Open-Source integration in SAS Viya

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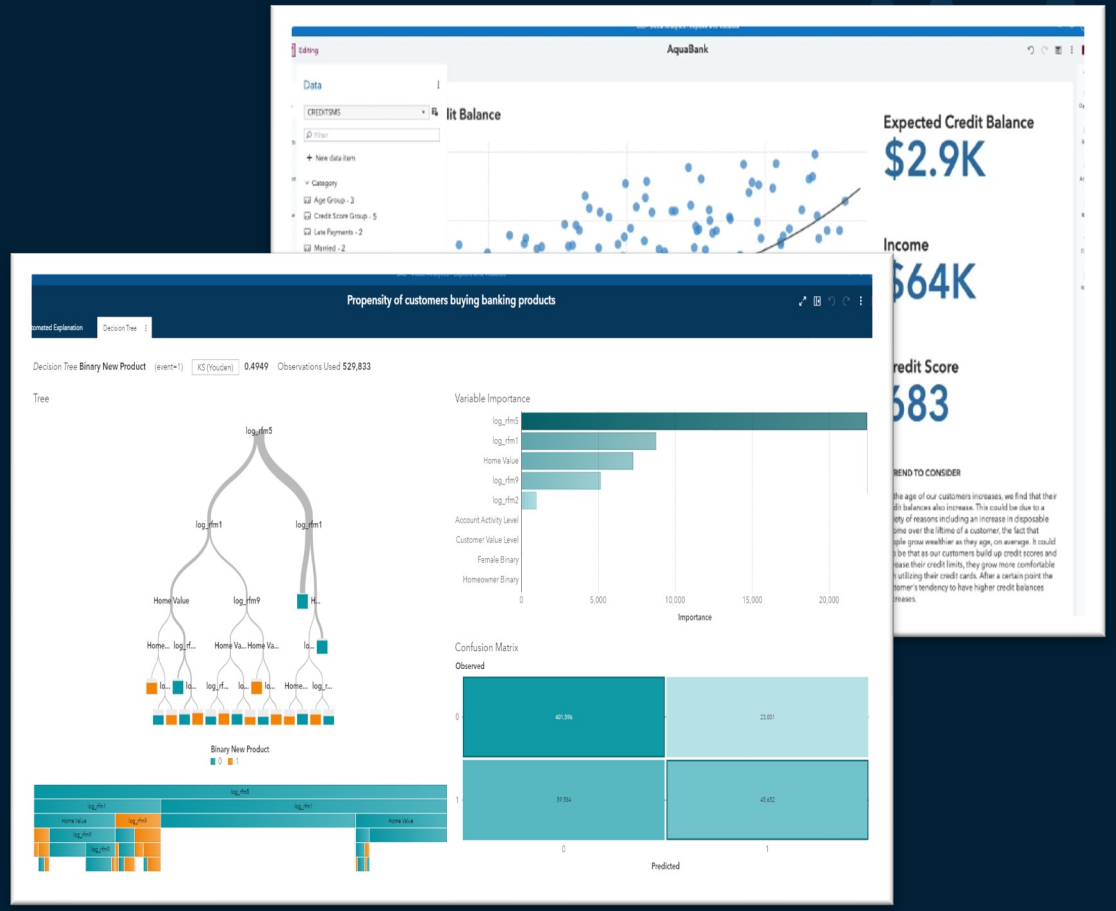
Agenda

- Introduction Open-Source Integration
- Executing SAS + R + Python from SAS Studio
- Executing Flows or custom steps for above code
- Executing SAS from R Studio
- Executing SAS from python

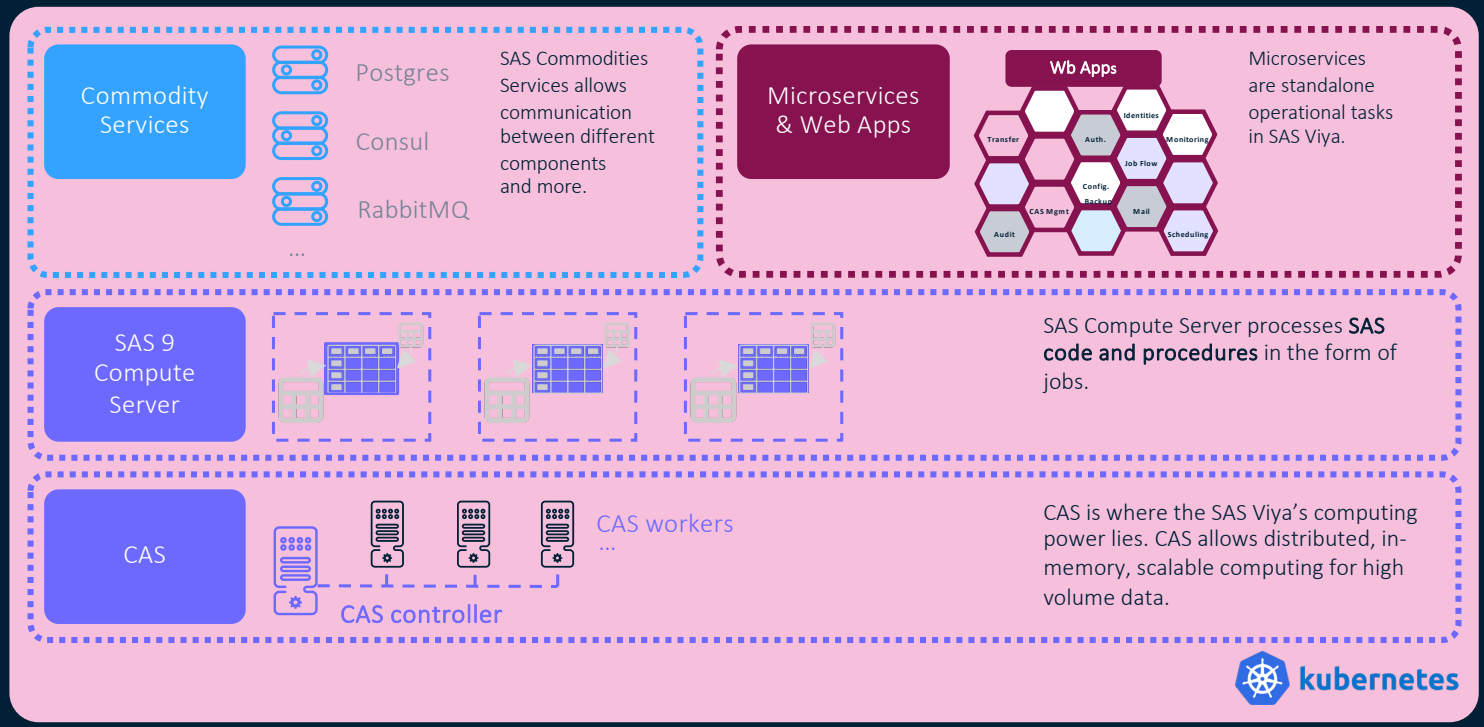
What is SAS Viya?

SAS Viya is a software platform which offers capabilities to address the analytics lifecycle. Quickly transform raw data into operational insights that support every kind of decision your organization makes.

SAS Viya is accessed securely through the web, no need to install anything locally. Whether you are a programmer (both SAS and open source), a data scientist, or an executive, you can use SAS Viya to get your work done.



The Basics of SAS Viya's Architecture



= THE ENGINE

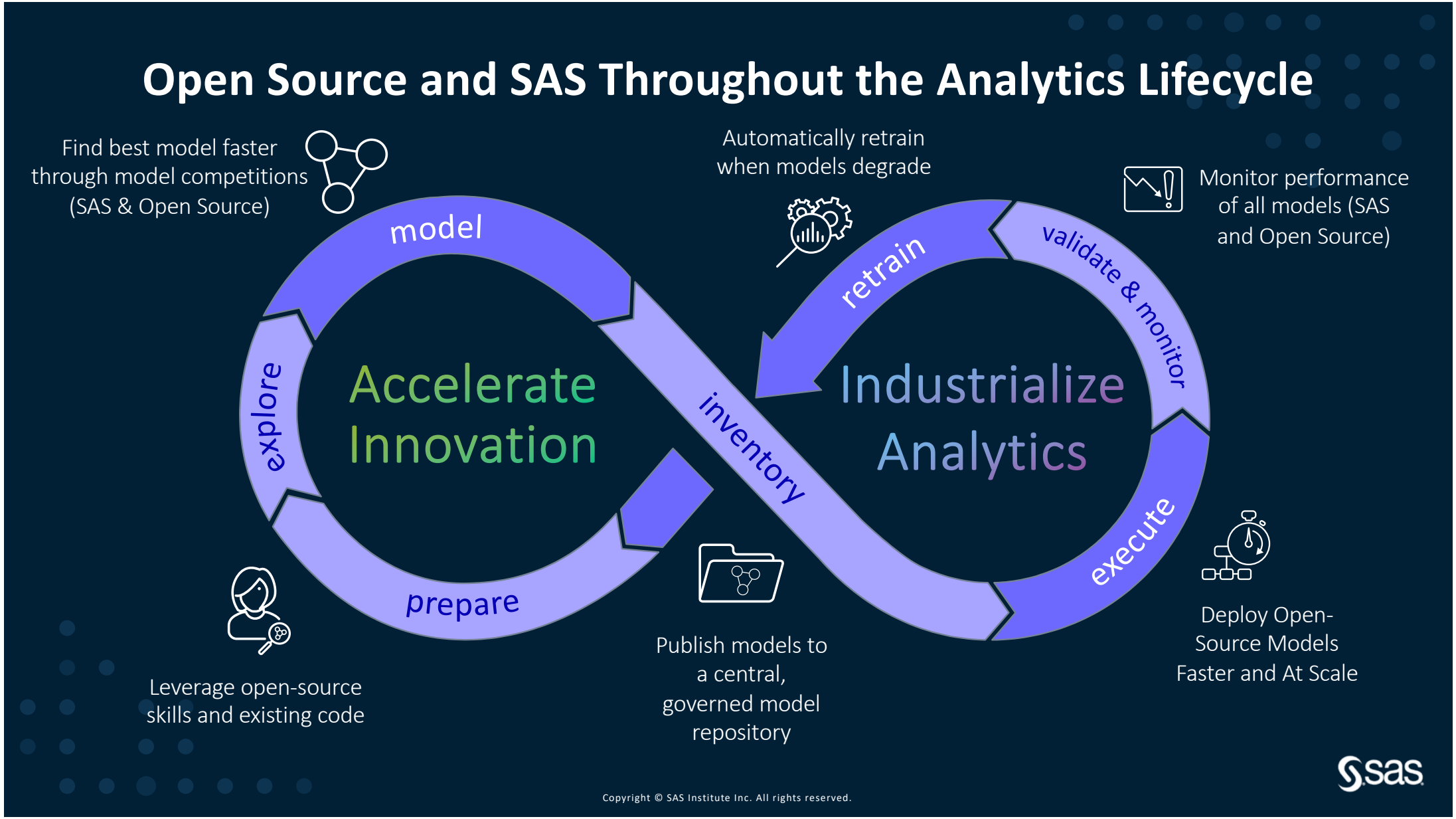
= CONTROL SYSTEM

= SUPPORTING PARTS

Overview slide: R and Python

- What is R?
  - R is an open-source programming language most often utilized in statistical computing and machine learning settings
  - Popular packages: tidyverse, ggplot, shiny
- What is Python?
  - Python is an open-source general purpose programming language often used in data science/ML
  - Easy to read and highly flexible due to the variety of user-made packages and models available to install
  - Popular data science packages: numPy, sciPy, pandas, Mlflow, TensorFlow, Seaborn
- Learn more about popular open-source tools

Open Source and SAS Throughout the Analytics Lifecycle



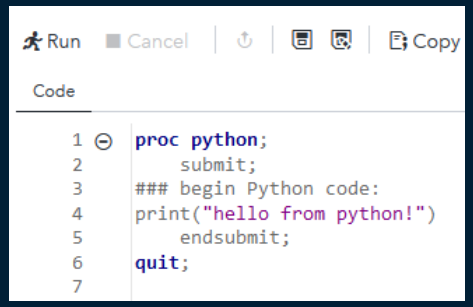
What does open-source integration with Viya look like?

Open-Source integration can work in both directions:

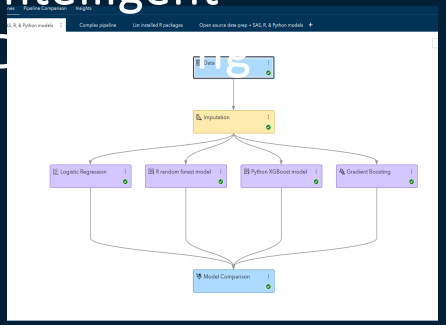
1. Viya to open source:

2. Open source to Viya:

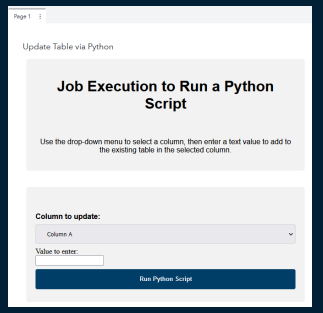
SAS Studio



Model Studio & Intelligent

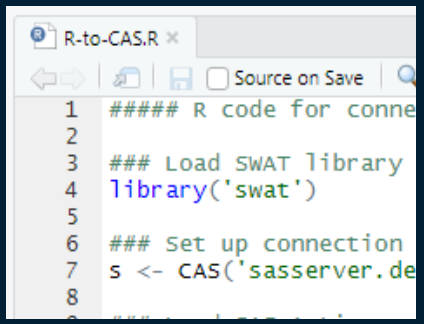


Visual Analytics



Jupyter Notebook

RStudio



Web apps

1. Viya to Open-Source

Enhanced Capabilities

- Model competitions
- Hybrid pipelines (SAS + open source)
  - Integrate open-source models in both drag-and-drop (Model Studio) and programming (SAS Studio) interfaces
- Streamlined model publishing and deployment
- Workflow orchestration and automation

2. Open-Source to Viya

Enhanced Capabilities

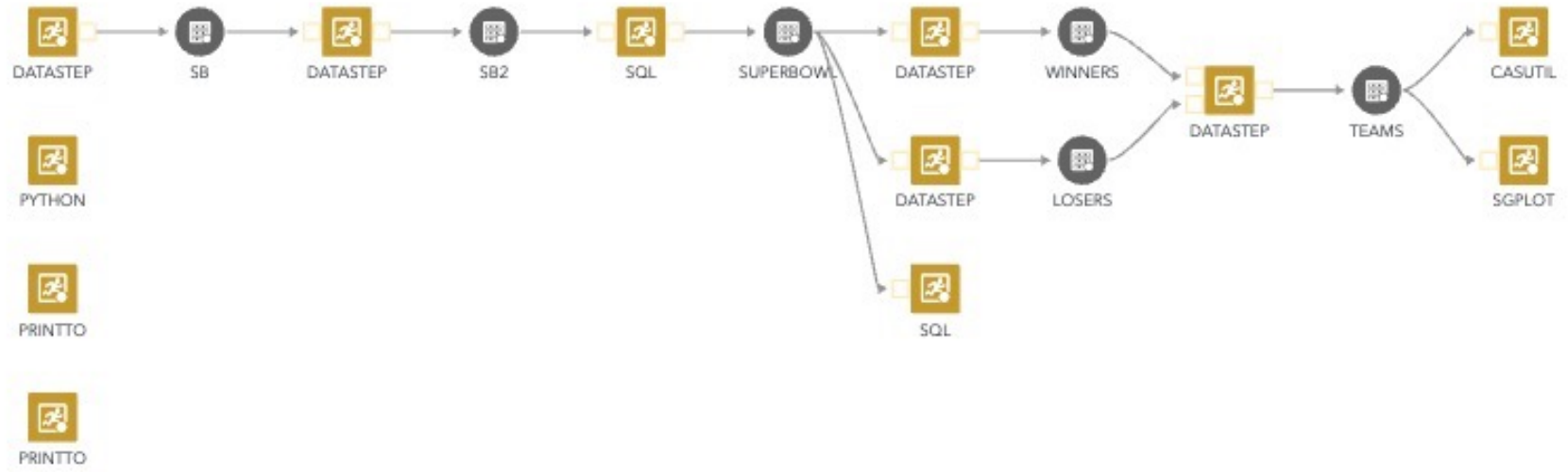
- Access to Viya's parallel, distributed analytics engine
- Enhanced collaboration
- Streamlined model publishing and deployment
- Open APIs
  - "Bring Your Own Language"
  - Mobile App & Web App Development

Sample code example

```
/*
   Use python to scrape data from a wiki page
   https://en.wikipedia.org/wiki/List_of_Super_Bowl_champions
   Then write it out to a work file
   The python output of the head statement is in the log

*/

proc python;
submit;
import sys
print(sys.version)

import pandas as pd
URL = "https://en.wikipedia.org/wiki/List_of_Super_Bowl_champions"

tables = pd.read_html(URL,attrs = {'class' : 'wikitable sortable sticky
sb = tables[0]
sb.head()

ds = SAS.df2sd(sb, 'work.sb')
endsubmit;
run;
```

```
/* Read Data to R  */

PROC IML;
call ExportDataSetToR ("Work.teams","teams");

submit / R;

tapply(teams$Score, teams$Outcome, summary)

library(ggplot2)

p <- ggplot(teams, aes(x=Outcome, y=Score, color=Outcome)) + geom_boxpl

png(file="/data/compute-landingzone/Home/bemurp/boxplot.png",width=600,
p
dev.off()

endsubmit;

QUIT;
```

Sample flow example



Workshop Flow

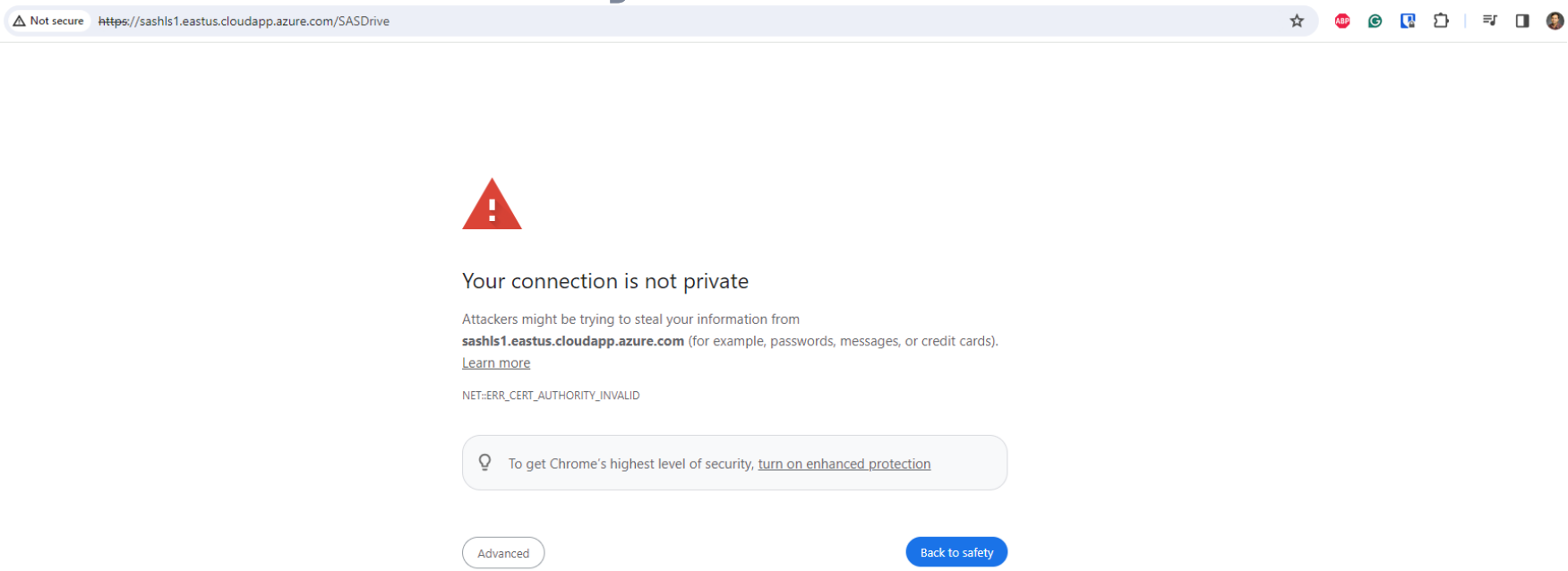
- Introduction
- Navigating the platform
- Opening sas studio
- Navigating to the folder
- Testing SAS\R\Python code
- Running the designed code
- Testing execution of sas in R-Studio
- Testing execution of sas in python

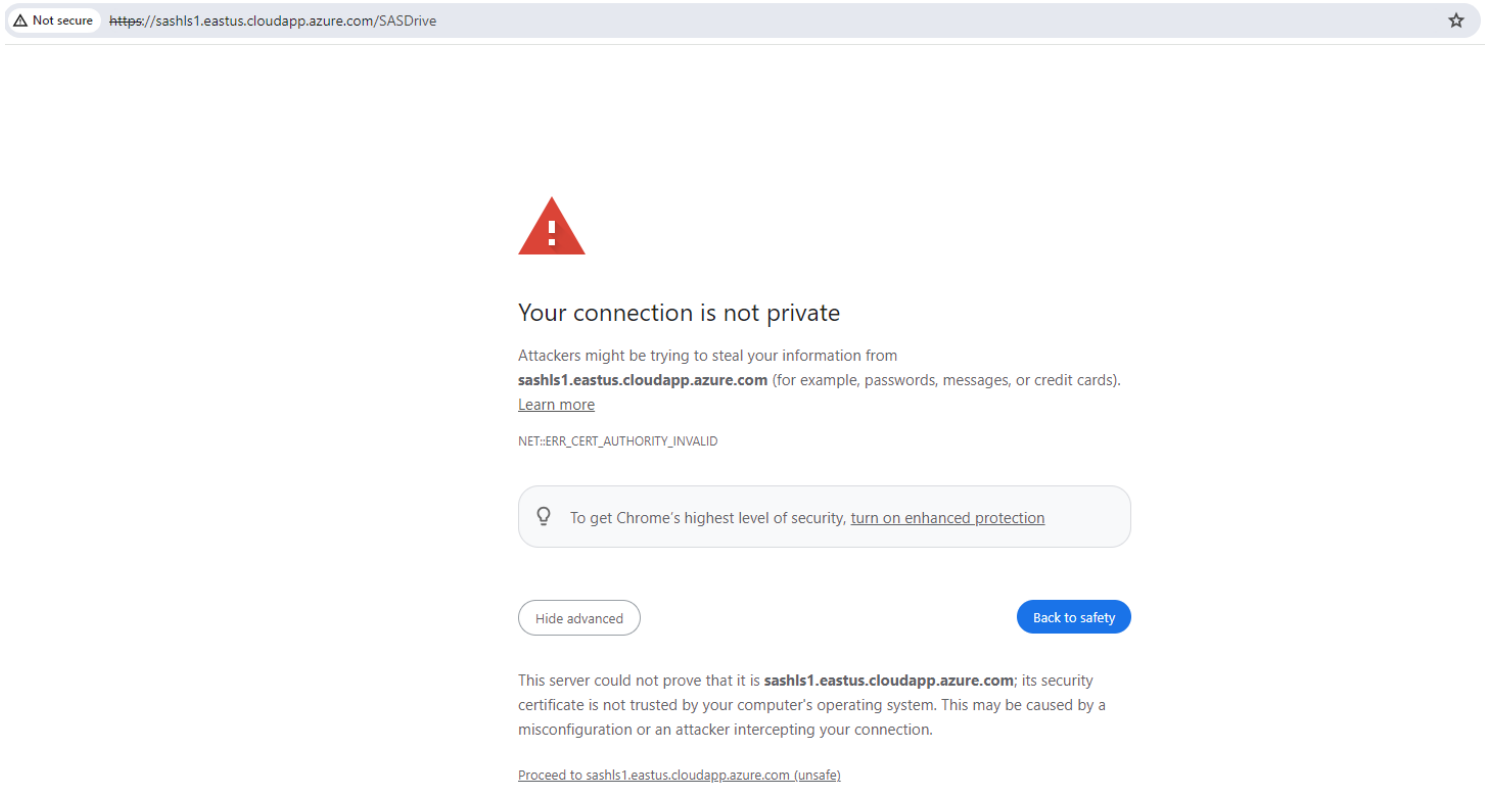
SAS Viya Platform

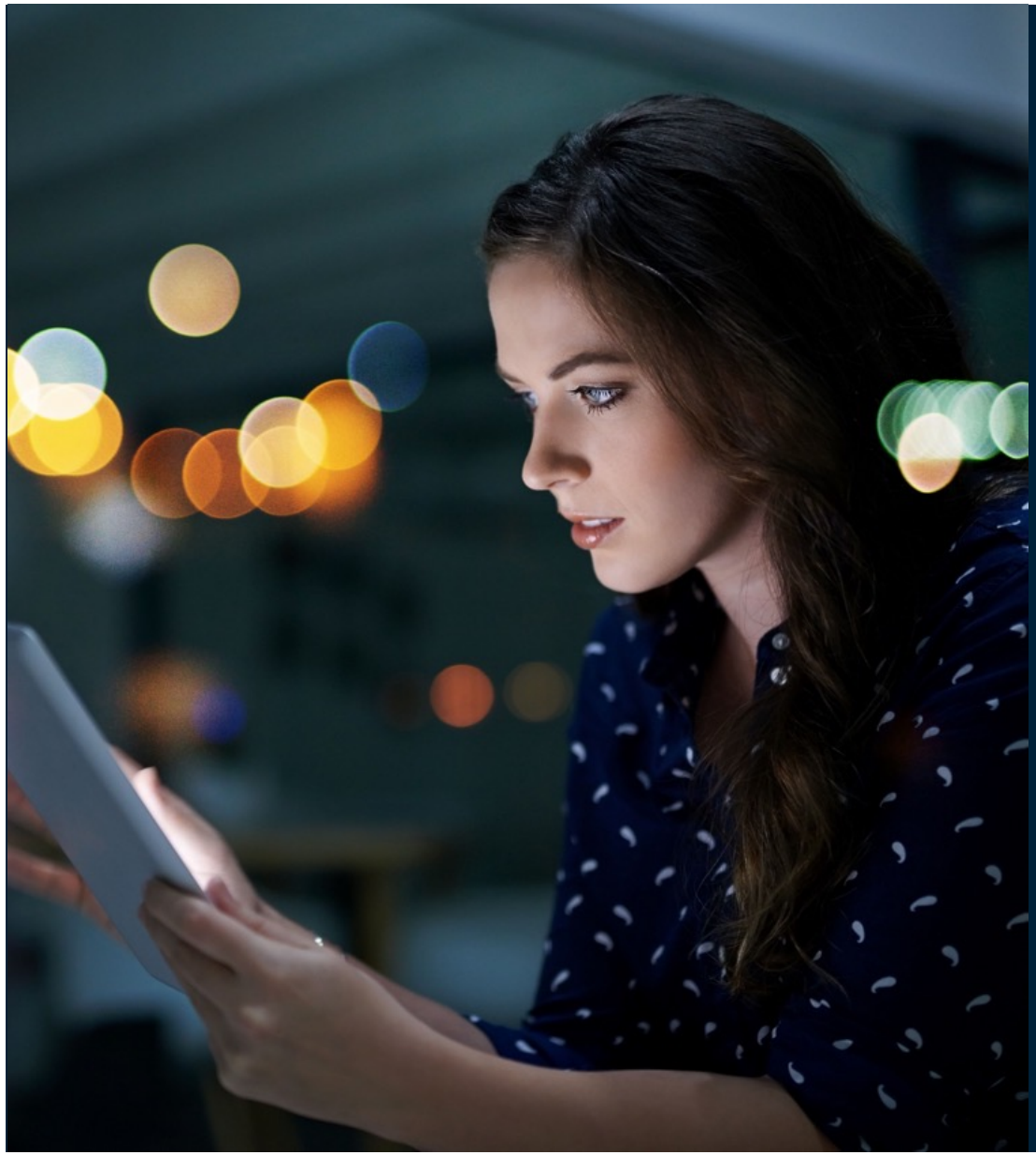
WebLink

- https://sashls1.eastus.cloudapp.azure.com
- https://sashls1.eastus.cloudapp.azure.com/SASStudio/
- https://github.com/Pdsaslife/PHUSE_HOW_2025

Connect to SAS Viya







Useful Resources for Viya

developer.sas.com

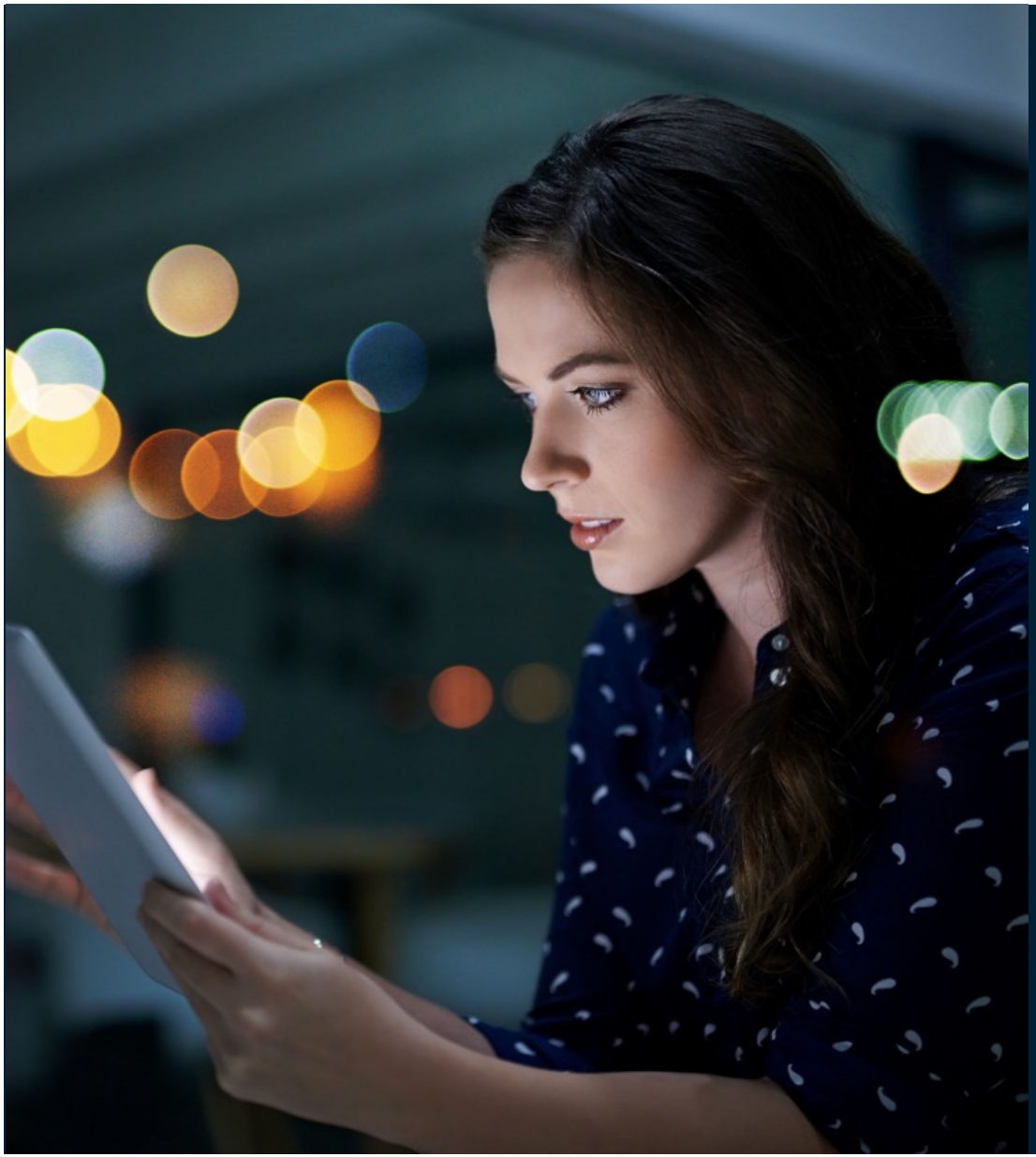
SAS Blog: Easier Feature Engineering

Data Science Pilot Action Set documentation

SWAT Examples on GitHub

Video recording of Viya and R Studio Integration

sas



Useful Resources

developer.sas.com (R site)

Calling R from SAS/IML (video)

SAS Programming for R Users:

- E-Learning course
- Course materials (code, data)

Using R code in SAS Enterprise Miner (video)