

#SASGF

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GLOBAL
FORUM 2021

AMERICAS | MAY 18-20

ASIA PACIFIC | MAY 19-20

EMEA | MAY 25-26

How Do I Start My ModelOps Journey With SAS[®] Model Manager?

Diana Shaw





Diana Shaw

Senior Product Manager, SAS

An engineer turned data scientist turned software developer with over 20 years making data-driven decisions, Shaw's passion is helping customers apply advanced analytics, machine learning and natural language processing to solve complex problems. She leads development of ModelOps software with repeated proven success enhancing analytic efficiencies, maintaining operational model excellence and increasing new initiative speed-to-market.

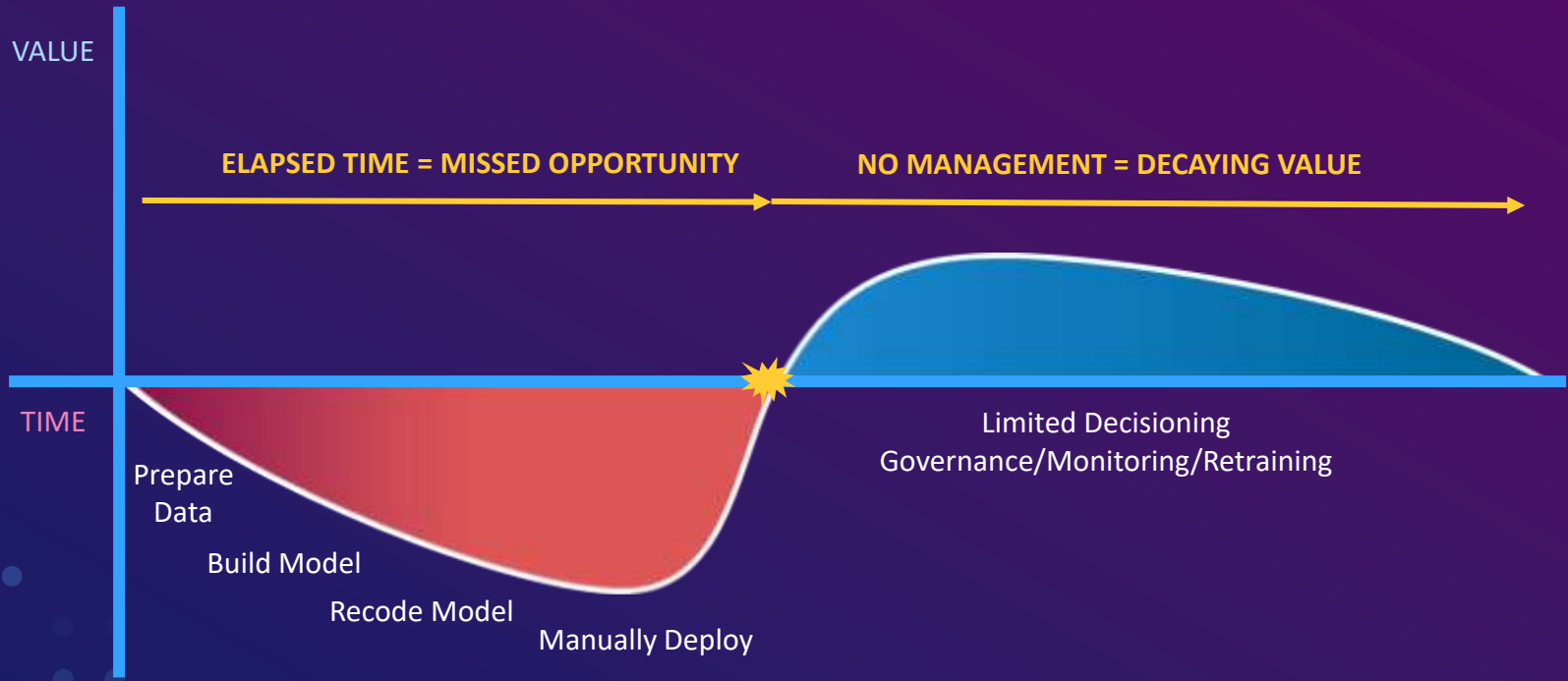
Why is ModelOps needed?

On average, only **53%** of AI/ML projects are **eventually deployed**.
(Gartner 2020)

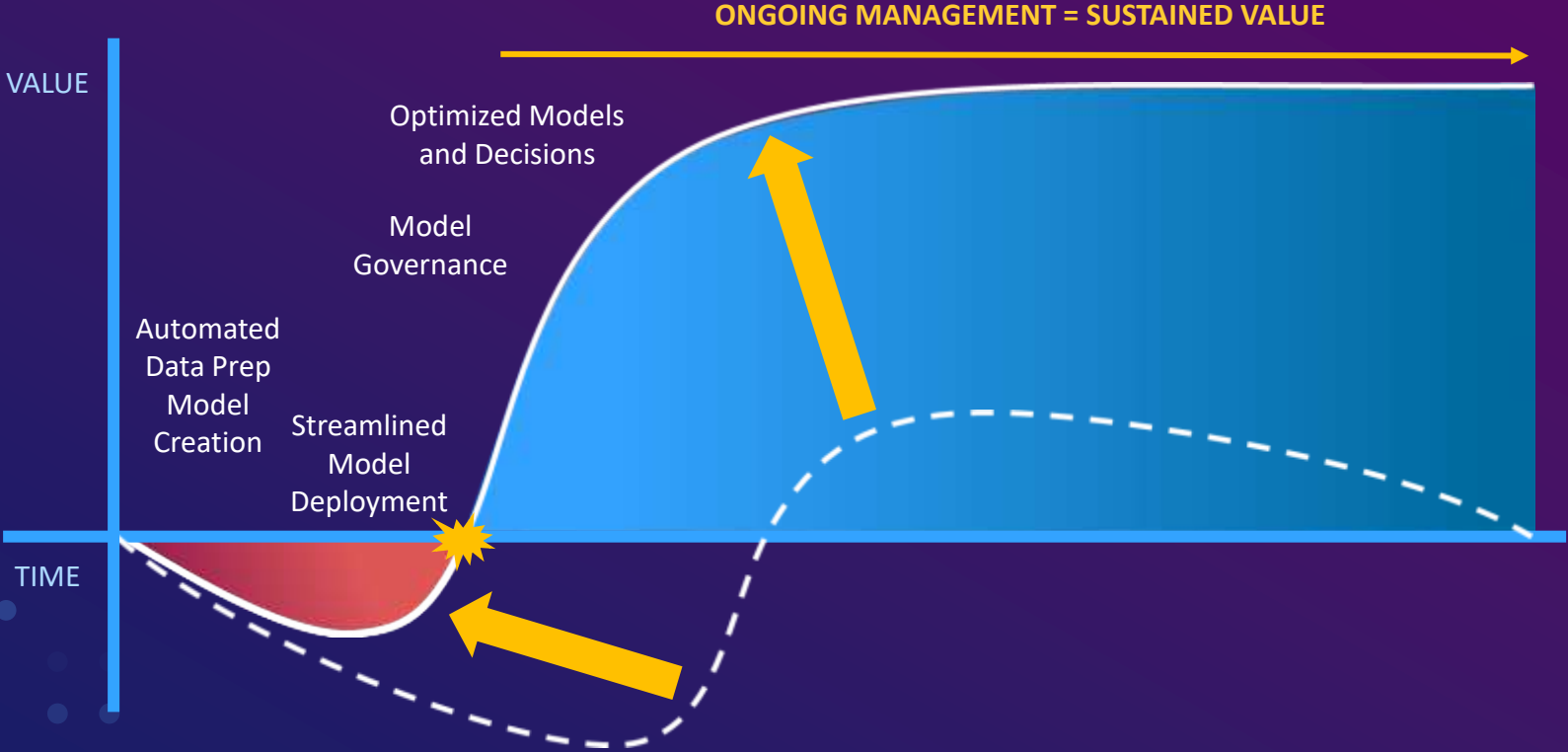
Organizations will **waste time and money** on data science projects that are **not put into production and properly managed**. Their AI transformation will **fail without ModelOps**.

We can activate the **value of analytics** with a framework to **streamline** the deployment and management of **analytical models** and **integrate with rules** for decisioning.

Organizations Spend Wasted Cycles On Decision Design, Leaving Little Time For Realized Value



SAS Provides Immediate Value Through Intelligent ModelOps and Decisioning



ANALYTICS

FOR EVERYONE. EVERYWHERE.



Improve team productivity by automating the analytics life cycle

Manual coding takes a tremendous amount of time and skilled resources. SAS automates tedious tasks to improve productivity for the entire team.



Automated explainability of models in simple language

Business Analyst



Automated data management w/ ML powered data prep

Automated modeling to reduce time to build models

Data Scientist



Automated monitoring and retraining of models

IT manager



<50%

Less than 50% of the best models get deployed.



90%

90% of models take more than three months to deploy.



44%

44% of the models take over seven months to put into production.

Worldwide Semiannual Big Data and Analytics Spending Guide, IDC, April 2019.

Open Access From Diverse Interfaces

The collage illustrates the following interfaces and data:

- Anaconda Prompt:** Shows a terminal window with the command `profile init` and an error message: `'C:\Users\dishaw\AppData\Local\Continuum\Anaconda3\Scripts\activate.bat' is not recognized as an internal or external command, operable program or batch file.`
- Jupyter Notebook:** Displays code for ROC and LR plots, including `ROC Curve using Validation Data` and `LR Plot using Validation Data`.
- File Explorer:** Shows a directory listing for `C:\Users\dishaw\Documents\WM CLI` with files like `07/08/2020 04:54`.
- SAS Studio Dashboard:** Features a 'Projects' section with a donut chart showing **50 Total** projects and another showing **18 Total** published models. Below is a table of projects.
- SAS Visual Analytics:** Shows a scatter plot and a bar chart.

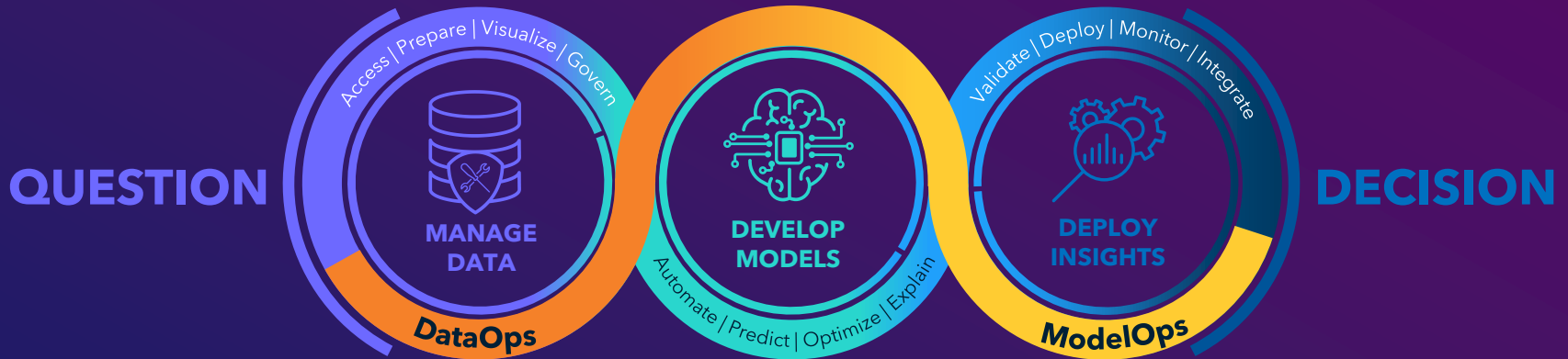
Name	Model Platform	Health	Created	Modified by
01_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
02_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
03_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
04_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
05_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
06_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
07_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
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18_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
19_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin
20_SAS_Validation_Validation	Python	Success	May 10, 2020 11:48:16	admin

- ✓ Interactive GUI with KPI performance monitoring, variable drift, stability, alerts
- ✓ REST APIs
- ✓ Command Line Interface
- ✓ Python packages (PZMM and others)
- ✓ SAS code



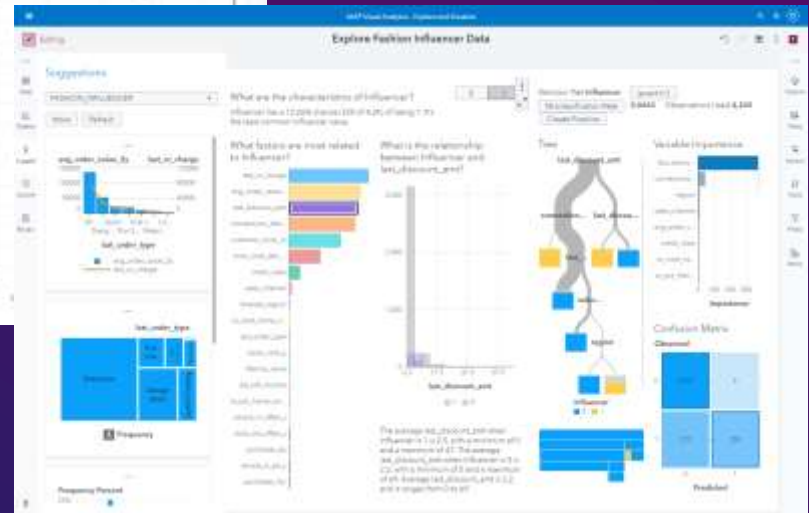
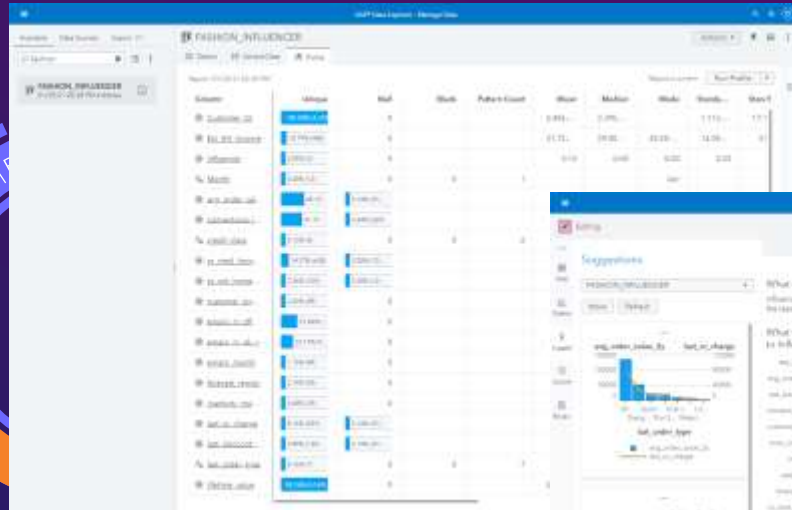
Collaboration in Action with SAS

Integrated Analytics, Model Management, and Decision Making into Business Applications



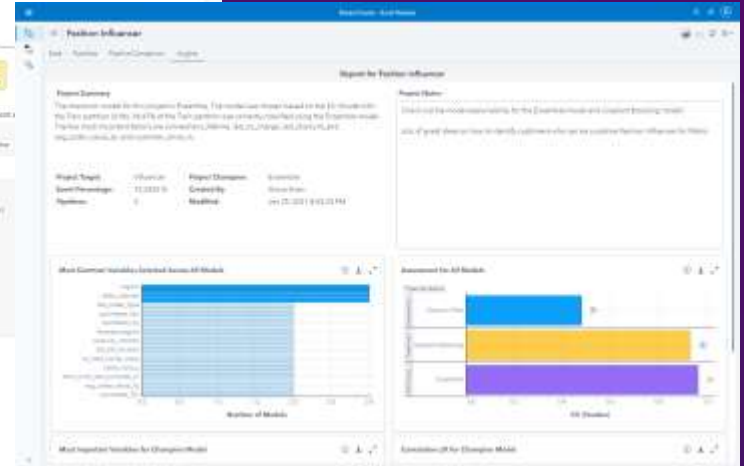
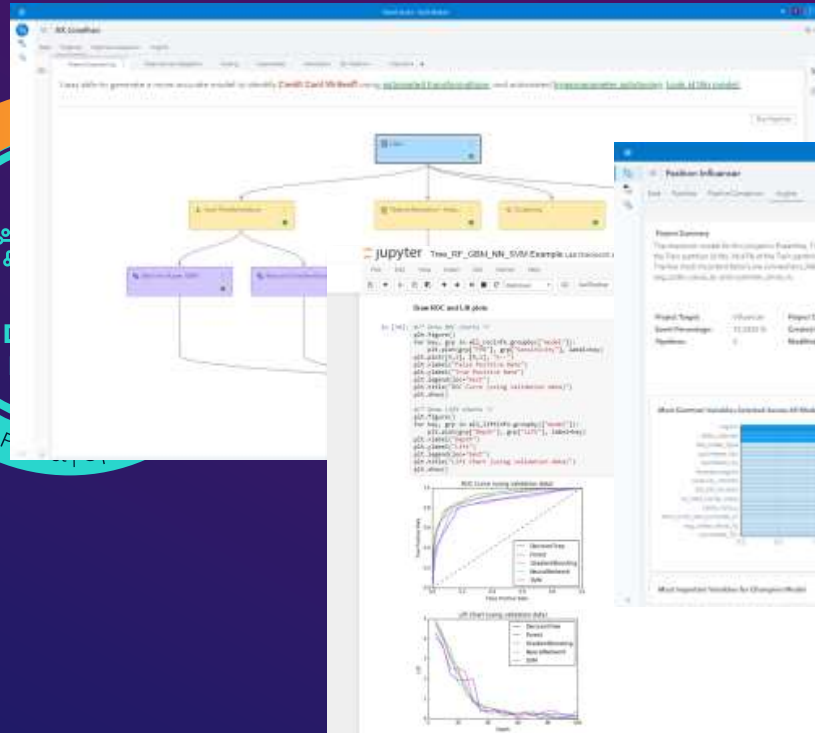
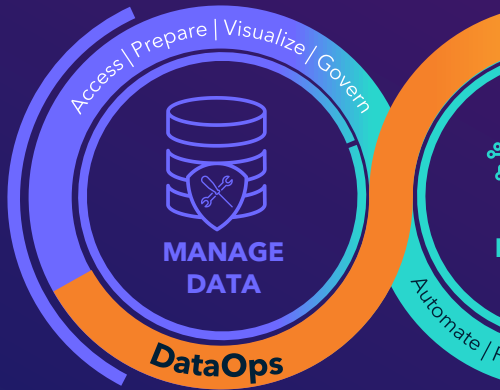
Collaboration in Action with SAS: DataOps

Real-time data ingestion, engineering, quality, and exploration



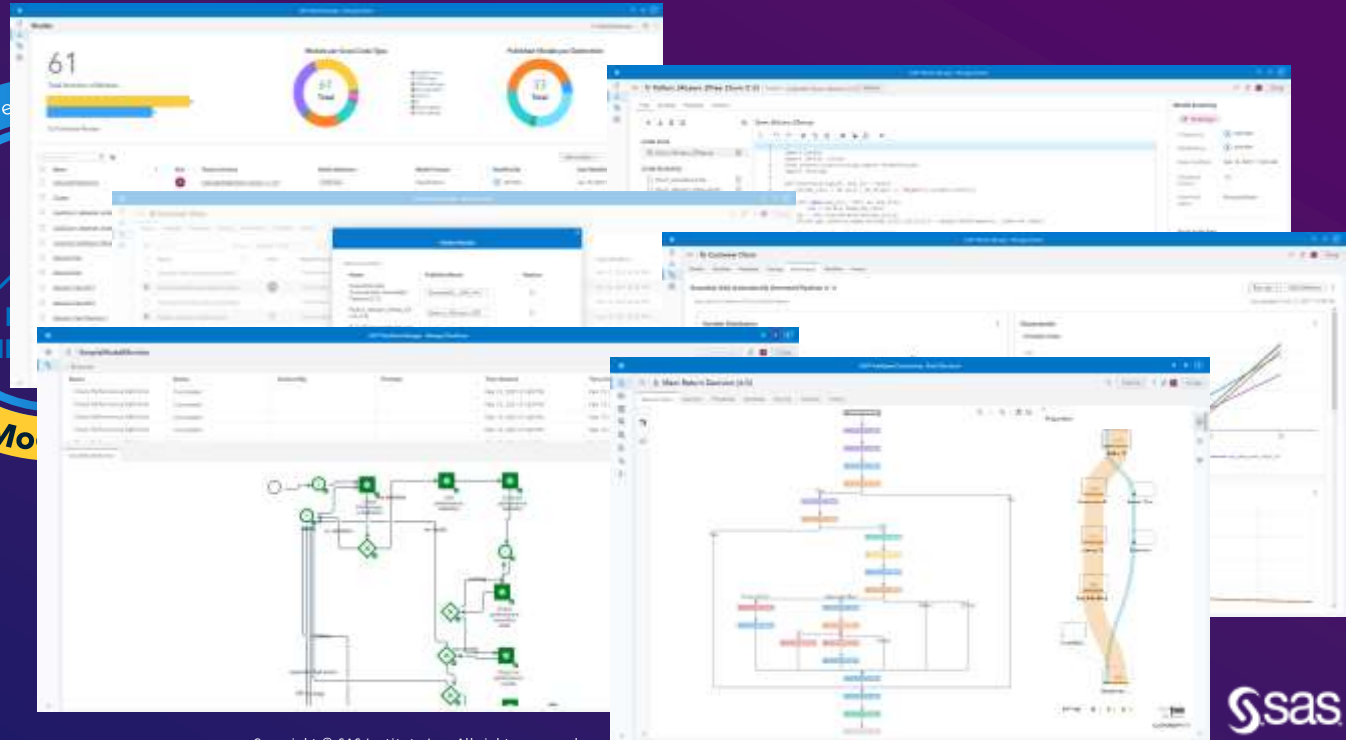
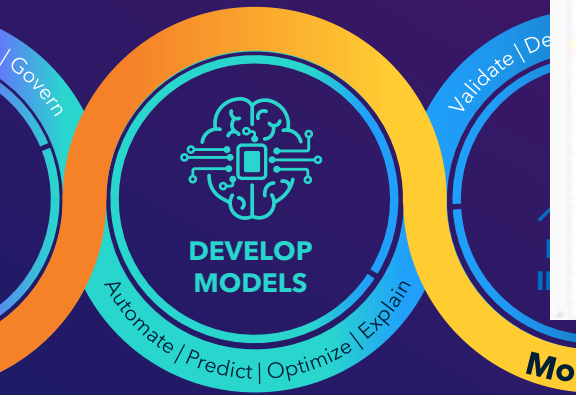
Collaboration in Action with SAS: Model Dev

Intelligent, scalable modeling for business users and data scientists, from SAS to open source

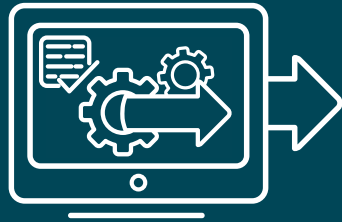


Collaboration in Action with SAS: ModelOps

Governed, explainable, transparent analytical monitoring and automation



ModelOps



VS

MLOps

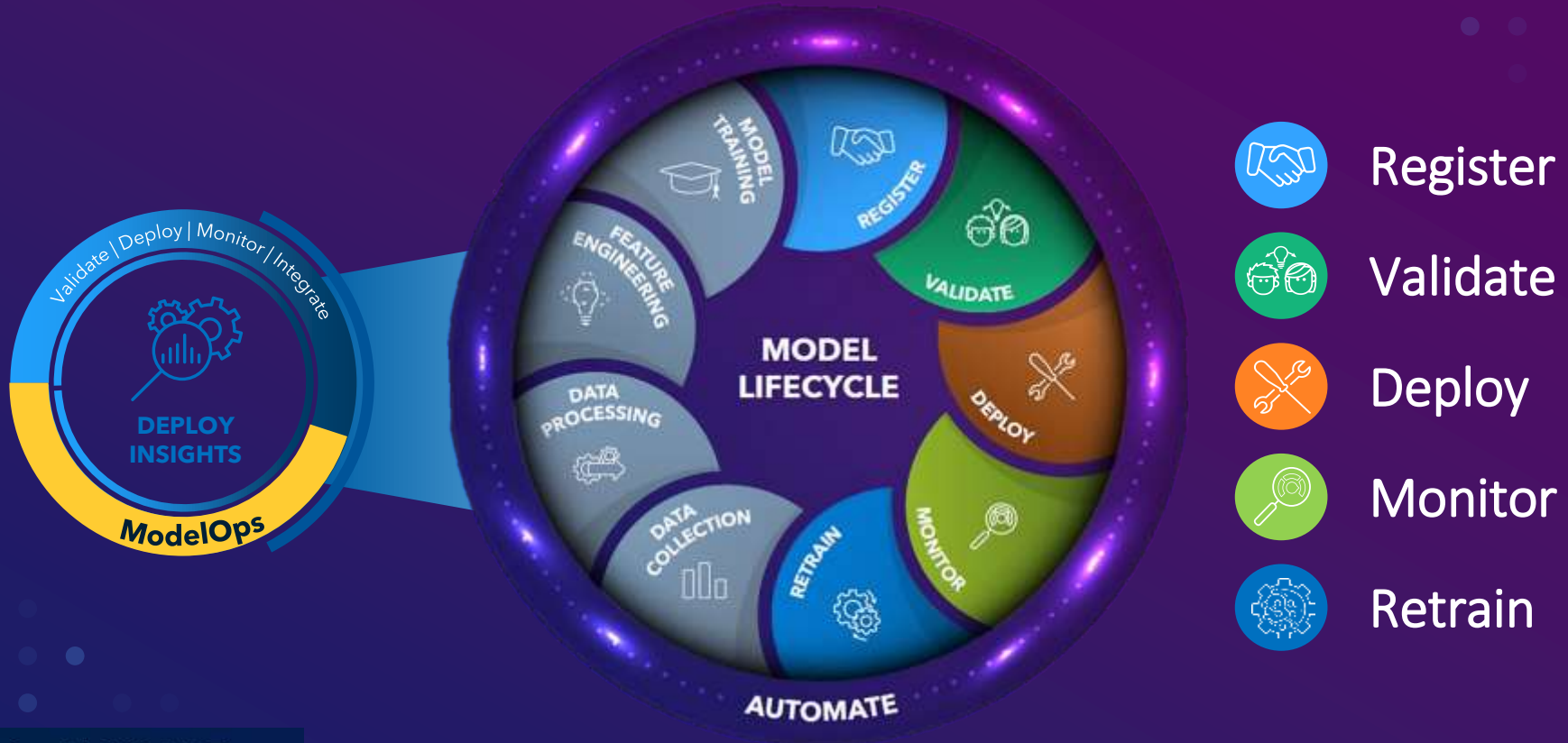


~50% of AI models do not make it into production
due to lack of ModelOps

ModelOps is a superset of MLOps, and inversely, MLOps is a subset of ModelOps. It is to be noted that every good ModelOps capability will, by default, have a good MLOps capability, but the inverse may not hold true.

Gartner Innovation Insight for ModelOps, August 2020

ModelOps with SAS® Model Manager

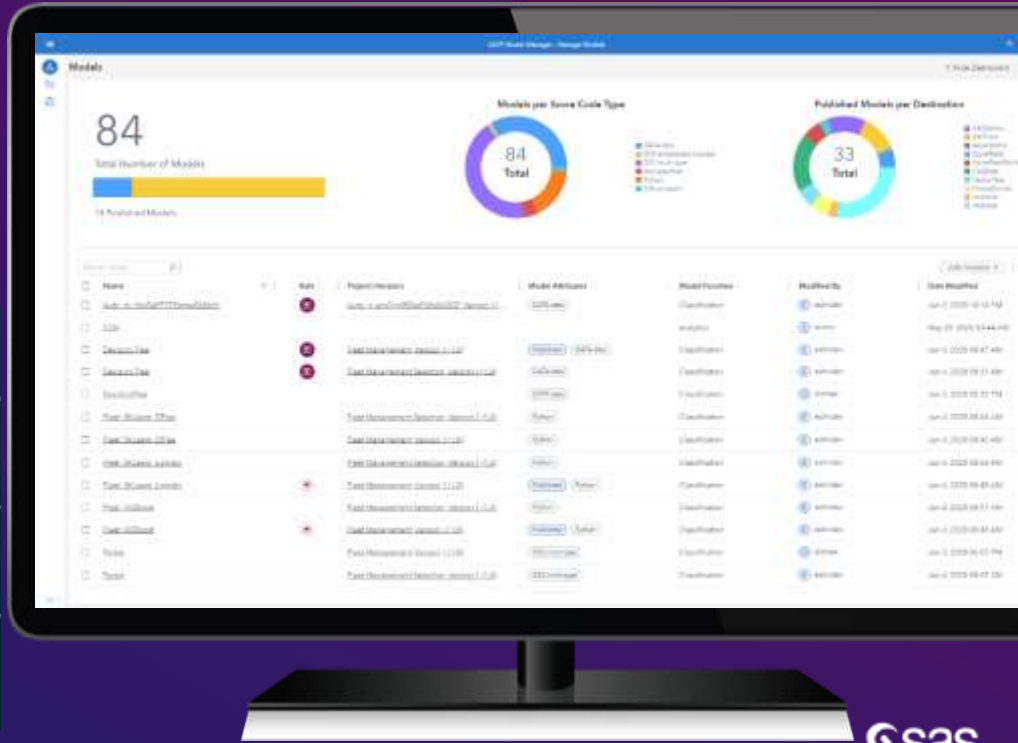


Register

ORGANIZE AND MANAGE ANALYTIC MODELS AND PIPELINES



-  Create a central searchable repository for all models/pipelines
-  Compare models side-by-side
-  Maintain version control and track project history
-  Access models and model-score artifacts using open REST APIs



Deploy

MODEL PUBLISHING AND SCORING

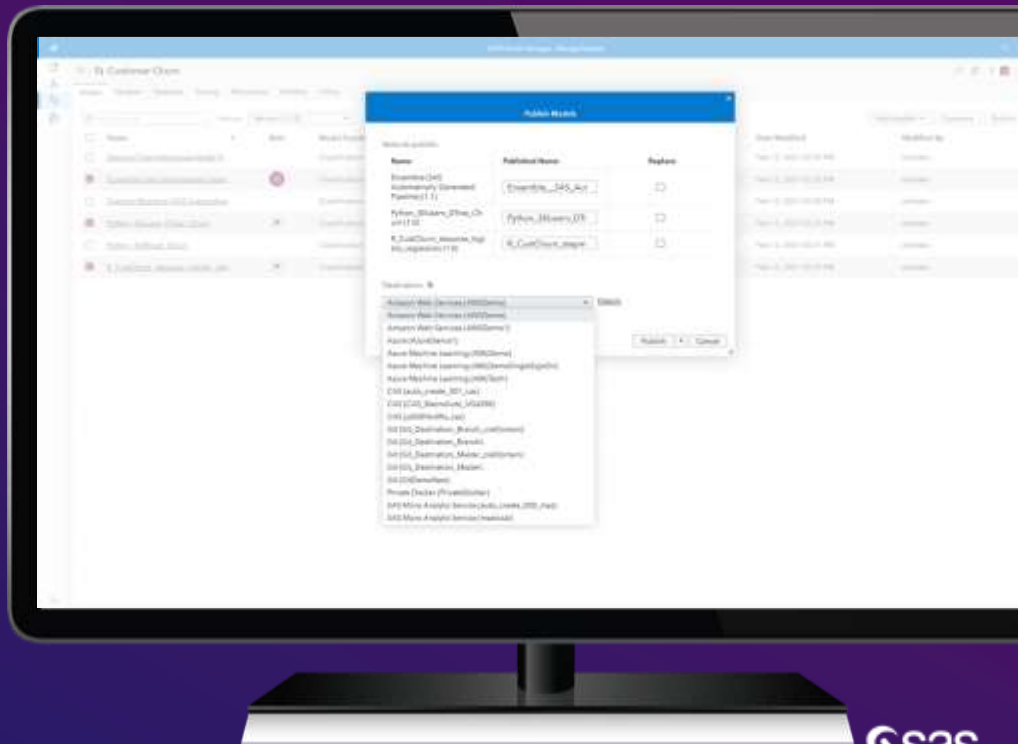


- 

Get quick and easy access to different production environments
- 

Deploy in-batch, streaming, cloud or edge devices
- 

Support multiple publishing destinations and container destinations



Monitor

MONITOR MODEL PERFORMANCE



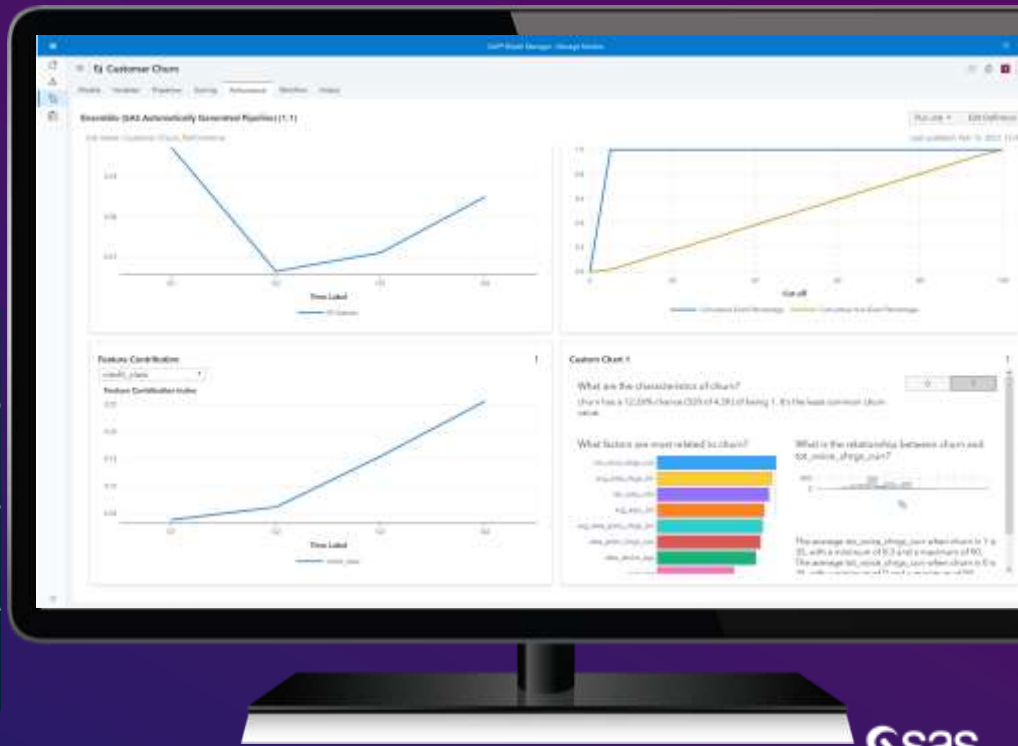
- 

Use a handy wizard to generate out-of-the-box performance reports
- 

Maintain visibility of performance monitoring tasks
- 

Easily access data to monitor your own reports
- 

Monitor and Detect Model/Feature Degradation and Alerting system

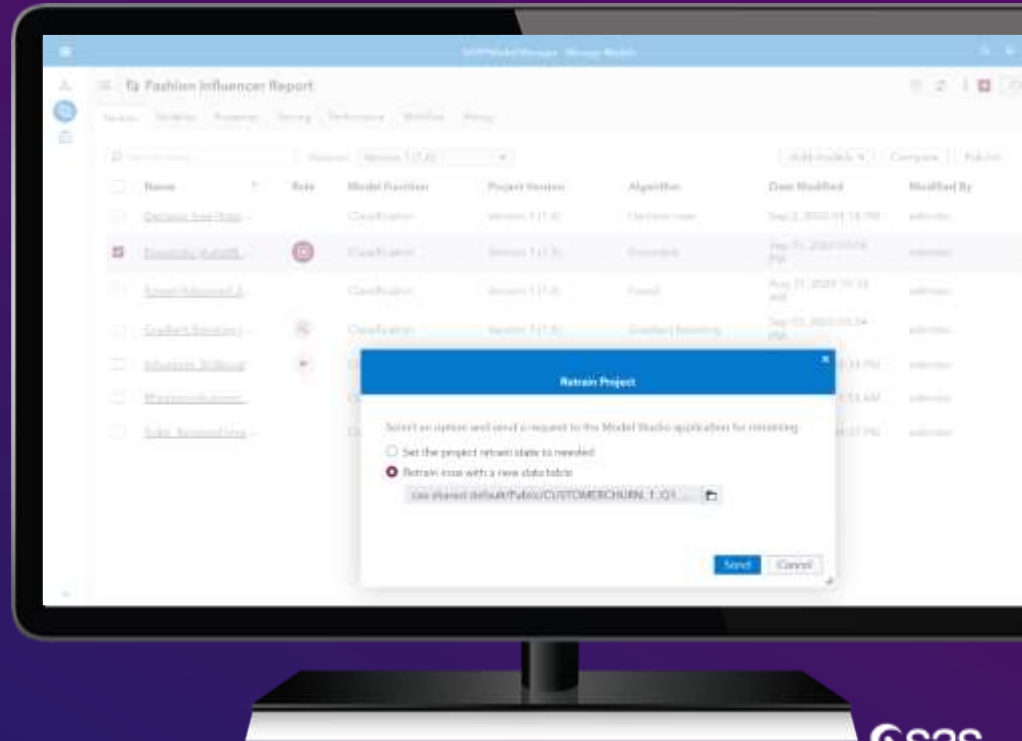


Retrain

RETRAIN MODELS



1. Retrain the existing model on new data
2. Revise the model with new techniques (such as feature engineering or new data elements)
3. Replace the model entirely with a better model.

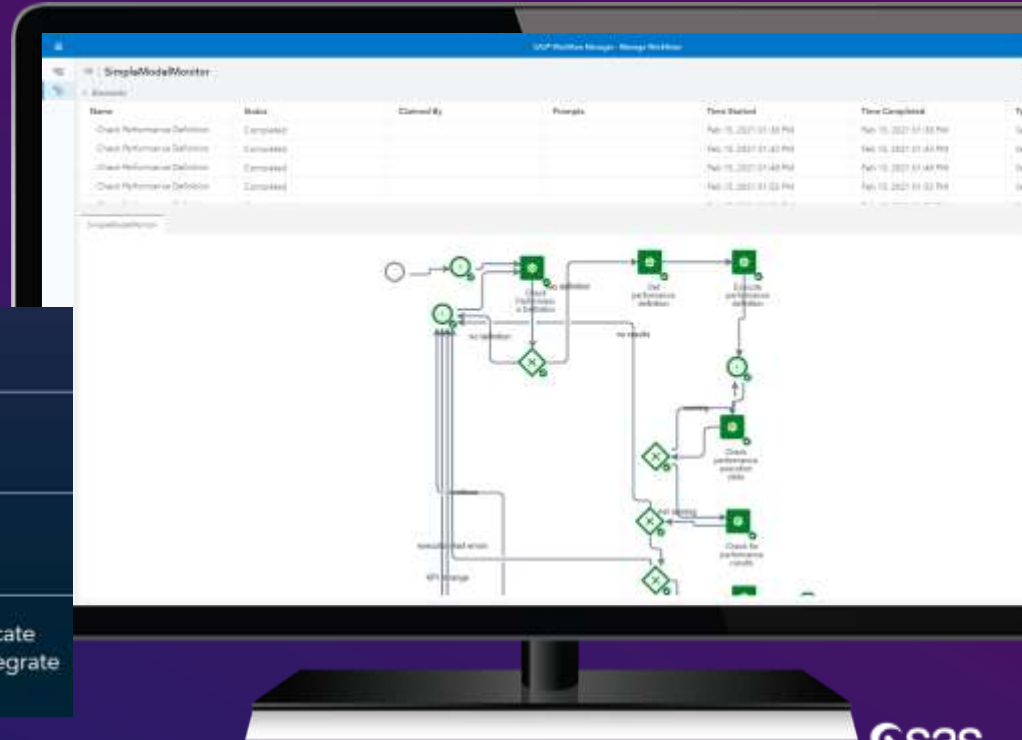


Automate

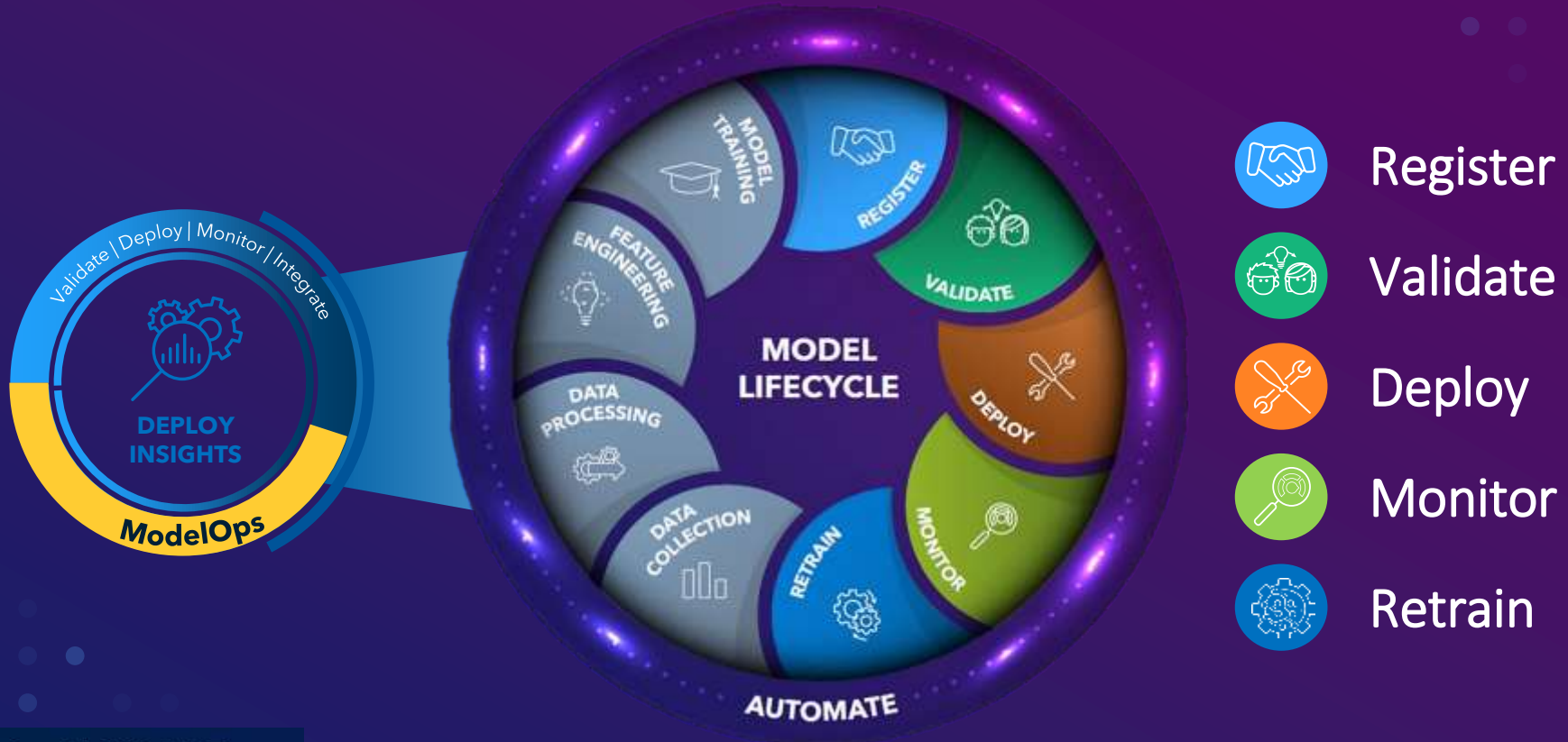
WORKFLOW-BASED APPROACH TO AUTOMATION



-  Create custom workflows that match business requirements and processes
-  Start a workflow process to track the progress of your project
-  Apply out-of-the-box task templates
-  Use the open, RESTful API to communicate with the model lifecycle system and integrate with third-party applications

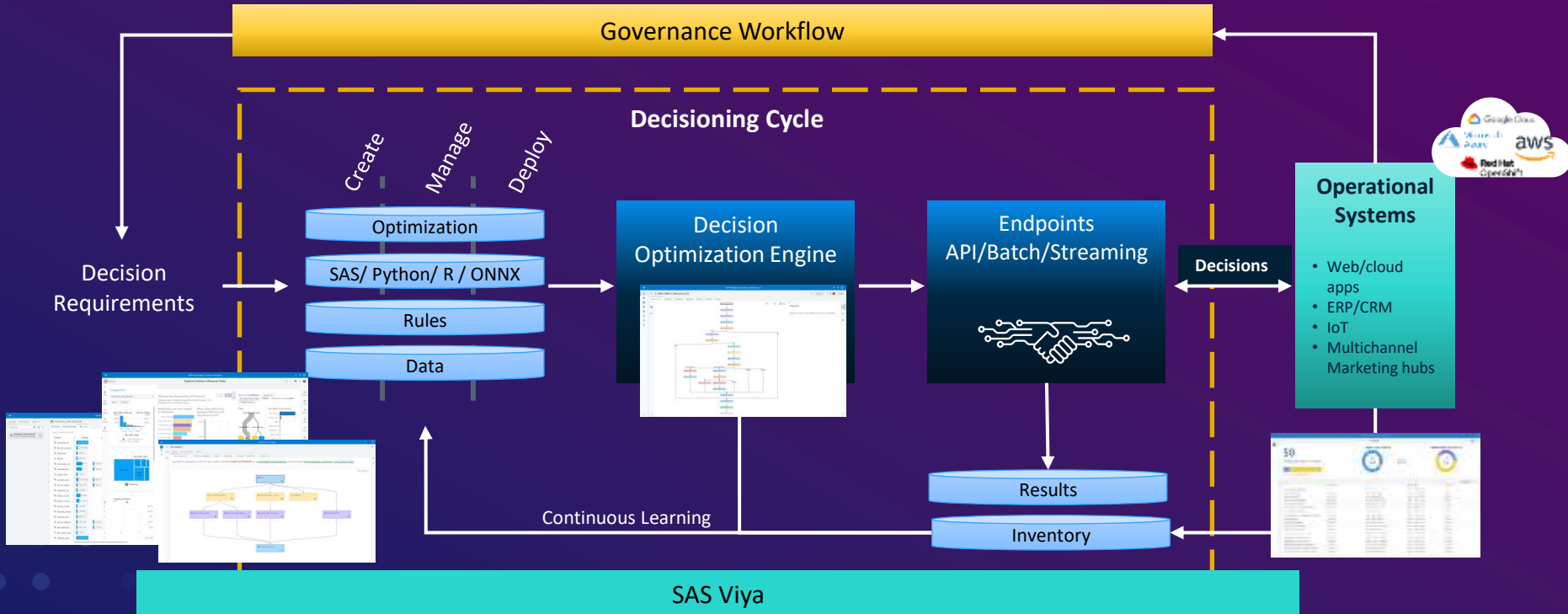


ModelOps with SAS® Model Manager



Unified ModelOps with SAS

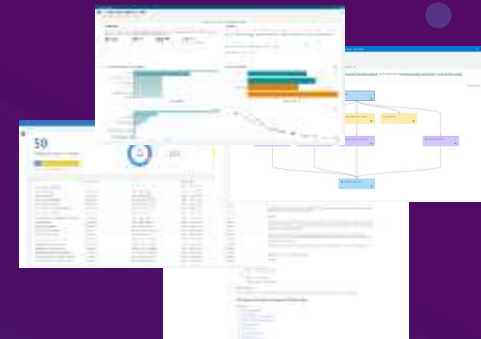
Dev – Test – Deploy – Monitor - Improve



ModelOps with SAS® Model Manager

SAS Operationalizing Analytics

Guiding principles for our efforts in 2021 and beyond



Connected

Collaborative lifecycle - real-time and batch data ingestion, data quality, modeling, reporting, governance and decision authoring / deployment

Intelligent

Embedded and automated monitoring, calibration, optimization and natural language and analytic suggestions

Open

Cloud-native architecture enabling app dev using no-code / low-code GUIs, embedding micro-containerized SAS and open-source code

Governed

Secured, measurable, transparent, automated models, workflows and decisions



Maximize Business Value. Make Better Decisions.
Deliver Trusted Outcomes.



Enterprise Platform



Democratize Analytics



Embedded AI

Helpful ModelOps Resources

- https://www.sas.com/en/whitepapers/model-ops-111230.html?utm_source=other&utm_medium=email&utm_campaign=non-cbo-gbc-prd-us
- <https://blogs.sas.com/content/datamanagement/2020/02/27/why-ops-ing-is-in-dataops-modelops/>
- www.sas.com/sas/offers/20/modelmanagement.html
- https://www.sas.com/en_us/software/model-manager.html
- <https://support.sas.com/en/software/model-manager-support.html>
- <https://communities.sas.com/t5/SAS-Communities-Library/What-s-New-with-SAS-Model-Manager-Home-page/ta-p/721997>
- <https://github.com/sassoftware/open-model-manager-resources>
- <https://github.com/sassoftware/python-sasctl/tree/master/src/sasctl/pzmm>
- <https://communities.sas.com/>
- <https://developer.sas.com/home.html>
- <https://communities.sas.com/t5/SAS-Communities-Library/What-s-new-with-SAS-Model-Manager-Enhanced-support-for-R-models/ta-p/707054>
- <https://communities.sas.com/t5/SAS-Communities-Library/What-s-new-with-SAS-Model-Manager-pzmm-Python-Zip-Model/ta-p/701673>

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Learn from home – free for 30 days. Get software labs to practice and online support if needed.

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Ask questions, get answers and share insights with SAS users.

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An exclusive platform to collaborate, learn and share your expertise. Gain access to a diverse network to advance your career. Special rewards and recognition exclusively for SAS users.

[SAS Users YouTube Channel](#)

A plethora of videos on hundreds of topics, just for SAS users.

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Get the latest SAS news plus tips, tricks and more.

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Meet local SAS users, network and exchange ideas – virtually.

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If you haven't already done so, create your SAS Profile to access free training, SAS Support Communities, technical support, software downloads, newsletters and more.



Thank you
for joining us for
this SAS webinar

