF(logical\_test, value\_if\_true, [value\_if\_false])**

- Returns one value if logical\_test is True and another if it is False

**IFERROR(value, value\_if\_error)**

- Returns the value you specify if a formula evaluates to an error; otherwise, it returns the result of the formula.

**IFNA(value, value\_if\_na)**

- Returns the value you specify if a formula returns the #N/A error value; otherwise, it returns the result of the formula.

# IS Functions

Syntax =  
*isfunction(value)*

- ISBLANK - Returns TRUE if the value is blank
- ISERR - Returns TRUE if the value is any error value except #N/A
- ISERROR - Returns TRUE if the value is any error value
- ISEVEN - Returns TRUE if the number is even
- ISFORMULA - Returns TRUE if there is a reference to a cell that contains a formula
- ISLOGICAL - Returns TRUE if the value is a logical value
- ISNA - Returns TRUE if the value is the #N/A error value
- ISNONTTEXT - Returns TRUE if the value is not text
- ISNUMBER - Returns TRUE if the value is a number
- ISODD - Returns TRUE if the number is odd
- ISREF - Returns TRUE if the value is a reference
- ISTEXT - Returns TRUE if the value is text

# SUMPRODUCT to Test Array/Range

- Idea: Count the # of cells in a range that meets a condition
- Use IS function, but how do we count it?
  - Use the SUMPRODUCT function, which sums the product of an array
  - So, =SUMPRODUCT(--ISfunction(array))
    - ❖ Where, -- (operator) says "meet this criteria"

# SUMPRODUCT Example

Formulas are counting items in Value column

	A	B	C	D
1	Description	Formula Result	FORMULATEXT	Value
2	ISBLANK		2 =SUMPRODUCT(--ISBLANK(\$D\$2:\$D\$10))	
3	ISERR		1 =SUMPRODUCT(--ISERR(\$D\$2:\$D\$10))	#N/A
4	ISERROR		3 =SUMPRODUCT(--ISERROR(\$D\$2:\$D\$10))	#VALUE!
5	ISFORMULA		5 =SUMPRODUCT(--ISFORMULA(\$D\$2:\$D\$10))	0
6	ISLOGICAL		1 =SUMPRODUCT(--ISLOGICAL(\$D\$2:\$D\$10))	TRUE
7	ISNA		2 =SUMPRODUCT(--ISNA(\$D\$2:\$D\$10))	#N/A
8	ISNONTEXT		8 =SUMPRODUCT(--ISNONTEXT(\$D\$2:\$D\$10))	
9	ISNUMBER		2 =SUMPRODUCT(--ISNUMBER(\$D\$2:\$D\$10))	123
10	ISTEXT		1 =SUMPRODUCT(--ISTEXT(\$D\$2:\$D\$10))	abc
11				
12	<b>These Functions don't work with SUMPRODUCT because look for single value</b>			
13	ISEVEN			
14	ISODD			
15	ISREF			

# Final Thoughts on Error Formulas

Use to trap errors

May mask errors

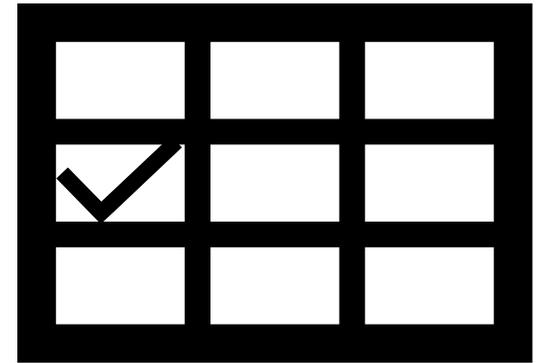
- Especially by those who lack training

Focus on finding errors

Use caution when eliminating errors

- Errors point out issues with your spreadsheet

# Data Validation Techniques



# Data Validation in Excel

Define restrictions on what data can or should be entered in a cell

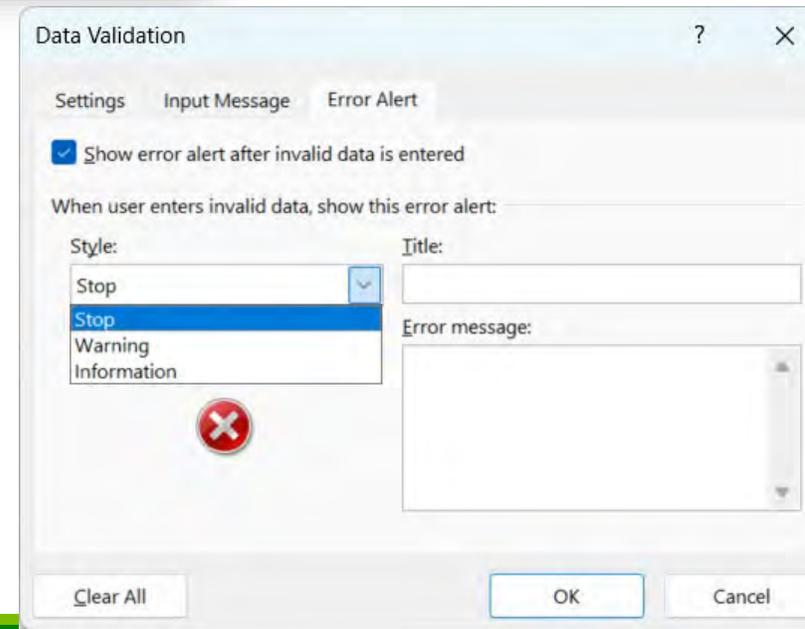
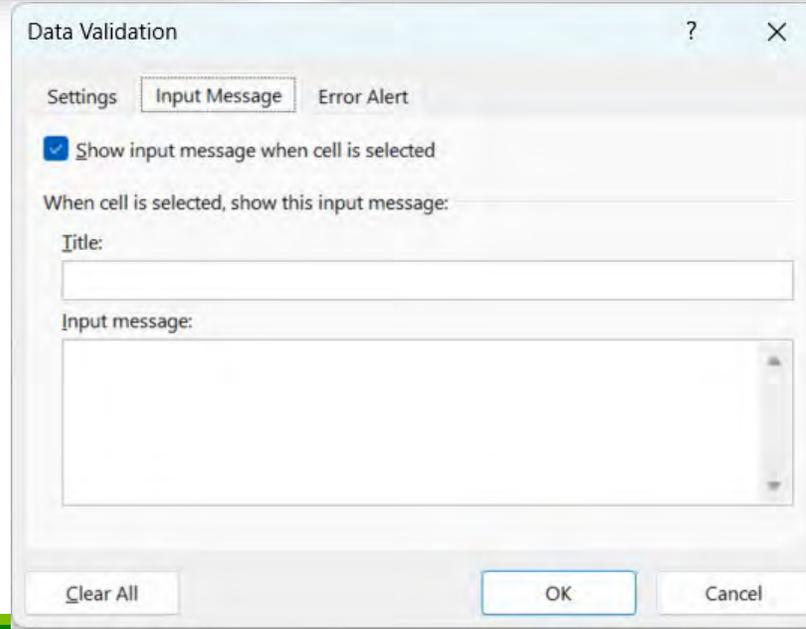
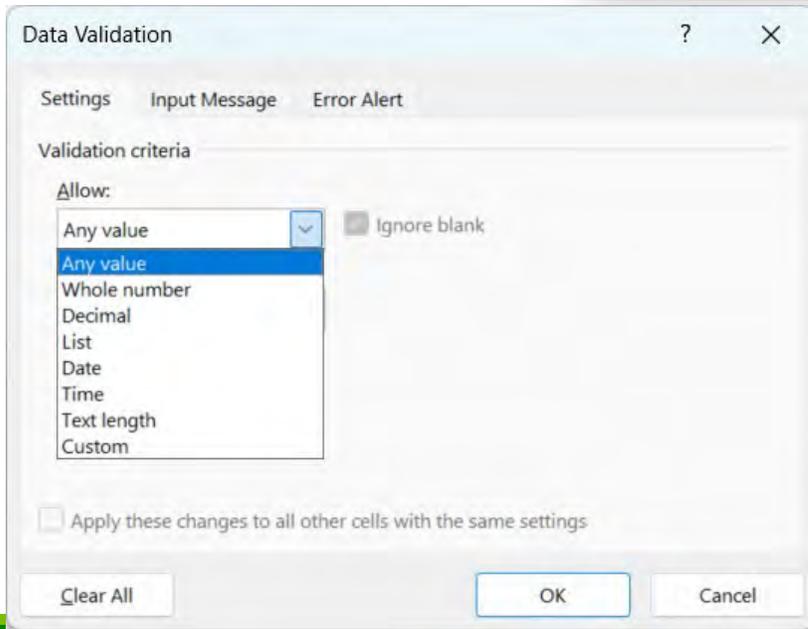
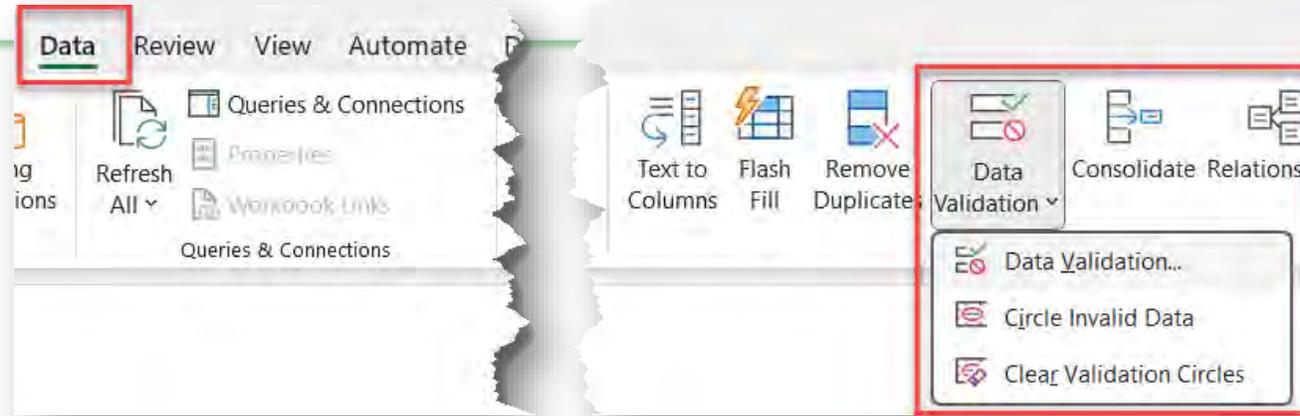
Prevent or warn users of invalid data

Provide messages to define what input you expect

Restrict data to:

- Predefined list
- Date/time range,
- Number range
- Text size
- Formula

# Data Validation Dialog Box and Options



# Settings - Validation Criteria

## Requires "Range" with Min and Max

- Whole Number
- Decimal
- Date
- Time
- Text Length

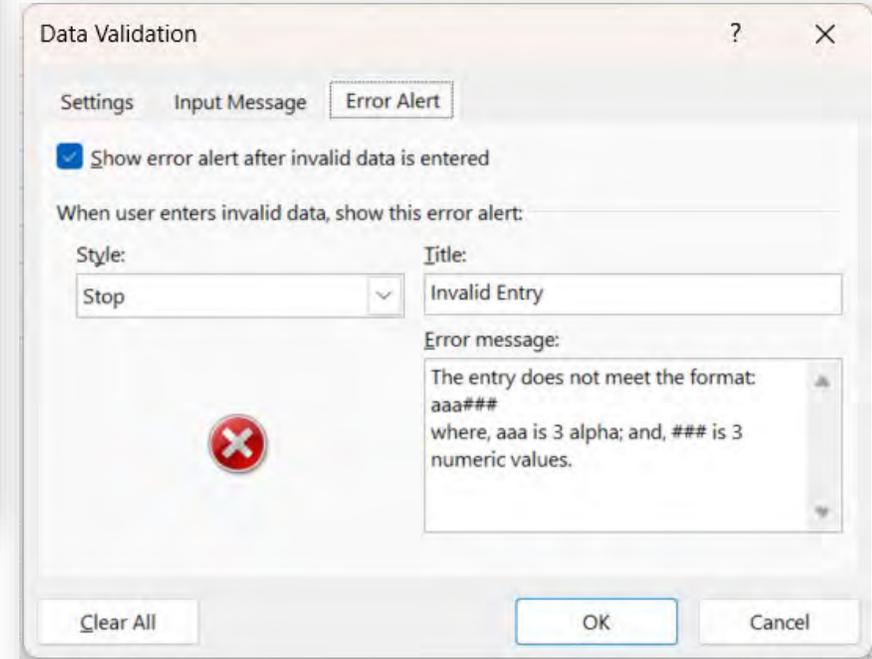
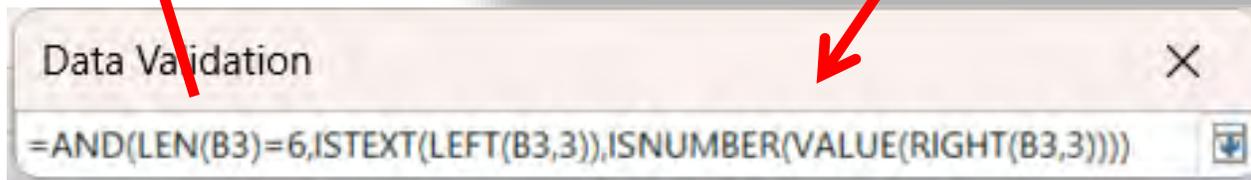
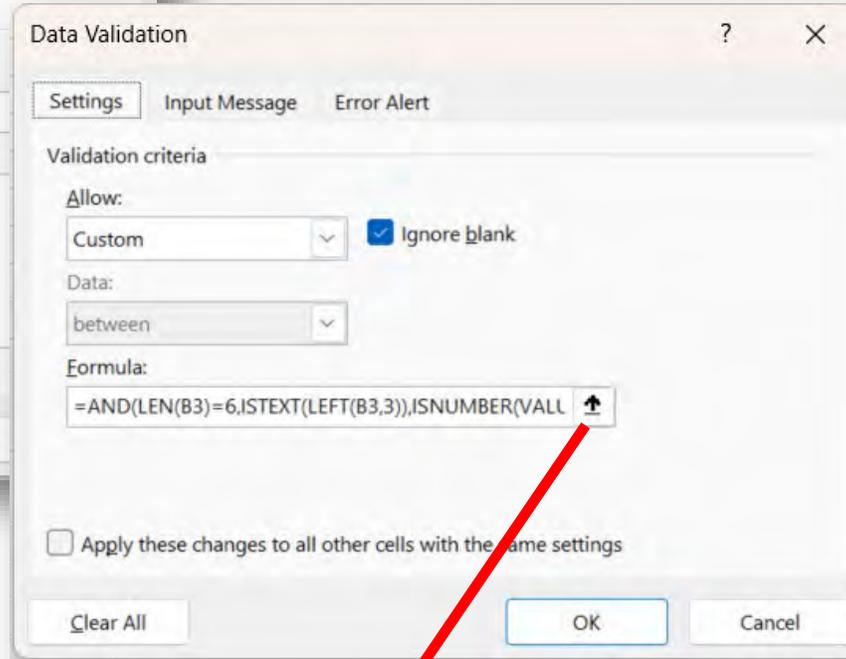
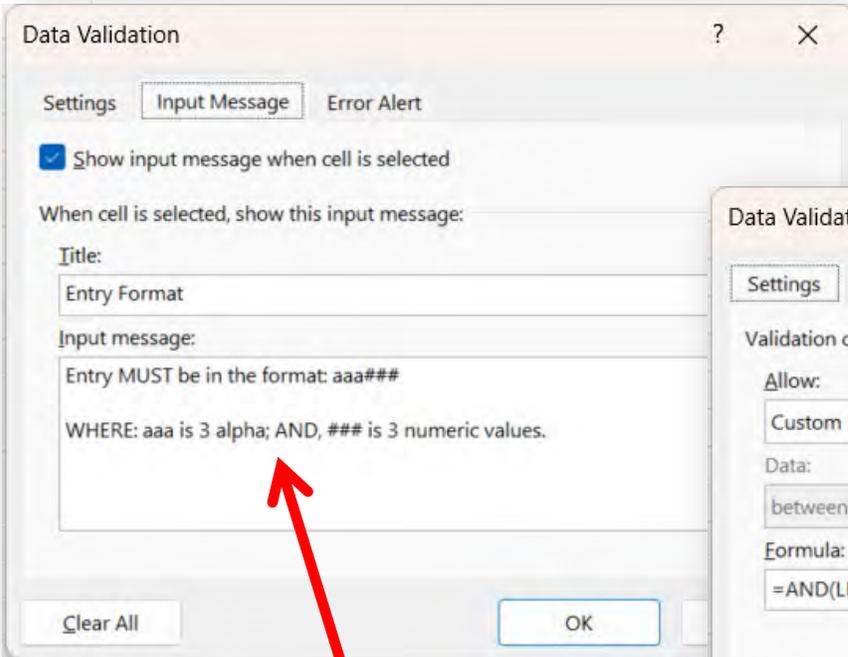
## Requires a Source

- List

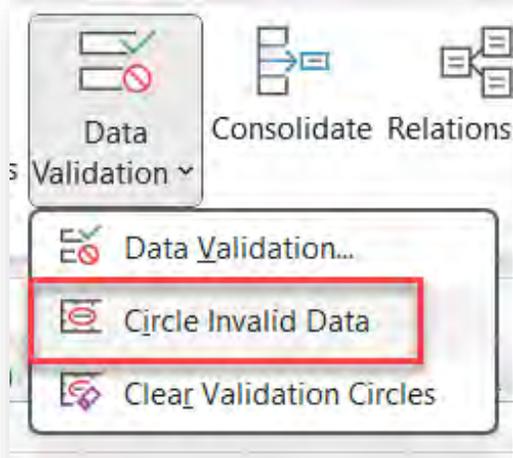
## Requires a Formula

- Custom

# Customer ID Example - Formula for Special Format



# Circle Invalid Data



Warning & Information where you accepted invalid data

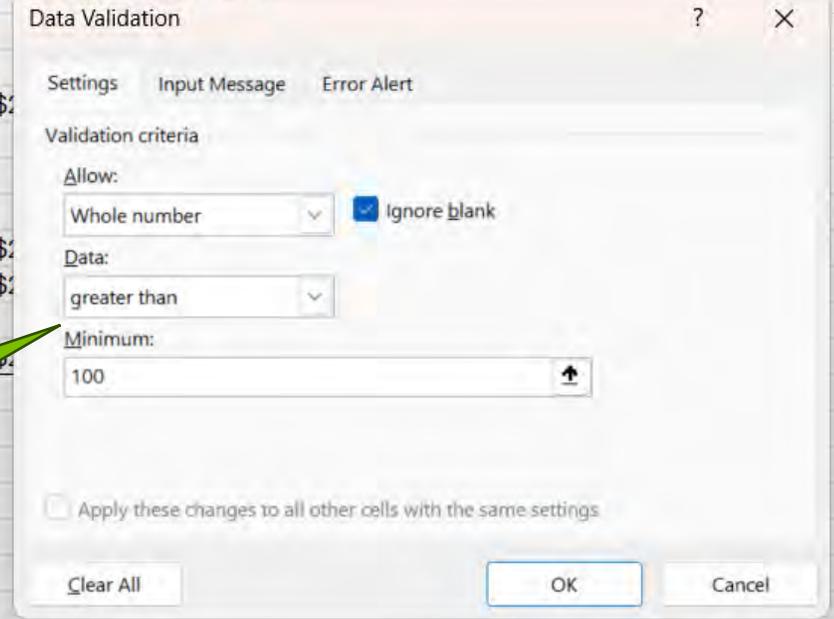
Paste, Fill, Formula or Macro where invalid data is in cell

	Enter Data:	Data Validation Requirements:
<b>CustID:</b>	abc	---> Special format
<b>Name:</b>	Jones, Smith, Brown, Willi	---> Limit # of characters
<b>Continent:</b>	North America	---> Drop-Down list of valid entries
<b>Territory:</b>	Canada	---> Lookup based on Territory

# Data Validation - "After the Fact"

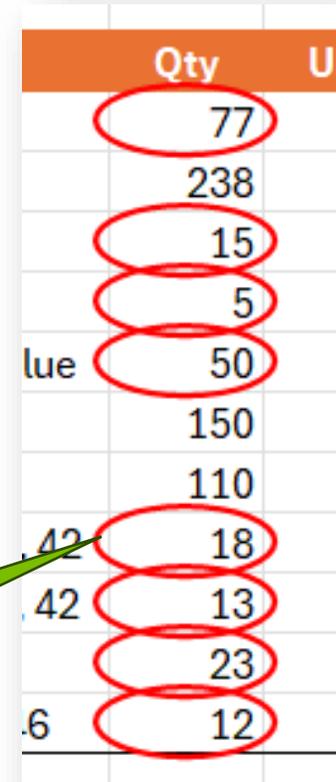
Highlight data, then select Data Validation

This represents "valid" data and will circle values "outside" the criteria



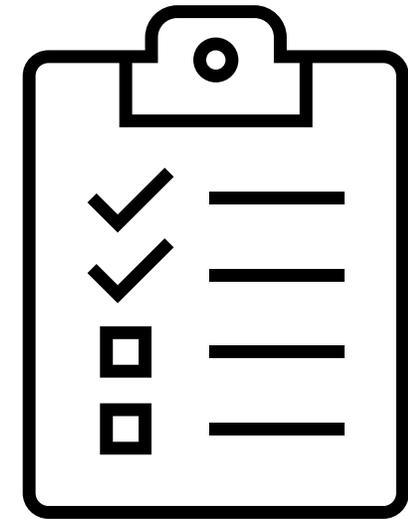
The dialog box is titled "Data Validation" and has three tabs: "Settings", "Input Message", and "Error Alert". The "Settings" tab is active. Under "Validation criteria", the "Allow:" dropdown is set to "Whole number" and the "Ignore blank" checkbox is checked. The "Data:" dropdown is set to "greater than" and the "Minimum:" field contains the value "100". There are "Clear All", "OK", and "Cancel" buttons at the bottom.

Now, select Circle Invalid Data



Qty
77
238
15
5
50
150
110
18
13
23
12

# Error Tracing and Auditing Tools



# Excel Formula Auditing Tools

View and troubleshoot calculations

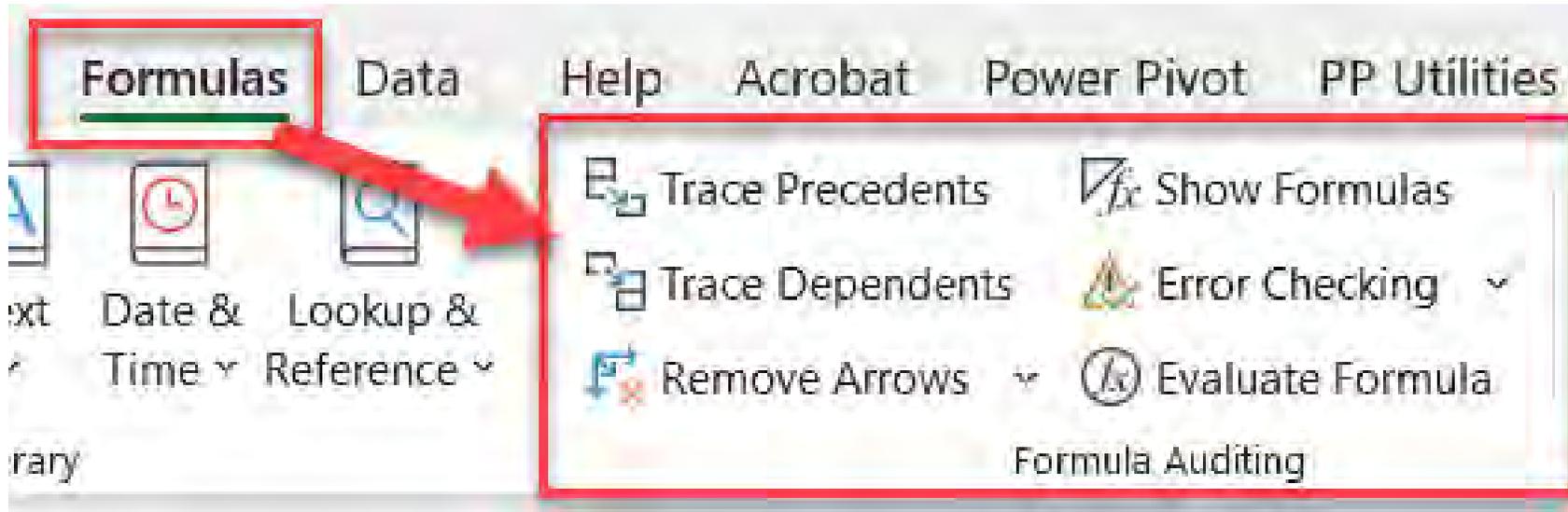
Determine if a cell is used in a formula

Display all formulas in cells

Move through errors based on Error Checking Rules

Step through each part of a complex formula

# Formulas - Formula Auditing



# Trace Precedents

Indicates cell(s) used in *formula* calculation

Product Name	Qty	Unit Price	Total
ML Mountain Tire	77	\$ 29.99	\$ 2,309.23
Patch Kit/8 Patche	238	\$ 2.29	\$ 545.02
Road Tire Tube	15	\$ 3.99	\$ 59.85
Road-250 Red, 48	5	\$ 2,443.35	\$ 12,216.75
Sport-100 Helmet	50	\$ 34.99	\$ 1,749.50

Select cell with formula, then select Trace Precedents

Double-click *line* to follow "on sheet" or "off sheet" connector

# Trace Dependents

Indicates where cell is used in *formula* calculation

Product Name	Qty	Unit Price	Total
ML Mountain Tire	77	\$ 29.99	\$ 2,309.23
Patch Kit/8 Patches	238	\$ 2.29	\$ 545.02
Road Tire Tube	15	\$ 3.99	\$ 59.85
Road-250 Red, 48	5	\$ 2,443.35	\$ 12,216.75
Sport-100 Helmet	50	\$ 34.99	\$ 1,749.50

Select cell with formula, then select Trace Dependents

Double-click *line* to follow "on sheet" or "off sheet" connector

# Formulas Used in Other Formulas

Multiple Trace Example	
Initial Value	\$ 1.00 <---- Start Here for <b>Trace Dependents</b>
Calc #1	\$ 10.00
Calc #2	\$ 10,000.00
Calc #3	\$ 10,600.00
Calc #4	\$ 5,300.00
Calc #5	Start Here for <b>Trace Precedents</b> ----> FALSE

Select cell with formula, then select Trace Precedents multiple times

Works best for "on sheet" formulas. For "off sheet" formulas, must double-click connector then select Trace Precedents

# Show Formulas

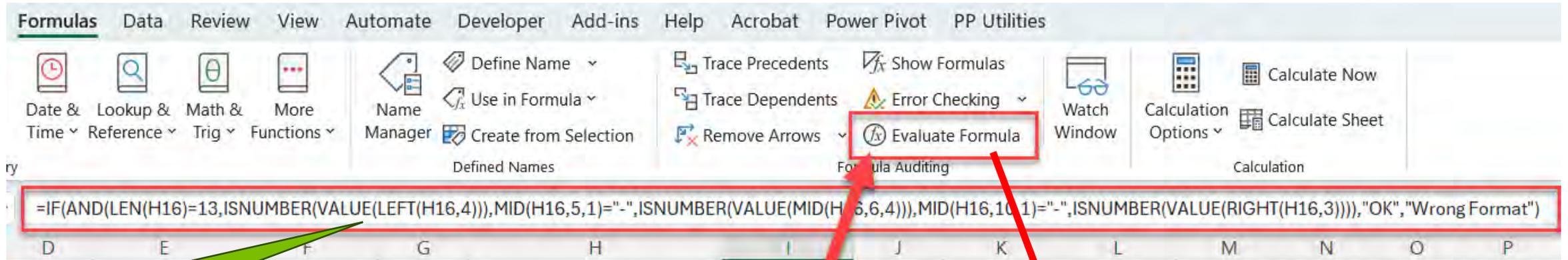
Displays the formulas in each cell of the Worksheet

	F	G	I	J
	<b>Total</b>	<b>Multiple Trace Example</b>		
	=ROUND([@Qty]*[@Unit Price],R	Initial Value	1	<---- Start Here for Tra
	=ROUND([@Qty]*[@Unit Price],R	Calc #1	=I2*10	
	=ROUND([@Qty]*[@Unit Price],R	Calc #2		=J4^4
	=ROUND([@Qty]*[@Unit Price],R	Calc #3		
	=ROUND([@Qty]*[@Unit Price],R	Calc #4		

May not display the entire formula, use caution changing column width as it will remember the new size

Select Show Formulas to revert to resulting values

# Evaluate Formula



Works great on complex formula

## Evaluate Formula

1234-1234-1234 Wrong Format

The 'Evaluate Formula' dialog box is open, showing the formula being evaluated. The 'Reference' is `FormulaAuditing!$I$16`. The 'Evaluation' shows the formula: `= IF(AND(LEN(H16)=13,ISNUMBER(VALUE(LEFT(H16,4))),MID(H16,5,1)="-",ISNUMBER(VALUE(MID(H16,6,4))),MID(H16,10,1)="-",ISNUMBER(VALUE(RIGHT(H16,3)))),"OK","Wrong Format")`. The result of the evaluation is `Wrong Format`. The dialog box has buttons for 'Evaluate', 'Step In', 'Step Out', and 'Close'.

# Evaluate Formula - Step Through Calculation

Evaluate Formula

Reference: FormulaAuditing!\$I\$16

FormulaAuditing!\$H\$16

Evaluation: = IF(AND(LEN(H16)=13,ISNUMBER(VALUE(LEFT(H16,4))),MID(H16,5,1)="-",ISNUMBER(VALUE(MID(H16,6,4))),MID(H16,10,1)="-",ISNUMBER(VALUE(RIGHT(H16,3))))),"OK","Wrong Format")

1234-1234-1234

The cell currently being evaluated contains a constant.

Evaluate

Evaluate Formula

Reference: FormulaAuditing!\$I\$16

Evaluation: = IF(AND(LEN("1234-1234-1234")=13,ISNUMBER(VALUE(LEFT(H16,4))),MID(H16,5,1)="-",ISNUMBER(VALUE(MID(H16,6,4))),MID(H16,10,1)="-",ISNUMBER(VALUE(RIGHT(H16,3))))),"OK","Wrong Format")

To show the result of the underlined expression, click Evaluate. The most recent result appears italicized.

Step In Step Out Close

Evaluate Formula

Reference: FormulaAuditing!\$I\$16

Evaluation: = IF(AND(14=13,ISNUMBER(VALUE(LEFT(H16,4))),MID(H16,5,1)="-",ISNUMBER(VALUE(MID(H16,6,4))),MID(H16,10,1)="-",ISNUMBER(VALUE(RIGHT(H16,3))))),"OK","Wrong Format")

To show the result of the underlined expression, click Evaluate. The most recent result appears italicized.

Evaluate Step In Step Out Close

# Wrap-Up



# Presentation Wrap-Up

## 1 of 2

Research shows 80%+ of spreadsheets have errors

There are various ways to deal with formula errors that result in #errors

- Use formula to check for errors
- Use Find & Search - Go To Special
- Use Find - Find All
- Use Formula Auditing - Error Checking
- Create a Visual Basic Macro that finds and highlights

# Presentation Wrap-Up

## 2 of 2

IF and IS functions help detect errors in formulas

- These can be used to mask errors
- Focus on using these to find errors

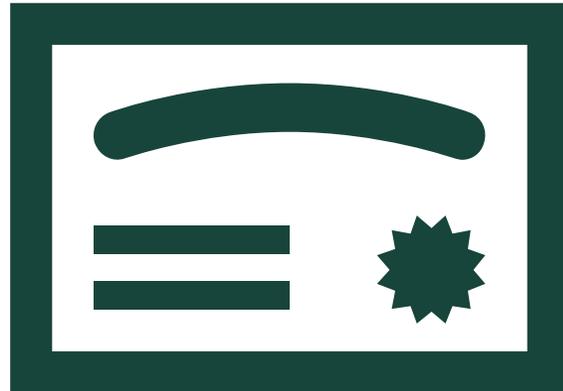
Data Validation can reduce input errors

- Can also be used to “test” cells “after the fact”

Excel Formula Auditing Tools can be used to view and troubleshoot calculations

# Questions?





# Thank You!!



Bryan L. Smith, CPA.CITP, CISA



[bsmith@datasmithpro.com](mailto:bsmith@datasmithpro.com)



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ONE FINAL NOTE

# Microsoft 365: Supercharging CPA Productivity



Presented By

John H. Higgins  
Higgins Advisory, LLC  
Rochester, Michigan

# John H. Higgins, CPA.CITP

## Strategic Technology Advisor



[john@higginsadvisoryllc.com](mailto:john@higginsadvisoryllc.com)

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Nationally recognized thought leader, advisor, author and speaker on CPA technology
- Strategic technology advisor to the profession w/ 35+ years of experience
- Founded and sold two CPA technology advisory startups
- Former National Mid-market Technology Partner - BDO
- CPA Practice advisor Top 25 Thought Leader for the CPA profession
- AICPA Business & Industry Hall of Fame Inductee
- Past Chair of the Michigan Association of CPAs
- Passionate advocate for the CPA profession!

# Learning Goals



- Identify many ways that you can tap into the full potential of Microsoft 365.
- Identify a series of specific initiatives and apps that you can implement to optimize Your Microsoft 365 ROI.

# Presentation Outline

- Microsoft 365 Value Proposition
- Top Apps and Initiatives to Focus On
- Getting Help
- Wrap-up

# MICROSOFT 365 VALUE PROPOSITION FOR YOUR PRACTICE



# Microsoft 365 Value Proposition is Compelling

Enhance Communication & Collaboration

Simplify tech stack

Enhance data security and disaster recovery protection

Enable a hybrid work environment

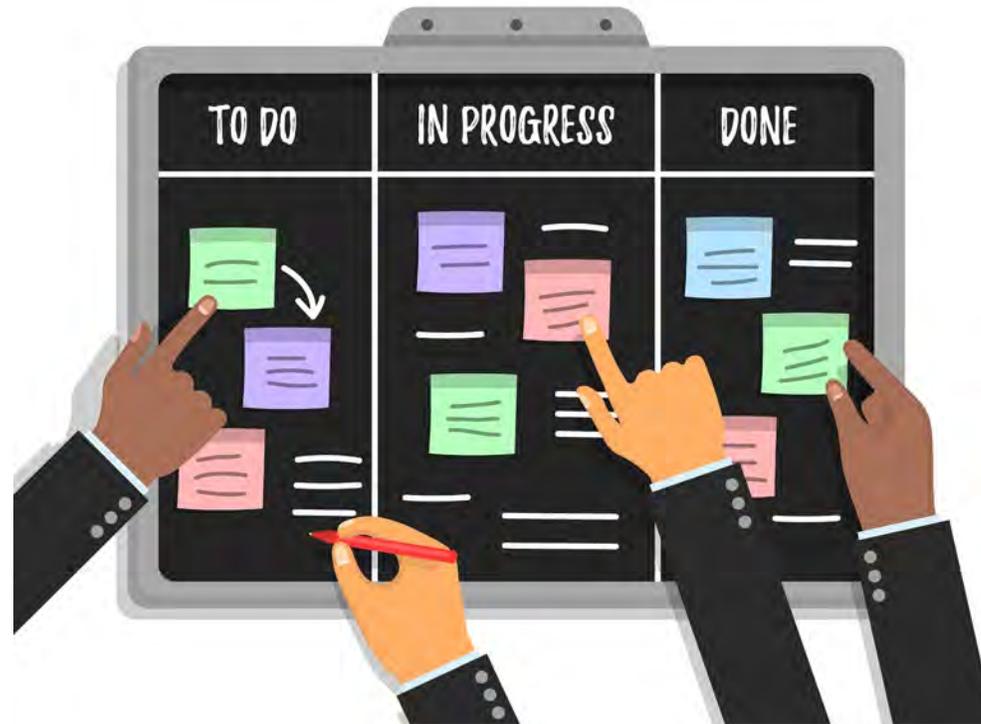
Future proof your business - create the foundation for using AI

Reduce costs & infinitely scalable

# Microsoft 365 – What You Start With

 <b>Add-Ins</b> Add-Ins	 <b>Bookings</b> Simplify how you schedule and manage appointments both inside and outside your organization.	 <b>Calendar</b> Manage and share your schedule.	 <b>Clipchamp</b> Make and edit videos.	 <b>Connections</b> Access personalized tools, news, and resources.
 <b>Engage</b> Connect with coworkers and classmates, share information, and organize around projects.	 <b>Excel</b> Budget, plan, and calculate.	 <b>Forms</b> Customize surveys and quizzes, get real-time results.	 <b>Insights</b> Improve your productivity and wellbeing with Microsoft Viva Insights.	 <b>Kaizala</b> A simple and secure mobile chat app for work.
 <b>Learning</b> Keep learning, keep growing with Viva Learning.	 <b>Lists</b> Allows users to create, share, and track data inside lists.	 <b>Loop</b> Enabling teams to think, plan, and create together.	 <b>OneDrive</b> Safely store files, photos, and more.	 <b>OneNote</b> Create a digital notebook.
 <b>Outlook</b> Email, schedule, and set tasks.	 <b>People</b> Group, share, and manage contacts.	 <b>Planner</b> Create plans, organize and assign tasks, share files, and get progress updates.	 <b>Power Apps</b> Build mobile and web apps with the data your organization already uses.	 <b>Power Automate</b> Sync files and more to simplify your work.
 <b>Power Pages</b> Unleash the power of Copilot to craft secure, low-code business websites with ease.	 <b>PowerPoint</b> Easily make presentations.	 <b>Project</b> Develop project plans, assign tasks, track progress, and manage budgets.	 <b>SharePoint</b> Share and manage content, knowledge, and applications to empower teamwork.	 <b>Stream</b> Share videos of classes, meetings, presentations, and training sessions.
 <b>Sway</b> Create interactive reports and presentations.	 <b>Teams</b> Meet, share, and chat.	 <b>To Do</b> List and manage your tasks.	 <b>Visio</b> Simplify and communicate complex information visually.	 <b>Viva</b> Explore Viva apps that improve the way you work.
 <b>Whiteboard</b> Ideate and collaborate on a freeform canvas designed for pen, touch and keyboard.	 <b>Word</b> Write, share, and make real time edits.			

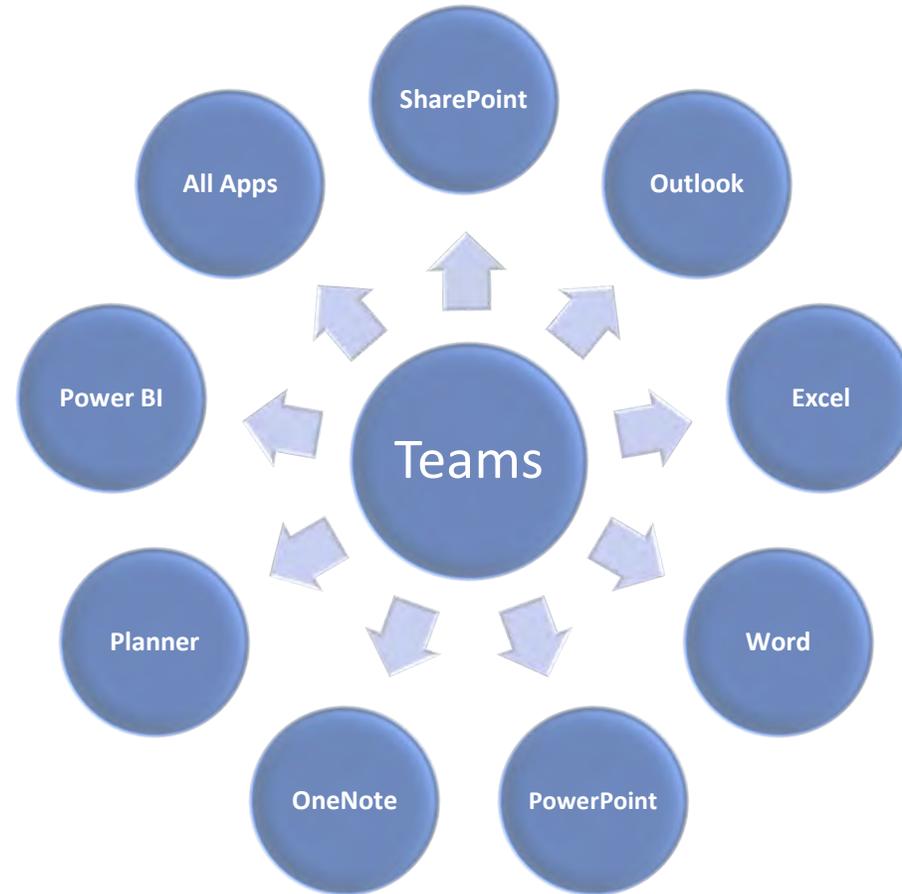
# TOP MICROSOFT 365 INITIATIVES AND APPS TO FOCUS ON



# Tips for Getting The Most Out of M365

- Make Teams the priority (including online meetings)
- Store shared files in SharePoint (including client file uploads)
- Manage engagements with Planner
- Get organized with OneNote
- Manage lists with Lists app
- Document processes with Clipchamp (formerly Stream)
- Create forms and surveys with Forms app
- Manage your schedule with the Bookings app
- Communicate financial data visually with Power BI
- Automate workflows with Power Automate & Copilot Studio

# TEAMS ROLE IN THE MICROSOFT 365 ECOSYSTEM

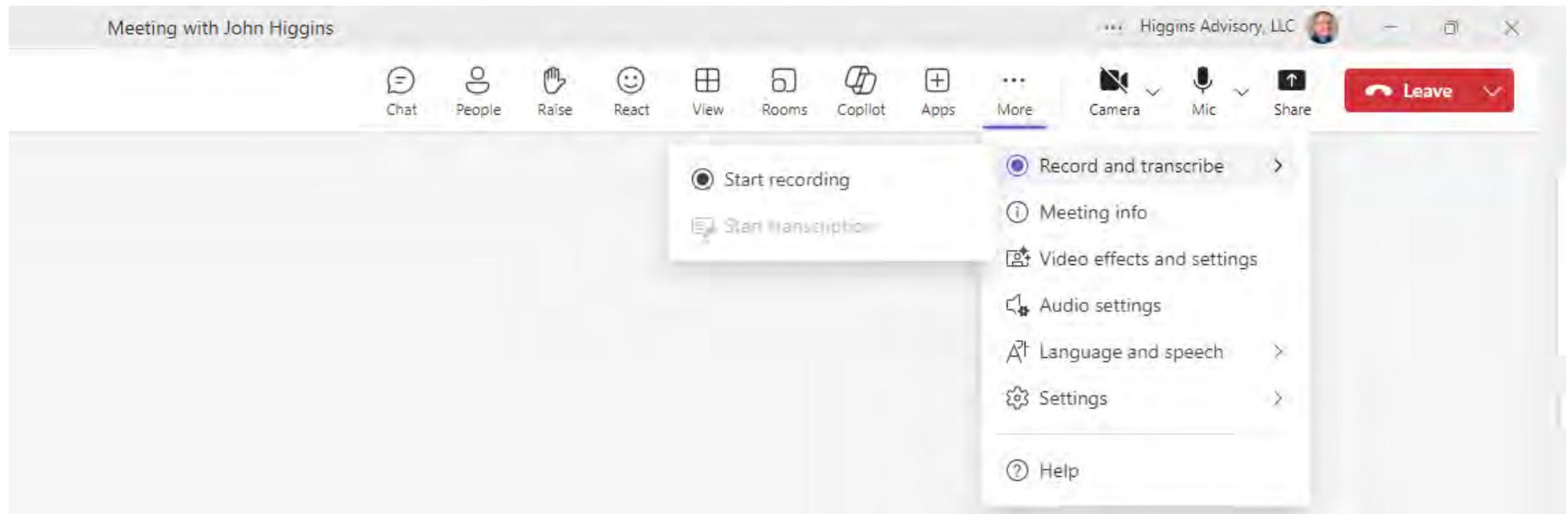
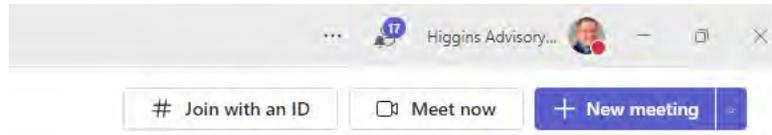


# Communication - Make Teams the Priority

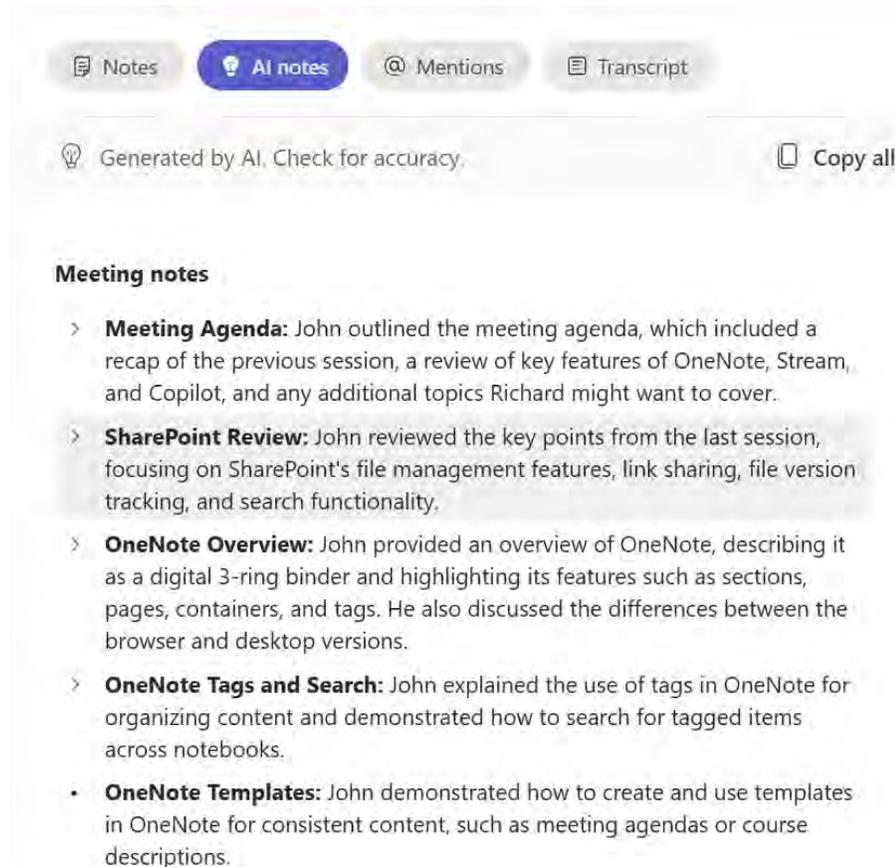


- ✓ Plan your Teams / Channels setup
- ✓ Use Chat within Team Channels
- ✓ Use Channel tabs for maximum efficiency
- ✓ Replace your phone system with Teams and Microsoft Voice
- ✓ Transfer email conversations to Teams
- ✓ Conduct and record all meetings in Teams

# Document Meetings With Teams



# Recap Teams Meetings Example



The screenshot shows the Microsoft Teams AI notes interface. At the top, there are tabs for 'Notes', 'AI notes' (which is selected), 'Mentions', and 'Transcript'. Below the tabs, there is a lightbulb icon and the text 'Generated by AI. Check for accuracy.' followed by a 'Copy all' button. The main content area is titled 'Meeting notes' and contains a list of notes:

- › **Meeting Agenda:** John outlined the meeting agenda, which included a recap of the previous session, a review of key features of OneNote, Stream, and Copilot, and any additional topics Richard might want to cover.
- › **SharePoint Review:** John reviewed the key points from the last session, focusing on SharePoint's file management features, link sharing, file version tracking, and search functionality.
- › **OneNote Overview:** John provided an overview of OneNote, describing it as a digital 3-ring binder and highlighting its features such as sections, pages, containers, and tags. He also discussed the differences between the browser and desktop versions.
- › **OneNote Tags and Search:** John explained the use of tags in OneNote for organizing content and demonstrated how to search for tagged items across notebooks.
- **OneNote Templates:** John demonstrated how to create and use templates in OneNote for consistent content, such as meeting agendas or course descriptions.

## Follow-up tasks

- **Copilot Feature:** Post information in the Teams channel about the current status and functionality of the bookmark feature in Teams. (John)
- **Copilot Feature:** Check and confirm the availability of the bookmark feature in Teams and update the team accordingly. (John)
- **Copilot Access:** Ensure that the Copilot button is enabled for all team members in the Edge browser and provide necessary instructions for access. (Richard)
- **Copilot Training:** Offer training sessions or resources for team members interested in learning more about Copilot for Office 365 and its applications. (Richard)
- **Power BI Training:** Identify a team member to become the expert in Power BI and provide them with necessary training resources. (Lisa)

# Recap Teams Meetings Example (continued)

Did we review the Planner app in the meeting

**Copilot** 3/22 1:28 PM

The Planner app was mentioned briefly in the context of tasks and to-do lists. It was noted that tasks assigned in the Planner app would show up in the To Do app, allowing for centralized task management across different 365 applications. However, there was no detailed review or demonstration of the Planner app itself. 1

AI-generated content may be incorrect

Does it seem like the attendees were understanding the concepts presented

**Copilot** 3/22 1:29 PM

Based on the meeting transcript, attendees engaged actively with the concepts presented, asking relevant questions and providing feedback. For example, Richard and Lisa discussed the possibility of flagging discussion threads in Teams, and Mary Rae MacKay shared a screenshot to assist with understanding a feature. Additionally, Richard offered to help anyone interested in learning more about Copilot for Office 365, indicating a proactive approach to understanding and utilizing the tools discussed. 1 2 3

AI-generated content may be incorrect

Did I discuss OneDrive security

**Copilot** 3/22 5:14 PM

Yes, OneDrive security was discussed briefly. John mentioned that OneDrive stores files that only the user has access to unless they share specific files or folders with others. This ensures privacy and control over the stored content. 1 2

AI-generated content may be incorrect

Ask me anything about this meeting

More prompts

# Storing and Sharing Files



# Store Shared Files in SharePoint & Personal Work Files in OneDrive

OneDrive = your personal (business) files

SharePoint = shared file sites

Share files internally & externally

Simultaneous Office file editing

Eliminate email file attachments

Synchronize with local PC

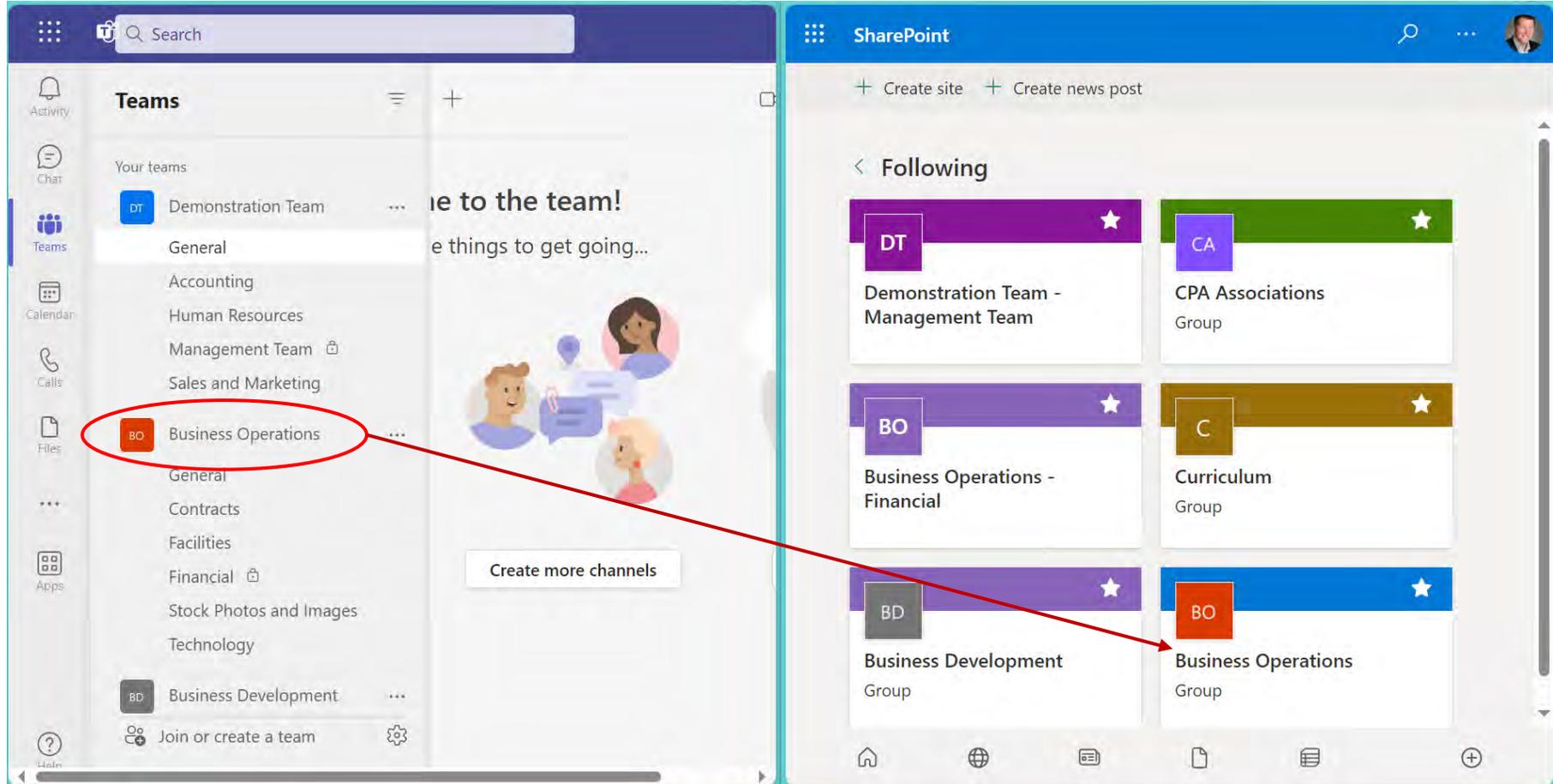
Maintain file version history

Set custom alerts

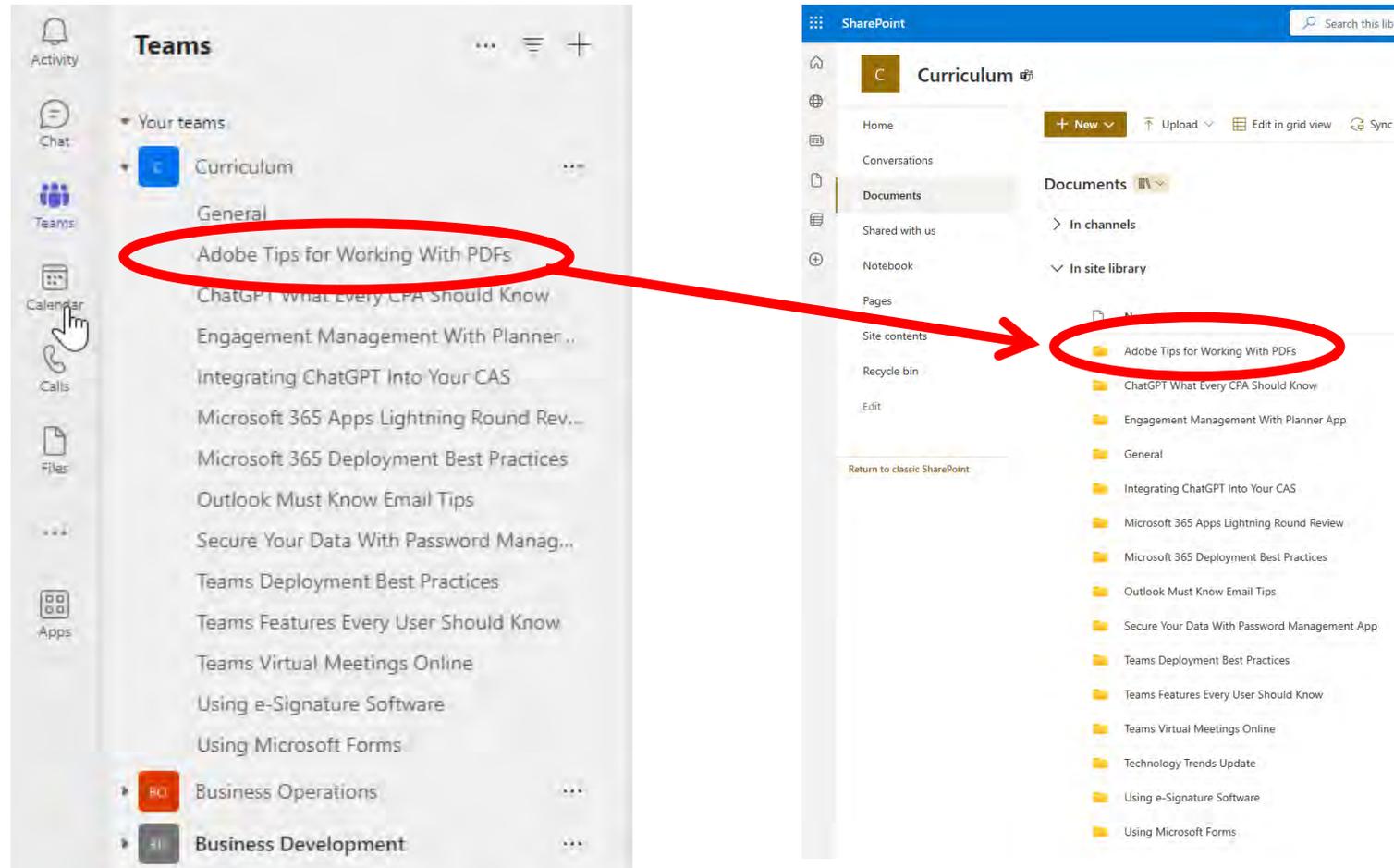
# SharePoint Best Practices

- Manage SharePoint site creation and folder management through Teams
- Learn how file versioning works and manage appropriately
- Minimize the use of OneDrive
- Use Teams & SharePoint as a client portal for communication and file exchange
- Share files via email links, not attachments
- Automate routine file processing with Power Automate and Copilot

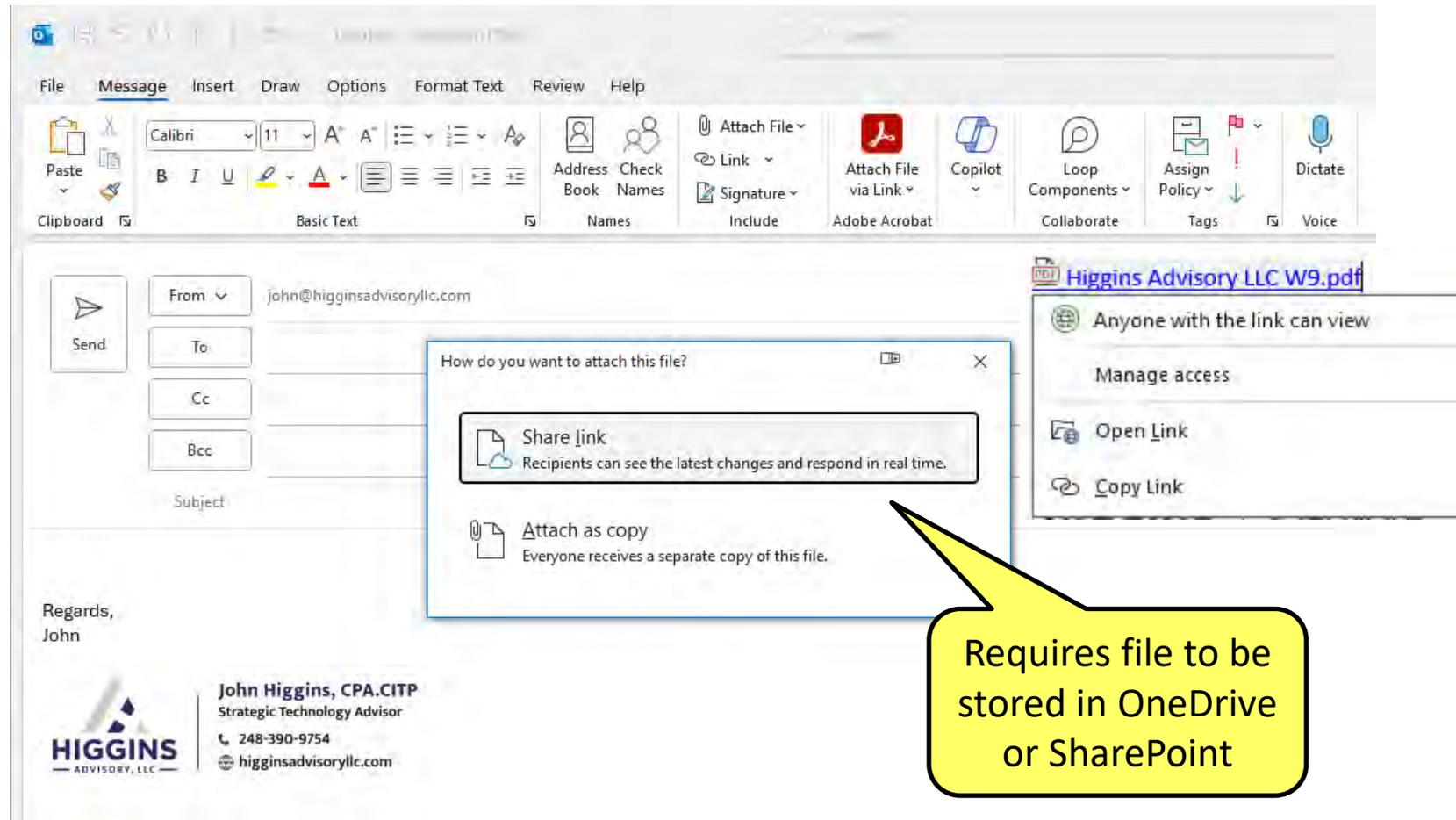
# Teams / SharePoint Relationship



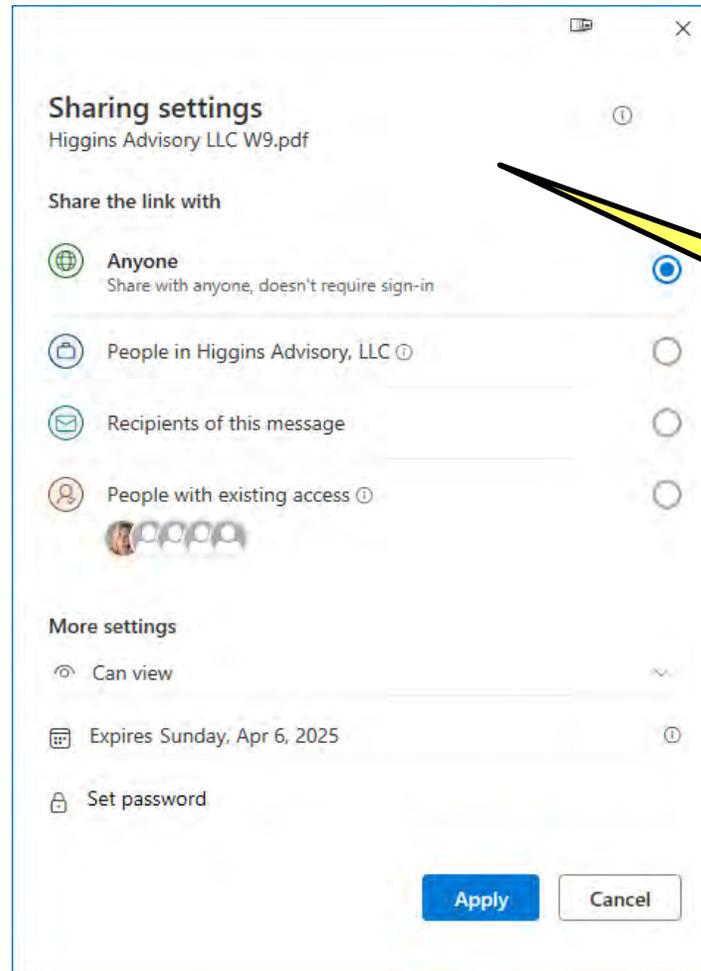
# Teams Channels & SharePoint File Folders



# Sending Files Securely: Use File Link



# Establish File Link Access Controls



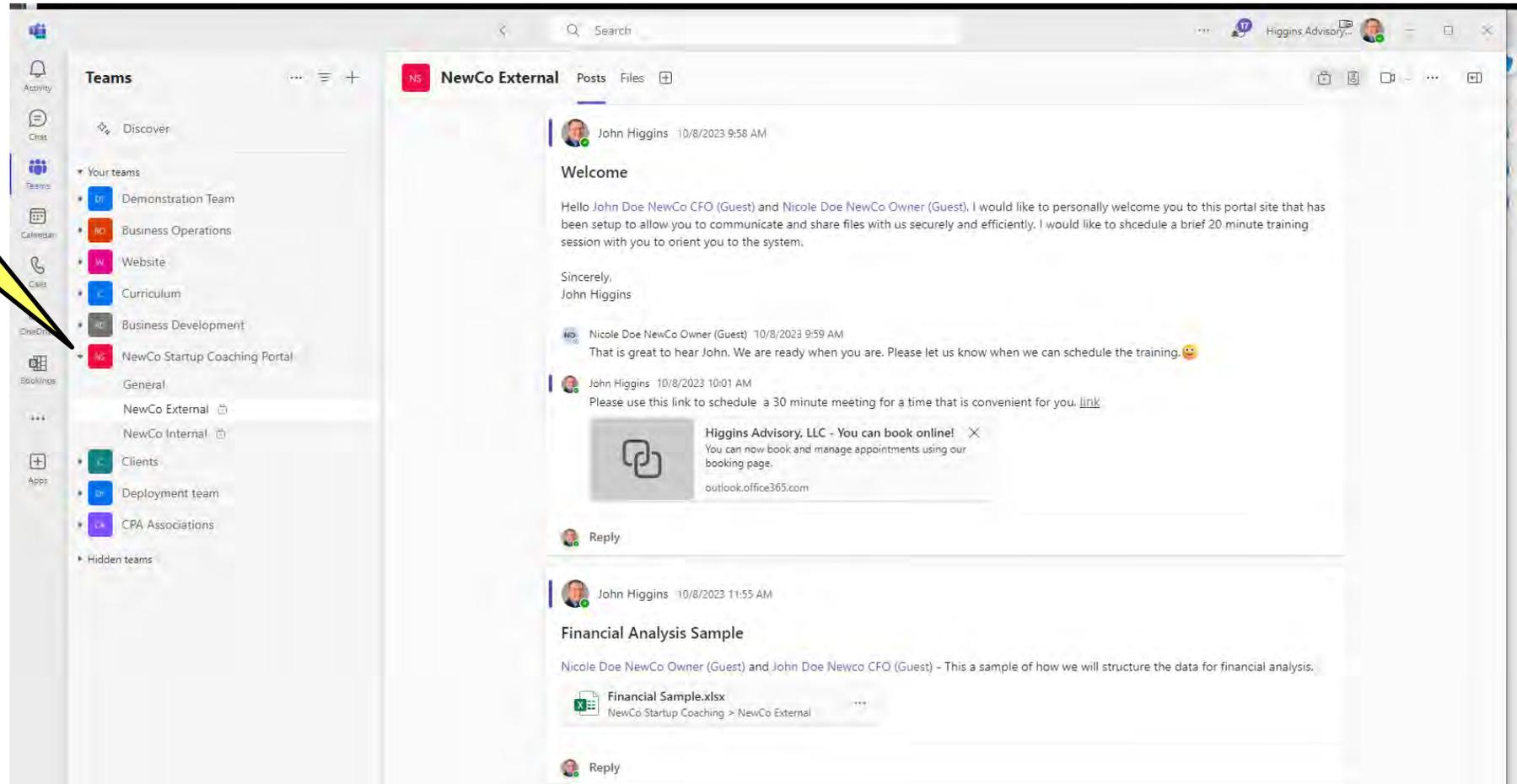
Establish file sharing link permissions

# Create a Secure Client Portal Using Teams

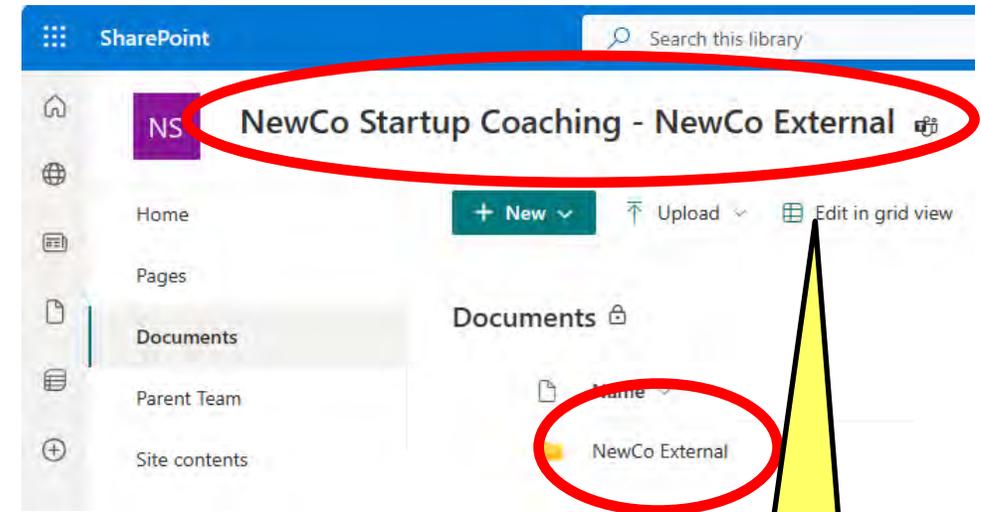
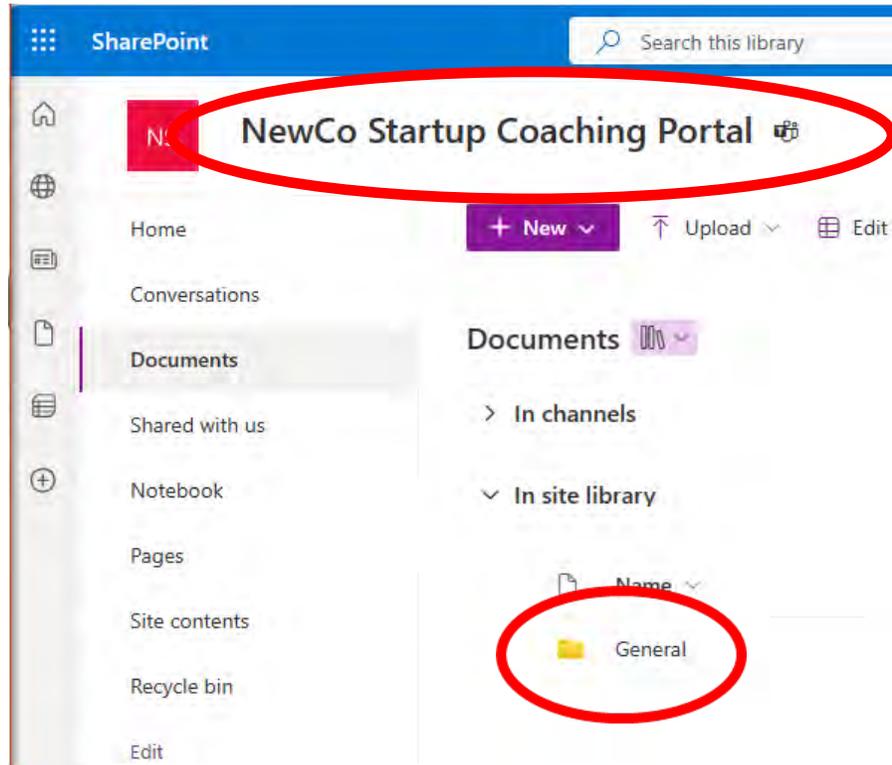


# Establish Client Portal Model (continued)

Firm view

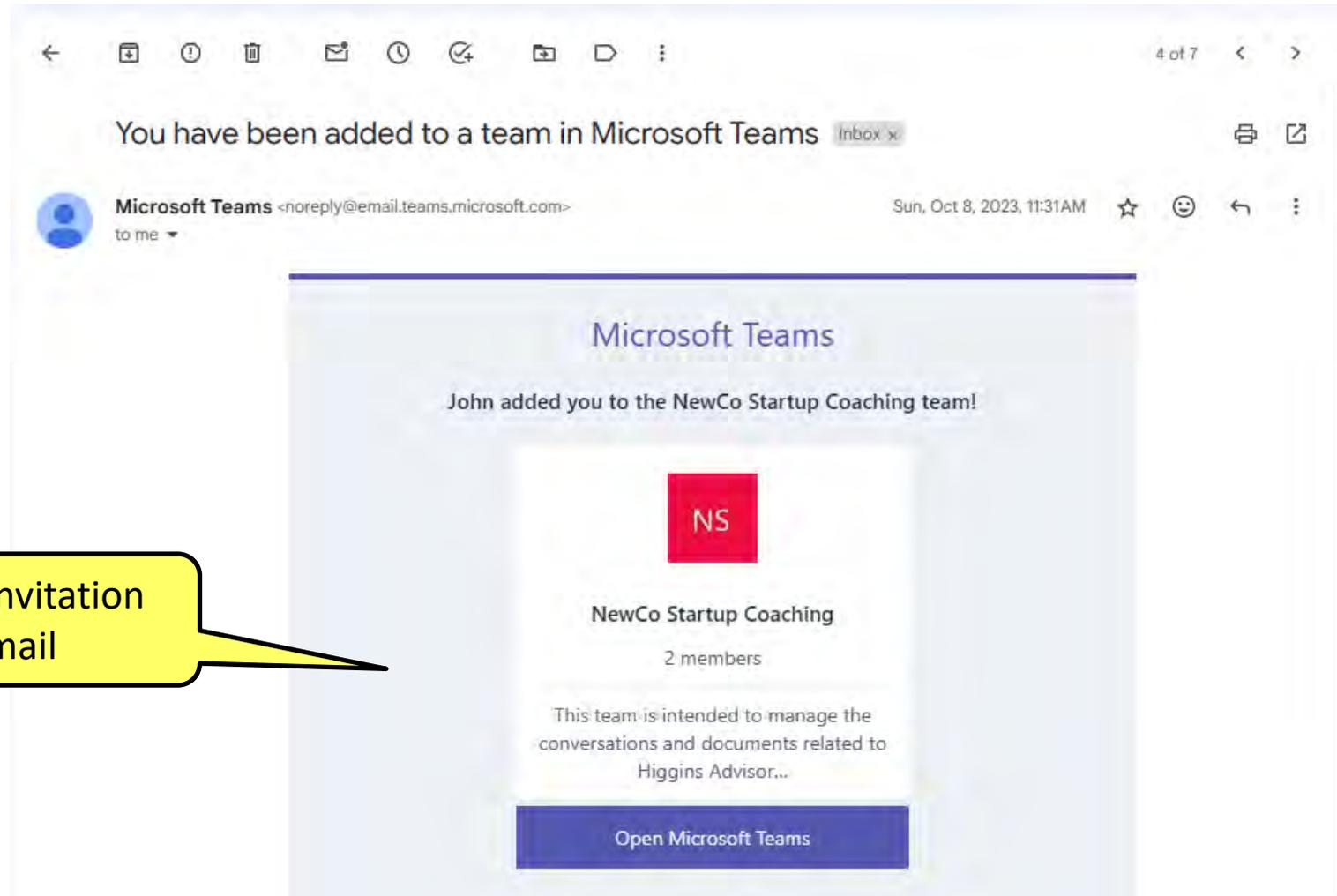


# Establish Client Portal Model (continued)



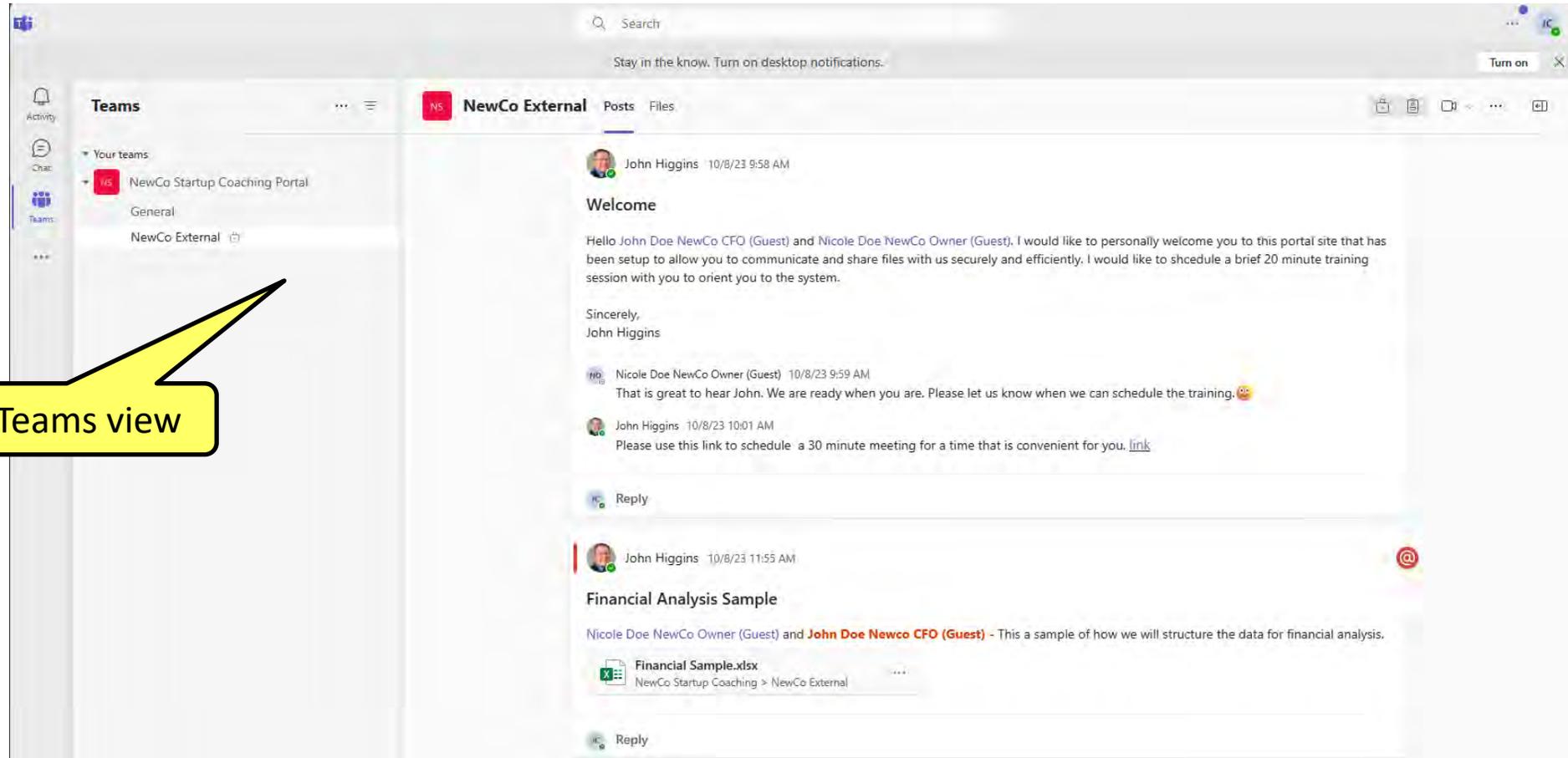
Private channel site

# Establish Client Portal Model (continued)



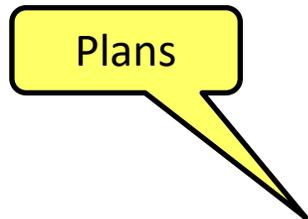
Client invitation email

# Establish Client Portal Model (continued)



Client Teams view

# Manage Engagements & Projects with Planner



My Plans > MS Teams Deployment

Grid Board Schedule Charts Timeline

My Day  
My Tasks  
**My Plans**

Pinned

- Tax Engagement Demonstrat...  
Demonstration Team
- Courseware Development  
Courseware Development
- MMO  
MMO

+ New plan

Set up this planner

- + Add task
- Project management
- Project kickoff  
You've read the introduction to this "Chat, teams, channels, and apps" plan. You've done all the preliminary tasks. Now you're ready to hold a kickoff meeting for your Teams rollout project. The project...
- 0 / 5  
12/31/2024

Get ready

- + Add task
- Adoption
- Build your Teams adoption plan  
A successful Teams rollout needs a well-thought-out adoption plan to help your users make the move to Teams and get the most out of it, right from the start. Use our adoption guidance to create a pla...
- 3 0 / 5  
12/31/2024

Roll out to early adopters

- + Add task
- Project management Adoption
- Implement your adoption plan  
You created an adoption plan under "Get ready." Now it's time to implement it. If you need further guidance, check out c "Adopt Teams" resources in the attachm below.
- 1 0 / 1  
02/28

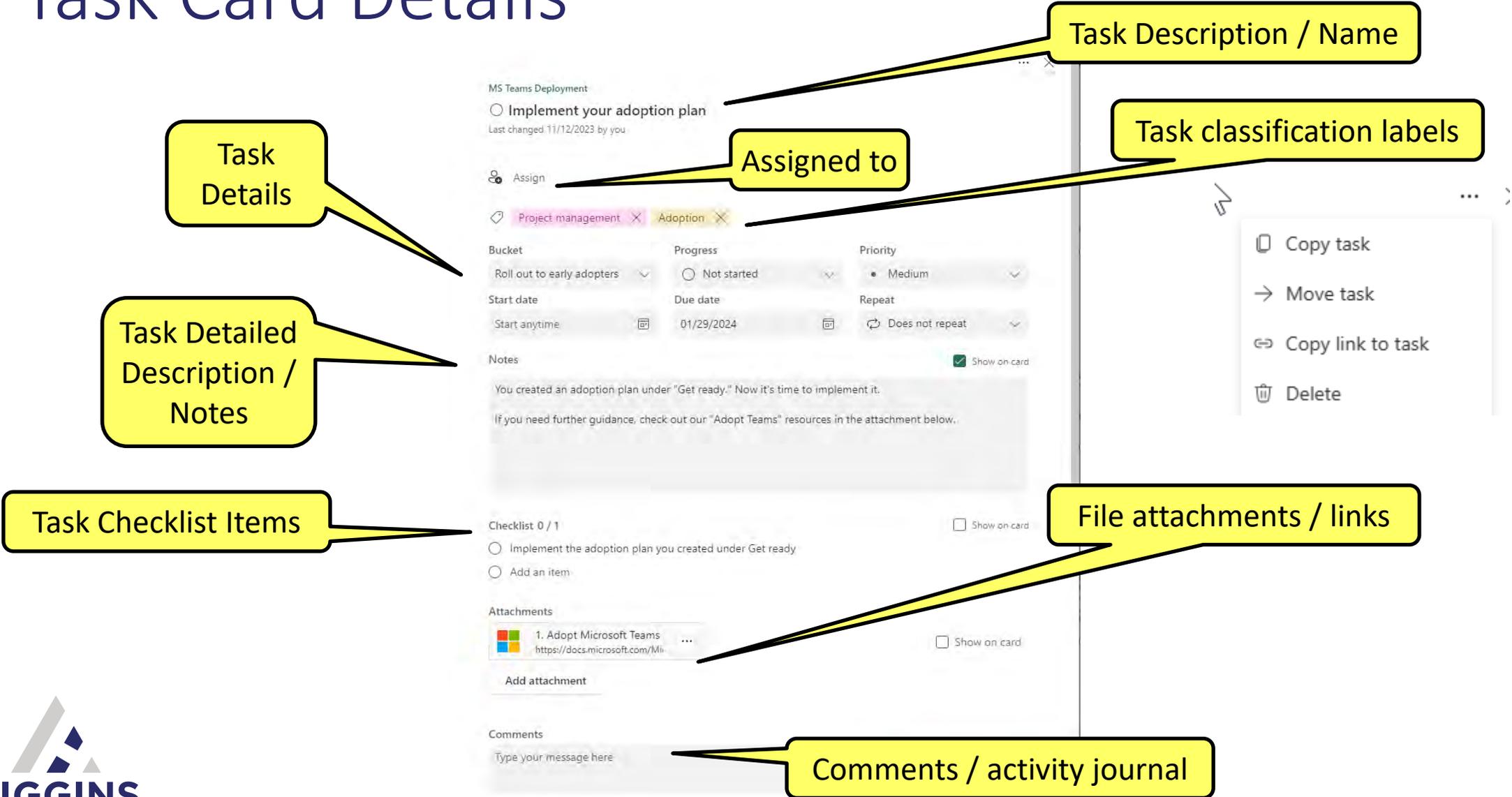
Configuration

- Address deployment prerequisites  
Before you roll out Teams across your organization, take time to confirm that your environment is ready for Teams. If you used "Get started" to get out...

Project management Configuration

- Roll out Teams to pilot users  
To get started quickly on Teams, we recommend you create two or three team and channels for a select group of early adopters. Be first rolling out Teams to...

# Task Card Details



# ORIENTATION TO THE PLANNER APP



# Planner App Home Screen

The screenshot displays the Planner application interface. The top navigation bar includes the 'Planner' logo and user profile. Below it, the current plan is identified as 'MS Teams Deployment'. The main view is set to 'Board' mode, showing a grid of tasks. On the left sidebar, the 'My Plans' menu item is circled in red and highlighted by a yellow callout bubble labeled 'Plans'. The main content area is divided into three columns: 'Set up this planner', 'Get ready', and 'Roll out to early adopters'. Each column contains a list of tasks with descriptions and due dates. The 'Set up this planner' column includes a 'Project kickoff' task due on 12/31/2024. The 'Get ready' column includes a 'Build your Teams adoption plan' task due on 12/31/2024. The 'Roll out to early adopters' column includes an 'Implement your adoption plan' task due on 02/28.

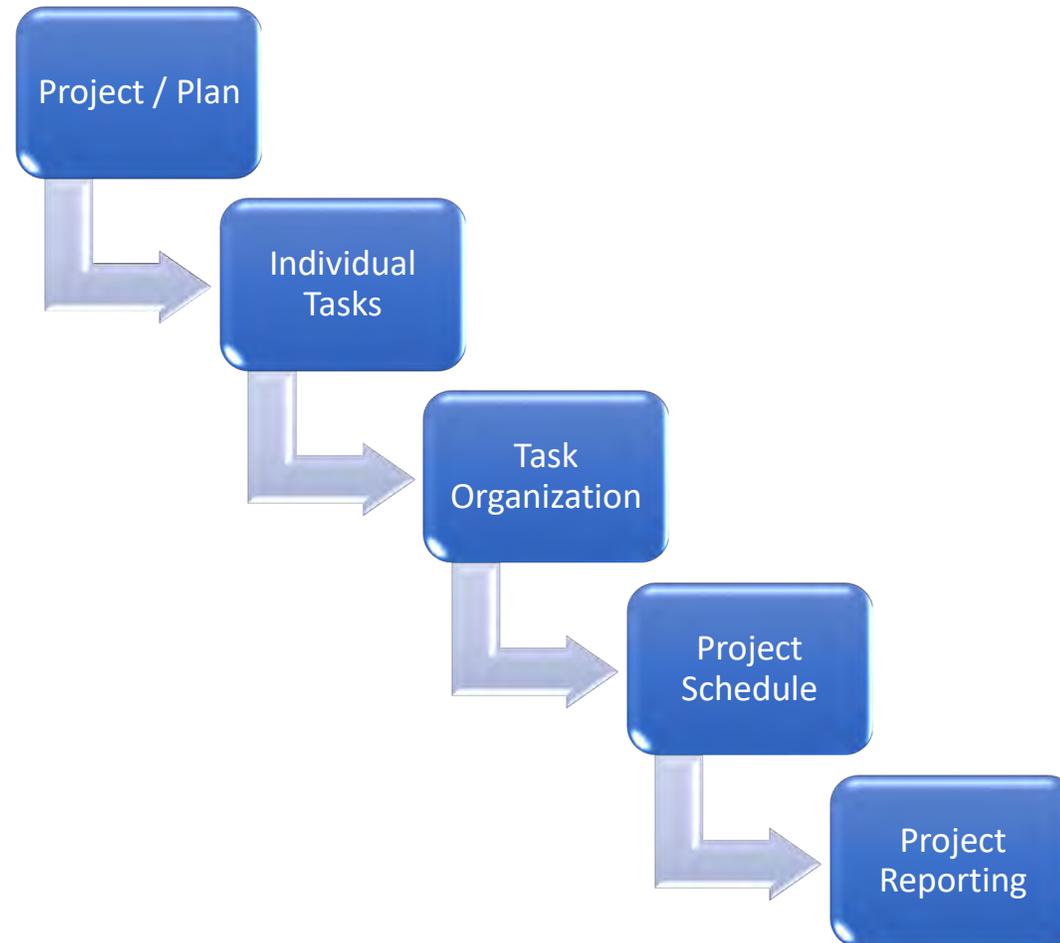
# Project Plan Board View

The screenshot displays the Microsoft Planner interface in 'Board' view for a project named 'MS Teams Deployment'. The top navigation bar includes 'View Board', 'Grid', 'Schedule', 'Charts', and 'Timeline'. The 'Board' view is selected and circled in red. Below the navigation, there are search, filter, and group-by options. The main area is divided into four columns, each representing a project phase:

- Set up this planner:** Contains a task 'Project kickoff' under the 'Project management' bucket. Progress: 0/6. Due date: 12/31.
- Get ready:** Contains a task 'Build your Teams adoption plan' under the 'Adoption' bucket. Progress: 0/5. Due date: 12/31.
- Roll out to early adopters:** Contains a task 'Implement your adoption plan' under the 'Project management' and 'Adoption' buckets. Progress: 0/1. Due date: 03/28.
- Org-wide rollout:** Contains a task 'Update your adoption plan' under the 'Adoption' bucket. Progress: 0/1. Due date: 03/11.

Annotations include a red circle around the 'Board' view selector and a yellow callout box pointing to the 'Roll out to early adopters' column with the text 'Organizing Buckets'. Another yellow callout box points to the task 'Implement your adoption plan' with the text 'Individual Tasks'.

# DEEP DIVE FEATURES REVIEW



# Creating A Plan

The image illustrates the process of creating a plan in a software application. It is divided into three main sections:

- Left Panel:** A sidebar menu with a red circle around the 'Plan' option. Below it are 'Portfolio' and a 'New plan' button.
- Middle Panel:** A 'Create new' dialog box. A red circle highlights the 'Basic' template (labeled 'Start with grid and board'). A red arrow points from this circle to the right panel.
- Right Panel:** A 'Create a basic plan from scratch' dialog box. It shows a 'Name' field with 'Audit Engagement Demo - Standard', a checked 'Add to my pinned plans' checkbox, and a group selection dropdown. The dropdown is open, showing a search bar and a list of groups: 'Business Operations Private', 'Business Development Private', 'Curriculum Private', 'CPA Associations Private', and 'Demonstration Team Private'. A yellow callout box points to the 'Demonstration Team' group with the text: 'All team members will have access to the plan'.

# Individual Task Card Details

The screenshot displays a task card for 'MS Teams Deployment' with the title 'Implement your adoption plan'. The card includes several sections: 'Assigned to' (empty), 'Task classification labels' (Project management, Adoption), 'Bucket' (Roll out to early adopters), 'Progress' (Not started), 'Priority' (Medium), 'Start date' (Start anytime), 'Due date' (01/29/2024), 'Repeat' (Does not repeat), 'Notes' (You created an adoption plan under "Get ready." Now it's time to implement it. If you need further guidance, check out our "Adopt Teams" resources in the attachment below.), 'Checklist 0 / 1' (Implement the adoption plan you created under Get ready, Add an item), 'Attachments' (1. Adopt Microsoft Teams, https://docs.microsoft.com/Mli...), and 'Comments' (Type your message here). A context menu is open on the right with options: Copy task, Copy link to task, and Delete.

**Task Details**

**Task Description / Name**

**Assigned to**

**Task classification labels**

**Task Detailed Description / Notes**

**Setup recurring tasks**

**Task Checklist Items**

**File attachments / links**

**Comments / activity journal**

# Board View

The screenshot displays the Microsoft Planner interface in Board View for a plan titled "MS Teams Deployment". The interface is organized into five columns representing different stages of the project:

- Set up this planner:** Contains one task, "Project kickoff", under the "Project management" category. It includes a description, progress indicators (0/6), and a due date of 12/31.
- Get ready:** Contains two tasks. The first is "Identify Teams champions and early adopters" (Adoption category) with progress 2/4 and due date 12/31. The second is "Address deployment prerequisites" (Configuration category) with progress 0/8 and due date 12/31.
- Roll out to early adopters:** Contains two tasks. The first is "Implement your adoption plan" (Adoption category) with progress 0/1, due date 03/28, and a description. The second is "Roll out Teams to pilot users" (Configuration category) with progress 0/4, due date 03/28, and a description.
- Org-wide rollout:** Contains two tasks. The first is "Update your adoption plan as needed" (Adoption category) with progress 0/1, due date 03/11, and a description. The second is "Roll out chat, teams, channels, and apps to the next group of users" (Adoption category) with progress 0/1, due date 03/18, and a description.
- Add a new bucket:** This column is currently empty.

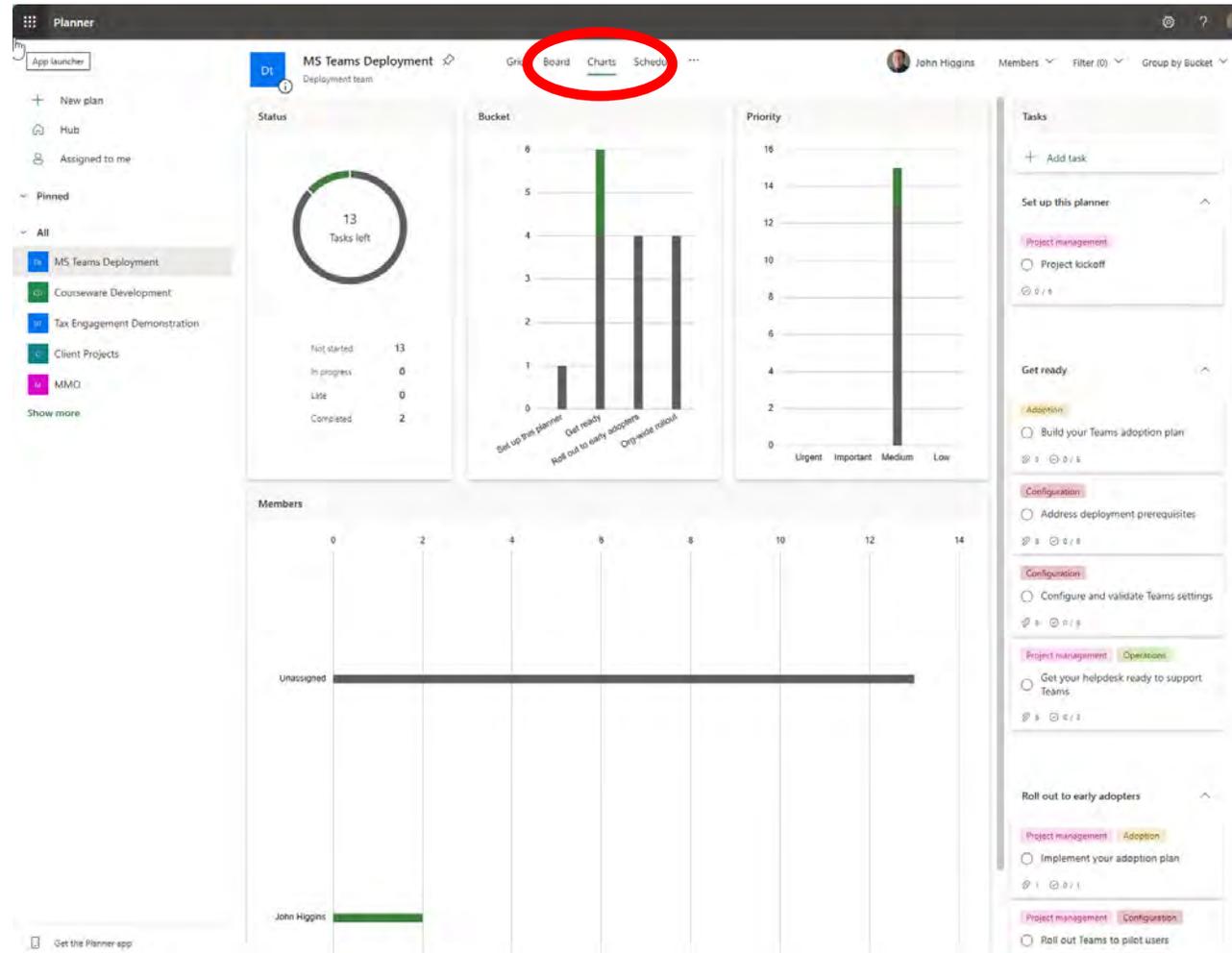
The interface includes a top navigation bar with "My Plans > MS Teams Deployment", view options (Grid, Board, Schedule, Charts), and a "Share" button. A search bar and "Filters" are also visible. Each task card shows a category, a checklist item, a description, progress indicators, and a due date.

# Grid View

The screenshot shows the Microsoft Planner interface in Grid View for a plan titled 'MS Teams Deployment'. The 'Grid' view selector is circled in red. The grid columns include Task Name, Assignment, Start date, Due date, Bucket, Progress, Priority, Labels, and Quick look. The 'Bucket' column header is circled in red. A yellow callout bubble labeled 'Individual Tasks' points to the task list. Another yellow callout bubble labeled 'Organizing Buckets' points to the 'Bucket' column. The 'Quick look' column header is also circled in red. The task list includes various tasks such as 'Get your helpdesk ready to support Teams', 'Configure and validate Teams settings', and 'Define usage scenarios', each with associated dates, progress indicators, and labels like 'Operations' and 'Adoption'.

Task Name	Assignment	Start date	Due date	Bucket	Progress	Priority	Labels	Quick look
Get your helpdesk ready to support Teams				Get ready	Not started	Medium	Operations +1	6 0/3
Configure and validate Teams settings			12/31/2025	Get ready	Not started	Medium	+1	8 0/8
Monitor usage and feedback			2/28/2025	Roll out to early a	Not started	Medium	Operations	1 0/3
Address deployment prerequisites			12/31/2025	Get ready	In progress	Medium	+1	8 0/8
Monitor Teams usage and feedback			4/24/2025	Org-wide rollout	In progress	Medium	Operations	1 0/2
Turn on Teams			3/25/2025	Org-wide rollout	Not started	Medium	Adoption	1 0/1
Build your Teams adoption plan	John Higgins		12/31/2025	Get ready	Not started	Medium	Adoption	3 2/4
Turn on Teams for pilot users			2/28/2025	Roll out to early a	Not started	Medium	+1	1 0/1
Roll out chat, teams, channels, and apps to the next gro			3/18/2025	Org-wide rollout	In progress	Medium	Adoption	1 0/1
Define usage scenarios	John Higgins		12/11/2024	Get ready	Completed	Medium	Adoption +1	1 3/6
Roll out Teams to pilot users			3/28/2025	Roll out to early a	Not started	Medium	+2	4 0/4
Learn about deploying Teams	John Higgins		11/20/2024	Get ready	Completed	Medium	+1	2 2/3
Project kickoff			12/31/2025	Set up this planne	Not started	Medium	+1	0/6
Implement your adoption plan			3/28/2025	Roll out to early a	Not started	Medium	Adoption +1	1 0/1
Update your adoption plan as needed				Org-wide rollout	Not started	Medium	Adoption	7 0/1
Identify Teams champions and early adopters				Get ready	Not started	Medium	Add label	

# Reporting – Chart View



# Reporting – Schedule View

The screenshot displays the Microsoft Planner interface for a project named "MS Teams Deployment". The "Schedule" view is selected, showing a calendar for January 2024. Tasks are represented as blocks on the calendar grid. A red circle highlights the "Schedule" tab in the top navigation bar. On the right side, the "Unscheduled tasks" panel is visible, containing a list of tasks such as "Set up this planner", "Get ready", "Get your helpdesk ready to support Teams", "Roll out to early adopters", "Org-wide rollout", and "Completed". A yellow callout bubble with the text "Unscheduled Tasks" points to this panel.

Day	Task
Jan 8	Project kickoff
Jan 15	Build your Teams a...
Jan 22	Address deployme...
Jan 23	Configure and vali...
Jan 29	Implement your ad...

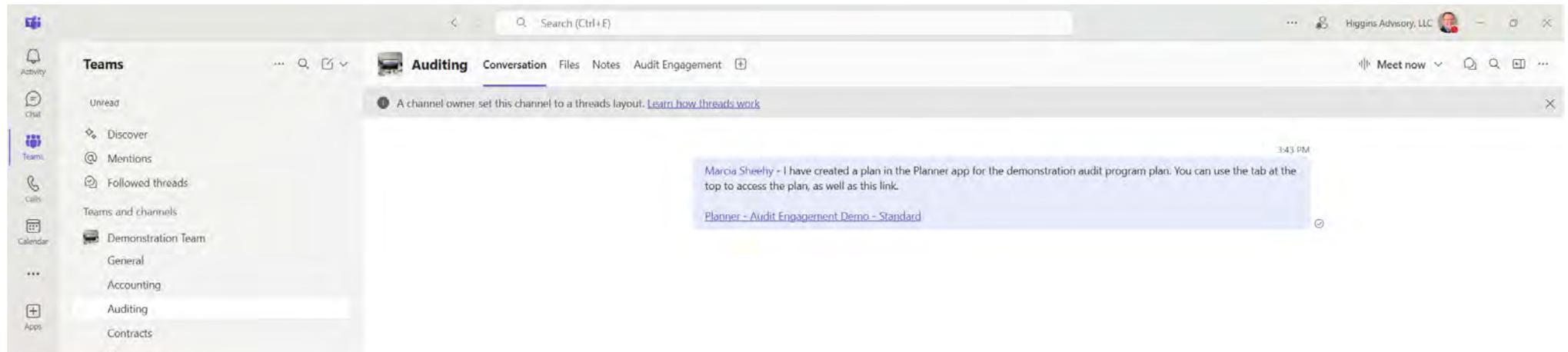
# Reporting – View Options

The screenshot displays the Microsoft Teams reporting interface for a project named "MS Teams Deployment". The interface is divided into three columns: "Not started", "In progress", and "Completed". The "Completed" column is currently selected, showing a list of tasks. A red circle highlights the "Filter (0)" and "Group by Progress" dropdown menus in the top right corner. A yellow callout box labeled "Task filtering options" points to the "Filter" dropdown menu, which is open and shows various filtering criteria such as "Due (0)", "Late", "Today", "Tomorrow", "This week", "Next week", "Future", "No date", "Priority (0)", "Progress (0)", "Label (0)", "Bucket (0)", and "Assignment (0)". Another yellow callout box labeled "Task grouping options" points to the "Group by Progress" dropdown menu, which is also open and shows grouping options like "Bucket", "Assigned to", "Progress" (which is selected), "Due date", "Labels", and "Priority".

# Additional Plan Features

- Plan details
- Copy link to plan
- Export plan to Excel
- Copy Plan
- Add plan to Outlook calendar

# Planner / Teams Integration

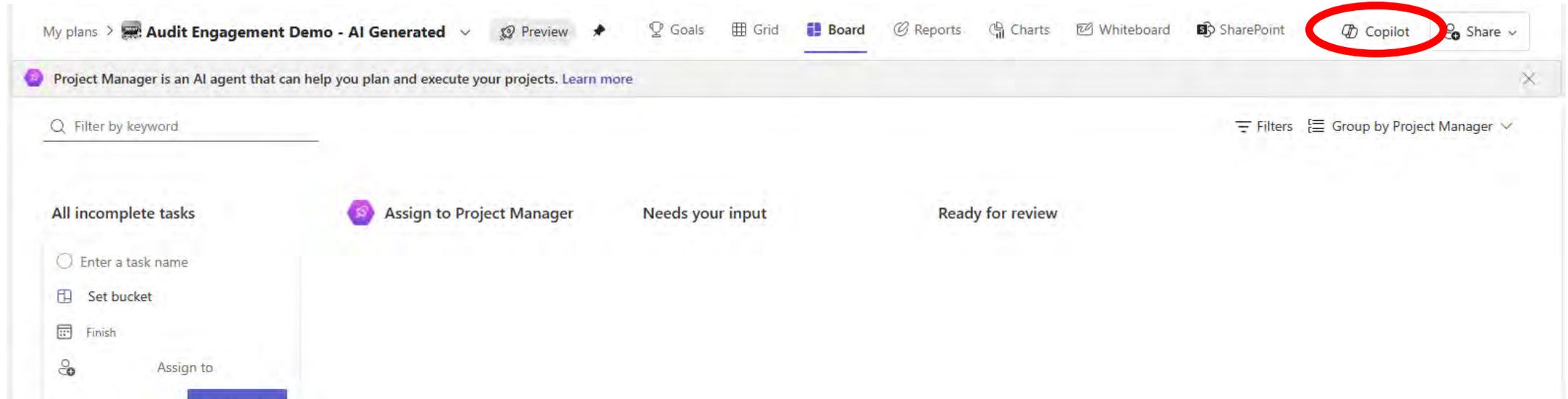


# Planner / OneNote Integration

The screenshot displays the Microsoft OneNote interface. The ribbon is set to the 'Insert' tab, and the 'Auditing' sub-tab is highlighted with a red circle. Below the ribbon, the 'Demonstration Team Notebook' is open, showing a page titled 'Audit Program Excel Template'. A link labeled 'Demo Audit Plan in Planner App' is visible. Below the link, there is a document icon and the text 'sample audit program for performance measures'. The main content area shows a table with the following structure:

Audit Program: Accuracy of Performance Measures		WPreference	preparedby	reviewedby
Audit Objective				
To determine whether the agency's reported performance measures are <b>accurate, supported, and consistent</b> with underlying source data, definitions, and applicable laws, rules, and guidance.				

# Planner / Copilot AI Integration



# Planner App Licensing Plans

	Formerly Project Plan 1	Formerly Project Plan 3	Formerly Project Plan 5
<b>Microsoft Planner</b> <b>Included</b> in Microsoft 365 <a href="#">Sign in to Planner</a> <a href="#">See Microsoft 365 plans &gt;</a>	<b>Planner Plan 1</b> <b>\$10.00</b> user/month, paid yearly (Annual subscription auto-renews) <sup>2</sup> <a href="#">Buy now</a> <a href="#">Or try free for one month &gt;</a> Trial cancellation terms apply <sup>1</sup>	<b>Planner and Project Plan 3</b> <b>\$30.00</b> user/month, paid yearly (Annual subscription auto-renews) <sup>2</sup> <a href="#">Buy now</a> <a href="#">Or try free for one month &gt;</a> Trial cancellation terms apply <sup>1</sup>	<b>Planner and Project Plan 5</b> <b>\$55.00</b> user/month, paid yearly (Annual subscription auto-renews) <sup>2</sup> <a href="#">Buy now</a> <a href="#">Try now with a partner &gt;</a>
<b>Planner in Microsoft 365 includes:</b> <ul style="list-style-type: none"><li>✓ Real-time collaboration, commenting, and sharing using the Planner app in Microsoft Teams or the Planner web app</li><li>✓ Creation and management of content-rich tasks with features including files, checklists, and labels</li><li>✓ Tasks organized by My Day, My Tasks, and Assigned to me</li><li>✓ Basic plan templates</li><li>✓ Ability to view reports and dashboards<sup>2</sup></li><li>✓ Grid, Board, Schedule, and Charts views</li><li>✓ Ability to view task dependencies</li><li>✓ Security, compliance, data privacy, accessibility, and Microsoft 365 customer support</li></ul>	<b>Planner Plan 1 includes:</b> <ul style="list-style-type: none"><li>✓ Creation and management of content-rich tasks with features including files, checklists, and labels</li><li>✓ Project goals</li><li>✓ Backlogs and sprints</li><li>✓ Premium plan templates</li><li>✓ Ability to build reports and dashboards<sup>2</sup></li><li>✓ Grid, Board, Timeline (Gantt), and Charts views</li><li>✓ Task dependencies</li><li>✓ Customization and integration</li><li>✓ Security, compliance, data privacy, accessibility, and Microsoft 365 customer support</li></ul>	<b>Includes everything in Planner Plan 1, plus:</b> <ul style="list-style-type: none"><li>✓ <b>Microsoft 365 Copilot in Planner (preview)<sup>3</sup></b></li><li>✓ Task history</li><li>✓ Roadmaps</li><li>✓ Baselines and critical path</li><li>✓ Resources request capabilities</li><li>✓ Program management</li><li>✓ Portfolios in Planner</li><li>✓ Project financials, budgeting, and costing</li><li>✓ Advanced dependencies with lead and lag</li><li>✓ Project Online desktop client</li><li>✓ Project Online</li></ul>	<b>Includes everything in Planner and Project Plan 3, plus:</b> <ul style="list-style-type: none"><li>✓ Advanced portfolio management</li><li>✓ Enterprise resource management and allocation</li></ul> 

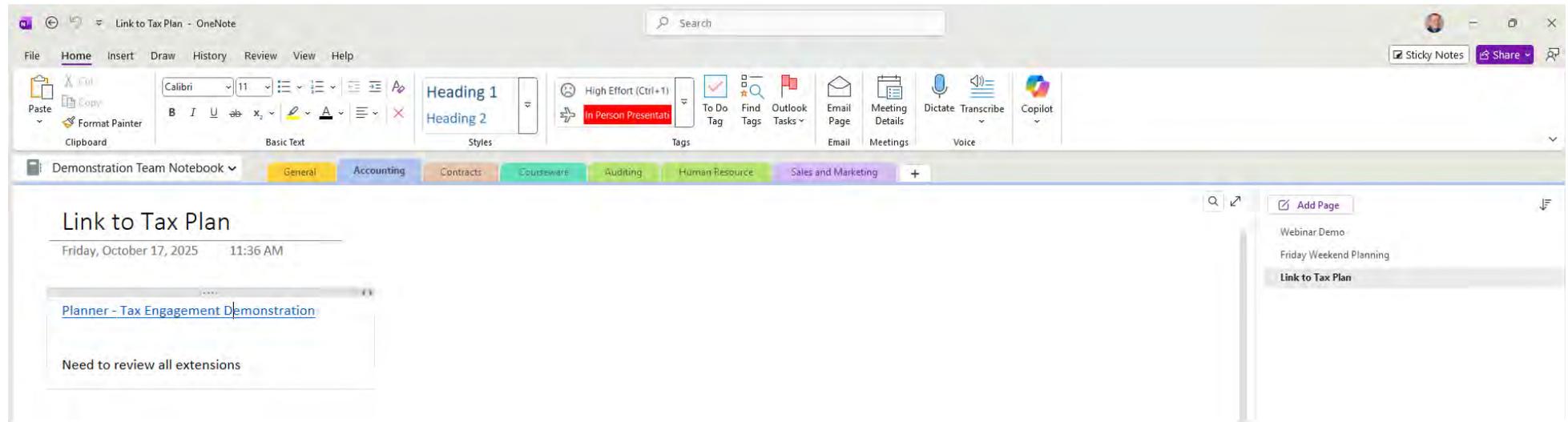
# ORGANIZING NOTES AND IDEAS WITH ONENOTE



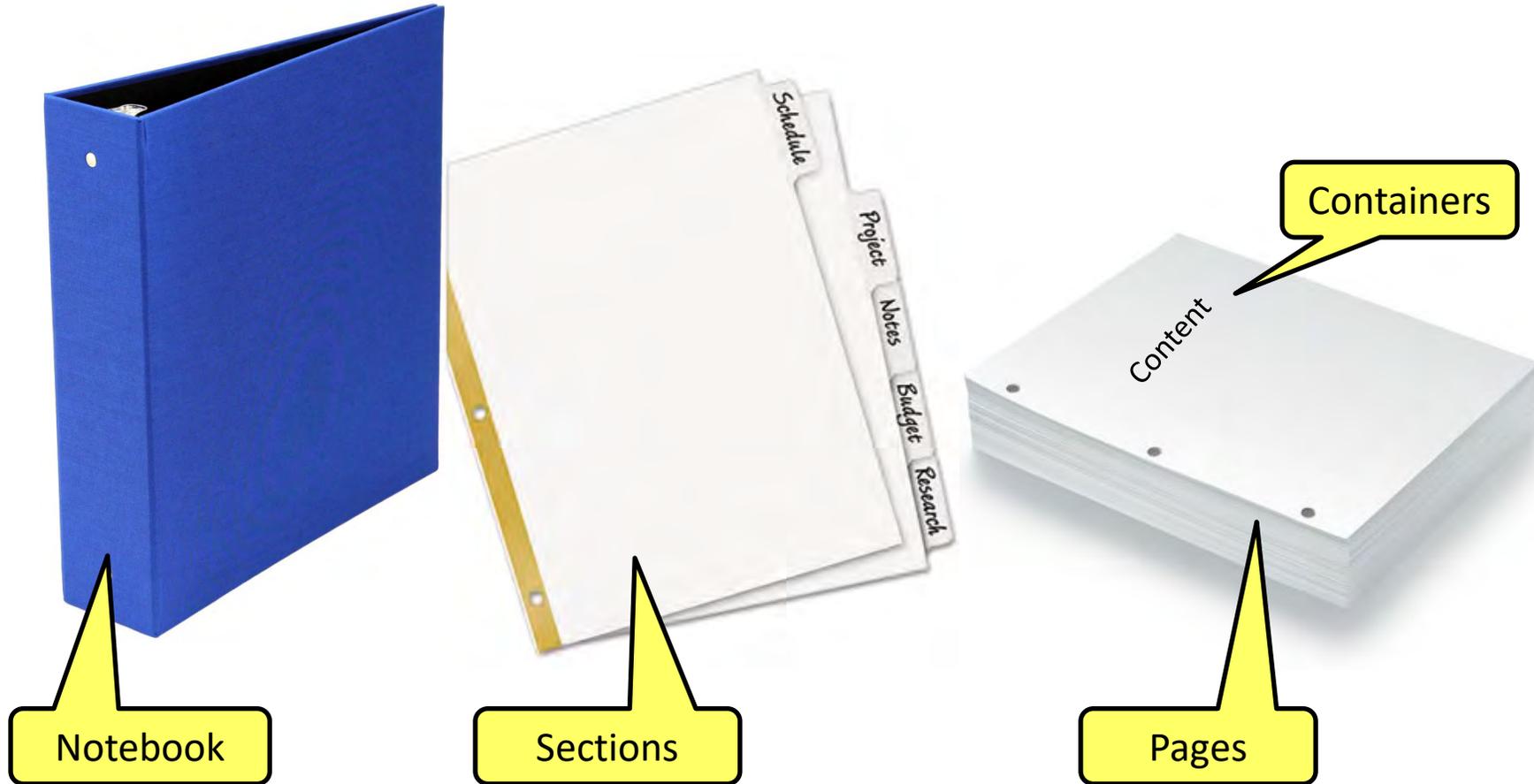
# Applications for OneNote

- Document and organize notes
- Create and standardized meeting agendas
- Document and share meeting notes
- Maintain working documents
- Replace internal use of Microsoft Word
- ***Replace you paper notepad!***

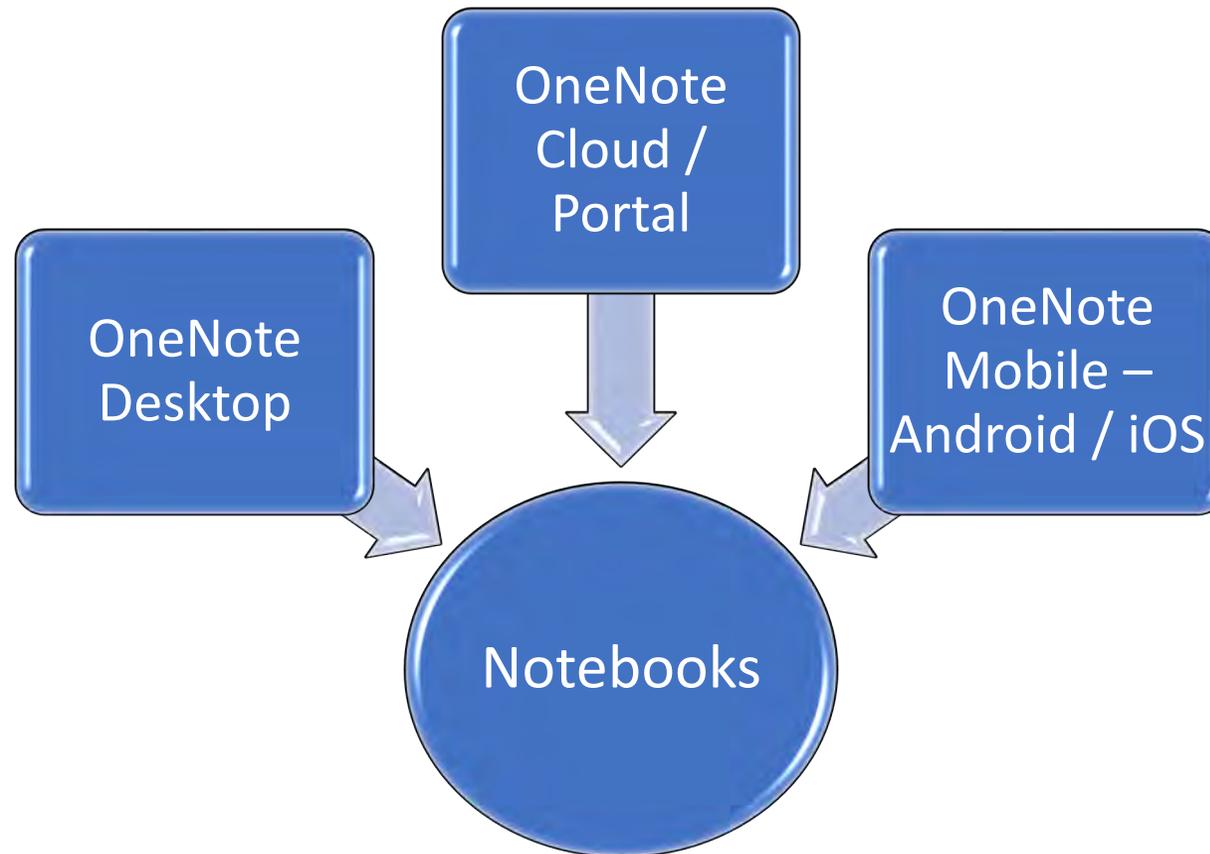
# OneNote Home Screen



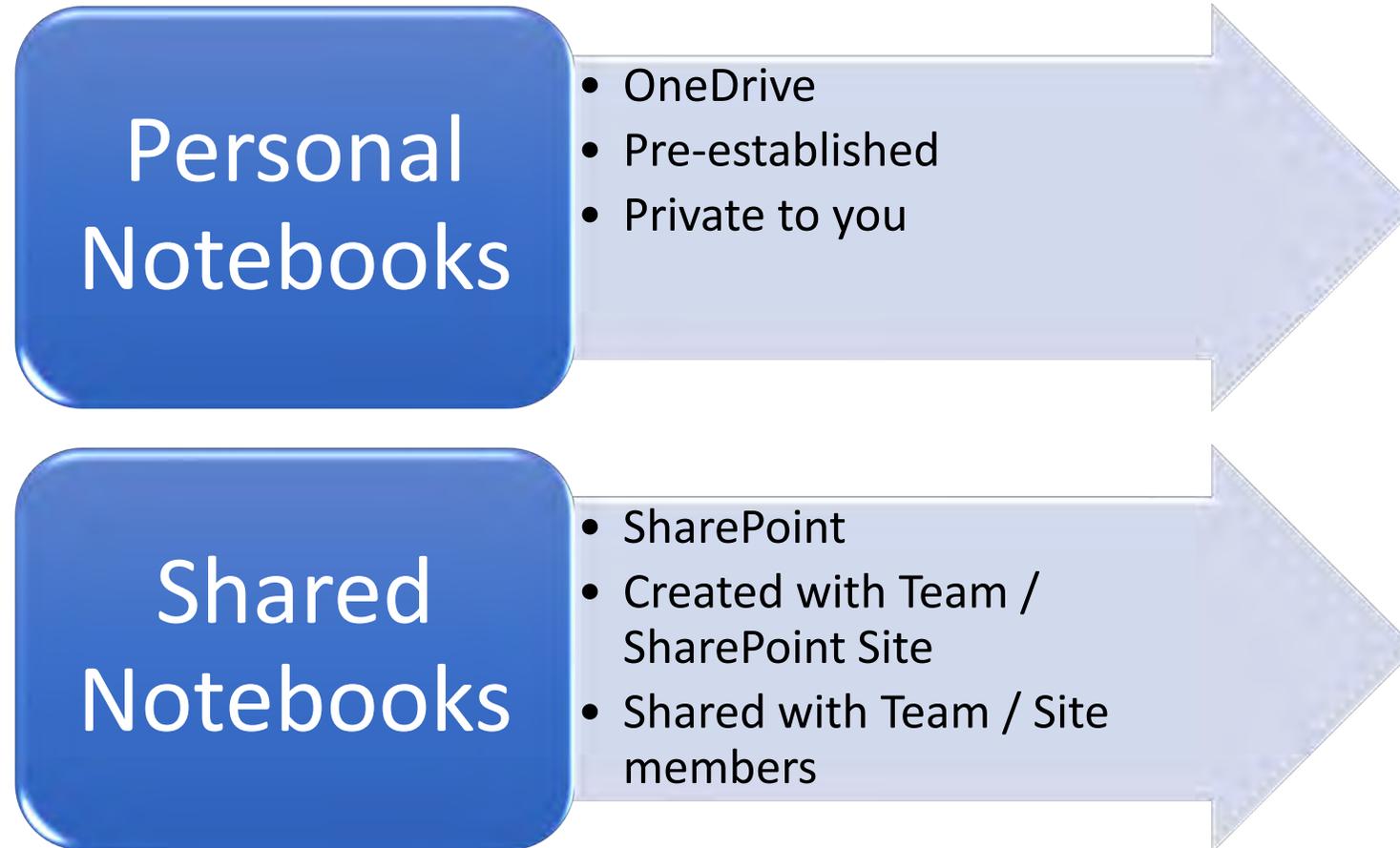
# OneNote Content Organization



# The OneNote Apps



# OneNote Notebook Storage





# OneNote App Things to Know

Supports multiple content formats

- Text / audio / video / files / drawing / links

Dictate option

One to one Teams / SharePoint / Notebook relationship

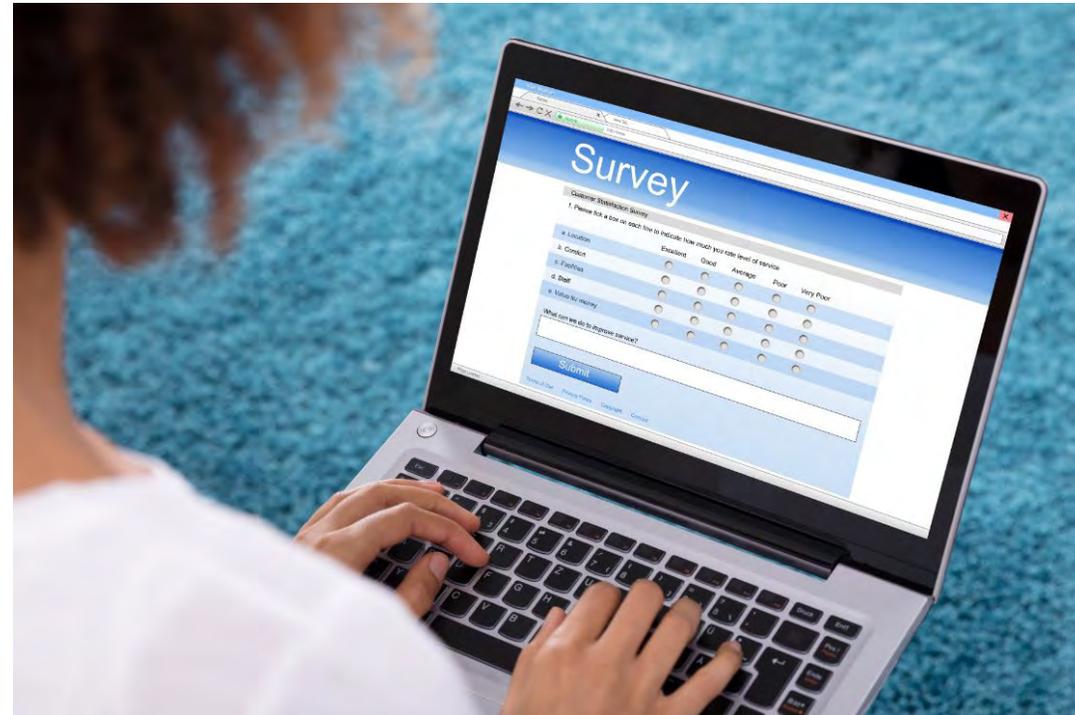
Shared access to notebooks

Custom note page templates

# OneNote Features Review

- ✓ Navigating OneNote
- ✓ Creating and sharing notebooks
- ✓ Adding content to OneNote
- ✓ Tagging and searching content
- ✓ Using templates

# CREATING SURVEYS AND FORMS FOR DATA COLLECTION



# Applications for the Forms App

- Training / meeting evaluations
- Performance appraisals
- Customer / client satisfaction surveys
- 1040 Tax client organizer
- Skills assessment quizzes (internal / client)

# Things to Know About the Forms App

Create surveys & quizzes

Not designed to create a fillable form

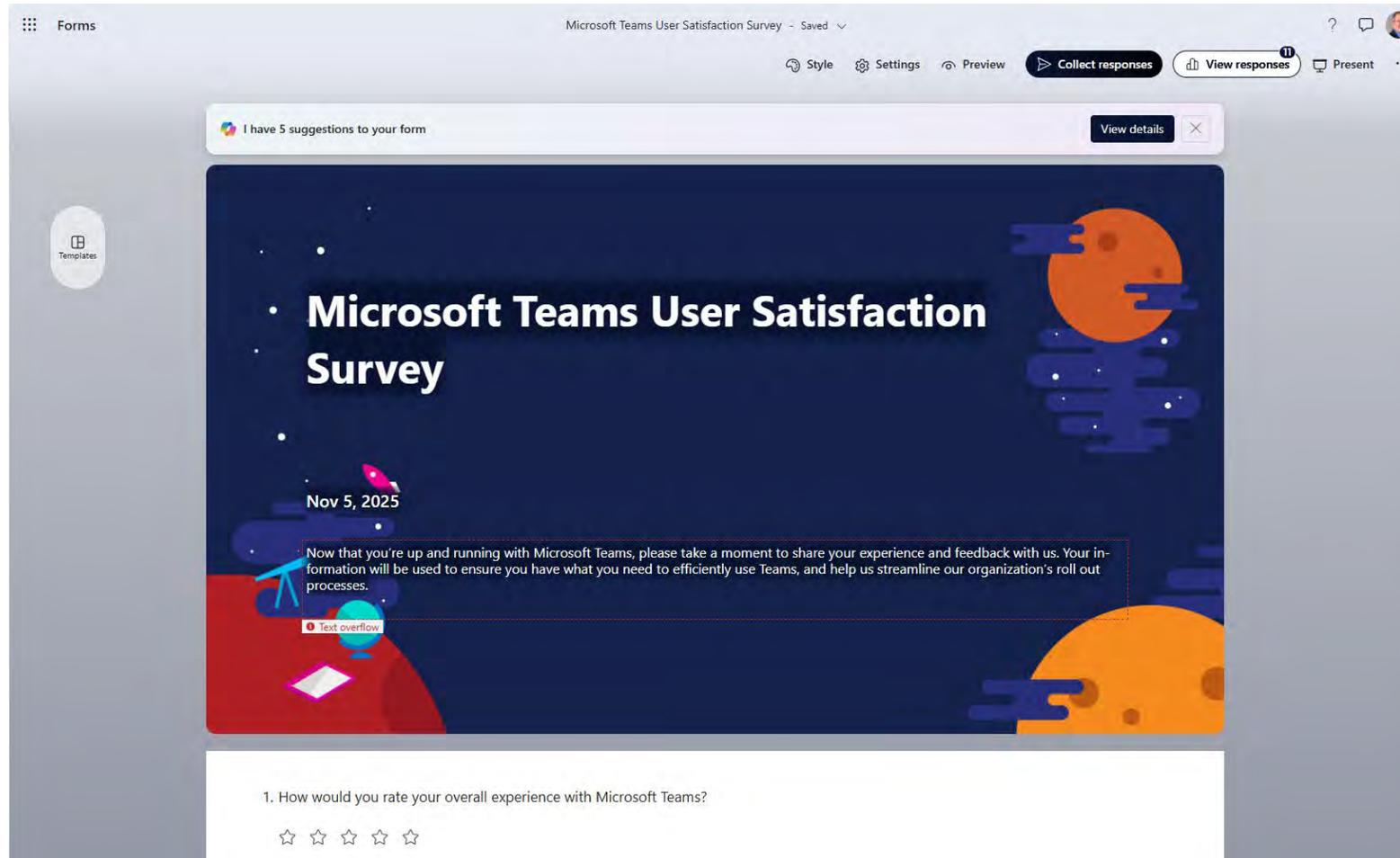
Simple and intuitive interface

“Responsive” display formatting

Pre-formatted response analysis

Direct integration with Excel for analysis

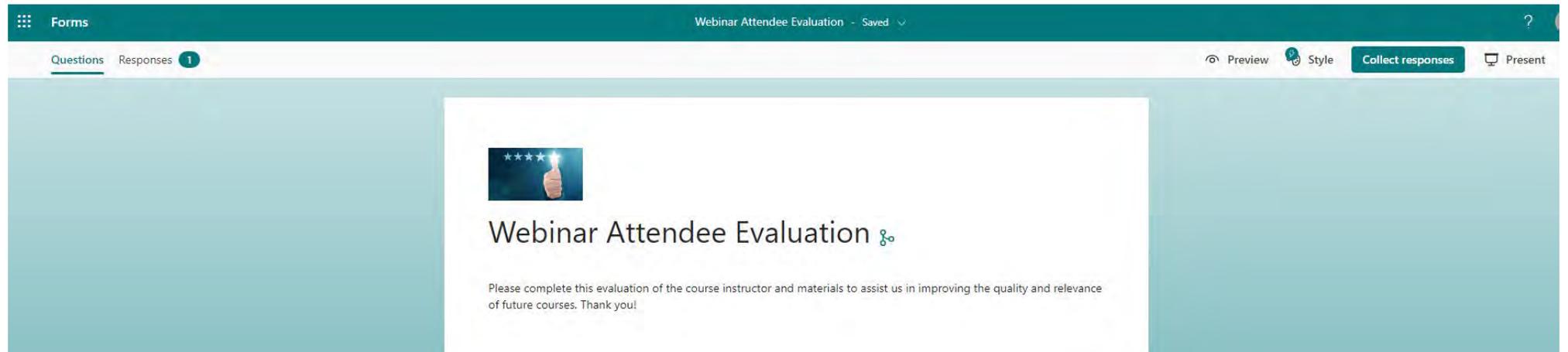
# Forms App User Interface



# Forms App Features to Review

- Creating a survey
- Survey question types
- Collecting and analyzing responses
- Leveraging Copilot AI in Forms app

# Create Title and Introduction



The screenshot shows a form editor interface. At the top, there is a teal header bar with the text 'Forms' on the left and 'Webinar Attendee Evaluation - Saved' on the right. Below the header, there is a navigation bar with 'Questions' and 'Responses 1'. On the right side of the navigation bar, there are buttons for 'Preview', 'Style', 'Collect responses', and 'Present'. The main content area is a white box with a teal background. It features a small image of a hand pointing up with four stars above it. The title 'Webinar Attendee Evaluation' is displayed in a large font, followed by a subtitle: 'Please complete this evaluation of the course instructor and materials to assist us in improving the quality and relevance of future courses. Thank you!'.

# Create Sections, Questions & Branches

Part 1 - Attendee information

Please complete the attendee information below

---

1. Full name 🗑️ ⬇️ ⬆️

Enter your answer

Long answer  Required ⋮

**+**  Choice  Text  Rating  Date  ⌵ 🔗

- Ranking
- Likert ⓘ
- Upload File
- Net Promoter Score®
- Section

2. Email

Enter your answer

Subtitle

Restrictions

Add branching

# Add Branching If Applicable

18. Would you like to receive printed promotional information from us?

Yes      Go to  ▼

No      Go to  ▼

Go to  ▼

Section

Next

✓ End of the form

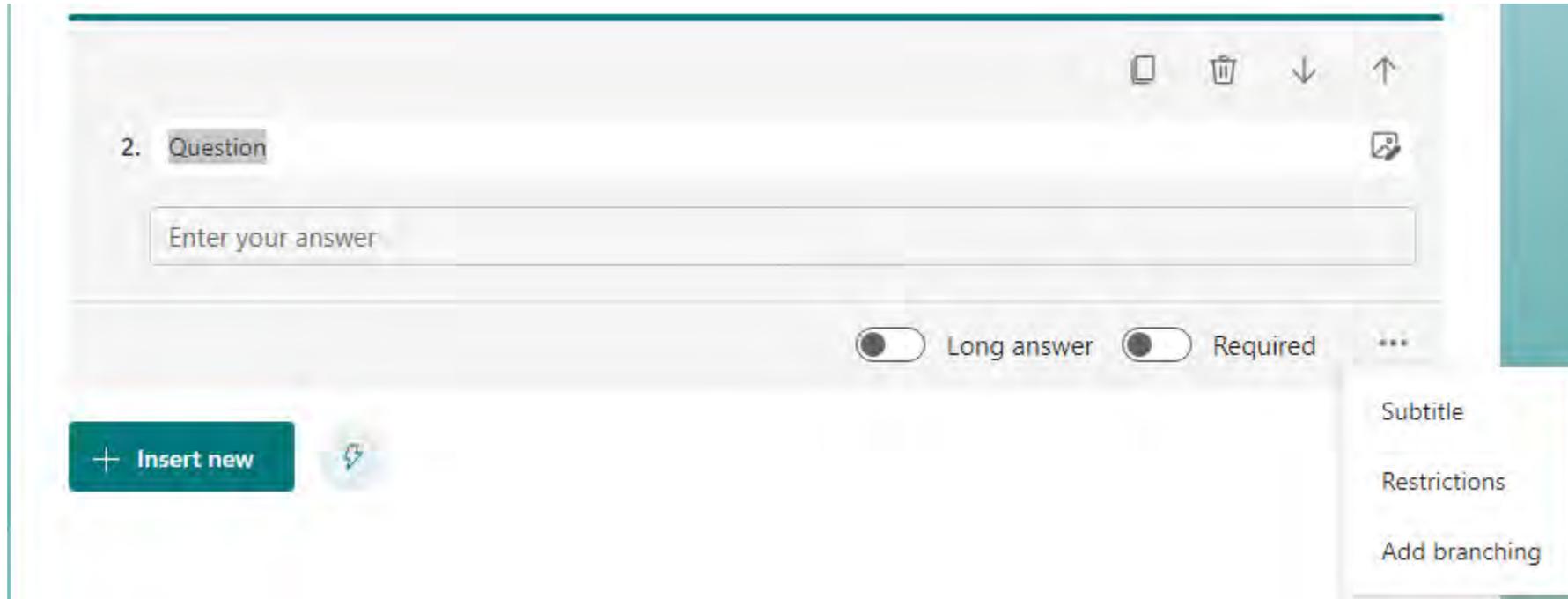
Other sections

1. Part 1 - Attendee information

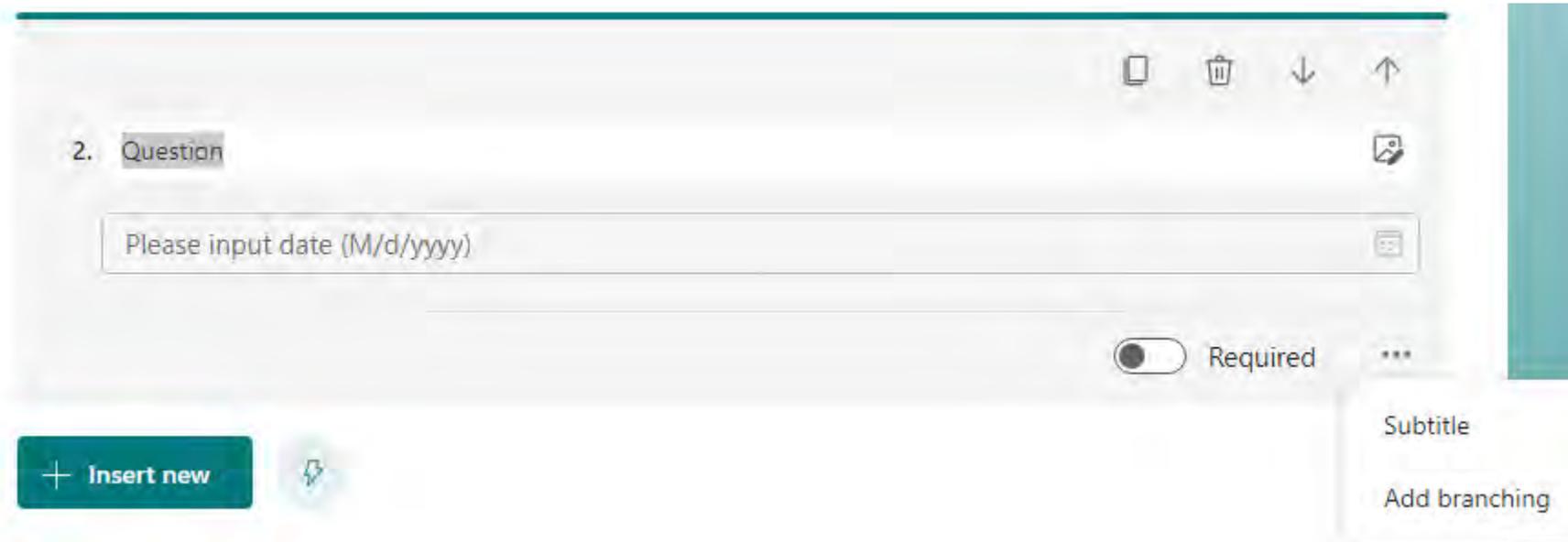
3. Contact Information

Go to

# “Text” Question Type



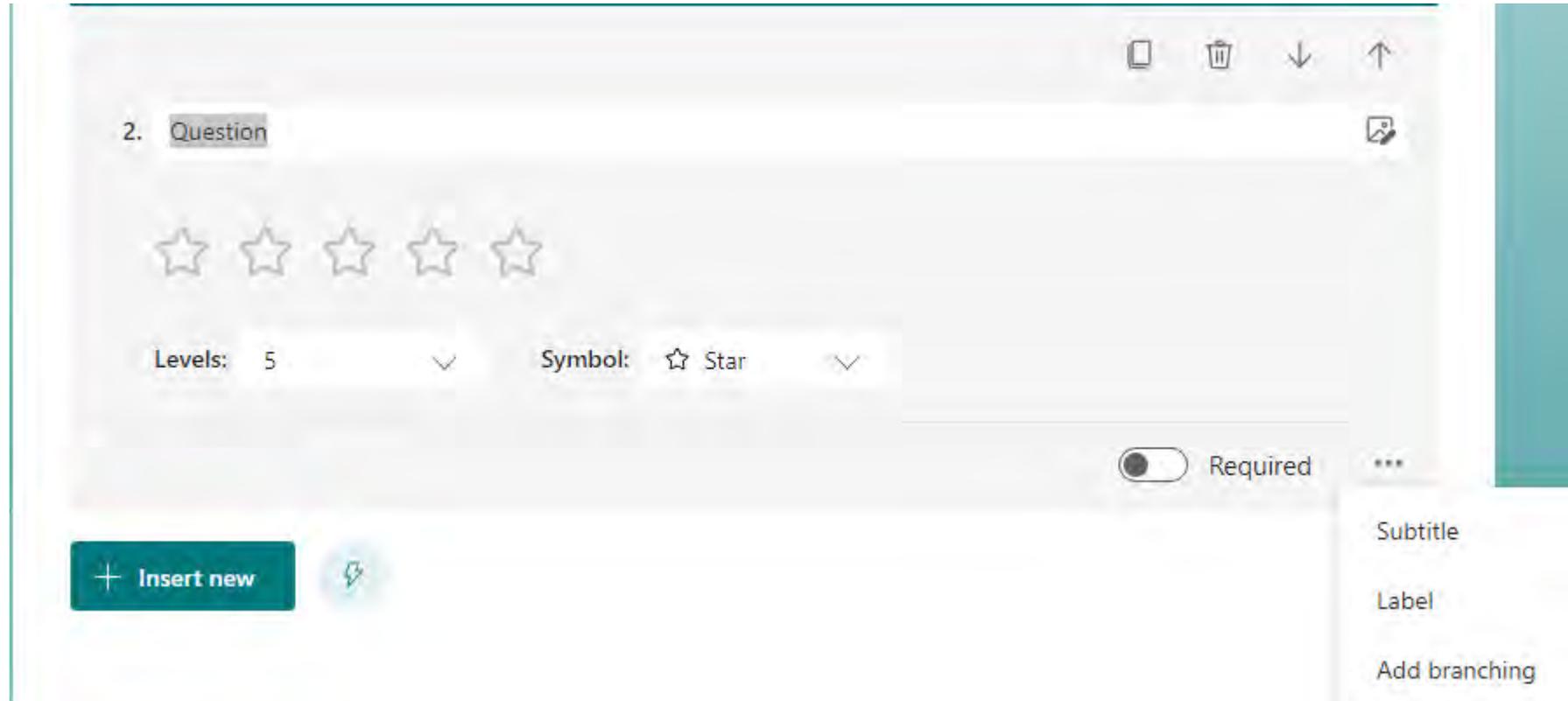
# “Date” Question Type



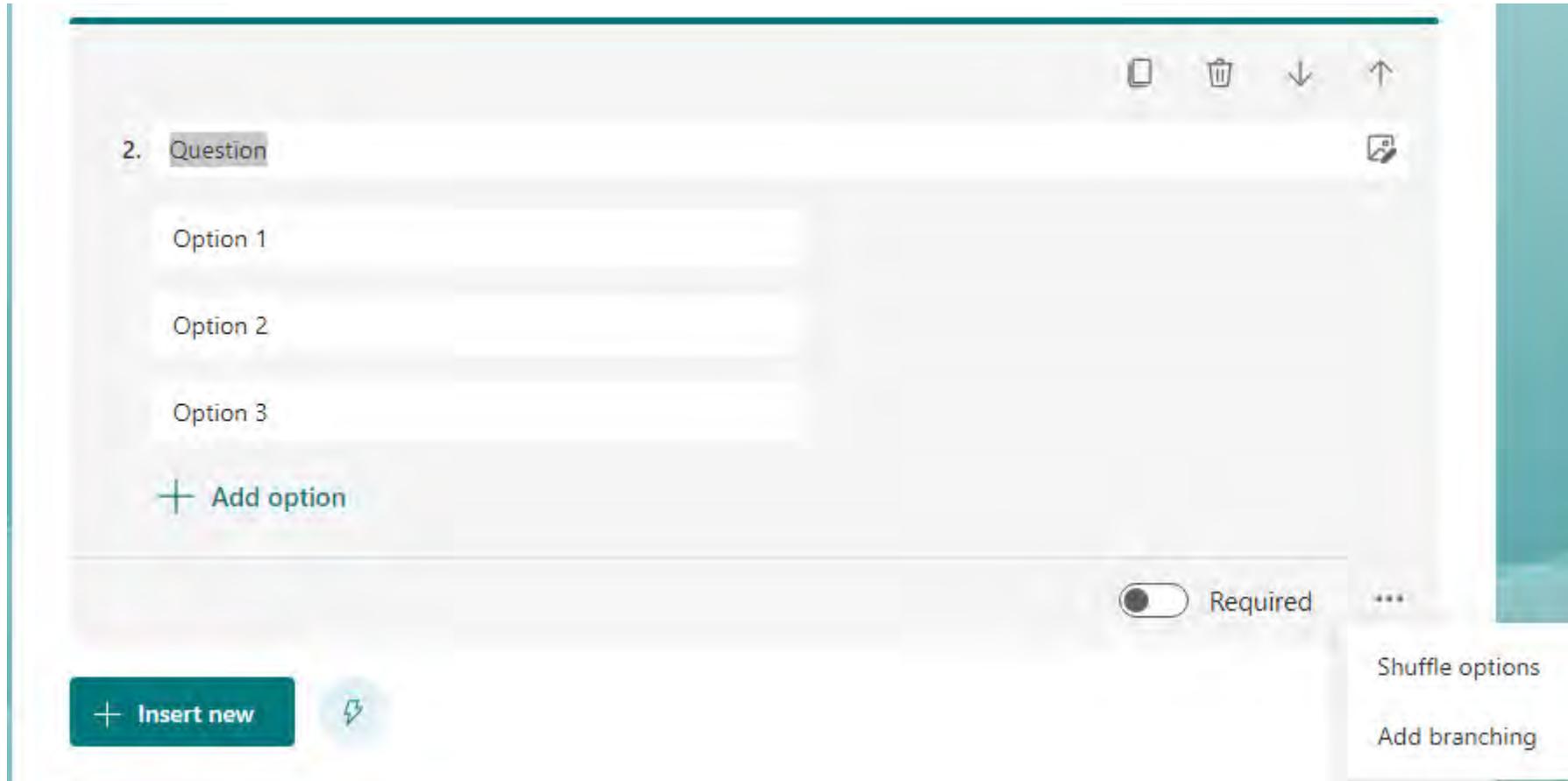
# “Choice” Question Type

The screenshot displays a quiz editor interface for a 'Choice' question type. At the top, there are icons for document, trash, down arrow, and up arrow. Below these is a text input field labeled '2. Question' with a small icon to its right. Underneath the question field are two radio button options: 'Option 1' and 'Option 2', each with a small icon to its right. Below the options are two buttons: '+ Add option' and 'Add "Other" option'. At the bottom of the question editor, there are two toggle switches: 'Multiple answers' (which is currently turned off) and 'Required' (which is currently turned on). To the right of these toggles is a three-dot menu icon. A dropdown menu is open from this icon, showing four options: 'Shuffle options', 'Drop-down', 'Subtitle', and 'Add branching'. Below the question editor is a green button labeled '+ Insert new' with a lightning bolt icon to its right. At the bottom of the interface, the text '3. Email' is visible.

# “Rating” Question Type



# “Ranking” Question Type



# “Likert” Question Type

The screenshot displays a user interface for creating a Likert question. At the top right, there are icons for copy, delete, and move. The main area contains a question titled "2. Question" with a subtitle icon. Below the title is a table with five columns labeled "Option 1" through "Option 5" and a plus sign icon. Two rows are visible, labeled "Statement 1" and "Statement 2", each with a radio button in each of the five option columns. Below the table is a button labeled "+ Add statement". At the bottom right, there is a "Required" toggle switch and a three-dot menu. The menu is open, showing "Subtitle" and "Add branching" options. At the bottom left, there is a button labeled "+ Insert new" and a lightning bolt icon.

	Option 1	Option 2	Option 3	Option 4	Option 5	
Statement 1	<input type="radio"/>					
Statement 2	<input type="radio"/>					
+ Add statement						

Required

- Subtitle
- Add branching

+ Insert new

# “File Upload” Question Type

The screenshot shows a survey question editor interface. At the top right, there are icons for copy, delete, down arrow, and up arrow. The question text is "2. Question" with a question mark icon to its right. Below the question text is a label "Upload file:" followed by a large, light gray upload area. Underneath the upload area, there are two dropdown menus: "File number limit:" set to "1" and "Single file size limit:" set to "10MB". At the bottom right of the question editor, there is a toggle switch for "Required" which is currently turned on, and a three-dot menu icon. A dropdown menu is open from the three-dot icon, showing options: "Subtitle", "File type", and "Add branching". At the bottom left of the editor, there is a teal button with a plus sign and the text "Insert new", and a lightning bolt icon.

File uploads are available only for surveys sent to people within your organization

# “Net Promoter Score” Question Type

The screenshot shows a configuration interface for a Net Promoter Score question. The question text is "2. How likely are you to recommend us to a friend or colleague?". Below the question is a horizontal scale with 11 buttons labeled 0 through 10. The scale is anchored with "Not at all likely" on the left and "Extremely likely" on the right. At the bottom right of the question area, there is a "Required" toggle switch which is currently turned on, and a three-dot menu. The menu is open, showing two options: "Subtitle" and "Add branching". At the bottom left of the interface, there is a teal button labeled "+ Insert new" and a lightning bolt icon.

# Update Survey Settings

## Settings

### Who can fill out this form

- Anyone can respond
- Only people in Higgins Advisory, LLC can respond  
Sign-in required to validate access within Higgins Advisory, LLC
- Record name
- One response per person
- Specific people in Higgins Advisory, LLC can respond

### Options for responses

- Accept responses
- Start date
- End date
- Set time duration ⓘ
- Shuffle questions
- Disable question number for respondents
- Show progress bar
- Hide **Submit another response**

- Customize thank you message

Thank you for completing this evaluation survey. Your feedback is important to us and much appreciated.

- Allow respondents to save their responses
- Allow respondents to edit their responses

### Response receipts

- Allow receipt of responses after submission
- Get email notification of each response
- Get smart notification emails to track the response status ⓘ

# Preview & Test Survey

← Back Computer Mobile

English (United States) ▾



## Webinar Attendee Evaluation

Please complete this evaluation of the course instructor and materials to assist us in improving the quality and relevance of future courses. Thank you!

Hi, John. When you submit this form, the owner will see your name and email address.

### Part 1 - Attendee information

Please complete the attendee information below

1. Full name

2. Email Address

English (United States) ▾



## Webinar Attendee Evaluation

Please complete this evaluation of the course instructor and materials to assist us in improving the quality and relevance of future courses. Thank you!

Hi, John. When you submit this form, the owner will see your name and email address.

### Part 1 - Attendee information

Please complete the attendee information below

1. Full name

# DISTRIBUTING SURVEYS AND COLLECTING RESPONSES



# Send and Collect Responses

**Send and collect responses**

- Anyone can respond
- Only people in Higgins Advisory, LLC can respond  
Sign-in required to validate access within Higgins Advisory, LLC
- Record name
- One response per person
- Specific people in Higgins Advisory, LLC can respond

[Feedback](#)

Copy link

<https://forms.office.com/Pages/ResponsePag...> [Copy link](#)

Shorten URL

**Webinar Attendee Evaluation**

Responders will see the form like this.

# Send Survey Link via Outlook or Teams

**Send and collect responses** [Close]

- Anyone can respond
- Only people in Higgins Advisory, LLC can respond  
Sign-in required to validate access within Higgins Advisory, LLC
- Record name
- One response per person
- Specific people in Higgins Advisory, LLC can respond

[Share] [Share] [Share] [Code]

To: Name, group, chat or channel...



You are invited to take this:  
**Webinar Attendee Evaluation**

Hi! Would you mind taking 7 minutes to complete this form?  
It would be great if you can submit your response by Feb 2, 2024. Thank you!

Outlook  Teams (Message only) **Send**

Invitation will be sent via Outlook

[Feedback]

# Invite via QR Code

**Send and collect responses**

- Anyone can respond
- Only people in Higgins Advisory, LLC can respond  
Sign-in required to validate access within Higgins Advisory, LLC
- Record name
- One response per person
- Specific people in Higgins Advisory, LLC can respond

 Feedback

**Webinar Attendee Evaluation**



Recipients can scan the code on a phone or tablet to access the form.

[Download](#)

# Embed Survey Link in Website

### Send and collect responses

- Anyone can respond
- Only people in Higgins Advisory, LLC can respond  
Sign-in required to validate access within Higgins Advisory, LLC
- Record name
- One response per person
- Specific people in Higgins Advisory, LLC can respond

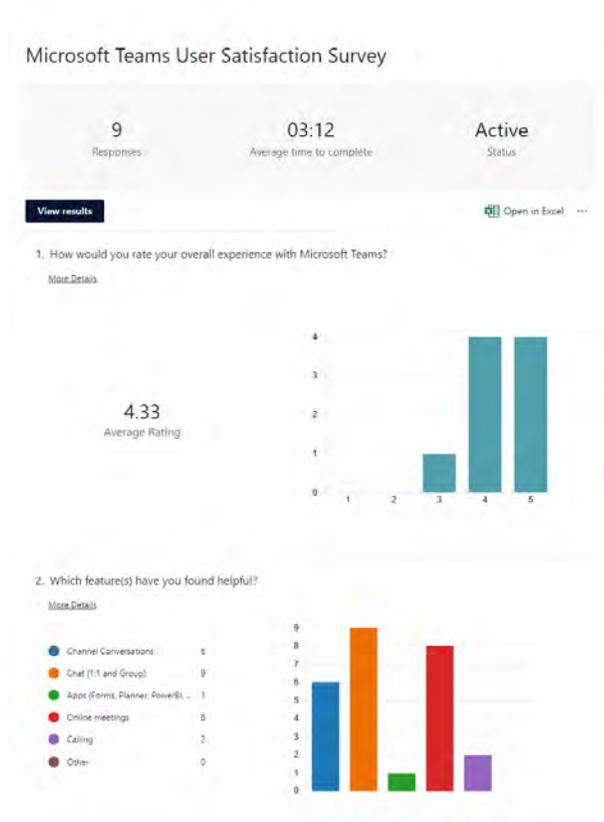
Feedback

Copy this code and paste it in a webpage or Sway.

```
<iframe width="640px" height="480px" src="https://forms.office..."
```

Copy

# ANALYZING SURVEY RESULTS



# Review Response Summary

View individual responses

Microsoft Teams User Satisfaction Survey

11 Responses      02:48 Average time to complete      Active Status

[View results](#)      [Open in Excel](#)      [Delete all responses](#)      [Print summary](#)      [Share a summary link](#)

1. How would you rate your overall experience with Microsoft Teams?

[More Details](#)      [Insights](#)

4.27 Average Rating

Rating	Number of Responses
1	0
2	0
3	1
4	6
5	4

Analyze results in Excel

# RECORDING AND EDITING VIDEOS WITH CLIPCHAMP ~~AND STREAM~~



# Important Note

- Effective mid 2025, Microsoft has combined the Stream and Clipchamp apps into a unified interface under the Clipchamp brand
- You may still see the Stream app in your M365 portal.
- Recommendation is to use Clipchamp exclusively going forward.

# Applications for Clipchamp

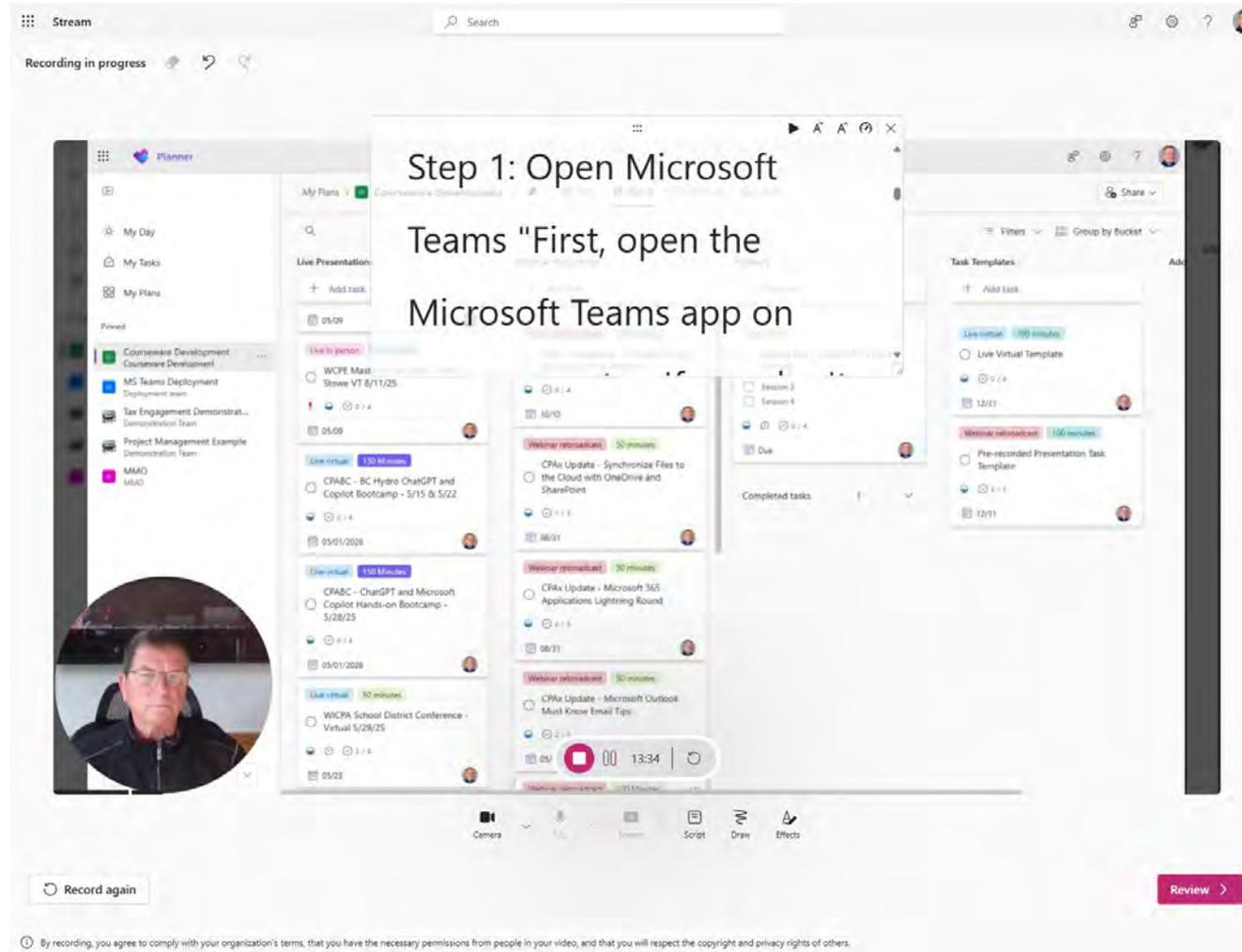
- Manage Teams meeting recordings
- Document internal business processes
- Create promotional videos
- Create on demand learning videos
- Use Copilot to create, summarize and query videos

# Clipchamp Home Screen

The screenshot shows the Clipchamp home screen. At the top, there is a navigation bar with the Clipchamp logo, a search bar, and user profile icons. Below the navigation bar is a purple banner with the text "Create and watch videos, all in one place" and various video-related icons. Underneath the banner are two buttons: "Create a new video" and "Edit a video". Below these buttons are five video thumbnails with labels: "Upload a video", "Screen recording", "Camera recording", "Video project", and "Playlist". At the bottom, there is a filter section with tabs for "Recent", "All", "Created by me", "Meetings", "Playlists", "Projects", and "Favorites". A search box labeled "Filter by name or person" is also present. Below the filter section is a table with the following data:

Name	Opened	Owner	Activity
 HeyGen Demo Video CPA Associations	Fri at 12:39 PM	John Higgins	

# Document Processes



# Bookings App – Streamline appointment scheduling



# Things to Know About the Bookings App

Bookings app is included with all Microsoft 365 subscription plans

Streamlines and automates internal and external appointment scheduling

Directly integrates with Outlook and Teams

Available as an app in Teams

Personal or shared booking page option

Detailed setup instructions provided by Microsoft [Bookings support page](#)

# Personal Booking Page

The screenshot shows a personal booking interface for John Higgins. At the top, there is a header banner with a background image of colored pencils and books. On the left side of the banner is a circular profile picture of John Higgins. To the right of the profile picture, the name "John Higgins" is displayed in a bold font, with "Booking Page" written in a smaller font below it.

Below the banner, the section is titled "Choose a meeting type". There are two selectable options:

- 60 Minute Meeting**: 1 HR, Appointment for up to 1 hour meeting. This option is highlighted with a blue border.
- 30 Minute Meeting**: 30 MIN, Appointment for a 30-minute meeting.

Underneath the meeting type selection, there is a section for "Available times". It includes a status indicator "You are available" with a green checkmark, a menu icon, and a globe icon. To the left is a calendar for "November 2023" with the date "28" selected. To the right is a list of time slots for "Tuesday, November 28":

Time Slot	Availability
10:10 AM	Available (Green Checkmark)
10:40 AM	Available (Green Checkmark)
11:10 AM	Available (Green Checkmark)
11:40 AM	Available (Green Checkmark)
12:10 PM	Available (Green Checkmark)

# Shared Booking Page

**HIGGINS**  
ADVISORY, LLC

Higgins Advisory, LLC

SELECT A SERVICE

2-hour Advisory Meeting  
Please use this option to book a meeting for... Read more  
2 hours

1-hour meeting  
Schedule a 1-hour meeting... Read more  
1 hour

30-minute meeting  
Schedule a 30 minute meeting... Read more  
30 minutes

Booking for 1-hour meeting

January 04, 10:15 am

DATE  TIME

January 2024						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

9:15 AM	9:45 AM	10:15 AM
10:45 AM	11:15 AM	11:45 AM
12:15 PM	12:45 PM	1:15 PM
1:45 PM	2:15 PM	2:45 PM
3:15 PM	3:45 PM	

All times are in (UTC-05:00) Eastern Time (US & Canada)

ADD YOUR DETAILS

First and last name \*  
John Doe

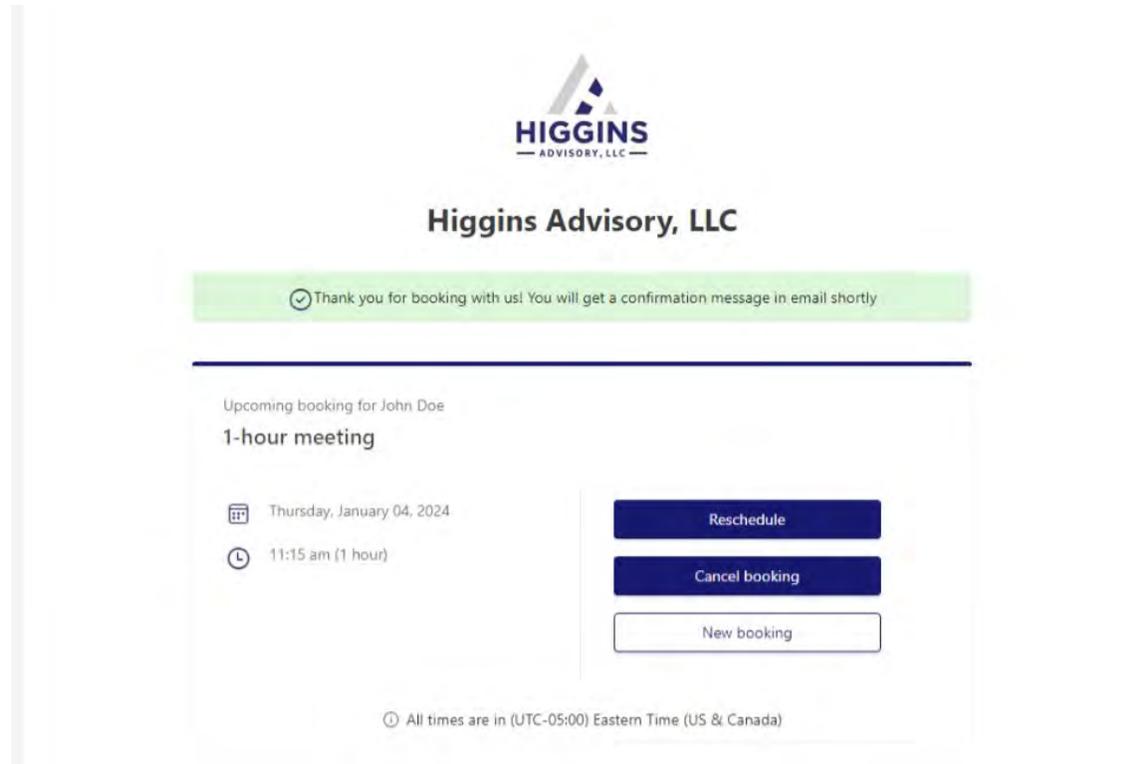
Notes  
This is a demonstration of booking an appointment on the bookings page.

Email \*  
jhd221@gmail.com

Data Collection Policy: When booking an appointment on our public calendar, only the information you provide is stored. Higgins Advisory, LLC guarantees that this data will not be sold or shared with external parties, your privacy and trust are our top priority.

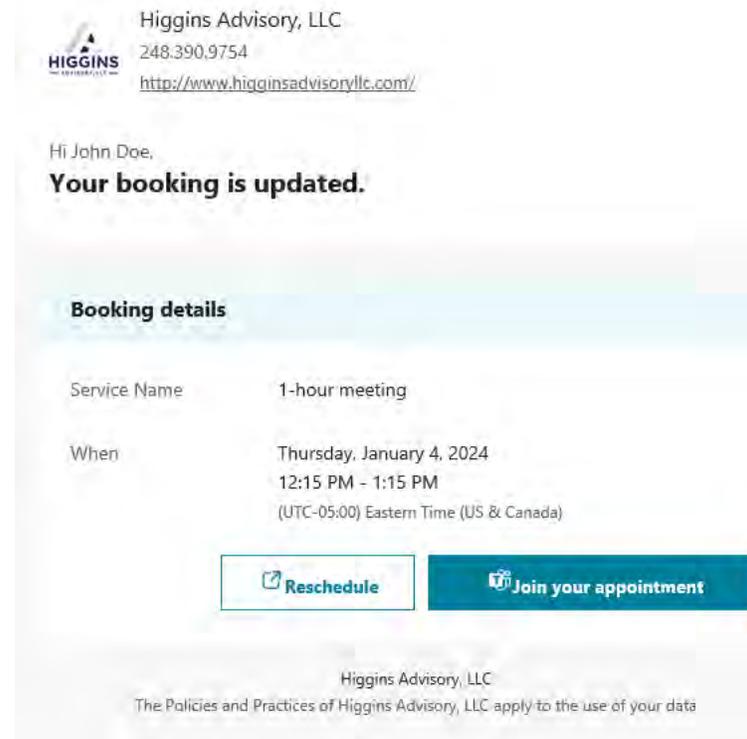
Book

# Web Page Booking Confirmation



The screenshot displays a web page for Higgins Advisory, LLC. At the top center is the company logo, which consists of a stylized 'A' shape made of three triangles (two grey, one blue) above the text 'HIGGINS ADVISORY, LLC'. Below the logo, the company name 'Higgins Advisory, LLC' is written in a bold, dark blue font. A light green horizontal bar contains a checkmark icon and the text 'Thank you for booking with us! You will get a confirmation message in email shortly'. Below this bar, a horizontal line separates the header from the main content. The main content area is titled 'Upcoming booking for John Doe' and features a '1-hour meeting' section. This section includes a calendar icon next to the date 'Thursday, January 04, 2024' and a clock icon next to the time '11:15 am (1 hour)'. To the right of the date and time are three buttons: 'Reschedule' (dark blue), 'Cancel booking' (dark blue), and 'New booking' (white with a dark blue border). At the bottom of the main content area, a small note states 'All times are in (UTC-05:00) Eastern Time (US & Canada)'.

# Client / Customer Booking Email Confirmation



# Configure Staff

The screenshot displays the 'Bookings' application interface. On the left, a navigation menu includes 'Calendar', 'Booking page', 'Customers', 'Staff' (highlighted with a red circle), 'Services', 'Business information', and 'Integrations'. The main content area shows the profile for 'John Higgins', an Administrator. Below the profile, there are tabs for 'Overview', 'Contact', 'Calendar and Availability', and 'Services'. The 'Overview' tab is active, showing 'No upcoming appointments' and a 'Show in calendar' button. The 'Contact Information' section lists 'Email: john@higginsadvisoryllc.com', 'Phone number: 248-390-9754', and 'Teams: john@higginsadvisoryllc.com'. The 'Membership information' section shows 'Status: Bookable', 'Last changed: Sun 11/26/2023 2:53 PM', and 'Email last sent: Sun 11/26/2023 2:53 PM | Re-send'. A 'Show more contact information' button is also present. The 'Services' section has a 'Show services' button.

# Configure Services

The screenshot displays the Microsoft Bookings interface. On the left, a navigation pane lists various options: Calendar, Booking page, Customers, Staff, **Services** (highlighted with a red circle), Business information, and Integrations. The main content area shows the configuration for a '30-min meeting' service. At the top, it indicates '1:1 service' and 'Online Meeting', with options to 'Edit service' and 'Book appointment'. Below this, there are tabs for 'Overview', 'Service details', 'Calendar and Availability', and 'Staff'. The 'Overview' tab is active, showing 'No upcoming appointments' and a 'Show calendar' button. The 'Service Details' section includes: 'Service booking page' (https://outlook.office365.co...), 'Duration' (30 minutes), and 'Default price' (Price not set). A description reads 'Grab some time with us for ...'. At the bottom, there are links for 'Show all service details' and 'Show all assigned staff'.

# Configure Business Information

The screenshot displays the 'Bookings' configuration interface. At the top, there is a blue header with a grid icon and the text 'Bookings'. Below the header, a navigation bar includes a back arrow and the text 'Back to all booking pages'. To the right of the navigation bar are 'Save' and 'Discard' buttons. The main content area is titled 'Business information' and contains several expandable sections:

- Basic details:** Includes business name, address, phone, links and other basic details.
- Privacy policy and Terms and conditions:** Enter business Privacy policy and Terms and conditions details.
- Business logo:** Add or change your business logo that your customers will see in your booking page, reminders and messages. This section includes a placeholder image of two people in a meeting and 'Change logo' and 'Delete logo' buttons.
- Business hours:** Enter information about your business hours.
- ACS App Integration:** Connect your Azure Communication Service App with Bookings.

A left-hand sidebar contains navigation options: Calendar, Booking page, Customers, Staff, Services, Business information (highlighted), and Integrations.

# Personal Booking Page Meeting Type

New meeting type

 Add a title

 [+ Category](#) 

 Add a description

 Location   Teams meeting

 30 mins 

 **Public**  
These will appear on your booking page

**Private**  
Only people with a booking link can view this

Schedule customization 

 Use my regular meeting hours  [See regular meeting hours](#)

[+ Advanced options](#)

# Lists App - Create and manage customized lists



Microsoft Lists

+ Add new item | Edit in grid view | Undo | Share | Copy link | Export | Forms **New** | Automate | Integrate | ...

My lists  
**Higgins Advisory, LLC Expense Tracker** ☆ ⓘ

Item	Date	Amount	Category	Description
Postage stamps	September 29, 2023	\$15.00	Postage	20 Forever stamps
Lunch with ABC Co	December 15, 2023	\$45.00	Meals / Entertainmer	
Dinner	July 17, 2024	\$50.00	Meals / Entertainmer	
		Sum 110.00		

**New item**

Item \*  
Enter value here

You can't leave this blank.

Date  
Enter a date

Amount  
\$ Enter a number

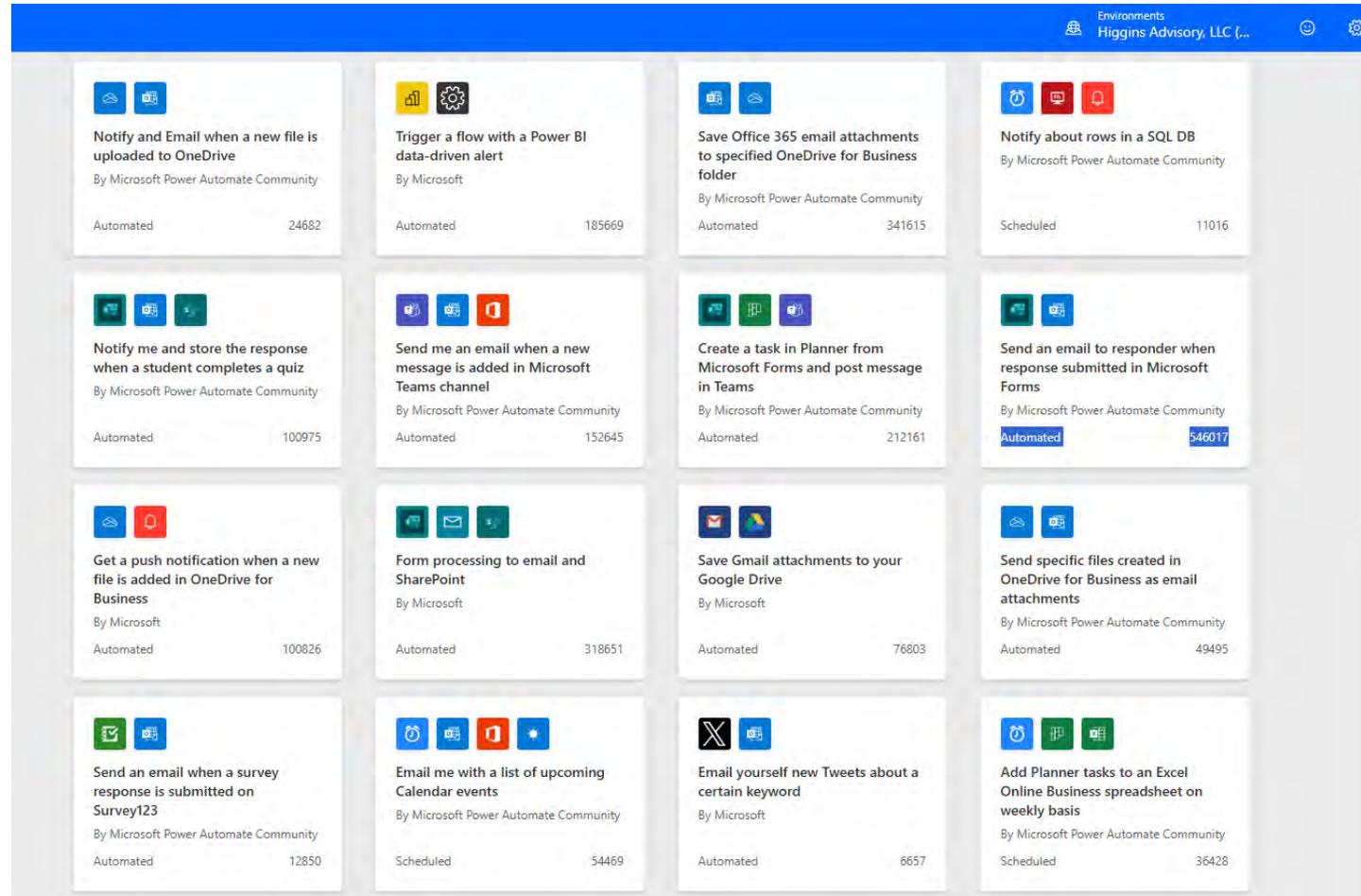
Category  
—

Description  
Enter value here

Receipt  
Add an image

Attachments  
Add attachments

# Power Automate – Automate business processes



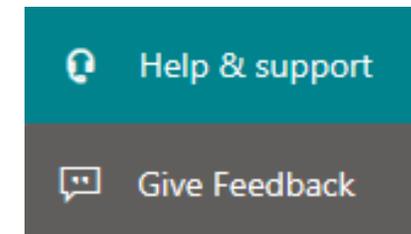
# GETTING HELP



# Where Can I Get Help?

## Implementation & Support Resources:

- Probably not your current IT support!
- [Microsoft sponsored 365 training & support](#)
- [LinkedIn Learning](#)
- Microsoft 365 CPE programs
- Microsoft 365 Admin support
- [Microsoft Support Offering](#)
- Microsoft Business Partners
- [Upwork](#) for Microsoft support



# Microsoft Self-service Support

Help & support

Give Feedback

Help Support History

## How can we help?

Tell us your problem so we can get you the right help and support.

How do I configure to allow guest users in Teams

- How do I enable Teams Guest Access
- Cannot add guest to teams
- How do I allow Skype for Business users to communicate with people with regular Skype
- Guest user is unable to access files in Teams
- How do I configure Teams Direct Routing

Self Help Contact Support Support History

## How can we help?

Tell us your problem so we can get you the right help and support.

How do I configure to allow guest users in Teams

Adding external guest users to Teams is a powerful collaboration tool. Lets learn more about the problem you are having so we can provide the best solution.

Note that in many cases, the best step is to run the support diagnostic we offer which will run comprehensive tests on your configuration and offer the most accurate solution.

**Is your Guest access issue affecting specific guests, or all guest accounts?**

Issue is with all guest accounts

Only happens to specific guests

### More Help

[Guest access in Microsoft Teams - Microsoft Teams](#)  
Guest access in Teams requires configuring other settings in Microsoft 365, including settings in Microsoft Entra ID. Microsoft...

[Turn guest access in Microsoft Teams on or off](#)  
Configure guest access in the Teams admin center. Sign in to the Microsoft Teams admin center. Select Users > Guest access. Set...

[Use guest access and external access to collaborate with p...](#)  
1 Provided that the user has been added as a guest and is signed in with the guest account. 2 Only by email or Session Initiation...

Contact support Legal | Privacy & Cookies

Back

Self Help **Contact Support** Support History

## Get support from an agent

Please include #M365Copilot in the Title if you are contacting us for a Copilot issue.

Title\*

How do I configure to allow guest users in Teams

Description (Stronger descriptions result in quicker resolutions)

Describe your issue in detail

Confirm your number\*

+1

Please enter a valid phone number

Confirm email addresses of authorized contacts\* (Stronger descriptions result in quicker resolutions)

Microsoft will work directly with contacts listed to resolve this service request.

Please enter a valid email address

Consent to the recording of all calls necessary to resolve this service request. This can be changed at any time.\*

--choose one--

Attachments

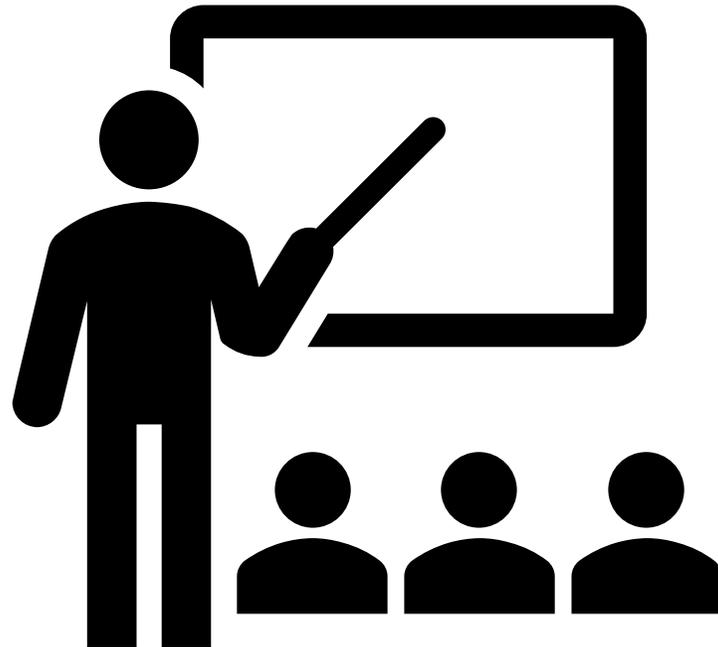
Add a file or screenshot or video

Contact us Legal | Privacy & Cookies

# Microsoft Business Partners

The screenshot displays the Microsoft AppSource Partners interface. At the top, the Microsoft logo and 'AppSource' are visible. A search bar contains the text 'cygnus'. Below the search bar, navigation tabs include 'All', 'Apps', 'Categories', 'Industries', 'Consulting Services', and 'Partners'. The main heading is 'Browse partners' with a subtext 'Filter and sort partners to refine the results.' On the left, a 'Filters' sidebar includes a 'Clear all' link, a 'Search filters' input, a location filter for '48306, Rochester, Michigan, United States (100 mi radius)', and several expandable categories: 'Microsoft Customer Size', 'Partner capabilities', 'Industries', 'Products (1)', 'Solution category', 'Services', and 'Environmental, Social, Govern...'. A 'Microsoft 365' filter is applied. The main area shows 'All results' with a 'Sort by: Best match' dropdown. The results are presented in a grid of partner cards, each featuring a logo, name, location, Microsoft services (e.g., Azure, Teams), and a 'Contact me' button. The visible partners include Red Level, TMR Consulting (Private) Limited, Apex Digital Solutions, Worksgighted LLC, OnPar Technologies, CrucialLogics Inc., Sentinel Technologies Inc., Communication Square, TechHouse, and EEC Services FZ LLC.

# WRAP-UP



# In Summary

- Microsoft 365 is one of the most underutilized software investments in business
- The full value of Microsoft 365 is based in the integration of the apps
- Take advantage of the “low hanging fruit” opportunities throughout the Microsoft 365 ecosystem of apps

# Questions ?



# Thank you!!!

Let's connect on LinkedIn →





**Wisconsin Institute of  
Certified Public Accountants**

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# AI-Powered Excel: Transforming Workflows With Copilot

Developed by Bryan L. Smith, CPA.CITP, CISA

**In Waukesha, WI on December 4, 2025, 10:55am-12:10pm**



## Bryan L. Smith, CPA.CITP, CISA

---

- Owner DataSmithPro, LLC
- Co-founder of CPA Crossings, LLC
- Strategic technology advisor to CPAs w/ 40+ years of experience
- Nationally recognized author and presenter on CPA technology
- Extensive knowledge and experience in proper Excel design techniques as well as helping CPAs build spreadsheets that are accurate
- As a Certified Information Systems Auditor (CISA), spent a considerable amount of time auditing and validating thousands of Excel spreadsheets
- Developed various data analysis and Microsoft Power BI courses and has worked with multiple organizations to train and coach staff on proper data analysis techniques
- Masters of Science in Information Assurance (MSIA)

# Presentation Outline

Click links to navigate to  
specific section ----- >



- [Introduction to Copilot in Excel](#)
- [Copilot to Learn Excel](#)
- [Copilot with Formulas](#)
- [Copilot to Enhance Productivity](#)
- [Copilot to Analyze Data](#)
- [Copilot to Automate Repetitive Tasks](#)
- [Wrap-Up](#)

The slides in this presentation contain many screenshots of Excel and Copilot in order to demonstrate particular features and functionality.

These screenshots were taken during the development of this course. However, Microsoft updates the apps regularly and it becomes difficult to constantly update the screenshots. Therefore, please note that screenshots may vary from your actual version, but the overall functionality remains the same.

Note About Screen Shots

# Introduction to Copilot in Excel





# What is Copilot?

## AI-powered assistant built on OpenAI's GPT models

- Fine-tuned for Microsoft applications

## Uses Natural Language Processing (NLP)

- Interprets user commands and generates contextual responses

## Integrates with Microsoft Ecosystem

- Microsoft 365 (M365) apps (Word, Excel, Outlook, PowerPoint, Teams)
- Windows 11 (system-wide AI-powered assistance)
- Power Automate and Power BI (workflow automation & data visualization)

# How Does Copilot Work?

## Type question or command into prompt

- In MS365 apps
- In Windows App
- In Web at [copilot.microsoft.com](https://copilot.microsoft.com)

## Passes to OpenAI's LLM (Large Language Model)

- Currently GPT-5 (but will upgrade to new model over time)

## LLM process and formulates an answer

- Generates a human-like response
- User asks clarification questions & the conversation continues

# How Does Copilot Help?

Word

- Write documents by suggesting text or summarizing long reports

Excel

- Analyze your data and create charts automatically

Outlook

- Draft emails and summarize long email thread

Windows

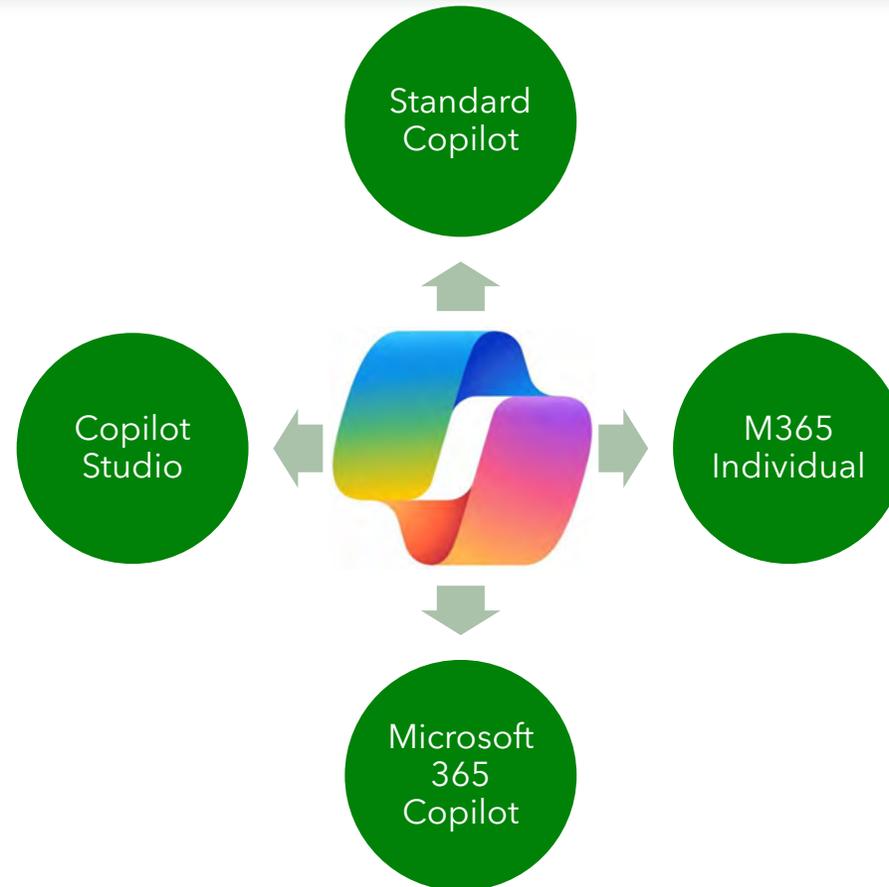
- Answer questions, adjust settings, or help with tasks

Browser

- Answer questions about almost any topic



# Which Copilot Plan is Right for You?





# Standard Copilot

Free

Accessed on the web, in Windows, macOS, & iPadOS

Uses the "chat" concept

Limited integration to M365 apps

Best for the casual user

# Accessing Standard Copilot

The screenshot shows the Microsoft Copilot web interface. The browser address bar displays `https://copilot.microsoft.com/`. The main content area features a large text input field with the placeholder text "Message Copilot" and a "Quick response" dropdown menu. Below this are several buttons for quick actions: "Write a first draft", "Get advice", "Learn something new", "Create an image", "Make a plan", "Brainstorm ideas", "Practice a language", and "Take a quiz". A chat window on the right side of the screen shows a conversation with Copilot, including a "Chat" header, a "Copilot" logo, and several cards for tasks like "Create a summary", "Understand the main points", and "Get calendar info".

Callout boxes provide the following instructions:

- Go to Copilot.com**: Points to the browser address bar.
- OR- Select Copilot icon**: Points to the Copilot icon in the browser's top right corner.
- Type question or select card**: Points to the "Message Copilot" input field.
- Type question or select card**: Points to the "Understand the main points" card in the chat window.



# Microsoft 365 Individual Subscriptions - Copilot Availability

## Personal

- Available in desktop apps
- Higher usage limits than free

## Family

- Available in desktop apps only for the subscription owner
- Higher usage limits than free

## Premium

- Available in desktop apps only for the subscription owner
- Higher usage limits than Personal and Family
- Access to Copilot features currently exclusive to Premium subscribers



# Microsoft 365 Copilot

License for \$30/user/month, paid yearly

Everything in Copilot Premium

Requires a M365 Business Standard or Premium license

Integration with desktop versions of M365 apps

Collaboration within your organization

Best for business users

# Accessing Copilot in Desktop Version of M365

The screenshot shows the Microsoft Excel interface with the Copilot sidebar open. The Copilot icon in the ribbon is circled in red. A green callout points to it with the text "Select Copilot icon". Another green callout points to the Copilot sidebar with the text "Type question or select card". The spreadsheet contains a table of items and their prices, and a list of questions for Copilot to answer.

Item	Quantity	Unit Price	Total Sales
Laptop	5	1000	
Tablet	10	500	
Smartphone	15	700	
Monitor	20	200	
Keyboard	25	50	
Mouse	12	30	
Printer	30	300	
Desk	18	150	
Chair	22	100	
Headphones	27	80	
Router	8	120	
USB Drive	14	25	
External HDD	10	150	
Webcam	9	90	
Gaming Mouse	16	60	

Questions asked during Automatically Generate Formulas section:

1. Use Copilot icon > Suggest a Formula Column
2. Generate a formula to calculate total sales by multiplying quantity and unit price
3. Create a total for the total sales column

Generate a formula to calculate total sales by multiplying quantity and unit price

Item	Quantity	Unit Price	Total Sales
Laptop	5	1000	
Tablet	10	500	
Smartphone	15	700	
Monitor	20	200	
Keyboard	25	50	
Mouse	12	30	
Printer	30	300	

# Accessing Copilot in Web Version of M365

Access M365 Web app & open document

https://datasmithpro-my.sharepoint.com/...  
Oxls119w2\_Pm01\_CopilotInExcel\_v2503\_1

File Home Insert Share Page Layout Formulas Data Review

Clean Data with Copilot Copilot has 2 suggestions to clean your data in sheet CleanData

Questions asked during Copilot to Learn Excel section:

Product	Price	Stock
Apple	1	100
Banana	0.5	150
Orange	0.75	200
Mango	1.5	50

Chat

Copilot M365

Create a summary  
Summarize the main points on this page.

Understand the main points  
List key points from file

Get calendar info  
When's my next meeting with person ?

View prompts

Message Copilot

Select Copilot icon

Type question or select card



# Copilot Studio

License for \$200/month

Create & build your own, unique Copilot

- A low-code, end-to-end conversational AI platform
- Allows you to build and customize “copilots”

Customize Copilot for M365 (Copilot for Microsoft 365 required)

Access generative AI plugins to enhance copilot outputs

Best for those who want a custom Copilot experience

# Best Practices for Using Copilot in Excel

Be VERY specific when asking your questions

NEVER trust the response

- Use it for training
- Be prepared to edit the response
- Validate EVERY response to confirm it is correct
- If response isn't correct continue clarifying chats

I have found Copilot works GREAT for MS apps

- Not so good for general questions (ChatGPT is WAY better)

# Getting Started Using Copilot in Excel

## Autosave ON

- Which means file must be saved to OneDrive or SharePoint

## Use Excel Tables or “Table-Like Range”

## Open the chat pane on Home tab

- Also, quick menu by clicking Copilot icon on selected cell
- Select a card or type a question

# Accessing Copilot in Excel

**Turn On Autosave**

**Select Copilot to open chat pane**

**Type question here**

**Select Copilot icon on cell**

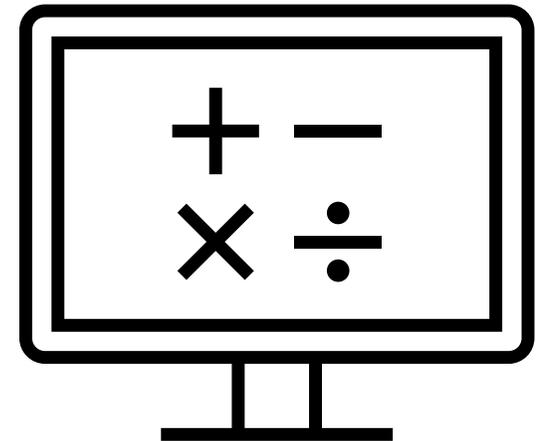
**Suggested Copilot help**

**Use to help Copilot get better**

F	G	H	I	J	K
<b>Total</b>					
\$2,309.23					
\$545.02					
\$59.85					
\$12,216.75					
\$1,749.50					
\$4,348.50					
\$2,363.90					
\$36,883.22					
\$30,883.87					
0					
4					
8					

- Get Deeper Analysis Results using Python
- fx Explain this Formula
- fx Suggest a Formula Column
- Suggest Conditional Formatting
- Summarize using PivotTable or Chart
- Teach Me Something About Excel
- Chat with Copilot
- Hide until I Reopen this Document

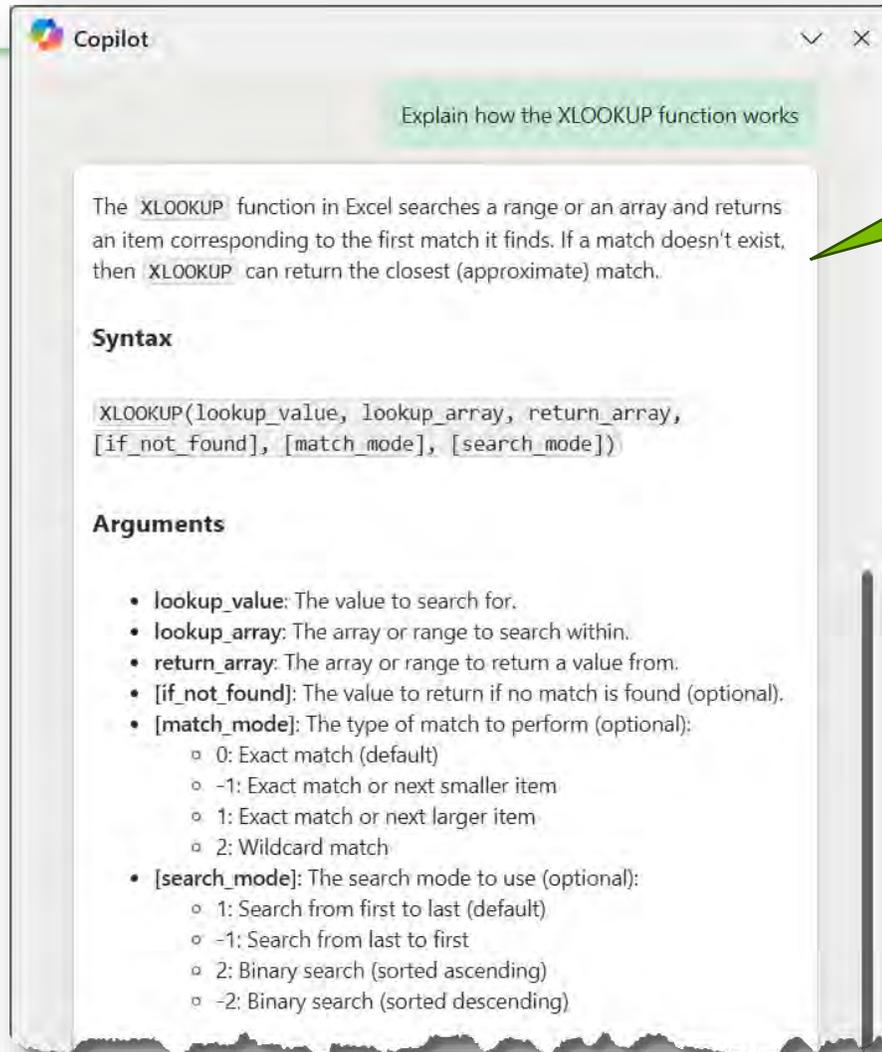
# Copilot to Learn Excel



# Use Copilot in Excel to Learn Excel

1. Explain a Function
2. Create Data to Use With a Formula
3. Explain How to Write a Formula
4. Ask for Keyboard Shortcuts
5. Explain a Concept (Absolute/Relative Reference)
6. Explain a Feature (PivotTable)

# 1. Explain a Function



Copilot

Explain how the XLOOKUP function works

The `XLOOKUP` function in Excel searches a range or an array and returns an item corresponding to the first match it finds. If a match doesn't exist, then `XLOOKUP` can return the closest (approximate) match.

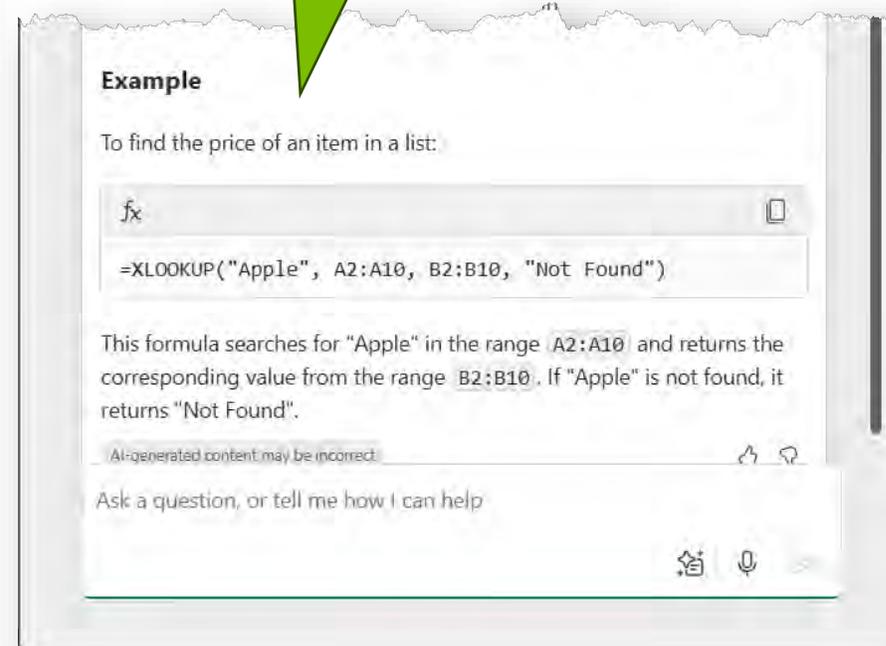
**Syntax**

```
XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])
```

**Arguments**

- **lookup\_value**: The value to search for.
- **lookup\_array**: The array or range to search within.
- **return\_array**: The array or range to return a value from.
- **[if\_not\_found]**: The value to return if no match is found (optional).
- **[match\_mode]**: The type of match to perform (optional):
  - 0: Exact match (default)
  - -1: Exact match or next smaller item
  - 1: Exact match or next larger item
  - 2: Wildcard match
- **[search\_mode]**: The search mode to use (optional):
  - 1: Search from first to last (default)
  - -1: Search from last to first
  - 2: Binary search (sorted ascending)
  - -2: Binary search (sorted descending)

Very Microsoft  
"Help-like" response



**Example**

To find the price of an item in a list:

```
fx  
=XLOOKUP("Apple", A2:A10, B2:B10, "Not Found")
```

This formula searches for "Apple" in the range `A2:A10` and returns the corresponding value from the range `B2:B10`. If "Apple" is not found, it returns "Not Found".

AI-generated content may be incorrect.

Ask a question, or tell me how I can help

# Copilot vs. ChatGPT for General Questions

## Copilot

Can you provide key points about how XLOOKUP works?

Sure, here are the key points about how the XLOOKUP function works:

- **Purpose:** Searches a range or array and returns an item corresponding to the first match it finds.
- **Syntax:**  
`XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])`

**Arguments:**

- **lookup\_value:** The value to search for.
- **lookup\_array:** The array or range to search within.
- **return\_array:** The array or range to return a value from.
- **[if\_not\_found]:** The value to return if no match is found (optional).
- **[match\_mode]:** The type of match to perform (optional):
  - 0: Exact match (default)
  - -1: Exact match or next smaller item
  - 1: Exact match or next larger item
  - 2: Wildcard match
- **[search\_mode]:** The search mode to use (optional):
  - 1: Search from first to last (default)
  - -1: Search from last to first
  - 2: Binary search (sorted ascending)
  - -2: Binary search (sorted descending)

• **Example:**

```
.fx  
=XLOOKUP("Apple", A2:A10, B2:B10, "Not Found")
```

This formula searches for "Apple" in the range A2:A10 and returns the corresponding value from the range B2:B10. If "Apple" is not found, it returns "Not Found".

Still "help-like"

Ask clarification question

## ChatGPT

Can you provide key points about how XLOOKUP works?

### Key Points About How XLOOKUP Works

1. **Basic Functionality**
  - Searches for a **lookup value** in a specified range (**lookup\_array**) and returns a corresponding value from another range (**return\_array**).
2. **Flexible Lookup Direction**
  - Works for **both vertical and horizontal lookups**, unlike VLOOKUP and HLOOKUP.
  - Can search **left-to-right** or **right-to-left** (unlike VLOOKUP).
3. **Exact Match by Default**
  - No need to specify an exact match, unlike VLOOKUP, which defaults to an approximate match.
4. **Handles Missing Values**
  - The `[if_not_found]` argument allows returning a custom message instead of `#N/A`.
5. **Supports Approximate Matches**
  - Can find the next **smaller (-1)** or **larger (1)** match when exact values are unavailable.
6. **Wildcard Matching Available**
  - Allows searches using `*` (for any characters) and `?` (for a single character).
7. **Searches in Any Order**
  - Can search **top-to-bottom (1)** or **bottom-to-top (-1)**.
  - Can perform **binary search (2 or -2)** if data is sorted.

More natural language

# 2. Create Data to Use With a Formula

Copilot

To demonstrate how the XLOOKUP function works, follow these steps:

1. Add Business Data:
  - o Create a new worksheet.

Ask to add data

Following business data:

Price	Stock
1.00	100
0.50	150
0.75	200
1.50	50

	A	B	C	D	E
1	Product	Price	Stock		
2	Apple	1	100		0.5
3	Banana	0.5	150		200
4	Orange	0.75	200		
5	Mango	1.5	50		

### What you can do next

#### Manual Option

You can manually add a worksheet and copy the following sample data and formulas:

#### Step 1: Add a new worksheet

- Right-click any sheet tab, choose "Insert," and select "Worksheet."
- Rename it to XLOOKUP\_Demo.

#### Step 2: Enter sample business data

SKU	Product
P-1001	Laptop 14"
P-1002	Laptop 16"
P-2001	Monitor 27"
P-2002	Monitor 34"

+ Insert to new sheet

#### Step 3: Try these XLOOKUP formulas

- Find price by SKU:  
 =XLOOKUP("P-2001", A2:A9, D2:D9, "SKU Not Found")
- Find product name by SKU:  
 =XLOOKUP("P-2001", A2:A9, B2:B9, "SKU Not Found")
- Find stock by product name:  
 =XLOOKUP("Monitor 34" UW", B2:B9, E2:E9, "Product Not Found")

# Try Other Functions

SWITCH

LET

IFS

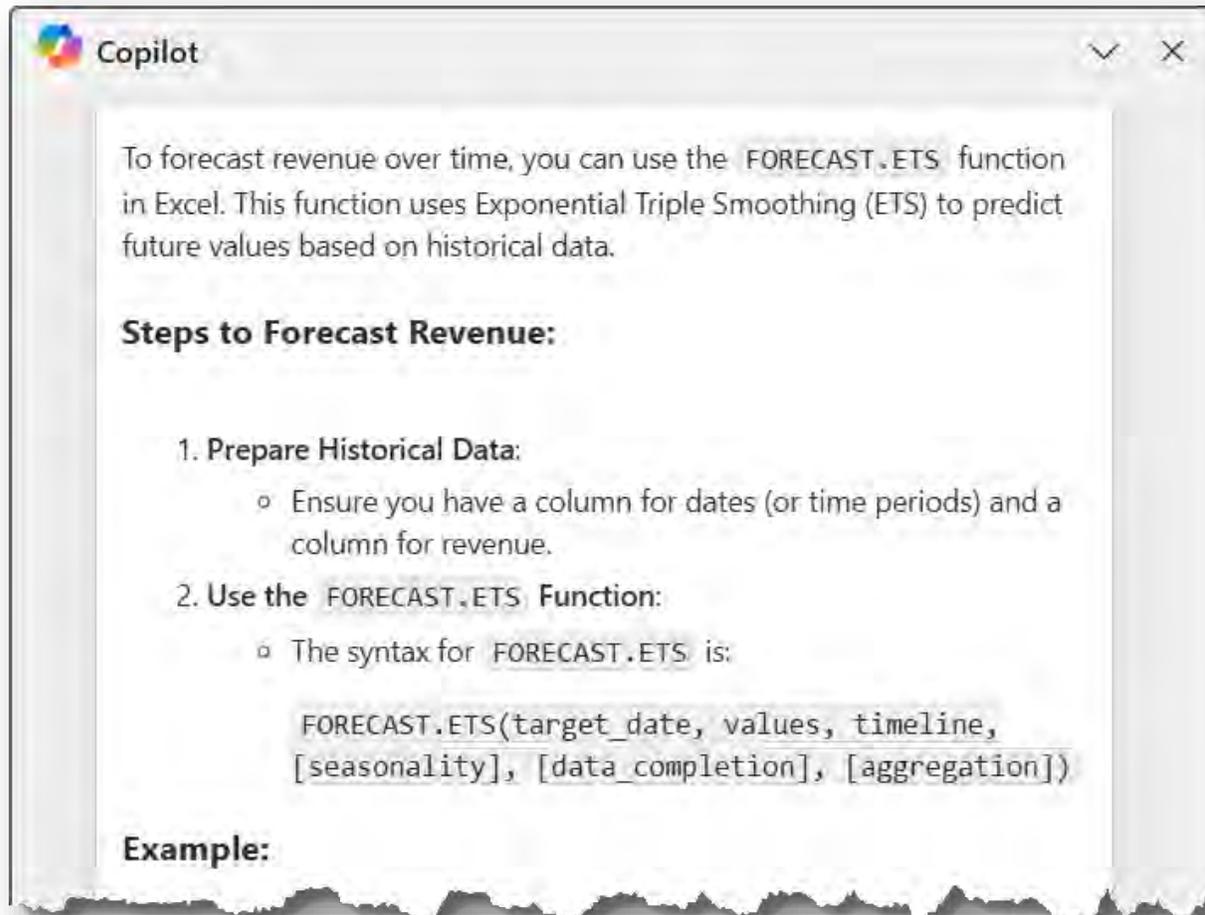
SUMIF / SUMIFS

FILTER

UNIQUE

# 3. Explain How to Write a Formula

How can I write a formula that forecasts revenue over time



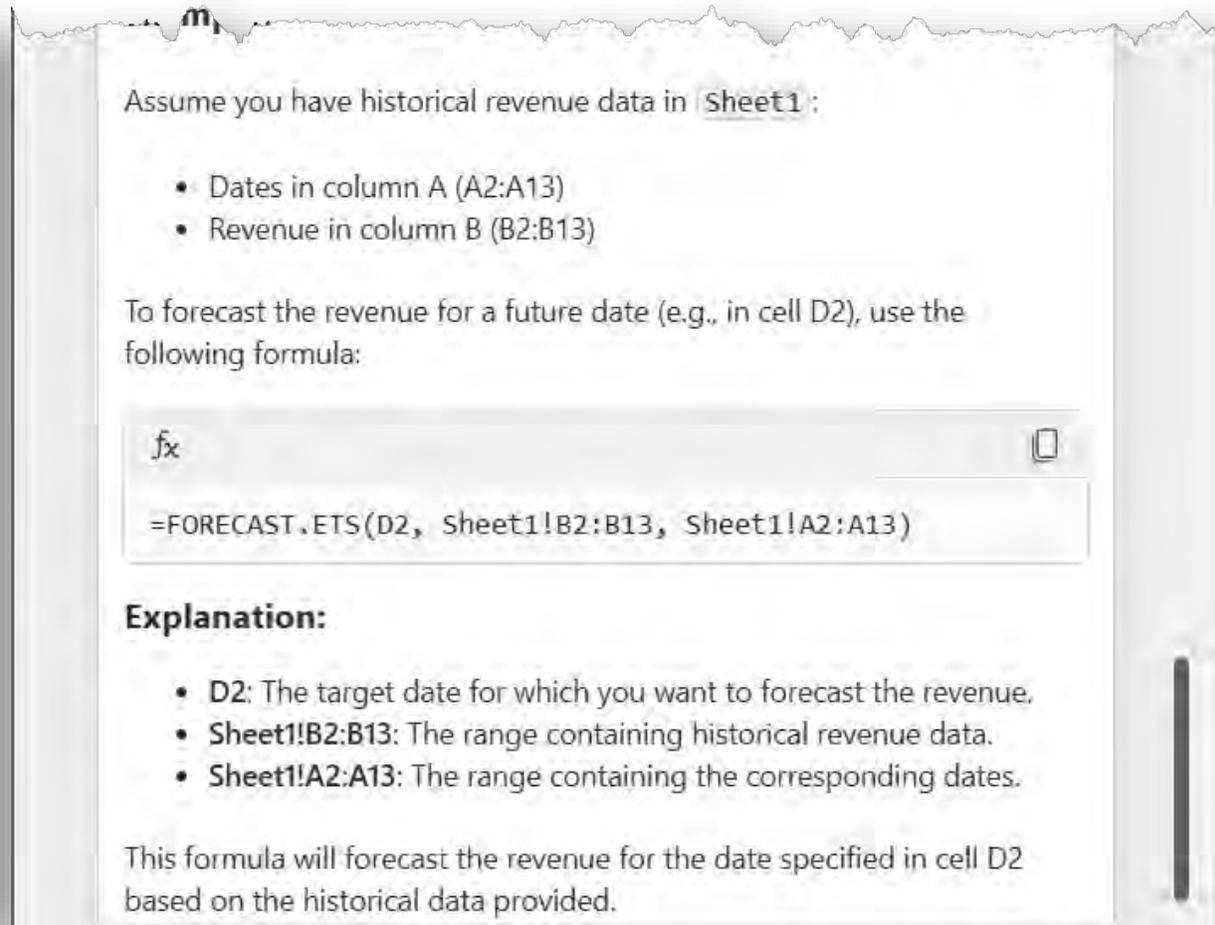
**Copilot**

To forecast revenue over time, you can use the `FORECAST.ETS` function in Excel. This function uses Exponential Triple Smoothing (ETS) to predict future values based on historical data.

**Steps to Forecast Revenue:**

- 1. Prepare Historical Data:**
  - Ensure you have a column for dates (or time periods) and a column for revenue.
- 2. Use the `FORECAST.ETS` Function:**
  - The syntax for `FORECAST.ETS` is:  
`FORECAST.ETS(target_date, values, timeline, [seasonality], [data_completion], [aggregation])`

**Example:**



Assume you have historical revenue data in `Sheet1`:

- Dates in column A (`A2:A13`)
- Revenue in column B (`B2:B13`)

To forecast the revenue for a future date (e.g., in cell `D2`), use the following formula:

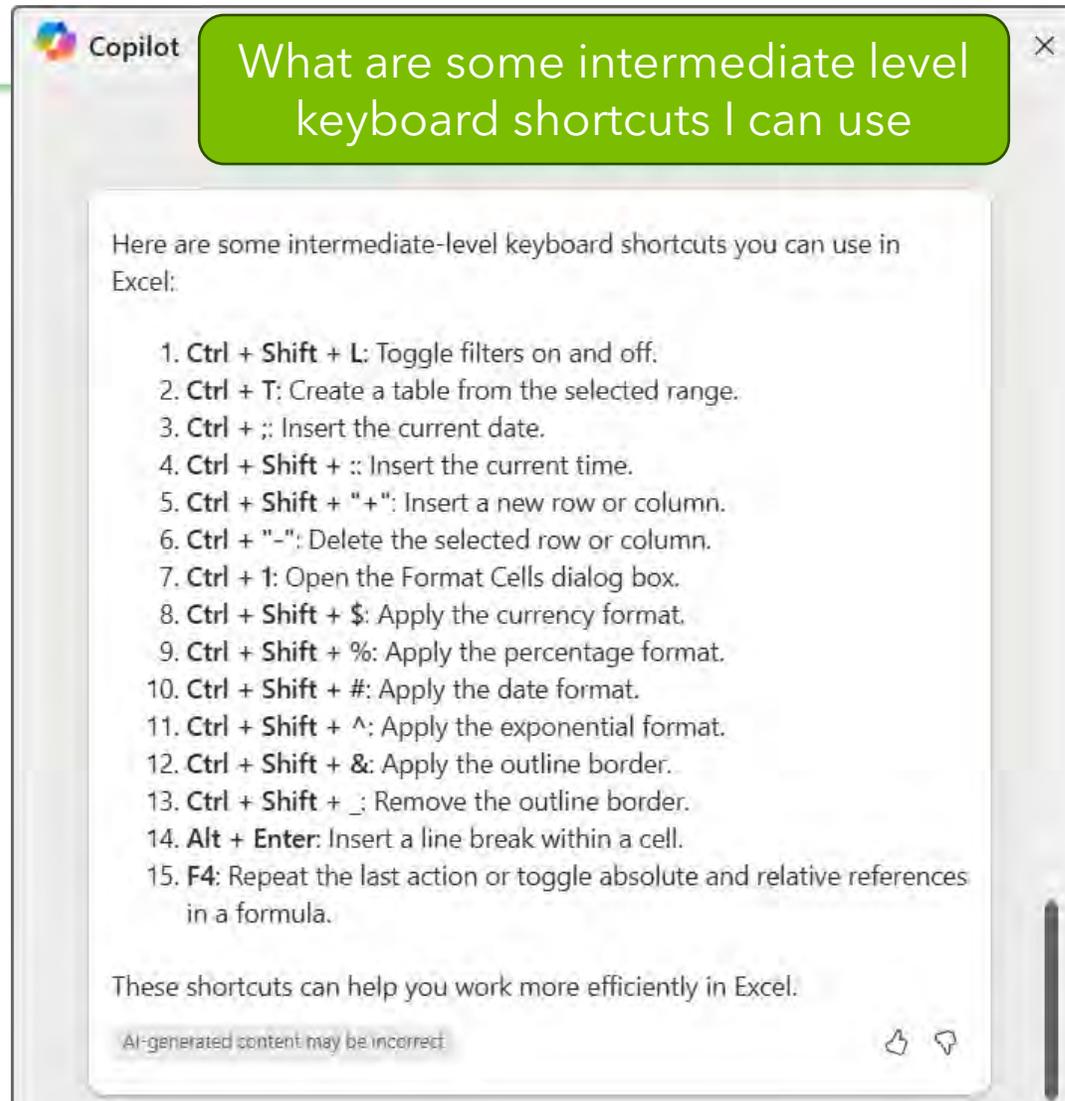
```
=FORECAST.ETS(D2, Sheet1!B2:B13, Sheet1!A2:A13)
```

**Explanation:**

- `D2`: The target date for which you want to forecast the revenue.
- `Sheet1!B2:B13`: The range containing historical revenue data.
- `Sheet1!A2:A13`: The range containing the corresponding dates.

This formula will forecast the revenue for the date specified in cell `D2` based on the historical data provided.

# 4. Ask for Keyboard Shortcuts



Copilot

What are some intermediate level keyboard shortcuts I can use

Here are some intermediate-level keyboard shortcuts you can use in Excel:

1. **Ctrl + Shift + L**: Toggle filters on and off.
2. **Ctrl + T**: Create a table from the selected range.
3. **Ctrl + ;**: Insert the current date.
4. **Ctrl + Shift + ;**: Insert the current time.
5. **Ctrl + Shift + "+"**: Insert a new row or column.
6. **Ctrl + "-"**: Delete the selected row or column.
7. **Ctrl + 1**: Open the Format Cells dialog box.
8. **Ctrl + Shift + \$**: Apply the currency format.
9. **Ctrl + Shift + %**: Apply the percentage format.
10. **Ctrl + Shift + #**: Apply the date format.
11. **Ctrl + Shift + ^**: Apply the exponential format.
12. **Ctrl + Shift + &**: Apply the outline border.
13. **Ctrl + Shift + \_**: Remove the outline border.
14. **Alt + Enter**: Insert a line break within a cell.
15. **F4**: Repeat the last action or toggle absolute and relative references in a formula.

These shortcuts can help you work more efficiently in Excel.

AI-generated content may be incorrect

👍 👎

# 5. Explain a Concept (Absolute/Relative Reference)

What is the difference between absolute and relative references

In Excel, the difference between absolute and relative references lies in how the cell references adjust when you copy a formula to another cell.

## Relative References

- **Definition:** Adjust based on the relative position of the cell where the formula is copied.
- **Example:** If you have a formula `=A1+B1` in cell C1 and you copy it to cell C2, it will adjust to `=A2+B2`.

## Absolute References

- **Definition:** Remain constant, regardless of where the formula is copied.
- **Example:** If you have a formula `=$A$1+$B$1` in cell C1 and you copy it to cell C2, it will remain `=$A$1+$B$1`.

## Mixed References

- **Definition:** Combine absolute and relative references.
- **Example:** If you have a formula `=$A1+B$1` in cell C1 and you copy it to cell C2, it will adjust to `=$A2+B$1`.

## Usage

- **Relative:** Use when you want the formula to adjust based on its new location.
- **Absolute:** Use when you want to lock a specific cell reference in the formula.

You can toggle between these reference types by pressing `F4` while editing a formula.

AI-generated content may be incorrect.



# 6. Explain a Feature (PivotTable)

## What is a PivotTable and How can I use it

A PivotTable is a powerful tool in Excel that allows you to summarize, analyze, explore, and present large amounts of data. It enables you to transform data into meaningful insights by grouping and aggregating data based on different criteria.

### How to Create and Use a PivotTable:

#### 1. Select Your Data:

- Ensure your data is organized in a table with headers.

#### 2. Insert a PivotTable:

- Go to the `Insert` tab on the Ribbon.
- Click on `PivotTable`.
- In the `Create PivotTable` dialog box, select the range of your data and choose where you want the PivotTable to be placed (new worksheet or existing worksheet).

#### 3. Build Your PivotTable:

- In the PivotTable Field List, drag fields to the following areas:
  - **Rows:** Fields you want to display as rows.
  - **Columns:** Fields you want to display as columns.
  - **Values:** Fields you want to aggregate (e.g., sum, average).
  - **Filters:** Fields you want to use to filter the data.

### Example:

Assume you have the following data in `Table1`:

Product	Price	Stock
Apple	1.00	100
Banana	0.50	150
Orange	0.75	200
Mango	1.50	50

To create a PivotTable that summarizes the total stock for each product:

#### 1. Select the Data:

- Select the range `Table1`.

#### 2. Insert the PivotTable:

- Go to `Insert` > `PivotTable`.
- Select `Table1` as the data range.
- Choose to place the PivotTable in a new worksheet.

#### 3. Build the PivotTable:

- Drag the `Product` field to the `Rows` area.
- Drag the `Stock` field to the `Values` area.

This will create a PivotTable that shows the total stock for each product. You can further customize the PivotTable by adding more fields, changing the aggregation function, and applying filters.

# The List is *Almost* Infinite

How can I add a Keyboard Shortcut to the Quick Access toolbar?

What are Themes and how do you use them?

Explain how to use the currencies data type

# Review Chat History or Start New Chat

The image shows a screenshot of the M365 Copilot interface. On the left, a navigation panel is open, displaying a list of chat history items. A red box highlights the 'All conversations' link at the bottom of this list. A red arrow points from this link to the right-hand side of the image, which shows a detailed view of the chat history. This view includes a search bar at the top, followed by filter buttons for 'All', 'Agents', and 'Pages'. Below these are several chat entries, each with a title and a snippet of the conversation. A red arrow points from the 'All conversations' link to the search bar area. Green callout boxes provide instructions: 'Open navigation panel' points to the hamburger menu icon; 'New Chat' points to the chat icon; 'Displays ALL Copilot chat history' points to the chat history list; 'Older chats with search' points to the search bar; and 'Hover over to delete' points to a chat entry.

New Chat

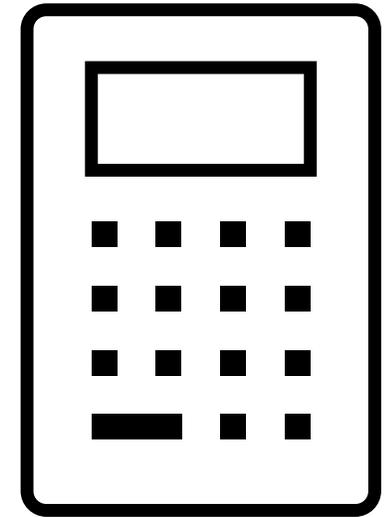
Open navigation panel

Displays ALL Copilot chat history

Older chats with search

Hover over to delete

# Copilot with Formulas



# Use Copilot in Excel with Formulas

1. Automatically Generate Formulas
2. Create Complex Formulas
3. Explain a Formula
4. Debug a Formula

# Using Copilot App Skills for Just this Workbook

The image illustrates the Copilot interface in Excel, highlighting the 'App Skills' feature. A red arrow points from the 'App Skills' icon in the top-left corner to the 'App Skills' menu. A green callout bubble labeled 'New Chat' points to the '+' icon in the Copilot header. Another green callout bubble labeled 'App Skills History' points to the 'Chat history' link in the Copilot menu. A third red arrow points from the 'Chat history' link to a detailed view of the chat history, which shows a list of chat entries with a 'Delete all Copilot history' button at the bottom.

**New Chat**

**App Skills History**

**Copilot**  
Hello Bryan!  
Here are some ideas to get you started.

- Suggest a formula column
- Summarize using PivotTables or charts
- Give a unique insight using Python
- Highlight all cells with [incomplete in red]
- Create a table for my recent emails about [sales targets]
- How do I sum values based on [criteria]

Show data insights  
Show a suggestion for a formula column  
Suggest conditional formatting

+ Message Copilot

**Copilot Chats**

- Create a total for the total sale... 11/14/2025

Delete all Copilot history

# 1. Automatically Generate Formulas

	A	B	C	D	E	F	G
1	Item	Quantity	Unit Price	!Sales			Questions ask
2	Laptop	5	1000				
3	Tablet	10	500				
4	Smartphone	15	700				
5	Monitor	20	200				
6	Keyboard	25	50				
7	Mouse	12	30				
8	Printer	30	300				
9	Desk	18	150				
10	Chair	22	100				
11	Headphones	27	80				
12	Router	8	120				
13	USB Drive	14	25				
14	External HDD	10	150				
15	Webcam	9	90				
16	Gaming Mouse	16	60				

Looking at A1:C16, here's 1 formula column to review and insert in Column D:

**Total Price**

Calculates the total price for each item by multiplying the quantity by the unit price.

fx

`=B2*$C2`

Show explanation

+ Insert column

Give me another column suggestion

AI-generated content may be incorrect

Hover over to preview

	A	B	C	D
1	Item	Quantity	Unit Price	Total Price
2	Laptop	5	1000	\$5,000.00
3	Tablet	10	500	\$5,000.00
4	Smartphone	15	700	\$10,500.00
5	Monitor	20	200	\$4,000.00
6	Keyboard	25	50	\$1,250.00
7	Mouse	12	30	\$360.00
8	Printer	30	300	\$9,000.00
9	Desk	18	150	\$2,700.00
10	Chair	22	100	\$2,200.00
11	Headphones	27	80	\$2,160.00
12	Router	8	120	\$960.00
13	USB Drive	14	25	\$350.00
14	External HDD	10	150	\$1,500.00
15	Webcam	9	90	\$810.00
16	Gaming Mouse	16	60	\$960.00

fx

`=PRODUCT($B21, $C21)`

Show explanation

	Total Price	Total Sales
...		

Pushes existing columns over

# Create Total Row

Create a total for the total sales column

Total sales: \$46,750.00

Looking at A20:D35, here's 1 formula to review and insert in row 36:

fx

=SUM(D\$21:D\$35)

Show explanation

Calculates the total sales for all items in the table.

	A	D
20	Item	Total Sales
21	Laptop	\$5,000.00
22	Tablet	\$5,000.00
23	Smartphone	\$10,500.00
...	...	...
36	Total	\$46,750.00

+ Insert row

External HDD	10	150	\$1,500.00
Webcam	9	90	\$810.00
Gaming Mouse	16	60	\$960.00
<b>Total</b>			<b>\$46,750.00</b>

# 2. Create Complex Formulas: Simple Split Text

Customer Name
John Doe
Alice Smith
Emma Johnson
Harry White

Suggest a Formula Column

Looking at **A2:A6**, here's 1 formula column to review and insert in **Column B**:

**First name**

Extracts the first name of each customer by taking the text before the first space in their full name.

```
fx  
=TEXTBEFORE([@[Customer Name]], " ")
```

Show explanation

	B
2	First name
3	John
4	Alice
5	Emma
6	Harry

+ Insert column

Customer Name	First name	Last name
John Doe	John	Doe
Alice Smith	Alice	Smith
Emma Johnson	Emma	Johnson
Harry White	Harry	White

Now create the last name column

Looking at **A2:B6**, here's 1 formula column to review and insert in **Column C**:

**Last name**

Extracts the last name of each customer by taking the text that appears after the first space in their full name.

```
fx  
=TEXTAFTER([@[Customer Name]], " ")
```

Show explanation

# 2. Create Complex Formulas: Complex Split Text #1

Customer Name
John J. Doe
Alice M. Smith
Emma M. Johnson
Harry White

Suggest a Formula Column

Looking at A9:A13, here's 1 formula column to review and insert in Column B:

**First name**

Extracts the first name of each customer by taking the text before the first space in their full name.

```
fx  
=TEXTBEFORE([@[Customer Name]], " ")  
Show explanation
```

	B
9	First name
10	John
11	Alice
12	Emma
13	Harry

+ Insert column

Create a middle initial column

Looking at A9:B13, here's 1 formula column to review and insert in Column C:

**Middle initial**

Extracts the middle initial from the "Customer Name" by finding the first character after the first space. If no middle initial is found, it returns an empty string.

```
fx  
=IFERROR(LEFT(TEXTAFTER([@[Customer Name]], " "), 1), "")  
Show explanation
```

	C
9	Middle initial
10	J
11	M
12	M
13	W

Some Customer Name do not have a middle initial, so it should be blank

Looking at A9:B13, here's 1 formula column to review and insert in Column C:

**Middle Initial**

Extracts the middle initial from the "Customer Name" by splitting the name into parts and taking the first letter of the second part if it exists. If there is no middle initial, it leaves the cell blank.

```
fx  
=LET(parts, TEXTSPLIT([@[Customer Name]], " ", TRUE),  
IF(COLUMNS(parts) > 2,  
LEFT(TRIMEX(parts, 1, 2), 1))  
Show explanation
```

	C
9	Middle Initial
10	J
11	M
12	M
13	

## 2. Create Complex Formulas: Complex Split Text #2

Customer Name
John James Doe
Alice M. Smith
Emma M. Johnson
Harry

Split the Customer Name column into First, Middle and Last Name, where middle name may be a full name or a middle initial with a period or a middle initial without a period or no middle initial. Plus some names do not have a middle initial or last name.

Customer Name	First Name	Middle Name	Last Name
John James Doe	John	James	Doe
Alice M. Smith	Alice	M.	Smith
Emma M Johnson	Emma	M	Johnson
Harry	Harry		

## 2. Create Complex Formulas: Complex Split Text #3

Customer Name
John James Doe, Jr.
Alice M. Smith
Emma M Johnson
Harry

Split the Customer Name column into First, Middle, Last Name and suffix, where middle name may be a full name or a middle initial with a period or a middle initial without a period or no middle initial. Plus some names do not have a middle initial or last name and some names have a suffix which is after the comma.

Customer Name	First Name	Middle Name	Last Name	Suffix
John James Doe, Jr.	John	James	Doe	Jr.
Alice M. Smith	Alice	M.	Smith	
Emma M Johnson	Emma	M	Johnson	
Harry	Harry			

# 2. Create Complex Formulas: Find Top 5 Highest Sales

Item	Quantity	Unit Price	Total Sales
Laptop	5	\$1,000	\$5,000
Tablet	10	\$500	\$5,000
Smartphor	15	\$700	\$10,500
Monitor	20	\$200	\$4,000
Keyboard	25	\$50	\$1,250
Mouse	12	\$30	\$360
Printer	30	\$300	\$9,000
Desk	18	\$150	\$2,700
Chair	22	\$100	\$2,200
Headphon	27	\$80	\$2,160
Router	8	\$120	\$960
USB Drive	14	\$25	\$350
External HI	10	\$150	\$1,500
Webcam	9	\$90	\$810
Gaming Mc	16	\$60	\$960

Find the top 5 highest sales

I analyzed data in A2:D17, and here's what I found:

**Top 5 in 'Item' by 'Total Sales'**

Item	Sum of Total Sales
Smartphone	\$10,500
Printer	\$9,000
Laptop	\$5,000
Tablet	\$5,000
Monitor	\$4,000
<b>Grand Total</b>	<b>\$33,500</b>

+ Add to a new sheet

AI-generated content may be incorrect

Creates a PivotTable

Item	Max of Total Sales
Smartphone	\$10,500
Printer	\$9,000
Laptop	\$5,000
Tablet	\$5,000
Monitor	\$4,000
<b>Grand Total</b>	<b>\$10,500</b>

# 2. Create Complex Formulas: Find Top 5 Highest Sales with Input Field

Find the top "X" highest sales where there is an input cell for X, add the results starting at cell G11 and input cell at F11

To find the top "X" highest sales, where "X" is specified in cell F11, and display the results starting at cell G11, you can use the following formula:

- 1. In cell G11, enter the following formula to get the top "X" highest sales:

```
fx
=LET(
  sales, Table13[Total Sales],
  items, Table13[Item],
  x, F11,
  sortedSales, SORTBY(sales, sales
```

This formula will sort the sales in descending order and then extract the top "X" sales along with their corresponding items. The results will be displayed starting at cell G11.

AI-generated content may be incorrect

Sometimes the formula is incorrect and errors

Had to keep asking questions to get this corrected

### Copilot Final Results (after initial question and 8 clarifying questions):

```
=LET(
  sortedData, SORTBY(Table133, Table133[Total Sales], -1),
  topX, F11,
  FILTER(sortedData, SEQUENCE(ROWS(sortedData)) <= topX)
)
```

5	Smartpho	15	700	10500
	Printer	30	300	9000
	Laptop	5	1000	5000
	Tablet	10	500	5000
	Monitor	20	200	4000

# 3. Explain a Formula

Explain the formula in E2

I don't have access to the specific formula in cell E2. Could you please provide the formula so I can explain it to you?

AI-generated content may be incorrect



Explain the formula  
`=XLOOKUP(D2, A2:A6, B2:B6, "Product Not Found", 0, 1)`

Simple

**Copilot**

The formula `=XLOOKUP(D2, A2:A6, B2:B6, "Product Not Found", 0, 1)` searches for a value in a specified range and returns a corresponding value from another range. Here's a breakdown of what it does:

- `D2`: The value to search for.
- `A2:A6`: The range to search within.
- `B2:B6`: The range to return a value from if the search value is found.
- `"Product Not Found"`: The value to return if the search value is not found.
- `0`: Specifies an exact match is required.
- `1`: Specifies the search mode, where `1` means search from first to last.

In summary, this formula looks for the value in cell `D2` within the range `A2:A6`. If it finds an exact match, it returns the corresponding value from the range `B2:B6`. If no match is found, it returns "Product Not Found". The search is conducted from the first to the last item in the range.

**Copilot**

Explain what this Excel formula is doing `=IF(ROWS(F11:F22)-SUMPRODUCT(--ISFORMULA(F11:F22))<>0,"Missing Formula","OK")`

The formula `=IF(ROWS(F11:F22)-SUMPRODUCT(--ISFORMULA(F11:F22))<>0,"Missing Formula","OK")` checks if all cells in the range `F11:F22` contain formulas. Here's a breakdown of what it does:

- `ROWS(F11:F22)`: Counts the number of rows in the range `F11:F22`, which is 12.
- `ISFORMULA(F11:F22)`: Checks each cell in the range `F11:F22` to see if it contains a formula, returning an array of TRUE or FALSE values.
- `--ISFORMULA(F11:F22)`: Converts the TRUE or FALSE values to 1 or 0, respectively.

Complex

- `SUMPRODUCT(--ISFORMULA(F11:F22))`: Sums the array of 1s and 0s, giving the count of cells that contain formulas.
- `ROWS(F11:F22) - SUMPRODUCT(--ISFORMULA(F11:F22))`: Calculates the difference between the total number of rows and the number of cells containing formulas.
- `IF(ROWS(F11:F22) - SUMPRODUCT(--ISFORMULA(F11:F22)) <> 0, "Missing Formula", "OK")`: Checks if the difference is not equal to 0. If it is not 0, it means there are cells without formulas, and it returns "Missing Formula". If it is 0, it means all cells contain formulas, and it returns "OK".

# 4. Debug a Formula

Copilot

What is wrong with this Excel formula =XLOOKUP(D4, A2:A6, B3:B5, "Product Not Found", 0, 1)

The issue with the formula =XLOOKUP(D4, A2:A6, B3:B5, "Product Not Found", 0, 1) is that the lookup array A2:A6 and the return array B3:B5 are not of the same size. The lookup array has 5 rows, while the return array has only 3 rows. Both arrays must have the same number of rows for the XLOOKUP function to work correctly.

Here is the corrected formula assuming the return array should also be B2:B6:

```
fx
=XLOOKUP(D4, A2:A6, B2:B6, "Product Not Found", 0, 1)
```

Arrays MUST be of the SAME size and they are not

Suggests solution

Copilot

What is wrong with this Excel formula =XLOOKUP(D6, A2:A6)

The formula =XLOOKUP(D6, A2:A6) is incomplete. The XLOOKUP function requires at least three arguments: the lookup value, the lookup array, and the return array.

Here is the correct syntax for the XLOOKUP function:

```
XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])
```

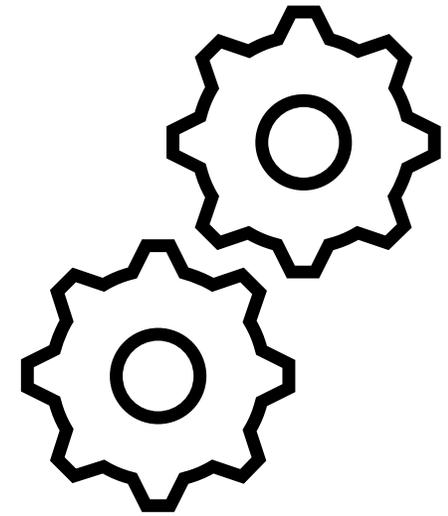
To fix the formula, you need to specify the return array. For example, if you want to return values from the range B2:B6, the corrected formula would be:

```
fx
=XLOOKUP(D6, A2:A6, B2:B6)
```

Formula is incomplete

Suggests solution

# Copilot to Enhance Productivity



# Use Copilot in Excel to Enhance Productivity

1. Conditional Formatting
2. Clean and Format Data

# 1. Conditional Formatting #1

The screenshot shows the Copilot chat interface in Excel. The chat history includes a prompt: "Show a suggestion for a formula column" and a response: "Suggest conditional formatting". A red box highlights the "Suggest conditional formatting" button. A green callout bubble points to the suggestions list with the text: "If you like one of the suggestions, click it".

The suggestions list includes:

- Highlight cells in 'Product' when 'Sales' cells are greater than 10,000
- Highlight cells above average in column 'Sales'
- Add a gradient Data Bar to 'Sales' column
- Highlight cells less than 8,500 in column 'Sales'
- Highlight rows when cells begin with 'M' in column 'Product'

The selected suggestion is expanded to show a preview of the conditional formatting rule:

- Custom Formula:** Apply a conditional format on cells in the column "Product" using the formula below
  - Fill color: yellow
  - Font color: black

The formula bar shows: `=B3 > 10000`. The "Apply" button is visible at the bottom.

On the right, a table displays product sales data:

Product	Sales
Laptop	\$12,000
Tablet	\$8,500
Smartphone	\$15,000
Monitor	\$6,000
Keyboard	\$4,000
Mouse	\$3,000
Printer	\$7,000
Desk	\$9,000
Chair	\$5,000
Headphones	\$6,500
Router	\$7,200
USB Drive	\$2,500
External HDD	\$4,800
Webcam	\$3,100
Gaming Mouse	\$8,000

# 1. Conditional Formatting #2

Copilot

Highlight sales below \$5,000 in red

Sure! Looking at **A2:B17**, here's 1 conditional formatting rule to review and apply:

- **Cell value less than 5000:** Apply the following to cells in the column "Sales"
  - Fill color: red
  - Font color: black

AaBbCc

Apply

Product	Sales
Laptop	\$12,000
Tablet	\$8,500
Smartphone	\$15,000
Monitor	\$6,000
Keyboard	\$4,000
Mouse	\$3,000
Printer	\$7,000
Desk	\$9,000
Chair	\$5,000
Headphones	\$6,500
Router	\$7,200
USB Drive	\$2,500
External HDD	\$4,800
Webcam	\$3,100
Gaming Mouse	\$8,000

Copilot

Apply conditional formatting to show top 25% of sales in dark green and font in white

Sure! Looking at **A2:B17**, here's 1 conditional formatting rule to review and apply:

- **Top 25 Percent:** Apply the following to cells in the column "Sales"
  - Fill color: green
  - Font color: white

AaBbCc

Apply

Product	Sales
Laptop	\$12,000
Tablet	\$8,500
Smartphone	\$15,000
Monitor	\$6,000
Keyboard	\$4,000
Mouse	\$3,000
Printer	\$7,000
Desk	\$9,000
Chair	\$5,000
Headphones	\$6,500
Router	\$7,200
USB Drive	\$2,500
External HDD	\$4,800
Webcam	\$3,100
Gaming Mouse	\$8,000

# 2. Clean and Format Data: Customer Name

Customer Name
john doe
Jane DOE
ALICE smith
BOB jones
Charlie BROWN
david WILSON
emma JOHNSON
frank MARTIN
GEORGE hill
HARRY WHITE
Michael Scott
Jim Halpert
Pam Beesly
Dwight Schrute
Stanley Hudson
JOHN DOE

Copilot

Fix capitalization on customer name so the first letter of every word is capitalized

I wasn't able to fix the capitalization on the customer names. Please try again or check the data manually.

You can use the following formula to fix the capitalization of customer names in column A of Table17:

```
fx  
=PROPER(Table17[@[Customer Name]])
```

add this formula as a new column

Looking at A2:D18, here's 1 formula column to review and insert in Column E:

**Proper Customer Name**

Converts the customer names to proper case, ensuring that each name starts with a capital letter and the rest of the letters are in lowercase. This standardizes the format of customer names for better readability and consistency.

```
fx  
=PROPER([[Customer Name]])
```

Show explanation

	E
2	Proper Customer Name
3	John Doe
4	Jane Doe
5	Alice Smith
6	Bob Jones
...	...

+ Insert column

Proper Customer Name
John Doe
Jane Doe
Alice Smith
Bob Jones
Charlie Brown
David Wilson
Emma Johnson
Frank Martin
George Hill
Harry White
Michael Scott
Jim Halpert
Pam Beesly
Dwight Schrute
Stanley Hudson
John Doe

# 2. Clean and Format Data: Phone Number

Create a new column that fixes the phone number so there are no spaces or special characters (" "-" "(" ")" "."). Then format with the Number format, Special, Phone Number

Phone Number
123-456-7890
123 456 7890
(123)456-7890
123.456.7890
1234567890
987-654-3210
987 654 3210
(987)654-3210
987.654.3210
9876543210
(555) 123-4567
555-234-5678
555.345.6789
555 456 7890
555-567-8901
(123) 456-7890

To create a new column that fixes the phone number in Table17, follow these steps:

1. Insert a new column named "Fixed Phone Number" in Table17.
2. Use the following formula to remove spaces and special characters from the phone numbers in column B:

```
fx
=TEXTJOIN("", TRUE,
MID(Table17[@[Phone
Number]]),
FIND(MID(Table17[@[Phone
Number]]_ROW(INDIRECT("1:" &
LEN(Table17[@[Phone
```

3. Format the new column with the Number format, Special, Phone Number.

This formula will concatenate only the numeric characters from the phone number, effectively removing spaces and special characters.

That formula did not work, received #value! error

I apologize for the inconvenience. Let's use a different approach to remove spaces and special characters from the phone numbers.

1. Insert a new column named "Fixed Phone Number" in Table17.
2. Use the following formula in the new column to remove spaces and special characters from the phone numbers in column B:

```
fx
=TEXTJOIN("", TRUE,
IF(ISNUMBER(MID(Table17[@[Ph
one Number]]),
ROW(INDIRECT("1:" &
LEN(Table17[@[Phone
```

3. Format the new column with the Number format, Special, Phone Number.

The number format didn't work because the result is a text value

To convert the text value to a number format, you can use the following steps:

1. Insert a new column named "Fixed Phone Number" in Table17.
2. Use the following formula in the new column to remove spaces and special characters from the phone numbers in column B and convert the result to a number:

```
fx
=VALUE(TEXTJOIN("", TRUE,
IF(ISNUMBER(MID(Table17[@[Ph
one Number]]),
ROW(INDIRECT("1:" &
LEN(Table17[@[Phone
```

3. Format the new column with the Number format, Special, Phone Number.

Fixed Phone Number
(123) 456-7890
(123) 456-7890
(123) 456-7890
(123) 456-7890
(123) 456-7890
(987) 654-3210
(987) 654-3210
(987) 654-3210
(987) 654-3210
(987) 654-3210
(555) 123-4567
(555) 234-5678
(555) 345-6789
(555) 456-7890
(555) 567-8901
(123) 456-7890

# 2. Clean and Format Data: Date

Date
01/02/2024
02-03-2024
2024/03/04
April 5, 2024
06.07.2024
07/08/2024
08-09-2024
2024/09/10
October 11, 2024
12.13.2024
2023/01/15
February 16, 2023
03-17-2023
April 18, 2023
05.19.2023
01/02/2024

Fix the date field so the dates are displayed as "mm/dd/yyyy" but before the format can be applied, I need a formula to standardize the current dates

Looking at A2:F18, here's 1 formula column to review and insert in Column G:

**Standardized Date**

Converts the date in each row to a standardized format of mm/dd/yyyy (month/day/year) to ensure consistency and ease of comparison across all entries in this table.

```
fx
=TEXT(DATEVALUE([@Date]), "[$-en-us]mm/dd/yyyy")
```

Show explanation

	G
2	Standardized Date
3	01/02/2024
4	02/03/2024
5	03/04/2024
6	04/05/2024
...	...

+ Insert column

dates with the format "mm.dd.yyyy" are getting #value! error

Looking at A2:G18, here's 1 formula column to review and insert in Column H:

**Standardized Date2**

Standardizes the date format by converting various date representations into a consistent "mm/dd/yyyy" format, ensuring uniformity across all entries in the table.

```
fx
=TEXT(DATEVALUE(SUBSTITUTE(SUBSTITUTE([@Date], ".", "/"), "-", "/")), "[$-en-us]mm/dd/yyyy")
```

Show explanation

	H
2	Standardized Date2
3	01/02/2024
4	02/03/2024

result is not a date value so it cannot be used in formulas

To ensure the result is a date value that can be used in formulas, use the following formula to standardize the dates in column C of Table17:

1. Insert a new column named "Standardized Date" in Table17.
2. Use the following formula in the new column to standardize the dates:

```
fx
=DATEVALUE(SUBSTITUTE(SUBSTITUTE([@Date], ".", "/"), "-", "/"))
```

3. Format the new column with the date format "mm/dd/yyyy".

Standardized Date
01/02/2024
02/03/2024
03/04/2024
04/05/2024
06/07/2024
07/08/2024
08/09/2024
09/10/2024
10/11/2024
12/13/2024
01/15/2023
02/16/2023
03/17/2023
04/18/2023
05/19/2023
01/02/2024

# Copilot to Analyze Data



# Use Copilot in Excel to Analyze Data

1. Summarize Dataset
2. Find Average Sales Per Month
3. Detect Trends and Patterns
4. Create Charts

# 1. Summarize Dataset #1

Product	Sales	Profit	Region
Laptop	\$12,000	\$3,000	North
Tablet	\$8,500	\$1,800	South
Smartphone	\$15,000	\$4,000	West
Monitor	\$6,000	\$1,200	East
Keyboard	\$4,000	\$600	North
Mouse	\$3,000	\$400	South
Printer	\$7,000	\$1,500	West
Desk	\$9,000	\$2,500	East
Chair	\$5,000	\$900	North
Headphones	\$6,500	\$1,400	South

Creates PivotTable/  
PivotChart

Summarize this dataset

I analyzed data in A1:D11, and here's what I found:

**'Sales' and 'Profit' by 'Product' and 'Region'**

Region	Product		Sum ...
	Chair	Desk	
East			\$9,000
North	\$5,000	\$900	
South			
West			

... Add to a new sheet

AI-generated content may be incorrect

You are asking for a summary of the dataset, but it does not specify the exact type of summary or the columns to be considered. I recommended an answer for summarizing the total sales and profit by product and region.

Copy

AI-generated content may be incorrect

Summarize total sales by region.

Summarize total profit by product.

Summarize total sales by region

I analyzed data in A1:D11, and here's what I found:

**'Sales' by 'Region'**

Sum of Sales (Thousands)

West  
North  
South  
East

\$0 \$5 \$10 \$15 \$20 \$25

... Add to a new sheet

AI-generated content may be incorrect

The total sales by region are \$22,000 for West and \$21,000 for North. See the table above for more details.

AI-generated content may be incorrect

Show data insights

Show data insights

I analyzed data in A1:D11, and here's what I found:

**'Sales' by 'Product'**

Sum of Sales (Thousands)

Product

\$0 \$2 \$4 \$6 \$8 \$10 \$12 \$14 \$16

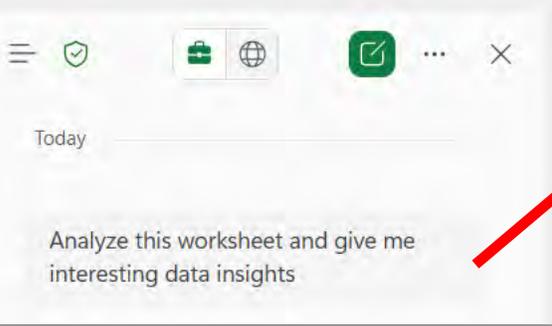
... Add to a new sheet

AI-generated content may be incorrect

The total sales by product include \$15,000 for Smartphone and \$12,000 for Laptop. See the table above for more details.

# 1. Summarize Dataset #2

Transac	Date	Product	Region	Sales Am	Unit
20001	1/1/2023	Mouse	West	\$4,978	6
20002	1/2/2023	Smartphone	West	\$518	2
20003	1/3/2023	Smartwatch	West	\$3,230	2
20004	1/4/2023	Monitor			
20005	1/5/2023	Smartwatc			
20006	1/6/2023	Chair			
20007	1/7/2023	Keyboard			
20008	1/8/2023	Gaming Co			
20009	1/9/2023	Printer			
20010	1/10/2023	Headphon			
20011	1/11/2023	Tablet			
20012	1/12/2023	VR Headse			



Back to Copilot Chat

Lots of detail on my simple dataset, think what it can do with your data!

Here's a concise, insight-rich readout of the "Summarize2" transactions in your workbook, plus visuals you can drop into a deck right away.

## Executive snapshot

- **Revenue & volume.** The dataset contains 500 transactions totaling \$1,383,315 across 2,506 units, with an average order value of ~\$2,767.
- **Momentum.** Revenue peaked in Nov-2023 and troughed in May-2024; from the first to the last month in the file, revenue is down ~52%, suggesting a notable deceleration as the series approaches its end.
- **Regional mix.** Sales are fairly balanced by region, with a slight edge to East, then North, followed by South and West.
- **Product mix.** Laptops, Routers, and Monitors are the top three revenue drivers and together account for ~25% of all sales—healthy but not overly concentrated.
- **Stability.** Month-to-month revenue variance is modest (coef. of variation ≈ 0.14), but there are a few sharp swings that are worth tracking.

## What's interesting (and actionable)

### 1) Seasonality & trend

- The best month is Nov-2023, while May-2024 is the softest. This pattern hints at a Q4 lift and a pronounced soft patch in late spring—useful for demand planning and campaign timing.
- The month-over-month change ranges from +11% at the high to -51% at the low, so while the series is generally stable, there are a couple of step-downs to watch (likely post-holiday normalization).

### Monthly trend



### 2) Geographic performance

# 2. Find Average Sales Per Month

Transac	Date	Product	Region	Sales Am	Unit
20001	1/1/2023	Mouse	West	\$4,978	6
20002	1/2/2023	Smartphone	West	\$518	2
20003	1/3/2023	Smartwatch	West		
20004	1/4/2023	Monitor	East		
20005	1/5/2023	Smartwatch	West		
20006	1/6/2023	Chair	South		
20007	1/7/2023	Keyboard	East		
20008	1/8/2023	Gaming Console	North		
20009	1/9/2023	Printer	North		
20010	1/10/2023	Headphones	North		
20011	1/11/2023	Tablet	East		
20012	1/12/2023	VR Headset	South		

Find average sales per month

I analyzed data in A1:F501, and here's what I found:

**'Sales Amount' by year and month of 'Date'**

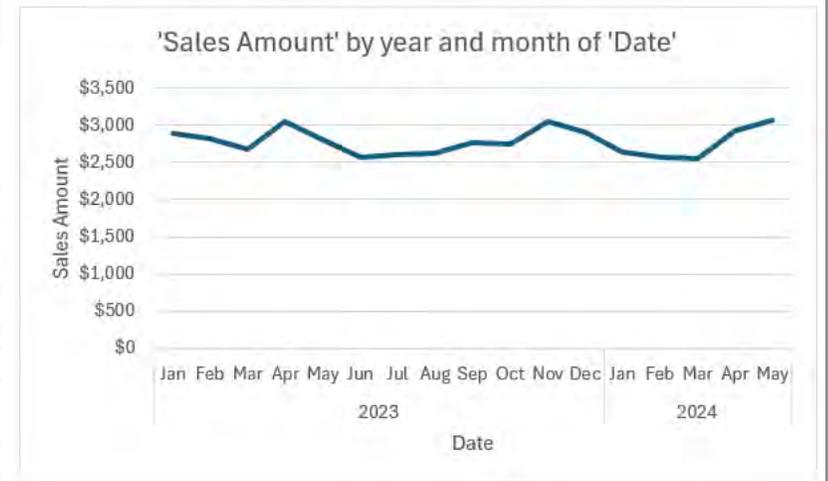
Average of Sales Amount

+ Add to a new sheet

AI-generated content may be incorrect

The average sales amount per month ranges from \$2,549 to \$3,071. See the chart above for more details.

Years	Months	Average of Sales Amount
2023	Jan	\$2,882
	Feb	\$2,813
	Mar	\$2,677
	Apr	\$3,045
	May	\$2,806
	Jun	\$2,567
	Jul	\$2,609
	Aug	\$2,614
	Sep	\$2,767
	Oct	\$2,739
	Nov	\$3,055
	Dec	\$2,900
<b>2023 Total</b>		<b>\$2,788</b>
2024	Jan	\$2,633
	Feb	\$2,560
	Mar	\$2,549
	Apr	\$2,921
	May	\$3,071
<b>2024 Total</b>		<b>\$2,708</b>
<b>Grand Total</b>		<b>\$2,767</b>



# 3. Detect Trends and Patterns

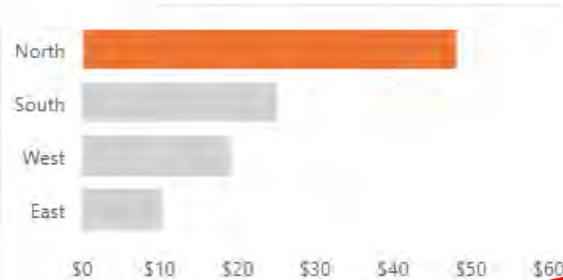
Transac	Date	Product	Region
20001	1/1/2023	Mouse	West
20002	1/2/2023	Smartphone	West
20003	1/3/2023	Smartwatch	West
20004	1/4/2023	Monitor	East
20005	1/5/2023	Smartwatch	West
20006	1/6/2023	Chair	South
20007	1/7/2023	Keyboard	East
20008	1/8/2023	Gaming Console	North
20009	1/9/2023	Printer	North
20010	1/10/2023	Headphones	North
20011	1/11/2023	Tablet	East
20012	1/12/2023	VR Headset	South

What are the trends for sales by month by region

I analyzed data in A1:F501, and here's what I found:

**For 'Product: Smartwatch', 'Region': North has noticeably higher 'Sales Amount'.**

Sum of Sales Amount (Thousands)



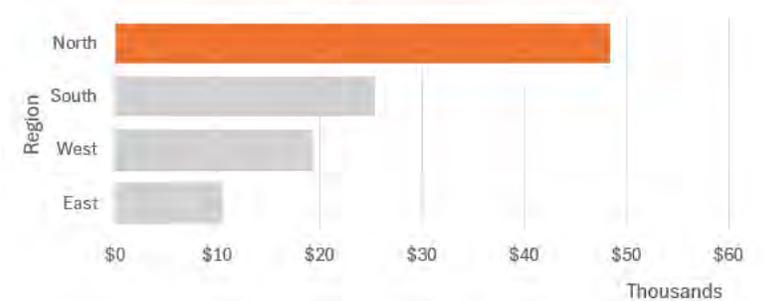
+ Add to a new sheet

AI-generated content may be incorrect

The trends for sales by month by region show that the North region has noticeably higher sales amounts for the product Smartwatch. See the chart above for more details.

Region	Sum of Sales Amount
North	\$48,318
South	\$25,338
West	\$19,262
East	\$10,414
<b>Grand Total</b>	<b>\$103,332</b>

For 'Product: Smartwatch', 'Region': North has noticeably higher 'Sales Amount'.



Sales Amount

# 4. Create Charts

Transac	Date	Product
20001	1/1/2023	Mouse
20002	1/2/2023	Smartphone
20003	1/3/2023	Smartwatch
20004	1/4/2023	Monitor
20005	1/5/2023	Smartwatch
20006	1/6/2023	Chair
20007	1/7/2023	Keyboard
20008	1/8/2023	Gaming Console
20009	1/9/2023	Printer
20010	1/10/2023	Headphones
20011	1/11/2023	Tablet
20012	1/12/2023	VR Headset

Create a line chart showing sales by year by month by region

I analyzed data in A1:F501, and here's what I found:

Sum of Sales Amount (Thousands)



Chart1DONE

+ Add to a new sheet

AI-generated content may be incorrect

I created a line chart showing sales by year, month, and region. The North region has noticeably higher sales amounts for the product Smartwatch. See the chart above for more details.

Generate a line chart for sales trends over the past 12 months

I analyzed data in A1:F501, and here's what I found:

**Date**      **Sum of Sales Amount**

2023-06	\$77,012
2023-07	\$80,888
2023-08	\$81,036
2023-09	\$83,008
2023-10	\$84,902
2023-11	\$91,655
2023-12	\$89,898
...	...

- Select: Add to a new sheet
- Go to New Sheet and select table
- Show this data as a line chart
- Select: Add to this sheet

Chart2DONE

+ Add to a new sheet

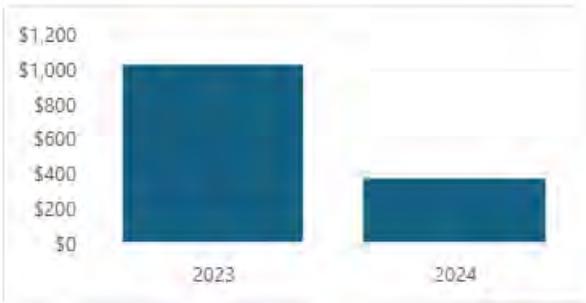
AI-generated content may be incorrect

The sales trends over the past 12 months show varying amounts, with the highest sales in November 2023 (\$91,655) and the lowest in May 2024 (\$42,995). See the table above for more details.

# 4. Create Charts (continued)

Create a column chart for annual sales

I analyzed data in A1:F501, and here's what I found:  
Sum of Sales Amount (Thousands)



+ Add to a new sheet

AI-generated content may be incorrect



I have created a column chart showing annual sales. The sales amount for 2023 is \$1,017,792, and for 2024, it is \$365,523. See the chart above for more details.

Now show breakdown by month

I analyzed data in A1:F501, and here's what I found:  
**'Sales Amount' by year and month of 'Date'**  
Sum of Sales Amount (Thousands)



+ Add to a new sheet

AI-generated content may be incorrect



Chart3DONE

The breakdown of annual sales by month shows varying amounts, with the highest sales in November 2023 (\$91,655) and the lowest in May 2024 (\$42,995). See the table above for more details.

Now make this a column chart

I analyzed data in A1:F501, and here's what I found:  
Sum of Sales Amount (Thousands)



+ Add to a new sheet

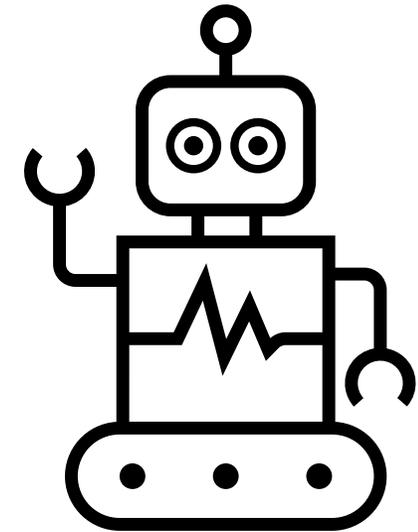
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Chart4DONE

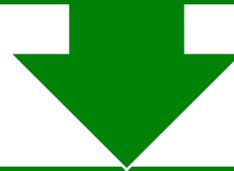
I have created a column chart showing the breakdown of annual sales by month. See the chart above for more details.

# Copilot to Automate Repetitive Tasks



# The Scenario

We have raw data that is not in the correct order



We want to:

Reorder the columns

Add a Total column

Turn it into an Excel  
Table

Format the dollar  
columns to the  
Accounting format

Add a Grand Total  
for the Total column

# Data Set Example

	A	B	C	D	E	F
1	Unit Price	Qty	Customer Name	Product Name	Cust#	
2	29.99	77	Justin A Robins	ML Mountain T	33930	
3	2.29	238	Tamara Zhu	Patch Kit/8 Pat	50470	
4	3.99	15	Nicole White	Road Tire Tube	43580	
5	2443.35	5	Nancy L Sanchez	Road-250 Red,	42860	
6	34.99	50	Reginald Navarr	Sport-100 Helm	45800	
7	28.99	150	Autumn Zhu	Touring Tire	14170	
8	21.49	110	Nicole White	LL Road Tire	43580	
9	2049.09	18	Denise Mehta	Mountain-200 I	21840	
10	2319.99	13	Tamara Zhu	Mountain-200 S	50470	
11	4.99	23	Autumn Zhu	Touring Tire Tul	14170	
12	2384.07	12	Reginald Navarr	Touring-1000 B	45800	
13						
14						
15	E - A	C - B	D - C	B - D	A - E	d * e
16	Cust#	Customer Name	Product Name	Qty	Unit Price	Total
17						

# Process Steps

Type out each step

As if you were doing it manually

Put each step in a separate cell

Follow each step manually

Copy & paste steps into Copilot

Test on a sample spreadsheet

# Example of Our Instructions

G

## Instructions:

Create an Excel Macro that:

Uses the AutomateTasksData sheet

Where column A is UnitPrice, column B is Qty, Column C is Customer, Column D is Product and column E is cust#

Insert AutomateTasksFinal sheet and Rearrange columns as follows: Cust#, Customer, Product, Qty, UnitPrice

Make the data into an Excel table

Add column F as a Total column where it is Qty \* Unit Price

Format the UnitPrice and Total columns as Accounting

Add a Total Row for the Total Column

Create new sheet so we don't affect raw data & can test/re-test

# Paste Instructions into Copilot

Create an Excel Macro that: Uses the AutomateTasksData sheet Where column A is UnitPrice, column B is Qty, Column C is Customer, Colmun D is Product and column E is cust# Insert AutomateTasksFinal sheet and Rearrange columns as follows: Cust#, Customer, Product, Qty, UnitPrice Make the data into an Excel table Add column F as a Total column where it is Qty \* Unit Price Format the UnitPrice and Total columns as Accounting Add a Total Row for the Total Column

CAUTION: Please carefully review the generated VBA code before running it!

```
Sub AutomateTasks()
    Dim wsData As Worksheet
    Dim wsFinal As Worksheet
    Dim tbl As ListObject
    Dim lastRow As Long

    ' Set references to the worksheets
    Set wsData = ThisWorkbook.Sheets("AutomateTasksData")

    ' Insert the new sheet
    Set wsFinal =
ThisWorkbook.Sheets.Add(After:=ThisWorkbook.Sheets(ThisWorkbo
ok.Sheets.Count))
    wsFinal.Name = "AutomateTasksFinal"
```

How do I run this macro?

Can you explain the code?

To run the macro, follow these steps:

1. Press **Alt + F11** to open the VBA editor.
2. In the VBA editor, go to **Insert > Module** to create a new module.
3. Copy and paste the provided VBA code into the module.
4. Close the VBA editor.
5. Press **Alt + F8** to open the "Macro" dialog box.
6. Select **AutomateTasks** from the list of macros.
7. Click **Run**.

Make sure your workbook is saved as a macro-enabled workbook (.xlsm) to run the macro.

How do I run this macro?

Can you explain what each part of the code does?

What should I do if I encounter an error?

How can I modify the macro to include additional columns?



Other suggestions

# Pasted into Excel and Ran Macro - End Result

	A	B	C	D	E	F
1	<b>Cust#</b>	<b>Customer</b>	<b>Product</b>	<b>Qty</b>	<b>UnitPrice</b>	<b>Total</b>
2	33930	Justin A Robir	ML Mountai	77	\$ 29.99	\$ 2,309.23
3	50470	Tamara Zhu	Patch Kit/8	238	\$ 2.29	\$ 545.02
4	43580	Nicole White	Road Tire Ti	15	\$ 3.99	\$ 59.85
5	42860	Nancy L Sanc	Road-250 R	5	\$ 2,443.35	\$ 12,216.75
6	45800	Reginald Nav	Sport-100 F	50	\$ 34.99	\$ 1,749.50
7	14170	Autumn Zhu	Touring Tire	150	\$ 28.99	\$ 4,348.50
8	43580	Nicole White	LL Road Tire	110	\$ 21.49	\$ 2,363.90
9	21840	Denise Melh	Mountain-2	18	\$ 2,049.09	\$ 36,883.62
10		Tamara Zhu	Mountain-2	13	\$ 2,319.99	\$ 30,159.87
11		Autumn Zhu	Touring Tire	23	\$ 4.99	\$ 114.77
12	45800	Reginald Nav	Touring-100	12	\$ 2,384.07	\$ 28,608.84
13	<b>Total</b>					<b>\$119,359.85</b>

Might want to ask to autofit column widths

# Wrap-Up



# Presentation Wrap-Up

Copilot is an AI-powered assistant built on OpenAI's GPT models

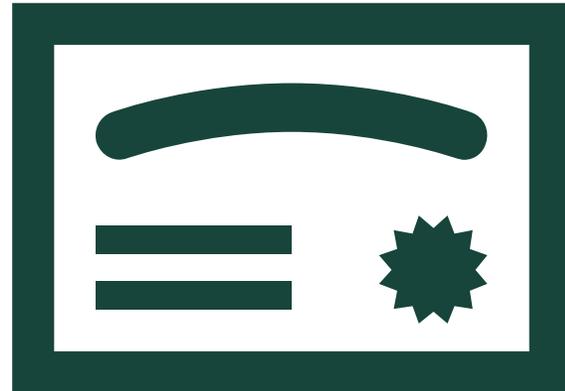
There are multiple versions of Copilot, some require monthly license

Copilot can be used in Excel to:

- Learn Excel
- Help with formulas
- Enhance productivity
- Analyze data
- Automate repetitive tasks

# Questions?





# Thank You!!



Bryan L. Smith, CPA.CITP, CISA



[bsmith@datasmithpro.com](mailto:bsmith@datasmithpro.com)

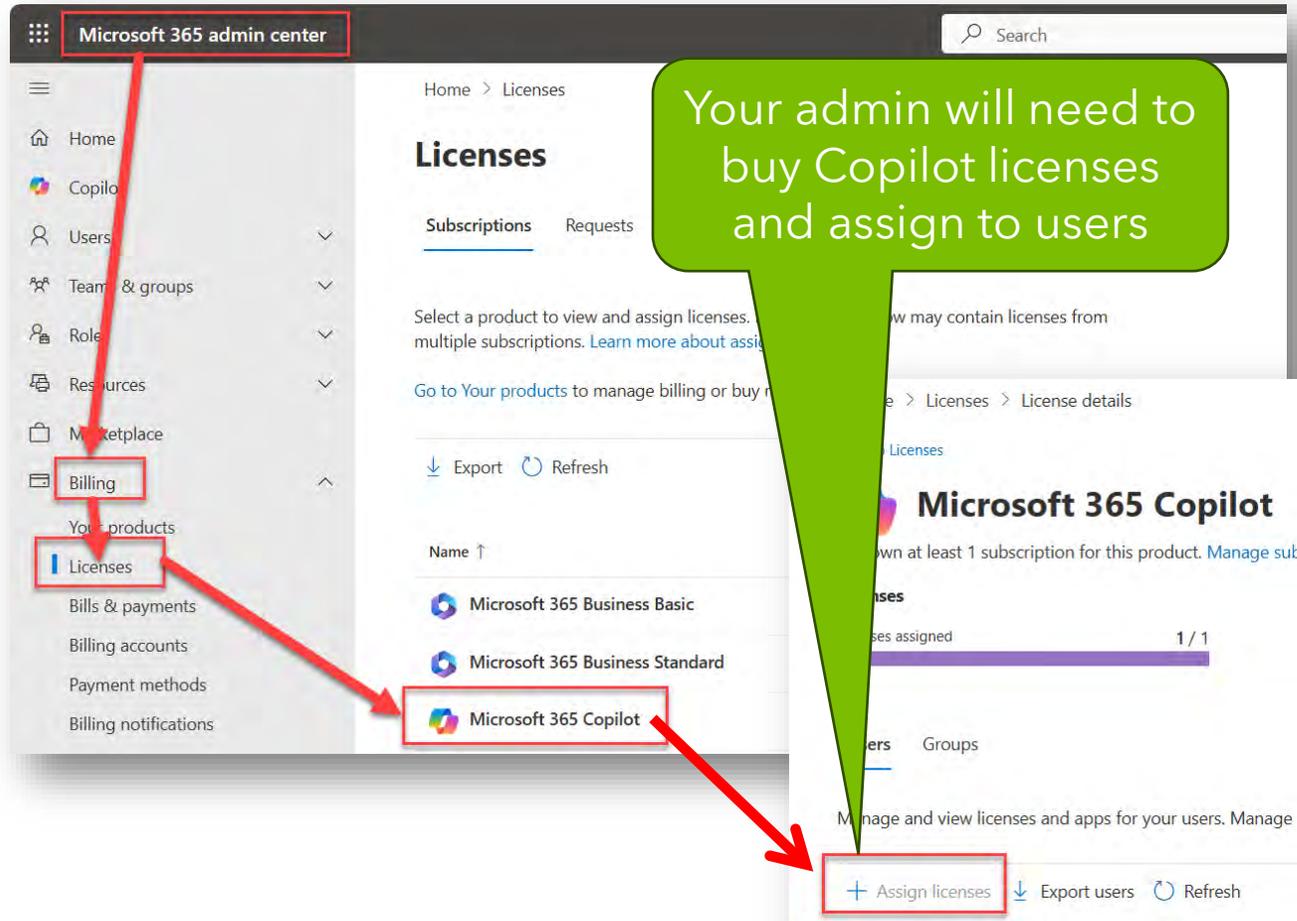


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ONE FINAL NOTE

# How to Enable Microsoft 365 Copilot in Desktop Apps

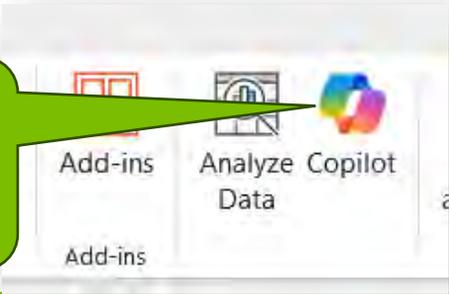


Your admin will need to buy Copilot licenses and assign to users

User will need to go to File > Account in any M365 app, select Update License, then close & reopen app



Copilot will now appear on Home ribbon



# Smart Tech, Sound Judgement: Navigating AI Responsibly



Set your browser to  
**HIGGINS.CNF.IO**  
For interactive polling  
and Q & A

Presented By  
John H. Higgins, CPA.CITP  
Rochester, Michigan



# Learning Goals

- Recognize the ethical dilemmas and risks associated with AI applications that you can encounter
- Identify practical guidelines for mitigating them

Set your browser to

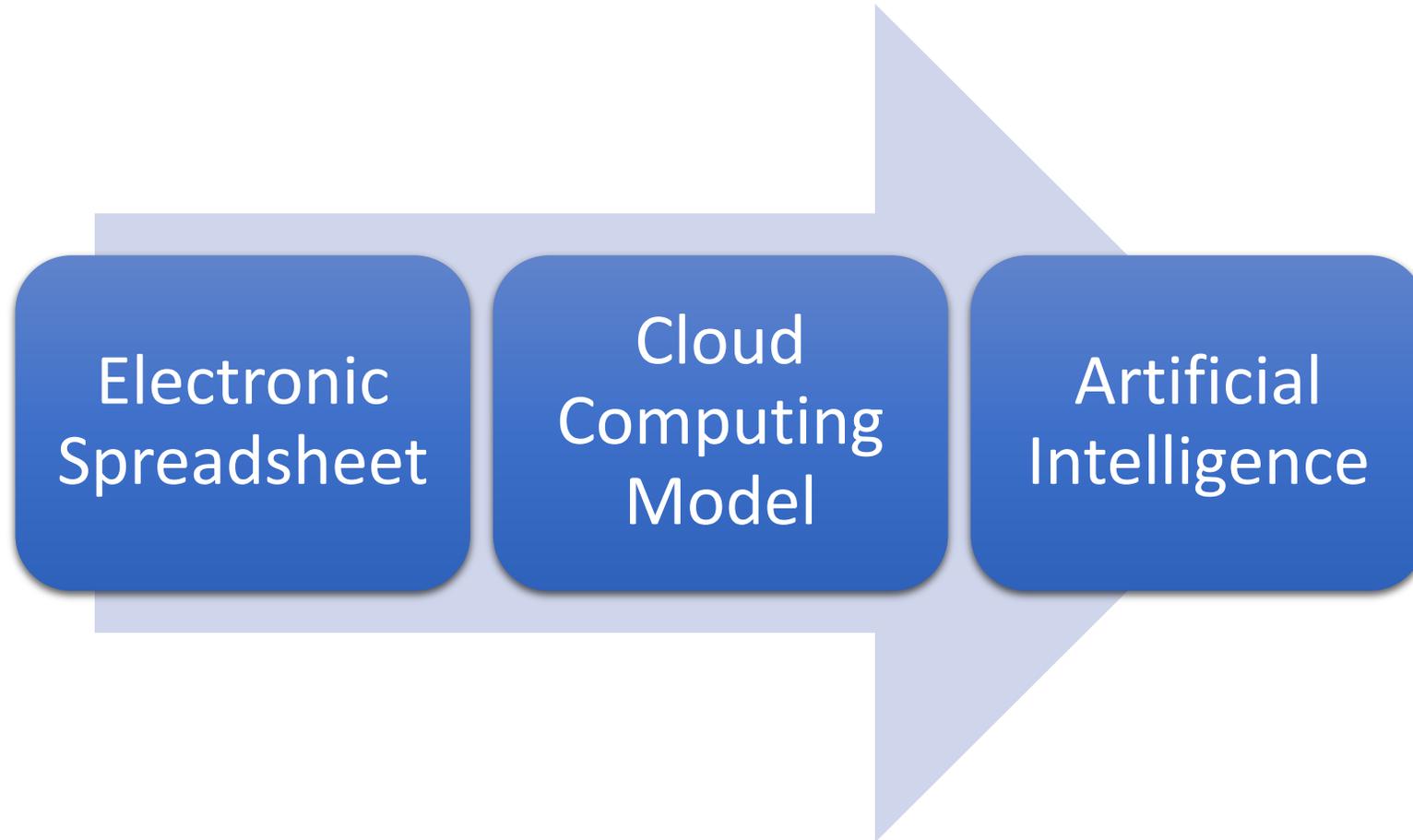
**HIGGINS.CNF.IO**

For interactive polling  
and Q & A

# Presentation Outline

- Why AI Ethics is an Important Topic
- AI Usage Ethical Dilemmas & Risks
  - Where do they originate
  - What are they specifically
  - How to mitigate them
- Wrap-up

# The Big Three CPA Technology Revolutions



***Live Content Slide***

*When playing as a slideshow, this slide will display live content*

**Poll: What is the first thought, in a word, that comes to your mind with  
AI?**

# WHY AI ETHICS IS AN IMPORTANT TOPIC?



What's wrong with this picture?



“The new spring in AI is the most significant development in computing in my lifetime. Every month, there are stunning new applications and transformative new techniques. But such powerful tools also bring with them new questions and responsibilities.”

Sergey Brin

Co-founder Google

“The most important thing to know about AI, it is the first technology in history that can make decisions by itself and can create new ideas by itself.”

Yuval Noah Harari  
Best Selling Author – Sapiens

“ . . . And can take actions by itself”

John Higgins, CPA

## ***Live Content Slide***

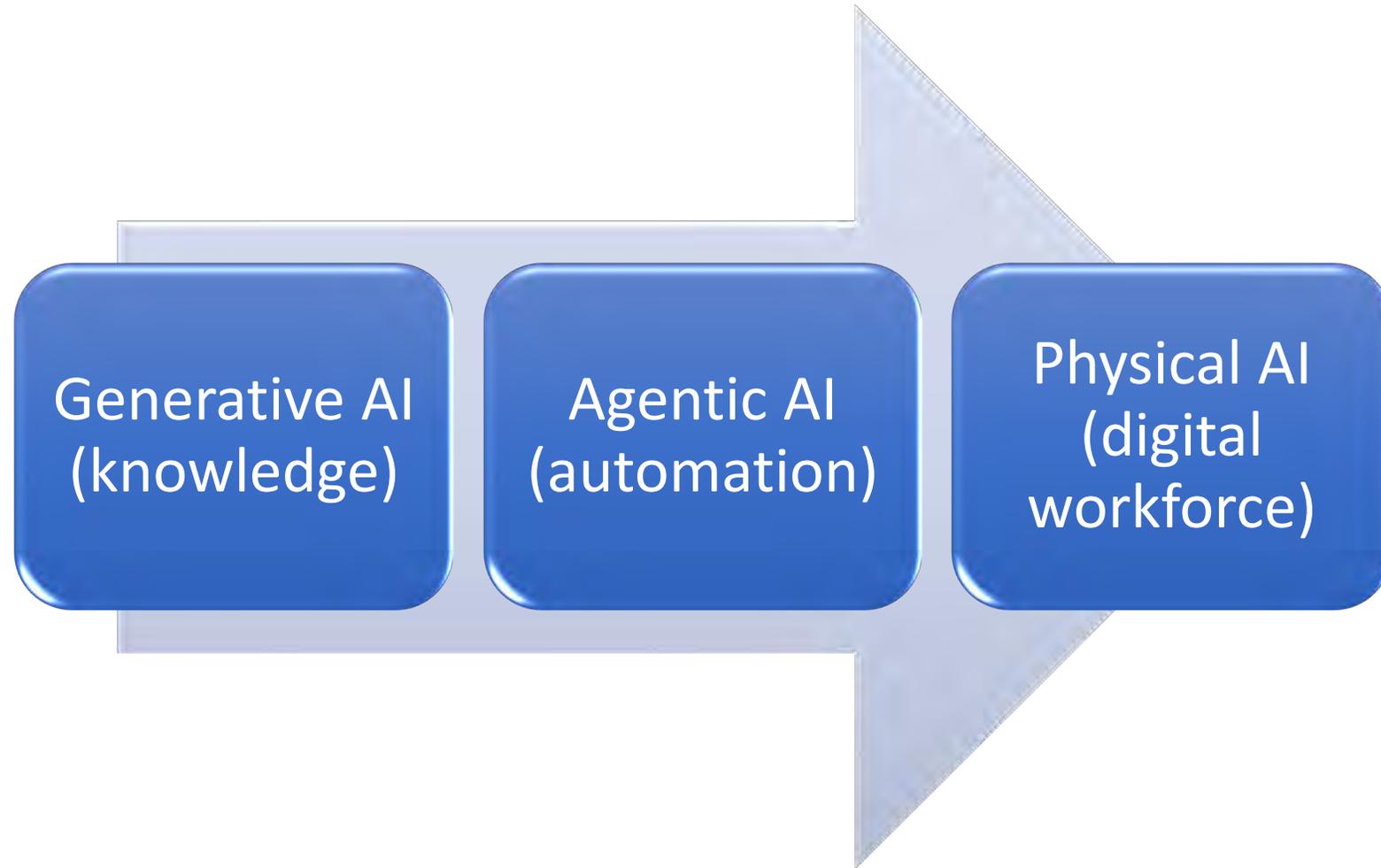
*When playing as a slideshow, this slide will display live content*

**Poll: What concerns you most about AI technology?**

# THE SOURCE OF AI ETHICAL DILEMMAS & RISKS



# AI Technology Evolution

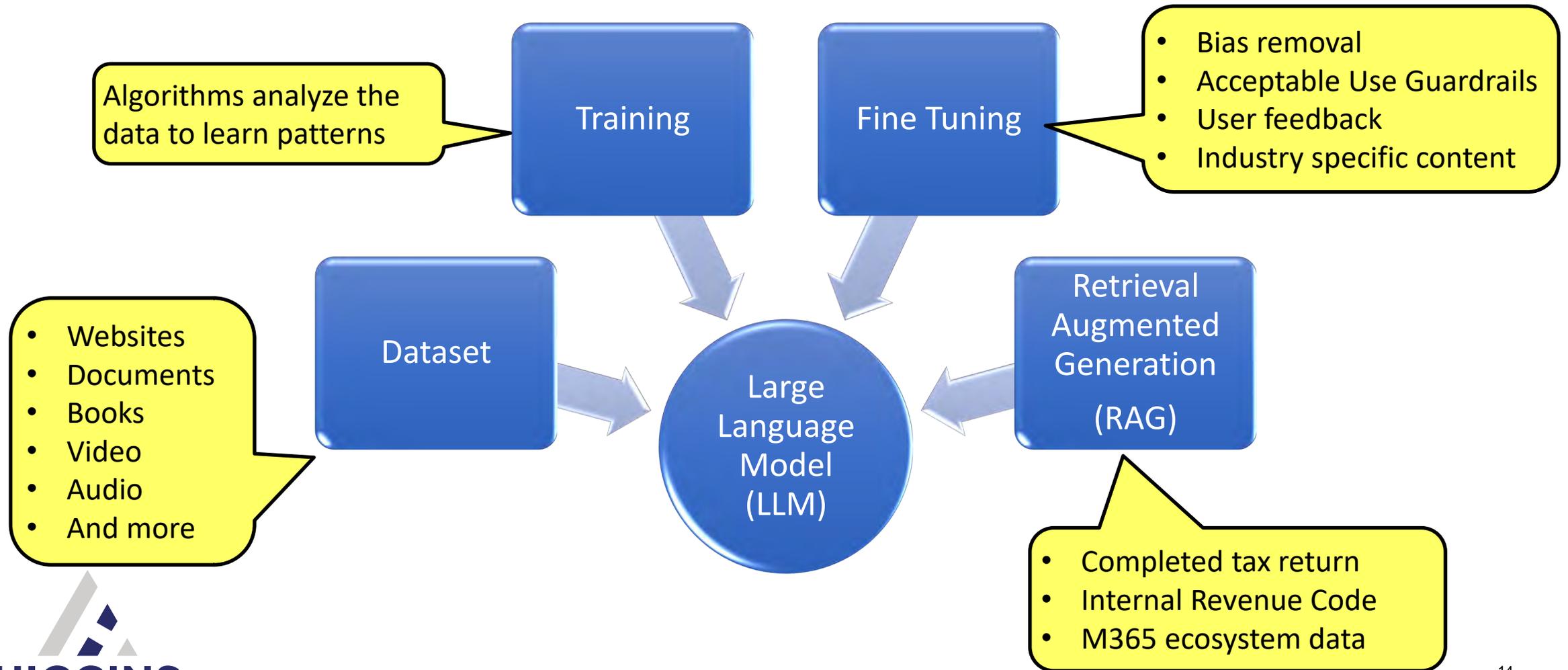


# A Simple Generative AI demo

- ***Prompt:*** What is AGI?
- ***Response:*** AGI stands for Artificial General Intelligence.
- ***Prompt:*** In the context of income taxes.
- ***Response:*** In the context of *income taxes*, AGI refers to *Adjusted Gross Income*.

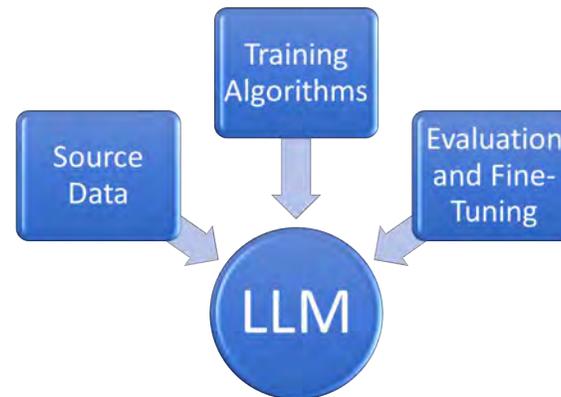


# Building a Large Language Model (LLM)



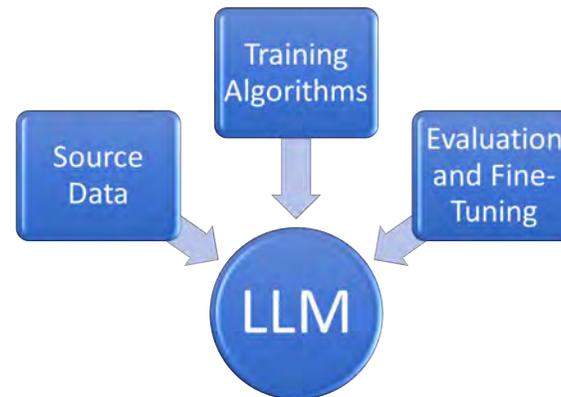
# LLM Source Data Ethical Risks

- AI application developer determines the source of the data
- The source data will have inherent biases
- Source data may have copyright issues



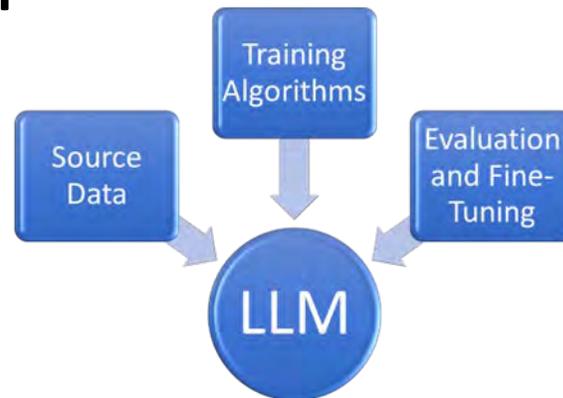
# LLM Training Algorithm Ethical Risks

- AI application developer defines the algorithms that train the data
- Different weightings can be assigned to different classifications of data to remove / embed biases



# LLM Evaluation and Fine-tuning Ethical Risks

- AI application developer defines the parameters of the “guard rails” to exclude/prevent inappropriate data
- AI developer defines “acceptable use” policies for user prompts

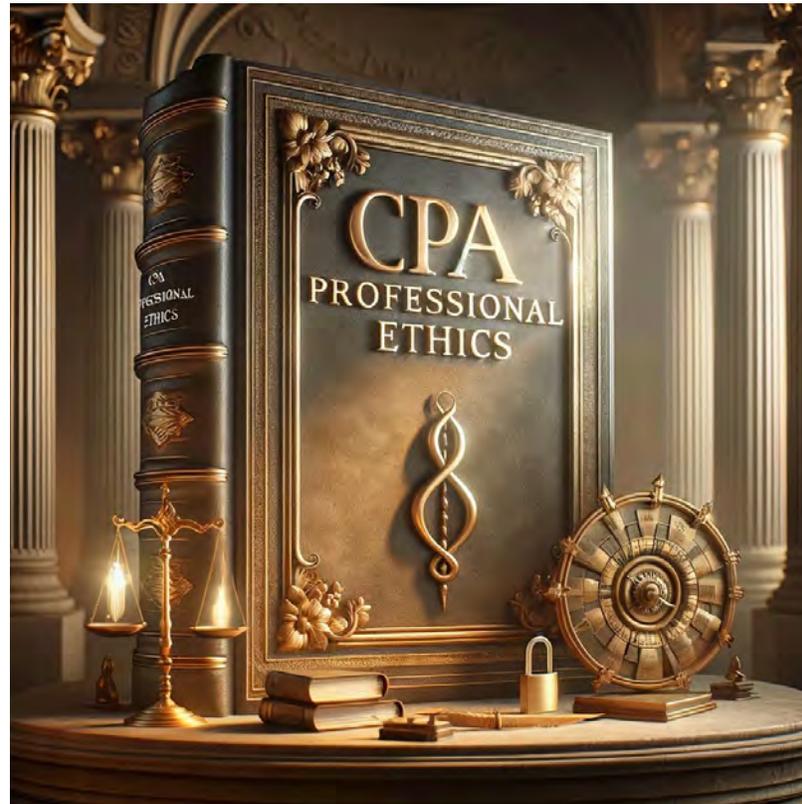


***Live Content Slide***

*When playing as a slideshow, this slide will display live content*

**Poll: Would you be willing to upload your blood test results to generative AI if it would help you diagnose your illness quicker and / or more effectively?**

# REVIEW OF THE CPA PROFESSIONAL ETHICS FRAMEWORK



# AICPA Code of Conduct

- Adopted by members of the AICPA
- Provides guidance and rules for CPAs in their performance of professional responsibilities
- Disciplinary repercussions for failure to comply

# Key Principles of Professional Conduct

- Act in the public interest
- Integrity
- Objectivity and Independence
- Due care



AICPA Code of Conduct  
Full Text



ChatGPT Summary

# Additional Regulatory Entities to Consider

- State Board of Accountancy
- SEC (Securities and Exchange Commission)
- PCAOB (Public Company Accounting Oversight Board)
- DOL (Department of Labor)
- GAO (Government Accountability Office)
- Federal, state and local taxing authorities

## ***Live Content Slide***

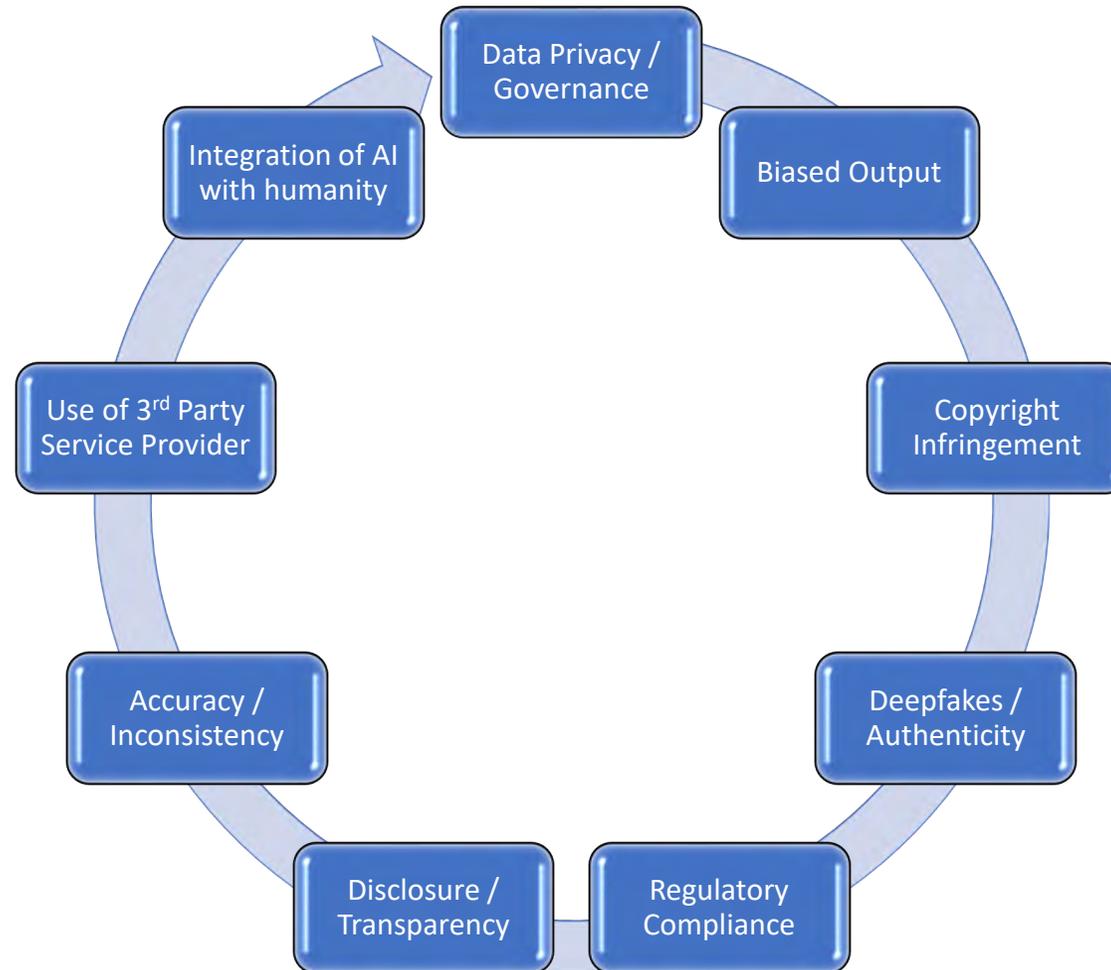
*When playing as a slideshow, this slide will display live content*

**Poll: Where would you place your organization on the AI adoption timeline?**

# AI ETHICAL RISK AND MITIGATION



# AI Ethical Risks and Mitigation



# MITIGATING THE ETHICAL DILEMMAS & RISKS



# #1 - Apply Due Diligence in Selecting AI Tools

- Select reputable tools
- Investigate their data privacy and acceptable use policies.
- Limit staff to using only approved tools

## #2 - Develop Documentation Standards

- Maintain an audit trail of AI prompts and outputs for client engagements as part of your engagement documentation standards
- Establish a policy for when and how AI usage on client engagements should be disclosed
- Consult with your professional liability carrier for guidance

## #3 - Authenticity and Accuracy Validation Policy

- Establish guidelines for standard procedures for validating the accuracy and authenticity of AI generated output
- Include links to sources in prompt output

## #4 - AI Acceptable Usage Policies and Procedures

- Establish an AI prompt champion to lead communication, oversight and knowledge sharing regarding prompt best practices
- Maintain a library of firm approved prompts for technical applications on client engagements
- Monitor standards setters and regulatory agencies for compliance requirements

## #5 - Develop an AI Acceptable Usage Policy

- Incorporate all these policies & procedures in a comprehensive and documented AI usage policy
- Provide mandatory education on the policy for all staff
- Monitor and update quarterly
- Monitor standards setters and regulatory agencies for compliance requirements

# Machines are getting more like humans



# Humans are getting more like machines



# Integration of AI & Humanity

- Risk of over reliance on AI generated content
- The fear of job security is real and should not be dismissed
- Communication , transparency and education are key

# Current Day Examples

- [HeyGen](#)
- [Figure 03](#)
- [Neuralink](#)

# WRAP-UP



# In Summary

- There are many ethical implications and risks associated with using generative AI technology
- Specific standards and regulations are currently limited
- Develop an AI usage policy for your organization
- Educate your staff on the risks of AI
- Use your core ethics as your foundation to guide you!

# Thank you!!!

Let's connect on LinkedIn →





**Wisconsin Institute of  
Certified Public Accountants**

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# From Numbers to Narratives: Mastering Data Analysis for CPAs

Developed by Bryan L. Smith, CPA.CITP, CISA

**In Waukesha, WI on December 4, 2025, 1:00-2:00pm**



## Bryan L. Smith, CPA.CITP, CISA

---

- Owner DataSmithPro, LLC
- Co-founder of CPA Crossings, LLC
- Strategic technology advisor to CPAs w/ 40+ years of experience
- Nationally recognized author and presenter on CPA technology
- Extensive knowledge and experience in proper Excel design techniques as well as helping CPAs build spreadsheets that are accurate
- As a Certified Information Systems Auditor (CISA), spent a considerable amount of time auditing and validating thousands of Excel spreadsheets
- Developed various data analysis and Microsoft Power BI courses and has worked with multiple organizations to train and coach staff on proper data analysis techniques
- Masters of Science in Information Assurance (MSIA)

# Presentation Outline

Click links to navigate to  
specific section ----- >



- [The Evolving Role of CPAs in a Data-Driven World](#)
- [Why Data Analysis Matters for CPAs](#)
- [Key Data Analysis Skills and Concepts for CPAs](#)
- [Leveraging Microsoft 365 Tools for Data Analysis](#)
- [Building a Data Analytics Mindset](#)
- [Wrap-Up](#)

# The Evolving Role of CPAs in a Data-Driven World



# The Profession at a Crossroads



Traditional role: compliance, audit, tax preparation, historical financial reporting



Emerging role: providing insights, analyzing trends, strategic forecasting, risk management



Automation and AI are replacing repetitive compliance tasks



Clients, employers, and regulators expect real-time, forward-looking insights



CPA firms and corporate teams must evolve to remain relevant and competitive

# Shifting Expectations for Accounting Professionals



## **Beyond Standard Reporting**

CPAs are expected to deliver actionable insights, not just traditional financial reports.

## **Data Trend Analysis**

Analyzing financial data trends helps organizations anticipate changes and opportunities.

## **Strategic Decision Support**

CPAs assist in forecasting and strategic decision-making to drive business growth.



## From Compliance to Strategic Advisory

### **Evolving CPA Role**

CPAs are transitioning from traditional compliance roles to broader strategic advisory positions within businesses.

### **Data Interpretation**

CPAs utilize data analysis to provide insights that support business decision-making and strategy development.

### **Strategic Business Guidance**

By advising on performance improvements, CPAs help businesses achieve sustainable growth and competitive advantage.

# Compliance vs Advisory



## Old World:

Static reports, manual reconciliations, backward-looking financials.

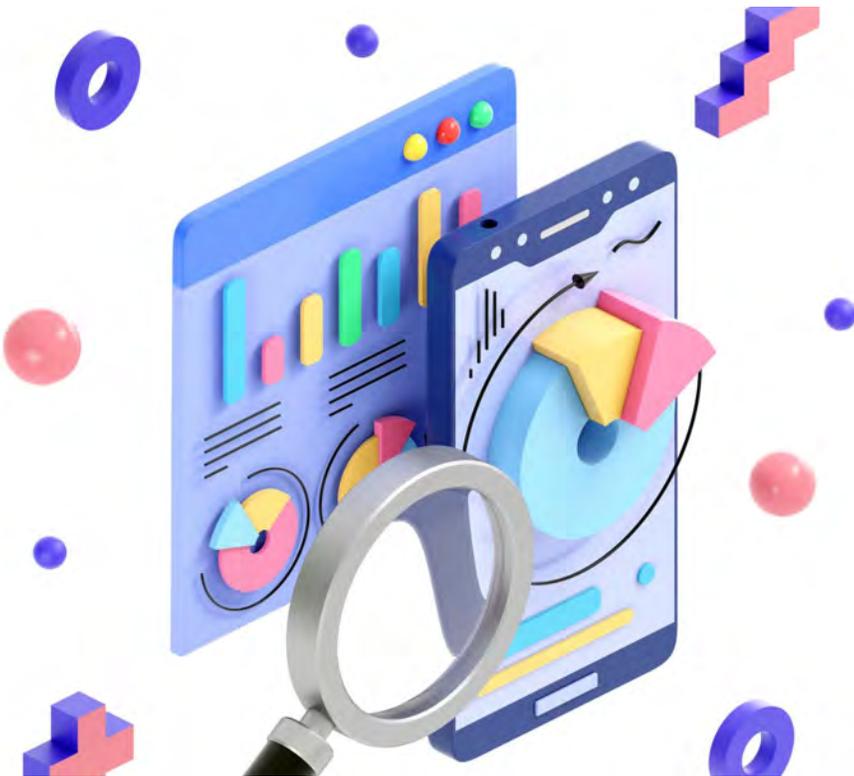
## New World:

Refreshable dashboards, predictive insights, and proactive recommendations.

Compliance answers **'What happened?'**

Analytics and advisory answer **'Why did it happen?' and 'What should we do about it?'**

# The Rise of Data Analytics in the Profession



## **Integration in Accounting**

Data analytics tools are now embedded within accounting workflows for enhanced efficiency and accuracy.

## **Detailed Financial Analysis**

Advanced analytics enable accountants to generate more detailed and actionable financial insights.



## Increasing Client Expectations in a Digital Era

### **Demand for Speed**

Clients expect rapid delivery of financial reports and real-time insights to make timely decisions.

### **Accuracy and Insight**

Clients require precise financial data combined with deeper analytical insights for better business understanding.

### **Technology Utilization**

CPAs are expected to use advanced technology and data analytics tools to meet client expectations efficiently.



# The Impact of Automation and Artificial Intelligence on Traditional Tasks

## Transformation of Traditional Tasks

Automation and AI are revolutionizing traditional accounting by streamlining routine tasks and improving efficiency.

## Reduction of Manual Work

AI reduces the time spent on manual data entry, allowing accountants to minimize errors and increase productivity.

## Focus on Strategic Planning

With automation handling routine tasks, CPAs can focus on data analysis and strategic business planning for better decision making.

# Why Data Analysis Matters for CPAs



# Why Data Analysis Matters



For Students/Staff:

Builds a competitive edge in the job market and career progression



For Managers:

Enables efficiency gains, smarter resource allocation, and better supervision



For Directors/Partners:

Drives growth, new revenue streams, and differentiates client services



For all levels:

Mastering analytics increases impact, relevance, and long-term career security

# Enhancing Client Advisory Services



## **Role of Data Analysis**

Data analysis helps CPAs understand client needs deeply for personalized financial advice

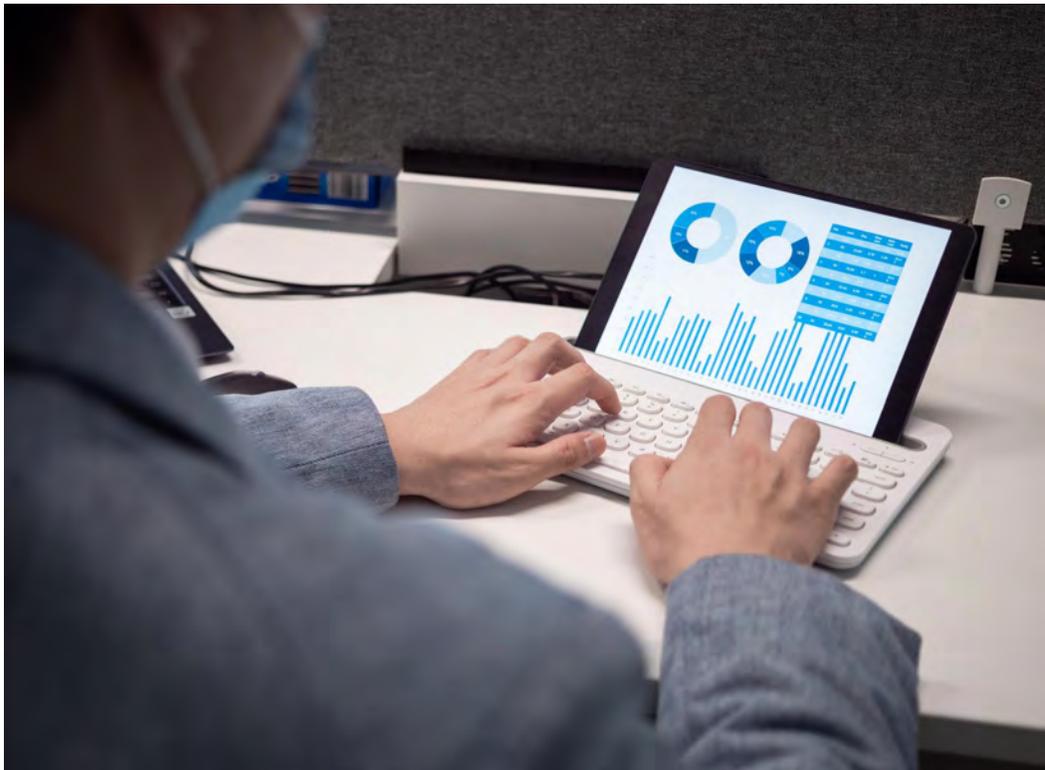
## **Tailored Client Advice**

CPAs use insights from data to offer advice aligned with clients' unique financial goals

## **Informed Decision Making**

Data-driven advice empowers clients to make better financial decisions confidently

# Mitigating Risks and Improving Decision-Making



## **Trend Analysis for Risk**

Analyzing trends helps identify potential risks early, allowing proactive risk management.

## **Anomaly Detection Impact**

Detecting anomalies supports recognizing unusual patterns that could indicate risks or opportunities.

## **Enhanced Decision-Making**

Data-driven insights empower CPAs to make informed, strategic decisions for organizational success.



# Storytelling with Data

## Framework:

Metric → Driver → Meaning → Action

Example: Revenue dropped 6% →  
Identify key product line → Explain the  
risk → Recommend action

**The narrative** is what decision-makers  
value – **not just the raw number**

Effective storytelling **transforms  
accountants** from **reporters to trusted  
advisors**



# Examples of Data Stories

## **AR Aging:**

AR >90 days rising → Cash flow risk → Recommend collection strategy

## **Expense Spike:**

Travel costs surge → Operational driver (new project) → Adjust budgets

## **Margin Analysis:**

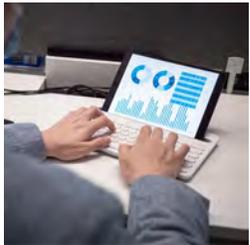
Client A less profitable → Product/service mix issue → Recommend pricing or product focus

# Why Compliance Work Is No Longer Enough



## **Limitations of Compliance**

Compliance work focuses on meeting regulatory requirements but often lacks strategic business insights



## **Need for Deeper Analysis**

CPAs must analyze financial data beyond compliance to uncover trends and opportunities for clients



## **Forward-Looking Insights**

Providing predictive insights helps clients plan effectively and adds significant business value

# Advisory Opportunities: From Insights to Actionable Recommendations



## Transforming Data into Insights

Data analytics converts raw figures into meaningful insights for strategic decision-making.

## Proactive Recommendations

CPAs use insights to provide proactive advice that drives business growth and operational efficiency.



## Competitive Edge: Standing Out in the Accounting Industry

### **Enhancing Advisory Capabilities**

Mastering data analysis allows CPAs to provide deeper insights and valuable business advice to clients

### **Increasing Marketability**

Data analysis skills boost a CPA's marketability by meeting modern business demands and expectations

### **Strategic Business Partner**

CPAs with strong data analysis are seen as key strategic partners in business decision-making processes

# Key Data Analysis Skills and Concepts for CPAs



# Understanding Basic Data Analytics Principles



## **Data Types Overview**

Understanding different data types helps categorize and organize data correctly for analysis

## **Statistical Measures**

Statistical measures summarize data distributions effectively

## **Visualization Techniques**

Data visualization techniques help present data clearly, enhancing interpretation and decision-making

# Identifying and Interpreting Relevant Data



## **Data Relevance Assessment**

CPAs identify data sets that directly address specific business questions for effective analysis

## **Actionable Insights Extraction**

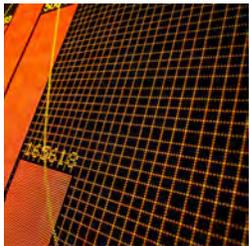
Analyzing relevant data helps CPAs generate insights that support informed business decisions

# Transforming Raw Data Into Actionable Narratives



## **Data Storytelling Importance**

Storytelling techniques help translate complex data into understandable and engaging narratives for stakeholders.



## **Visualization Techniques**

Visualizations like charts and graphs aid in illustrating key insights clearly and effectively.



## **Driving Actionable Insights**

Clear communication of data insights enables informed decision-making and stakeholder action.



## Critical Thinking and Analytical Reasoning

---

### **Importance of Critical Thinking**

Critical thinking helps CPAs analyze data deeply and identify underlying patterns and relationships.

### **Analytical Reasoning Skills**

Analytical reasoning enables CPAs to interpret complex datasets accurately for strategic financial insights.

### **Better Financial Decisions**

These skills empower CPAs to make informed decisions that benefit clients and organizations strategically.



## Effective Data Visualization Techniques

### **Importance of Clear Data Presentation**

Clear presentation of data helps CPAs effectively communicate insights to stakeholders and supports better understanding.

### **Mastering Visualization Tools**

Proficiency in tools like Power BI and Excel enables CPAs to create detailed and interactive visual reports.

### **Supporting Decision-Making**

Well-designed visualizations make complex data easier to understand, facilitating data-driven decisions.

# Understanding Data Governance and Integrity



## **Data Accuracy and Consistency**

Ensuring data is accurate and consistent is essential for reliable financial analysis and reporting.

## **Data Security Importance**

Protecting data security builds trust and meets regulatory compliance for CPAs and clients.

## **Governance Principles Awareness**

Understanding data governance principles guides proper management and integrity of financial data.

# Leveraging Microsoft 365 Tools for Data Analysis





# Essential Data Skills for CPAs

## **Financial Data Analysis**

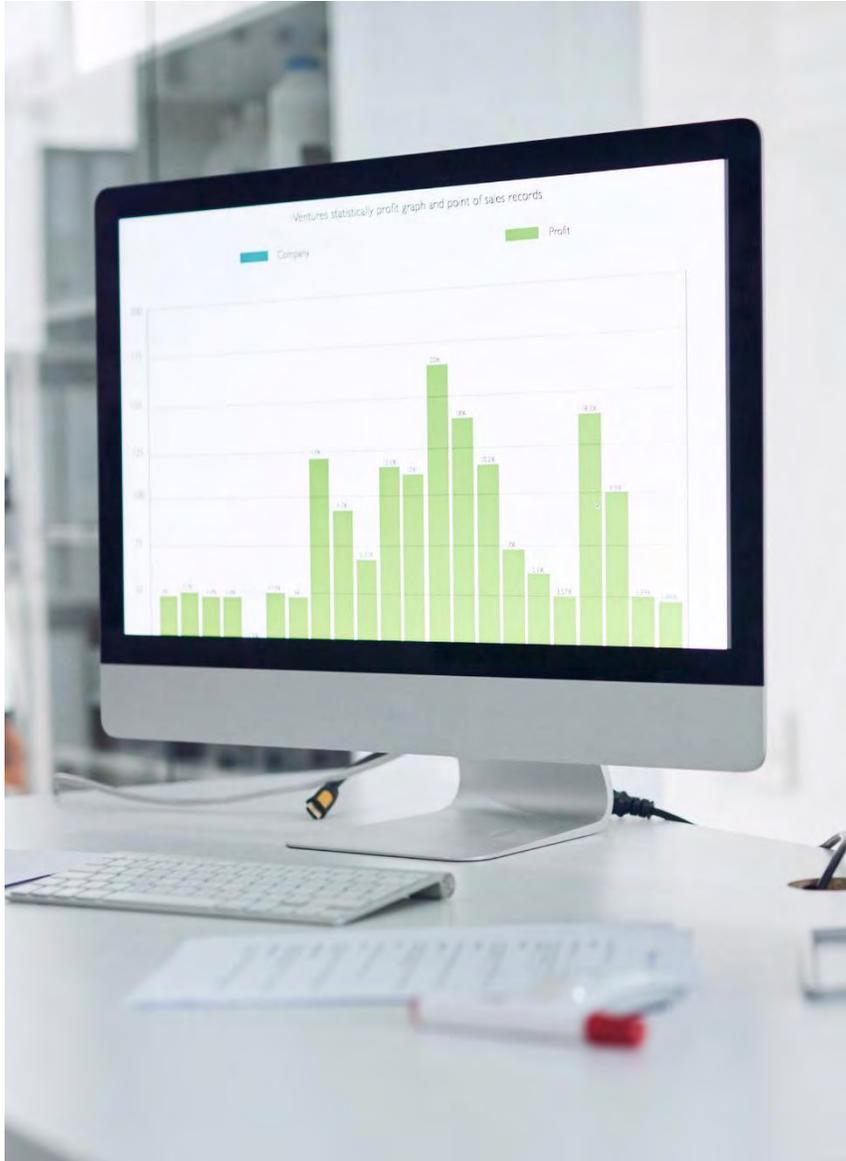
CPAs must interpret financial data and identify trends to support accurate decision-making and business insights.

## **Data Visualization Mastery**

Understanding and creating visuals makes complex data more accessible and supports communication of financial findings.

## **Digital Tools Proficiency**

Familiarity with digital tools like Excel and audit software increases efficiency and accuracy in data analysis tasks.



## Utilizing Excel for Data Modeling and Visualization

### **Advanced Excel Functions**

Excel offers advanced functions that help CPAs perform complex calculations and data analysis efficiently.

### **Pivot Tables**

Pivot tables enable dynamic summarization and organization of large datasets for insightful reporting.

### **Charting Tools**

Excel's charting tools allow effective visualization of data trends and comparisons through various graph types.



# Collaborating with Power BI for Advanced Analytics

## Interactive Dashboards

Power BI enables creation of interactive dashboards that visualize data dynamically and intuitively.

## Real-Time Data Updates

Power BI supports real-time data updates, ensuring the latest information is always available for analysis.

## Advanced Analytics Insights

Advanced analytics in Power BI provide deeper insights to support better decision-making.

# Microsoft 365 Toolkit



**Excel:** The foundation for most accountants; dynamic arrays, data models, and pivot tables extend its power.



**Power Query:** Automates repetitive data preparation tasks such as cleaning, transforming, and combining files.



**Power BI:** Creates dynamic dashboards and interactive visualizations to tell compelling stories.



**OneDrive/SharePoint/Teams:** Cloud-based collaboration, version control, and secure file sharing.



**Power Automate:** Sets up workflows and alerts, eliminating manual tasks.



# Overview and Integration of Microsoft Excel, Power Query, and Power Pivot

## Excel as Analysis Platform

Excel offers a familiar interface for data organization, enabling CPAs to perform efficient analysis.

## Power Query for Data Cleaning

Power Query simplifies data cleaning and transformation, ensuring accurate and usable data for analysis.

## Power Pivot for Data Modeling

Power Pivot enables complex data modeling and relationship management to uncover deeper insights.



# Introduction to Microsoft Power BI and Its Significance

## **Interactive Data Visualization**

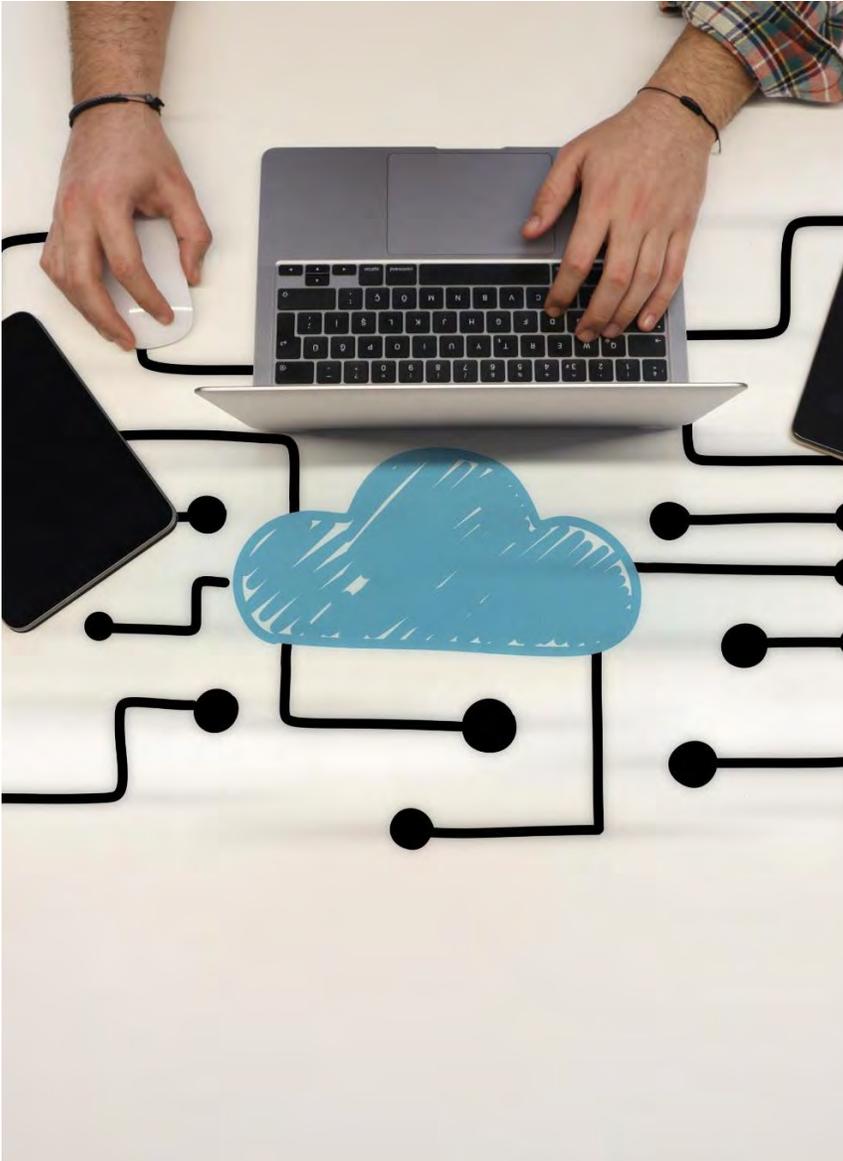
Power BI allows creation of interactive visual reports that help users explore data dynamically.

## **Empowering CPAs**

Power BI empowers CPAs to generate insightful dashboards for clear communication with stakeholders.

## **Clear Communication of Complex Data**

Power BI simplifies complex data, making reports easy to understand for all stakeholders.



## Using Teams and SharePoint for Collaboration and Data Sharing

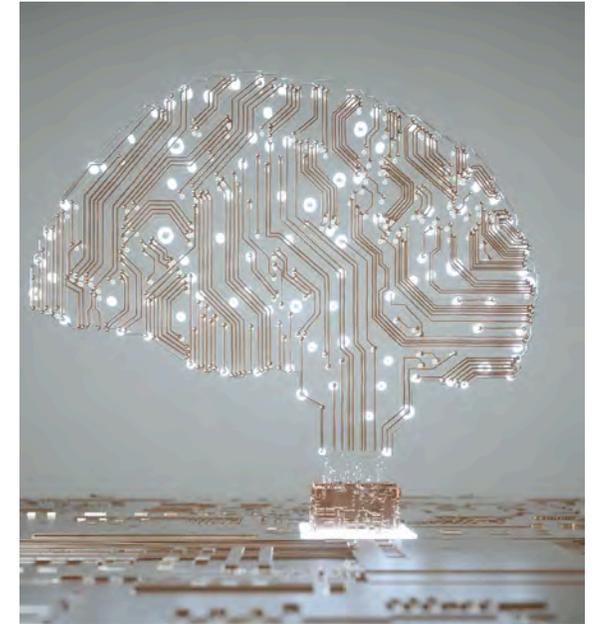
### **Seamless Collaboration**

Teams and SharePoint enable smooth collaboration among accounting teams for effective communication.

### **Real-Time Data Sharing**

Real-time sharing of data, reports, and insights improves decision making and productivity.

# Building a Data Analytics Mindset



# Developing a Growth Mindset for Continuous Learning



## **Embrace Ongoing Education**

Continuous learning enables CPAs to stay updated with new tools and evolving industry knowledge

## **Stay Curious and Adapt**

Curiosity drives exploration of innovative techniques and helps adapt to changing data environments

# Integrating Data Analytics Into Daily Accounting Practice



## **Improved Accuracy**

Data analytics reduces errors and enhances precision in accounting tasks for more reliable results

## **Enhanced Efficiency**

Routine workflows become faster and more streamlined by integrating data analysis tools

## **Strategic Value Delivery**

CPAs leverage data insights to provide valuable strategic advice to clients and organizations

# Analytics Maturity Path



**Awareness:** Know that tools and capabilities exist beyond traditional Excel



**Efficiency:** Staff automate repetitive processes using Power Query and modern Excel features



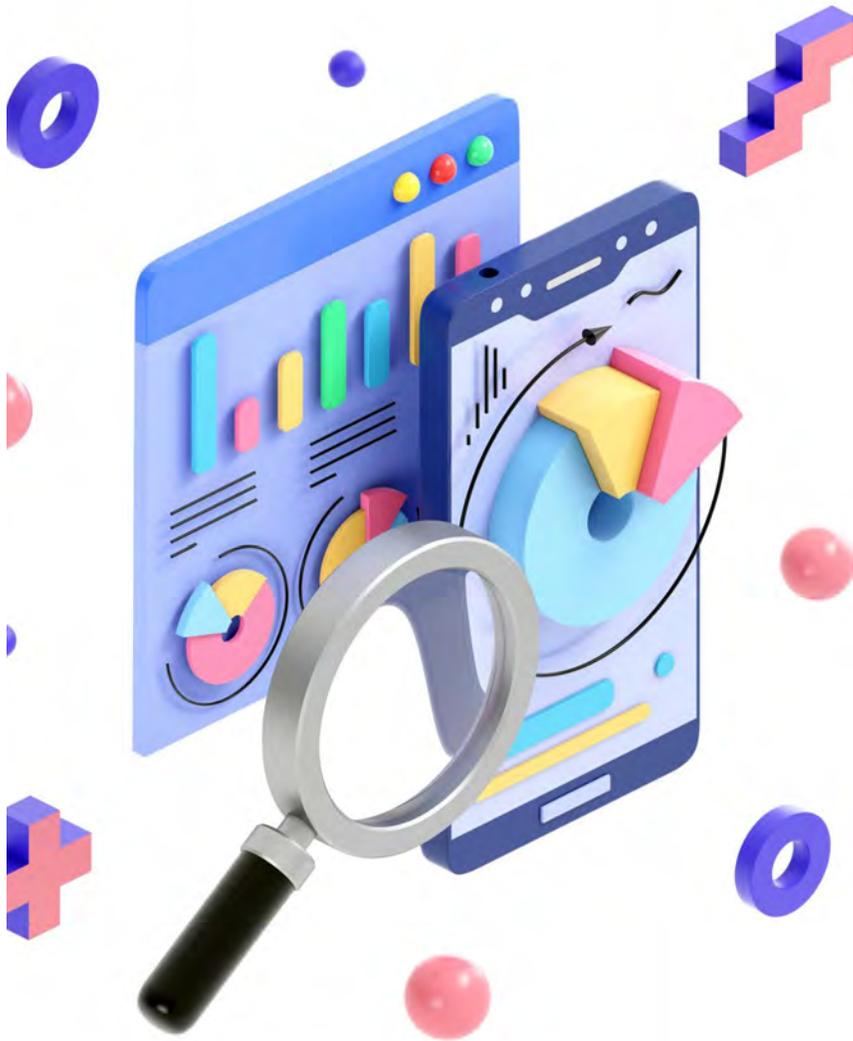
**Insight:** Analytics provides deeper understanding of performance drivers and trends



**Advisory:** Accountants provide forward-looking guidance and recommendations based on data models

# Building the Mindset

Staff	Learn and experiment with tools like Power Query and Power BI
Managers	Encourage staff development and allocate time for training
Leaders	Invest in analytics strategy, infrastructure, and culture
Everyone	Strive to move up the value chain from compliance to advisory



## The Value of Mastering Power BI for CPAs

### **Data Transformation Skills**

Mastering Power BI enables CPAs to convert complex raw data into clear, actionable insights

### **Visual Storytelling**

Power BI helps CPAs create compelling visual stories that communicate data effectively to stakeholders

### **Influencing Business Strategy**

CPAs use data insights from Power BI to guide strategic decisions and improve client advising



## Basic Steps to Get Started with Data Analytics in Microsoft 365

### **Understand Data Sources**

Begin by identifying and comprehending various data sources available within Microsoft 365 environments to analyze

### **Practice with Excel and Power BI**

Use Excel and Power BI tools to manipulate data, create visualizations, and gain practical analytics experience

### **Build Skills Through Projects**

Enhance analytics capabilities by working on hands-on projects that apply learned concepts progressively



# Transforming Financial Reporting with Interactive Dashboards

## Real-time Data Updates

Interactive dashboards provide real-time financial data updates for timely decision making.

## Enhanced Data Accessibility

Dashboards make complex financial data accessible and easy to understand for all users.

## Dynamic Financial Visualization

Dynamic visualizations simplify financial reporting by highlighting key metrics clearly.



## Common Obstacles in Adopting Data Analytics

### **Resistance to Change**

Resistance to organizational change can slow the adoption of data analytics despite its benefits.

### **Data Quality Issues**

Poor data quality undermines analytics efforts and leads to unreliable insights.

### **Skills Gap**

Lack of skilled personnel limits effective use and adoption of analytics technologies.

# Wrap-Up





# Conclusion

## **Empowering CPAs**

Mastering data analysis enables CPAs to convert raw numbers into insightful business narratives effectively.

Mastering data analysis tools empowers CPAs to excel in the changing accounting environment.

## **Strategic Advisory Role**

This skill transformation positions CPAs as key strategic advisors in today's data-driven business environment.

## **Enhanced Advisory Services**

Data analysis enhances advisory services, enabling CPAs to provide greater client value.

## **Continuous Skill Development**

Ongoing learning and using modern analytical tools are essential for CPAs to maintain success and relevance.

# Tools at Your Fingertips



**Excel:** The foundation for most accountants; dynamic arrays, data models, and pivot tables extend its power.



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**Power BI:** Creates dynamic dashboards and interactive visualizations to tell compelling stories.



**OneDrive/SharePoint/Teams:** Cloud-based collaboration, version control, and secure file sharing.



**Power Automate:** Sets up workflows and alerts, eliminating manual tasks.

# Call to Action



## Students/Staff

Start learning advanced Excel, Power Query, and Power BI now.



## Managers

Promote and support staff analytics training and experimentation.



## Leaders

Make analytics a strategic priority within firms and corporations.

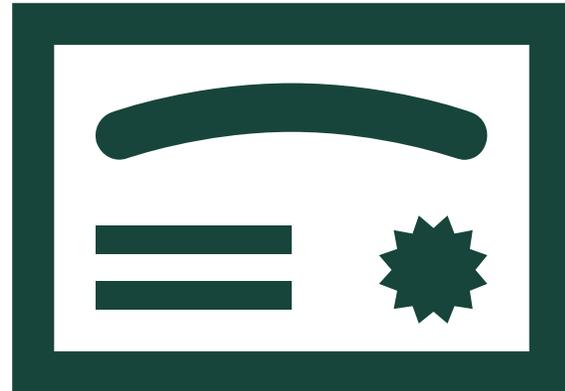


## Remember

Analytics is not optional – it's essential for future relevance of the profession.

# Questions?





# Thank You!!



Bryan L. Smith, CPA.CITP, CISA



[bsmith@datasmithpro.com](mailto:bsmith@datasmithpro.com)



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ONE FINAL NOTE



**Wisconsin Institute of  
Certified Public Accountants**

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# Power BI in Practice: Building End-to-End Analytics Solutions

Developed by Bryan L. Smith, CPA.CITP, CISA

**In Waukesha, WI on December 4, 2025, 2:15-3:30pm**



## Bryan L. Smith, CPA.CITP, CISA

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- Owner DataSmithPro, LLC
- Co-founder of CPA Crossings, LLC
- Strategic technology advisor to CPAs w/ 40+ years of experience
- Nationally recognized author and presenter on CPA technology
- Extensive knowledge and experience in proper Excel design techniques as well as helping CPAs build spreadsheets that are accurate
- As a Certified Information Systems Auditor (CISA), spent a considerable amount of time auditing and validating thousands of Excel spreadsheets
- Developed various data analysis and Microsoft Power BI courses and has worked with multiple organizations to train and coach staff on proper data analysis techniques
- Masters of Science in Information Assurance (MSIA)

# Presentation Outline

Click links to navigate to  
specific section ----->

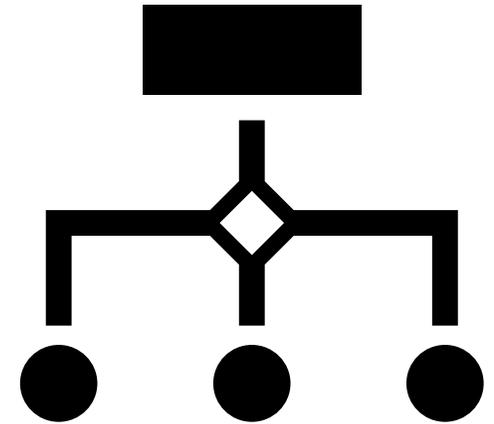


- [Power BI Workflow](#)
- [What's Next After Creating a Data Model](#)
- [Best Practices for Performance Optimization](#)
- [Leveraging Your Data Model Through PowerBI.com](#)
- [Wrap-Up](#)

The slides in this presentation contain many screenshots of Excel and the Power BI applications in order to demonstrate particular features and functionality. These screenshots were taken during the development of this course. However, Microsoft updates the apps regularly and it becomes difficult to constantly update the screenshots. Therefore, please note that screenshots may vary from your actual version, but the overall functionality remains the same.

Note About Screen Shots

# Power BI Workflow







# Reality

Your Organization

People performing various activities

Activities generate data

No two organizations have identical data

Determine your organization's data

## Collect Raw Data

# Collect Raw Data

Build “pipelines” to your data

- Data connectors
- Files (Excel, csv, text, report, databases)

Where is it?

How do we get it?

Is it complete?

## Process Data

# Process Data

Data is processed through the pipelines

Wherever possible automate this

Many tools on the market to help with this

Different tools for different data

Sometimes left to the technical staff

Clean  
Data

# Clean Data

Get data into a suitable format

May have several data tables

- Sales, customers, products, sales person

Filter, extract, combine, merge, eliminate, match, etc.

Create calculated columns for missing data

# Exploratory Data Analysis

Do you have the right data for what you want to know?

Is our data clean?

- Duplicates, missing values, absurd outliers, incorrect, etc.

Garbage In, Garbage Out

May need to go back to previous steps

Build Data  
Model &  
Measures

# Build Data Model & Measures

Put the raw data into a useable form

Connect tables through relationships

Allows access to all cleansed data

Build measures/metrics for what you want to know

- Dependent on who is using the data model

Share Data  
Product

# Share Data Product

Data Product = Data Model & Measures

Goal is to eliminate siloing of data

No ability to change the data, the model or the measures

Provides consistent analysis across the organization

Otherwise, people just copy & paste into Excel!!

Communicate/  
Visualize  
Report

# Communicate/Visualize Report

Tells the story of our data

Pictures are worth a 1,000 words

Limited tables (rows & columns of data)

Graphics, pictures, charts, etc.

Interactive visualizations

Take your audience into consideration

**Make  
Insightful  
Decisions**

# Make Insightful Decisions

The ultimate goal of Data Analysis

What is my data telling me?

- Trends, patterns, anomalies, etc.

Data backed decisions

Alternative is gut-based decisions



Automation  
&  
Maintenance

# Automation & Maintenance

Determine needs for data refresh

Setup scheduled refreshes

Document data model

Implement security rights

Monitor report usage



## Performance Optimization

# Performance Optimization

Remove unnecessary fields (columns) in dataset

Remove unnecessary records (rows) in dataset

Hide tables, columns & measures if not expected to use

Create measure in place of value column

Hide value columns where a measure is used to aggregate

# The Importance of the Data Analysis Process Flow

Each step is as important as another

- Don't discount any step

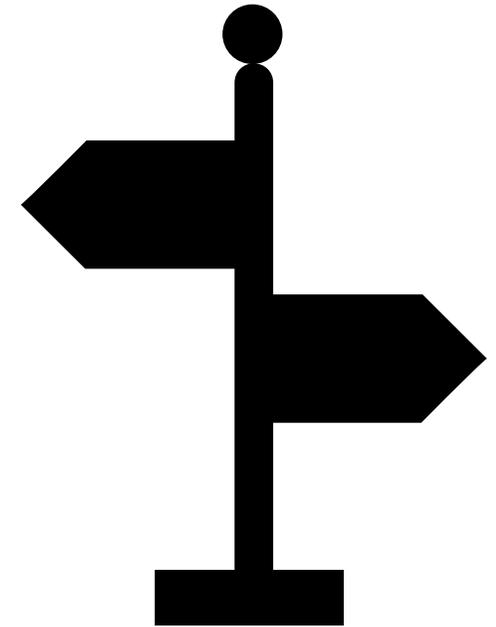
Following from beginning to end = greatest success

- Don't skip steps

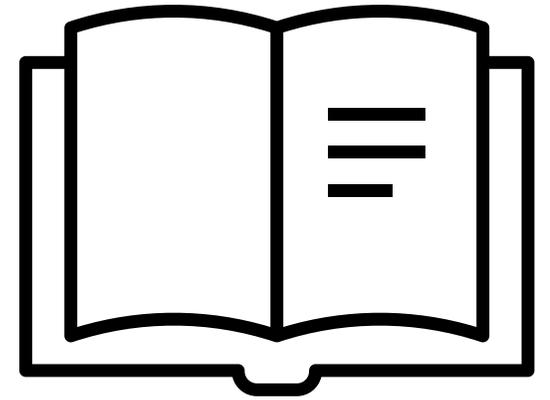
No magic button to push

Team effort to eliminate data silos

# What's Next After Creating a Data Model



# Document Data Model



# Why Document the Data Model?

## Ensures users understand

- Data structure
- Relationships
- Business Logic

Errors, inconsistencies & changes can be tracked over time

New analysts can quickly onboard & make improvements

# Document **Power Pivot** Data Model



# Excel Documentation

## Power Query

- Change Step Name
- Add Description to Step Properties
- Query Properties - Description

## Power Pivot

- Table Properties - Description
- Measure - Description
- Fields - Description
- Advanced - Synonyms
- Put Measures in Separate Table

# Excel Power Query - Document Steps

Query Settings

PROPERTIES

Name: Customers

APPLIED STEPS

- Source
- Navigation
- Changed Type
- Renamed Columns
- Removed Columns
- Replaced Values
- Replaced Values

Context Menu:

- Edit Settings
- Rename
- Delete
- Delete Until End
- Insert Step After
- Move before
- Move after
- Extract Previous
- View Native Query
- Properties...

Right-click on Step, select Properties

Step Properties

Name: Source

Description: Excel file that contains Customer master data.

Change Step Name (Source & Navigation step can't be changed)

Type a detailed description of what this step does

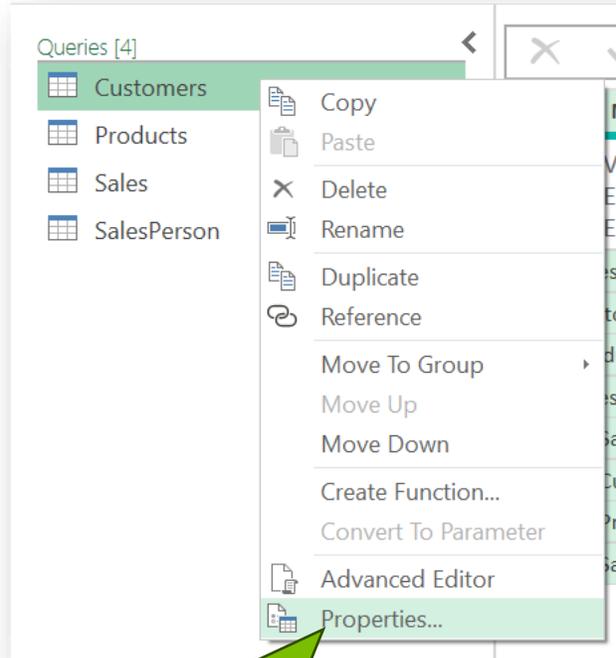
Query Settings

APPLIED STEPS

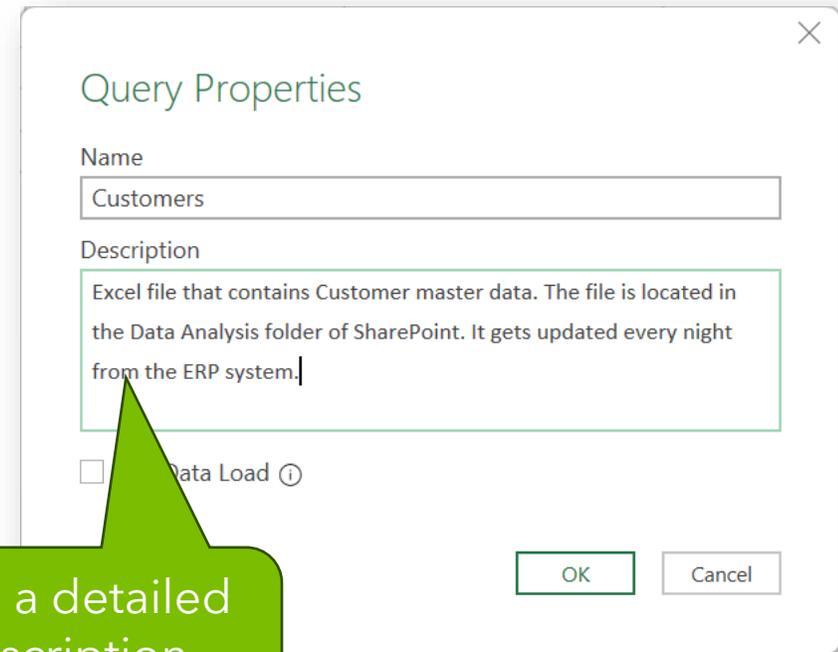
- Source
- Changed Type
- Renamed Columns
- Removed Columns
- Replaced "S" in CustomerType
- Replaced "I" in CustomerType

Indication a description was added, "hover" over to display

# Excel Power Query - Document Query Description

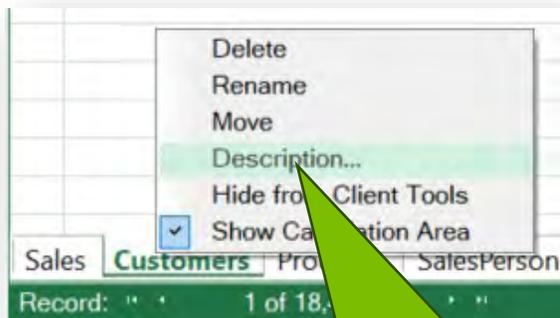


Right-click on Query,  
select Properties

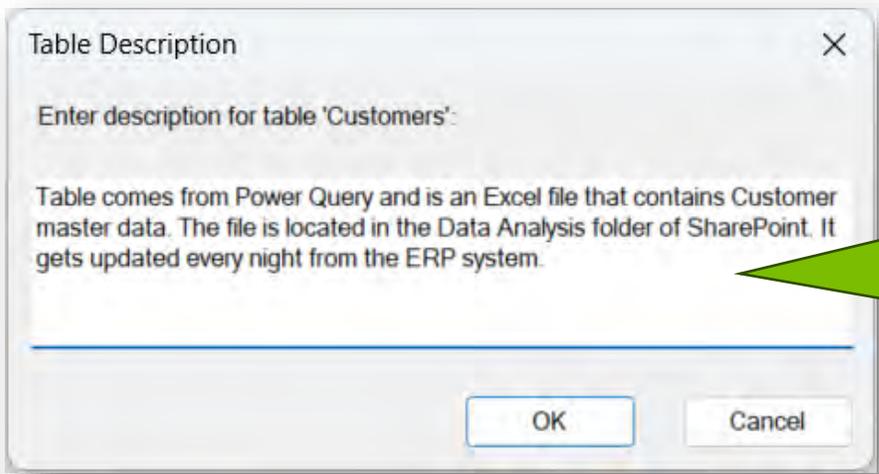


Type a detailed  
description  
about this Query

# Excel Power Pivot - Document Table Description



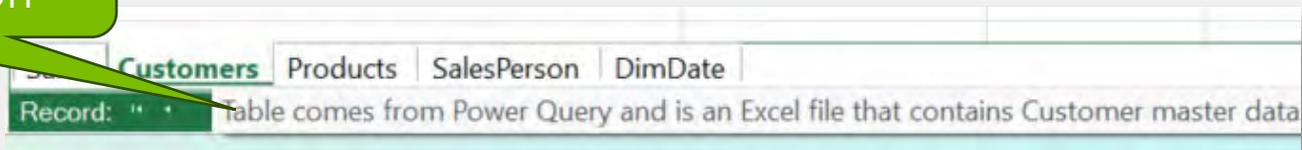
Right-click on Table, select Description



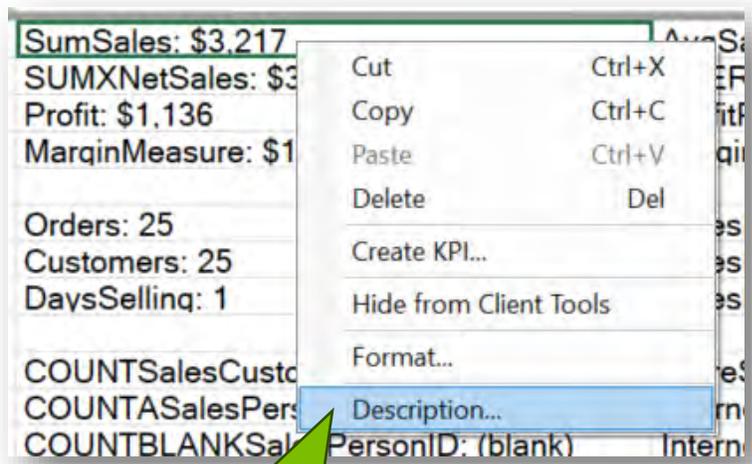
Type a detailed description about this Table. **Note:** this description is different from the Query description.

Limited to 256 characters

"Hover" over table name to display description

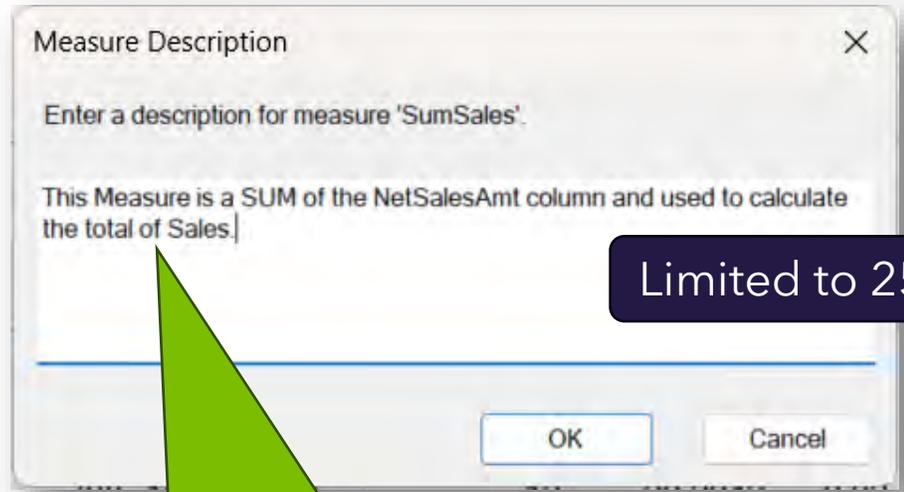


# Excel Power Pivot - Document Measure Description



Right-click on Measure, select Description

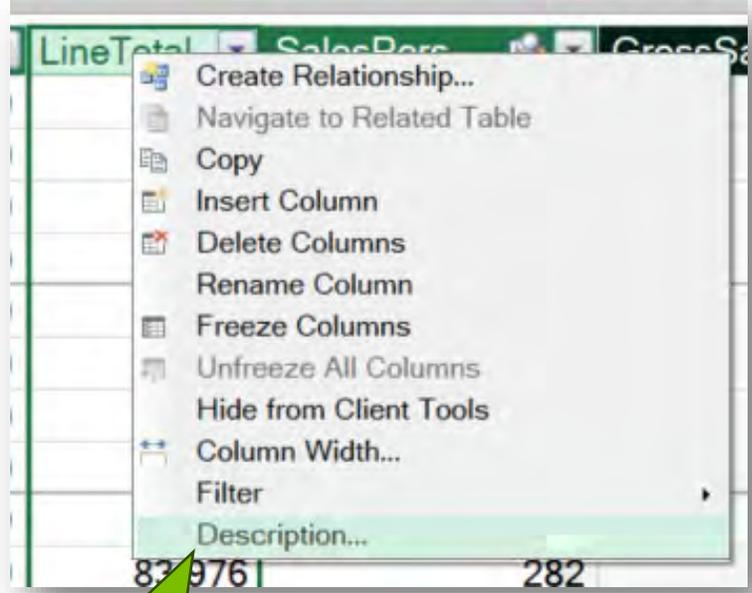
**Note:** You can also enter a Description on the Power Pivot ribbon in Excel



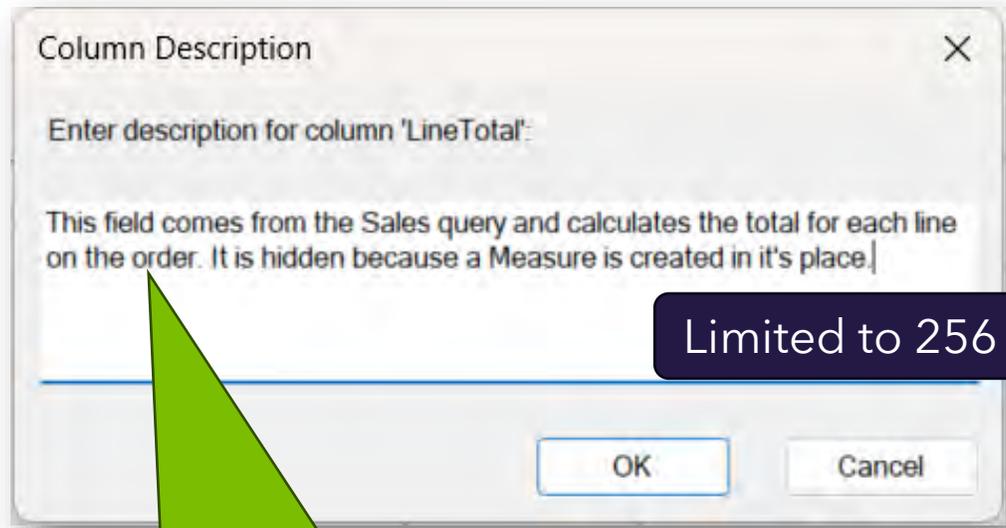
Type a detailed description about this Measure

**Note:** The only way to display a measure description is to right-click on measure and select Description

# Excel Power Pivot - Document Field/Column Description



Right-click on Column,  
select Description

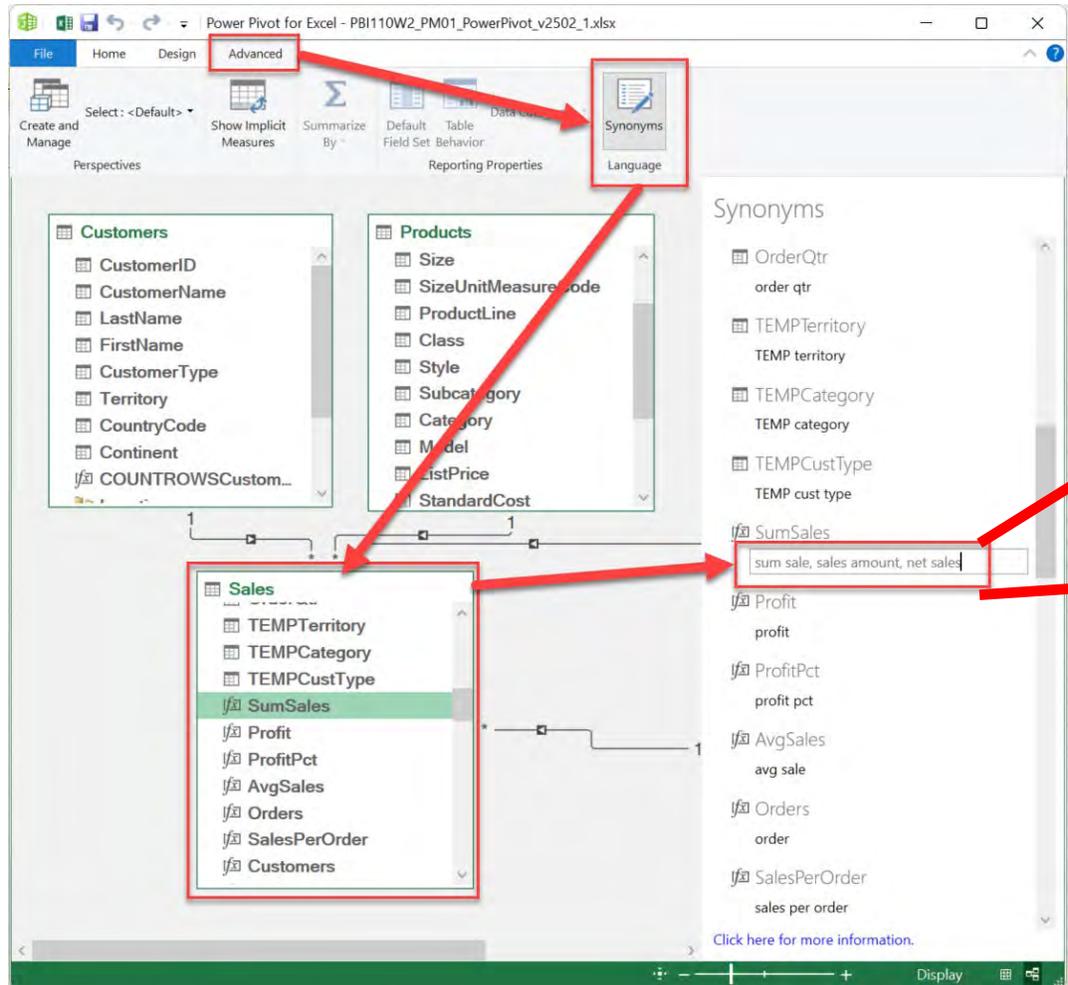


Limited to 256 characters

Type a detailed description  
about this Column

**Note:** The only way to display a  
column description is to right-click on  
column and select Description

# Excel Power Pivot - Create Synonyms for Fields



SumSales  
sum sale, sales amount, net sales, |

Can be used with Q&A feature when Data Model is saved to PowerBI.com

# Excel Power Pivot -

## Place Measures in a Table - Step 1, Create Table

Select any Blank cell in Excel, then Ctrl-C

Go to Manage Data Model, select Paste

Give a table name "\_Measures"

Uncheck

Right-click & Hide

Use first row as column headers.

OK Cancel

Hide from Client Tools

# Excel **Power Pivot** - Place Measures in a Table - Step 2, Add Measures

**Power Pivot**

Go back to Excel

Select the \_Measure table

Fill in any other field, then press OK

Select Measure, then Edit

Manage Measures

Measure	Formula
ALLMonthsSales	CALCULATE([SumSales],ALL(Sales[OrderMonth]))
ALLMonthsSales...	DIVIDE([SumSales],[ALLMonthsSales])
ALLSales	CALCULATE([SumSales],ALL(Sales))
ALLSalesRatio	DIVIDE([SumSales],[ALLSales])
ALLSELECTEDM...	CALCULATE([SumSales],ALLSELECTED(Sales[OrderMonth]))
ALLSELECTEDM...	DIVIDE([SumSales],[ALLSELECTEDM...])
ALLSELECTEDS...	CALCULATE([SumSales],ALLSELECTED(Sales))
ALLSELECTEDS...	DIVIDE([SumSales],[ALLSELECTEDS...])
AVERAGEXSellP...	AVERAGEX(Sales,[SUMXNetSales])

Measure

Table name: Measures

Measure name: ALLMonthsSales

Description: Measure to calculate SumSales without regard to a Months filter

Formula: =CALCULATE([SumSales],ALL(Sales[OrderMonth]))

Formatting Options

Category: Currency

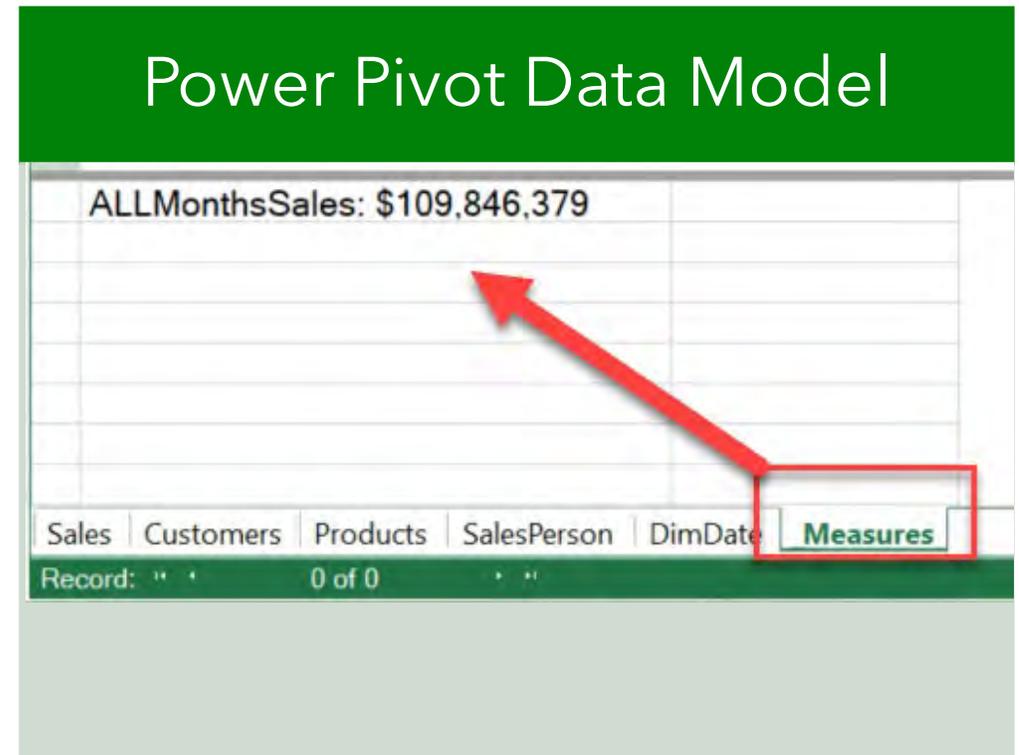
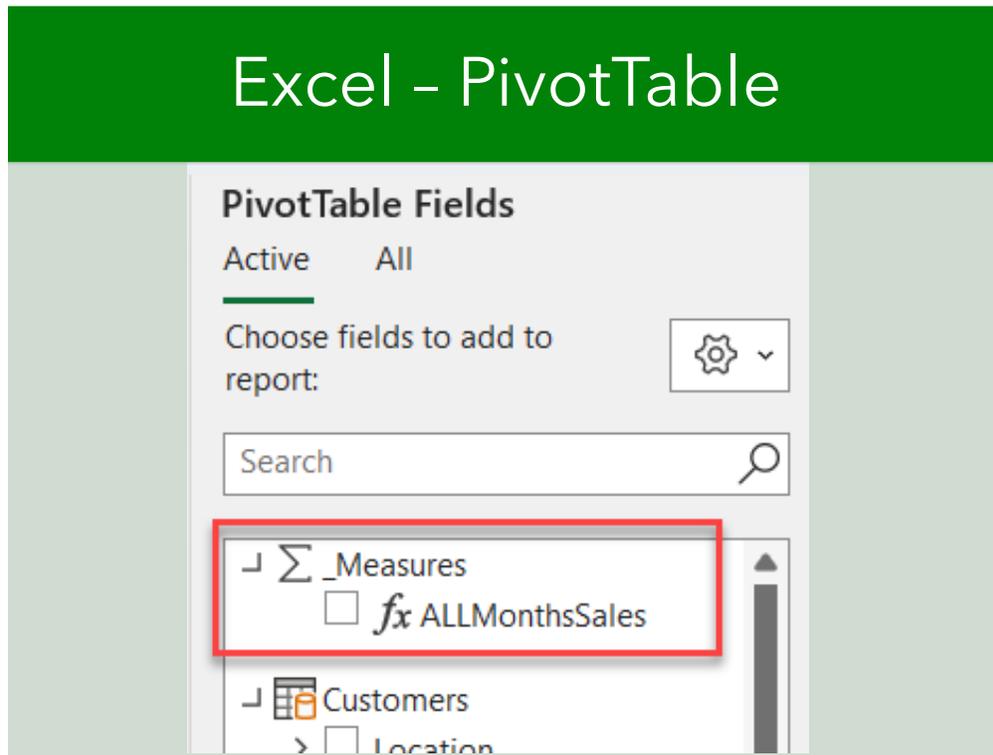
Symbol: \$

Decimal places: 0

Use 1000 separator (,)

OK Cancel

# Excel **Power Pivot** – Place Measures in a Table – Step 3, View Measures in New Table



# Excel Add-In Tool for Documentation

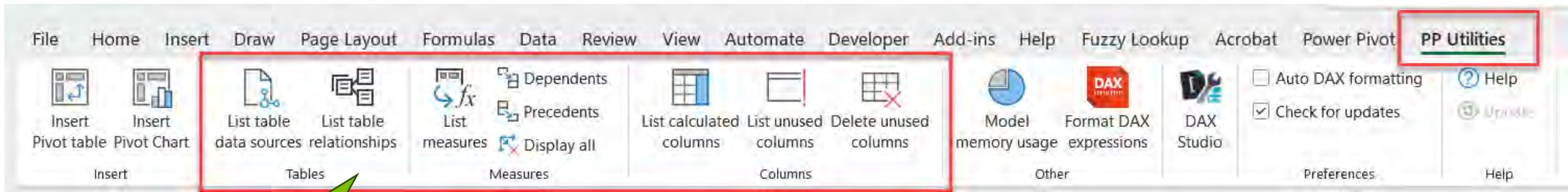
## Power Pivot Utilities

- By Bertrand d'ARBONNEAU, hosted on [sqlbi.com](https://sqlbi.com)
- Hasn't been updated in awhile but still works

## Documentation Features

- List Table Data Sources
- List Table Relationships
- List Measures
- List Calculated Columns
- List Unused Columns

# Power Pivot Utilities Ribbon



Documentation Features

# List Table Data Sources

	A	B	C	D
1	Table	Connection Name	Connection type	Description
2	_Measures	Connection	NOSOURCE	
3	Customers	Query - Customers	OLEDB	Table comes from Power Query and is an Excel file that contains Customer master data. The file is located in the Data Analysis folder of SharePoint. It gets updated every night from the ERP system.
4	DimDate	Excel PBI999X9 PM97 v1.0 DATE Table	OLEDB - MS Jet	
5	Products	Query - Products	OLEDB	
6	Sales	Query - Sales	OLEDB	
7	SalesPerson	Query - SalesPerson	OLEDB	
8				

Navigation tabs: SalesByCategory | SalesPer | TimeIntelligence | **Tables\_Sources** | ... + :

# List Table Relationships

	A	B	C	D	E	F
1	ID	Foreign Key Table	Foreign Key Column	Primary Key Table	Primary Key column	Active
2	1	Sales	CustomerID	Customers	CustomerID	TRUE
3	2	Sales	ProductID	Products	ProductID	TRUE
4	3	Sales	SalesPersonID	SalesPerson	SalesPersonID	TRUE
5	4	Sales	OrderDate	DimDate	DateKey	TRUE
6						

Navigation: < > ... TimeIntelligence Tables\_Sources **Model\_Relationships** Measur ... + :

# List Measures

	A	B	C	D
1	TABLE	MEASURE	DAX Expression	DESCRIPTION
2		__No measures defined	:=1	
3	_Measures	ALLMonthsSales	:=CALCULATE([SumSales],ALL(Sales[OrderMonth]))	Measure to calculate SumSales without regard to a Months filter.
54	Sales	SumOrderSize	:=SUM([OrderSize])	
55	Sales	SumSales	:=SUM([NetSalesAmt])	This Measure is a SUM of the NetSalesAmt column and used to calculate the total of Sales.
56	Sales	SumTotalStdCost	:=SUM([TotalStdCost])	
57	Sales	SUMXDiscAmt	:=SUMX(Sales,ROUND([SUMXGrossSales]*[Discount	
58	Sales	SUMXGrossSales	:=SUMX(Sales,ROUND([OrderQty]*[UnitPrice],2))	
59	Sales	SUMXNetSales	:=SUMXGrossSales]-[SUMXDiscAmt]	

Navigation bar: Tables\_Sources, Model\_Relationships, **Measures**, Calculated\_Co

# List Calculated Columns

	A	B	C	D
1	TABLE	COLUMN	DAX Expression	DESCRIPTION
2	Sales	DiscountAmt	=ROUND([GrossSales]*[DiscountPct],2)	
3	Sales	GrossSales	=ROUND([OrderQty]*[UnitPrice],2)	Calculated Column that calculates Gross Sales by multiplying Qty x UnitPrice.
4	Sales	Margin	=ROUND([NetSalesAmt]-[TotalStdCost],2)	
5	Sales	MarginPct	=DIVIDE([Margin],[NetSalesAmt],0)	
6	Sales	NetSalesAmt	=ROUND([GrossSales]-[DiscountAmt],2)	
7	Sales	OrderDay	=DAY([OrderDate])	
8	Sales	OrderMonth	=MONTH([OrderDate])	
	Sales	OrderQtr	=SWITCH([OrderMonth], 1,1,2,1,3,1,	

Model Relationships | Measures | **Calculated Columns** | Unused Columns

# List Unused Columns

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Table	Column	Pivot Tables	Pivot Charts	Slicers	Relationships	Measures	Cube Formulas	Calculated Columns	Sorted By	Hierarchies	Is Used	Mark For Delete (Works only on Excel 2016)
2	_Measures	RowNumber										FALSE	Yes
3	_Measures	Column1										FALSE	Yes
4	Customers	CustomerID				TRUE						TRUE	No
5	Customers	CustomerName										FALSE	Yes
6	Customers	LastName										FALSE	Yes
7	Customers	FirstName										FALSE	Yes
8	Customers	CustomerType	TRUE		TRUE		TRUE		TRUE			TRUE	No
9	Customers	Territory	TRUE						TRUE		TRUE	TRUE	No
10	Customers	CountryCode					TRUE				TRUE	TRUE	No
11	Customers	Continent									TRUE	TRUE	No
12	DimDate	DateKey	TRUE		TRUE	TRUE	TRUE					TRUE	No
13	DimDate	FullDate										FALSE	Yes
14	DimDate	Calendar Year	TRUE		TRUE							TRUE	No
15	DimDate	Calendar YearMonth										FALSE	Yes
16	DimDate	Calendar MonthYear										FALSE	Yes

Unused Columns Report

# Power Query Applied Steps Missing from Power Pivot Utilities Add-In

The image shows a composite screenshot of the Power Query environment. On the left, the 'Advanced Editor' button in the ribbon is highlighted with a red box and an arrow pointing to the 'Advanced Editor' window. Below it, the 'Queries' pane shows 'Customers' selected. In the center, the 'Query Settings' pane for 'Customers' has a red box around the 'APPLIED STEPS' section, which lists: Source, Navigation, Changed Type, Renamed Columns, Removed Columns, Replaced 'S' in CustomerType, and Replaced 'I' in CustomerType. On the right, the 'Advanced Editor' window displays the M code for the 'Customers' query. A red arrow points from the 'APPLIED STEPS' list to the corresponding M code lines. A green callout bubble at the bottom right contains the text: 'You can copy & paste this into Excel to document'.

```
let
    // Excel file that contains Customer master data.
    Source = Excel.Workbook(File.Contents("C:\Users\BryanSmith\DataSmithPro\DSP Curriculum-Power sdfs = Source[[Item="TblCustomers",Kind="Table"]][Data],
    #"Changed Type" = Table.TransformColumnTypes(sdfs,{{"CustomerID", Int64.Type}, {"Sales_Stores" = Table.RenameColumns(#"Changed Type",{"Sales_StoreName", "CustomerName",
    // Changed column names to make more sense.
    #"Renamed Columns" = Table.RenameColumns(#"Changed Type",{"Sales_StoreName", "CustomerName",
    // Removed columns not needed for analysis.
    #"Removed Columns" = Table.RemoveColumns(#"Renamed Columns",{"MiddleName", "TerritoryID"}),
    // Replaced 'S' with 'Store' so field value makes more sense to user. These would be wholes
    #"Replaced 'S' in CustomerType" = Table.ReplaceValue(#"Removed Columns", "S", "Store", Replace
    // Replaced 'I' with 'Internet' so field value makes more sense to user. These would be cus
    #"Replaced 'I' in CustomerType" = Table.ReplaceValue(#"Replaced 'S' in CustomerType", "I", "I
in
    #"Replaced 'I' in CustomerType"
```

# I Used ChatGPT to Write a Macro to Document

A	B	C	D
<p><b>⚠ WARNING/DISCLAIMER ⚠</b></p> <p>This macro extracts Power Query steps from the current Excel workbook and formats them into a structured table. Please review the following before using:</p> <p><input checked="" type="checkbox"/> <b>**Intended Use**:</b></p> <ul style="list-style-type: none"> <li>- This macro is designed to work only with Power Query queries embedded in the current workbook.</li> <li>- It generates an output sheet named "PowerQuerySteps" and formats it for readability.</li> </ul> <p><b>⚠ **Caution**:</b></p> <ul style="list-style-type: none"> <li>- Running this macro will overwrite** any existing "PowerQuerySteps" sheet.</li> </ul>	<p><b>How to Run This Macro</b></p> <ol style="list-style-type: none"> <li>1. <b>Open your Excel file</b> with Power Query queries.</li> <li>2. Press <b>ALT + F11</b> to open the VBA Editor.</li> <li>3. <b>Copy &amp; Paste</b> the code on the right.</li> <li>4. Click <b>Insert &gt; Module</b>, paste the updated code.</li> <li>5. Run the macro <b>ExtractPowerQuerySteps</b>.</li> </ol>	<p><b>Copy the Below Text:</b></p> <pre>Sub ExtractPowerQuerySteps()  Dim ws As Worksheet Dim qry As WorkbookQuery Dim regexStep As Object, regexSource As Object, regexDesc As Object  Dim mCode As String  Dim lines() As String Dim currentStep As String Dim stepFormula As String  Dim stepDescription As String  On Error GoTo 0</pre>	

**PLEASE** read entire Disclaimer before using the macro!!

Macro to extract Power Query steps to a Worksheet

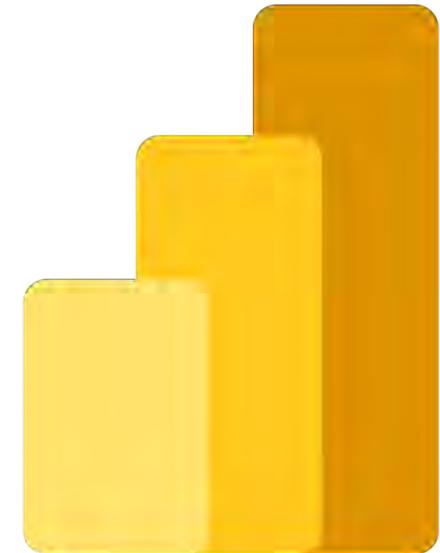
# Macro Results

	A	B	C	D
1	Query Name	Step Name	M Formula	Description
2	Customers	Source	= Excel.Workbook(File.Contents("C:\Users\BryanSmith\DataSmithPro\DSP Curriculum-PowerBI - DataSources\VPBI999X9 PM98 v1.1 AW DataSet.xlsx"), null, true), sdfs = Source[{Item="TblCustomers",Kind="Table"}][Data],	Excel file that contains Customer master data.
3	Customers	Changed Type	= Table.TransformColumnTypes(sdfs,{{"CustomerID", Int64.Type}, {"Sales_StoreName", type text}, {"LastName", type text}, {"FirstName", type text}, {"MiddleName", type text}, {"CustomerType", type text}, {"TerritoryID", Int64.Type}, {"SalesTerritoryName", type text}, {"CountryRegionCode", type text}, {"Group", type text}}),	
4	Customers	Renamed Colu	= Table.RenameColumns("#Changed Type",{{"Sales_StoreName", "CustomerName"}, {"CountryRegionCode", "CountryCode"}, {"Group", "Continent"}, {"SalesTerritoryName", "Territory"}}),	Changed column names to make more sense.
5	Customers	Removed Colu	= Table.RemoveColumns("#Renamed Columns",{"MiddleName", "TerritoryID"}),	Removed columns not needed for analysis.
6			= Table.ReplaceValue("#Removed	Replaced 'S' with 'Store' so field value makes more sense to user. These
			= Table.SelectColumn	
			"Size", "SizeUnitMea	
			"Subcategory", "Cate	

**Note:** Make sure you don't use " in description, I replaced with '

PowerQuerySteps

# Document **Power BI Desktop** Data Model



# Power BI Desktop Documentation

## Power Query

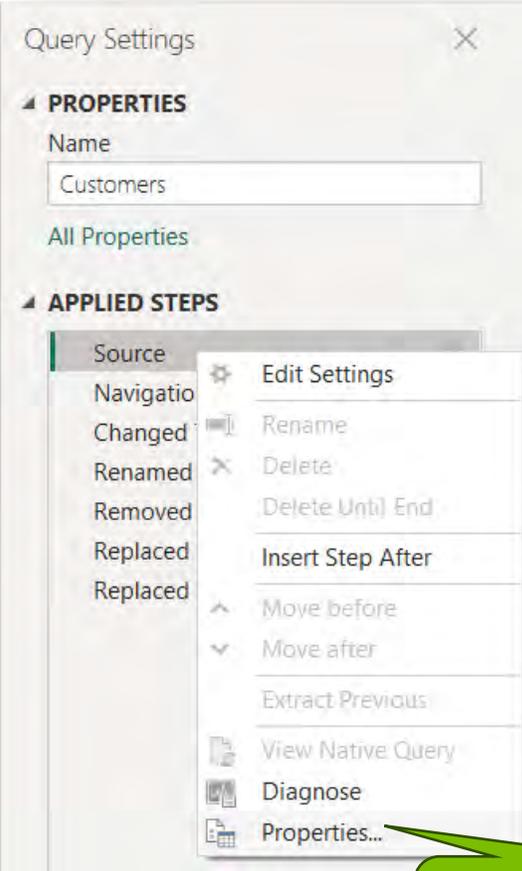
- Change Step Name
- Add Description to Step Properties

## Model View

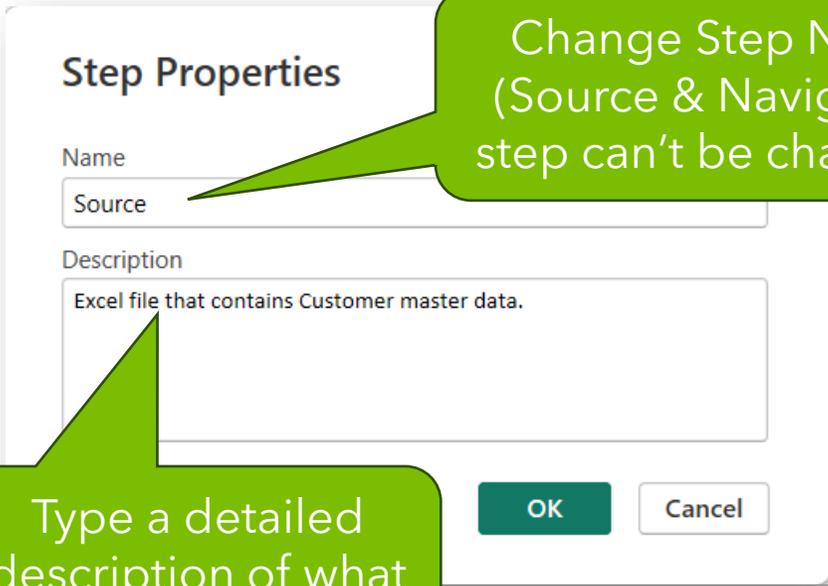
- Properties (for Measures, Fields, Calculated Columns & Tables)
  - Description
  - Synonyms
  - Display folder
    - FolderName1\FolderName2 (if needed)
  - Advanced - Data category

# Power BI Desktop Power Query - Document Steps

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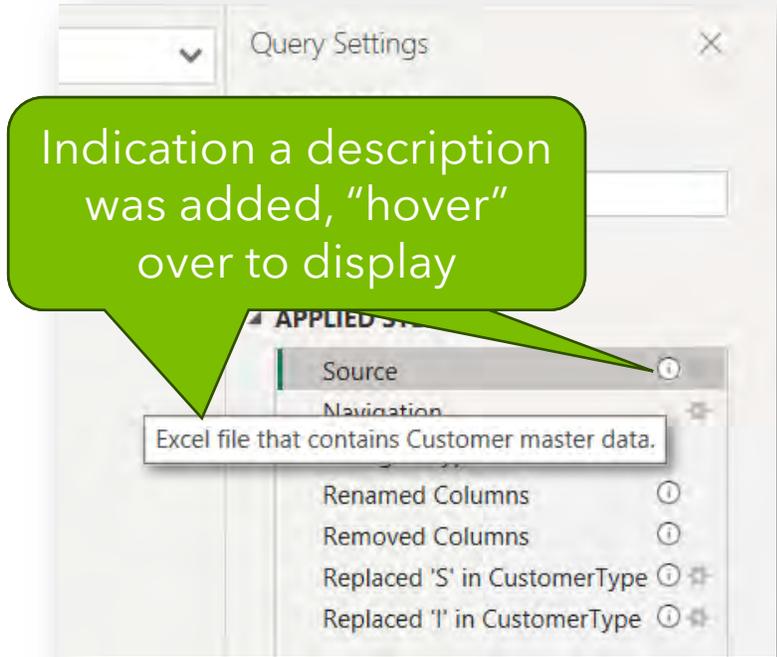


Right-click on Step, select Properties



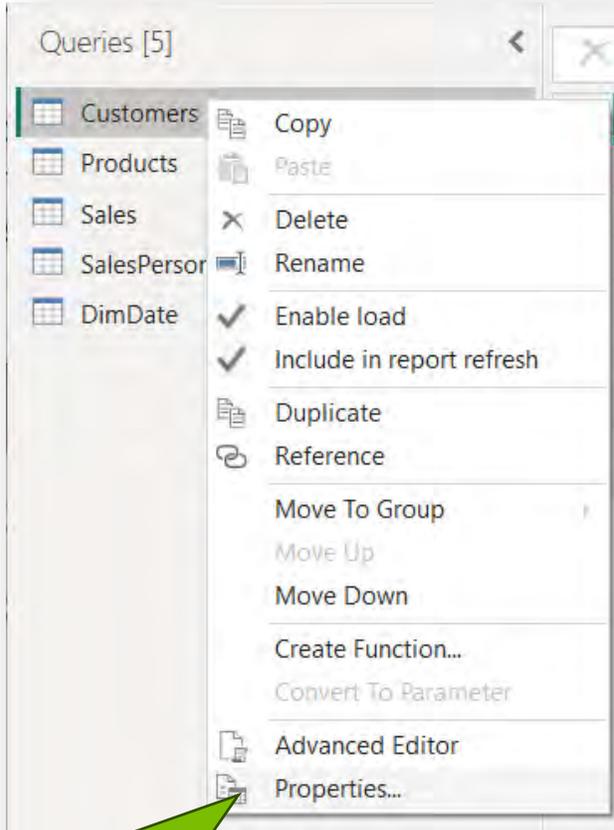
Change Step Name (Source & Navigation step can't be changed)

Type a detailed description of what this step does

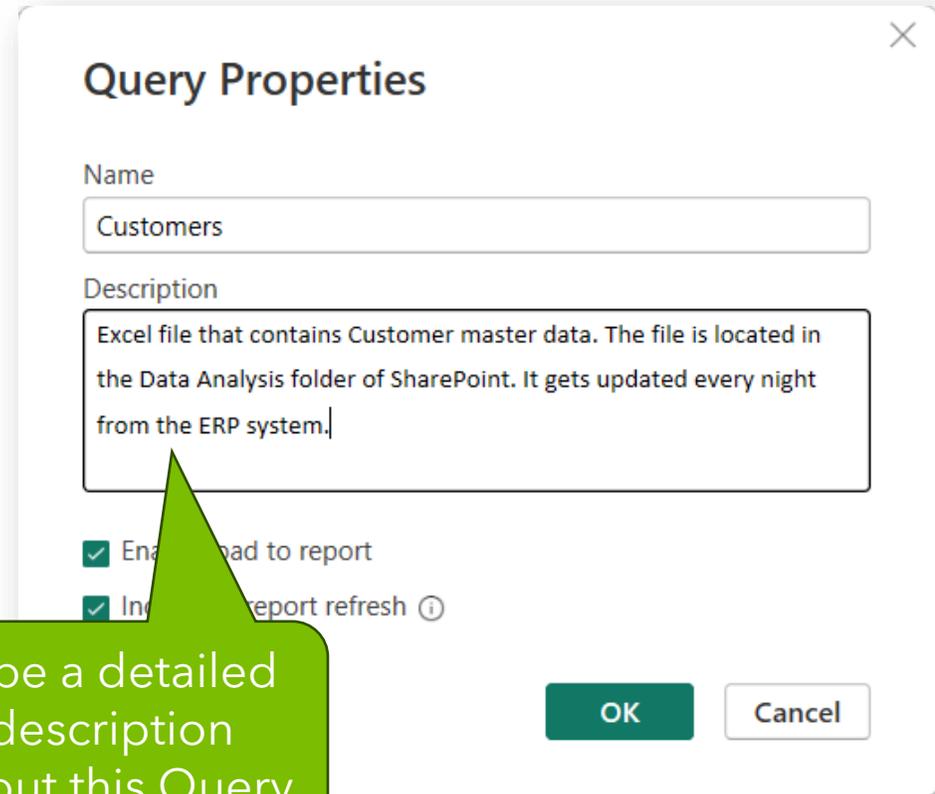


Indication a description was added, "hover" over to display

# Power BI Desktop Power Query - Document Query Description

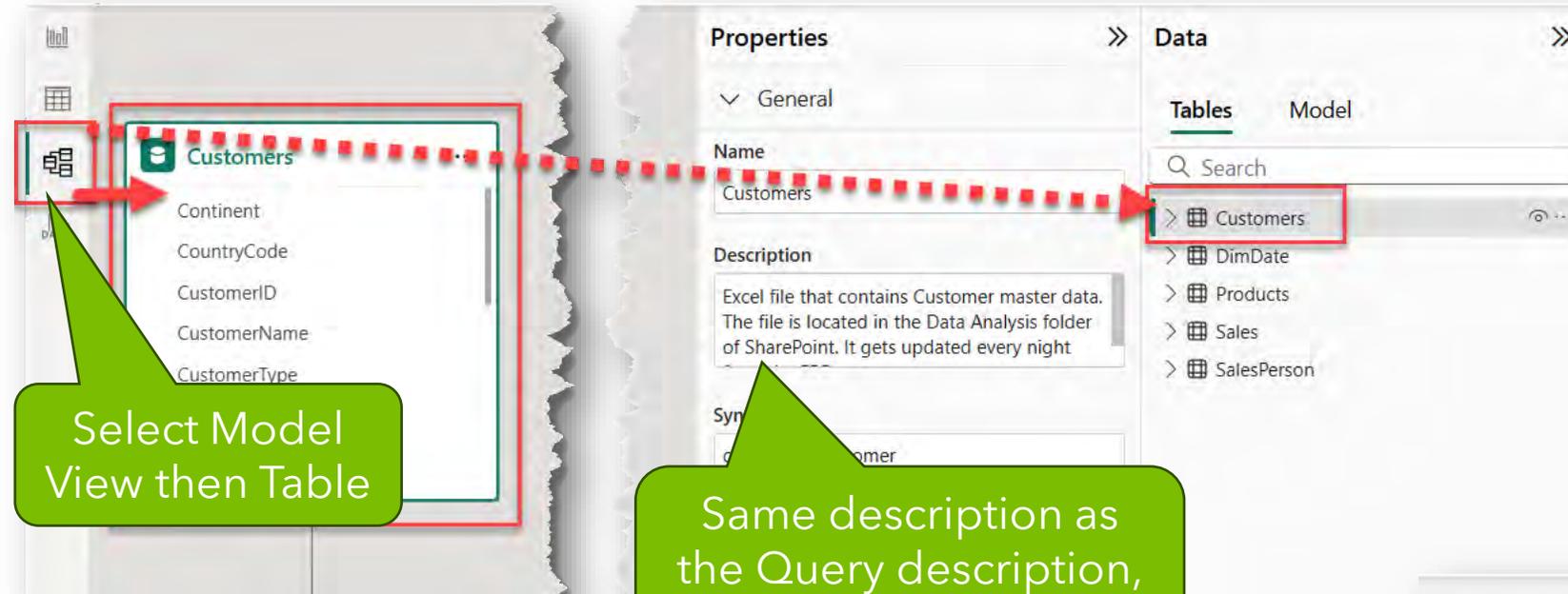


Right-click on Query, select Properties



Type a detailed description about this Query

# Power BI Desktop - Document Table Description

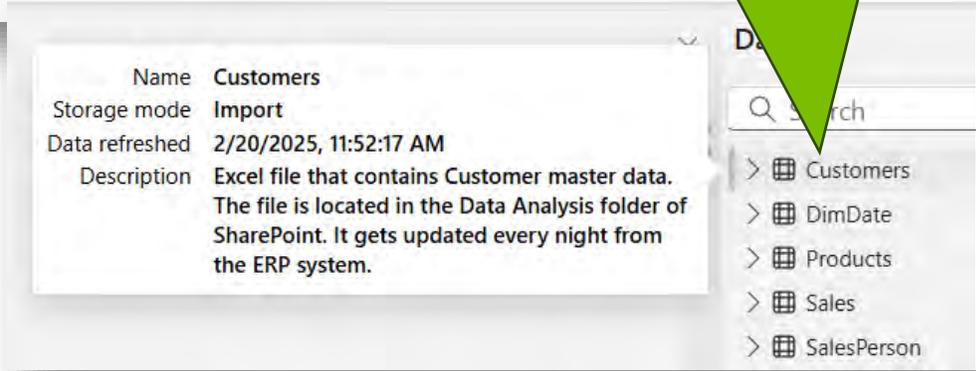


Select Model View then Table

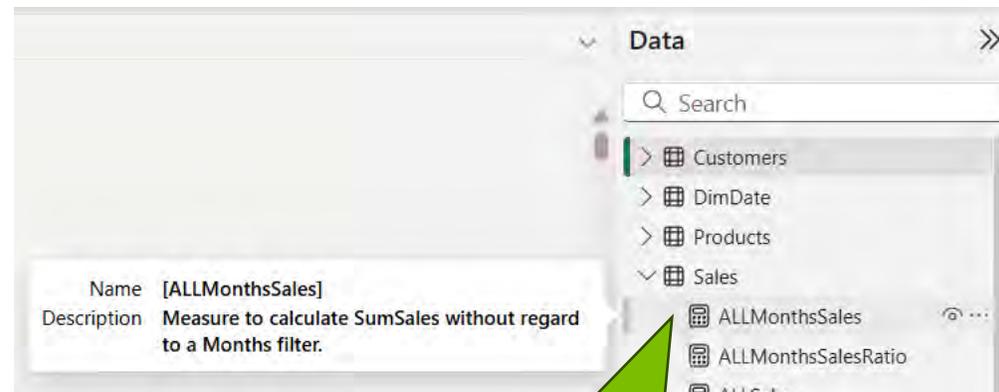
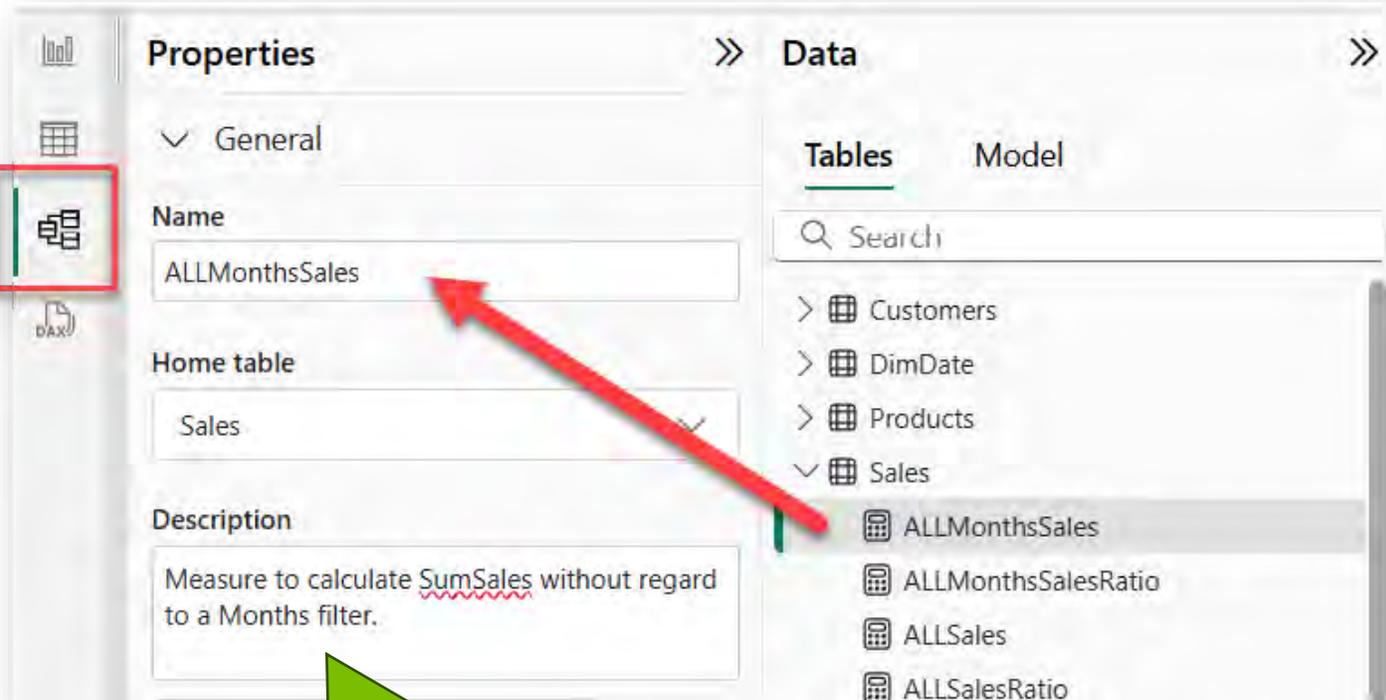
Same description as the Query description, so easier to enter here.

Limited to 256 characters

"Hover" over table name on **any** Data pane to display description



# Power BI Desktop - Document Measure Description



Type a detailed description about this Measure

Limited to 256 characters

"Hover" over measure name on **any** Data pane to display description

# Power BI Desktop - Document Field/Column Description

**Properties** >> **Data**

General

Name: GrossSales

Description: Calculated Column that calculates Gross Sales by multiplying Qty x UnitPrice.

Synonyms: gross sales, GrossSales

Display folder: Enter the display folder

Is hidden:

**Data**

Tables | Model

Search

Sales

- ALLMonthsSales
- ALLMonthsSalesRatio
- ALLSales
- ALLSalesRatio
- ALLSELECTEDMonthsSales
- ALLSELECTEDMonthsSalesRatio
- ALLSELECTEDSales
- ALLSELECTEDSalesRatio
- Average of NetSalesAmt
- AVERAGEXSellPricePerItem
- AvgSales
- BikeSales
- Count of SalesOrderID
- COUNTASalesPersonID
- GrossSales**

Calculated Column description

**Properties** >> **Data**

General

Name: LineTotal

Description: This field comes from the Sales query and calculates the total for each line on the order. It is hidden because a Measure is...

Synonyms: line total, LineTotal

Display folder: Enter the display folder

Is hidden:  Yes

**Data**

Tables | Model

Search

- GrossSales
- InternetSaleOfBikesInUS
- InternetSales
- LineTotal**
- LYSales
- LYSalesMTD
- LYSalesQTD
- LYSalesYTD
- Margin
- MarginMeasure
- MarginPct
- MarginPctM
- NetSalesAmt
- NetSalesAmt (bins)

Type a detailed description about any Column

# Power BI Desktop - Create Synonyms for Fields

The screenshot displays the Power BI Desktop interface. On the left, the 'Properties' pane is open to the 'General' tab for the 'SumSales' measure. It shows the name 'SumSales', the home table 'Sales', and a description: 'Measure to calculate SUM total of the NetSalesAmt column. It is the measure used in many other measures.' Below the description is a 'Create with Copilot (preview)' button and a warning: 'Content created by AI may not be accurate or appropriate, so review it carefully. [Read terms](#)'. The 'Synonyms' section lists: 'sum sales, SumSales, sales, sales amount, net sales'. On the right, the 'Data' pane is open to the 'Tables' view, showing a list of measures. The 'SumSales' measure is highlighted with a red rectangular box.

Can be used with  
Q&A feature

# Power BI Desktop - Place Measures in a Folder\Subfolder

**Properties** >> **Data**

General

Name: ALLMonthsSales

Home table: Sales

Description: Measure to calculate SumSales without regard to a Months filter.

Synonyms: ALL months sales

Display folder: \_Measure\ALL

**Tables** | Model

- Customers
- DimDate
- Products
- Sales
  - ALLMonthsSales
  - ALLMonthsSalesRatio
  - ALLSales
  - ALLSELECTEDSalesRatio
  - Average of NetSalesAmt
  - AVERAGEXSellPricePerItem
  - AvgSales
  - BikeSales
  - Count of SalesOrderID
  - COUNTASalesPersonID

Give folder name  
"\_Measures"

Can create  
subfolders using "\"

Sales

- \_Measure
  - ALL
    - ALLMonthsSales

Result

# Power BI Desktop Add-In for Documentation

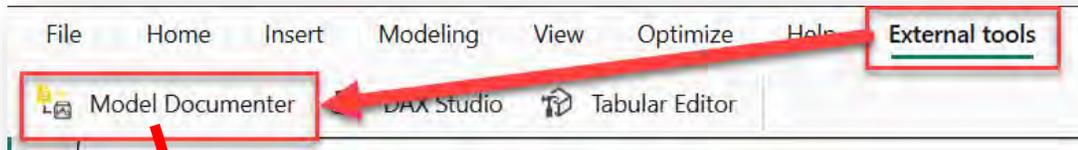
## Model Documenter

- By Marc Lelijveld & Ton Swart, hosted on [data-marc.com](https://data-marc.com)

## Documentation Features

- Creates PBI-D file with model documentation
- Table details
- Data source details, including steps & description
- Column details
- Measure details
- Relationship details

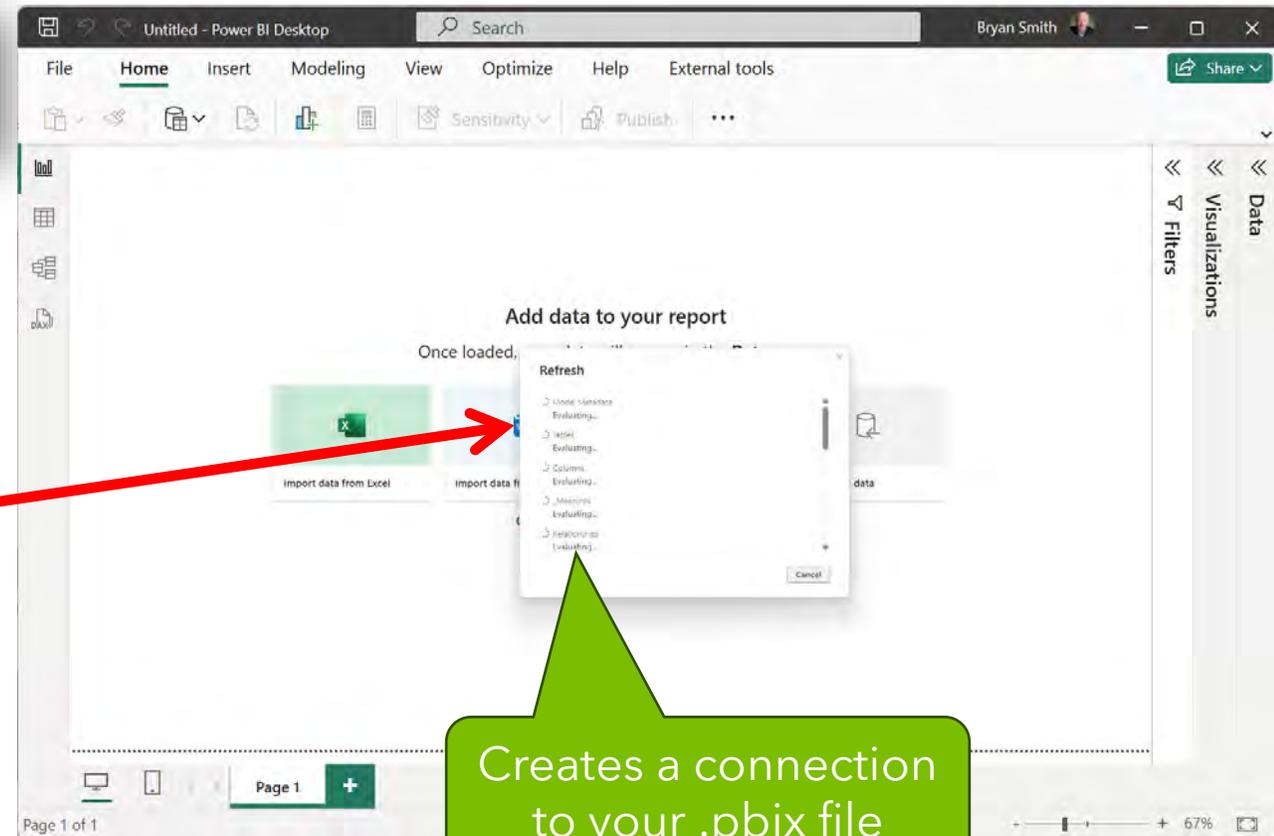
# Access Model Documenter



```
C:\Program Files (x86)\Data-Marc\ >
Successfully loaded plugin System.Data.OleDb, Version=6.0.0.0, Culture=neutral, PublicKeyToken=cc7b13fcd2ddd51 from assembly System.Data.OleDb.dll
Successfully loaded plugin System.IO.Packaging, Version=6.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a from assembly System.IO.Packaging.dll
Successfully loaded plugin System.Net.Http, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a from assembly System.Net.Http.dll
Successfully loaded plugin System.Net.Http.WebRequest, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a from assembly System.Net.Http.WebRequest.dll
Parsing results:
Command line:
--server localhost:63822 --database cd083e0c-d745-410a-a860-9e71911f8c92 --filename c:\Power BI Model Documenter\ModelDocumenter.vpax --pbitemplate C:\Program Files (x86)\Common Files\Data-Marc\ModelDocumenter\ModelDocumentationTemplate_v2.1.0.pbitemplate
Parsed Arguments:
Argument: s(server), type: String, value: localhost:63822 (converted from: localhost:63822)
Argument: d(database), type: String, value: cd083e0c-d745-410a-a860-9e71911f8c92 (converted from: cd083e0c-d745-410a-a860-9e71911f8c92)
Argument: f(filename), type: String, value: c:\Power BI Model Documenter\ModelDocumenter.vpax (converted from: c:\Power BI Model Documenter\ModelDocumenter.vpax)
Argument: p(pbitemplate), type: String, value: C:\Program Files (x86)\Common Files\Data-Marc\ModelDocumenter\ModelDocumentationTemplate_v2.1.0.pbitemplate (converted from: C:\Program Files (x86)\Common Files\Data-Marc\ModelDocumenter\ModelDocumentationTemplate_v2.1.0.pbitemplate)

Arguments not specified:

Additional arguments:
```



# Model Documenter Result



PBI-D file

Windows internal ID of .pbix file

"Buttons" to report pages  
(hold Ctrl to select)

The screenshot shows the Model Documenter interface. At the top, the title bar reads "Model documentation - cd083e0c-d745-410a-a860-9e71911f8c92". Below the title bar is a row of navigation buttons: Info, PQ Parameters, Tables, Partitions & policies, Columns, Calculation groups, Field Parameters, Measures, Relationships, and Security. The "Info" button is selected. A red box highlights this row of buttons. A red arrow points from the "Info" button to the bottom navigation bar, which also contains buttons for Info, PQ Parameters, Tables, Partitions & policies, Columns, Calculation groups, and Field Parameters. The main content area on the left contains introductory text about the report. The right side features a metadata table.

localhost:63822 <i>Server Name</i>	cd083e0c-d745-410a-a860-9e71911f8c92 <i>Model Name</i>
PowerBI <i>Compatibility Mode</i>	1567 <i>Compatibility Level</i>
22.Jan.2024 15:58 <i>Model Created</i>	20.Feb.2025 00:00 <i>Last Processed</i>
Extraction	
ModelDocumenter <i>Extractor App</i>	2.1 <i>Extractor App Version</i>
Dax.Model.Extractor <i>Extractor Lib</i>	24.Feb.2025 07:58 <i>Extraction Date</i>

# Model Documenter - Tables



The screenshot shows the 'Tables' page in the Model Documenter application. The page title is 'Model documentation - cd083e0c-d745-410a-a860-9e71911f8c92'. The 'Tables' tab is selected in the top navigation bar. On the left, there are summary statistics: 6 Tables, 1 DateTime, 5 Power Query, and 1 DAX. Below these are filters for Table Type, Auto generated DateTab..., Is Hidden, and Is Referenced, all set to 'All'. The main table lists the following data:

Type	Table Name	Description	Table Type	# Partitions	# Rows
Power Query	Customers	Excel file that contains Customer master data. The file is located in the Data Analysis folder of SharePoint. It gets updated every night from the ERP system.	Power Query	1	19,185
Calculated Table	DimDate		Calculated Table	1	
Power Query	DimDate		Power Query	1	2,556
Power Query	Products		Power Query	1	295
Power Query	Sales		Power Query	1	121,317
Power Query	SalesPerson		Power Query	1	14

Two callouts are present: a green callout pointing to the 'Description' column with the text 'List description & other information', and another green callout pointing to the filter section with the text 'Slicers are on every page'. The footer of the application shows 'Powered by Data-Marc.com'.

# Model Documenter - Partitions & Policies



The screenshot shows the 'Partitions & policies' view in the Model Documenter. The interface includes a top navigation bar with tabs for Info, PQ Parameters, Tables, Partitions & policies, Parameters, Measures, and Relationships. The main area is divided into three sections: a left sidebar, a central table, and a right pane for the selected table's expression.

**Partitions & policies sidebar:**

- 1 # Partitions
- (Blank) # Partitions Incremental
- Table Name: All
- type: All

**Table:**

Table Name	Partition Name	Start	End
Customers	Customers		
DateTableTemplate_e50dbf60-8eaa-4d92-a04c-8ce7e0744d5a	DateTableTemplate_e50dbf60-8eaa-4d92-a04c-8ce7e0744d5a		
DimDate	DimDate		
Products	Products		
Sales	Sales		
SalesPerson	SalesPerson		

**Expression pane (for Customers):**

```
let
// Excel file that contains Customer master data.
Source = Excel.Workbook(File.Contents("C:\Users\BryanSmith\DataSmithPro\DSP Curriculum-PowerBI - DataSources\PI\999X9 PM98 v1.1 AW DataSet.xlsx"), null, true);
TblCompany_Table = Source[Item="TblCustomers",Kind="Table"][[Data],
#"Changed Type" = Table.TransformColumnTypes(TblCompany_Table,
{{"CustomerID", Int64.Type}, {"Sales_StoreName", type text}, {"LastName", type text}, {"FirstName", type text}, {"MiddleName", type text}, {"CustomerType", type text}, {"TerritoryID", Int64.Type}, {"SalesTerritoryName", type text}, {"CountryRegionCode", type text}, {"Group", type text}});
// Changed column names to make more sense.
#"Renamed Columns" = Table.RenameColumns(#"Changed Type",
{{"Sales_StoreName", "CustomerName"}, {"CountryRegionCode", "CountryCode"}, {"Group", "Continent"}, {"SalesTerritoryName", "Territory"});
// Removed columns not needed for analysis.
#"Removed Columns" = Table.RemoveColumns(#"Renamed Columns",
{"MiddleName", "TerritoryID"});
// Replaced 'S' with 'Store' so field value makes more sense to user. These would be wholesale customers, such as Bike Stores that buy for resale.
#"Replaced 'S' in CustomerType" = Table.ReplaceValue(#"Removed Columns", "S", "Store", Replacer.ReplaceText, {"CustomerType"});
// Replaced 'I' with 'Internet' so field value makes more sense to user. These would be customers who bought from our web store.
#"Replaced 'I' in CustomerType" = Table.ReplaceValue(#"Replaced 'S' in CustomerType", "I", "Internet", Replacer.ReplaceText, {"CustomerType"});
in
#"Replaced 'I' in CustomerType"
```

**Policy information:**

- No policy Rolling window
- No policy Incremental period

**Callout:** Select table to view PQ steps

# Model Documenter - Columns



The screenshot shows the 'Columns' view in the Model Documenter. The main table lists columns with their table names, column names, data types, and formulas. A tooltip is displayed for the 'GrossSales' column, showing its data type as 'Decimal', its column expression as `ROUND([OrderQty]*[UnitPrice],2)`, and its description as 'Calculated Column that calculates Gross Sales by multiplying Qty x UnitPrice.'.

Table Name	Column Name	Calc. column	# Column Cardinality	Sort by	Format String
Sales	DiscountAmt		506		\\$#,0.00;(\\$#,0.00);\\$#,0.00
	DiscountPct		9		
	GrossSales		1,448		\\$#,0.00;(\\$#,0.00);\\$#,0.00
			1,188		
			1,516		
			1,342		0.00%;-0.00%;0.00%
			1		
			1		
			4		
			41		
			3		
			4		
			266		
			0		

Slicer to select column type

Hover over "Calc. Column" to view formula & description

# Model Documenter - Measures



The screenshot shows the 'Measures' tab in the Model Documenter interface. The main area displays a table of measures for the 'Sales' table. A callout box points to the 'SumSales' measure, with the text 'Select Measure to view formula'.

Table Name	Display Folder	Measure Name	Description	Measure Expression
Sales		OrderLineColor		SUM([NetSalesAmt])
		Orders		
		Profit		
		ProfitPct		
		SalesMTD		
		SalesPerCustomer		
		SalesPerDay		
		SalesPerOrder		
		SalesQTD		
		SalesYTD		
		StoreSales		
		Sum of DiscountAmt		
		Sum of GrossSales		
		Sum of LineTotal		
		Sum of Margin		
		Sum of NetSalesAmt		
		Sum of OrderYear		
		Sum of SalesOrderID		
		SumCost		
		SumDiscAmt		
		SumGrossSales		
		SumLineTotal		
		SumOrderSize		
		<b>SumSales</b>	Measure to calculate SUM total of the NetSalesAmt column. It is the measure used in many other measures.	
		SumTotalStdCost		
		SUMXDiscAmt		
		SUMXGrossSales		
		SUMXNetSales		
		_Measure\ALL		
		ALLMonthsSales	Measure to calculate SumSales without regard to a Months filter.	

# Model Documenter - Relationships

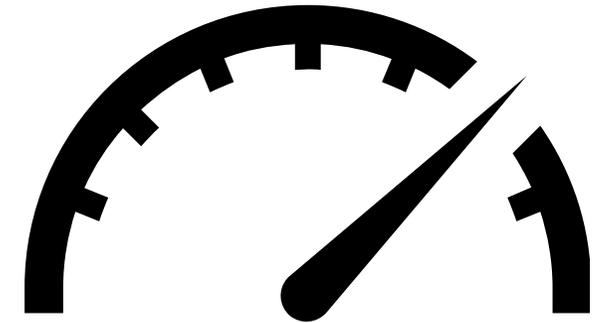


The screenshot shows the 'Relationships' tab in the Model Documenter interface. The title bar reads 'Model documentation - cd083e0c-d745-410a-a860-9e71911f8c92'. The interface includes a top navigation bar with tabs for Info, PQ Parameters, Tables, Partitions & policies, Columns, Calculation groups, Field Parameters, Measures, Relationships (selected), and Security. On the left, there are summary statistics: 4 relationships, all blank, with 4 active and 0 inactive. Below this are settings for Cross Filtering Behavior, Security Filtering Behavior, Is Active, and Rely On Ref. Integrity, all set to 'All'. The main area contains a table of relationships and a visual diagram. A green callout bubble points to the diagram with the text 'Visual of relationship'.

Left side	Cardinality	Right side	# Invalid rows
'SalesPerson'[SalesPersonID]	1 -----> M	'Sales'[SalesPersonID]	62021
'Customers'[CustomerID]	1 -----> M	'Sales'[CustomerID]	
'Products'[ProductID]	1 -----> M	'Sales'[ProductID]	
'DimDate'[DateKey]	1 -----> M	'Sales'[OrderDate]	

Visual of relationship

# Best Practices for Performance Optimization





Performance  
Optimization

# Performance Optimization

(Repeat Slide)

Remove unnecessary fields (columns) in dataset

Remove unnecessary records (rows) in dataset

Hide tables, columns & measures if not expected to use

Create measure in place of value column

Hide value columns where a measure is used to aggregate

# Remove Unnecessary Fields/Columns in Dataset

## Remove in Power Query

- i.e. we removed MiddleName & TerritoryID in Customers
- Reduces size of data model

## Becomes unavailable in data model

- Not needed for measures and/or calculated columns
- If needed in data model, can hide in data model

# Remove Unnecessary Records/Rows in Dataset

## Filter in Power Query

- Old data
- Inactive customers, locations, products, etc.
- Include just records needed for analysis

Filter early so future Steps aren't refreshing data

Use data profiling tools

# Data Profiling Tools



The screenshot shows the Power Query Editor interface for a query named 'Customers'. The ribbon includes 'File', 'Home', 'Transform', 'Add Column', and 'View'. The 'View' ribbon has several options checked: 'Column distribution', 'Column profile', and 'Column quality'. The data preview shows columns: CustomerID, CustomerName, LastName, FirstName, CustomerType, and Territory. Below the preview, the 'Column statistics' pane shows counts for Valid, Error, and Empty for each column. The 'Value distribution' pane shows a bar chart for 'CustomerName' with a tooltip for 'Friendly Bike Shop' indicating it appears 2 times (< 1%).

Column	Valid	Error	Empty
CustomerID	100%	0%	0%
CustomerName	100%	0%	0%
LastName	100%	0%	0%
FirstName	100%	0%	0%
CustomerType	100%	0%	0%
Territory	100%	0%	0%

Count	Value
Count	1000
Error	0
Empty	0
Distinct	998
Unique	996
Empty string	0
Min	A Bicycle...
Max	eComm...

Value	Count
Friendly Bike Shop	2
Sports Products Store	1
Advanced Bike Components	1
Aerobic Exercise Company	1
Associated Bikes	1
Metropolitan Sports Supply	1
Rural Cycle Emporium	1
Sharp Bikes	1
Bikes and Motorbikes	1
Country Parts Shop	1
Bicycle Warehouse Inc.	1

Records with errors or blank

CustomerName should be unique

Use Column Profile to find 2 not Unique

Only top 1000 records, click here to select entire data set

# Hide Tables, Columns & Measures, if not Expected to Use

In the Data Model

Hide from Client Tools

Can be used for calculations

Prevents users from selecting

- Eliminates confusion for users
- Removes from Q&A feature

# Create Measure in Place of Value Column

Value column added to visual is Implicit Measure

- Slower calculation - inefficient

Create measure which is Explicit Measure

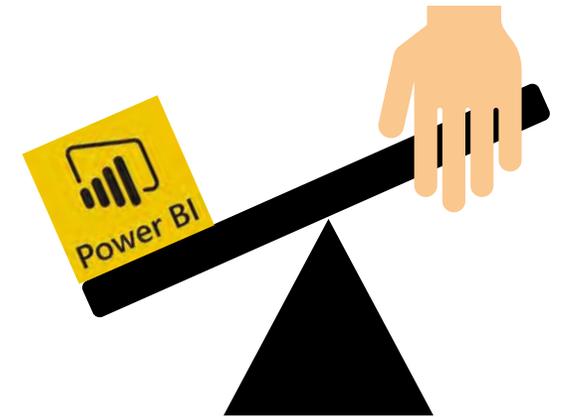
- Faster calculation - efficient

Use "X" functions (i.e. SUMX) to perform row-by-row calculations

Use SUM function to create measure to add up value columns

- Then hide value column so users don't accidentally use

# Leveraging Your Data Model Through PowerBI.com



# Local Files - Data Refresh & Sharing

## Power Pivot

Manual Refresh by selecting  
Data > Refresh All

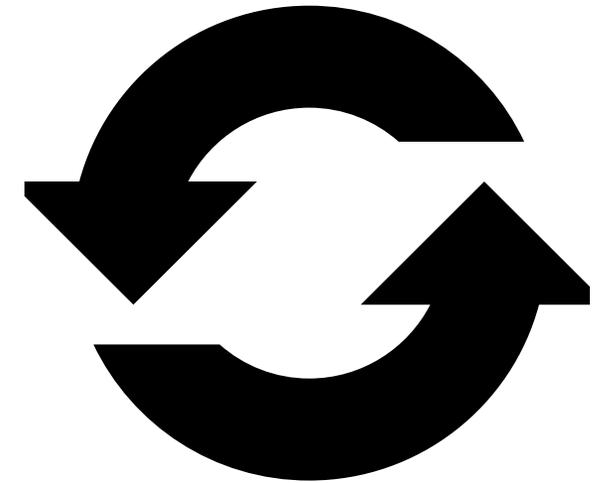
Share by emailing file or  
link to file

## Power BI Desktop

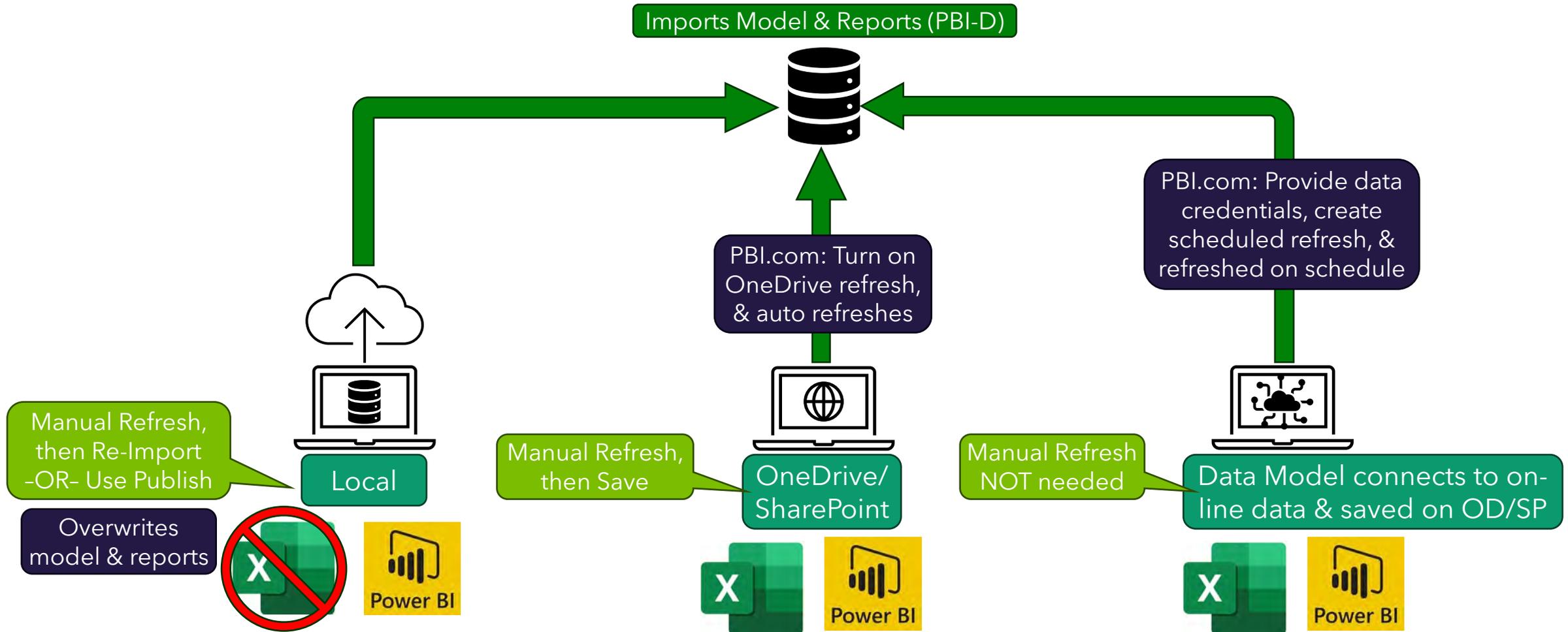
Manual Refresh by selecting  
Home > Refresh

Share by emailing file or  
link to file

# Data Refresh with PowerBI.com



# Data Refresh with PowerBI.com



# Import **Local .pbix** File

*(info only, not recommended)*



Bring PBI Together  
PBI110W2 - Power BI - Bringing It All Together for Data Analysis

+ New item   New folder   → Import

- Notebook
- Report or Paginated Report
  - From this computer
  - OneDrive
  - SharePoint

Import .pbix or .rdl files from OneDrive, Sharepoint, or your local drive.

Imports Data Model & Report

Name	Type
PowerPBI-D_Local_v2502_1	Report
PowerPBI-D_Local_v2502_1	Semantic model

Scheduled Refresh NOT available

Settings for PowerPBI-D\_Local\_v2502\_1

[View semantic model](#)

This semantic model has been configured by [bsmith@datasmithpro.com](mailto:bsmith@datasmithpro.com).

[Refresh history](#)

- Semantic model description
- Gateway and cloud connections
- Data source credentials
- Parameters
- Refresh
  - Time zone
    - Time zone configuration is applied not only to determine the schedule refresh incremental refresh models during on-demand and API refreshes. [Learn more](#)
    - (UTC) Coordinated Universal Time
  - Configure a refresh schedule
 

Define a data refresh schedule to import data from the data source into

Off
  - Refresh frequency

No option for OneDrive Refresh

# Import OneDrive .pbix File



Bring PBI Together  
PBI110W2 - Power BI - Bringing It All Together for Data Analysis

+ New item   New folder   → Import

Notebook

Report or Paginated Report

From this computer

OneDrive

SharePoint

Import .pbix or .rdl files from OneDrive, Sharepoint, or your local drive.

Imports Data Model & Report

Name	Type
PowerPBI-D_OneDrive_v2502_1	Report
PowerPBI-D_OneDrive_v2502_1	Semantic model

**Note:** This gets turned off if you don't select Automatic

Refresh

Time zone

Time zone configuration is applied next to incremental refreshes.

(UTC) Coordinated Universal Time

Configure a refresh schedule

OneDrive refresh

By default, OneDrive updates files hourly. Do you want your files to be kept up to date?

On

Sync with OneDrive and SharePoint

When changes are made to Power BI semantic models, you can choose how they are updated. Turn off this setting to prevent automatic updates.

Restrict updates  
Only semantic model owners can update semantic models with changes. Updates from SharePoint are not reflected.

Automatic updates  
Semantic models in the Power BI service are automatically updated with changes from SharePoint.

Default updates  
Semantic model refresh will continue to follow the current behavior, and updates from SharePoint are reflected.

Apply   Discard

Scheduled Refresh still NOT available because dataset local

OneDrive/SharePoint refresh options

# Auto Refresh

1 Products = DISTINCTCOUNT(Sales[ProductID])

Data

Tables Model

Search

- Customers
- DimDate
- Products
- Sales
- \_Measure
- ALL
- Products

Added a new measure, save & close file

OneDrive refresh

By default, OneDrive updates files hourly. Do you want your files to be kept up to date?

On

Sync with OneDrive and SharePoint

When changes are made to Power BI files stored in OneDrive or SharePoint, people using the semantic model might want to update the versions in the Power BI service with the changes. Turn off this setting to prevent automatic updates to the semantic model.

Restrict updates  
Only semantic model owners can update semantic models in OneDrive and SharePoint. Semantic model owners must manually refresh the semantic model. Semantic model users with write permission can refresh semantic models.

Automatic updates  
Semantic models in the Power BI service are automatically updated with changes made to the versions of the semantic models stored in OneDrive and SharePoint. Semantic model users with write permission can refresh semantic models.

Default updates  
Semantic model refresh will continue to follow the current behavior, and semantic model owners don't need to change their selection. Semantic models will continue to be updated automatically and semantic model users with write permission can refresh semantic models.

Apply Discard

In PBI.com, Model settings, select Automatic & turn On OneDrive refresh

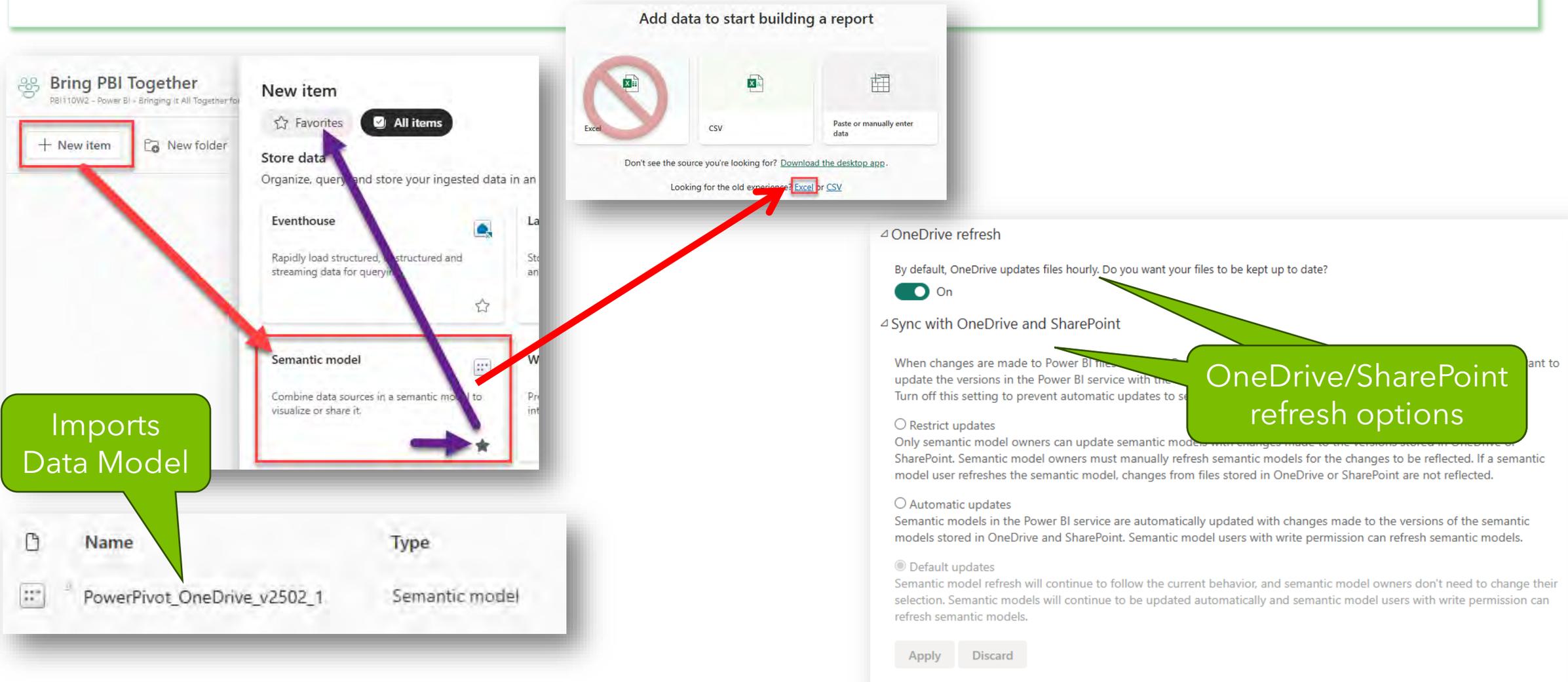
Refresh history

Scheduled OneDrive Direct Lake OneLake Integration

Details	Type	Start	End	Status	Message
	Scheduled	2/26/2025 10:00 AM	2/26/2025 10:04 AM	Completed	
<a href="#">Show</a>	Scheduled	2/26/2025 10:08 AM	2/26/2025 10:08 AM	Failed	The dataset owner has restricted who can refresh this dataset. If you need to refresh this dataset, you can try to take it over,...

Updates is a short time

# Import OneDrive Power Pivot .xlsx File



**Bring PBI Together**  
PBI110W2 - Power BI - Bringing it All Together for

**New item**  
☆ Favorites  All items

**Store data**  
Organize, query, and store your ingested data in an

**Eventhouse**  
Rapidly load structured, unstructured and streaming data for queryin

**Semantic model**  
Combine data sources in a semantic model to visualize or share it.

**Excel** **CSV** **Paste or manually enter data**

Don't see the source you're looking for? [Download the desktop app.](#)

Looking for the old experience? [Excel](#) or [CSV](#)

OneDrive refresh  
By default, OneDrive updates files hourly. Do you want your files to be kept up to date?  
 On

Sync with OneDrive and SharePoint  
When changes are made to Power BI mes... update the versions in the Power BI service with the... Turn off this setting to prevent automatic updates to se...

Restrict updates  
Only semantic model owners can update semantic models with changes made to the versions stored in OneDrive or SharePoint. Semantic model owners must manually refresh semantic models for the changes to be reflected. If a semantic model user refreshes the semantic model, changes from files stored in OneDrive or SharePoint are not reflected.

Automatic updates  
Semantic models in the Power BI service are automatically updated with changes made to the versions of the semantic models stored in OneDrive and SharePoint. Semantic model users with write permission can refresh semantic models.

Default updates  
Semantic model refresh will continue to follow the current behavior, and semantic model owners don't need to change their selection. Semantic models will continue to be updated automatically and semantic model users with write permission can refresh semantic models.

Apply Discard

**Imports Data Model**

Name	Type
PowerPivot_OneDrive_v2502_1	Semantic model

**OneDrive/SharePoint refresh options**

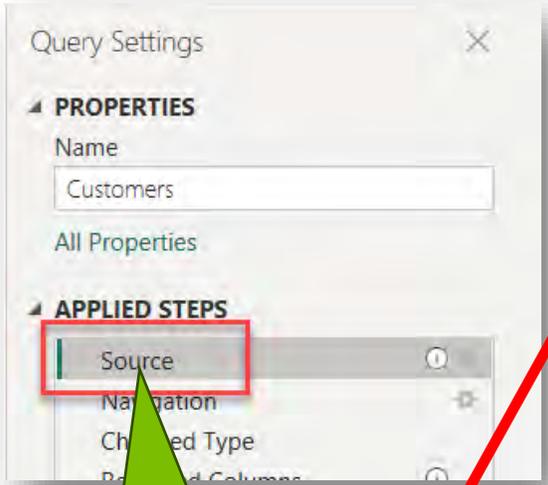


All indications are Microsoft is moving away from building “shared” data models in Excel using Power Pivot. They want users to build these models in Power BI Desktop. As of the writing of this course, using shared Power Pivot data models is still available. If this feature gets removed, you can import your Power Pivot data model into PBI-D, connect that to PowerBI.com and connect Excel to the PowerBI.com Semantic Model via Get Data > For Power BI and then create PivotTables from the Semantic Model.

This would cause more work for Excel users, so let’s hope Microsoft changes course!!

**IMPORTANT NOTE:** About Power Pivot (Excel) Data Models

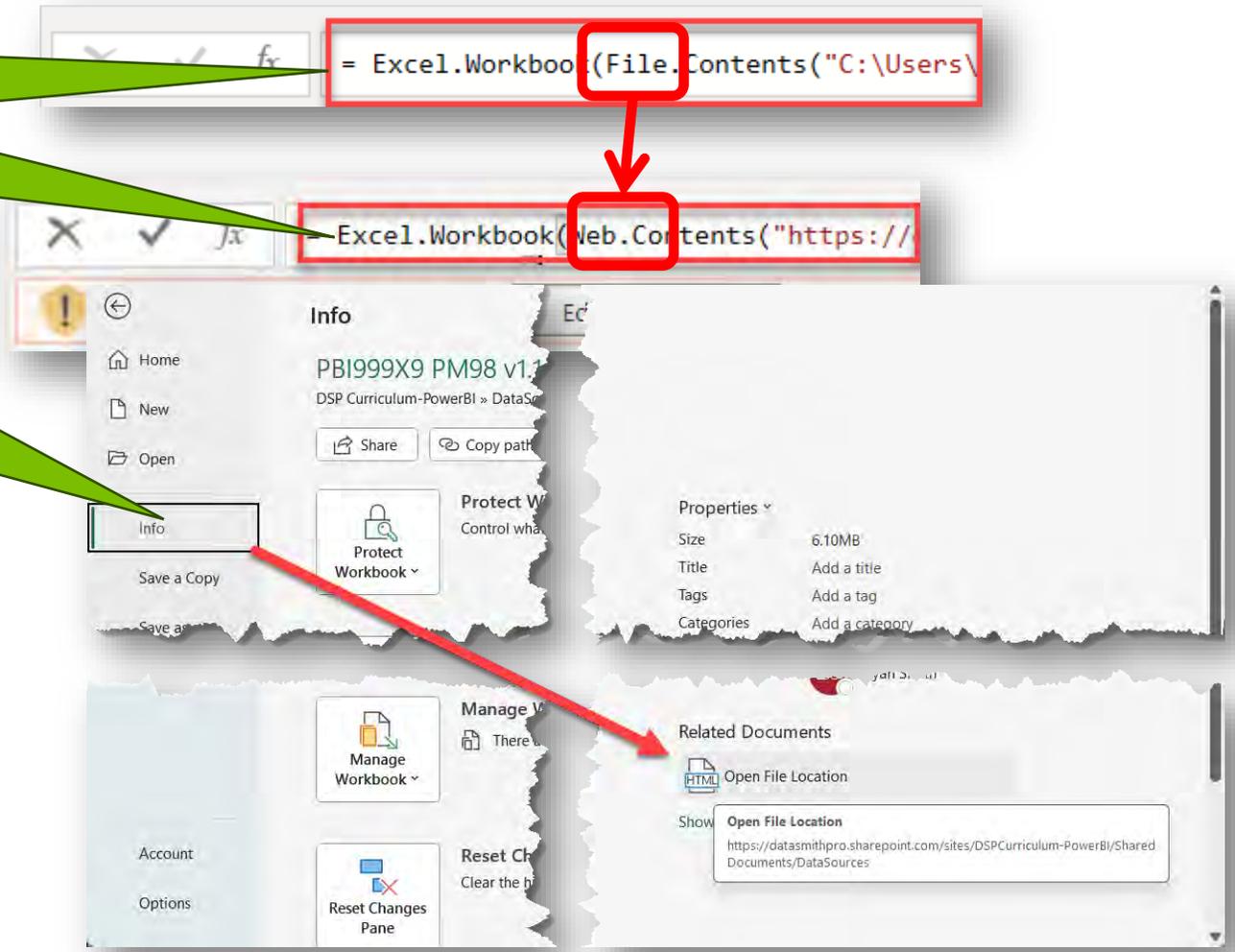
# Connect Data Model to On-Line Data (Here, Excel files on SharePoint)



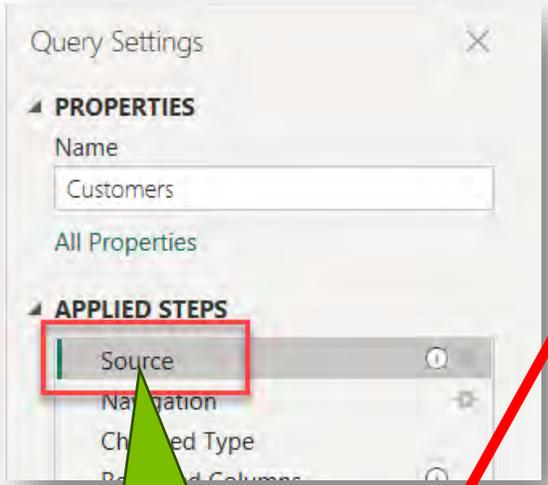
Open PQ,  
select Source

Change from local  
data connect to  
Web Connector

You will need data  
location; here is  
how to get Excel



# Connect Data Model to On-Line Data (Edit Credentials so data refreshes)



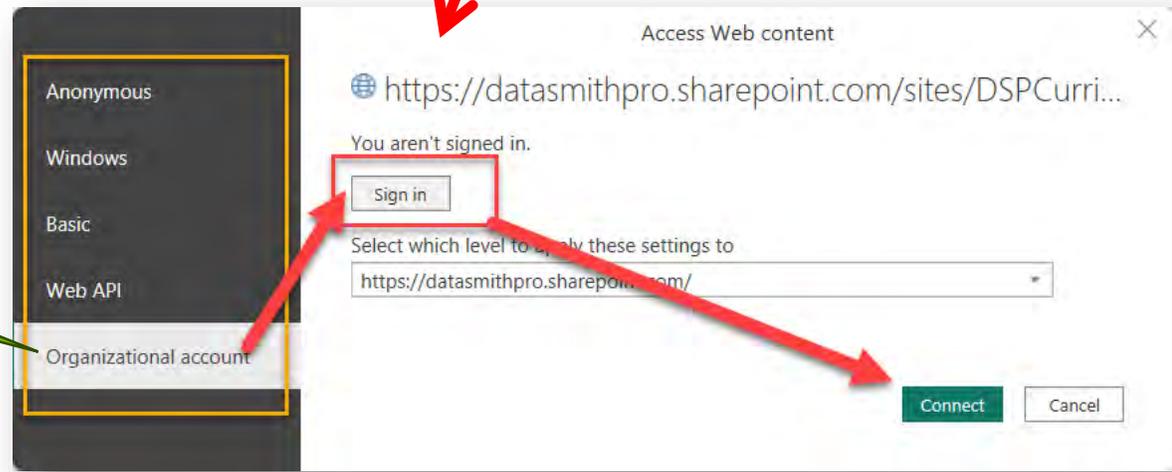
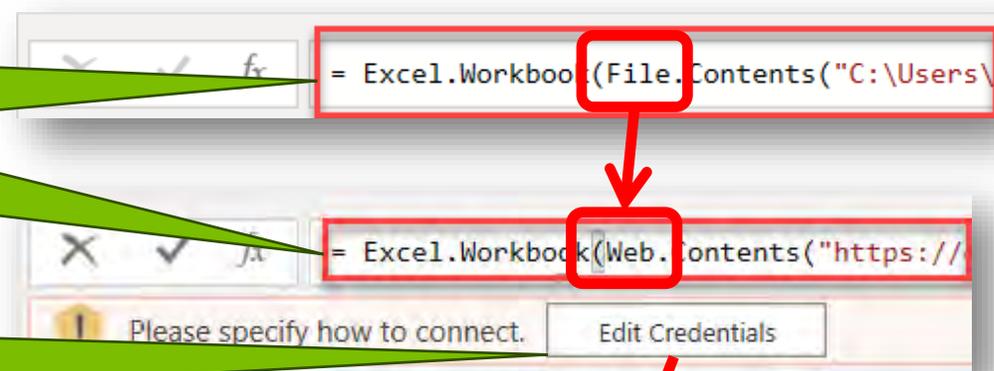
Open PQ,  
select Source

Change from local  
data connect to  
Web Connector

You will have to  
Authenticate to  
source

Here, I will use my  
M365 account

Change ALL Query Sources,  
Close & Apply, Save to OD/SP



# Import **OneDrive .pbix** File, with Data Connected to SharePoint Data



Bring PBI Together  
PBI110W2 - Power BI - Bringing It All Together for Data Analysis

+ New item   New folder   → Import ▾

- Notebook >
- Report or Paginated Report >

From this computer

- OneDrive
- SharePoint

Import .pbix or .rdl files from OneDrive, Sharepoint, or your local drive.

Imports Data Model & Report

Every unique data connector will need credentials for Scheduled Refreshes

Name	Type
PowerPBI-D_SPData_v2502_1	Report
PowerPBI-D_SPData_v2502_1	Semantic model

Data source credentials

⊗ Failed to test connection to your data source. Please retry your credentials. [Learn more](#)

Web ⚠ [Edit credentials](#) [Show in lineage view](#)

Web ⚠ [Edit credentials](#) [Show in lineage view](#)

# Data Source Credentials



Configure PowerPBI-D\_S...

url  
https://datasmithpro.sharepoint.com/sites/DSP/curriculum/

Authentication method  
OAuth2

Privacy level setting for this data source  
Organizational

Skip this connection

Sign in Cancel

Authentication method

- OAuth2
- Anonymous
- Basic
- OAuth2
- Service principal

Privacy level setting for this data source

- Organizational
- None
- Private
- Organizational
- Public

Data source credentials

- Web Edit credentials Show in lineage view
- Web Edit credentials Show in lineage view

Parameters

Refresh

Time zone  
Time zone configuration is applied not only to determine the schedule refresh time but also to establish the current date and time for incremental refresh models during on-demand and API refreshes. Learn more  
(UTC-05:00) Eastern Time (US and Cai)

Configure a refresh schedule  
Define a data refresh schedule to import data from the data source into the semantic model. Learn more  
On

Refresh frequency  
Daily

Time  
Add another time

Send refresh failure notifications to Semantic model owner  
These contacts:  
Enter email addresses

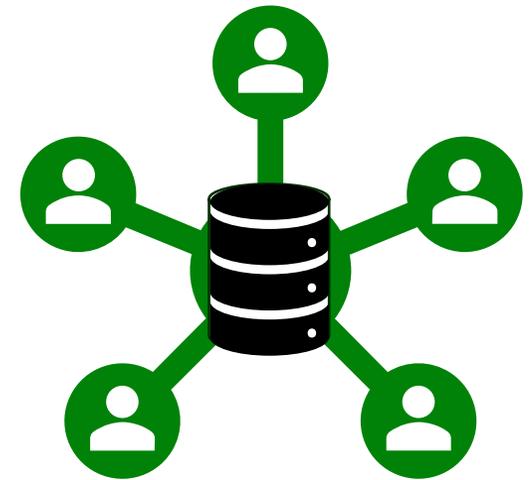
Apply Discard

Authentication depends on data source

These screenshots **are not** a recommendation for which method to choose, you **MUST** research proper authentication based upon your organization's data governance.

Once credentials are entered, you can schedule refreshes

# Sharing with PowerBI.com





# Create an App to Share Content Without Giving Access to Workspace



The image shows a screenshot of the Power BI workspace interface. On the left, the workspace name is 'Bring PBI Together'. A red box highlights the 'Create app' button. A green callout bubble points to this button with the text 'In Workspace, select Create App'. A red arrow points from the 'Create app' button to the 'Build your app' dialog box on the right. The dialog box has three tabs: 'Setup\*', 'Content\*', and 'Audience\*'. The 'Setup\*' tab is active. It contains the following fields and options:

- App name \***: A text box containing 'Bring PBI Together'.
- Description \***: A text box containing 'Enter a summary'. A green callout bubble points to this field with the text 'Enter information about App'.
- App logo**: A blue circular icon with a white grid pattern. To its right are 'Upload' and 'Delete' buttons.
- App theme color**: A dropdown menu showing a blue color.
- Contact information**: Three radio buttons: 'Show app publisher' (selected), 'Show items contacts from the workspace', and 'Show specific individuals or groups'. Below them is a search box with the text 'Enter a name or email address' and a yellow '@' icon.
- Advanced settings**: A dropdown menu.

At the bottom right of the dialog box, there are two buttons: 'Next: Add content' and 'Cancel'.

# Add Content to the App



Bring PBI Together

+ Add content

Add content to app

All Reports & Dashboards are available for selection

### Add content

Insert reports, dashboards, and workbooks directly from your workspace. You can also add website links.

Add from workspace    Add a link

	Name	Type	Owner	Refreshed
	PowerPBI-D_Local_v2502_1	Report	Bring PBI Together	2/25/25, 4:25:24 PM
	PowerPBI-D_OneDrive_v250	Report	Bring PBI Together	2/26/25, 11:58:05 ...
	PowerPBI-D_SPData_v2502	Report	Bring PBI Together	2/26/25, 12:00:21 ...
	PowerPivot_OneDrive_v250	Dashboard	Bring PBI Together	—

Add    Cancel

# Create Audience(s)



① Setup ② Content ③ Audience

**Audience**  
Manage your audiences and their permissions. Select what content each audience can see by toggling the eye icon.

Bring PBI Together + New Audience

Category	2001	2002	2003	2004	Total
Bikes	\$28,721	\$359,329	\$938,834	\$325,755	\$1,652,640
Components		\$69,070	\$167,904	\$35,141	\$272,114
Clothing	\$144	\$12,246	\$30,191	\$9,471	\$52,053
Accessories	\$61	\$1,958	\$13,965	\$4,616	\$20,600
<b>Total</b>	<b>\$28,926</b>	<b>\$442,603</b>	<b>\$1,150,894</b>	<b>\$374,984</b>	<b>\$1,997,407</b>

**SumSales and Orders by Category**

**SumSales**

**SumSales by Category**

**Edit Audience**  
Bring PBI Together

**Grant access to**

- Entire organization [Learn more](#)
- Specific users or groups
  - Enter a name or email address

**Advanced**

- Workspace users

**Publish app** Cancel

Select audience who will have access to the app

You can Show/Hide content, review link for details

# Published App - User View



The screenshot displays a Power BI application interface with a dark blue sidebar on the left and a main content area on the right. The sidebar includes a search icon, the text "Bring PBI Together", and a list of reports: "PowerPBI-D\_SPData\_v2502\_1", "SalesByCategory", "ColorSizeTT", "TTVisual", "Buttons", "Cond'l Formatting", "Show Data", "Drill Mode", "SubCat DrillThrough", "Transactions-DT", "Using DrillThrough", and "PowerPivot\_OneDrive\_v2502...".

The main content area features a table titled "Sales by Category" with the following data:

Category	2001	2002	2003	2004	Total
Bikes	\$28,721	\$359,329	\$938,834	\$325,755	\$1,652,640
Components		\$69,070	\$167,904	\$35,141	\$272,114
Clothing	\$144	\$12,246	\$30,191	\$9,471	\$52,053
Accessories	\$61	\$1,958	\$13,965	\$4,616	\$20,600
<b>Total</b>	<b>\$28,926</b>	<b>\$442,603</b>	<b>\$1,150,894</b>	<b>\$374,984</b>	<b>\$1,997,407</b>

Below the table is a pie chart titled "SumSales and Orders by Category". The chart shows the following distribution:

- Bikes: \$2M (82.74%)
- Components: \$0M (13.62%)
- Clothing: \$0M (2.61%)
- Accessories: \$0M (1.03%)

Below the pie chart is a chart titled "SumSales by Calendar Year and Category". The chart shows a legend with categories: Increase, Decrease, Total, and Other.

Viewing app requires Power BI Pro license

# Access PBI.com Data Model in **Excel**

**Data**

Get Data

From File

From Database

From Azure

From Power Platform

From Power BI (DataSmithPro)

From Other Sources

Combine Queries

Launch Power Query Editor...

Data Source Settings...

Query Options

Power BI

Search for a semantic model

PowerPBI-D\_SPData\_v250...

Workspace: Bring PBI Together

Owner: Bryan Smith

Refreshed: 2/26/2025, 12:00:21 PM

Tables in this semantic model (0)

Reports using this semantic model (0)

+ Insert PivotTable + Insert Table

PivotTable Fields

Show fields: (All)

Search

Customers

Location

More Fields

fx COUNTROWSC...

DimDate

Calendar

More Fields

Products

Categories

More Fields

Sales

Dates

More Fields

fx ALLMonthsSale...

fx ALLSales

fx ALLSalesRati...

fx Avera...

fx A...

Columns

Rows

Values

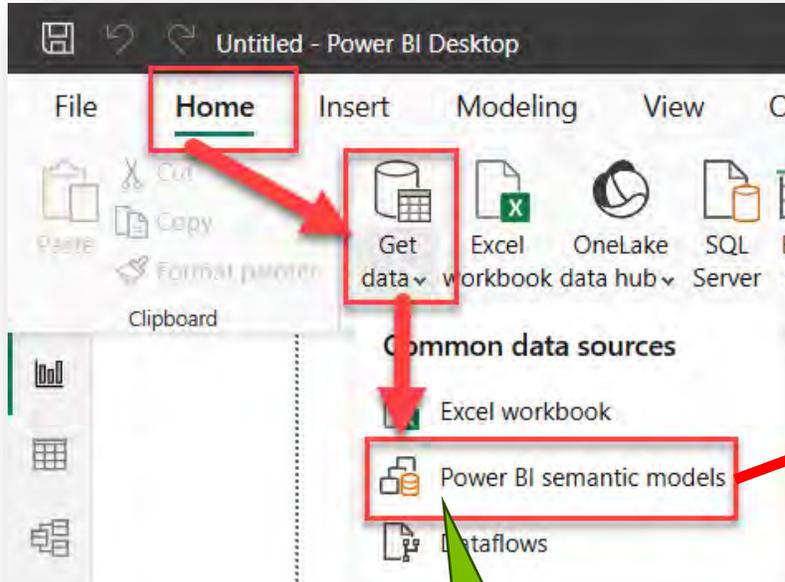
Defer Layout U...

You will be required to login

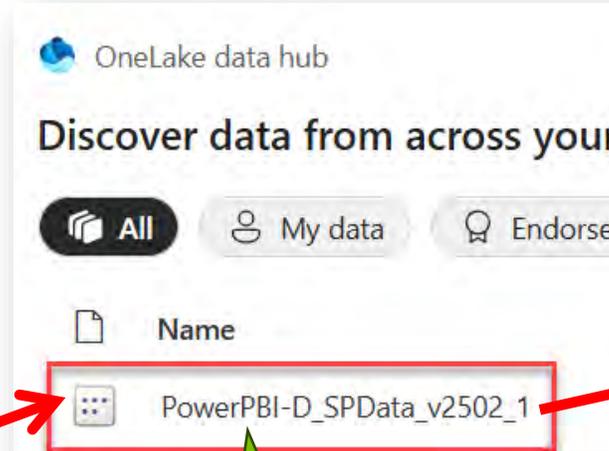
Select appropriate Semantic Model

Create PivotTable

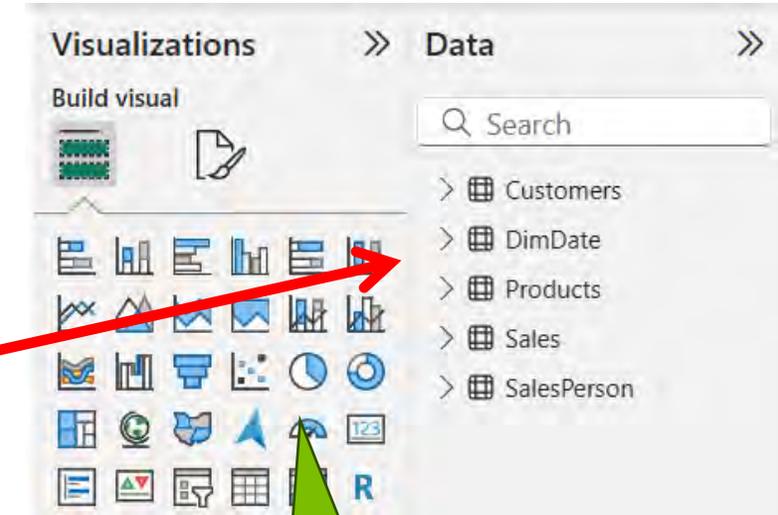
# Access PBI.com Data Model in **Power BI Desktop**



You will be required to login



Select appropriate Semantic Model



Create visuals

# Other Collaborations with PowerBI.com

- [Power BI's Analyze in Excel](#)
- [Power BI in Teams](#)
- [Power BI in PowerPoint](#)
- [Power BI and Power Automate](#)
- [Power BI semantic models with external users](#)

# Wrap-Up



# Presentation Wrap-Up

Our Power BI Workflow should include:

Documenting our data model

Determining our “use” scenarios

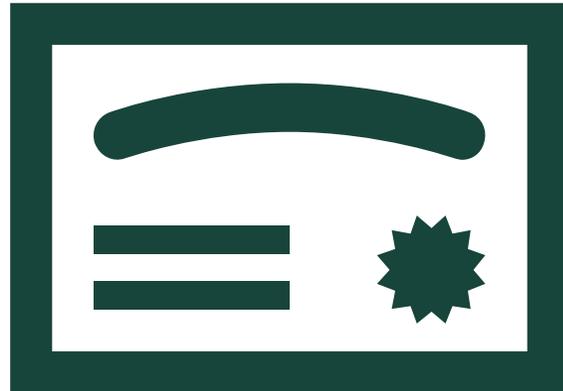
Optimizing our data model

Leverage PowerBI.com to automate refresh and share:

- Analysis
- Data Models
- Reports

# Questions?





# Thank You!!



Bryan L. Smith, CPA.CITP, CISA



[bsmith@datasmithpro.com](mailto:bsmith@datasmithpro.com)



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ONE FINAL NOTE

# Cryptocurrency at 15: What CPAs Should Know Now



Set your browser to  
**HIGGINS.CNF.IO**  
For interactive polling  
and Q & A

Presented By  
John H. Higgins, CPA.CITP  
Rochester, Michigan

# Learning Goals



- Recognize the current state of the cryptocurrency marketplace
- Identify key developments in cryptocurrency technology

Set your browser to  
**HIGGINS.CNF.IO**  
For interactive polling  
and Q & A

# John H. Higgins, CPA.CITP

## Strategic Technology Advisor



[john@higginsadvisoryllc.com](mailto:john@higginsadvisoryllc.com)

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Nationally recognized thought leader, advisor, author and speaker on CPA technology

Strategic technology advisor to the profession w/ 35+ years of experience

Founded and sold two CPA technology advisory startups

Former National Mid-market Technology Partner - BDO

CPA Practice advisor Top 25 Thought Leader for the CPA profession

AICPA Business & Industry Hall of Fame Inductee

Past Chair of the Michigan Association of CPAs

Passionate advocate for the CPA profession!

# Presentation Outline

- Cryptocurrency Market Update
- Cryptocurrency Technology Update
- Legislative and Regulatory Update
- Wrap-up

# Things to Know About Cryptocurrency

Cryptocurrency market cap as of Oct 2025 - \$3.7 trillion

Bitcoin is the only 100% decentralized cryptocurrency

SEC considers Bitcoin a commodity, all other crypto is treated as a security

SEC authorized multiple Bitcoin ETFs (exchange traded funds) in 2024

Ethereum is primarily used for “smart contracts”

FASB ASU 2023-08 permits recording cryptocurrency at fair market value

GENIUS Act provides regulatory certainty for stablecoins in the U.S.

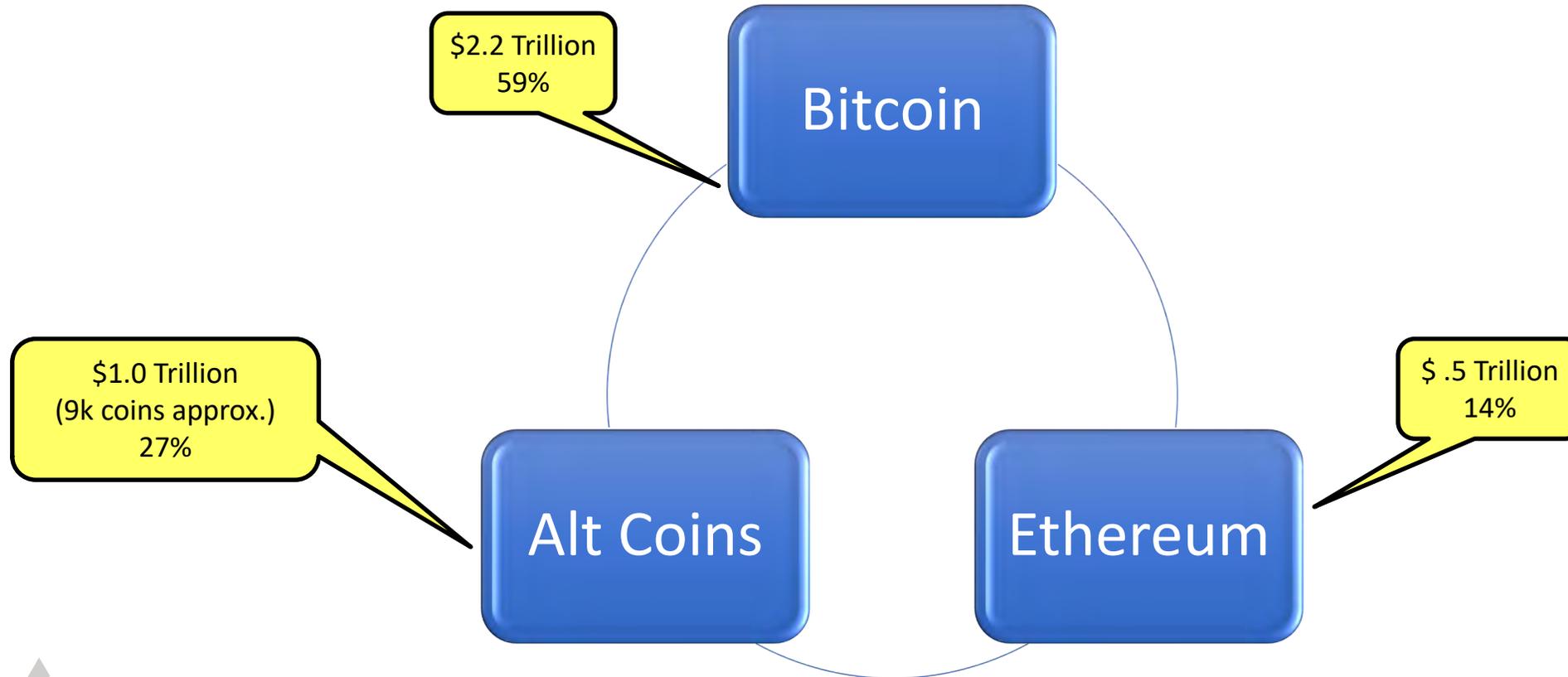
# Digital Assets

- Any asset that exists in digital form
- **Cryptocurrencies:** Digital currencies that use cryptography for secure transactions and operate on decentralized networks (e.g., Bitcoin, Ethereum).
- **Stablecoins:** Cryptocurrencies designed to maintain a stable value by being pegged to a fiat currency or other assets (e.g., USDT, USDC).
- **Non-Fungible Tokens (NFTs):** Unique digital tokens that represent ownership of a specific item or piece of content, often used for digital art and collectibles.
- **Central Bank Digital Currencies (CBDCs):** Digital versions of a country's fiat currency issued and regulated by the central bank.
- **Security Tokens:** Digital assets that represent ownership in a real-world asset, such as stocks or real estate

# CRYPTOCURRENCY MARKET UPDATE

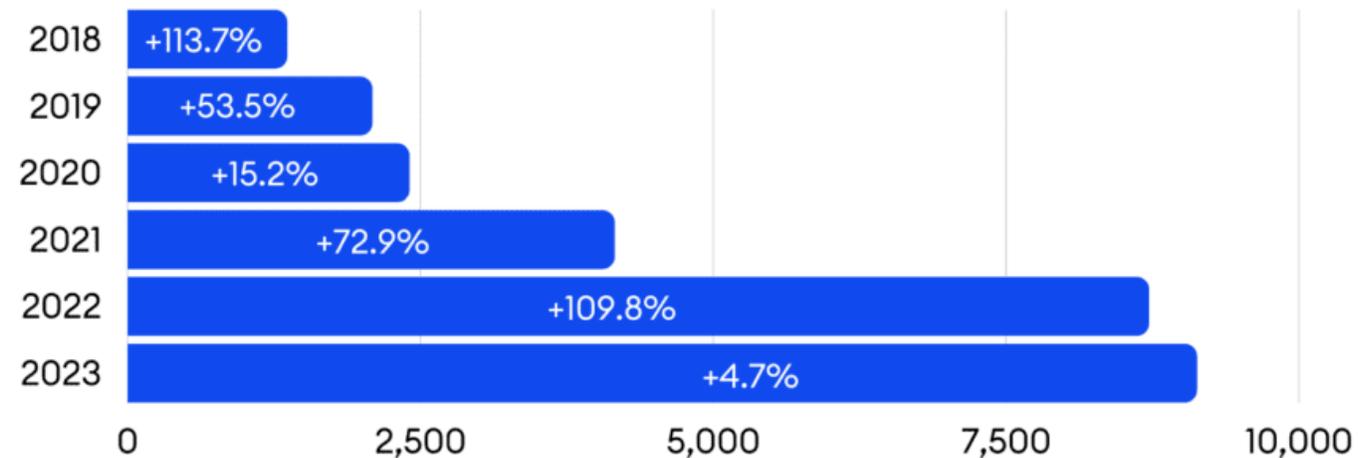


# Bitcoin, Ethereum & Alt Coins – Market Cap



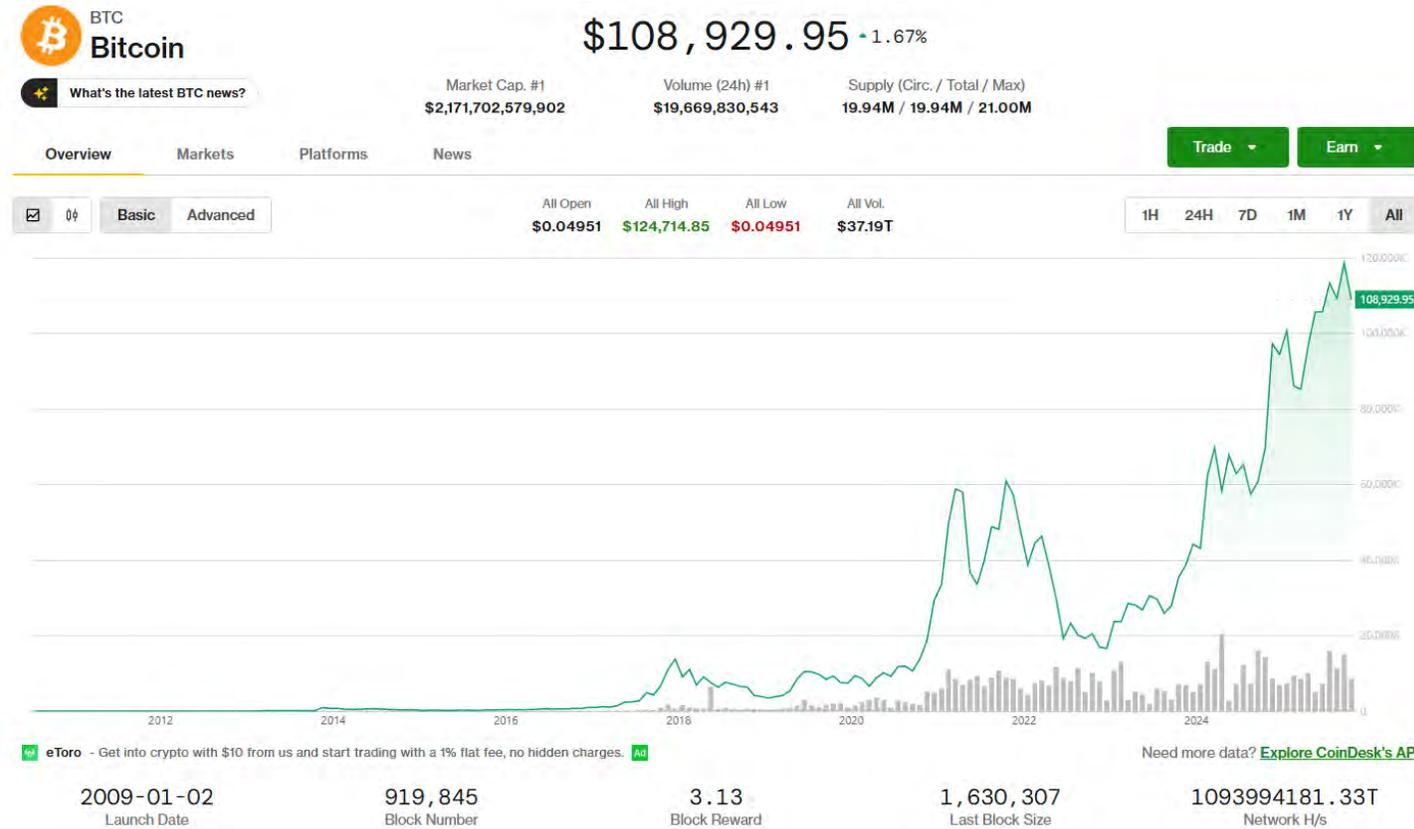
# “Active” Cryptocurrencies Approach 10K

## Number of Active Cryptocurrencies per Year



coinweb

# Bitcoin Price Chart



# Stablecoins – A Unique Form of Cryptocurrency

Maintain “stable” value via pegging to an asset

Common pegging references include \$USD, Gold, commodities

Facilitate international payments without intermediaries

Fiat-collateralized stablecoins pegged 1:1 to fiat currency held by financial institution

Tether (USDT) and USD Coin (USDC) are popular examples

Regulated by GENIUS Act in U.S. as of 7/18/25

# GENIUS Act Highlights

- Digital asset pegged to a fixed monetary value and redeemable at par
- Backed 1:1 by high-quality liquid assets (USD, Gold, etc.)
- Permitted Payment Stablecoin Issuers (PPSIs)
- 1:1 reserve requirement
- Monthly examination by registered CPA firm

# Bitcoin Miner Reward Halving History & Market Price

Date	Halving Amount	New Mining Reward	BTC Price	Block Reward Total
November 2012	25 BTC	25 BTC	\$12	\$300
July 2016	12.5 BTC	12.5 BTC	\$648	\$8,100
May 2020	6.25 BTC	6.25 BTC	\$8,572	\$53,575
April 2024	3.125 BTC	3.125 BTC	\$69,000	\$215,625

[ChartsBTC \(@ChartsBtc\) / X \(twitter.com\)](#)

The mining reward is what bitcoin miners receive for being the first to validate a block of transactions. It is their incentive for investing in the mining process.

# BTC ETFs Mark a Milestone in Cryptocurrency

- ETF = Exchange Traded Fund
- Trade like an equity stock
- Can invest in commodities, i.e., Bitcoin
- Eleven BTC applications approved by SEC as of January 2024
- Approximately \$148 billion of ETF investments as of October 2025 (BlackRock \$86 billion)

# Spot Bitcoin ETF Applications approved by SEC

- Grayscale
- 21Shares / Ark
- iShares / BlackRock
- Bitwise
- VanEck
- Wisdomtree
- Invesco / Galaxy
- Fidelity
- Valkyrie
- Global X
- Hashdex
- Franklin

# Larry Fink, CEO BlackRock

## Then

- [Larry Fink 2017](#)

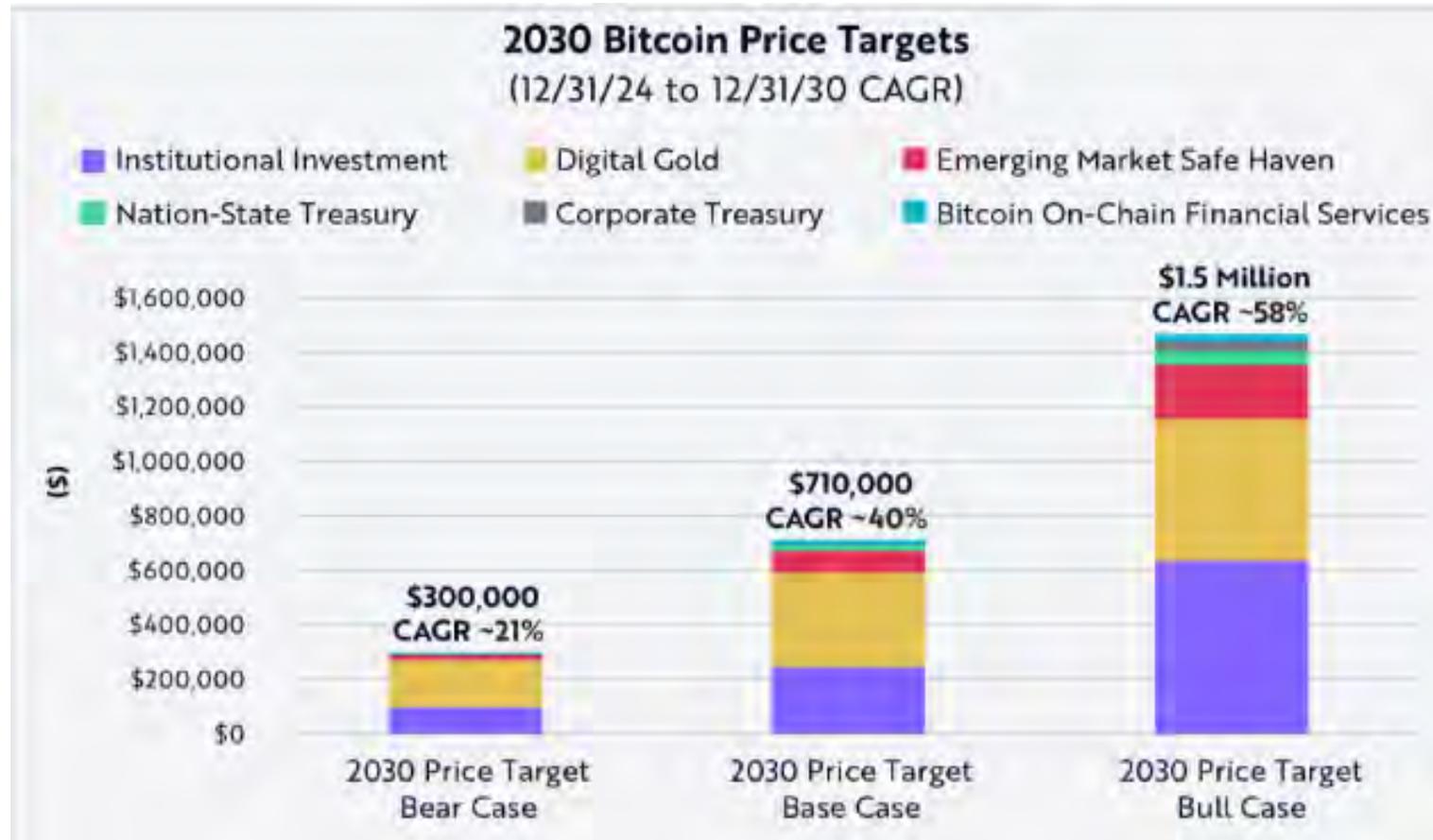
“Cryptocurrency identifies how much money laundering is being done. We are not hearing any demand from any of our clients to use this as an asset class”

## Now

- [Larry Fink 2023](#)

“We are hearing from clients around the world about the need for crypto. The rally is about a flight to quality. I believe crypto will play that role.”

# ARK Invest 2030 Bitcoin Price Targets



# Ethereum Update

Established in 2013 By 19-year-old Vitalik Buterin

130 million active wallets / accounts as of Oct 2025

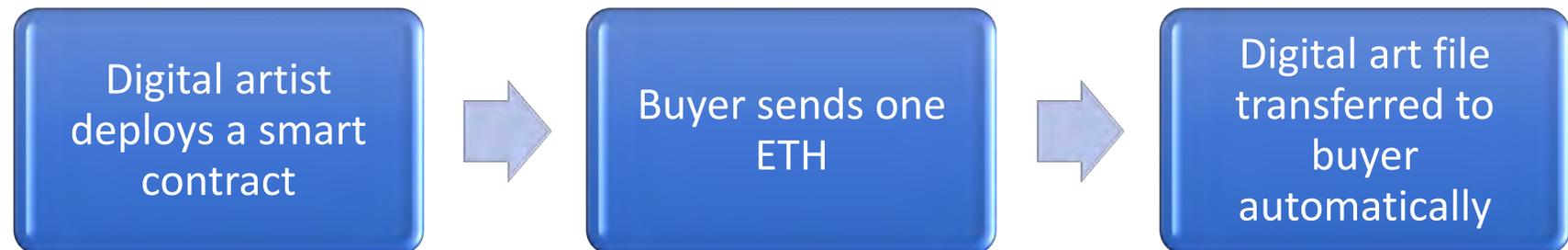
70 million smart contracts on Ethereum as of Oct 2025

Transitioned from proof-of-work to proof-of-stake 9/15/22

SEC approved 8 Ethereum ETFs in Q3 2024

# Smart Contracts

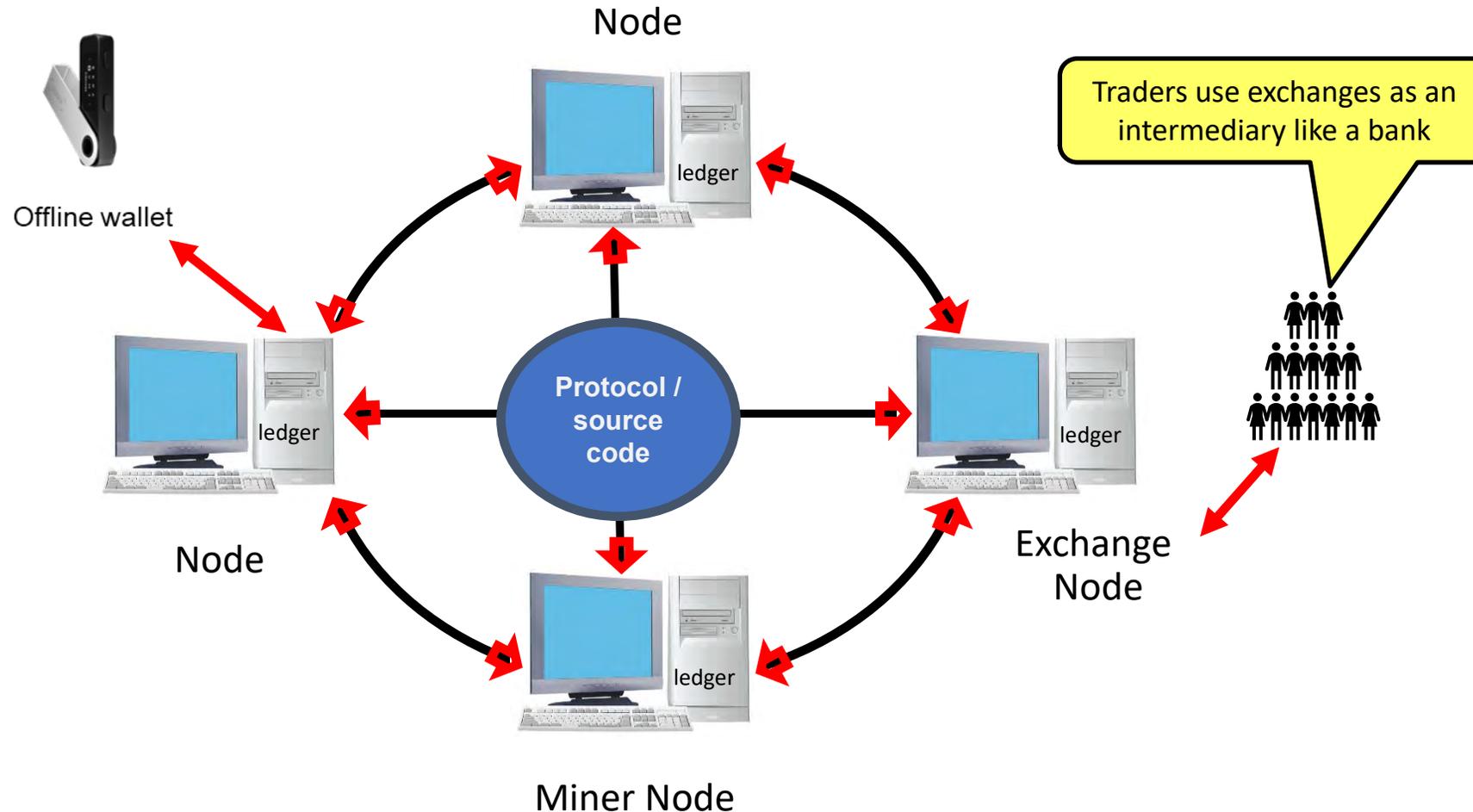
- Software coded contract that runs automatically on a blockchain when conditions are met
- Example:



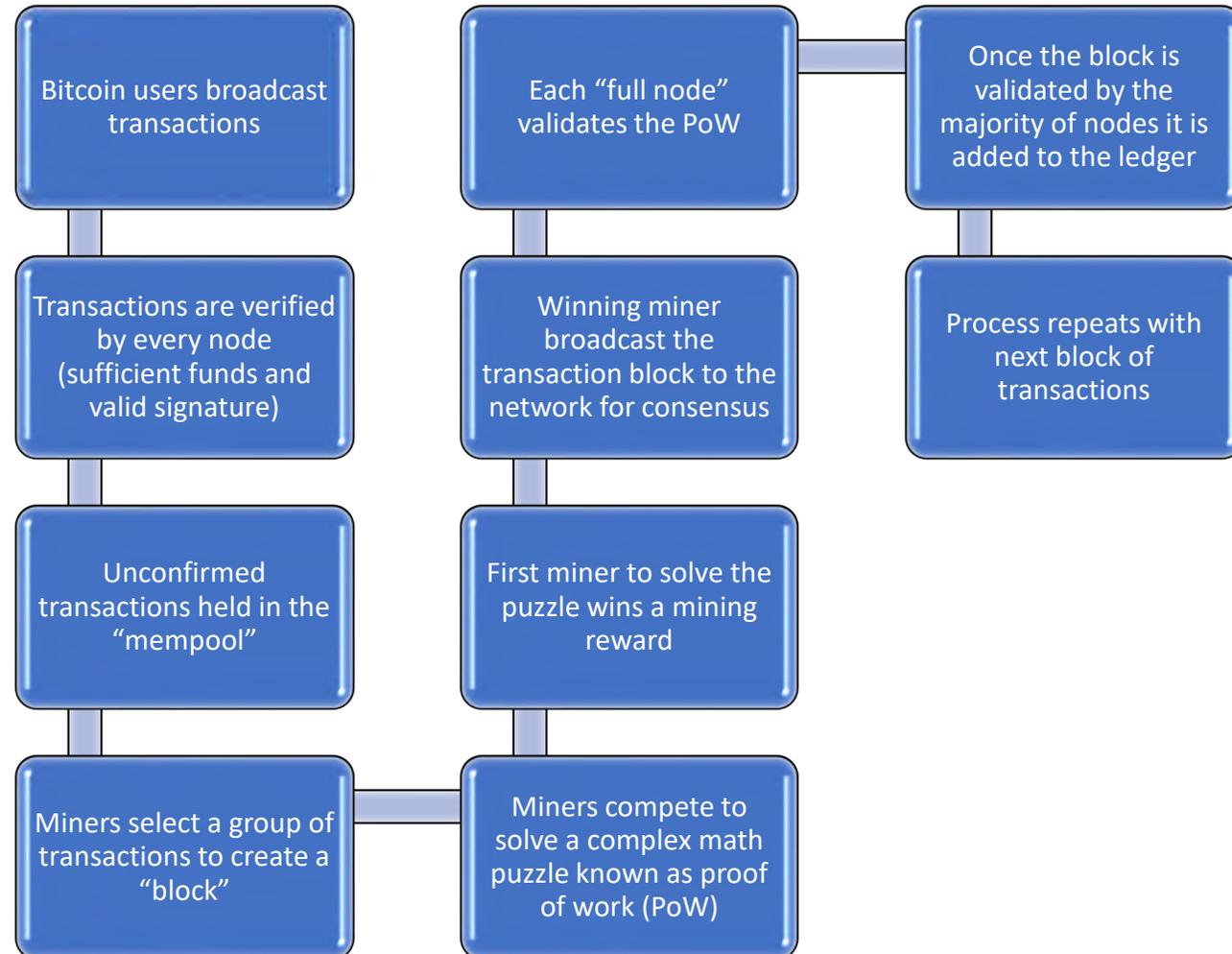
# CRYPTOCURRENCY TECHNOLOGY UPDATE



# Cryptocurrency Technology Review



# Bitcoin Transaction Validation Process



# Consensus Mechanism

- **Ensure Agreement** - All participants / nodes have a consistent and synchronized copy of the ledger
- **Ensure Integrity** – Prevent fraudulent changes through redundant copies of the ledger
- **Eliminate the Need for Trust** – Enables unknown parties to reach consensus without relying on a central authority

# Consensus Mechanisms

- **Proof of Work** – Requires participants aka miners to validate transactions and create a new block of entries.
- **Proof of Stake** – “Validators” are chosen based upon an established form of “stake.”
- Ethereum proof of stake model is based on offering holders of Ethereum to “stake” some of their Ethereum holdings



# New Trends in Cryptocurrency Technology

Proof-of-stake vs. Proof-of work

Lightning Network – facilitates “off chain” transactions

Wallet technology improving

Introduction of AI cryptocurrency tokens

Tax compliance software apps

# CRYPTOCURRENCY TAX COMPLIANCE SOFTWARE



# LEGISLATIVE AND REGULATORY UPDATE



Department of the Treasury  
Internal Revenue Service



# FEDERAL TAX IMPLICATIONS OF CRYPTOCURRENCY TRANSACTIONS



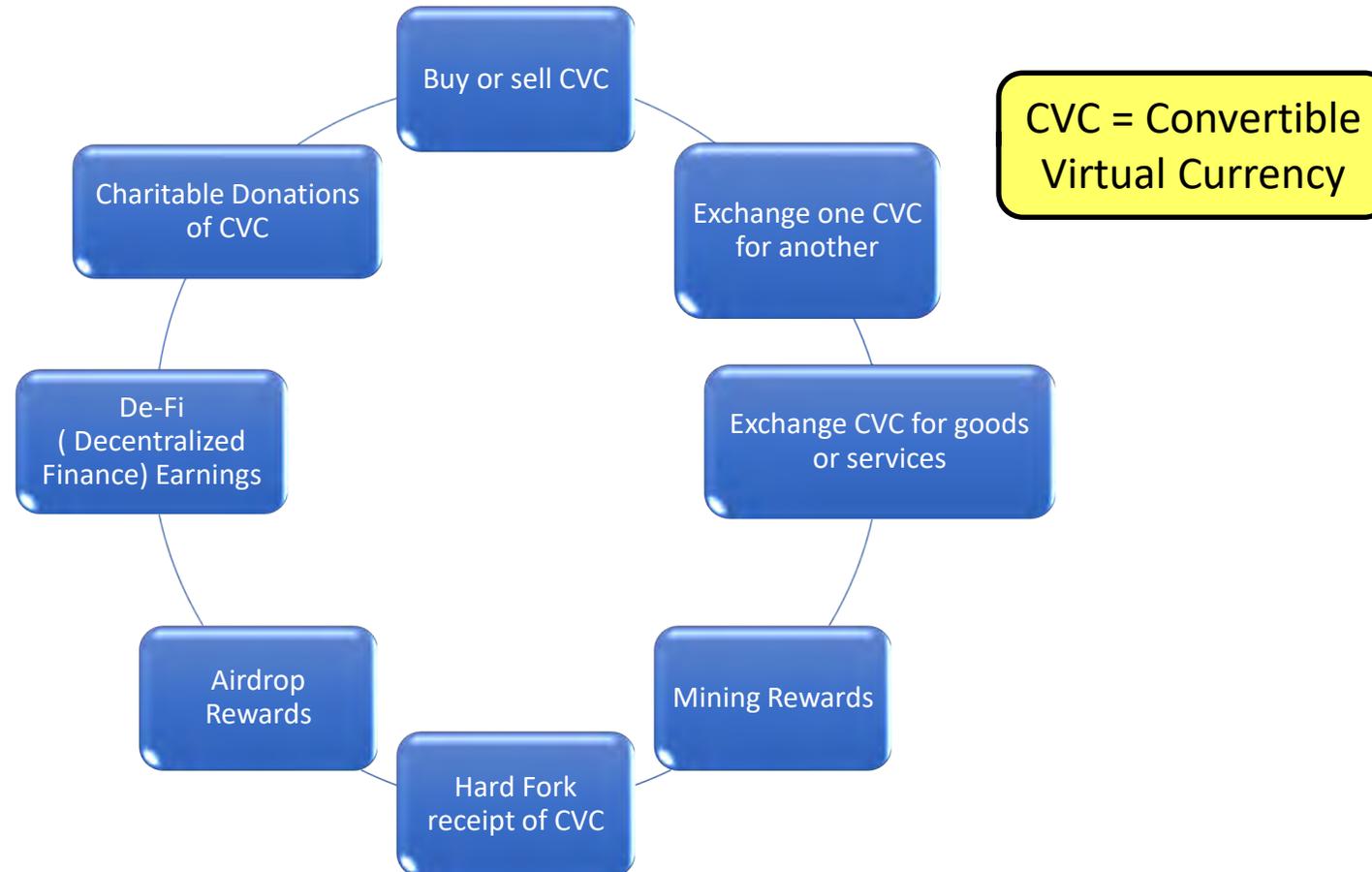
Department of the Treasury  
**Internal Revenue Service**

---

# IRS Notice 2014-21

- Issued 3/25/2014
- Provides “virtual currency” taxation guidance
- Defines “convertible” virtual currency (CVC)
- CVC is treated as property (business / investment / personal) for tax purposes
- CVC is not treated as currency
- CVC income reported at fair market value as of date received

# Taxable Virtual Currency Events



# Legislative Initiatives

- ✓ House Financial Services and Agricultural committees taking the lead
- ✓ Goal is to provide a framework to regulate cryptocurrencies
- ✓ Define which jurisdiction various digital assets fall under
- ✓ Security vs. Commodity
- ✓ Regulate trading platforms and exchanges
- ✓ Senate working on a regulatory framework for stablecoins
- ✓ DOJ clarifies cryptocurrency enforcement role

# WRAP-UP



# In Summary

- After a 15-year evolution, cryptocurrency has become a mainstream digital asset class
- Bitcoin is the only truly “decentralized” cryptocurrency
- Cryptocurrency valuation continues to be very volatile
- The next few years will likely define the long-term investment potential of cryptocurrency

# Thank you!!!

Let's connect on LinkedIn →

