Extending Power BI Functionality with R

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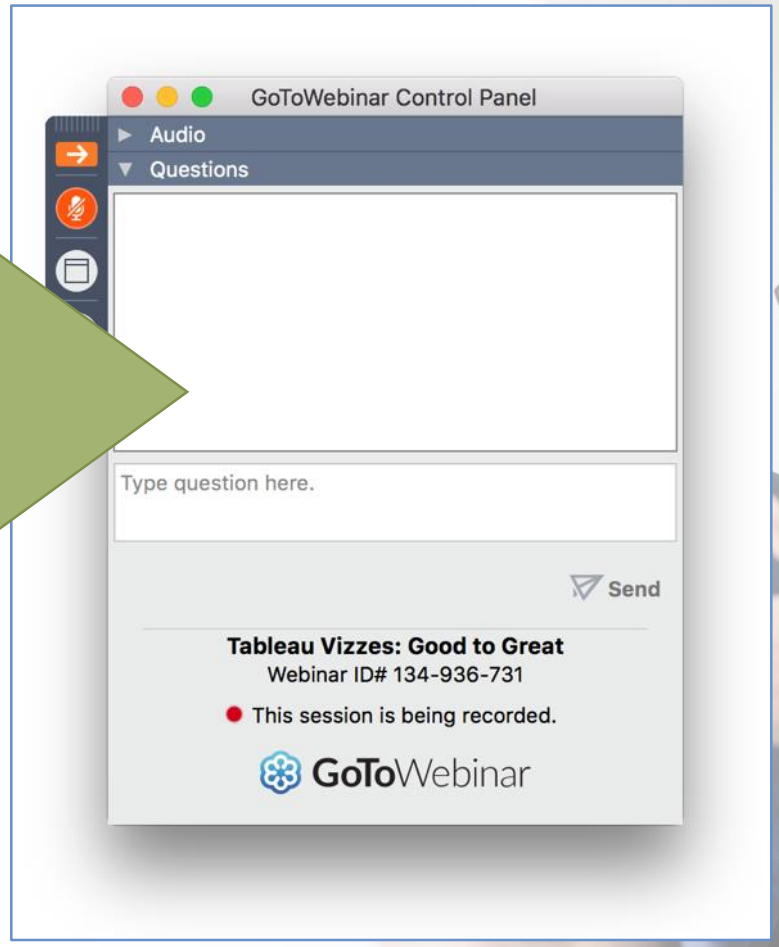

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Visit the Knowledge Center on the Senturus website to download this presentation and explore other assets:

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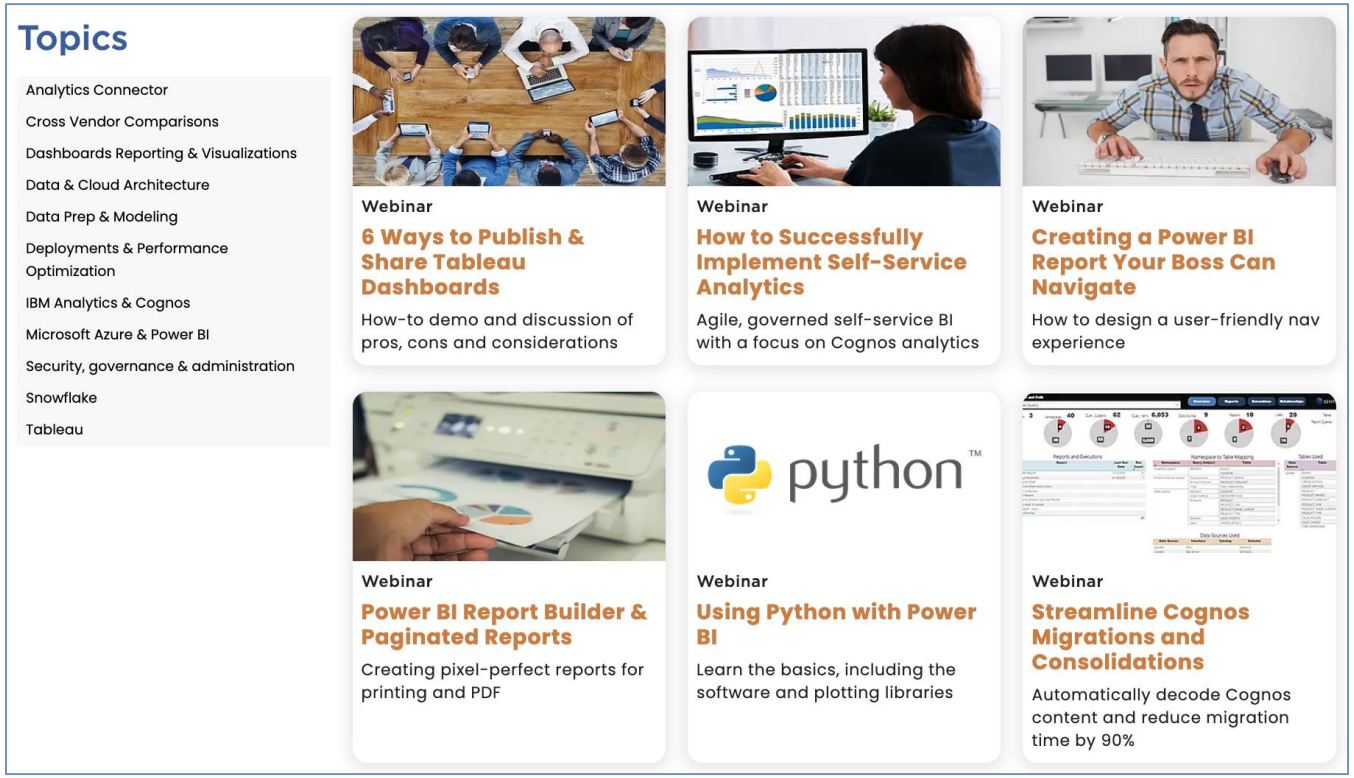

Agenda

- Introductions
- Discussion of R and Power BI
- Demos
- Senturus overview
- Additional resources
- Q&A

Topics

- R basics
- Configuring Power BI Desktop
- Using R for data
- R visualizations
- Transforming data

Introductions

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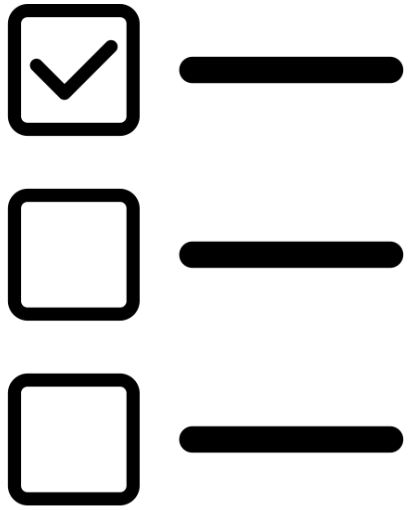
Poll #1

What is your preferred scripting language?

- Python
- R
- Other
- Don’t use a scripting language



What is R?

R is a free, open-source statistical language

R allows you to perform sophisticated statistical analysis and predictive analytics

This includes:

- linear and nonlinear modeling
- statistical tests
- time-series analysis
- classification

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What is R?

R uses a command line interface primarily

However, many GUI based applications are available for download

With R, users can create variables, formulas, functions and graphs to visualize their analysis and predictions

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Basic knowledge of R

- Before attempting Power BI integration, it is helpful to have a working proficiency with R
- Terms such as data frame, working with the command line and understanding the R environment are key success factors
- A good starting point is the R Project at www.r-project.org
- *Additional resources available at the end of this presentation*

Basic knowledge of R

- The R data frame function, data.frame, is the foundation for storing data within R
- Similar to pandas in Python
- Stores Power BI data in a schema for access

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1	United Equipment Co.	Chicago	IL
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8	Joseph H Cotton and Sons	Hartford	CT
9	Frigate Six, Inc.	Columbus	OH
10	Buffalina Enterprises	Atlanta	GA
11	Captcha-Cross	Fargo	ND
12	Mirado LLC	Tucson	AZ
13	New Drexel Corp	New York	NY

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Benefits of using R

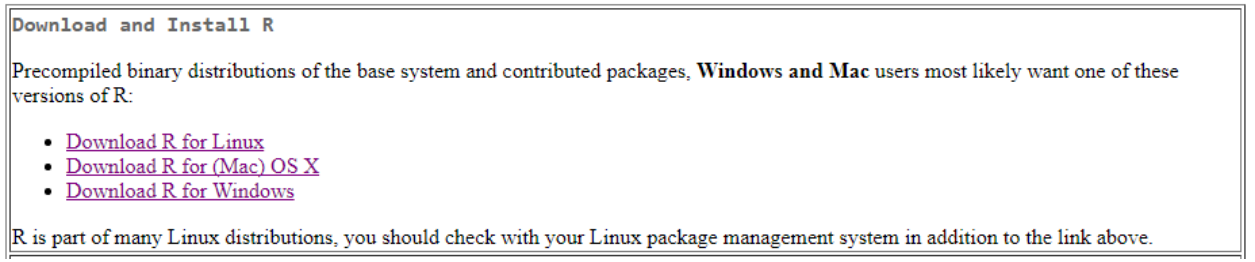
- R provides a powerful way to do statistical analysis on large sets of data
- Because it is also free, this is a compelling factor to its growth
- As an open-source product, new functions and packages are created all the time
- If you can’t find a capability initially, you can search for a package that can do it or even create a package of your own

Why R with Power BI?

- Using R in conjunction with Power BI can help with creating visualizations, cleansing data and get around limitations in Power BI
- A big advantage of using R is to connect to data sources not directly supported in Power BI currently
- With R packages, analytics not directly built into Power BI can be leveraged as well

Installing R

- Installations available for Windows, Linux and Mac
- Many Linux distributions already include R in their package management tools
- At a minimum, the command line interface is needed
- Additional 3rd party tools are available to add a graphical front end to R
- Main download site: http://cran.r-project.org



Download and Install R

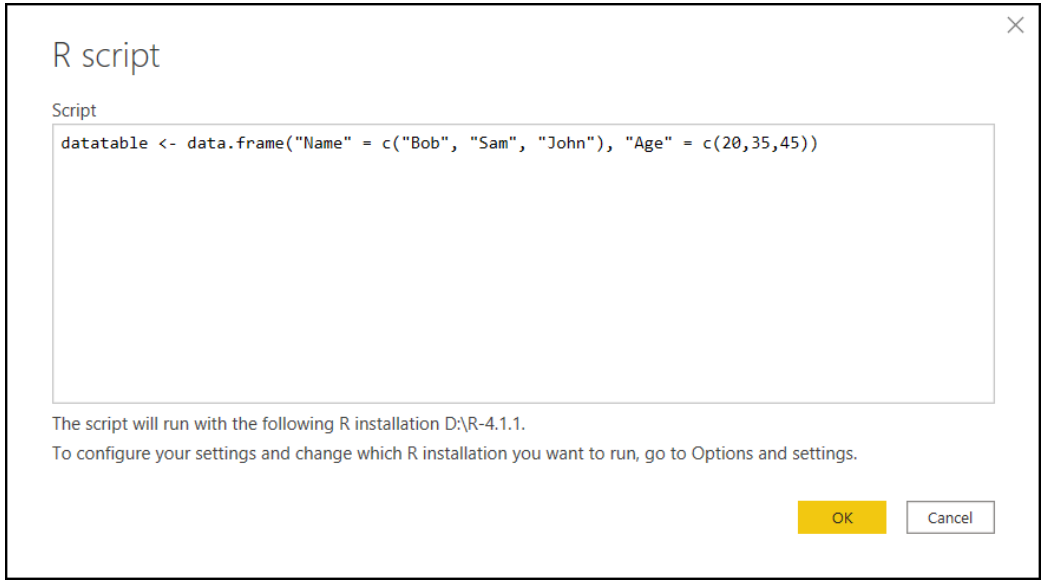
Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- Download R for Linux
- Download R for (Mac) OS X
- Download R for Windows

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

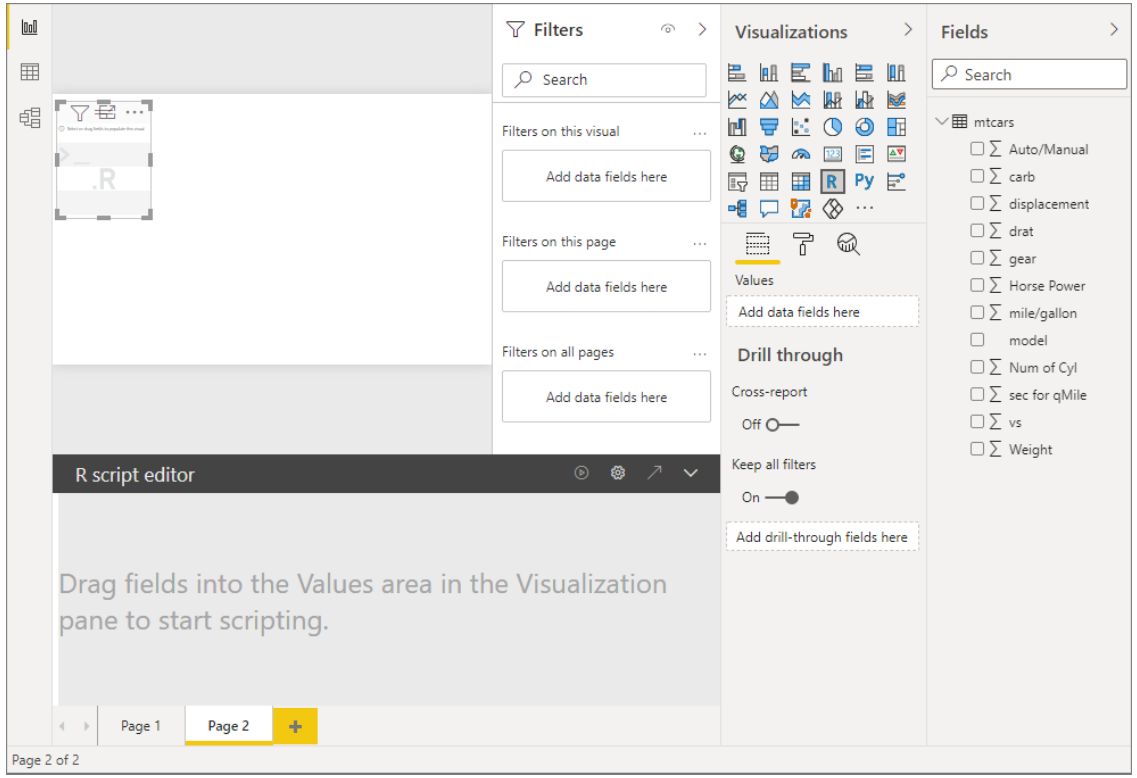
Data creation

R scripts can be used to either hard code data frames or a connection script can be created to use existing data sources.



R visualizations

To create visualizations with R, a placeholder is added to the screen and the script editor window appears.



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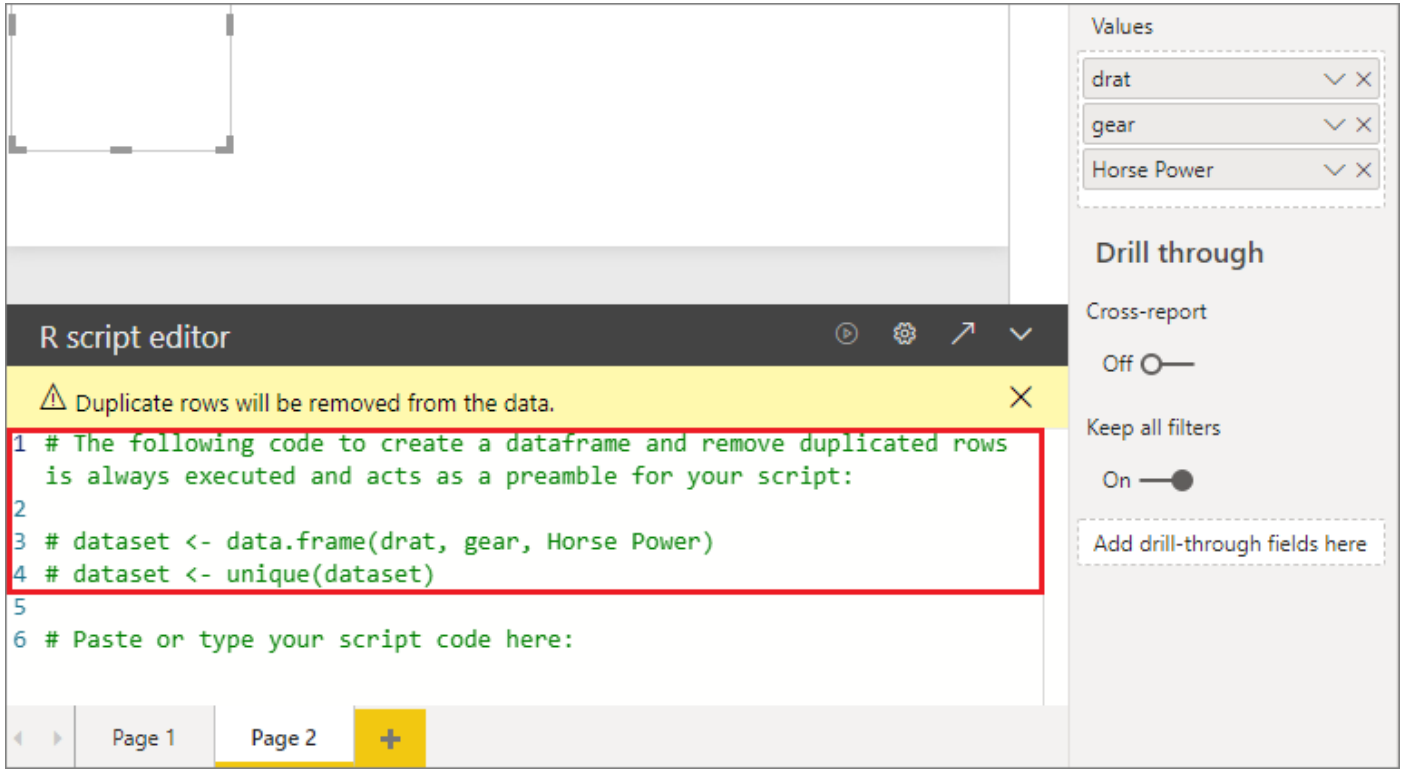
R visualizations

As you select fields, Power BI automatically adds them to header code which must be included in all scripts.



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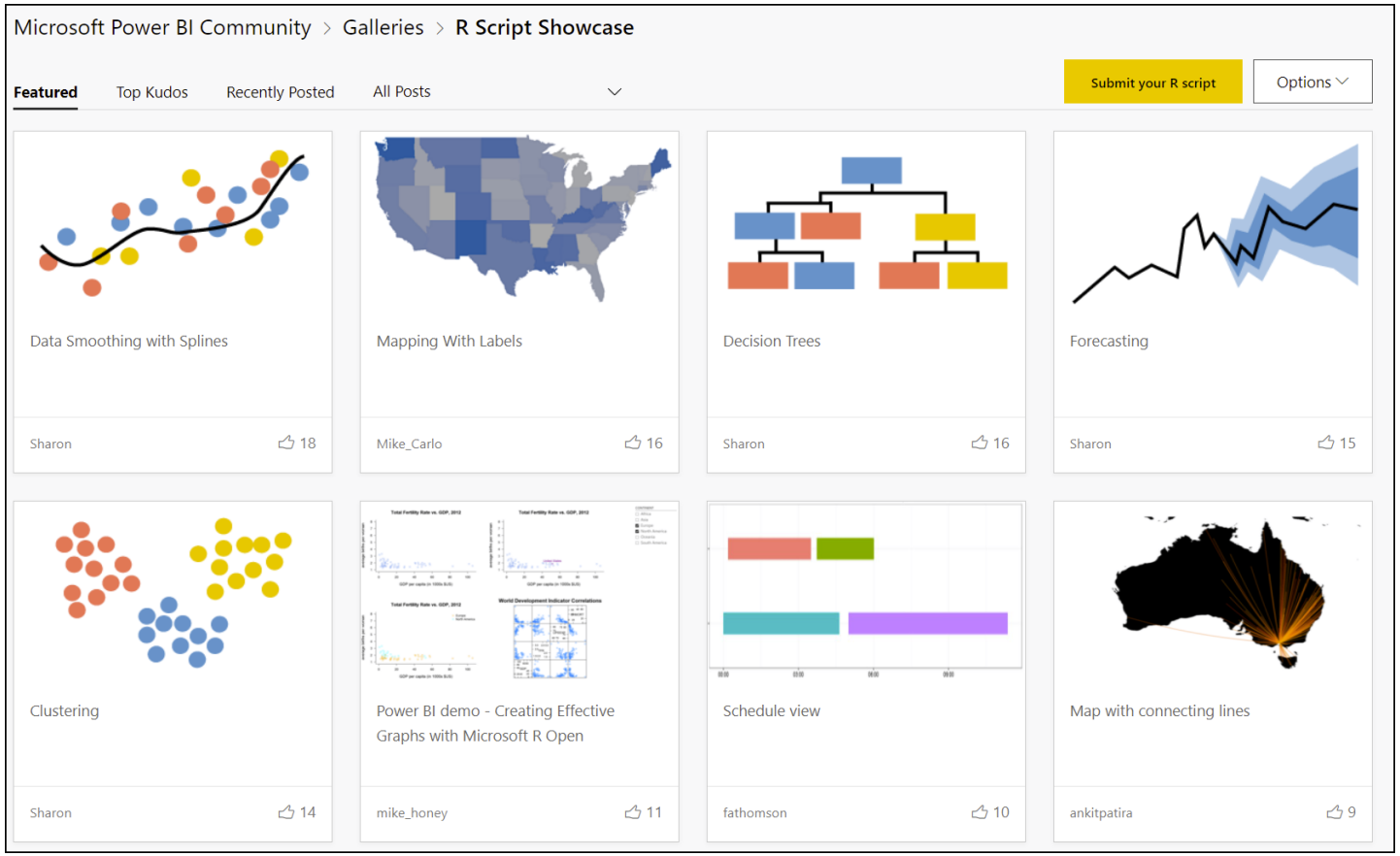
R visualizations

The R script showcase on the Power BI community is a good starting point.



Data manipulation

- Scripts can be used in Power Query Editor
- Data can be shaped in multiple ways:
  - completion of missing data
  - pivoting data
  - column and row removal
  - predictions
  - clustering

Power BI demos

Creating an enterprise workbook

- Configuring Power BI and libraries
- Creating data
- Building a visualization
- Transforming data

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Power BI & R summary

Using R in Power BI allows for:

- New and exciting visualizations
- Access to more data sources and complex data connections
- Cleansing and manipulation of data
- Re-use of existing code and leveraging in place technology

R versus Python

Which should you choose??

- A matter of which language is already in use in your organization
- R provides more statistical packages as a standard
- Python tends to have a lower entry learning curve
- Both have excellent communities with tons of examples

R resources

- The R Project for Statistical Computing

  https://www.r-project.org

- R Tutorial: An R Introduction to Statistics

  http://www.r-tutor.com

- R Tutorial W3 Schools

  http://w3schools.com/r/

- R Documentation

  http://rdocumentation.org

Complete BI training

Power BI

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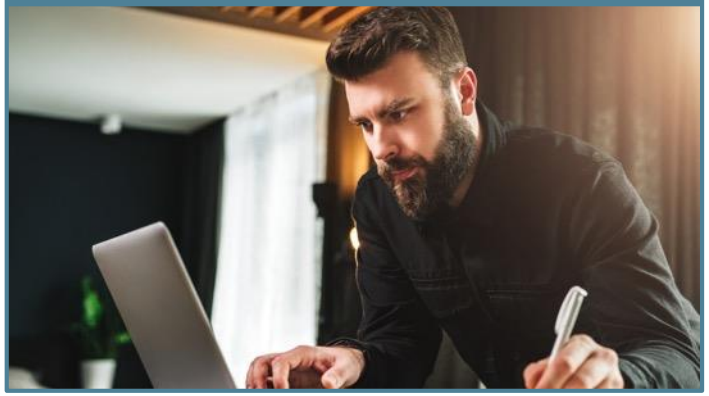
Self-paced learning



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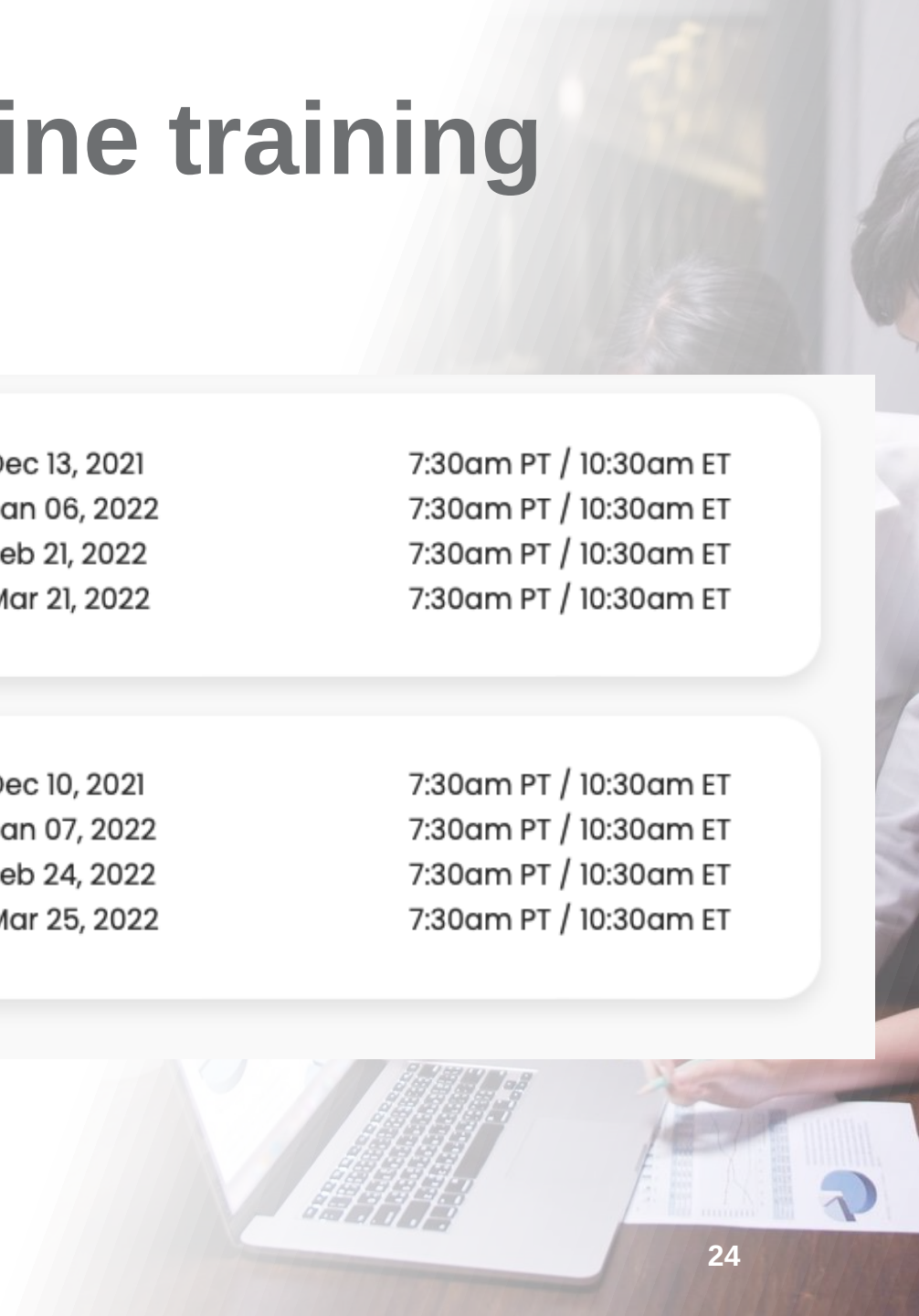
Power BI & Python	Beginning/Intermediate	Dec 13, 2021 Jan 06, 2022 Feb 21, 2022 Mar 21, 2022	7:30am PT / 10:30am ET 7:30am PT / 10:30am ET 7:30am PT / 10:30am ET 7:30am PT / 10:30am ET
Power BI & R	Beginning/Intermediate	Dec 10, 2021 Jan 07, 2022 Feb 24, 2022 Mar 25, 2022	7:30am PT / 10:30am ET 7:30am PT / 10:30am ET 7:30am PT / 10:30am ET 7:30am PT / 10:30am ET



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Additional resources

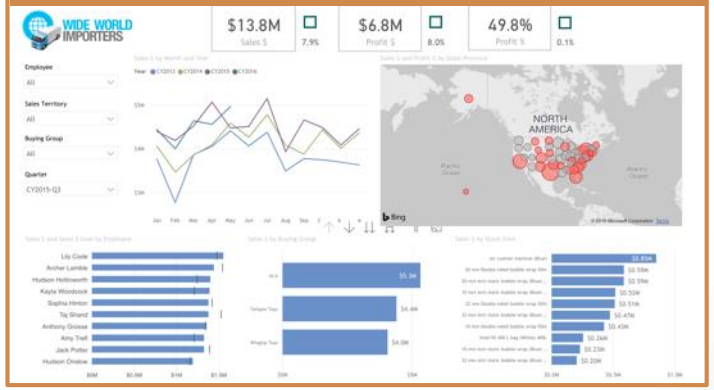
Unbiased product reviews

Technical tips

Insider viewpoints

More on this subject

Product demos



Upcoming events

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Your path to modern BI

Accelerating self-service analytics for the enterprise

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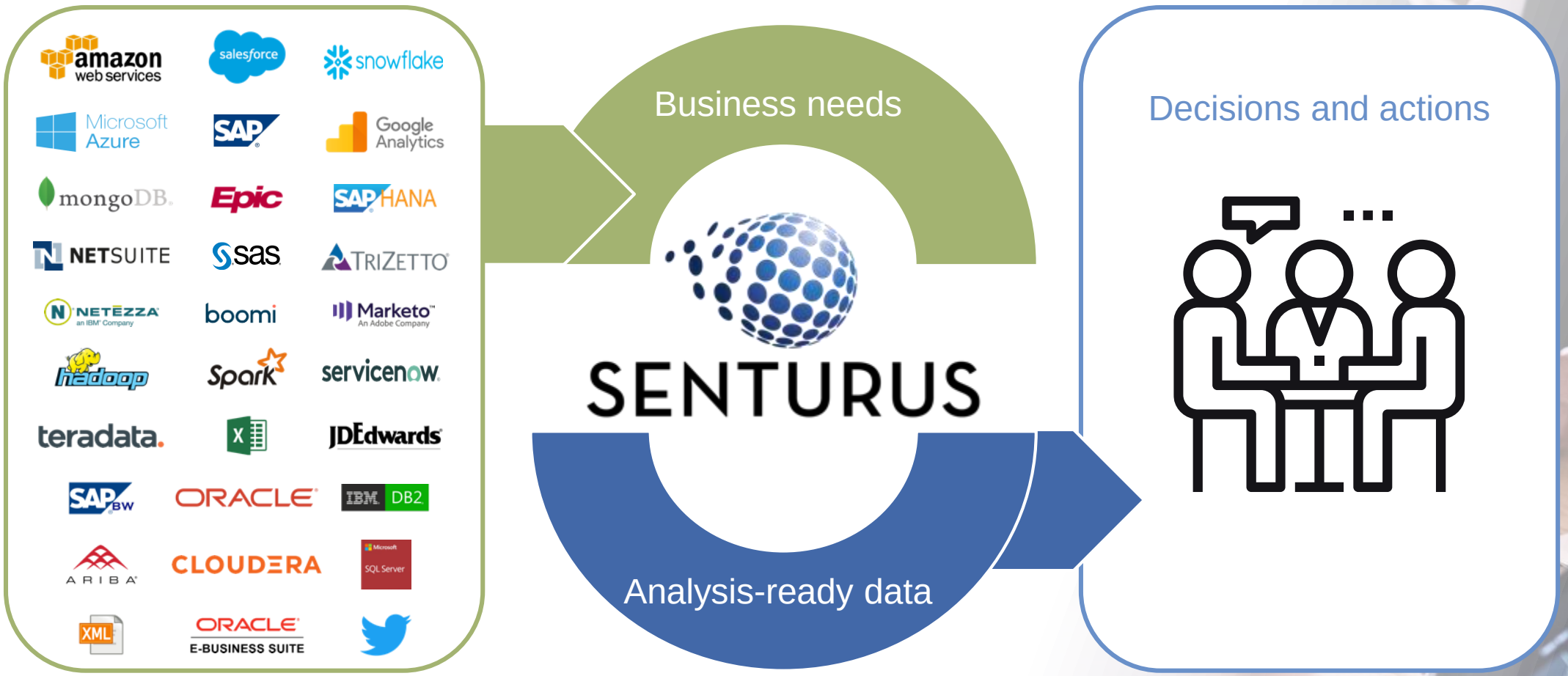
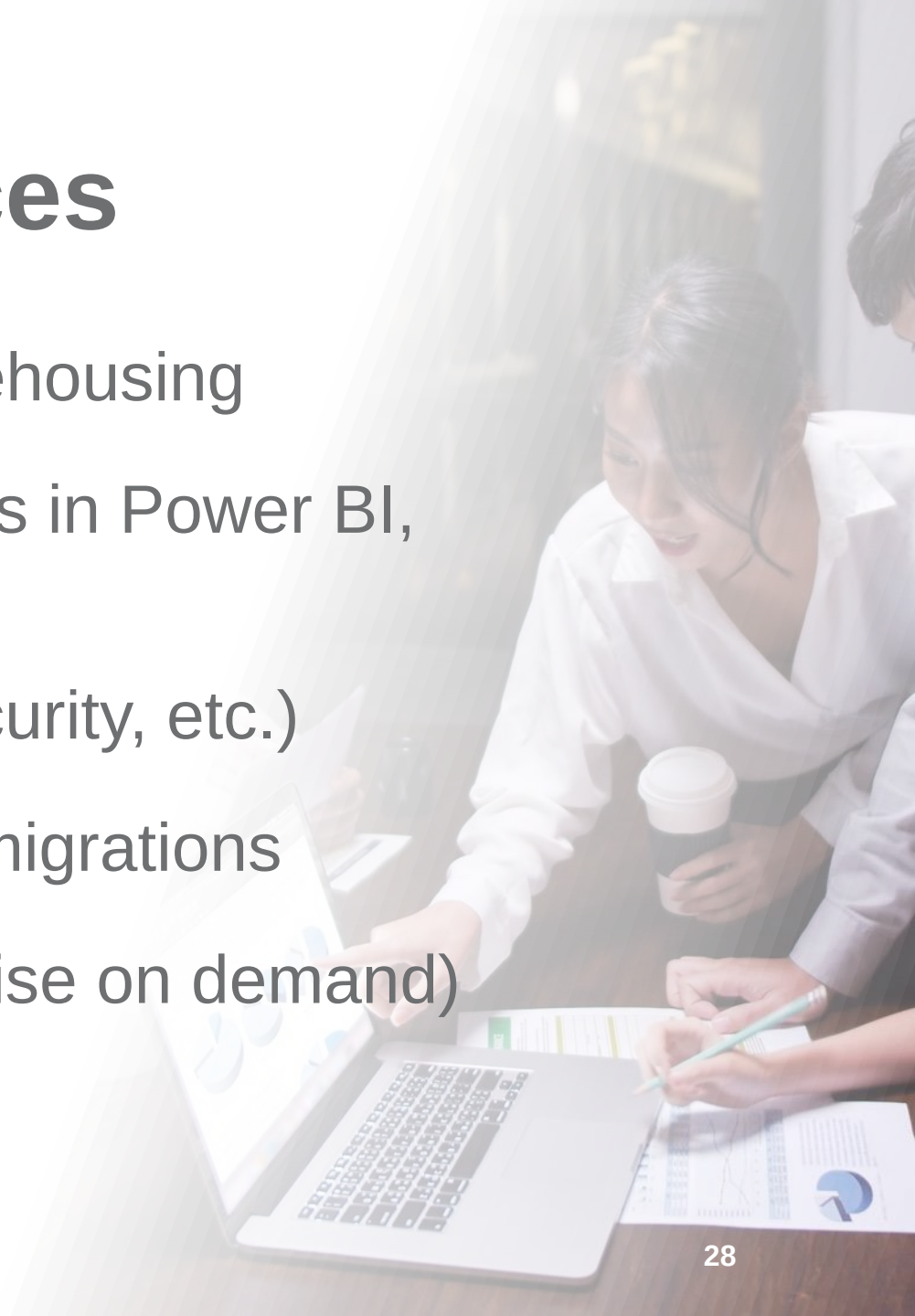
Bridging the gap



Full spectrum of BI services

- Data preparation and modern data warehousing
- Dashboards, reporting and visualizations in Power BI, Cognos and Tableau
- Hybrid BI environments (migrations, security, etc.)
- Software to accelerate bimodal BI and migrations
- BI services and support retainer (expertise on demand)
- Training and mentoring



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Q & A

If your question or issue is broader than what we are able to answer today, contact us at:

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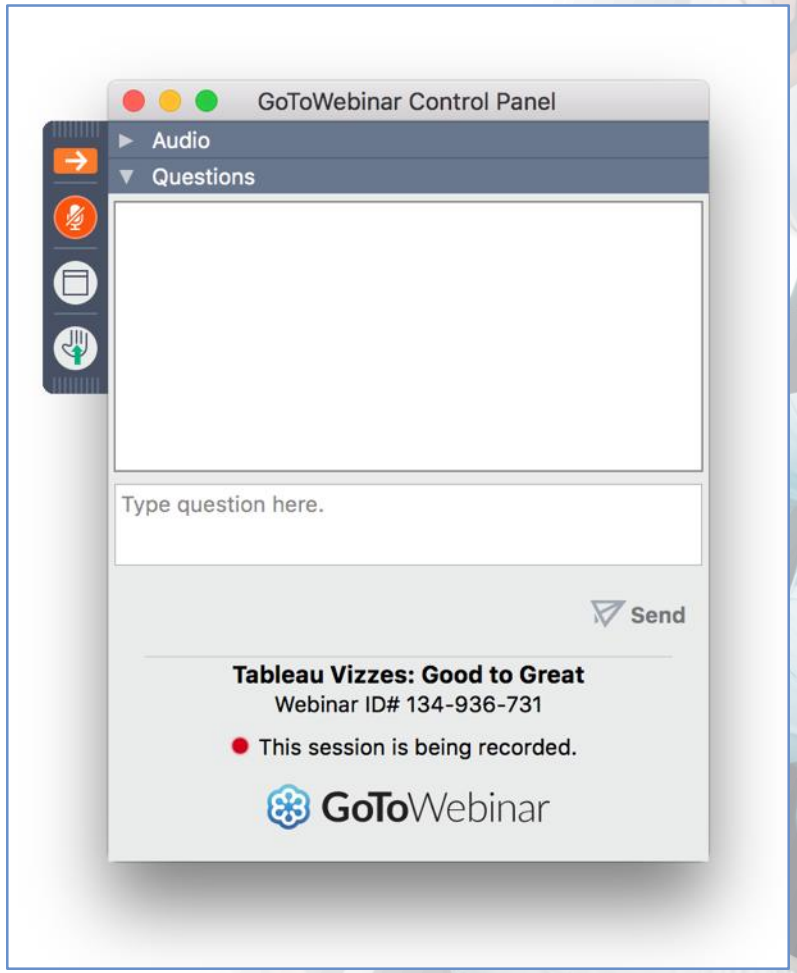
and we will set up a free consultation.



Thank You

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