



**SENTURUS**

# Using Python to Create Visualizations

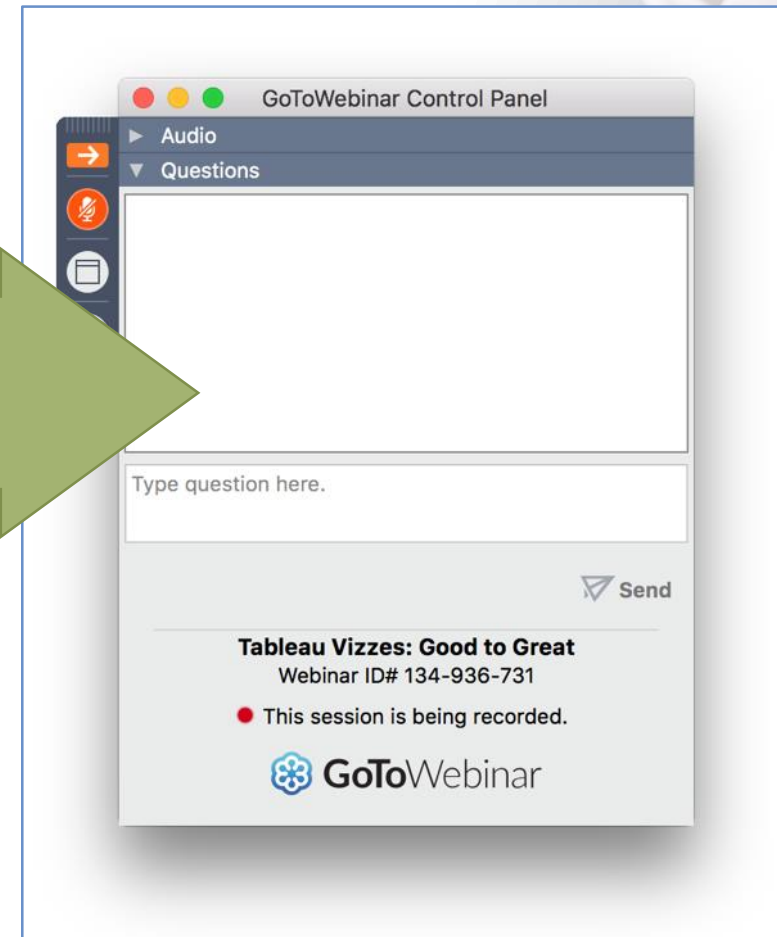


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### Topics


- Analytics Connector
- Cross Vendor Comparisons
- Dashboards Reporting & Visualizations
- Data & Cloud Architecture
- Data Prep & Modeling
- Deployments & Performance Optimization
- IBM Analytics & Cognos
- Microsoft Azure & Power BI
- Security, governance & administration
- Snowflake
- Tableau




**Webinar**  
**6 Ways to Publish & Share Tableau Dashboards**  
How-to demo and discussion of pros, cons and considerations




**Webinar**  
**How to Successfully Implement Self-Service Analytics**  
Agile, governed self-service BI with a focus on Cognos analytics




**Webinar**  
**Creating a Power BI Report Your Boss Can Navigate**  
How to design a user-friendly nav experience



**Webinar**  
**Power BI Report Builder & Paginated Reports**  
Creating pixel-perfect reports for printing and PDF



**Webinar**  
**Using Python with Power BI**  
Learn the basics, including the software and plotting libraries



**Webinar**  
**Streamline Cognos Migrations and Consolidations**  
Automatically decode Cognos content and reduce migration time by 90%

# Agenda

Introductions

Review of popular tools

Introduction to plotting with matplotlib

Popular plots available

Use case: visualizing wind information

Senturus overview and additional resources

Q&A





# Introductions



**Mark Copley**

Python Developer and Instructor



**Steve Reed Pittman**

Director  
Enterprise Architecture and Engineering

# Python

- General purpose programming language
- Part of a large, high quality, collaborative ecosystem of modules to support an infinite variety of applications
  - Scientific computing
  - Engineering
  - Web services
  - Finance
  - Machine learning
- Today: Python to create visualizations *and* clean, filter, transform and model data

# numpy

- `ndarray` data structure to efficiently store large data sets
- Very fast, highly parallelized computation
- Underlies almost all high-level computing in Python

# pandas

- Implements the ideas of Panel Data first used in the R programming language
- Provides the `Series` datatype (like a spreadsheet column)
- Provides the `DataFrame` datatype (like the entire spreadsheet)
- Supports ingesting large data sets in a variety of formats
  - CSV      Excel      HTML      JSON      SQL Queries



# matplotlib.pyplot

- Provides a wide variety of visualization routines
  - Line graphs, Bar Charts, Scatter Plots, Contour Plots and many more!
- Highly configuration: line styles, markers, fonts, colormaps
- Works with `ndarrays` from `numpy` as well as with `DataFrames` from `pandas`

# cartopy

- Module to make plots that are aware of mapping coordinate systems and projections
- New code developed by the user communities to meet their needs (and everyone benefits!)











# Jupyter notebooks

- Web-based, interactive, exploratory coding data visualization environment
- Provides a “notebook” view of your code and its output
- Allows mixing documentation, visualizations, and code in one document
  - Code cells    Markdown cells    Raw cells
- User interface provided by Javascript running in the browser
- Computation provided by one copy of *ipython* running in the background per active notebook
- Notebook can be saved as regular Python, HTML, PDF, etc.
- For convenience I’ll be using Jupyter for this class, but the same visualizations could also be produced with standalone Python scripts

# Demos



# Python training

|  |   |  |   |
|--|---|--|---|
| <b>Advanced Python for Finance Technologies</b><br>Advanced<br>🕒 3 days<br>       | <b>Advanced Python Programming</b><br>Advanced<br>🕒 4 days<br> | <b>Introduction to Python Programming</b><br>Beginning<br>🕒 4 days<br>                            | <b>Network Programming and Administration Using Python</b><br>Intermediate/Advanced<br>🕒 3 days<br>  |
| <b>Scientific Python for Experienced Developers</b><br>Advanced<br>🕒 3 days<br> | <b>Python Security</b><br>Intermediate<br>🕒 3 days<br>       | <b>Python Desktop Application Testing with Appium</b><br>Beginning/Intermediate<br>🕒 4 days<br> | <b>Power BI &amp; Python</b><br>Beginning<br>🕒 1/2 day<br>   |

[See details on our website](#)

# Additional resources



<https://senturus.com/resources/python-with-power-bi/>



# Additional resources

## Unbiased product reviews



## Technical tips



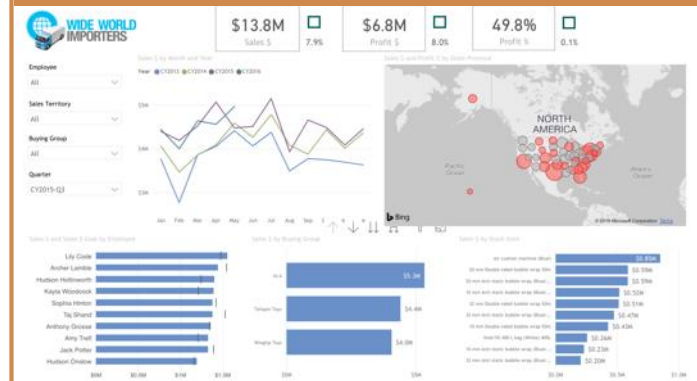
## Insider viewpoints



## More on this subject



## Product demos



## Upcoming events



# Upcoming events

## What's New in Cognos 11.2.3

Thursday, Sep 22, 2022, 11am PT/2pm ET

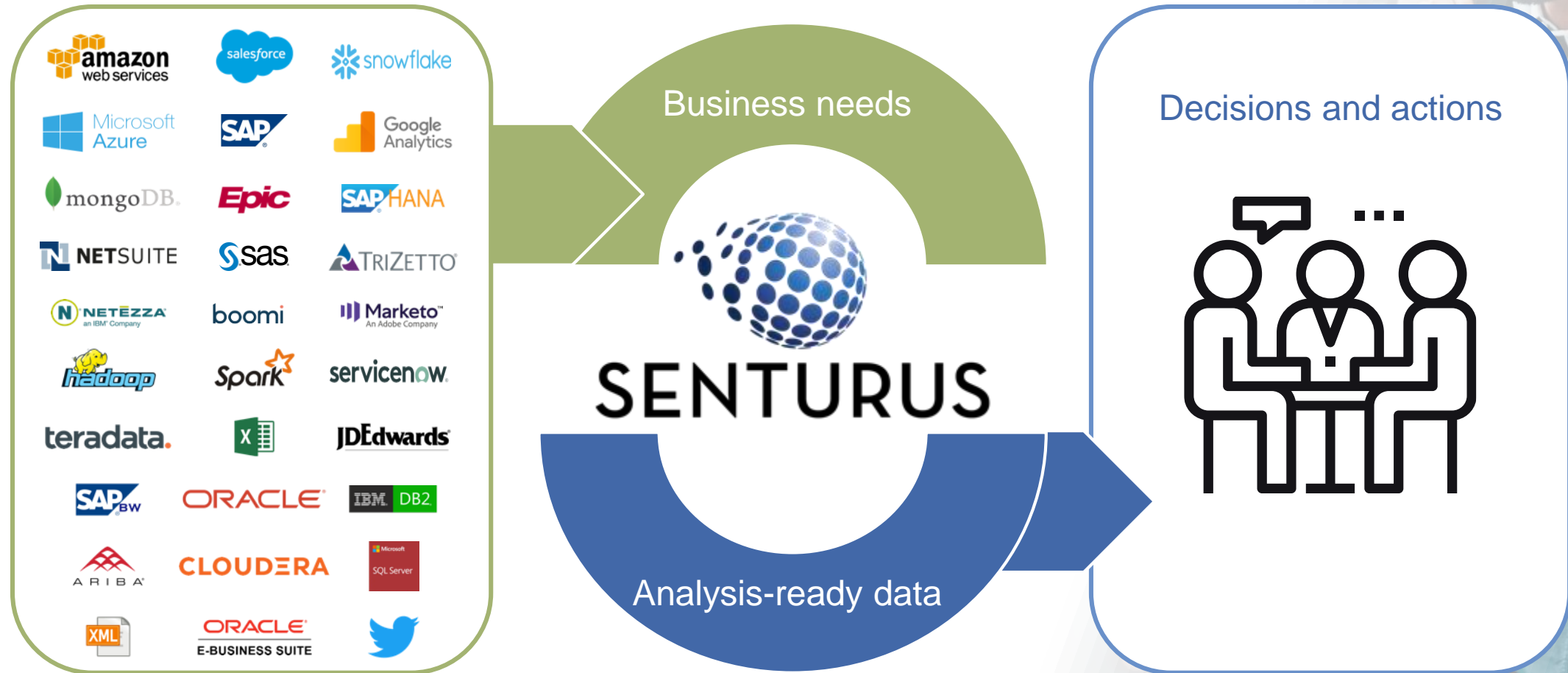
Register: <https://senturus.com/events/whats-new-in-cognos-11-2-3/>

## Automating Cognos Migration & Cleanups

Thursday, Oct 13, 2022, 11am PT/2pm ET

Register: <https://senturus.com/events/automating-cognos-migrations-and-cleanups/>

# Modern BI: accelerated & accessible





# A long, strong history of success

21+ years

1350+ clients

3000+ projects





# Join the Senturus team

We're hiring talented and experienced professionals

- Senior Microsoft BI Consultant
- Managing Consultant

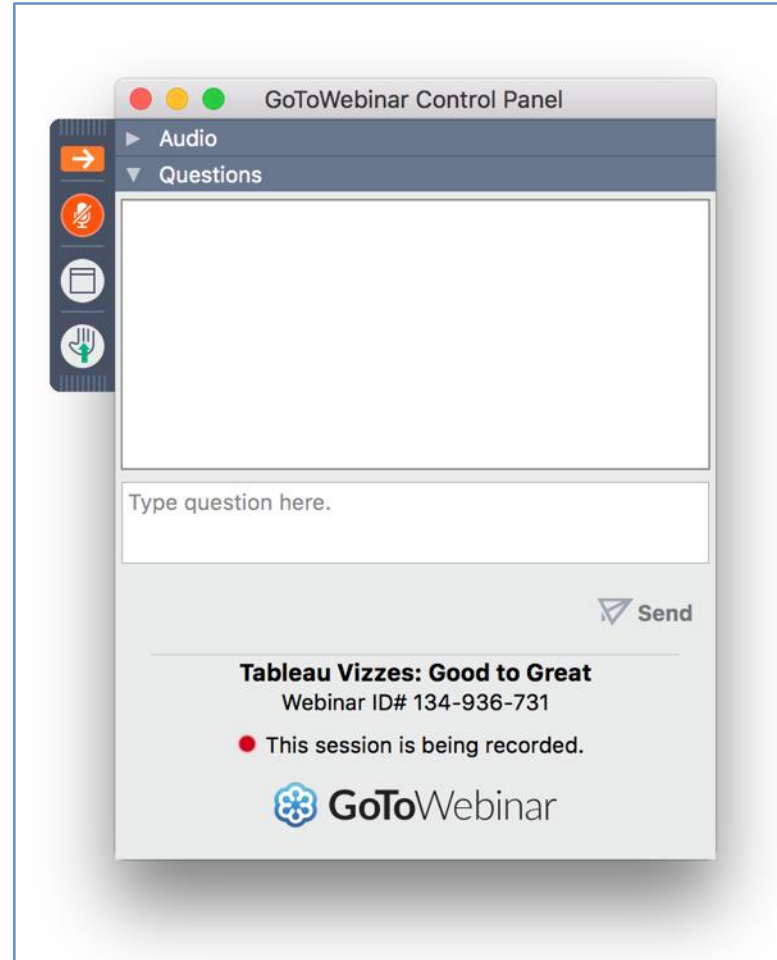
See job descriptions: <https://Senturus.com/why-Senturus/careers/>  
Send your resume to: [jobs@Senturus.com](mailto:jobs@Senturus.com)

# Q & A

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

[info@senturus.com](mailto:info@senturus.com)

and we will set up a free consultation.





# Thank You



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