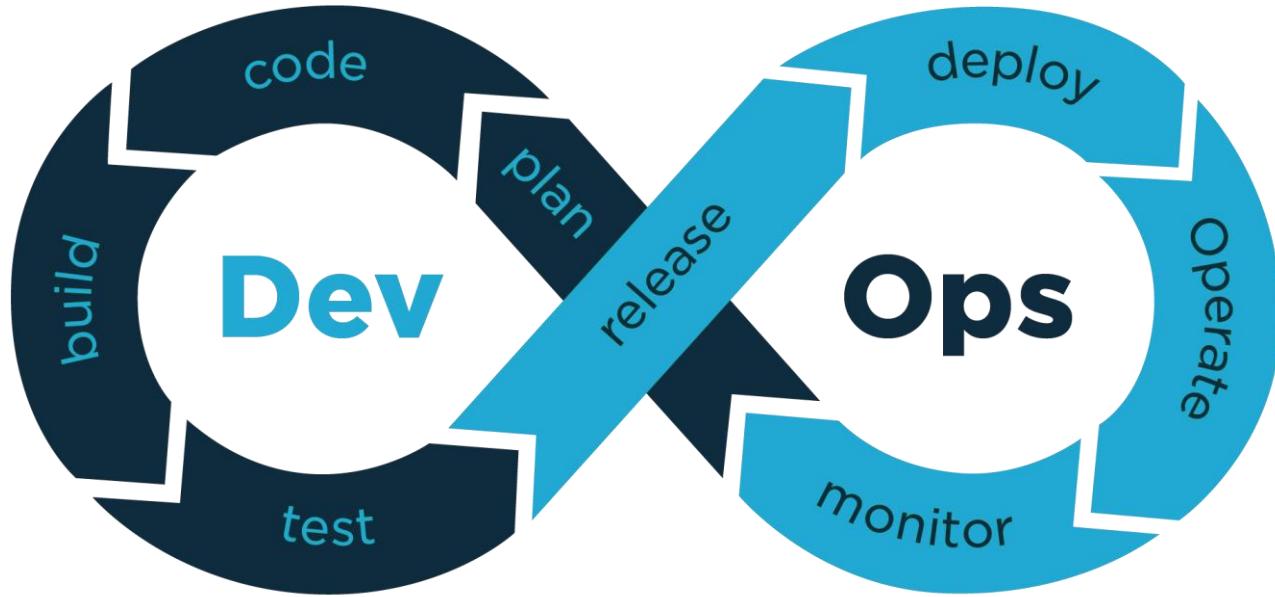
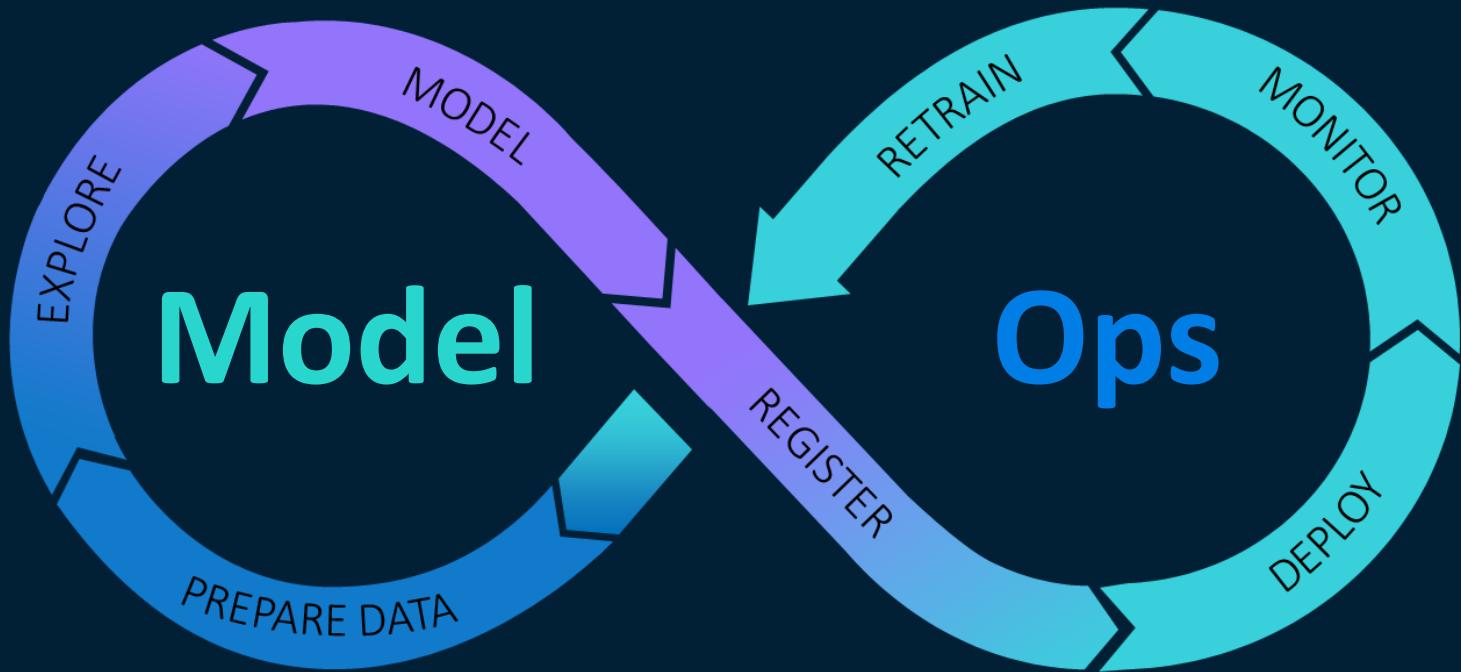


# Få modellene ut

Mens de er relevante





## Modeller av høy kvalitet driver viktige forbedringer i alle bransjer



Effektiv  
markedsføring i  
sanntid

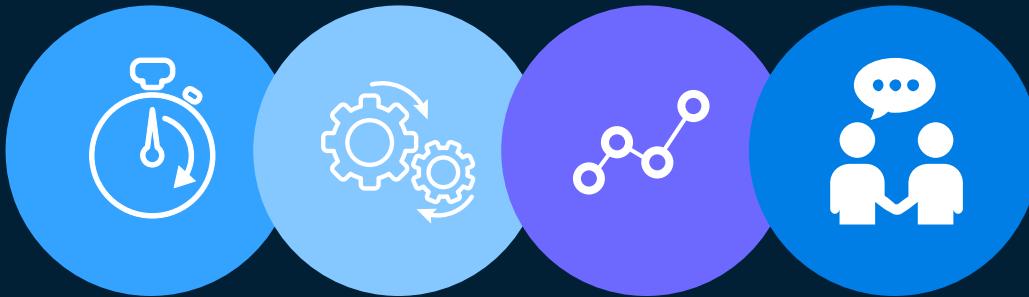


Produktkvalitet og  
sikkerhets-  
vurderinger



Avsløring av  
svindel på garanti,  
oppgjør og  
transaksjoner

# Viktige spørsmål



- 01** Hvor lang tid tar det å få en modell produksjonssatt? Hvor gamle er de data modellen ble trent opp på?
  
- 02** Hvor mange modeller har dere? Hvordan er du trygg på at beste modell blir brukt?
  
- 03** Når og hvordan ble modellen som er i produksjon oppdatert?

# Utfordringer under overflaten



Modeller i produksjon

Tapte muligheter

Færre enn 50% av de beste modellene blir produksjonssatt

90% av modellene tar mer enn 3 måneder å få i produksjon

Mangel på repeterbare prosesser og samarbeid

# Manuell modellutrulling

## Tapte muligheter

ANALYTISK  
VERDI

MEDGÅTT TID = TAPTE MULIGHETER

MANGLENDE STYRING = MINKENDE RELEVANS OG VERDI

TID

Data  
prep

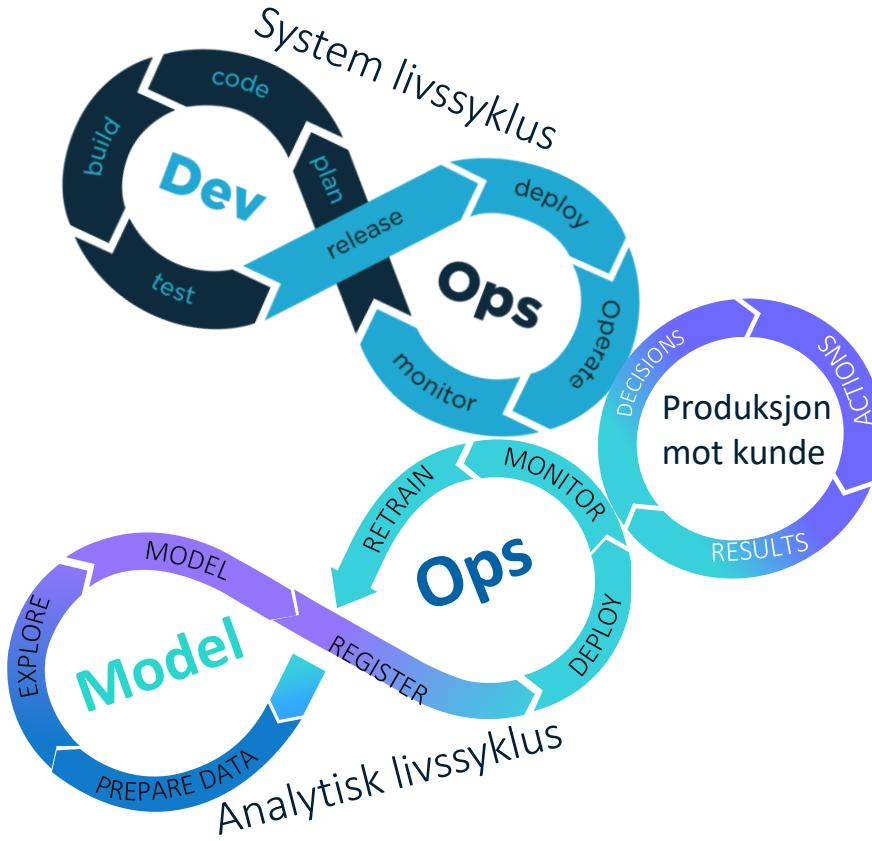
Bygg Modell

Omkode Modell

Manuell utrulling

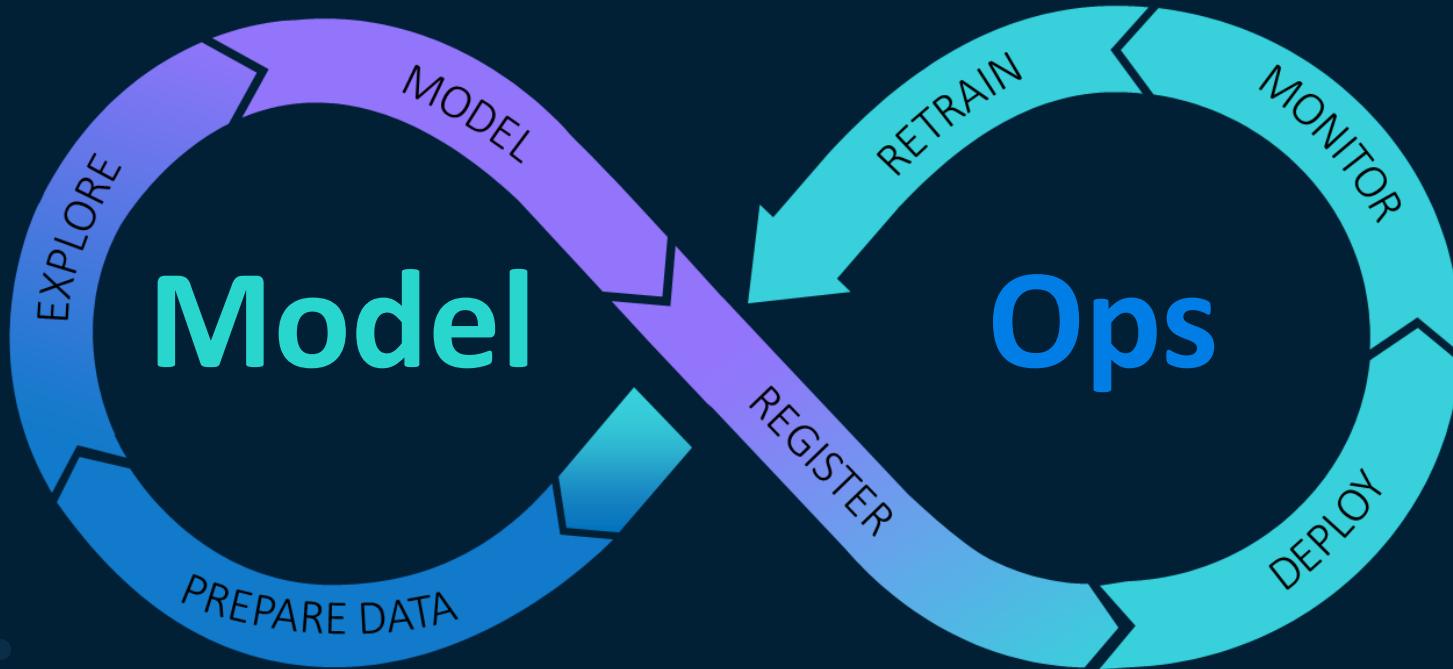
Manglende  
Styring / Overvåking / Retrenning





# Operasjonalisering av analyse

Analytisk livsløp og ModelOps



# Deployment

## Register and Deploy



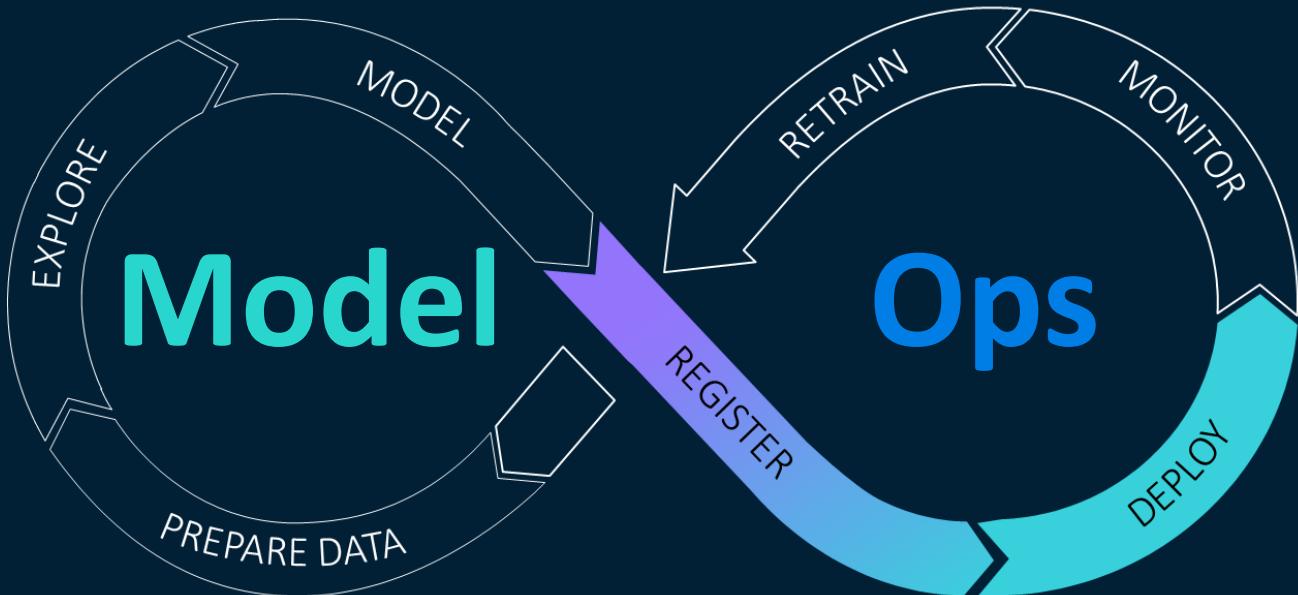
Central  
Repository



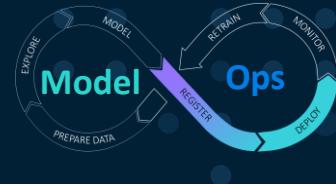
Model  
Governance



Build once and  
deploy rapidly  
anywhere



# Deployment Common Repository



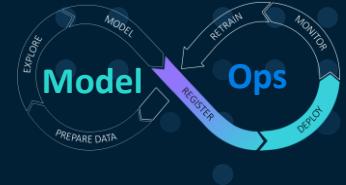
The screenshot shows the SAS Model Manager interface for managing models. The top navigation bar includes "Fleet Management", "Models", "Variables", "Properties", "Scoring", "Performance", "Workflow", and "History". A search bar labeled "Search event" is present. The main content area displays a table with columns: Event, Project Version, Model, Publishing Destination, and Event Date. The table lists various model events such as "Project version created", "Model created", "Model published", and "Model set as champion". Each row provides details like the project version (e.g., 1.0, 1.1, 2.0, 3.0), the model name (e.g., Fleet\_XGBoost, Fleet\_SKLearn\_DTee, Fleet\_SKLearn\_Logistic), the publishing destination (e.g., SAS Micro Analytic Service (maslocal), Azure (AzureDemo)), and the event date (e.g., Jun 3, 2020 12:57 PM, Jun 4, 2020 08:45 AM).

● Register and inventory ALL analytic models

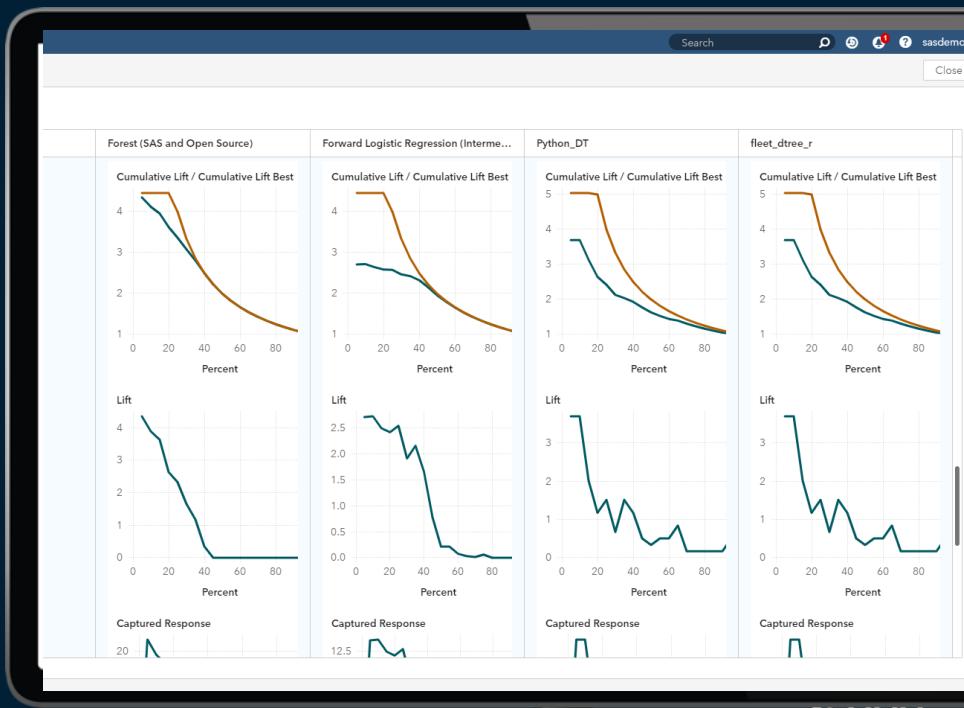
● Prebuilt model life cycle templates

● Share and collaborate

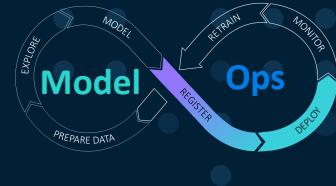
# Deployment Model Governance



- Compare SAS & open source models side-by-side
- Manage & operationalize SAS & open source models



# Deployment Governance



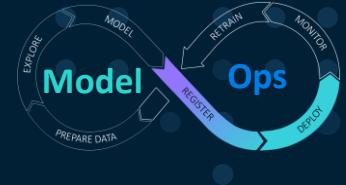
Name	R...	Model Func...	Location	Project (Version)	Date Modifi...	Modified By
testSPK		Classification	/Model Repositories/Repository 1		Aug 18, 2017 10:15 AM	brmdev
reg		Classification	/Model Repositories/Repository 1/Router	Project 1, Version 1 (1.0)	Aug 21, 2017 10:34 AM	brmdev
3		Classification	/Model Repositories/Repository 1/A_Folder		Aug 16, 2017 03:35 PM	brmdev
2		Classification	/Model Repositories/Repository 1/A_Folder		Aug 16, 2017 03:35 PM	brmdev
HMEQItem		Classification	/Model Repositories/Repository 1		Aug 18, 2017 10:16 AM	brmdev
4		Classification	/Model Repositories/Repository 1/A_Folder		Aug 16, 2017 03:35 PM	brmdev

Lineage record for all models in one place

Version control & track project history to ensure compliance with internal analytical processes

# Deployment

## Build once and rapidly deploy anywhere

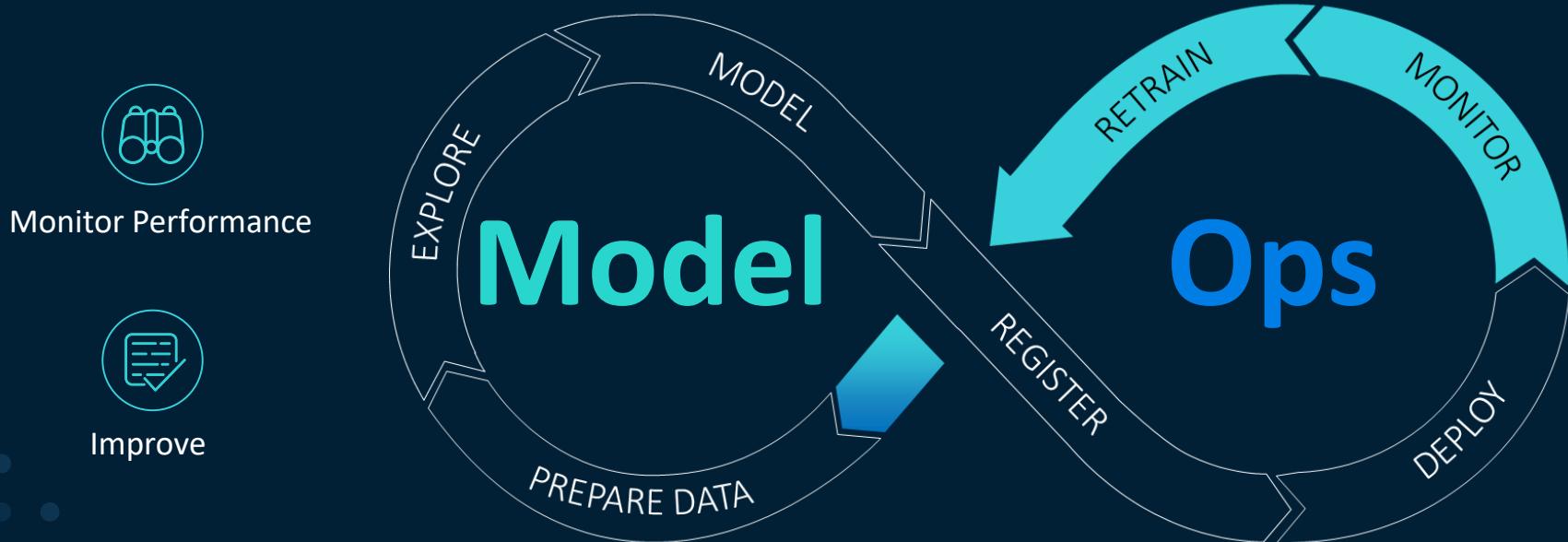


The screenshot illustrates the SAS Studio environment, specifically the 'Child Safety Model' project. On the left, there are several tabs and sections including 'Champion', 'Challenger', 'Registered', 'Parameter Tuning Best Configuration', 'Number of Variables to Try', 'Learning Rate', 'Sampling Rate', 'Lasso', 'Ridge', and 'Misclassification Error Percentage'. The main workspace shows a plot of 'Average Squared Error' versus 'Number' (ranging from 0 to 30), with a curve showing a downward trend. Below this is a 'Confusion Matrix' plot. On the right, a modal dialog titled 'Publish Models' lists various destinations: maslocal (SAS Micro Analytic Service), democas (CAS), \_HADOOP\_ (Hadoop), \_TERADATA\_ (Teradata), API (SAS Micro Analytic Service), Snowflake (CAS), Redshift (CAS), Google BigQuery (CAS), and MySQL (CAS). Under 'Selected: maslocal', it shows the item 'Augmented GBM' being published with the name 'Augmented\_GBM\_936cda78\_62cb'. A preview window on the right displays detailed statistics for the model, such as 'Sum of Frequencies' (1,768, 1,788, 1,788, 1,788) and 'Missclassification Rate' (0.087, 0.100, 0.117, 0.131).

- Test and validate models
- Publish to different production environments including in-batch, streaming, cloud or edge device
- Automation to support ModelOps

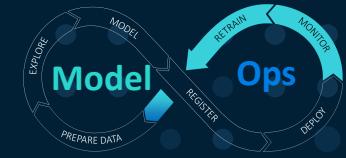
# Deployment

## Monitor and Retrain

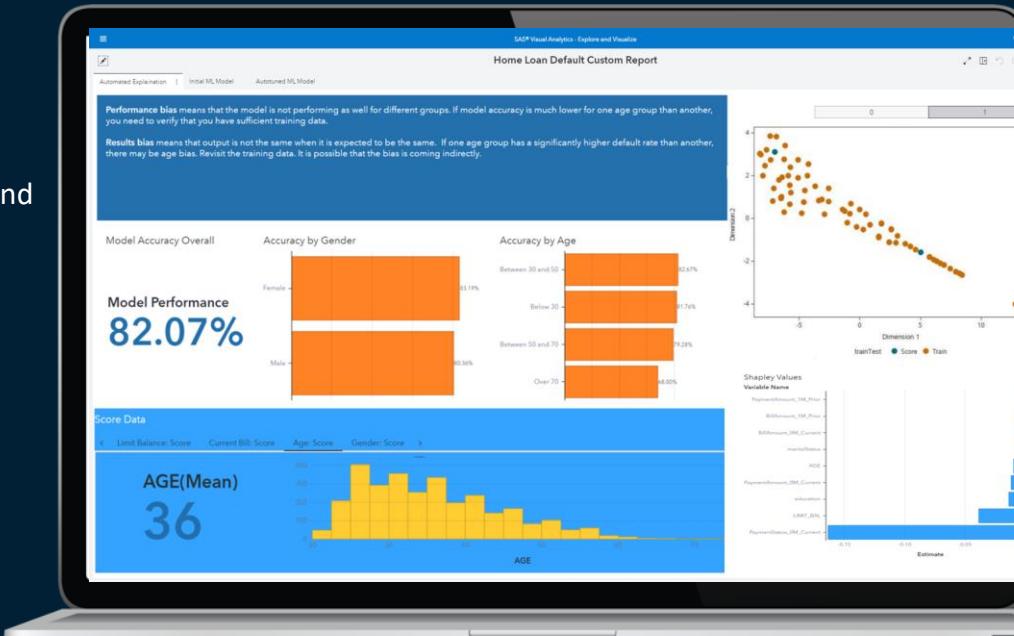


# Deployment

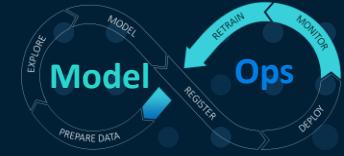
## Monitor Performance



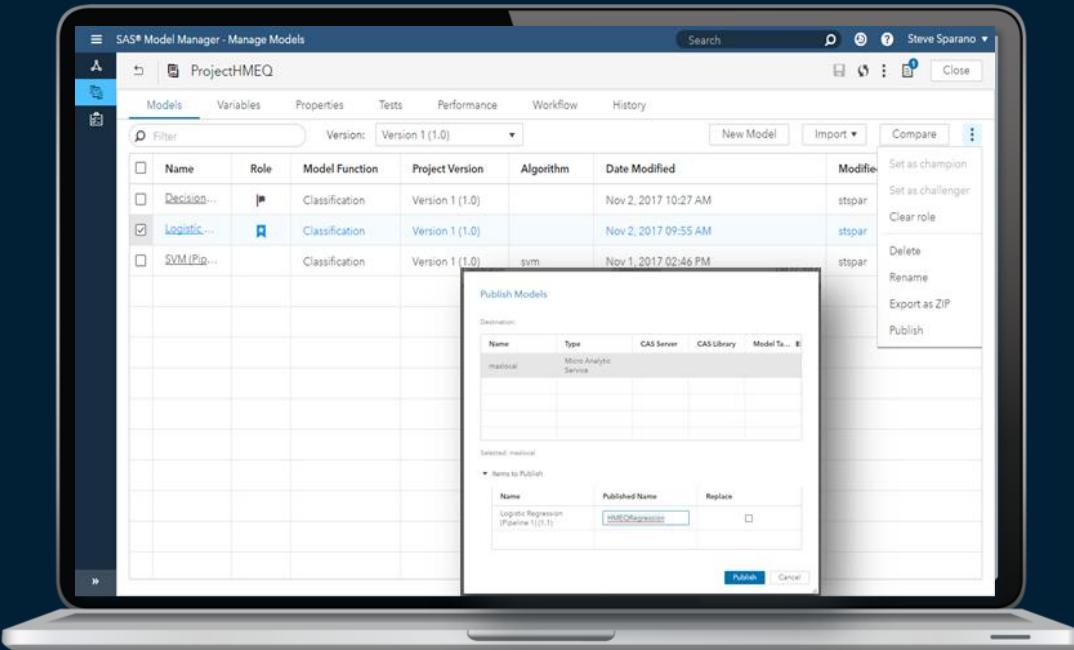
- Out of the box performance reports to monitor drift and performance
- Performance-monitoring tasks including data source and time execution
- Track all model attributes post deployment



# Deployment Improve

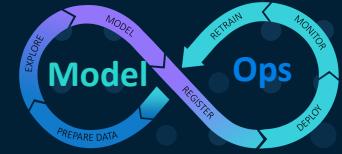


- Retrain when model shows decay
- Easily redeploy or replace models



# Automation

## Supporting ModelOps

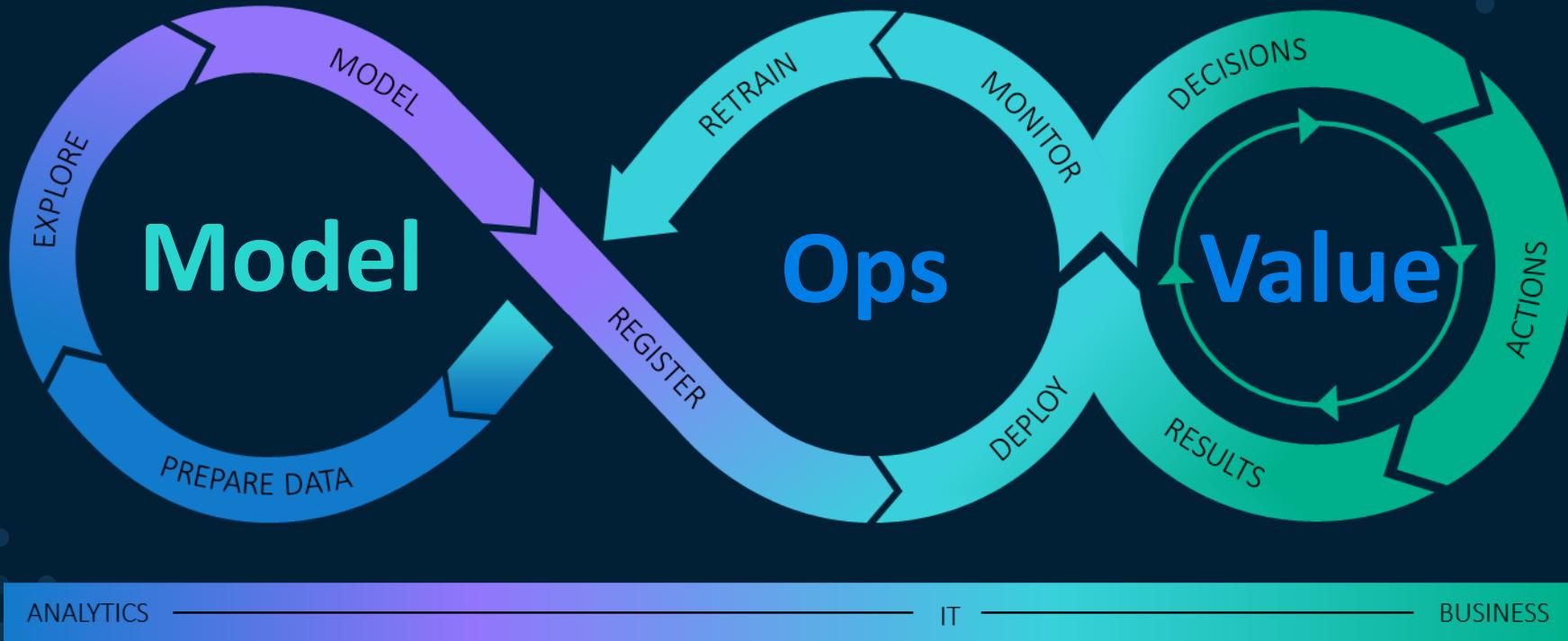


- Create custom workflows matching business requirements and processes
- Start a workflow process to track the progress of your project
- Out of the box task templates
- Automate end-to-end deployment process using either SAS OOB workflow management tools or integrate with existing frameworks via REST API's

The screenshot shows a computer monitor displaying the SAS Model Manager interface. The title bar reads "SAS Model Manager - Manage Models". The main window is titled "Fleet Management" and displays a table of models. The columns in the table are: Name, Role, Model Function, Project Version, Algorithm, Date Modified, and Modified By. The table lists several models, all categorized as Classification, with various versions and algorithms like Decision Tree, Logistic regression, XGBoost Tree, Forest, Gradient boosting, and Logistic regression. The "Modified By" column shows users like edmdev and dishaw.

Name	Role	Model Function	Project Version	Algorithm	Date Modified	Modified By
Decision_Tree		Classification	Version 1 (1.0)	Decision tree	Jun 4, 2020 10:59 AM	edmdev
Fleet_SKLearn_DTree		Classification	Version 1 (1.0)	Decision Tree	Jun 4, 2020 08:40 AM	edmdev
Fleet_SKLearn_Logistic		Classification	Version 1 (1.0)	Logistic regression	Jun 4, 2020 08:48 AM	edmdev
Fleet_XGBoost		Classification	Version 1 (1.0)	XGBoost Tree	Jun 4, 2020 10:59 AM	edmdev
Forest		Classification	Version 1 (1.0)	Forest	Jun 3, 2020 06:03 PM	dishaw
Gradient Boosting		Classification	Version 1 (1.0)	Gradient boosting	Jun 3, 2020 06:03 PM	dishaw
Logistic Regression		Classification	Version 1 (1.0)	Logistic regression	Jun 3, 2020 06:03 PM	dishaw

# Operasjonalisering av analyse



# Operationalizing



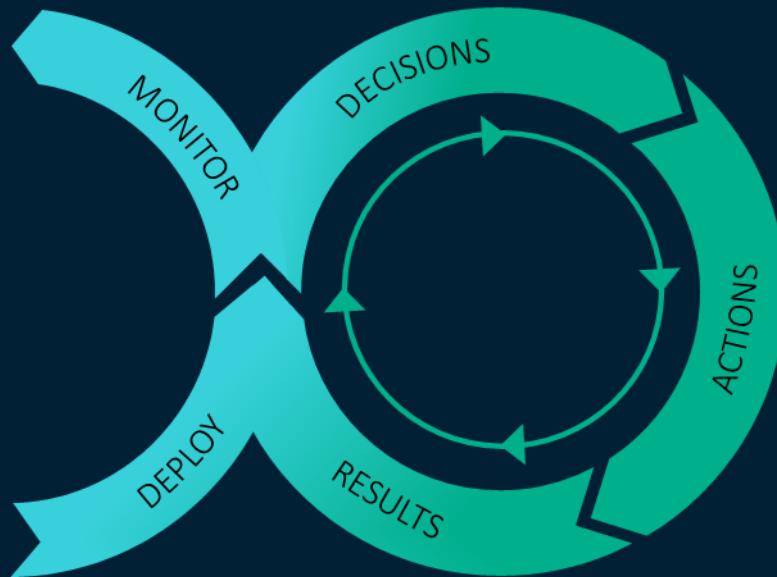
Manage decisions



Business rule  
and analytical  
model execution



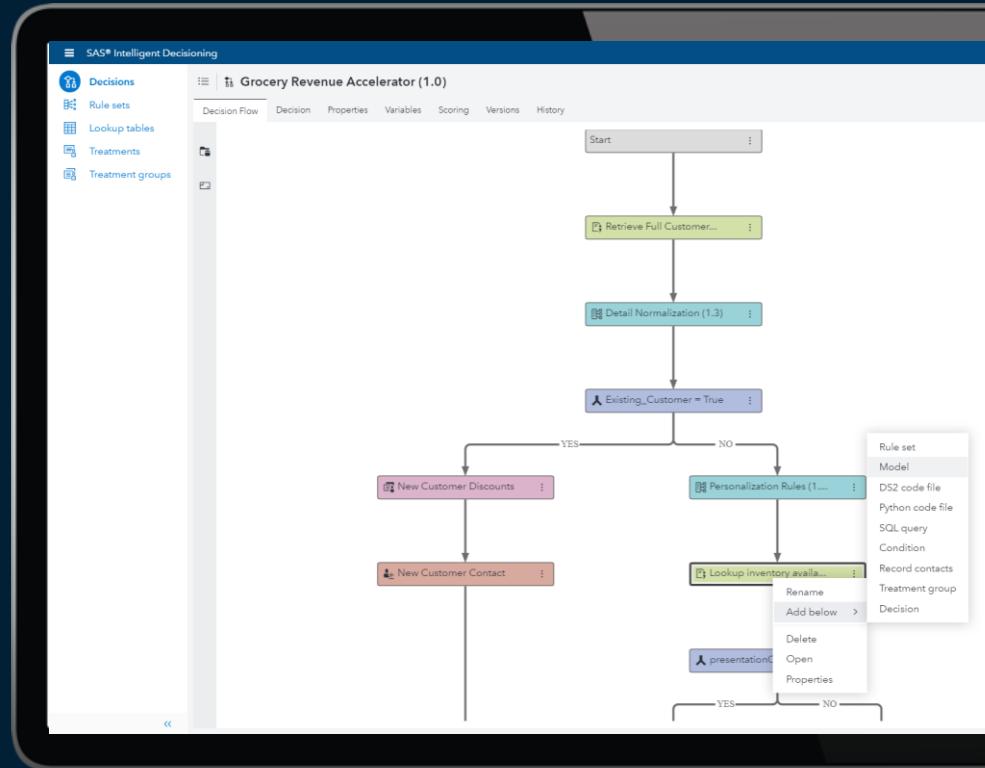
Automate high volume  
interactions



# Operationalizing Manage Decisions



- Design, manage and govern decisions
- Decision testing, lineage, versioning and validation



# Manuell modellutrulling

## Tapte muligheter

ANALYTISK  
VERDI

MEDGÅTT TID = TAPTE MULIGHETER

MANGLENDE STYRING = MINKENDE RELEVANS OG VERDI

TID

Data  
prep

Bygg Modell

Omkode Modell

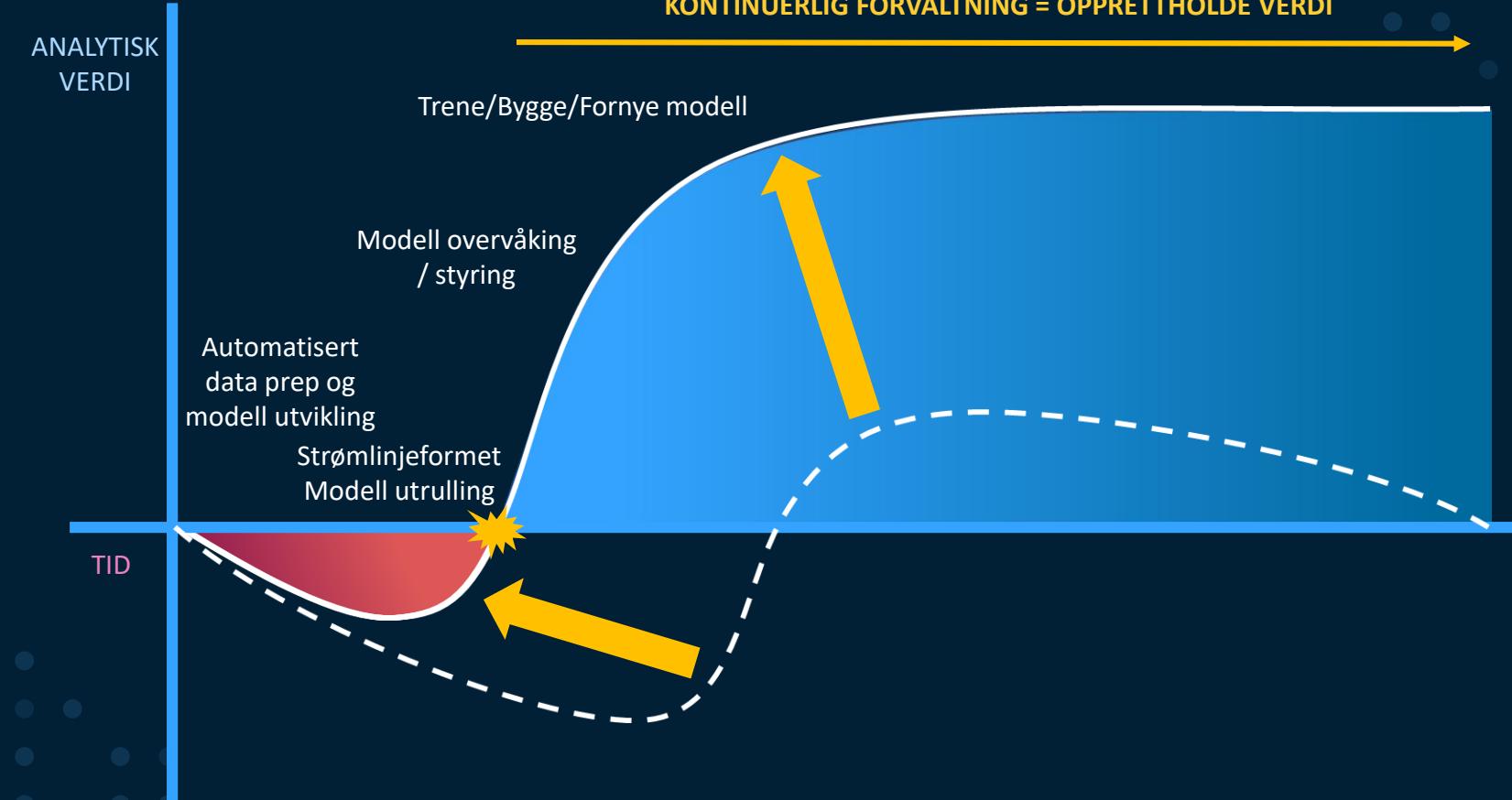
Manuell utrulling

Manglende  
Styring / Overvåking / Retrenning



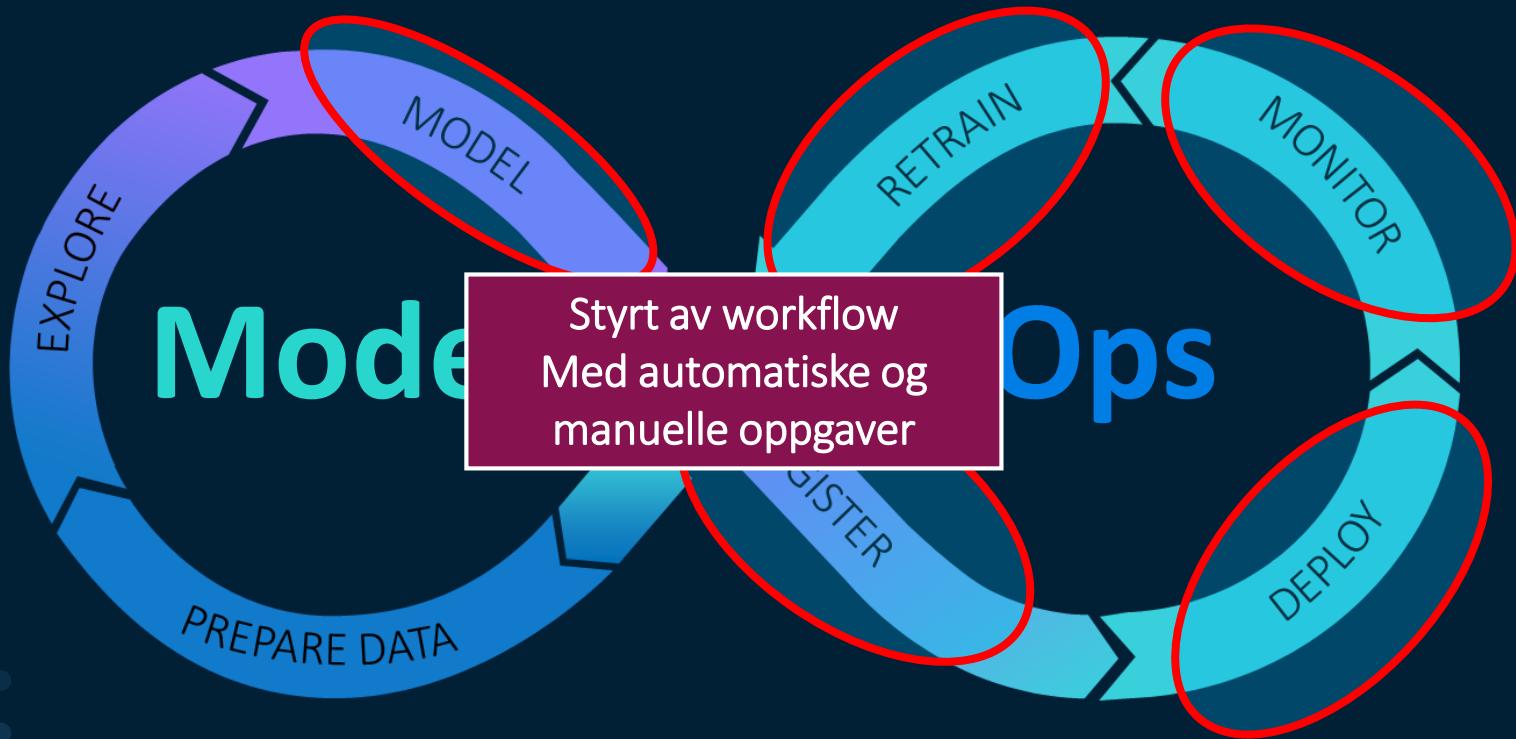
## KONTINUERLIG FORVALTNING = OPPRETTHOLDE VERDI

ANALYTISK  
VERDI



# Operasjonalisering av analyse

Analytisk livsløp og ModelOps



# Demo

sas.com

# Operasjonalisering av analyse

Analytisk livsløp og ModelOps

