

Building Advanced Solutions with Power BI



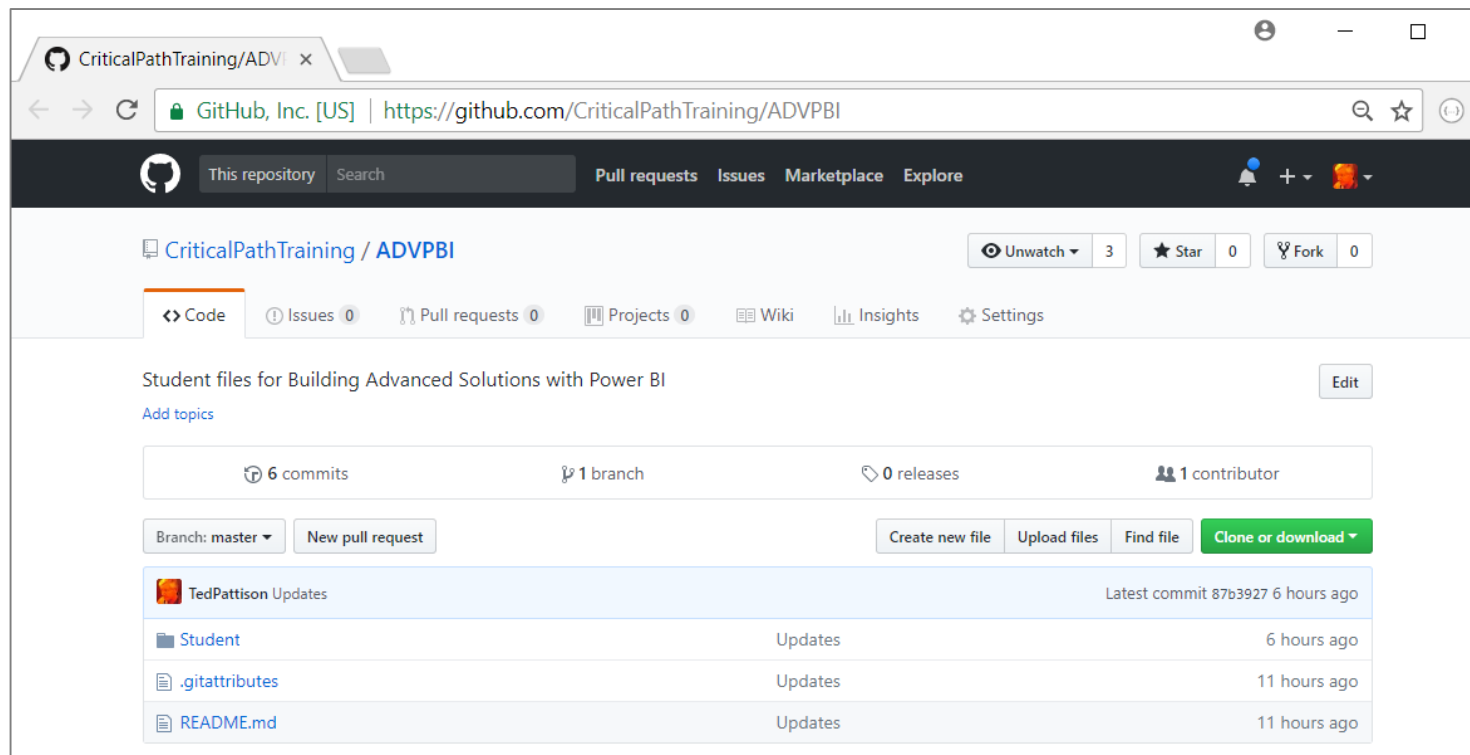
Student Background

- What's your name?
- What have you been doing with Power BI?
- Did you attend Power BI Bootcamp with Critical Path
- Do you develop custom solutions using Visual Studio?



Live Labs for ADVPBI

- Student files for this course maintained in GitHub
 - Labs and slides available in PDF and XPS formats
 - Go to <https://github.com/CriticalPathTraining/ADVPBI>



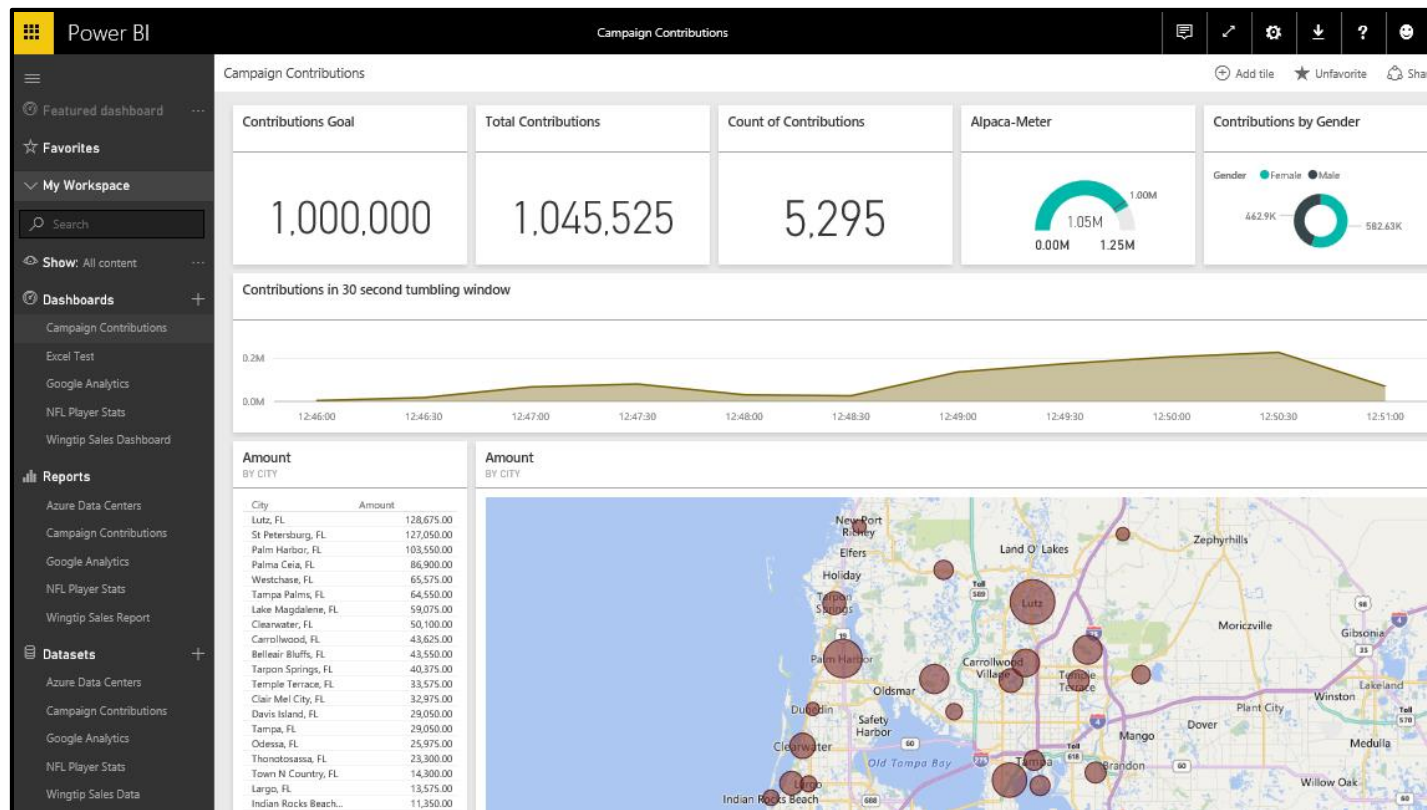
Agenda

- Working with the Power BI Platform
 - Creating an Office 365 Trial Tenant for Testing
 - Building Solutions using Power BI Desktop
 - Staying in Sync with Monthly Updates
 - Course Agenda



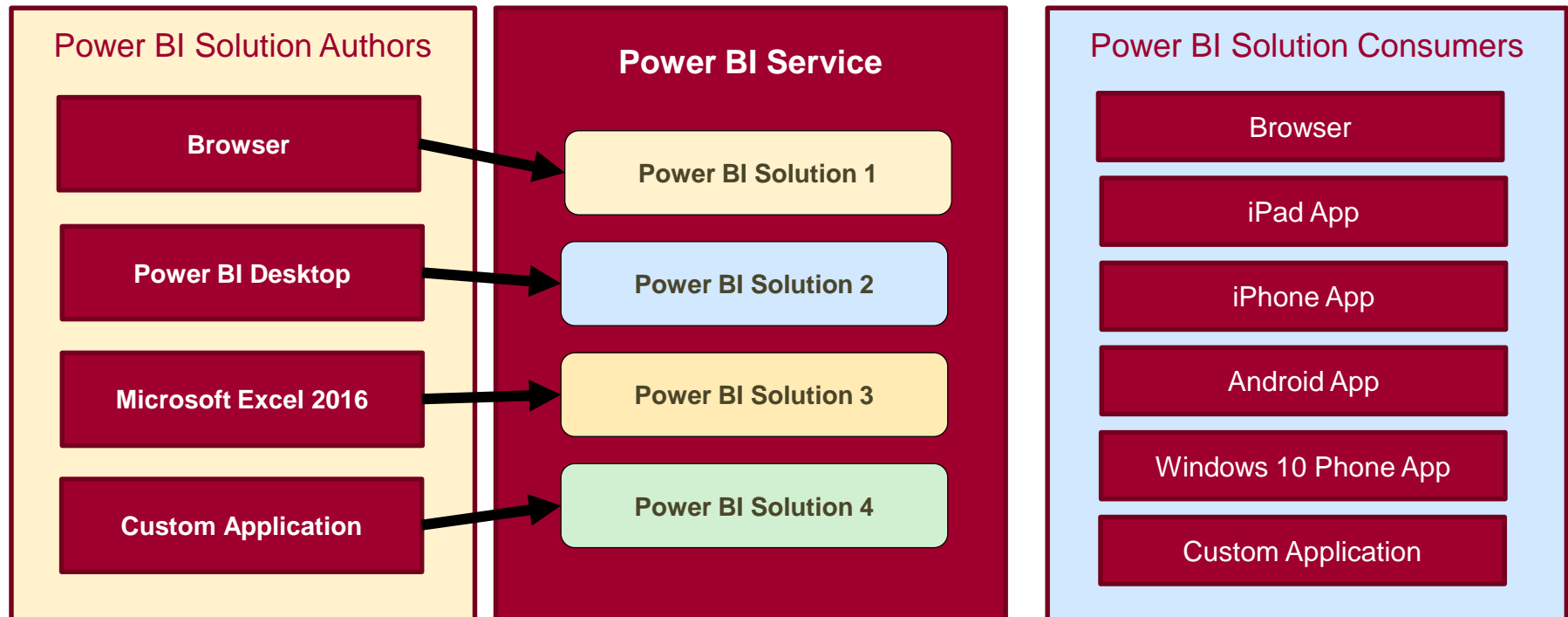
The Power BI Service

- The Power BI Service
 - Provides cloud-based foundation for Power BI platform
 - Accessible through browser at <https://app.powerbi.com>



Power BI Service Architecture

- Power BI support for authors and consumers
 - BI solution authors have a choice in authoring tools
 - BI solutions consumers can use wide range of devices



Power BI Licensing

- User-based licensing

Power BI (free)	Power BI Pro	Office 365 Enterprise E5
\$0.00 user/month	\$9.99 user/month	\$35.00 user/month
A cloud-based business analytics service that enables anyone to visualize and analyze data with greater speed, efficiency, and understanding. It ...	A cloud-based business analytics service that enables anyone to visualize and analyze data with greater speed, efficiency, and understanding. Power ...	The Office suite, plus email, instant messaging, HD video conferencing, 1 TB personal file storage and sharing, and advanced security, analytics and PSTN ...
Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps
Office 365 services	Office 365 services	Office 365 services
...

- Capacity-based Licensing

Power BI Premium P1	Power BI Premium P2	Power BI Premium P3	Power BI Premium EM3 (Month to Month)
\$4,995.00 instance/month	\$9,995.00 instance/month	\$19,995.00 instance/month	\$2,495.00 instance/month
Power BI capacity dedicated to your organization, unlocking unlimited content distribution and dependable performance. P1 offers 8 virtual cores ...	Power BI capacity dedicated to your organization, unlocking unlimited content distribution and dependable performance. P1 offers 16 virtual cores ...	Power BI capacity dedicated to your organization, unlocking unlimited content distribution and dependable performance. P1 offers 32 virtual cores ...	Embed Power BI content in your custom application, powered by 4 virtual cores of dedicated capacity. Some Premium features are disabled ...
Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included
Office 365 services	Office 365 services	Office 365 services	Office 365 services
...



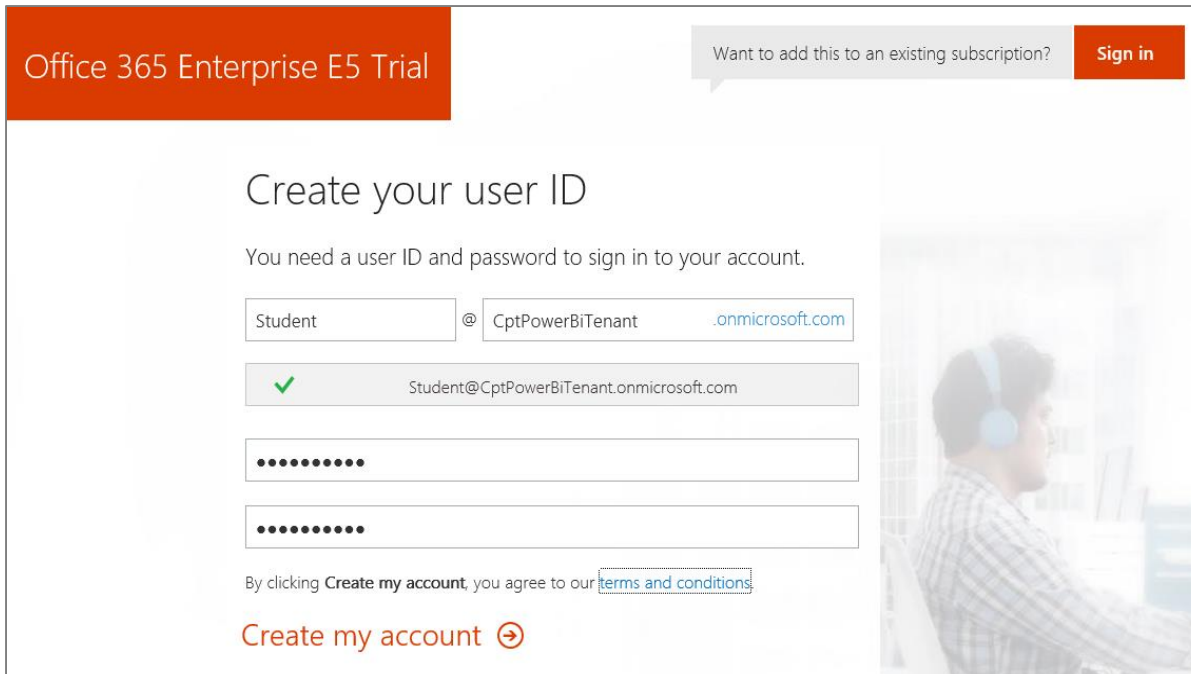
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Creating a Power BI Testing Environment

- Sign up for an Office 365 Enterprise E5 trial account
 - Creates a new Office 365 tenant
 - Creates an account which is tenant administrator
 - You can create 25 user accounts for testing purposes
 - You can create and test Office 365 unified groups



The screenshot shows the 'Office 365 Enterprise E5 Trial' sign-up page. At the top left, there is an orange banner with the text 'Office 365 Enterprise E5 Trial'. To the right of this banner, there is a grey box with the text 'Want to add this to an existing subscription?' and an orange 'Sign in' button. The main heading is 'Create your user ID'. Below this, it says 'You need a user ID and password to sign in to your account.' There are two input fields: the first contains 'Student' and the second contains 'CptPowerBiTenant.onmicrosoft.com'. Below these fields, there is a green checkmark icon and the text 'Student@CptPowerBiTenant.onmicrosoft.com'. There are two more input fields, both containing dots, representing password fields. At the bottom, there is a link to 'terms and conditions' and a 'Create my account' button with a right arrow icon. On the right side of the page, there is a blurred image of a person wearing a headset and working at a computer.

Office 365 Enterprise E5 Trial

Want to add this to an existing subscription? [Sign in](#)

Create your user ID

You need a user ID and password to sign in to your account.

Student @ CptPowerBiTenant .onmicrosoft.com

✓ Student@CptPowerBiTenant.onmicrosoft.com

.....

.....

By clicking **Create my account**, you agree to our [terms and conditions](#)

Create my account ➔



Office 365 admin center

- Chores to accomplish in Office 365 admin center
 - Learn how to add secondary user accounts for testing
 - Learn how to view and manage groups

Office 365 | Admin center preview

Home > Active users

Power BI Bootcamp Labs

[+ Add a user](#) [More](#) Filters All users [Export](#)

<input type="checkbox"/>	Display name ^	User name	Status
<input type="checkbox"/>	James Bond	JamesB@PowerBiBootcamp.onmicrosoft.com	Office 365 Enterprise E5
<input type="checkbox"/>	Ted Pattison	Student@PowerBiBootcamp.onmicrosoft.com	Office 365 Enterprise E5

[+ User](#) [Types of users](#) [Filters](#)

Users are people in your organization who can access Office 365.

Different types of users and accounts can use Office 365 in distinct ways.

Learn how filtering will help you keep this list under control – before it gets too long.





DEMO

Managing Users and Subscriptions in the Office 365 admin center

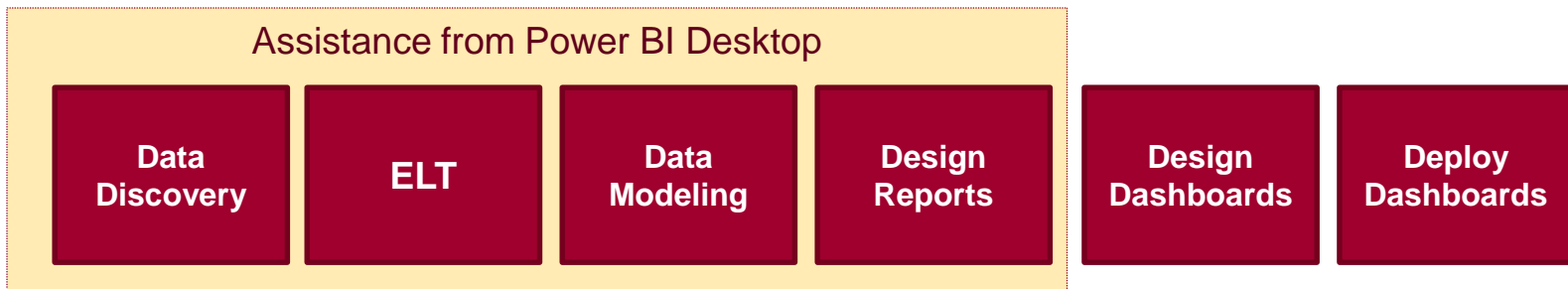
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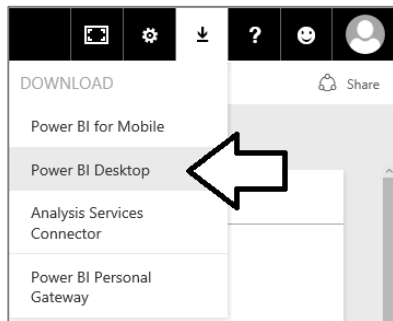
Working with Power BI Desktop

- Power BI Desktop focuses on first four phases
 - Query features for Data Discovery
 - Query features for ETL
 - Design features and DAX language for data modeling
 - Report design using a visual report designer
 - No support for designing dashboards
 - No support for packaging an entire solution



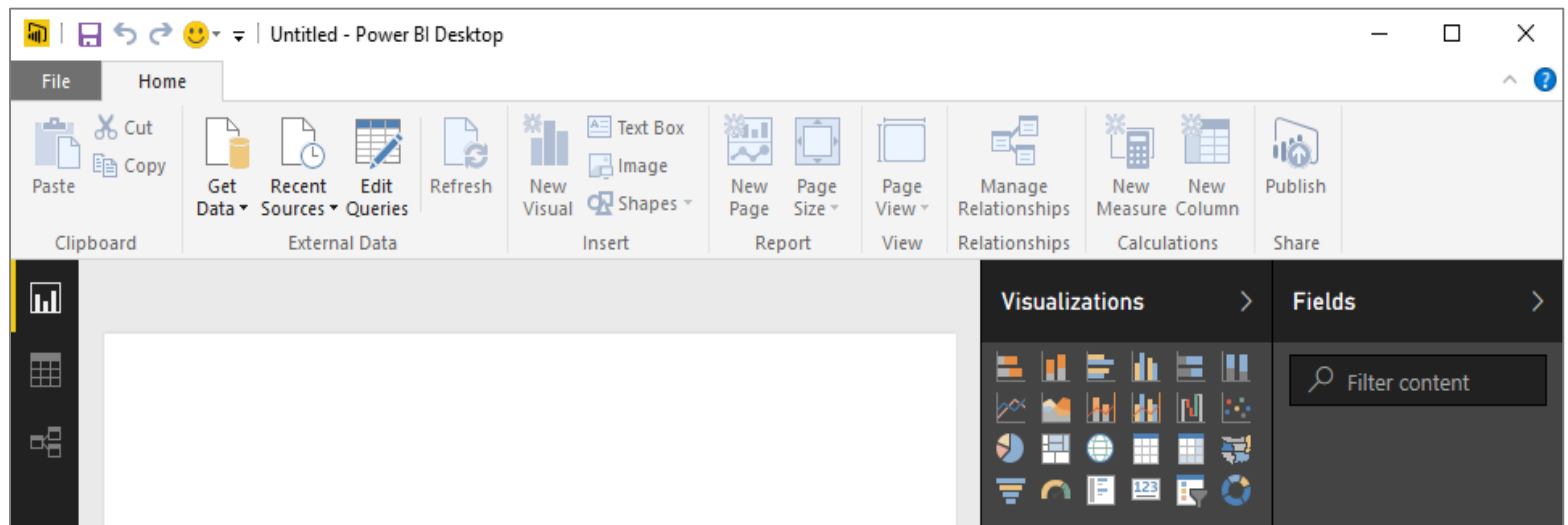
Installing Power BI Desktop

- Power BI Desktop quick & easy to install over the Internet
 - Select Power BI Desktop option from Power BI Download menu
 - Power BI Desktop downloads & installs in less than a minute



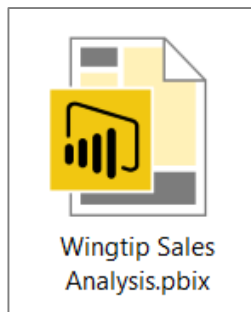
Working with Power BI Desktop

- Power BI Desktop is a Windows application
 - Work is saved and published in terms of projects
 - You can work on multiple projects at once
 - Each project runs in its own Power BI Desktop instance
 - Power BI Desktop can freeze up or act buggy
 - Quit & restart Power BI Desktop if it acts strangely



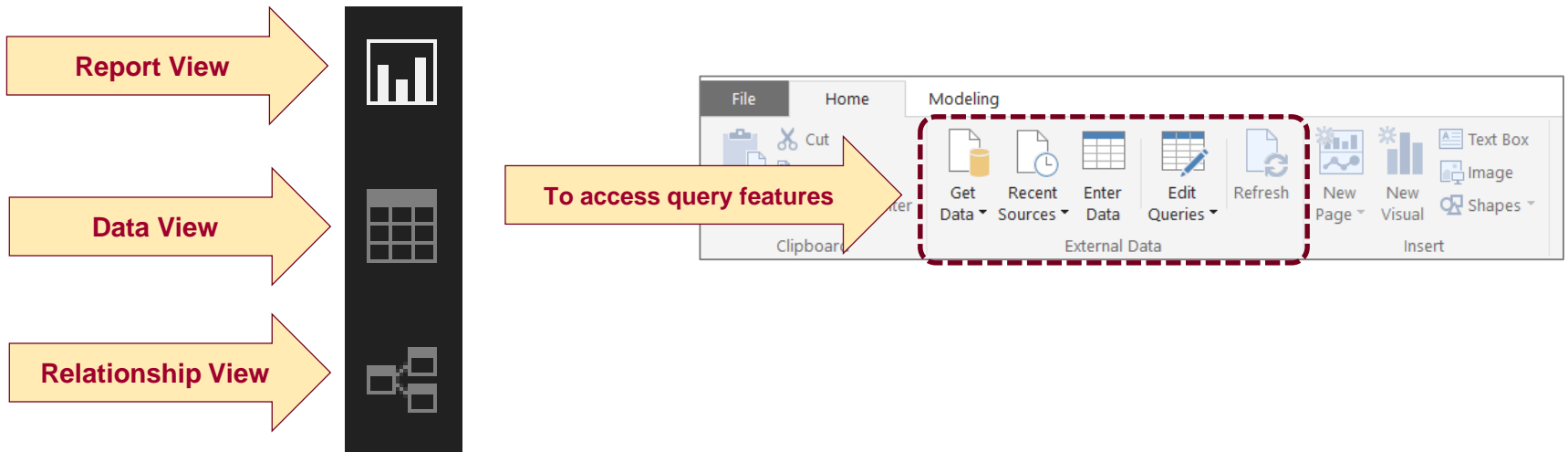
Projects and PBIX Files

- Power BI Desktop projects saved using PBIX files
 - PBIX file contains data source definitions
 - PBIX file contains query definitions
 - PBIX file contains data imported from queries
 - PBIX file contains exactly one data model definition
 - PBIX file contains exactly one report
 - PBIX file never contains data source credentials



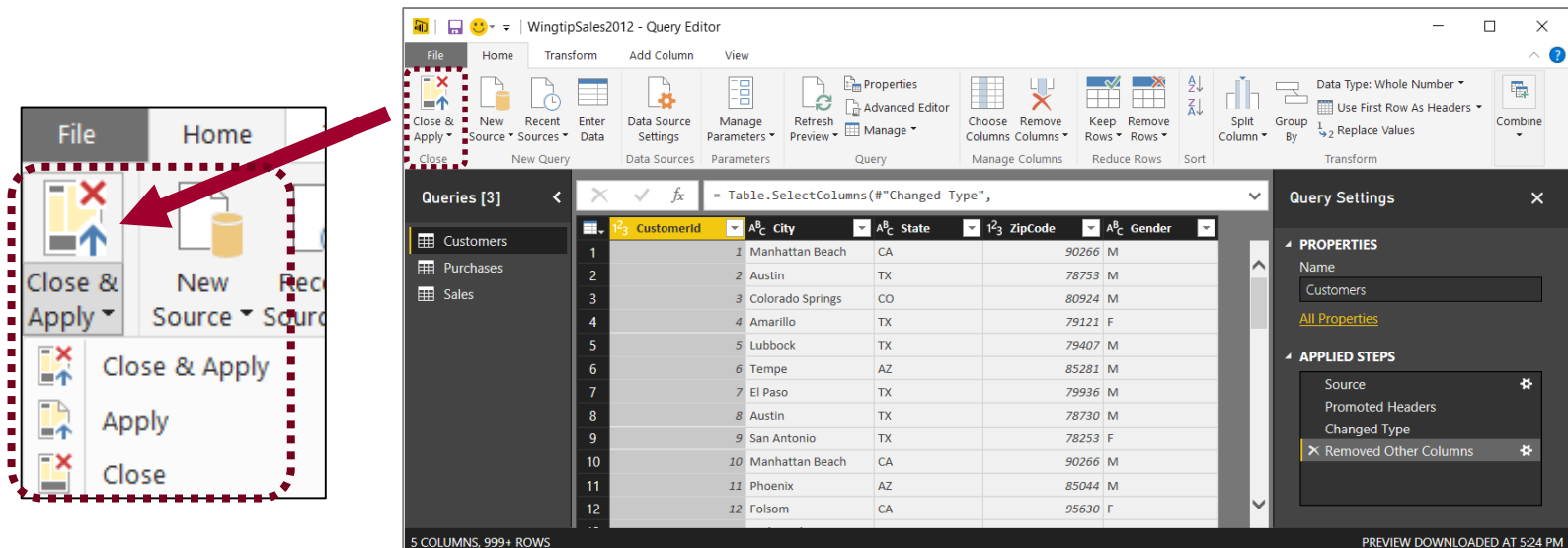
Getting Around in Power BI Desktop

- What do you need to learn to use Power BI Desktop?
 - Query features for importing data
 - Design features for modeling data
 - Report designer for creating reports
- Navigating between view modes



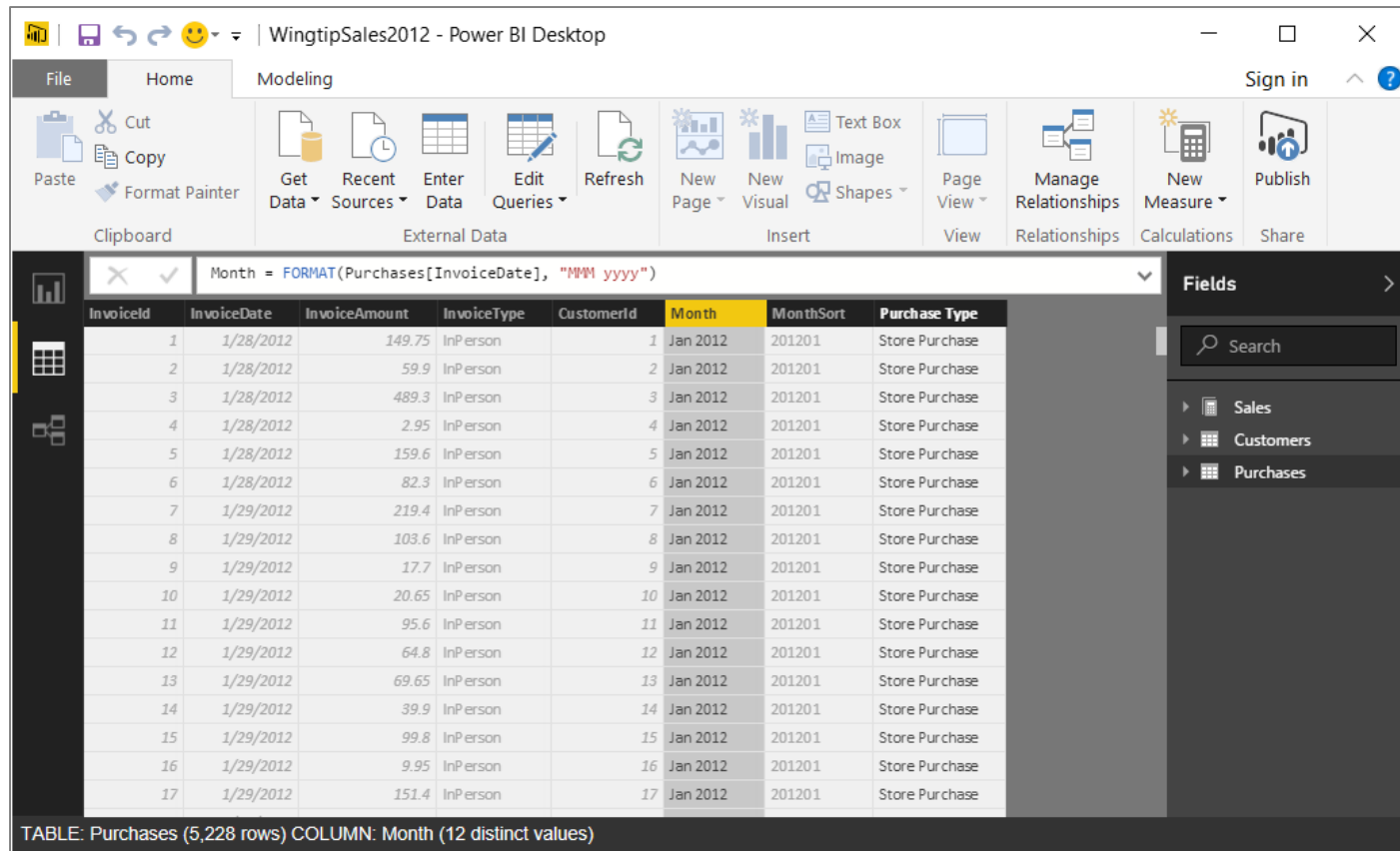
Query Editor Window

- Power BI Desktop provides separate Query Editor window
 - Provides powerful features for designing queries
 - Displays list of all queries in project on the left
 - Displays **Properties** and **Applied Steps** for selected query on right
 - Preview of table generated by query output shown in the middle
 - Query can be executed using **Apply** or **Close & Apply** command



Data View

- Data view is used for data modeling
 - Data View displays columns and rows of data for each table
 - Data View used to create calculated columns and measures



The screenshot shows the Power BI Desktop interface with the 'Data View' tab selected. The ribbon includes 'File', 'Home', and 'Modeling'. The 'Modeling' ribbon has options like 'Get Data', 'Recent Sources', 'Enter Data', 'Edit Queries', 'Refresh', 'New Page', 'New Visual', 'Text Box', 'Image', 'Shapes', 'Page View', 'Manage Relationships', 'New Measure', and 'Publish'. A red arrow points to the 'Data View' icon in the left-hand navigation pane.

The main area displays a table with the following columns: InvoiceId, InvoiceDate, InvoiceAmount, InvoiceType, CustomerId, Month, MonthSort, and Purchase Type. The 'Month' column is highlighted in yellow and contains the formula: `Month = FORMAT(Purchases[InvoiceDate], "MMM yyyy")`. The table shows 17 rows of data, all with a 'Store Purchase' type and 'In Person' invoice type, occurring in January 2012.

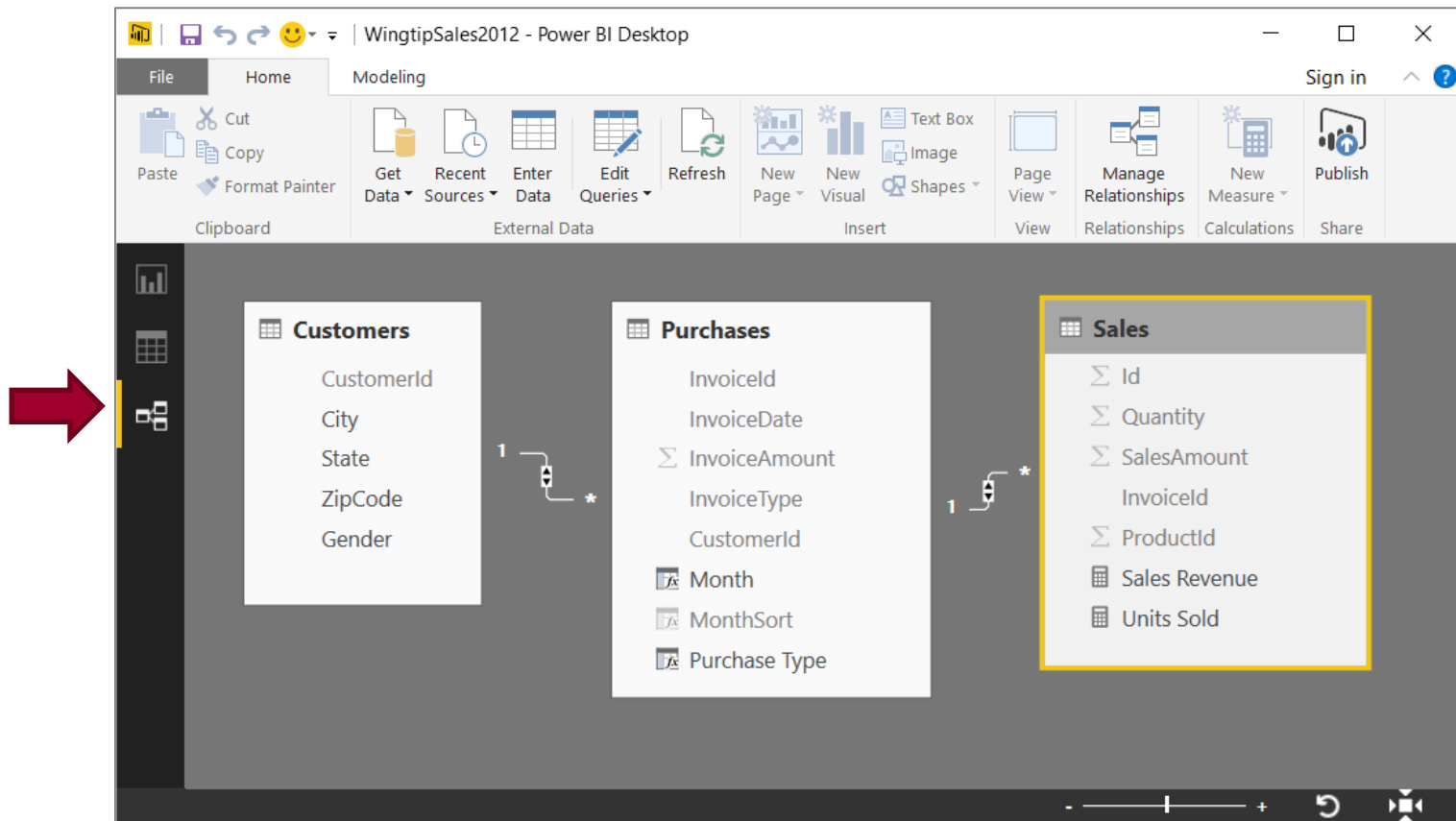
On the right, the 'Fields' pane shows a search bar and a list of tables: Sales, Customers, and Purchases.

At the bottom, a status bar indicates: **TABLE: Purchases (5,228 rows) COLUMN: Month (12 distinct values)**



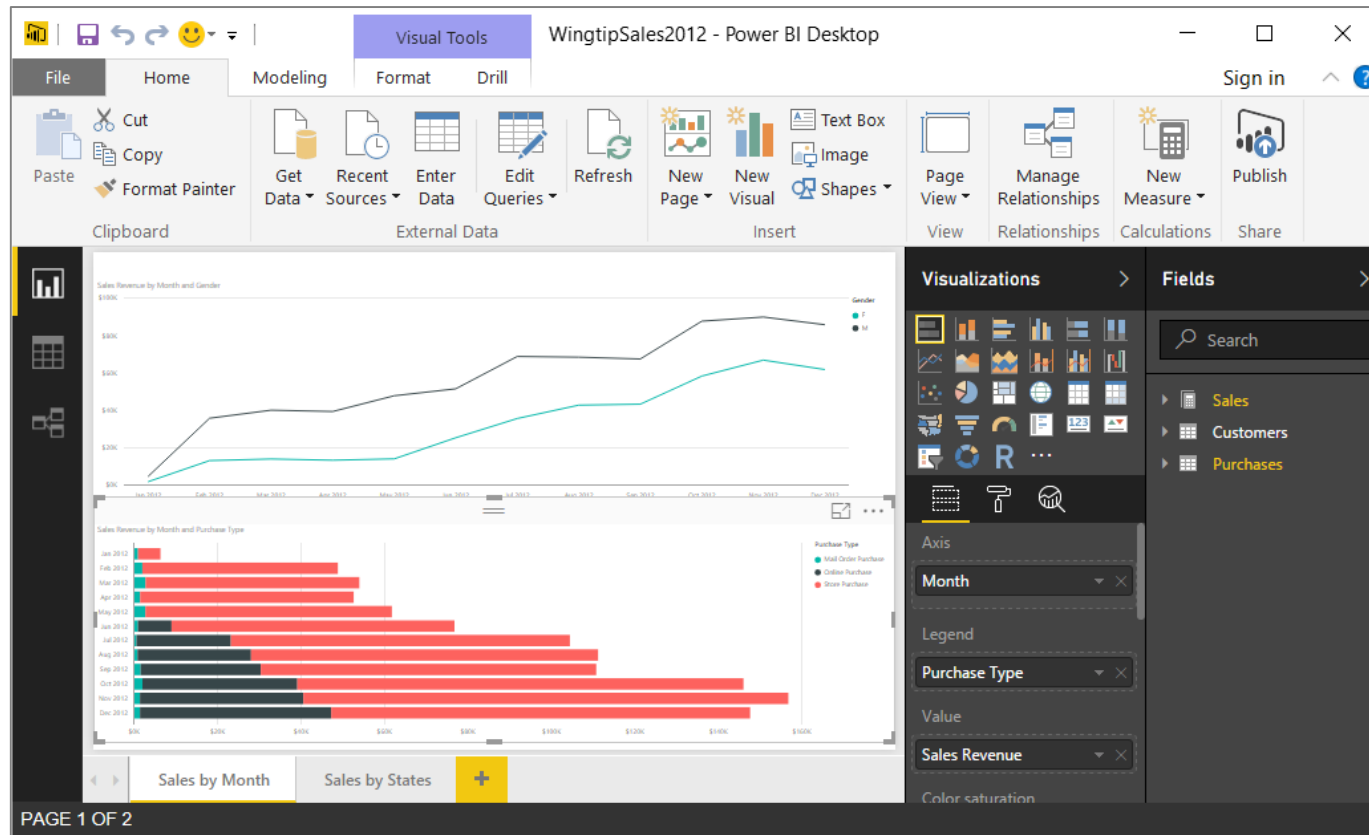
Relationship View

- Displays tables, fields and relationships
 - Used to view tables, fields and relationships in project's dataset
 - Used to create relationships when importing new tables



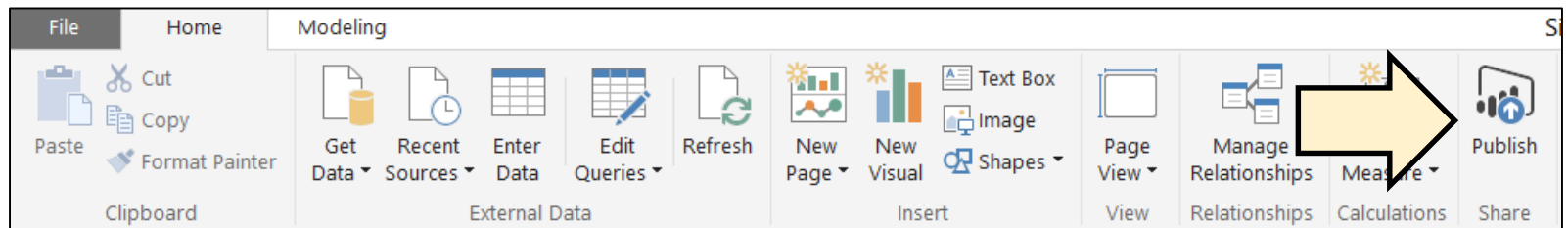
Report View

- Report view used to design report for current project
 - Report designer is very similar to Power BI service
 - Dataset can be simplified for Report View by hiding fields

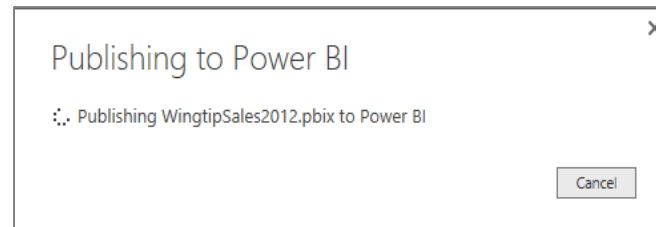
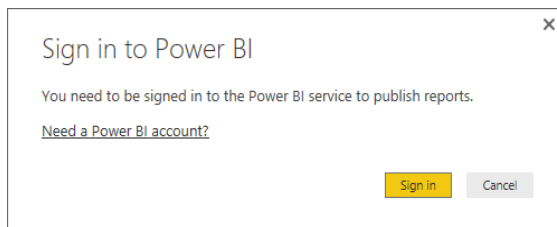


Publishing a Power BI Desktop Project

- Power BI Desktop provides **Publish** command
 - Used to publish project to Power BI service



- Requires logging into your Office 365 account



- Published articles added to target workspace





DEMO

Getting Up and Running with Power BI Desktop

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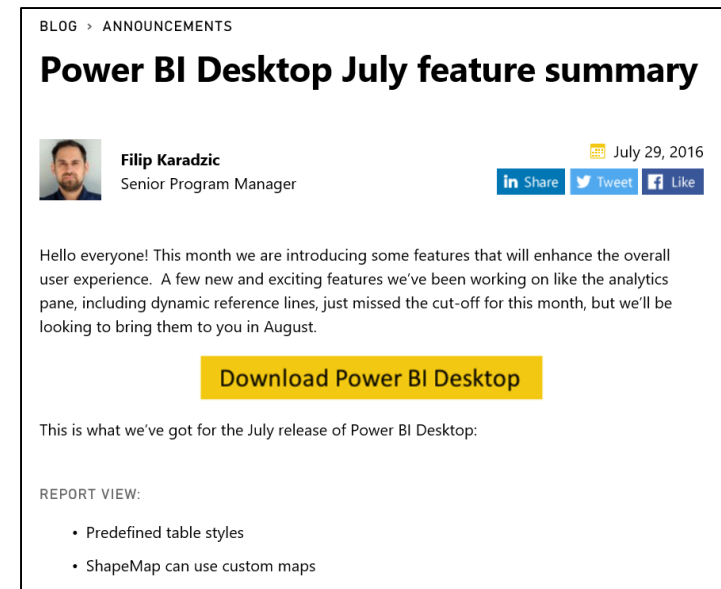
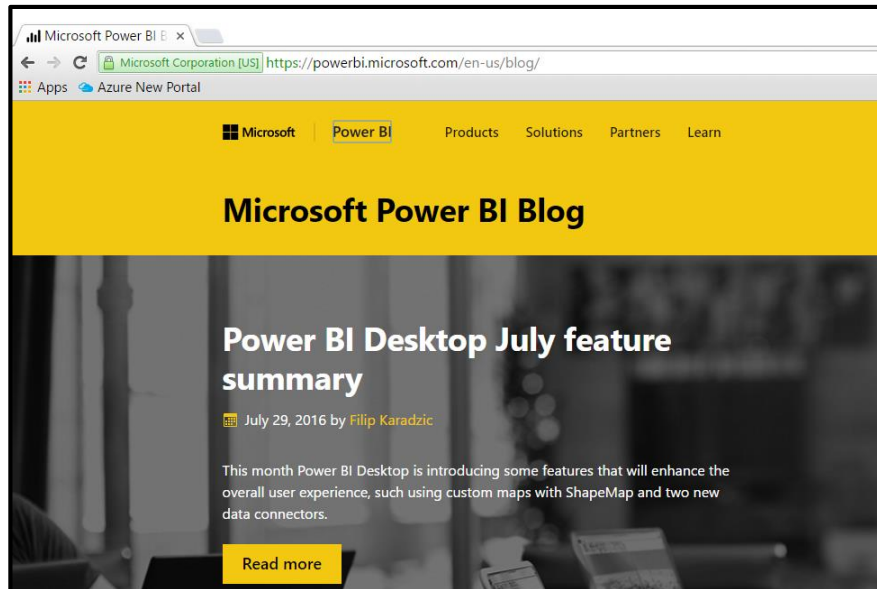


Power BI Team Blog

- Power BI Team Blog is an Essential Resource

<https://powerbi.microsoft.com/en-us/blog/>

- Be on the lookout for monthly updates

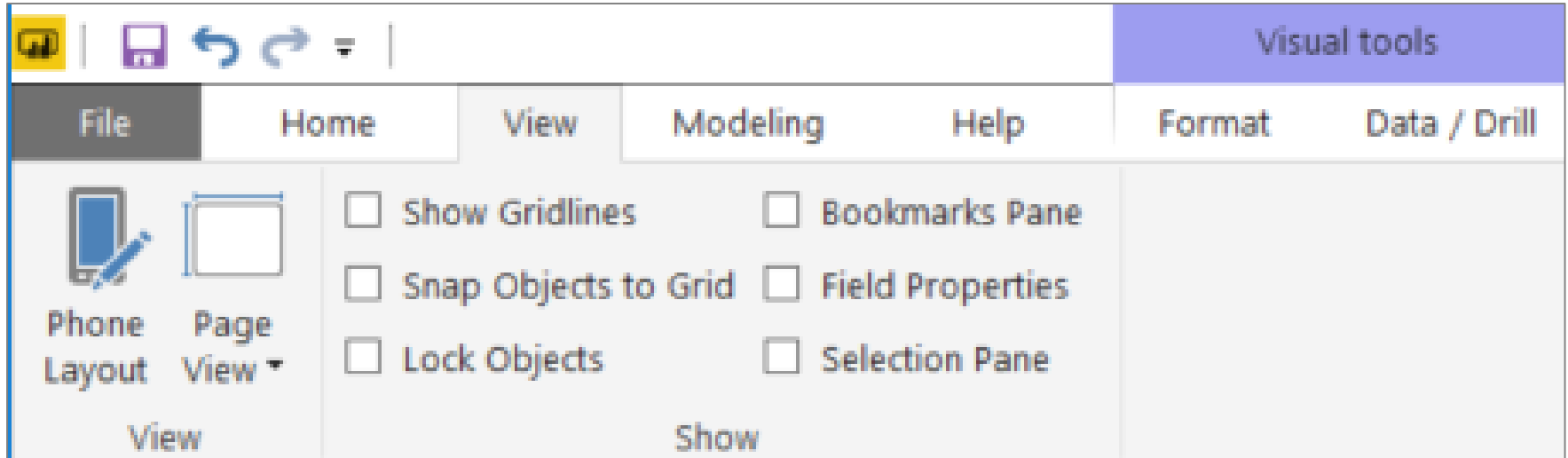


The Stream of New Reporting Features

- Added in Sept 2017
 - Drillthrough features
- Added in October 2017
 - Bookmarks and Bookmark Linking
 - Selection Pane to Hide/Show Visuals
 - Visual Spotlighting
- Added in November 2017
 - Visual Ordering Control and Lock Objects
- Added in December 2017
 - Cross-highlighting support for bookmarks, Field Pane, Q&A
- Added in January 2018
 - Hide & Show report page tabs



It's Not Your Father's Power BI Desktop

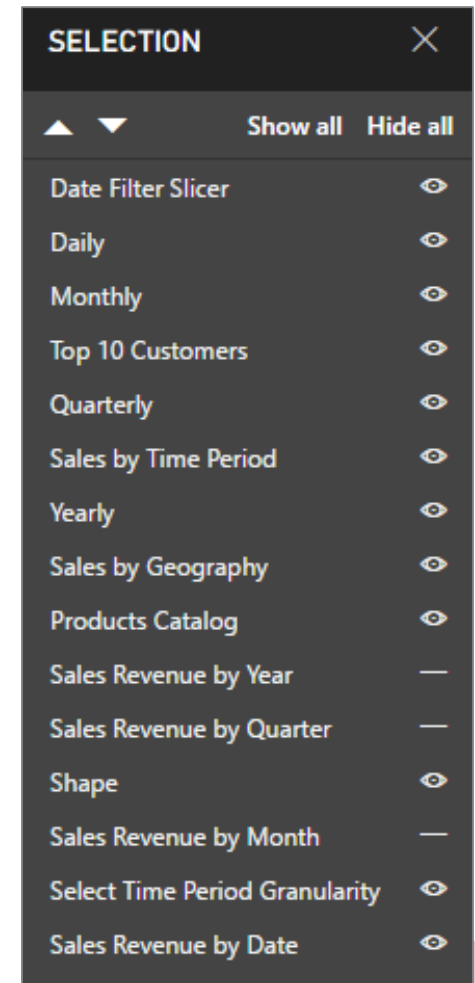
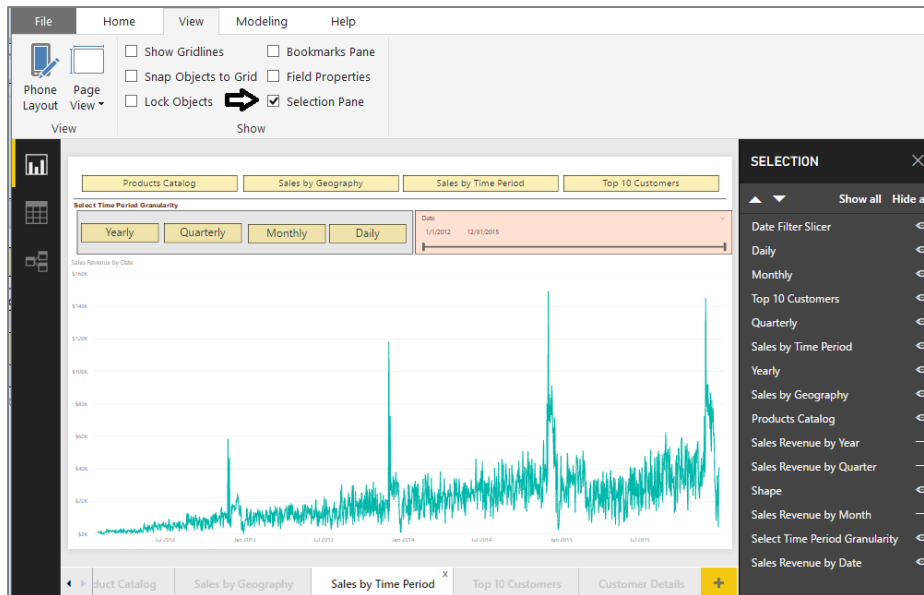


- **Lock Objects** mode used to prevent accidental moving
- **Bookmarks Pane** used to create and manage bookmarks
- **Field Properties** used to add field description
- **Selection Pane** used to select, order, hide & show visuals



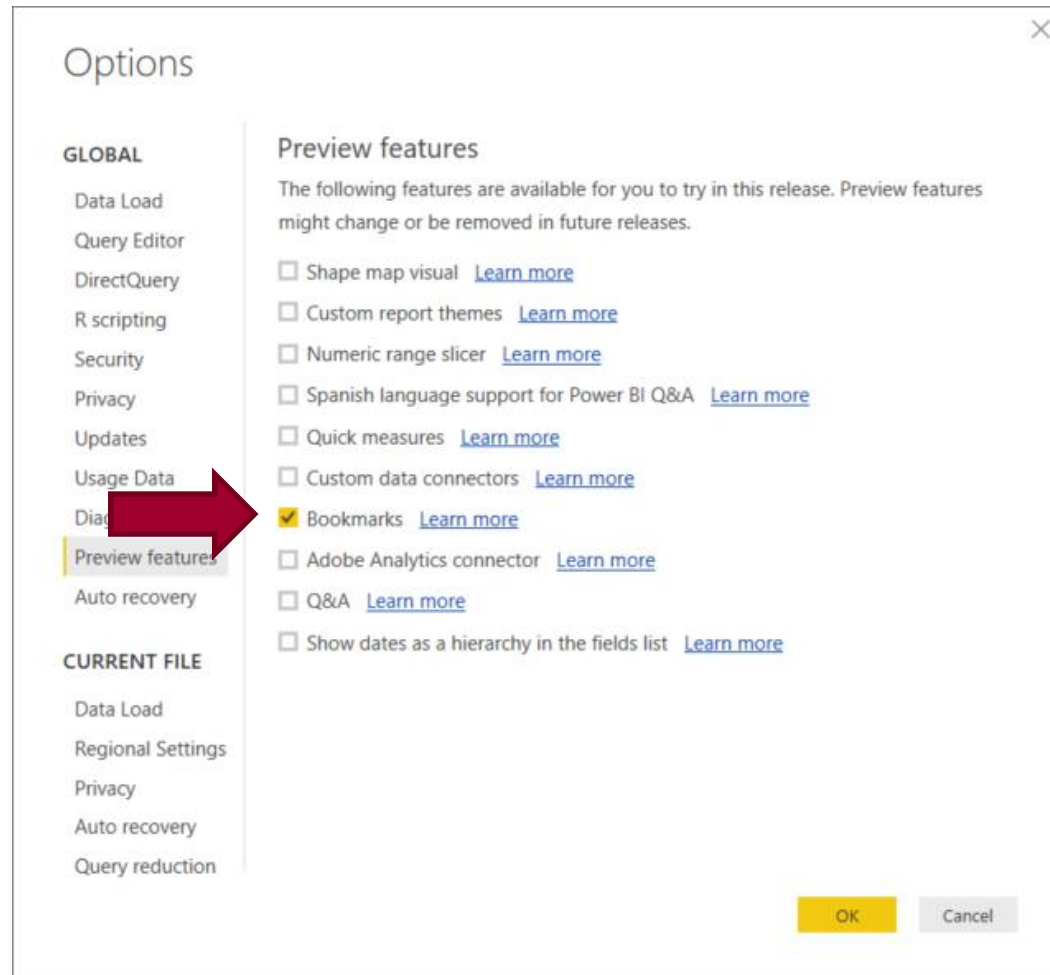
Selection Pane

- Provides control over object on a page
 - You can control whether visual is visible or hidden
 - You can change ordering to control what is on top



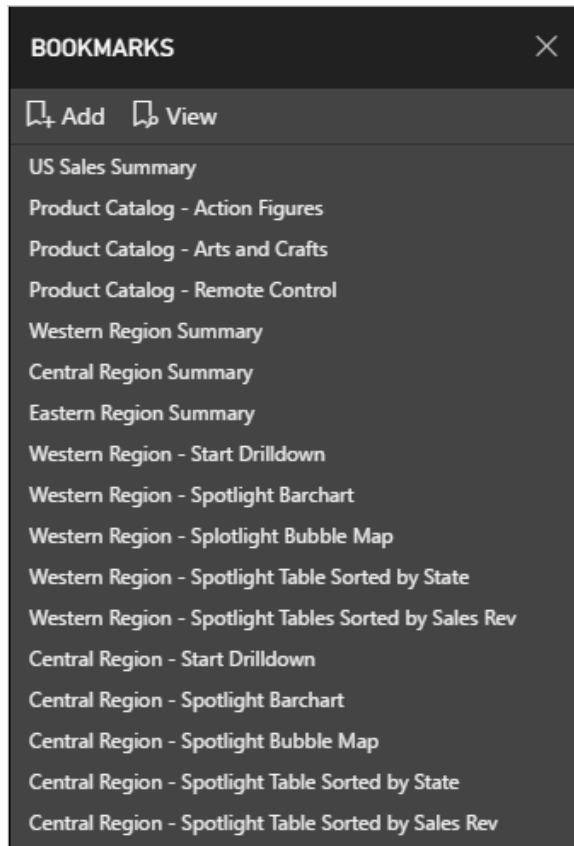
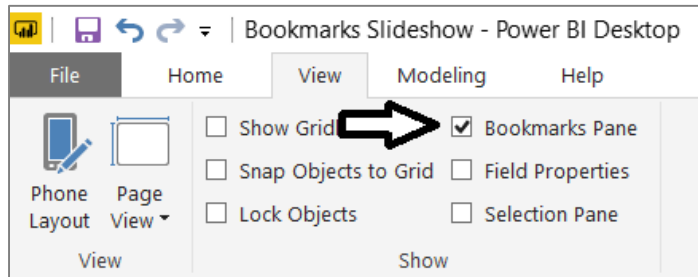
Bookmarks are still a Preview Feature

- Preview features must be enabled in Power BI Desktop



Bookmarks Pane

- Provide ability to create and manage bookmarks



What are Bookmarks

- Snapshot of recorded settings which can include...
 - Current page
 - Filters
 - Slicers
 - Visual sort order
 - Drill location
 - Visibility
 - Spotlighting
- Foundation for Story telling
 - For reports only – *bookmarks not supported in dashboards*





DEMO

Exploring the Bookmarks.pbix Demo Project

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Course Agenda

Day 1

- 01: Introduction *(this lecture)*
- 02: Designing Queries to Extract and Transform Data
- 03: Creating a Rich Data Model using DAX

Day 2

- 04: Building Custom Solutions with PowerApps
- 05: Building Custom Solutions with Microsoft Flow
- 06: Programming in M and Developing Custom Connectors

Day 3

- 07: Developing with the Power BI Service API
- 08: Embedding Power BI Reports and Dashboards
- 09: Developing Real-time Streaming Data Solutions



Summary

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