



SAS® FORUM  
RUSSIA 2017

# SAS Viya, Аналитическая платформа НОВОГО ПОКОЛЕНИЯ (the new generation analytical platform)

Mathias Coopmans



The analytics economy





Internet of Things



Artificial Intelligence



Machine Learning



Deep Learning



Cognitive Computing



SAS<sup>®</sup> Viya<sup>™</sup>

Our digital transformation  
to power the analytics economy



## HPA

- Speed up highly complex algorithms
- Scheduled jobs, run in batch
- Single user



## LASR

- Repeatedly run less complex algorithms
- Interactive use of data
- Multi-user
- Hadoop integration



## SAS Viya™

- Solves use cases of HPA and LASR
- Allow processing in memory and on disk
- Deliver highly available, fault tolerant processing



# SAS® Viya™ Early adopter use cases



# Customer Use Case

## ORGANIZATION

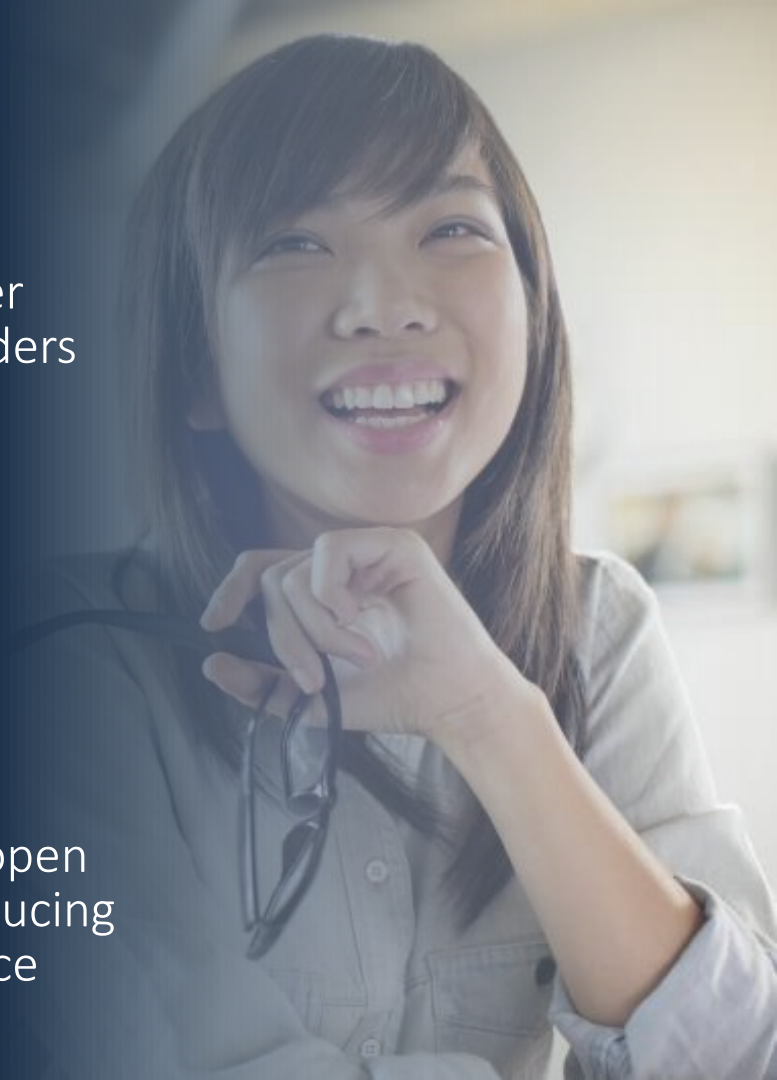
Major telco provider trying to improve customer satisfaction, reduce the occurrence of failed orders

## SUCCESS

Faster and better prediction of self install success/failure over open-source model

## BENEFIT

New algorithms in SAS Viya out-performed an open source model in both speed and accuracy – reducing failed orders and improving customer experience



# Customer Use Case

## ORGANIZATION

Technology company using predictive modelling to assist football teams with player scouting

## SUCCESS

Able to scale the training of deep learning models for image analysis and push them to production faster in real-time with single platform

## BENEFIT

Continue using open source tools, skills while speeding up time-to-market



# Customer Use Case

## ORGANIZATION

International electronic communications manufacturer using predictive modelling to assess manufacturing defects

## SUCCESS

Able to analyse parts in process from image analysis to correct production issues in-line in real-time

## BENEFIT

Detect defects sooner, correct production, and reduce scrap costs



# SAS<sup>®</sup> Viya<sup>™</sup> technical architecture

# SAS 9 architecture versus Viya architecture

SAS 9.4 products and UIs

Customer-written  
code

SAS 9.4

Metadata (WIP)-based mid-tier

MVA  
runtime

LASR / HPA  
runtimes

ESP  
runtime

In-  
database  
runtime

Customer-  
written code

SAS Viya products  
and UIs

SAS Viya

Microservices-based mid-tier

Viya MVA  
runtime  
(limited  
functionality)

CAS runtime



## Source-based Engines

### In-Stream



### In-Hadoop



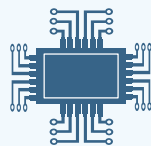
### In-Database



Parallel & Serial, Pub / Sub,  
Web Services, MQs

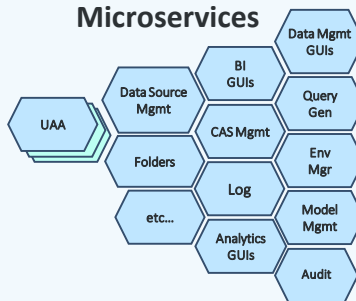
# SAS<sup>®</sup> Viya<sup>™</sup>

## In-Memory Runtime Engine



## Cloud Analytics Services (CAS)

## Microservices



## Solutions

Customer Intelligence



Analytics



Risk Management



Business Visualization



Fraud and Security Intelligence



Data Management



## APIs



## Platform



CLOUDFOUNDRY



docker



ANSIBLE



rpm



Google Cloud Platform



openstack<sup>™</sup>

CLOUD SOFTWARE

vmware

ORACLE<sup>®</sup>

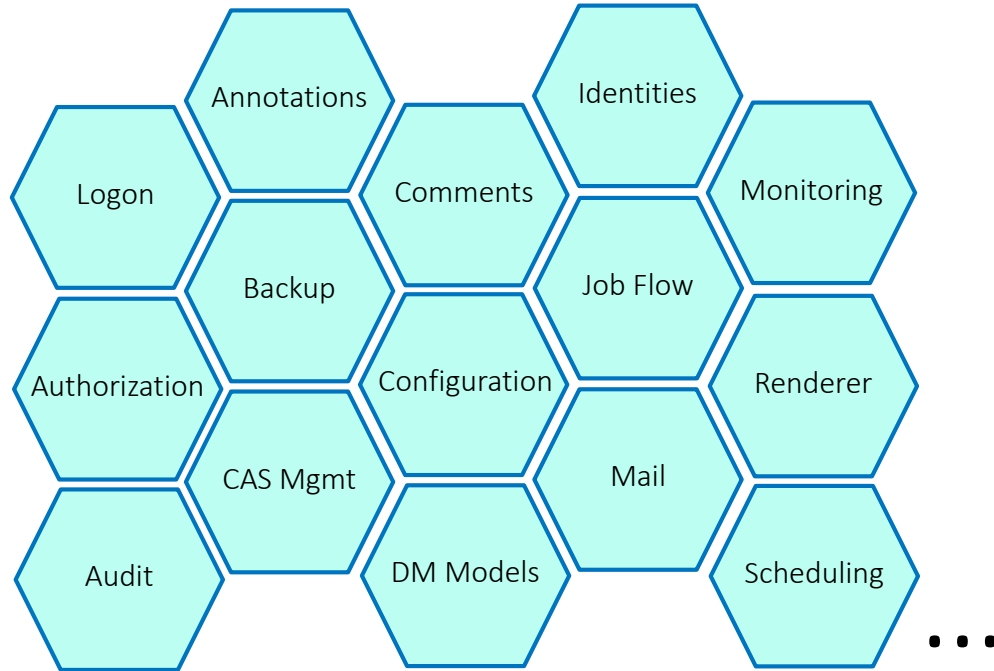
CLOUD



# SAS® Viya™ Service Architecture

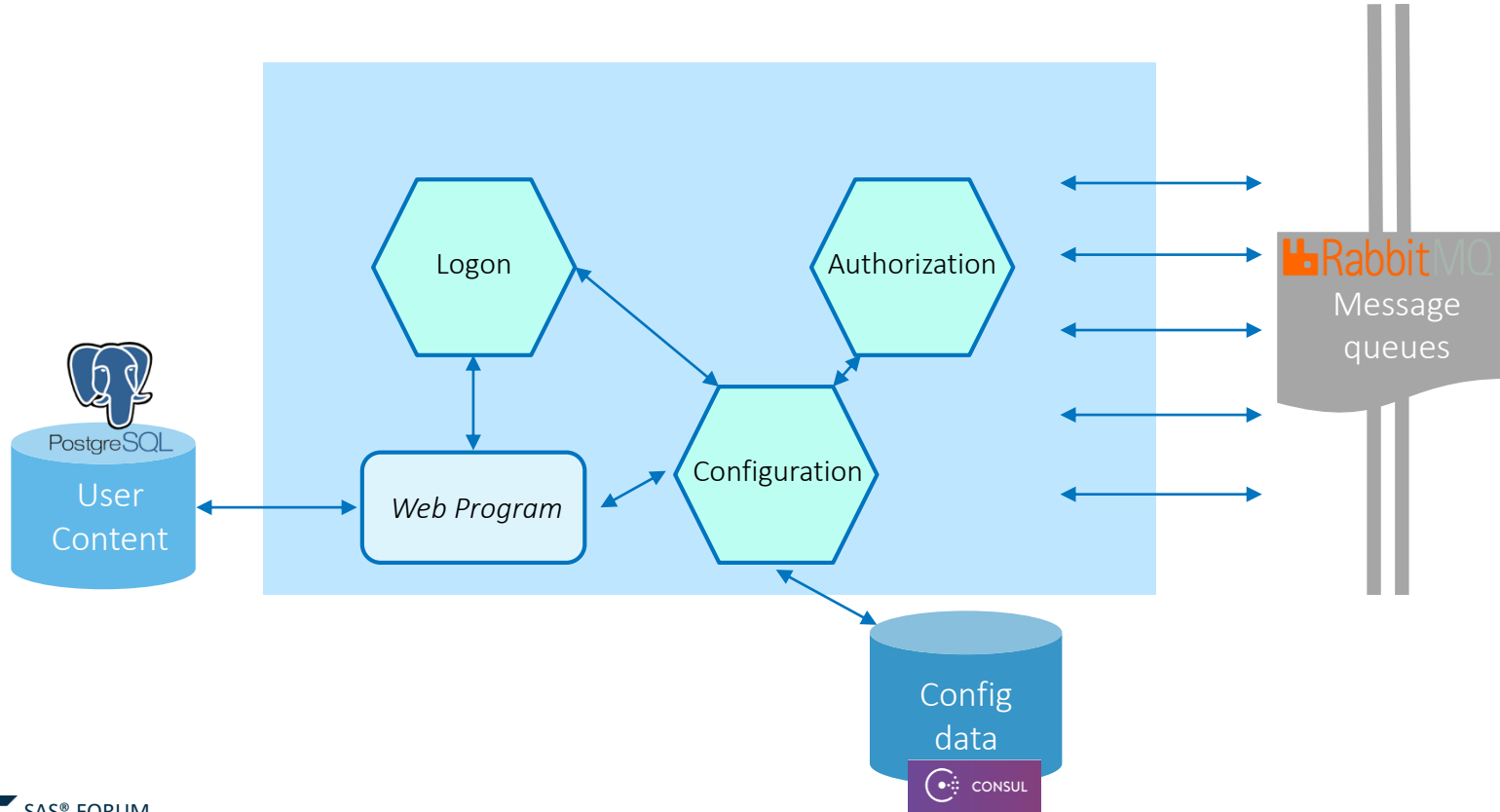
## Microservice Theory and Principles

- Small in focus, if not in size
- Independently updatable



# Viya Service Architecture

## Persistent Data with Stateful Services



# Environment Manager

«

Home

Recent

Reports

SAS Theme Designer

SAS Visual Analytics

SAS Visual Data Builder

SAS Environment Manager

Dashboard

Users

Data

Content

Resources

Security

SAS® Environment Manager - Dashboard

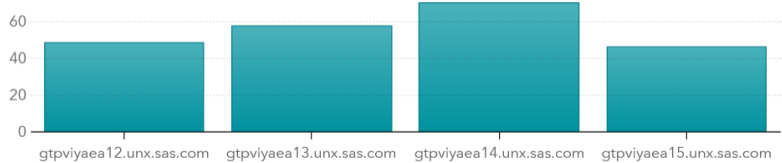
Search

viyademo0

CAS System Health

Node Memory Usage CPU Load

Memory Usage (GB)



Node	Memory Usage (GB)
gtpviyaea12.unx.sas.com	~50
gtpviyaea13.unx.sas.com	~58
gtpviyaea14.unx.sas.com	~68
gtpviyaea15.unx.sas.com	~48

Node

Custom Groups


Name	Members
Data Builders	37
SAS Administrators	1
Theme Designers	1
Esri Users	0
Application Administrators	0

Services

Total services: 59

Category	Total	Availability
CAS	1/1	✓
Application	54/54	✓
System	4/4	✓

Mobile Device Access



Status	Count
Successful	1

1 Successful

The blacklist is currently being enforced.

Top 10 Tables: SAS Infrastructure Data Server

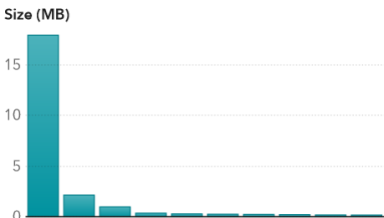


Table	Size (MB)
Table 1	~18
Table 2	~2
Table 3	~1
Table 4	~0.5
Table 5	~0.2
Table 6	~0.1
Table 7	~0.1
Table 8	~0.1
Table 9	~0.1
Table 10	~0.1

Table

Servers

Server ID	Machine Address	State
cas-shared-default	gtpviyaea12.unx.sas.com...	●

## Source-based Engines

### In-Stream



### In-Hadoop



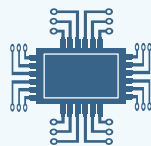
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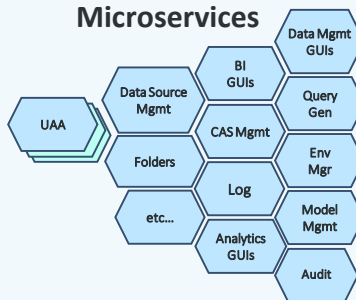
# SAS<sup>®</sup> Viya<sup>™</sup>

## In-Memory Runtime Engine



## Cloud Analytics Services (CAS)

## Microservices



## Solutions

Customer Intelligence



Analytics



Risk Management



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Data Management



## APIs



## Platform



CLOUDFOUNDRY



docker



ANSIBLE



rpm



Google Cloud Platform



openstack<sup>™</sup>

CLOUD SOFTWARE

vmware

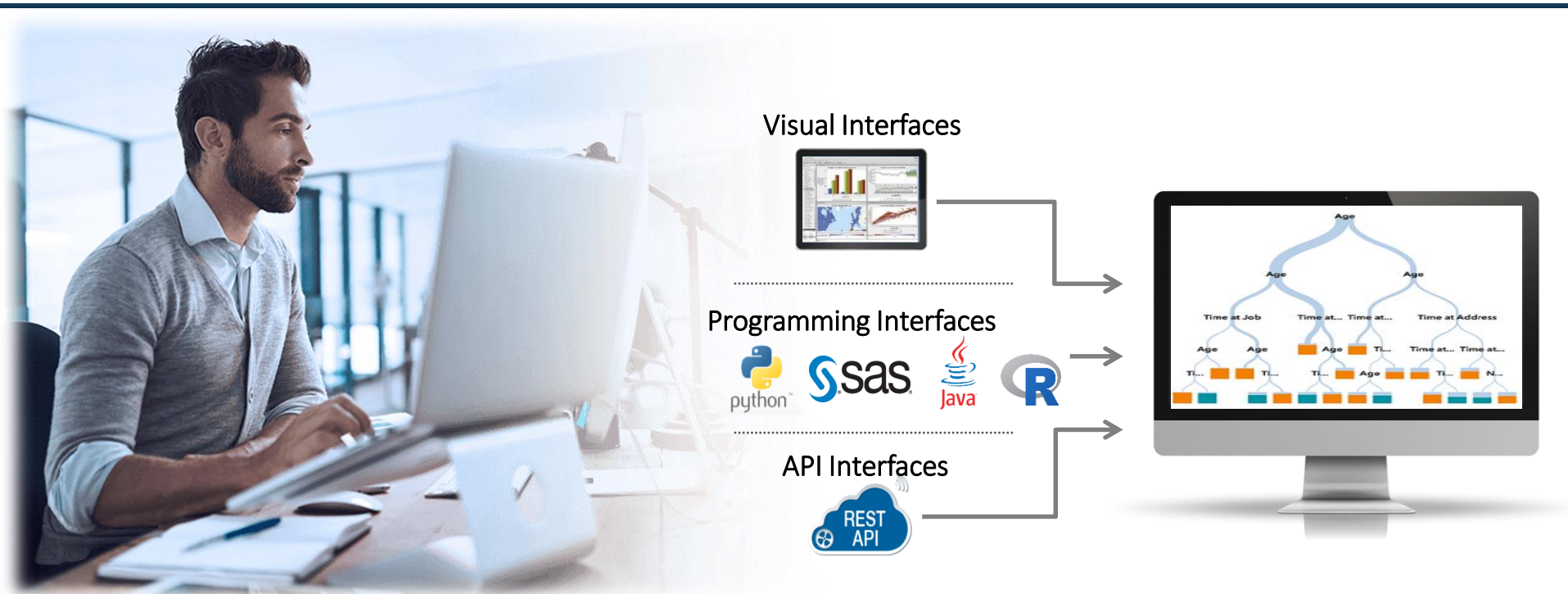


CLOUD






# MULTIPLE INTERFACES, ONE CODE BASE




# Open Source Repository

## <https://github.com/sassoftware>

 Features Business Explore Marketplace Pricing

This organization Search Sign in or Sign up



## SAS Software

Open Source from SAS Software

Cary, North Carolina, USA <https://www.sas.com/> [github@sas.com](mailto:github@sas.com)

Repositories People 15

Pinned repositories

### [sas\\_kernel](#)

A Jupyter kernel for SAS. This opens up all the data manipulation and analytics capabilities of your SAS system within a notebook interface. Use the Jupyter Notebook interface to execute SAS code a...

Jupyter Notebook ★ 64 🍴 26

### [dm-flow](#)

Library of SAS Enterprise Miner process flow diagrams to help you learn by example about specific data mining topics.

★ 26 🍴 21

### [sas-viya-programming](#)

Code samples and materials to help you learn to access SAS Viya services by writing programs in Python and other open-source languages

Jupyter Notebook ★ 28 🍴 20

### [sas-prog-for-r-users](#)

Teaching and lab materials for the "SAS Programming for R Users" course, including course notes, data, and code.

SAS ★ 15 🍴 11

### [saspy](#)

A Python interface module to the SAS System. It works with Linux, Windows, and mainframe SAS. It supports the `sas_kernel` project (a Jupyter Notebook kernel for SAS) or can be used on its own.

Jupyter Notebook ★ 44 🍴 24

### [python-swat](#)

The SAS Scripting Wrapper for Analytics Transfer (SWAT) package is the Python client to SAS Cloud Analytic Services (CAS). It allows users to execute CAS actions and process the results all from Py...

Python ★ 21 🍴 11

# SAS platform strategy

9.4 & ™

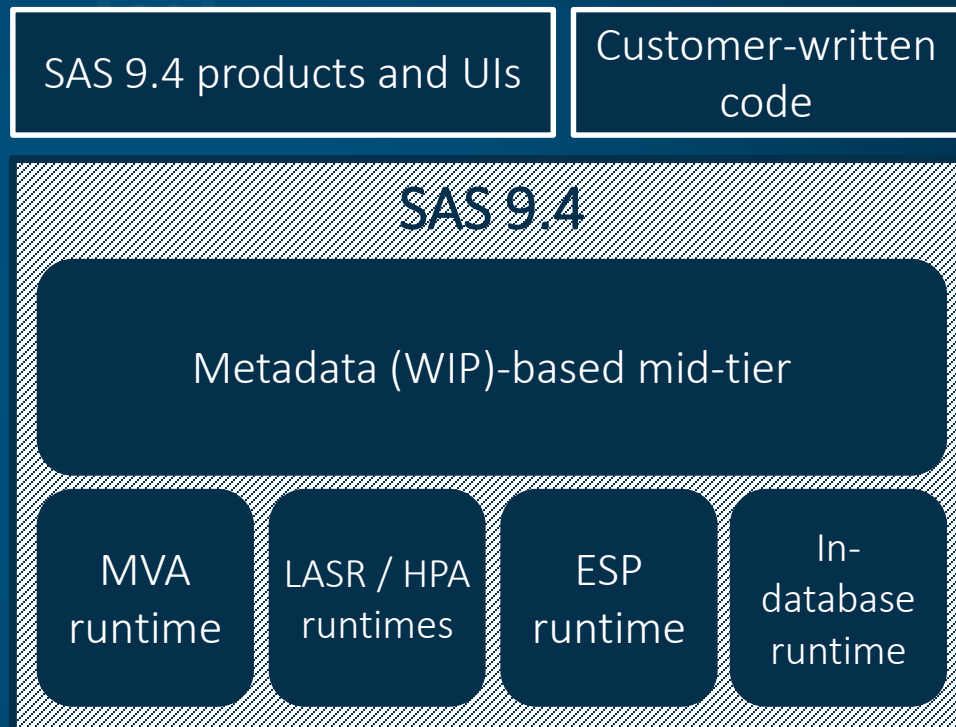
SAS Viya

The SAS platform

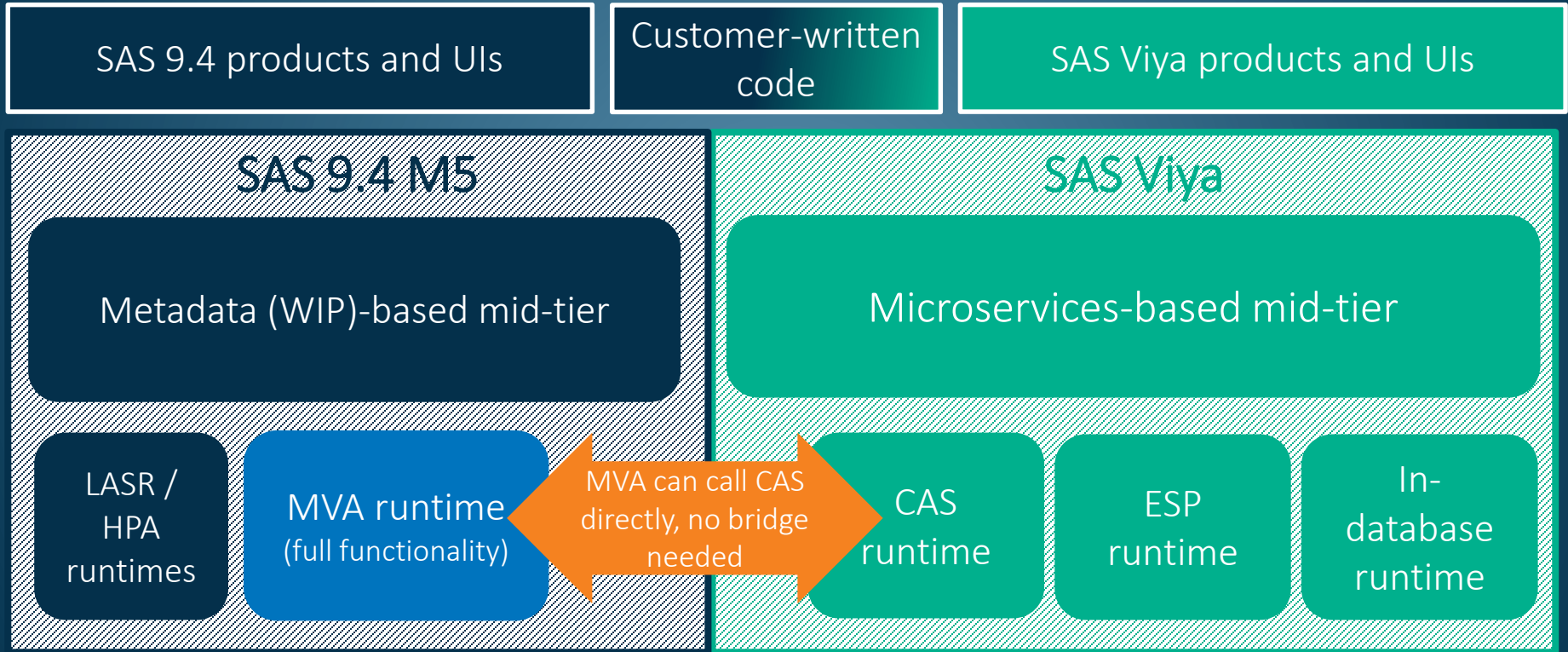
SAS 9

# The SAS 9.4 platform

- Support for any analytics use case
- Broad and extensive customer base in production
- Modernization needed to adapt to changing technology, business trends



# September release platform architecture





# What Comes Next?

AI and cognitive computing

Intelligent automation

Networked data

Ambient analytics



# SAS® 9 and SAS® Viya™ Roadmap

*Information is subject to change.*

## H2 | 2017

### SAS 9.4 M5 (Q3)

- SAS 9 & SAS Viya interoperability
- Product releases on 9.4 M5

### SAS Viya 3.3 (Q4)

- Visual product family 8.2
- Programming products 8.2
- New offerings include:
  - Visual Text Analytics
  - Model Manager
  - Data Preparation
  - Data Quality
- Visual Investigator 10.3

## H1 | 2018

### Releases on SAS 9.4 M5

- Small set of solutions require re-release

### Viya Deployment Releases

- SuSE Linux
- Cloud automation
- Cloud Foundry update
- Scripted deployment into AWS, Oracle Cloud

### SAS Viya 3.4

- Integration, Stability, Performance, Modernization, Transition, and Automation
- New product releases
- Incremental product updates

## H2 | 2018

### SAS 9.5

- Advanced data types
- Hardened security
- 3<sup>rd</sup> party update

### Releases on SAS Viya 3.4

- Updated product versions
- New offerings

# Thank you!

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