

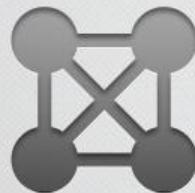
# Moving beyond 9.3

## *Key technology drivers and related investment areas*

---

Andreas Diggelmann, VP R&D, Planning, Operations & Strategy.

# 5 GOALS



# 5 GOALS FOR SAS R&D



01.  
**High-  
Performance  
Computing**

02.  
**Process  
Automation**

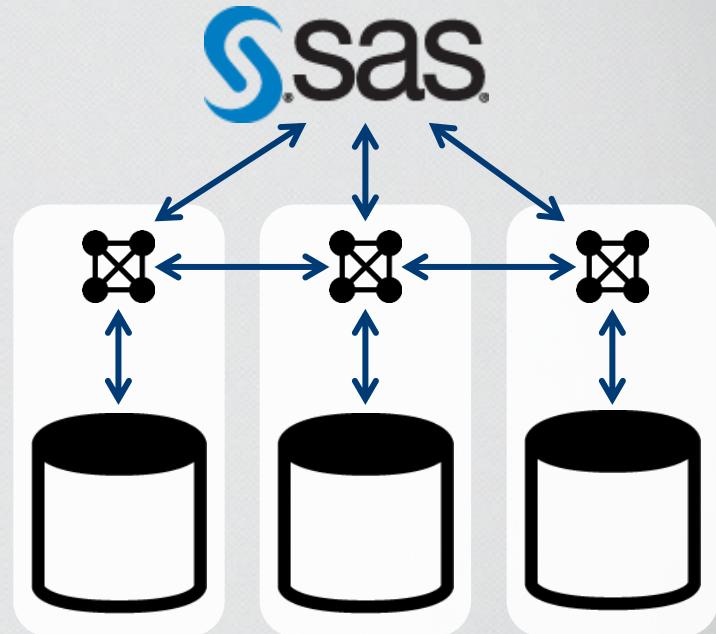
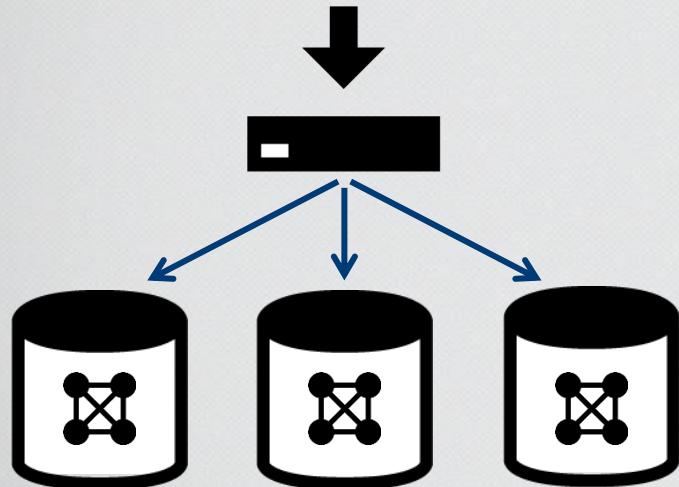
03.  
**Business  
Visualization**

04.  
**Data  
Management**

05.  
**SaaS**



# New Architectures



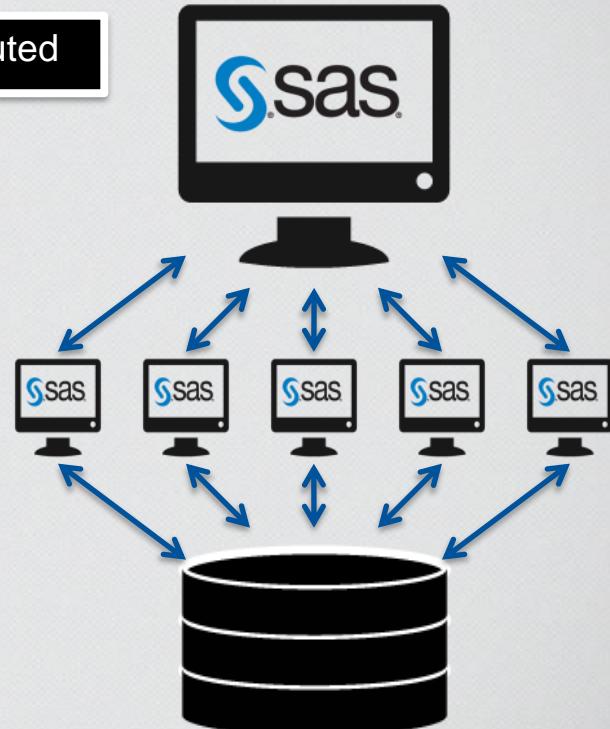
# Divide and Conquer

*“Shared Storage”*

Traditional

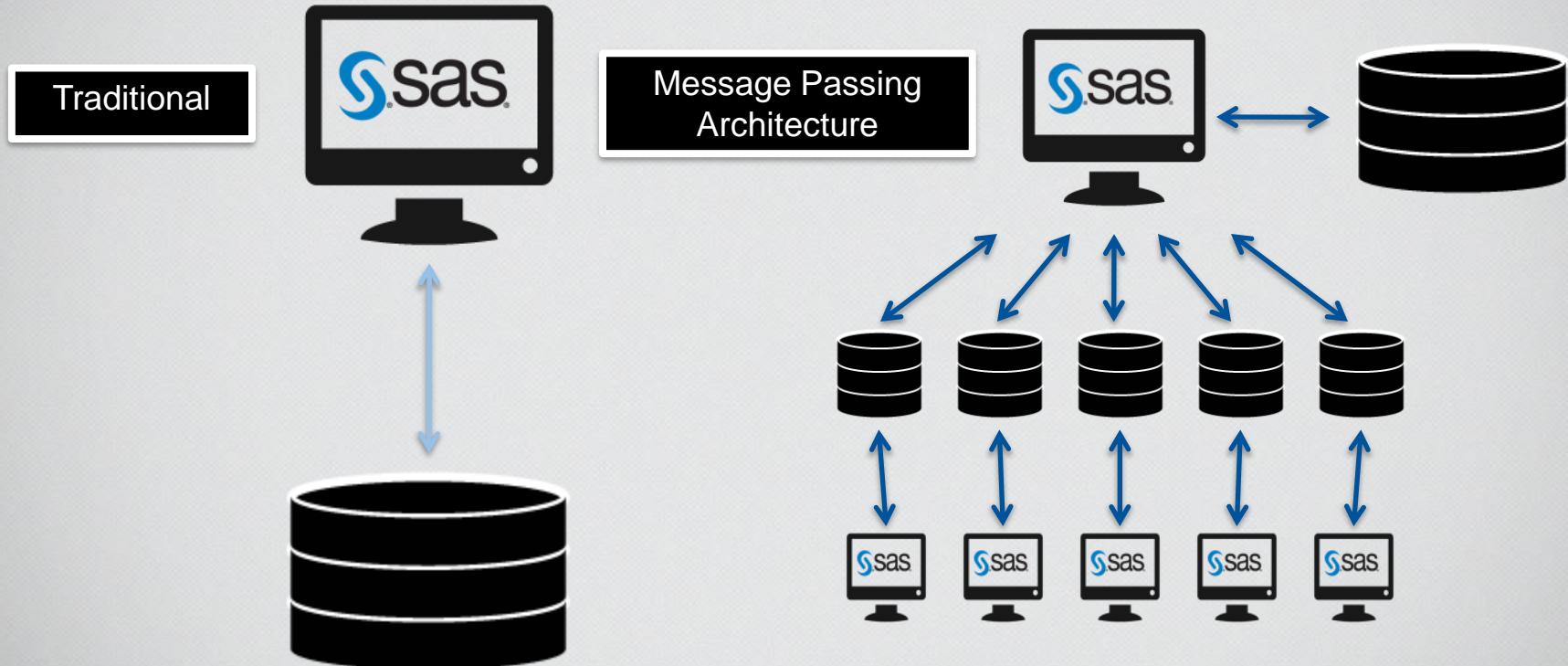


Distributed



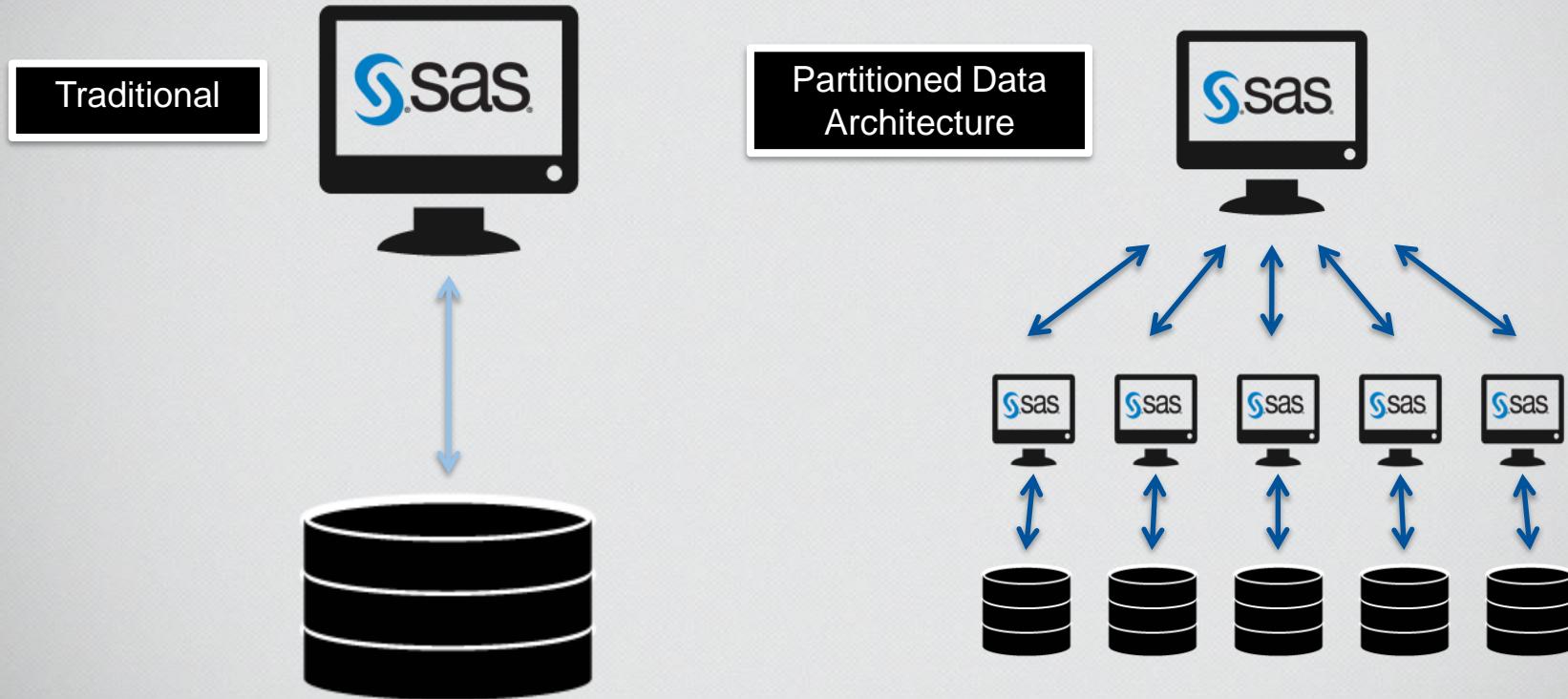
# Divide and Conquer

*“Move Data to Compute”*

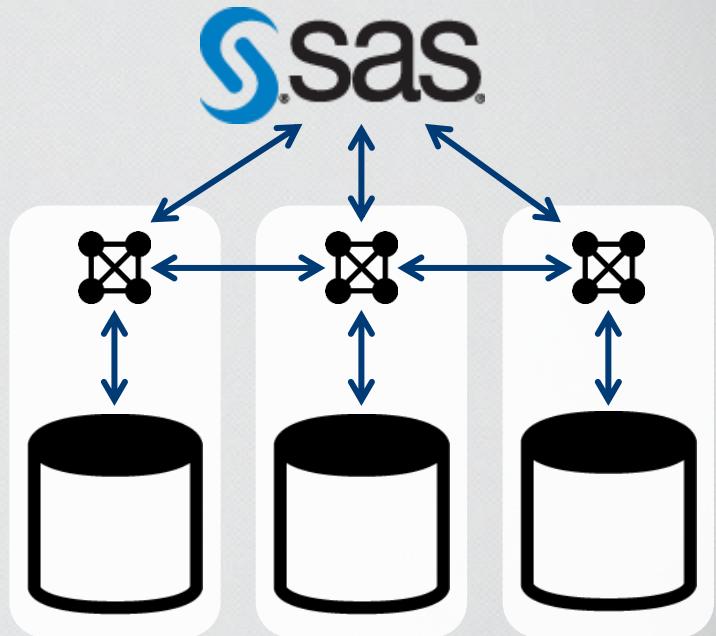
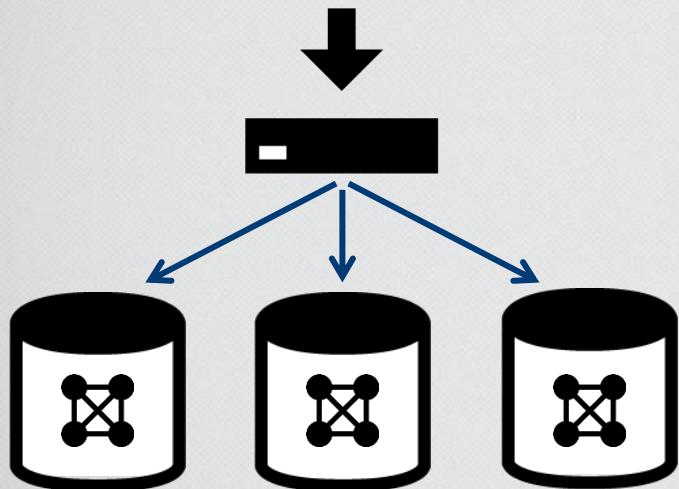


# Divide and Conquer

*“Move Compute to Partitioned Data”*

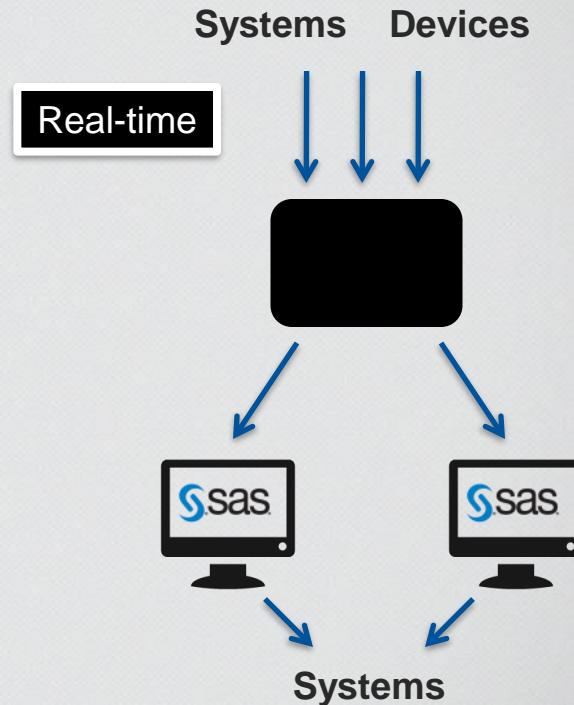
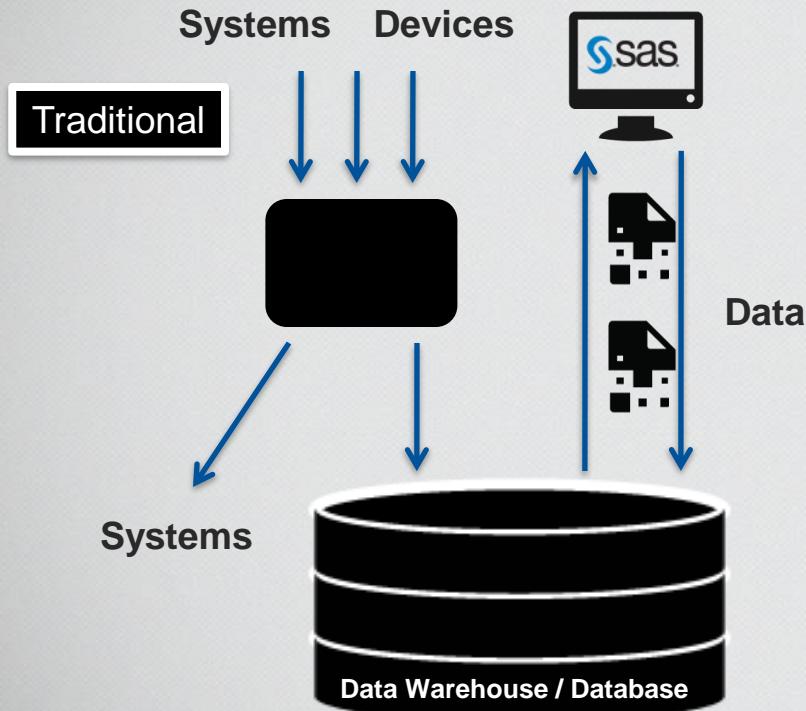


# In-DB vs. Alongside-DB



# Real-Time/Streaming/CEP

*“Adding Present to Past/Future”*



# 5 GOALS FOR SAS R&D



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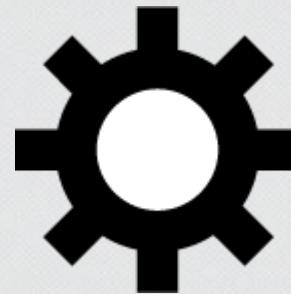
05.  
**SaaS**



# Process Automation



1. Workflow



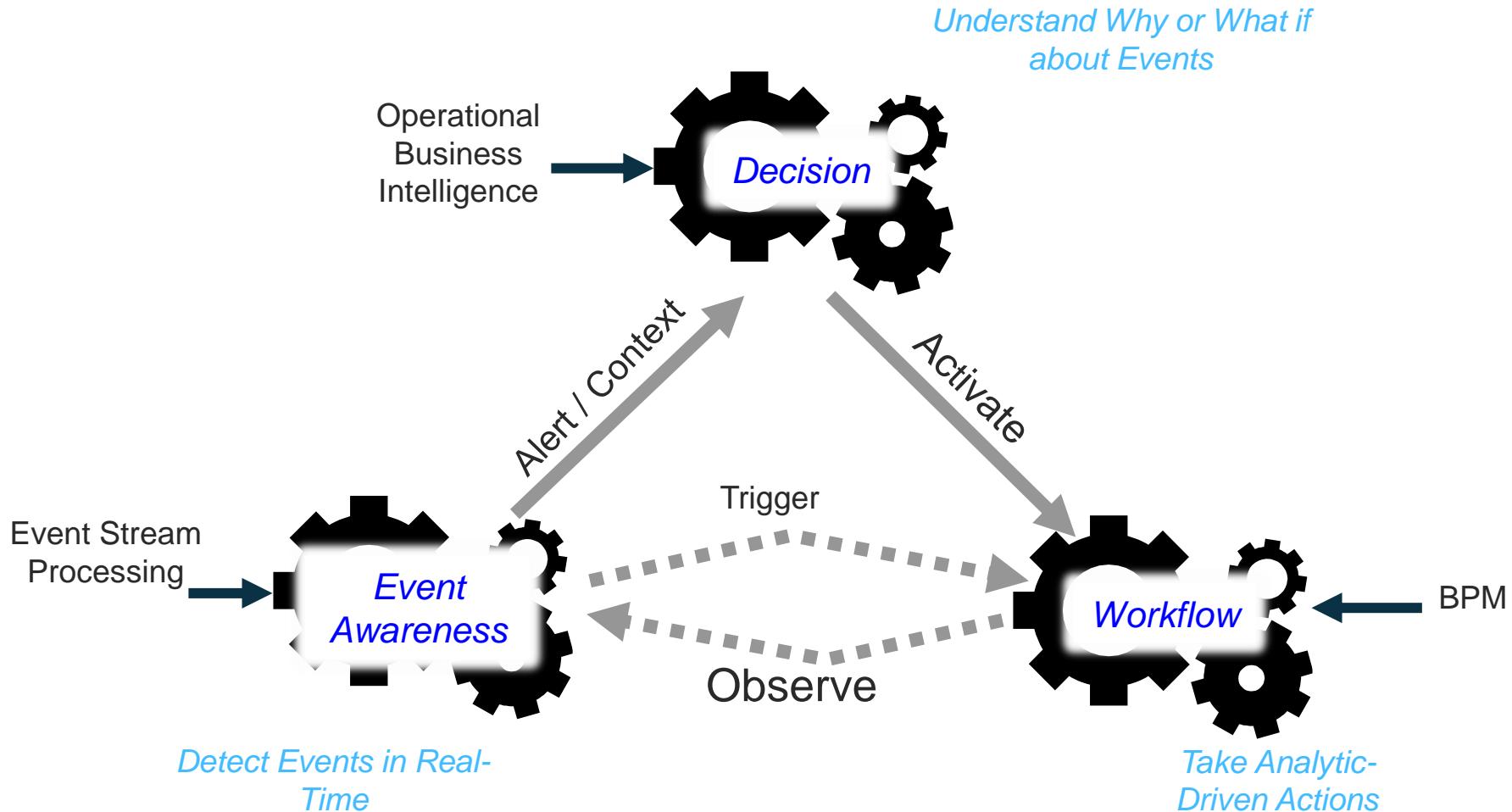
2. Rules



3. Quality



# Overview: Rules, Workflow, and Analytics



# 5 GOALS FOR SAS R&D



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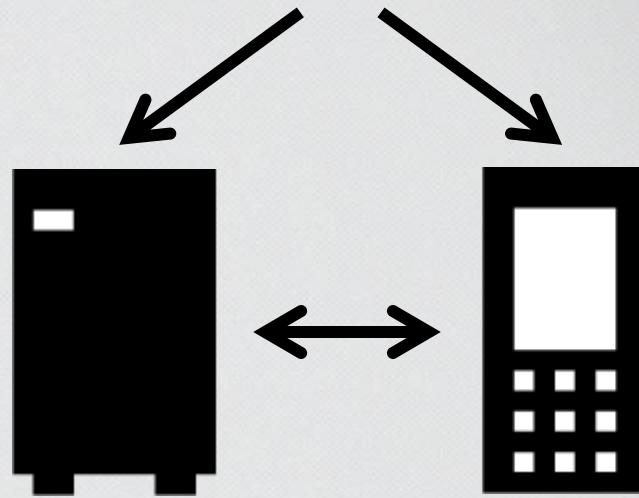
05.  
**SaaS**



# Business Visualization



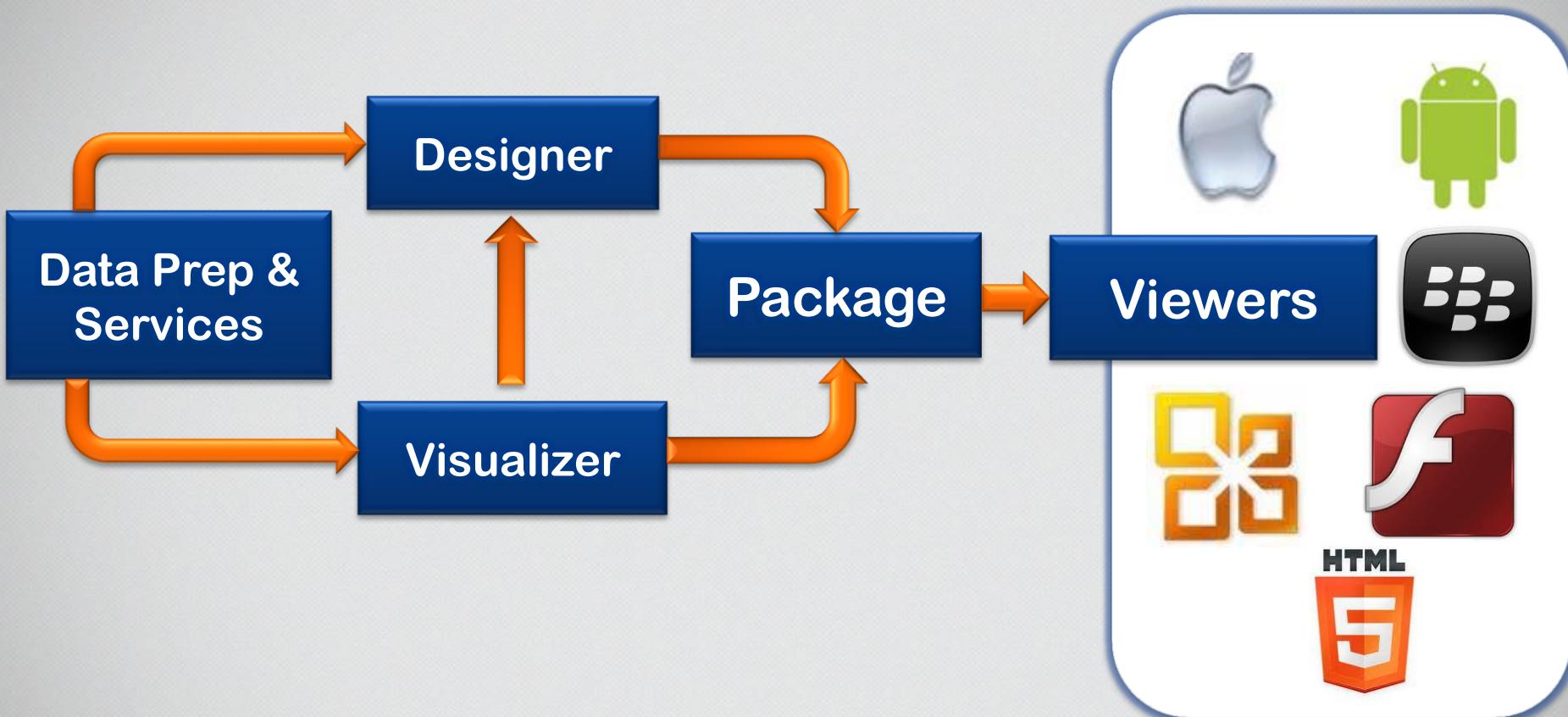
1. Discovery



2. Delivery

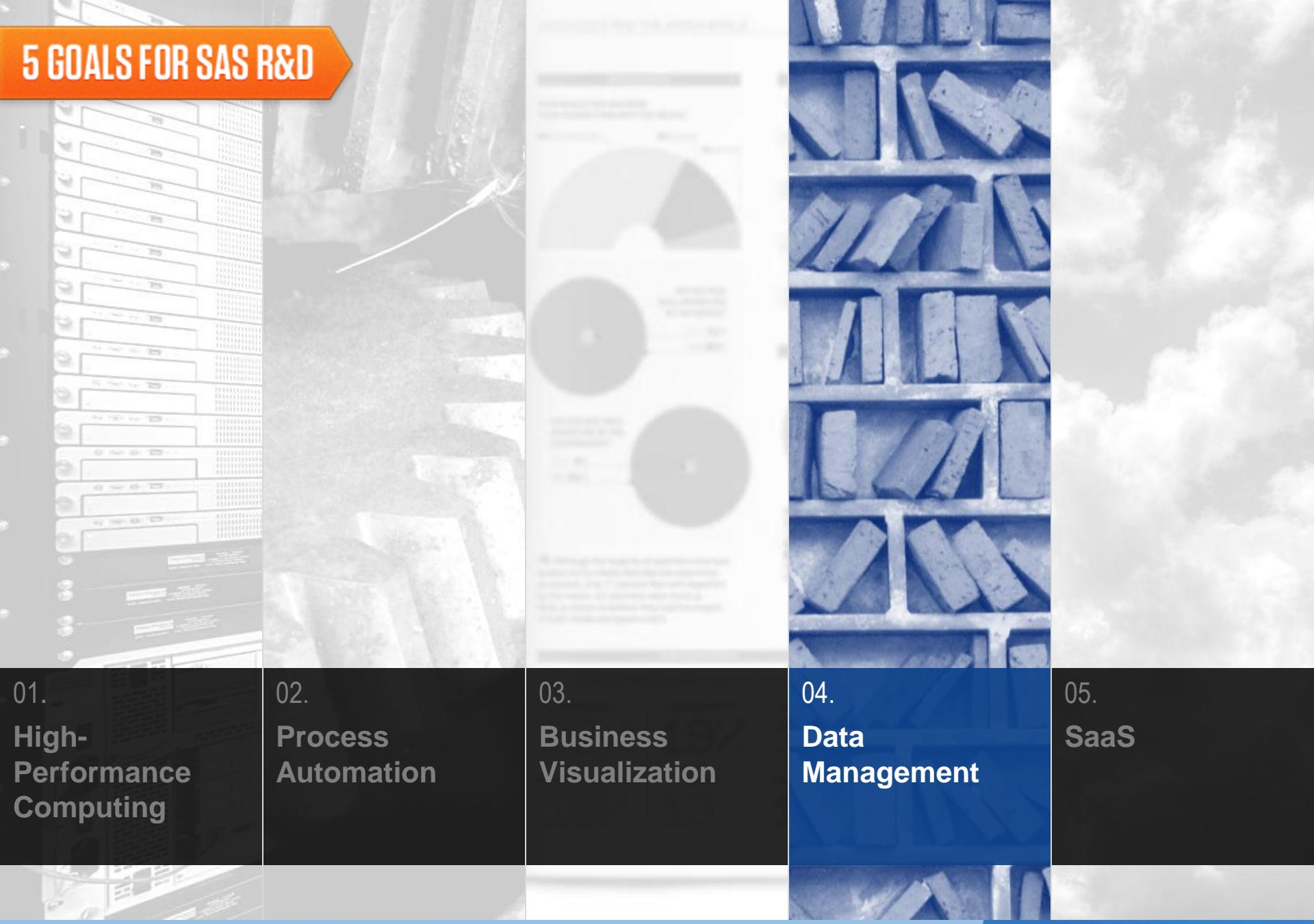


# Next Generation BI Framework



Collaboration & Search Services

# 5 GOALS FOR SAS R&D



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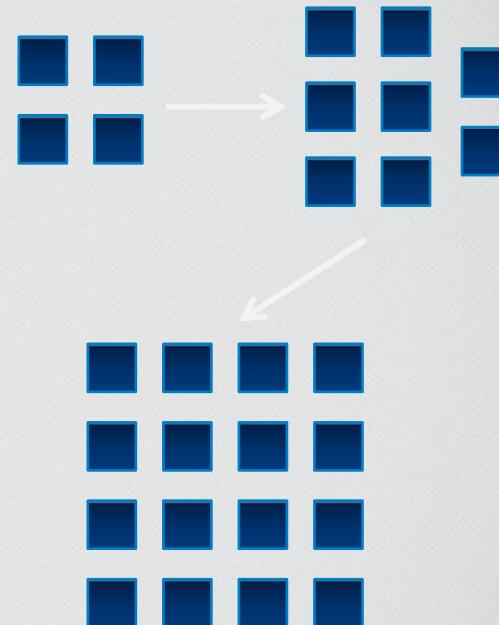
05.  
**SaaS**

# Explosion of Structured Data

2009 — 2011



Jan 1 — Jan 8



Currently, tech info  
doubles every **2 YEARS**.

It is forecasted to double  
every **3 DAYS**.



5 GOALS FOR SAS R&D

# Explosion of Unstructured Data



facebook

December 2010

cr. Paul Butler, Facebook

# Big Data & DM Architectures

## DI/DQ

Bulk Data Movement  
Transformations  
Data Quality Rules  
Data Access

## CEP

Continuous Views  
Transformations  
Data Access  
Source Feeds  
Pub/Sub Interface

## MDM

Entity Models  
Survivorship Rules  
Workflow  
Hierarchy Management  
Business Rules  
Data Quality Rules  
Data Access

## Federation

Data Virtualization  
Caching  
Data Access  
Pub/Sub Interface

Business Rules, Transformations, Data Quality Rules

Data Connectivity

Metadata



# Data Management Platform

## Data Integration Toolbox

### Data Services SOA

#### Metadata Management & Metadata Exchange

#### Data Integration Tools

ETL/ELT

Data Federation

Data Exploration

Data Profiling

Metadata Management

Data Quality

Master Data Management

#### Data Access

#### Administration, Scheduling, Versioning, Deployment



## Data Management Platform

### Metadata Exchange and Collaboration

#### Data Quality

- Data Exploration
- Data Profiling
- Entity Resolution
- Business Rule Creation and Management
- Verification, Normalization, Standardization, Transformation
- Data Monitoring
- Hierarchy Management
- Data Enrichment

#### Data Integration

- Data Transformation
- ETL/ELT
- Data Synchronization
- Data Migration
- Analytic Data Preparation
- Business Rule Execution
- Merging and Clustering

#### Master Data Management

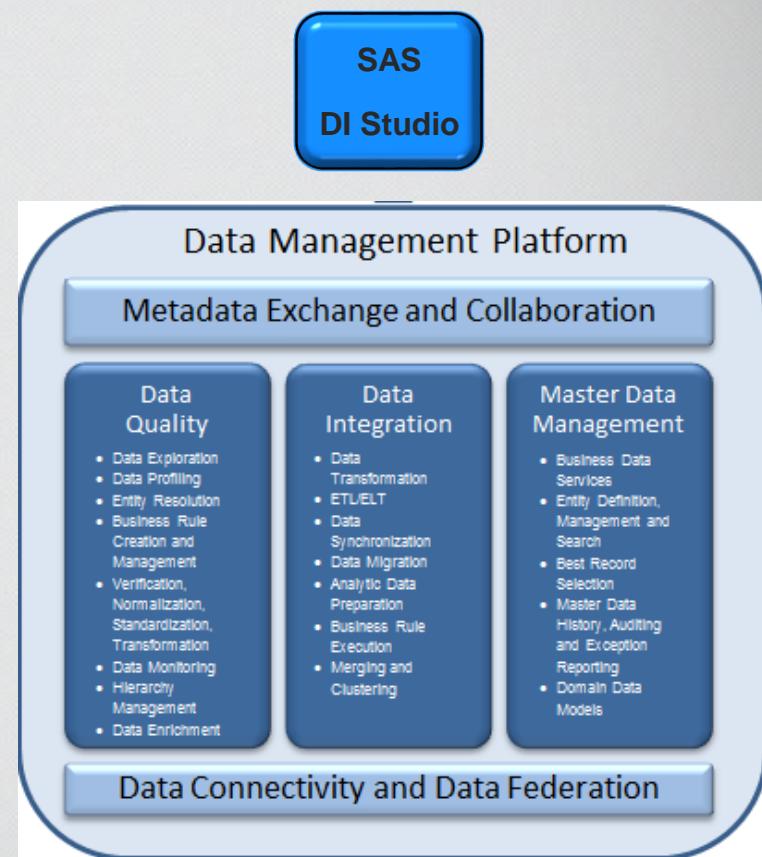
- Business Data Services
- Entity Definition, Management and Search
- Best Record Selection
- Master Data History, Auditing and Exception Reporting
- Domain Data Models

### Data Connectivity and Data Federation



# Long Term Vision

- SAS DI Studio
  - » Perceived as 'Visionary' technology by Analysts and Customers.
  - » Enterprise class data integration capabilities
  - » Direct access to the 'power' of BASE SAS
- Moves into Data Management Platform
  - » Single environment for
    - » Data Quality
    - » Data Integration
    - » Master Data Management
  - » Workflow
    - » Parallel Processing Orchestration
    - » Conditional Execution
  - » Enhanced ELT
  - » Data Dictionary



# 5 GOALS FOR SAS R&D



01.  
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Visualization**

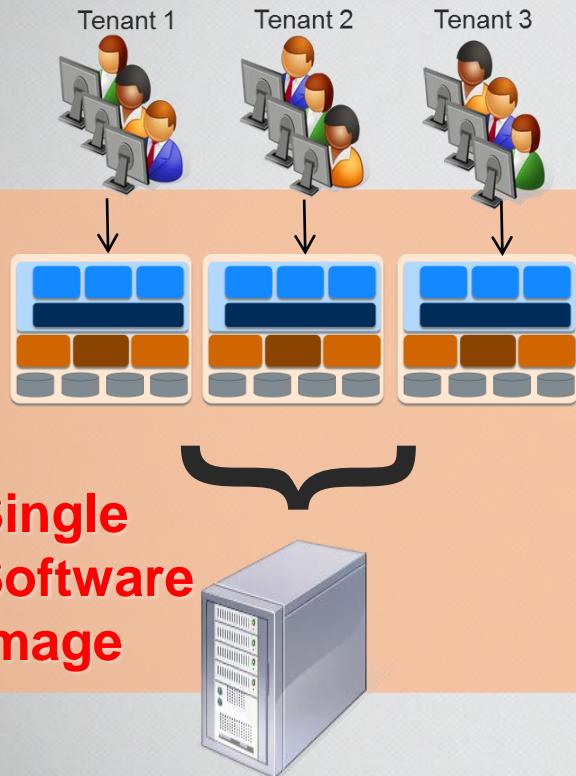
04.  
**Data  
Management**

05.  
**PaaS / SaaS**



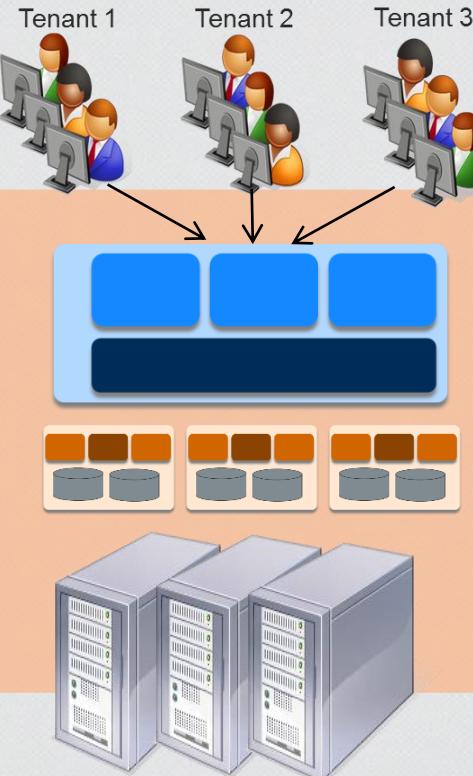
# SaaS multi-tenancy models

## Separate (Virtual) Infrastructure



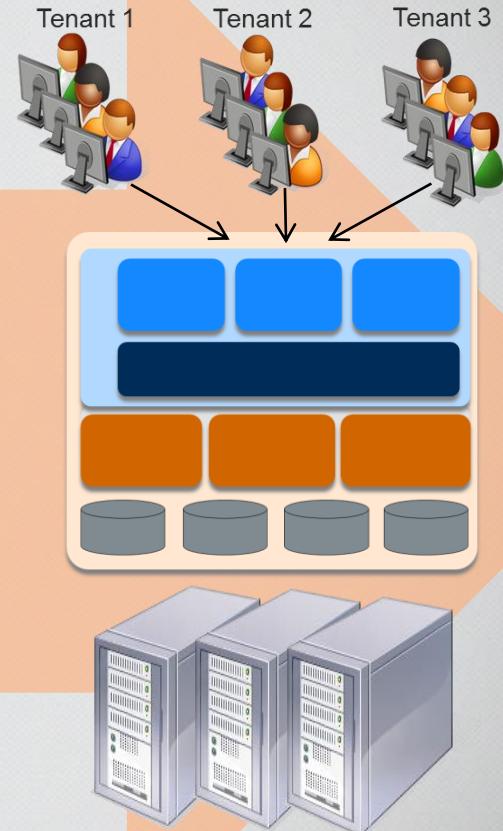
Level 1

## Hybrid: Shared apps, separate SAS servers

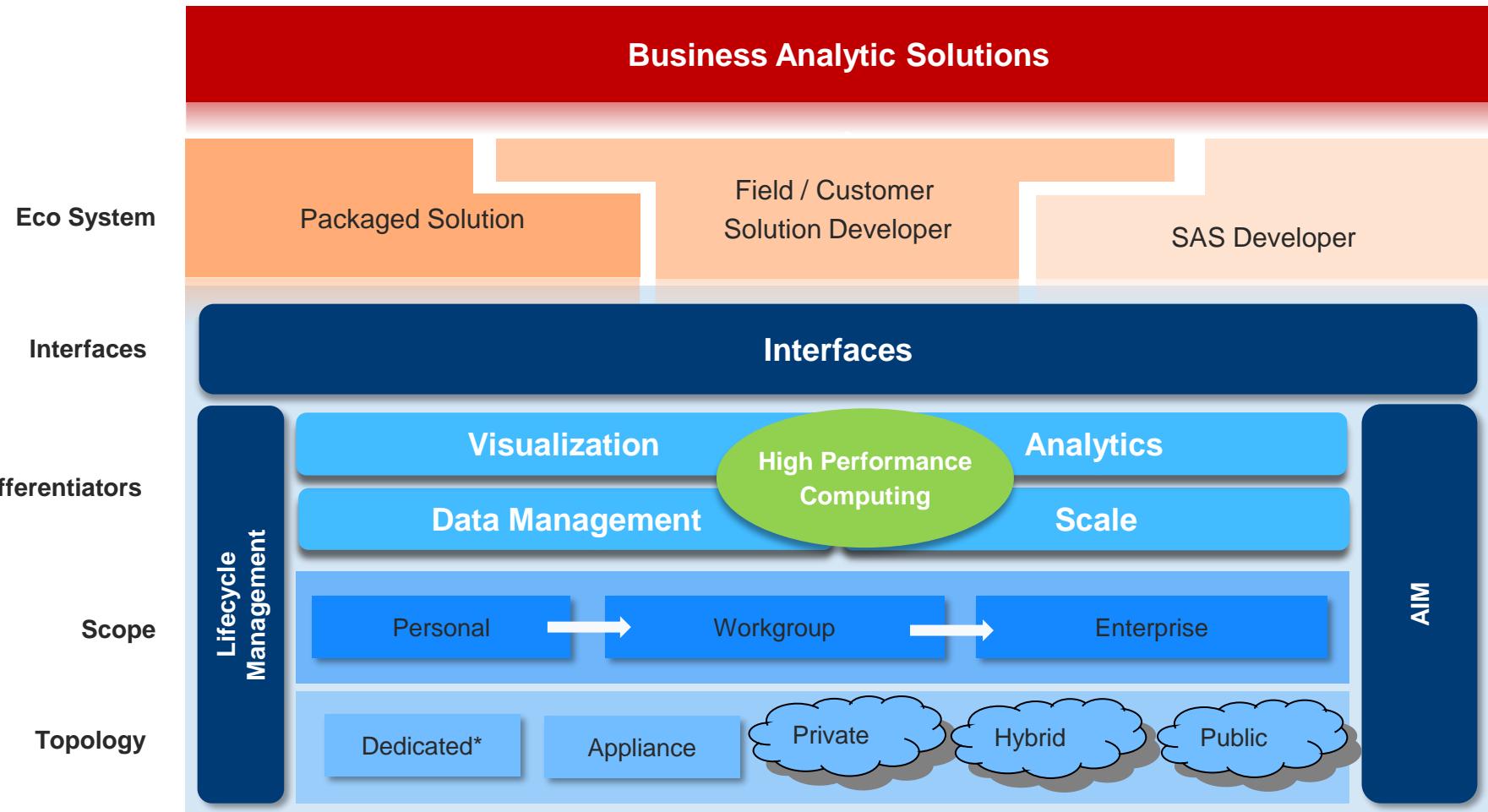


Level 2

## Full Multi-Tenancy



Level 3



# Cloud Environment

## Subscriber Portal

- Subscribe/purchase
- User management
- App config/setup
- Monitoring/auditing
- SLA reporting

## Provider Portal

- Marketing/Pricing
- Tenant management
- Contracting/billing
- SLA management
- Provisioning

## Security Framework



# Cloud Environment + SaaS

## Subscriber Portal

- Subscribe/purchase
- User management
- App config/setup
- Monitoring/auditing
- SLA reporting

SAS  
Solution

SAS  
Solution

## Integration Layer

- Service APIs
- Workflow & rules
- Content

## Application Platform

- App server
- SAS servers
- Database/storage

Security  
Framework

## Provider Portal

- Marketing/Pricing
- Tenant management
- Contracting/billing
- SLA management
- Provisioning



# Cloud + PaaS (AppDev Cloud)

PaaS (AppDev Cloud)

## App Lifecycle Management

- Versioning
- Testing
- Deployment
- Monitoring
- Promotion

Browser-based IDE

Eclipse IDE

## Integration Layer

- Service APIs
- Workflow & rules
- Content

## Application Platform

- App server
- SAS servers
- Database/storage

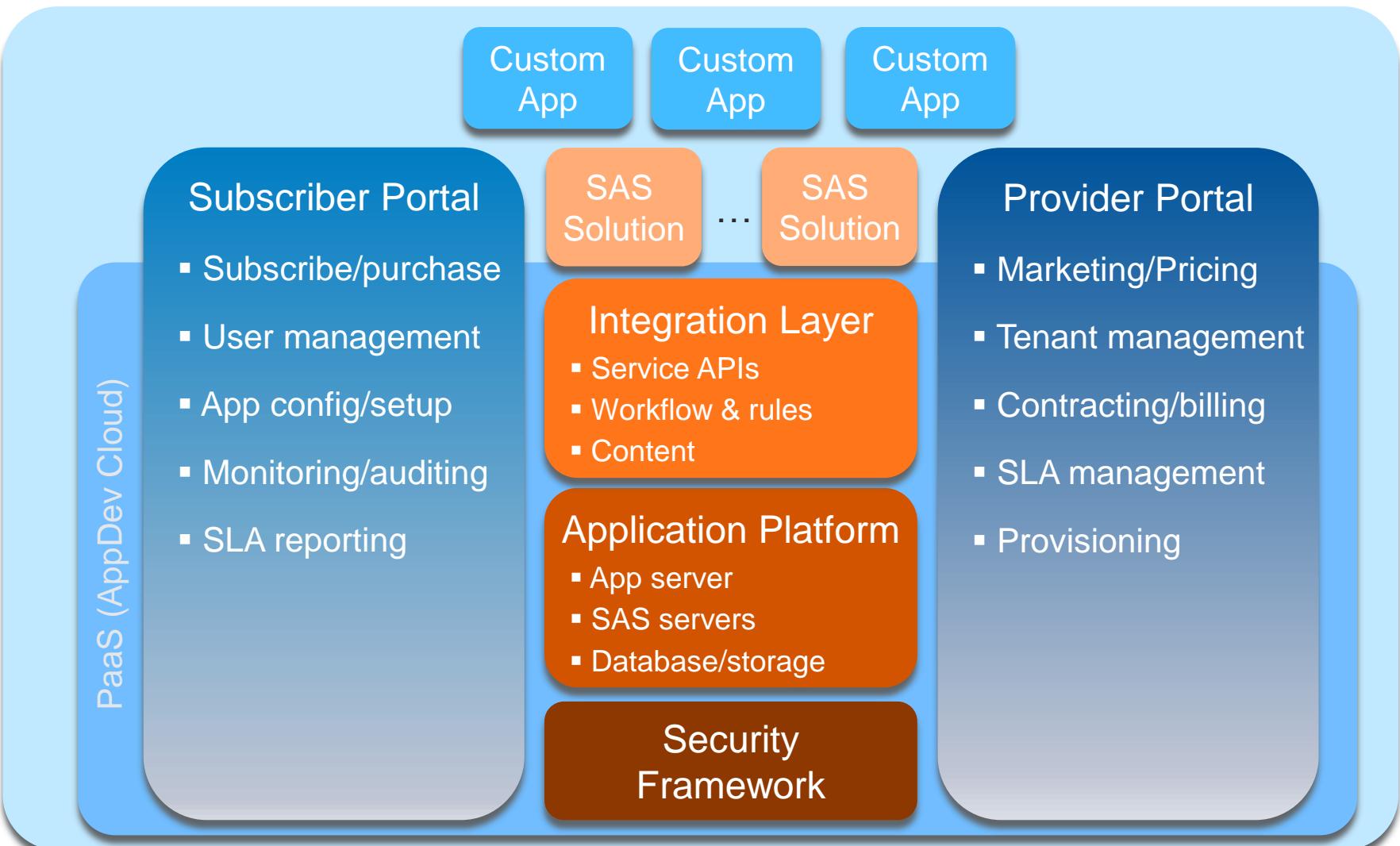
## Security Framework

## SAS App Store

- Apps
- Workflows
- Customizing



# Custom apps running on the cloud



# Vielen Dank für Ihre Aufmerksamkeit.



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