



SAP Data Hub/Intelligence

SBN Conference 2019

Stein Tronstad, SAP
October 23, 2019

PUBLIC



Agenda – Data Hub/Intelligence

- (Short) Overview
- (Short) Functionality
- (Short) Architecture
- Use cases



Bringing together enterprise applications and intelligent technologies

New Opportunities and new challenges

Enterprise Applications

Operationalize and maintain intelligent enterprise applications to assist in solving enterprise challenges in a sustainable way

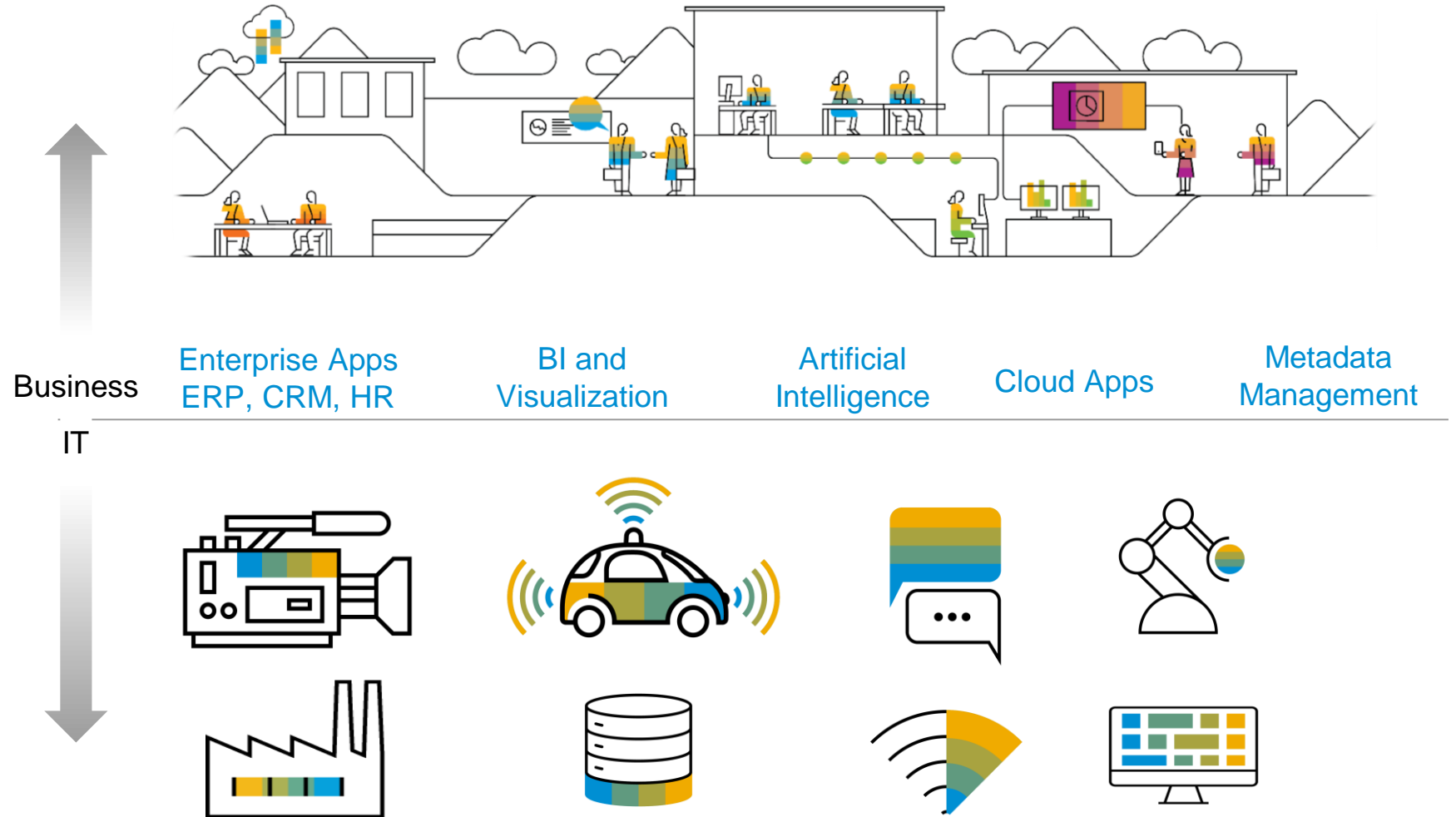
Intelligent Technologies

Harness intelligent technologies to create and enrich enterprise applications

Data Management

Take care of

- different data types
- data governance
- data integration
- orchestration of data processing



Various data sources

What is SAP Data Intelligence & SAP Data Hub?

Create data pipelines to leverage your data projects and orchestrate the data integration processes

Harness the advanced machine learning content to accelerate and scale and automate your Data Science projects

Manage metadata across a diverse data landscape and create a metadata repository



One solution to support the End-to-End workflow of delivering intelligent enterprise applications and business processes



Access & connect data



Govern & discover data



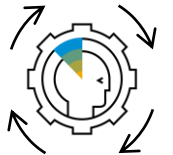
Prepare & manage data



Build scalable & flexible data processes



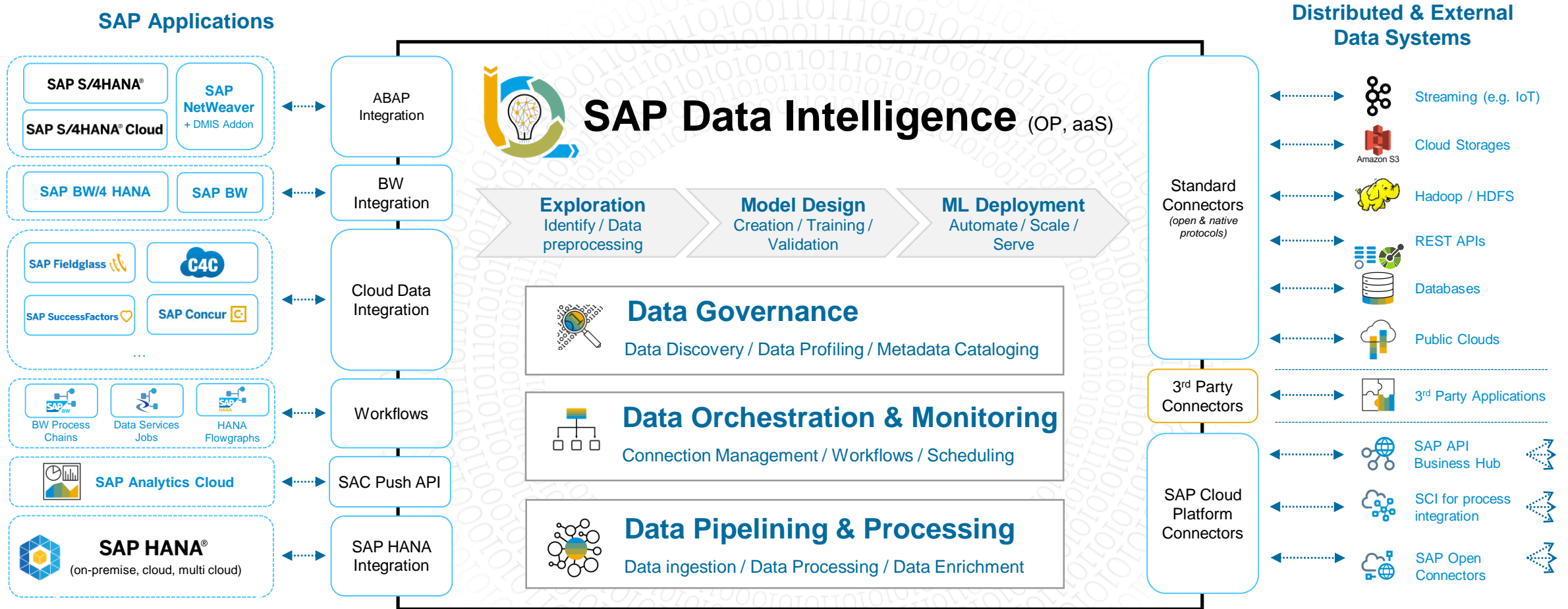
Deploy & integrate intelligent scenarios



Monitor & orchestrate the lifecycle

SAP Data Intelligence

End to End Data Integration and Processing



Data Governance/Metadata management



Build up catalog to get insight into your company's metadata

Exploring archived data

Browse, preview, profile

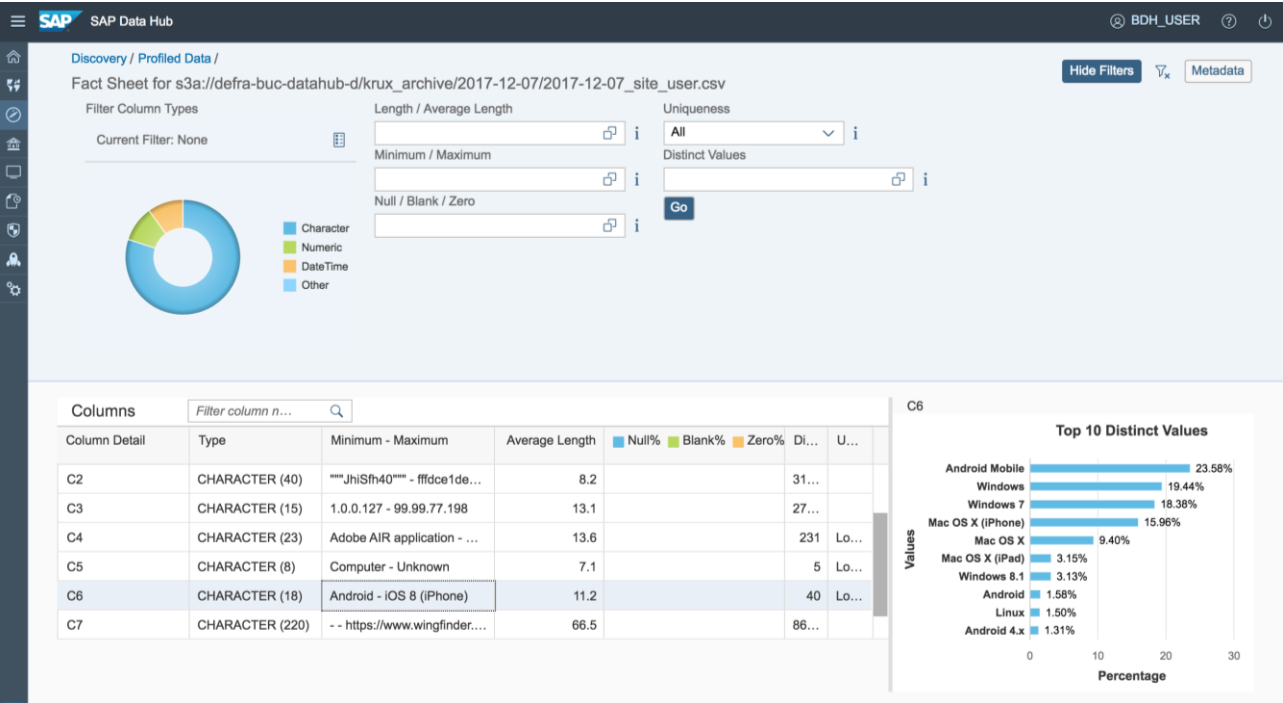
SAP Data Hub

Discovery /

Preview for s3a://defra-buc-datahub-d/krux_archive/2018-04-18/2018-04-18...

Maximum of 100 rows displayed

	C0	C1	C2	C3	C4	C5
1	1524078230000	2018-04-18	006be5caa6b93efe...	78.163.206.133	Mobile Safari-10	Mobile
2	1524042358000	2018-04-18	007cdfc87de01f974...	176.33.255.254	Mobile Safari-11	Mobile
3	1524041739000	2018-04-18	00a3f53164e2485f7...	54.161.62.105	Safari-0	Computer
4	1524044749000	2018-04-18	00a3f53164e2485f7...	54.161.62.105	Safari-0	Computer
5	1524053388000	2018-04-18	010a6a4ab4243032...	89.26.33.3	Mobile Safari-11	Tablet
6	1524048488000	2018-04-18	010c2867a6448aa7...	217.99.90.77	Mobile Safari-10	Tablet
7	1524048494000	2018-04-18	010c2867a6448aa7...	217.99.90.77	Mobile Safari-10	Tablet
8	1524048788000	2018-04-18	010c2867a6448aa7...	217.99.90.77	Mobile Safari-10	Tablet
9	1524061658000	2018-04-18	0123dc926a3ff538c...	85.4.136.203	Safari-11	Computer
10	1524040347000	2018-04-18	01ef3b8319f7239da...	87.210.0.124	Mobile Safari-11	Mobile
11	1524044448000	2018-04-18	02bb58b93c1e4132...	80.214.16.246	Mobile Safari-10	Mobile
12	1524024029000	2018-04-18	02f85269cd25bbd0...	68.230.78.185	Mobile Safari-11	Mobile
13	1524019746000	2018-04-18	03656908d2b3d157...	159.65.70.22	Apple WebKit-0	Mobile
14						



Data Preparation

SAP Data Intelligence Metadata Explorer

Manage Preparations

Hi, admin

Add Filter

Search

Info

Actions

Recipe

A ₃	MANDT	A ₃	CARRID	A ₃	CONNID	A ₃	COUNTRYFR	A ₃	CITYFROM	A ₃	AIRFROM	A ₃	COUNTRYTO
000		AA		0017					NEW YORK		JFK		
000		AA		0064					SAN FRANCISCO		SFO		
000		AC		0820		DE			FRANKFURT/MAIN		FRA	CA	
000		AF		0820		DE			FRANKFURT/MAIN		FRA	MQ	
000		DL		1699					NEW YORK		JFK		
000		DL		1984					SAN FRANCISCO		SFO		
000		LH		0400					FRANKFURT		FRA		
000		LH		0402					FRANKFURT		FRA		
000		LH		0454					FRANKFURT		FRA		
000		LH		0455					SAN FRANCISCO		SFO		
000		LH		2402					FRANKFURT		FRA		
000		LH		2407					BERLIN		TXL		
000		LH		2415					BERLIN		SXF		
000		LH		2436					FRANKFURT		FRA		
000		LH		2462					FRANKFURT		FRA		

Column

Preparation

CITYFROM

Change Case

Fill

Trim

Replace

Duplicate

Rename

Split

Combine

Convert To Date/Time

Convert To Number

Clear

Remove

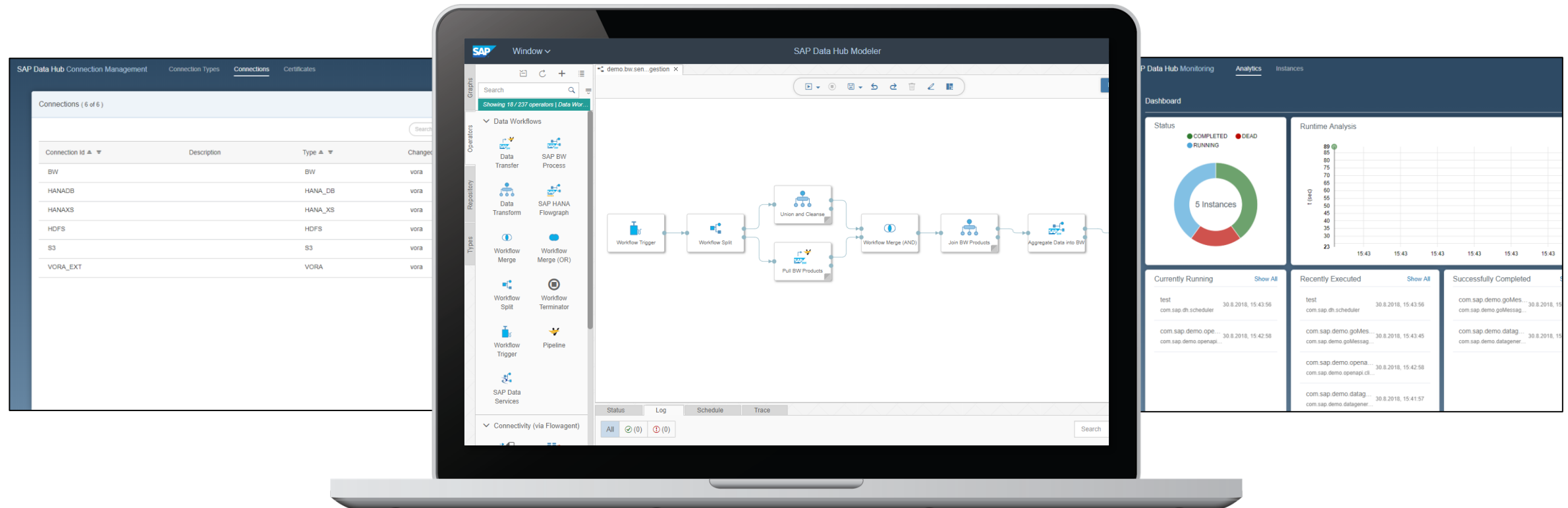
Sample size: 16 columns 1000 rows

Prepare the data without any technical scripting skills before feeding them into associated models

Application of data actions such as filtering, data type conversion and data trimming in just a few clicks

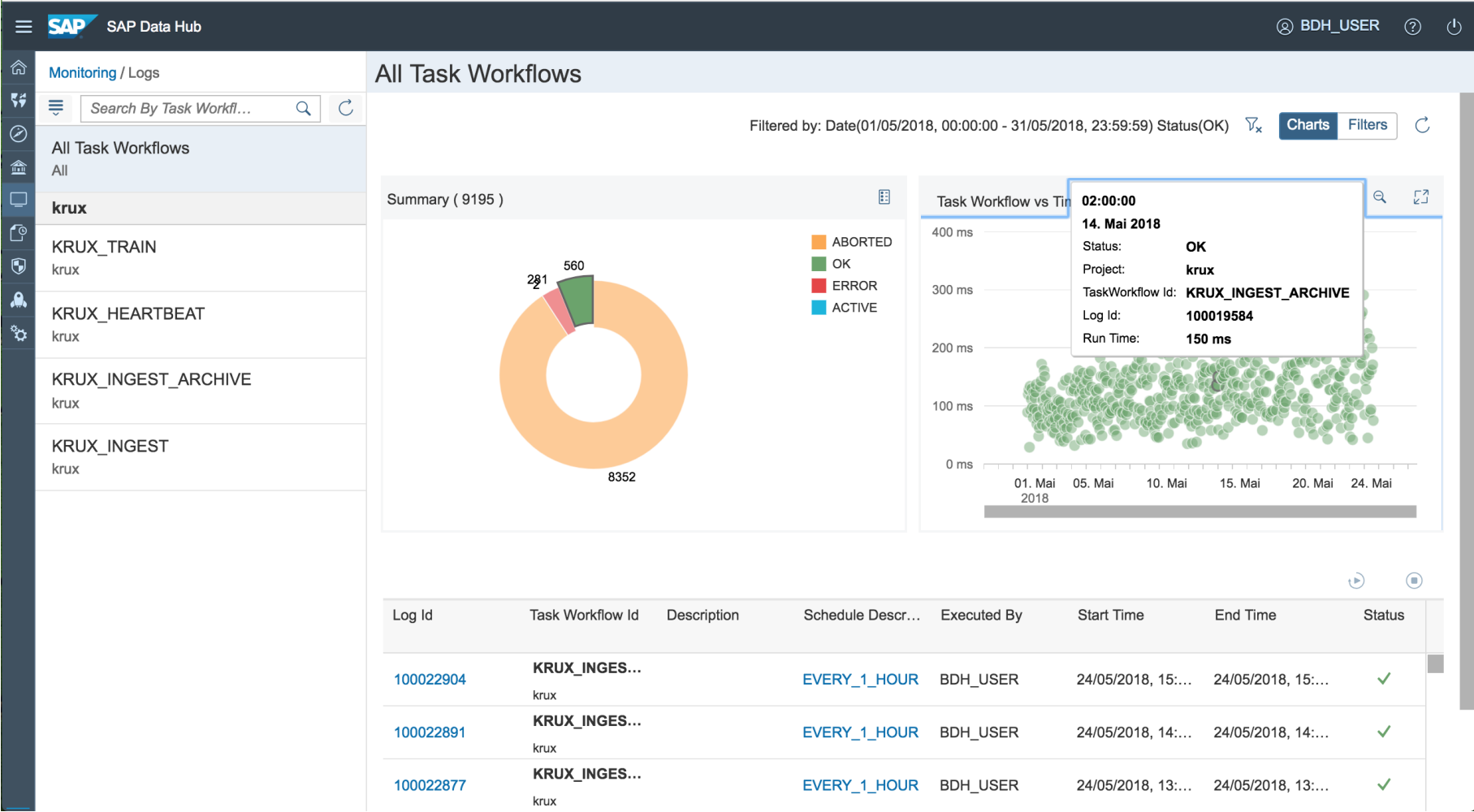
Execution and management of the accomplished data preparations to make use of the respective files during the further processing

Data Orchestration and Monitoring

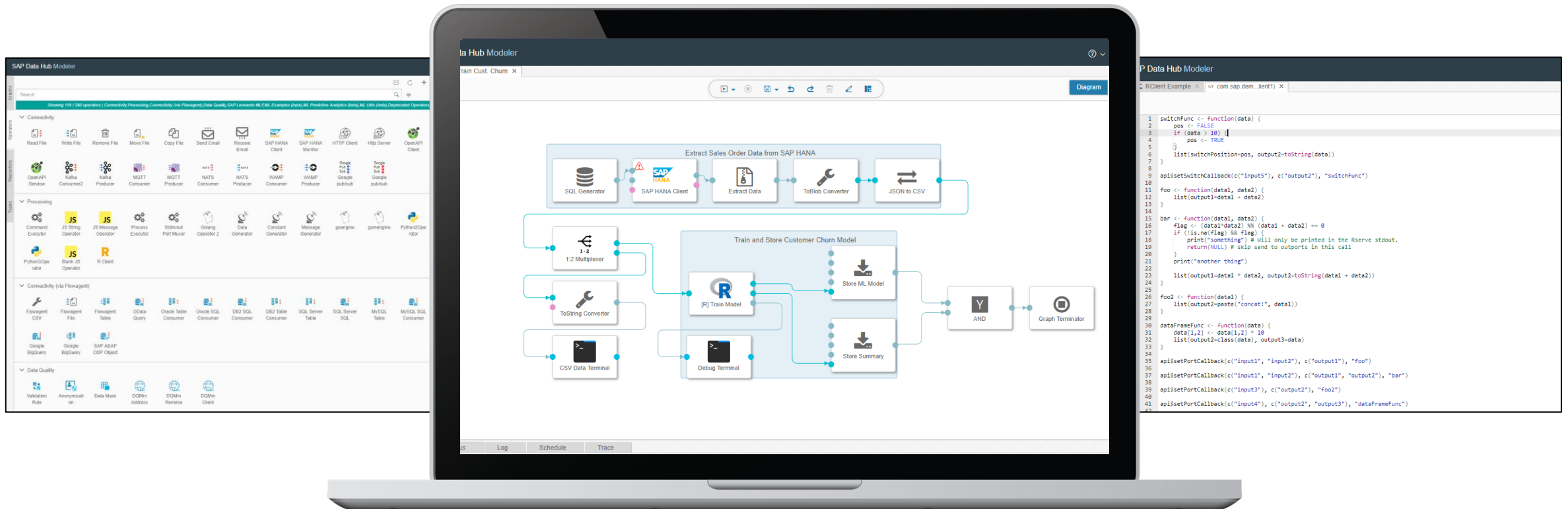


Connect, orchestrate and monitor processes across systems

Monitoring of Ingestion Process



Data Pipelining & Processing

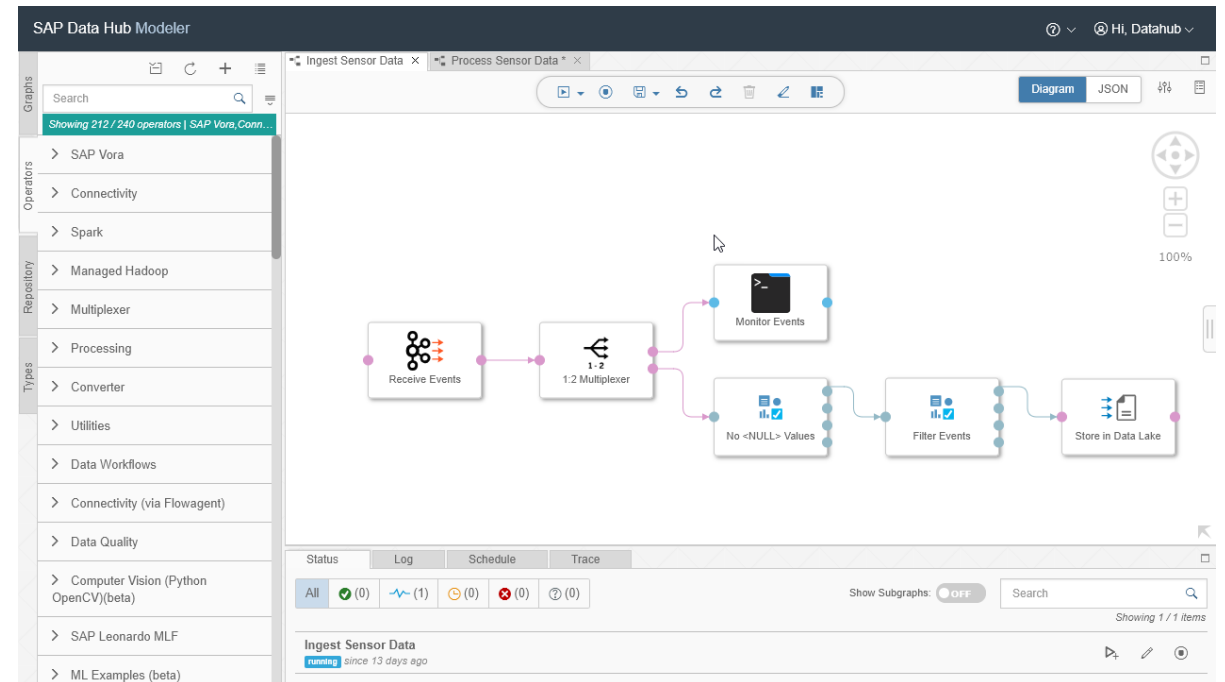


Build scalable and flexible flow-based applications to process, refine, and enrich data at the source.

Data Pipelining & Processing

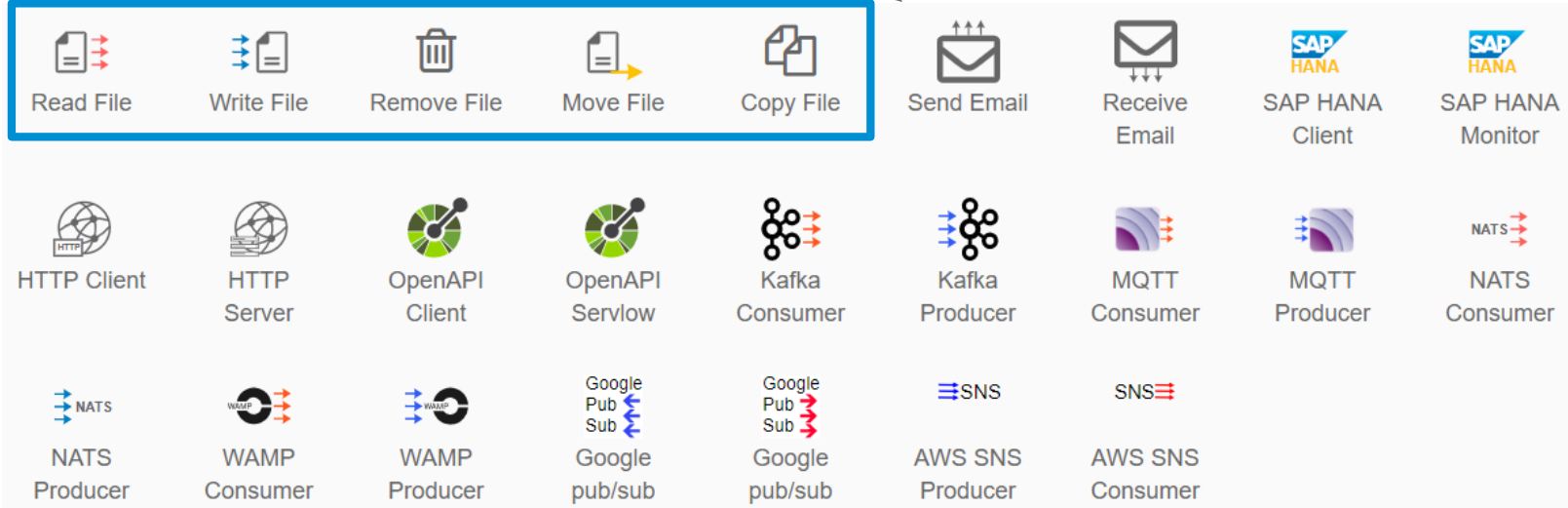
Build Flow-based Applications using the Pipeline Modeler

- **Data Pipelines** = Flow-based applications
 - Operators (independent computation units)
 - Data (messages) flows between operators
- **Extensible**
 - Over 250 pre-defined operators (Connectivity, Processing, Data Quality, CV, ML, etc.)
 - Custom / Partner operators
 - Wrap any custom code
- **Scalable**
 - Containerized – Docker containers constitute the operators' execution environments
 - Distributed – Easy horizontal scaling
- **Re-Usability**
 - Create complex, multistep, reusable data pipelines and operators



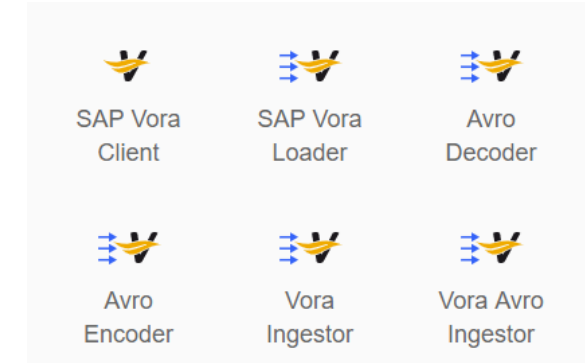
Built-in Standard Connectors

Connectivity:

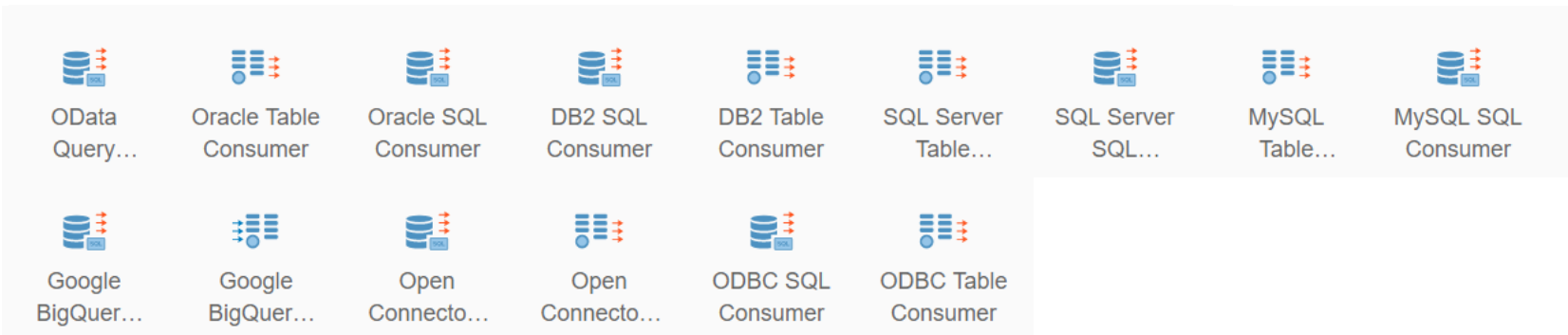


- Azure Data Lake (ADL)
- Google Cloud Storage (GCS)
- HDFS
- Amazon S3
- Azure Storage Blob (WASB)
- Local File System (file)
- SAP Semantic Data Lake
- WebHDFS

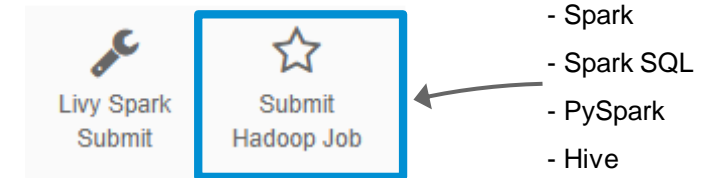
SAP Vora:



Connectivity (via Flowagent):



Spark / Hadoop:



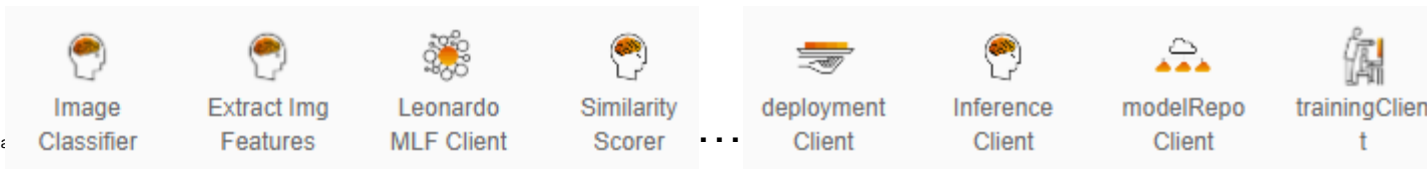
- Spark
- Spark SQL
- PySpark
- Hive

Data Quality:



Leonardo MLF:

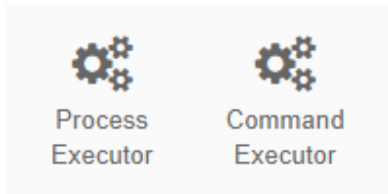
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Operators for Data Processing

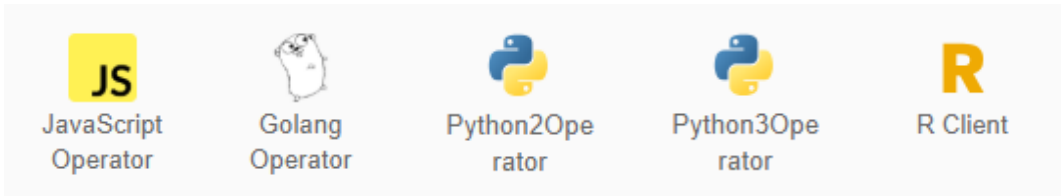
Process / Command Executors:

- Run a process within a pipeline and give contiguous stream to it
- Run a shell command for each arrival of a message within a pipeline



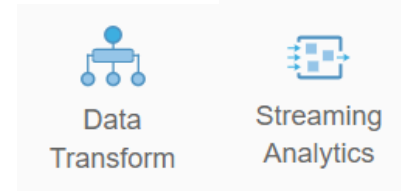
Scripting Operators:

- Write and run custom scripts for data manipulation within a pipeline
- Build re-usable operators in different programming languages



Transformation Operators:

- Run on-the fly transformations and do event stream processing using continuous query language (CQL) on data within a pipeline



Subengines:

- Develop and compile new operators locally using SDK
- Register and run custom operators in available pipeline subengine



*This is the current state of planning and may be changed by SAP at any time without notice.

Launchpad

SAP Vora Tools : Scalable Storage

The screenshot displays the SAP Vora Tools interface. On the left is a 'Catalog' pane with a search bar and a list of data sources. The 'PRODUCT' source is selected. The main area is divided into two panes. The left pane shows a bar chart titled 'DAT361.PRODUCT_REVIEWS' with the y-axis labeled 'AVG(POLARITY)' ranging from -55m to 290m. The x-axis shows product IDs: HT-1002, HT-1005, and HT-1008. The right pane is the 'SQL Editor' showing the schema 'DAT361' and two SQL queries. A floating toolbar on the right contains icons for Connection Management, License Management, Metadata Explorer, Modeler, Monitoring, System Management, and Vora Tools (highlighted with a green border).

Catalog

- DAT263
 - ADDRESS
 - CUSTOMER
 - PRODUCT**
 - PRODUCT_REVIEW
 - SENTIMENTANALYSIS
 - SOHEADER
 - SOITEM
 - TADOC_REVIEWS
 - TA_REVIEWS
 - VPRODORDERSBYCUST...
 - VPRODSSENTIMENTANAL...
- DAT361
 - PRODUCTS
 - PRODUCT_REVIEWS

SQL Editor

```
Schema: DAT361

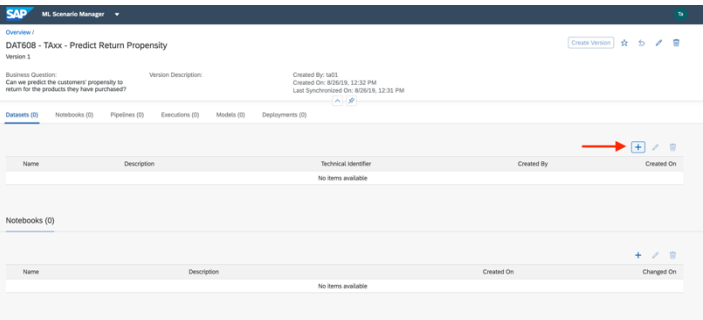
1 CREATE TABLE PRODUCTS (
2   MD5 VARCHAR(32) PRIMARY KEY,
3   PRODUCT_ID VARCHAR(7),
4   PRODUCT_NAME VARCHAR(38),
5   PRODUCT_PRICE DECIMAL(5,2),
6   REVIEW_LENGTH INTEGER,
7   REVIEW_TEXT VARCHAR(1024),
8   REVIEW_POLARITY FLOAT,
9   REVIEW_SUBJECTIVITY FLOAT
10 ) TYPE STREAMING STORE ON DISK;
11
12
13 CREATE TABLE PRODUCT_REVIEWS (
14   MD5 VARCHAR(32) PRIMARY KEY,
15   PRODUCT_ID VARCHAR(7),
16   PRODUCT_NAME VARCHAR(38),
17   PRODUCT_PRICE DECIMAL(5,2),
18   REVIEW_LENGTH INTEGER,
19   REVIEW_TEXT VARCHAR(1024),
20   REVIEW_POLARITY FLOAT,
21   REVIEW_SUBJECTIVITY FLOAT
22 ) TYPE STREAMING STORE ON DISK;
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
```

Bar Chart Data (Approximate)

Product ID	AVG(POLARITY)
HT-1002	260m
HT-1005	-55m
HT-1008	130m

Manage all your Artifacts in one place

Datasets



Register Dataset

***Name:**
Return Dataset

***URL:**
file://S3/bucket1/DAT608_TAxX_CleanedReturnDataset.csv

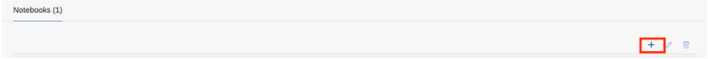
Description:
The return dataset includes the features which identify the behavioral patterns of the serial returners.

4896 characters remaining

CreateCancel

Name	Description	Technical Identifier
<input type="radio"/> Return Dataset	The return dataset includes the features which identify the behavioral patterns of the serial returners.	47236e77-646b-452b-9b06-06f6c6927b05

Experiments



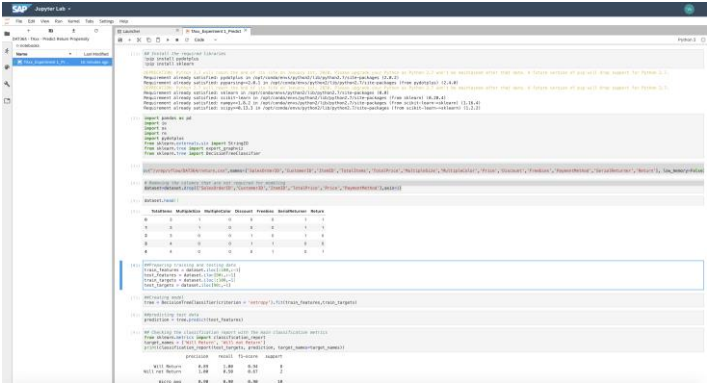
Create Notebook

***Name:**
TAxx_Experiment 1_Predict Return

Description:
Using a Decision Tree to predict the customer's propensity to return.

4931 characters remaining

CreateCancel



Name	Description	Technical Identifier	Created By	Created On
<input type="radio"/> Return dataset	The return dataset includes the features which identify the behavioral patterns of the serial returners. The dataset is saved locally and doesn't include the header.	27bc28ba-070d-45ad-a76d-0baf3b21a0b8	me	8/12/19, 11:25 AM

Name	Description	Created On	Changed On
<input checked="" type="radio"/> TAxx_Experiment 1_Predict Return	Using a Decision Tree to predict the customer's propensity to return.	8/12/19, 11:22 AM	8/12/19, 11:22 AM

Operations



Create Pipeline

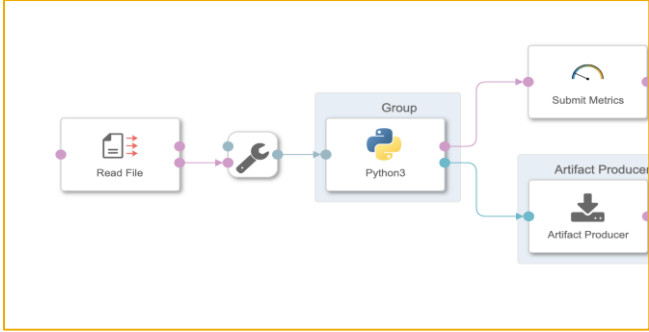
***Name:**
TAxx_Operationalize_PredictReturn

Description:
This pipeline will use our preferred model to orchestrate and schedule our execution.

4915 characters remaining

Template:
Python Producer

CreateCancel



Name	Description	Template	Created On
<input checked="" type="radio"/> TAxx_Operationalize_PredictReturn	This pipeline will use our preferred model to orchestrate and schedule our execution.	Python Producer	8/12/19, 11:18 AM

SAP Data Intelligence Templates

Create Pipeline

***Name:**

Description:

This pipeline will use our preferred model to orchestrate and schedule our execution.

4913 characters remaining

Template:

Blank

Create

Cancel

Blank

R Consumer

TensorFlow Training Pipeline

TensorFlow Serving Pipeline

Python Producer

Image Classification

Python Consumer

Similarity Scoring

R Producer

Translation

Blank

Create

Cancel

Jupyter Lab Integration

The screenshot displays the SAP Jupyter Lab environment. The top bar shows the SAP logo and 'Jupyter Lab' with a dropdown arrow. Below this is a menu bar with options: File, Edit, View, Run, Kernel, Tabs, Settings, and Help. The left sidebar contains a file explorer for 'iris 2019' with a list of notebooks: 'experiment 2.ipynb' (2 minutes ago), 'experiment.ipynb' (4 hours ago), and 'Iris.ipynb' (a minute ago). The main area shows the 'Iris.ipynb' notebook with the following content:

```
from sklearn.neighbors import KNeighborsClassifier
from sklearn.discriminant_analysis import LinearDiscriminantAnalysis
from sklearn.naive_bayes import GaussianNB
from sklearn.svm import SVC
```

1. LOAD DATASET

```
[69]: url = "https://archive.ics.uci.edu/ml/machine-learning-databases/iris/iris.data"
names = ['sepal-length', 'sepal-width', 'petal-length', 'petal-width', 'class']
dataset = pd.read_csv(url, names=names)
```

2. Summarize the Dataset

```
[70]: #shape
print(dataset.shape)

(150, 5)
```

3. Peek The Data

```
[71]: print(dataset.tail())
```

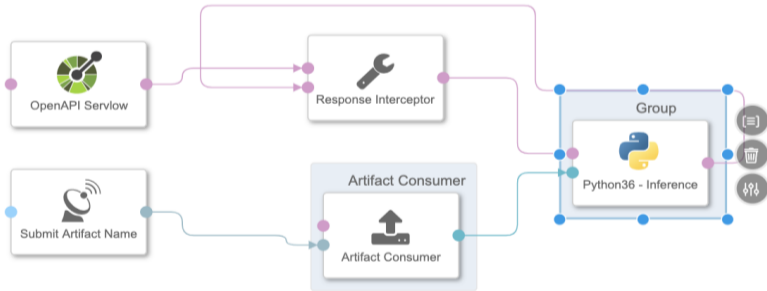
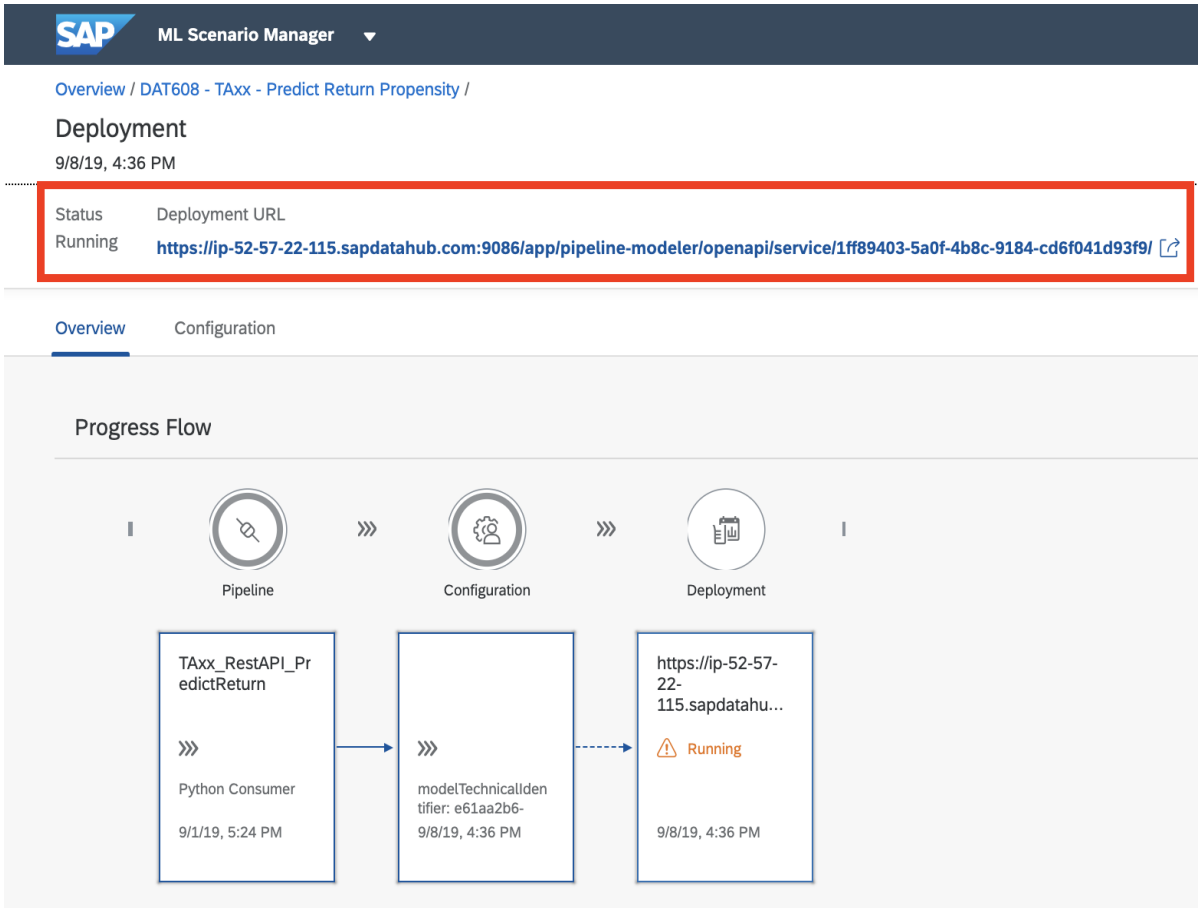
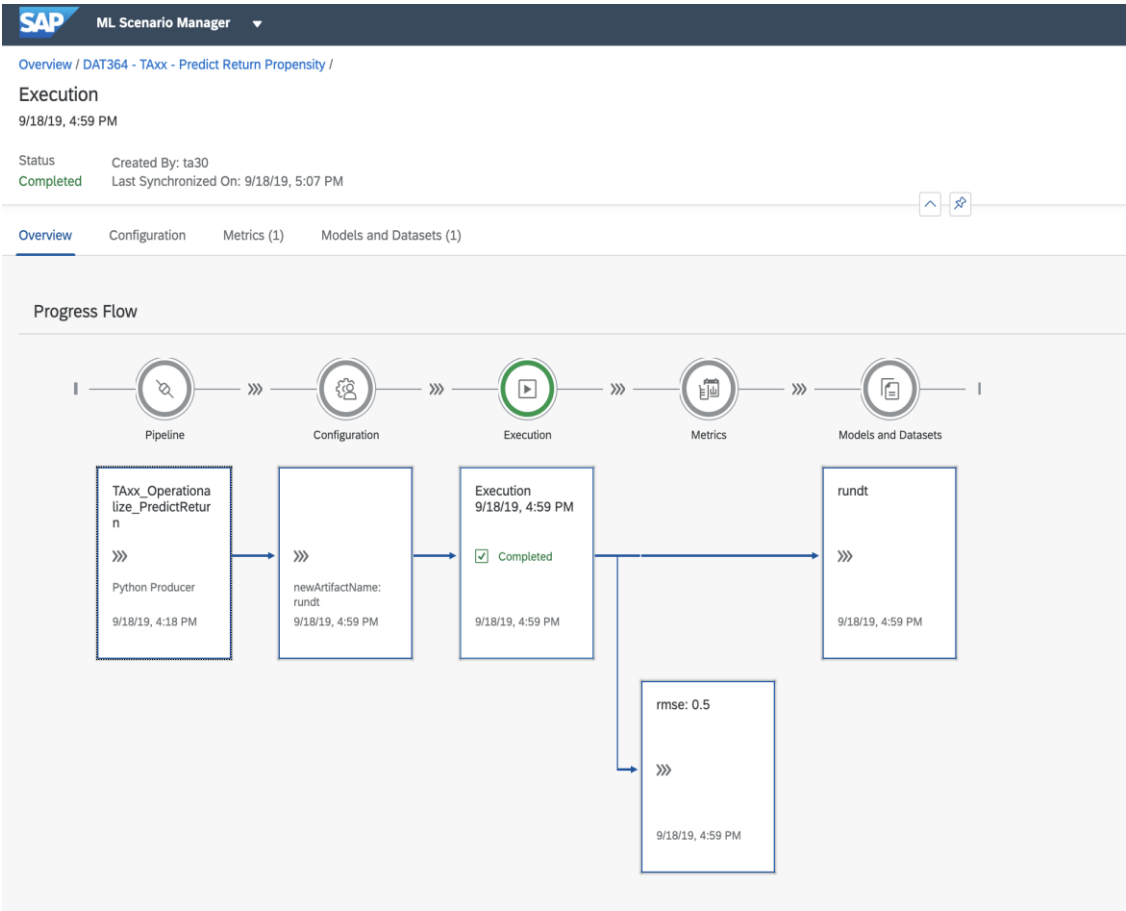
	sepal-length	sepal-width	petal-length	petal-width	class
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

Statistical Summary

```
[72]: print(dataset.describe())
```

	sepal-length	sepal-width	petal-length	petal-width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.000000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.000000	4.400000	6.900000	2.500000

Training and Deployment



SAP Data Hub evolves to SAP Data Intelligence



Identify



Data Preprocessing



Model Creation



Service Deployment & Operation

Machine Learning Scenario

Connection /Storage Management

Data Discovery

Data Processing

Model Creation

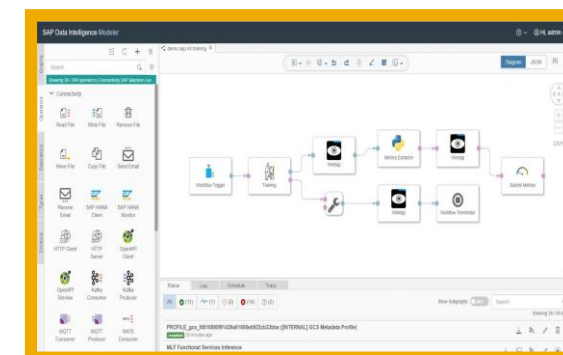
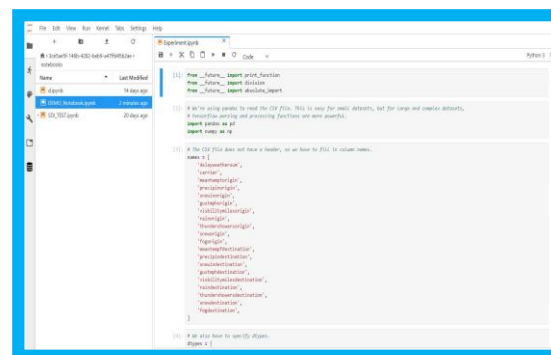
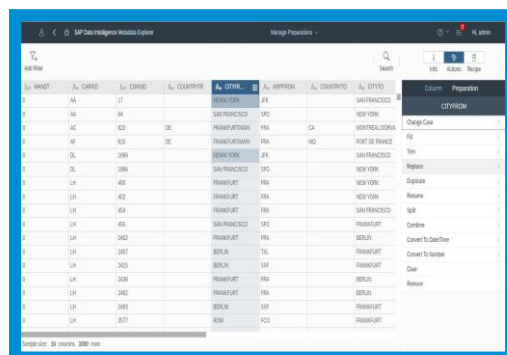
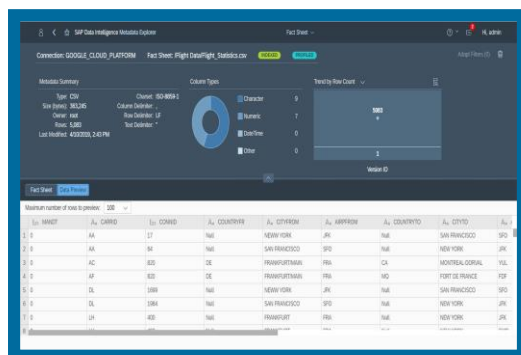
Model Training

Model Validation

Model Deployment

Integration into Application

Automation & Maintenance



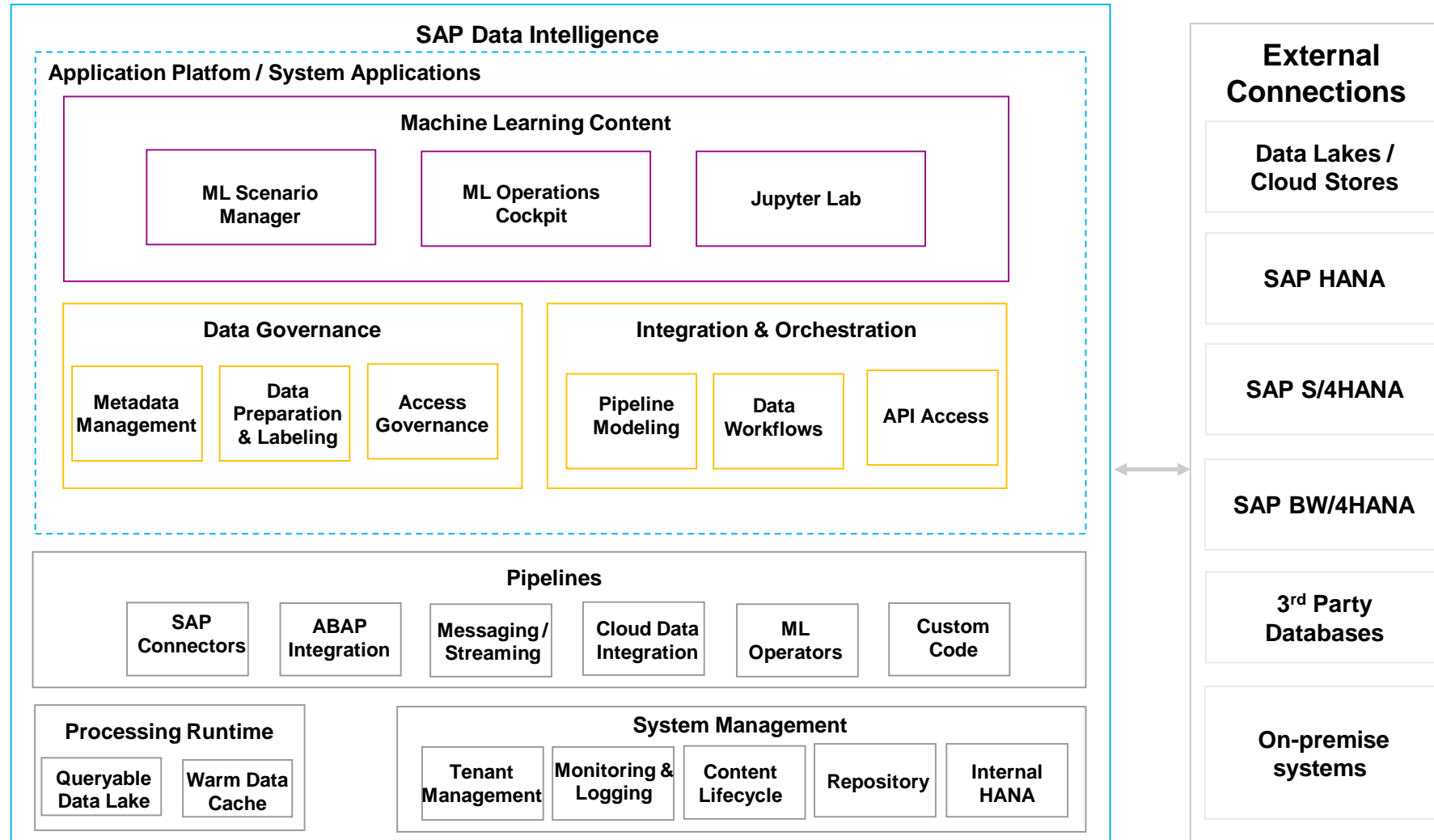
SAP Data Hub

SAP Data Hub

SAP Data Intelligence

SAP Data Intelligence

Architecture View



Deployment Options



SAP Cloud Platform



virtustream



SAP Data Intelligence

SAP SE

Deliver data-driven innovation across
the enterprise.



**On-premise
installations**

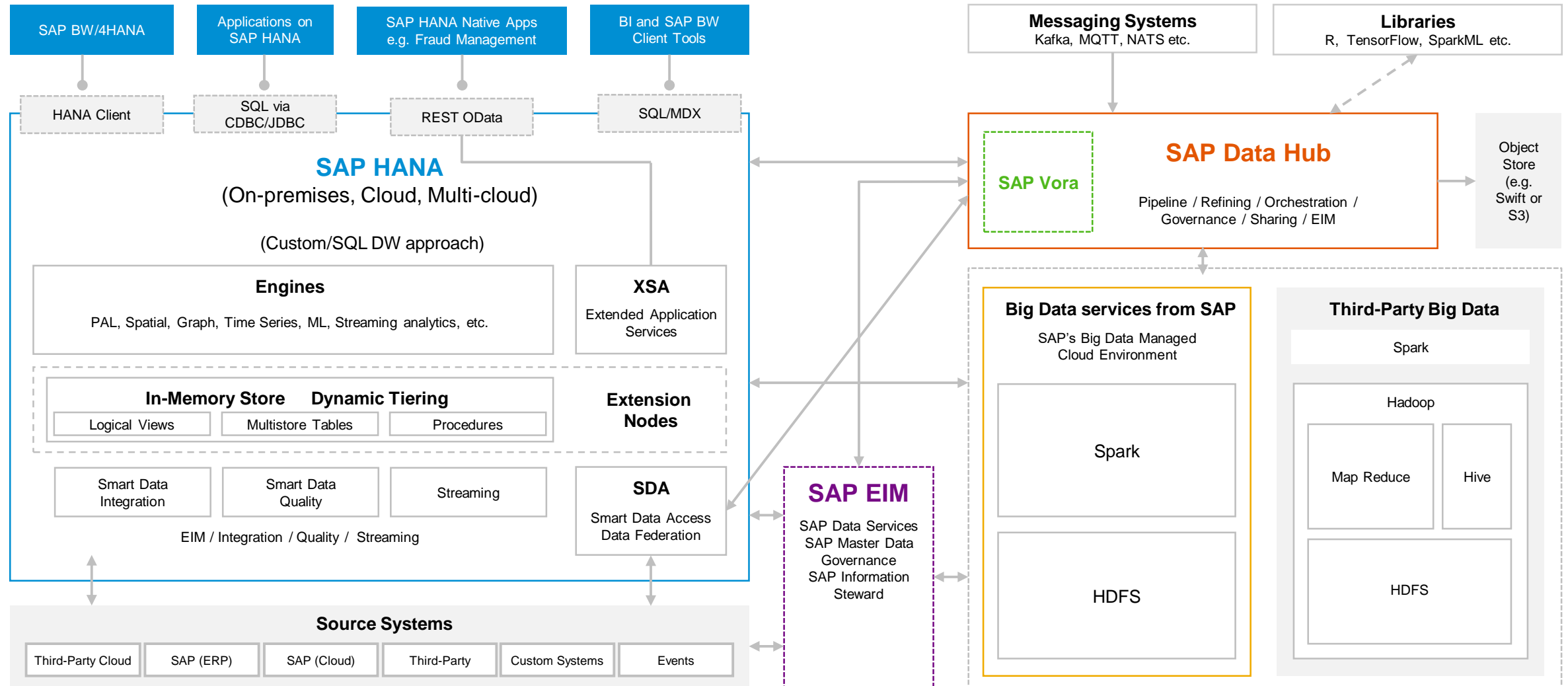
**Public cloud
Kubernetes service**

Private cloud

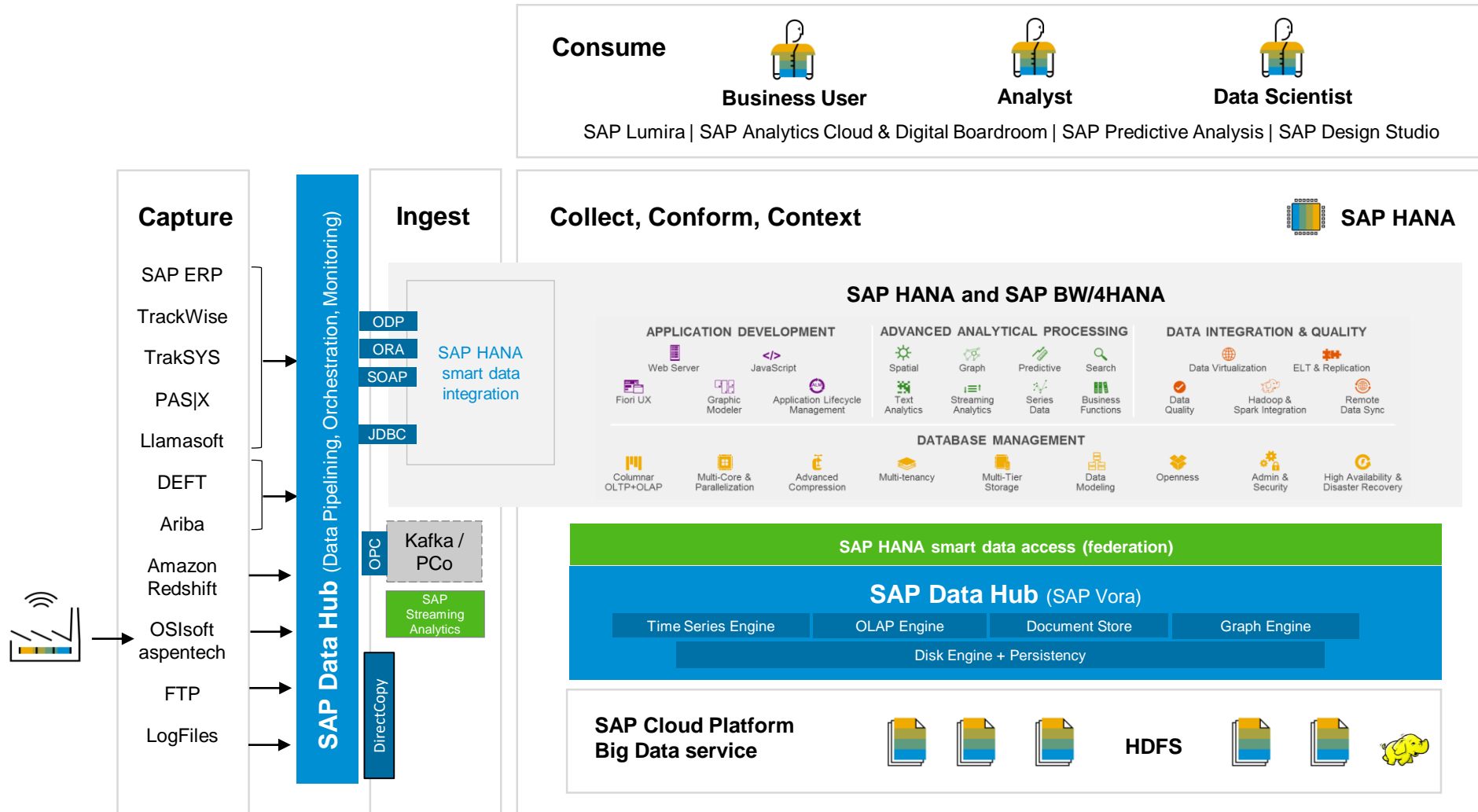
**SAP Cloud Platform,
SAP Data Intelligence**

Please always check the [Product Availability Matrix](#) for the latest information about supported OS, Kubernetes versions, certified partners, and any other restrictions.

SAP Data Hub – Customer Architecture Example



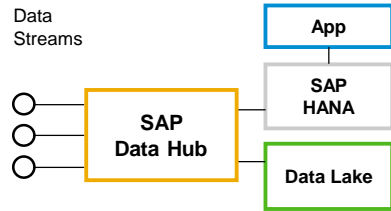
SAP Data Hub – Customer Architecture Example



**One architecture,
multiple purposes:**

- ML
- IoT
- Big Data
- Data Science

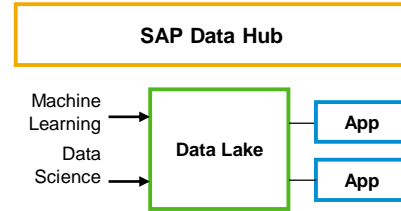
SAP Data Hub use cases



IoT Ingestion & Orchestration

Understand real-world performance

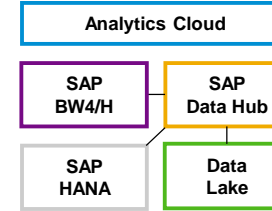
- Tackle the challenge of integrating and analyzing vast quantities of raw data and events from disparate semi-structured sources, having low-level semantics and no business context
- Solve the point-to-point challenge of distributed heterogeneous environments spanning messaging systems, cloud storages, SAP data management solutions, and enterprise apps
- Event-driven pipelines scaling to executions of many pipelines in parallel, at any time



Data Science & Machine Learning

Machine learning and predictive analytics

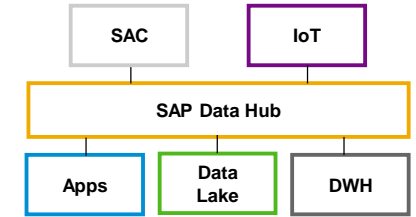
- One unified tool to process machine learning and advanced analytics algorithms on any mix of engines, both SAP (HANA PAL, Leonardo ML etc.) and non-SAP (Python, R, Spark, TensorFlow etc.)
- On the same tool, handle data ingestion and preparation from any source of any kind, solving point-to-point challenges
- Easily infuse machine learning and predictive into any target business process



Data Warehousing

Rapidly integrate and leverage new data sources

- Acquire new data sources with previously siloed data from traditional data warehouses, data marts, enterprise applications, and Big Data stores
- Combine all types of sources including structured and unstructured data, and enable a large variety of processing on them
- Seamlessly process large data sets across highly distributed landscapes and close to the data source, moving only high-value data



Data Cataloging and Governance

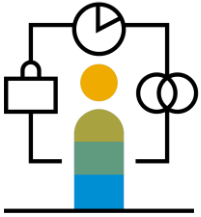
Understand and secure your data

- Crawl through data stores to gather valuable metadata and store it in a centralized information catalog
- Profile source data to gain a deeper understanding of the data to create meaningful data pipelines
- Move to centralized data access and control for all orchestration, data refinement, scheduling, and monitoring

Predictive quality

Use Case: **IoT Ingestion & Orchestration**

Industry: **Manufacturing**



Business Scenario

- A major automotive company is seeking to improve the quality management process in a car component manufacturing plant
- Metal parts needed for end product assembly are produced by means of heat metal forming
- Defective parts need to be sorted out and melted
- Initiative to improve accuracy of quality checks and lower production cost



Challenge

- Failed parts can only be selected after a full batch has been processed; potential of entire batches being defective
- Not enough insights to adjust production settings early in the overall process



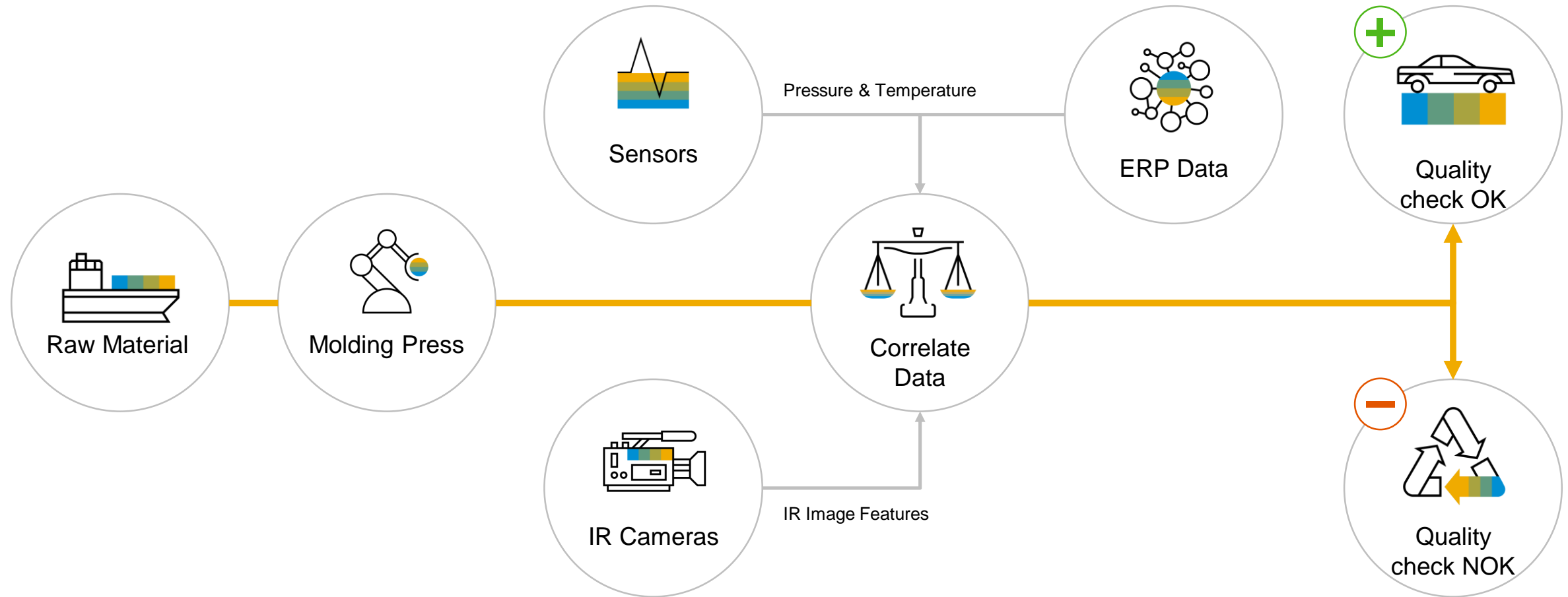
Solution

- Detailed analysis of data from sensors and infrared cameras
- Integration of that data with logistics data from ERP
- Execution of statistical algorithms to calculate quality KPIs

Conceptual solution

Use Case: **IoT Ingestion & Orchestration**

Industry: **Manufacturing**



Backend: SAP Data Hub pipelines

Use Case: **IoT Ingestion & Orchestration**

Industry: **Manufacturing**

1 Stream data

MATERIAL_ID	HEAT1	HEAT2	PRESSMAX	PRESSDUR
PRHOOD1006	1,105	805	66	33
PRHOOD1007	1,103	803	63	33
PRHOOD1008	1,100	800	70	33
PRHOOD1009	1,100	800	70	33
PRHOOD1010	1,100	800	86	33
PRHOOD1011	1,100	800	58	33
PRHOOD1012	1,100	800	63	33
PRHOOD1013	1,099	799	60	33
PRHOOD1014	1,100	800	60	33
PRHOOD1015	1,102	802	86	33

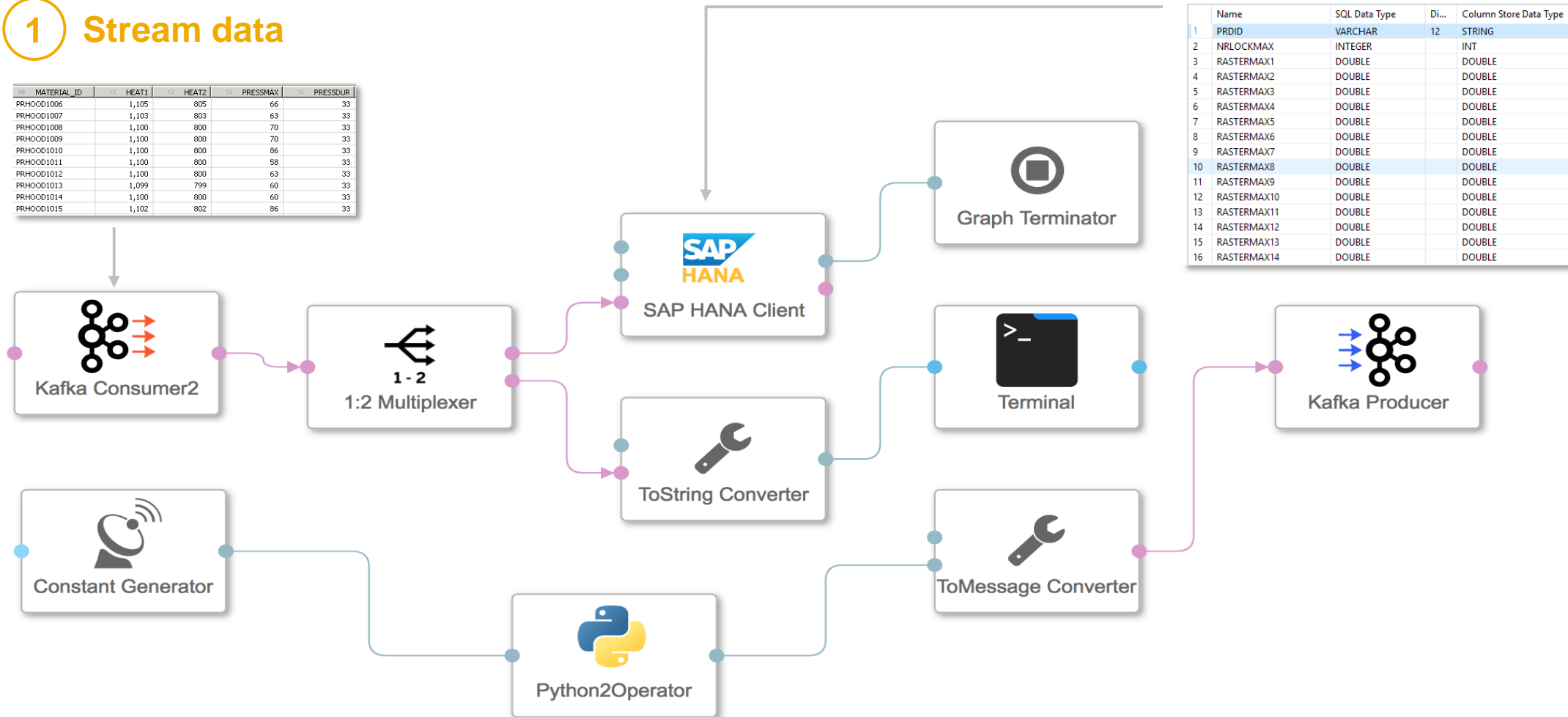


Table Name: IMG_RES_HANA

Columns	Indexes	Further Properties	Runtime Information
Name	SQL Data Type	Di...	Column Store Data Type
1 PRDID	VARCHAR	12	STRING
2 NRLOCKMAX	INTEGER		INT
3 RASTERMAX1	DOUBLE		DOUBLE
4 RASTERMAX2	DOUBLE		DOUBLE
5 RASTERMAX3	DOUBLE		DOUBLE
6 RASTERMAX4	DOUBLE		DOUBLE
7 RASTERMAX5	DOUBLE		DOUBLE
8 RASTERMAX6	DOUBLE		DOUBLE
9 RASTERMAX7	DOUBLE		DOUBLE
10 RASTERMAX8	DOUBLE		DOUBLE
11 RASTERMAX9	DOUBLE		DOUBLE
12 RASTERMAX10	DOUBLE		DOUBLE
13 RASTERMAX11	DOUBLE		DOUBLE
14 RASTERMAX12	DOUBLE		DOUBLE
15 RASTERMAX13	DOUBLE		DOUBLE
16 RASTERMAX14	DOUBLE		DOUBLE

Backend: SAP Data Hub pipelines

Use Case: **IoT Ingestion & Orchestration**

Industry: **Manufacturing**

2 Extract Features

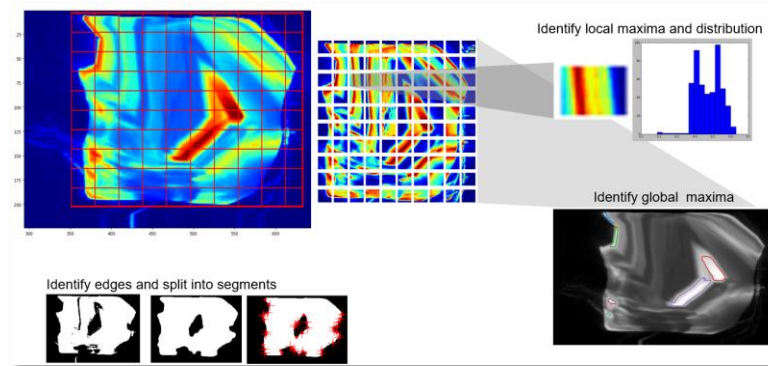
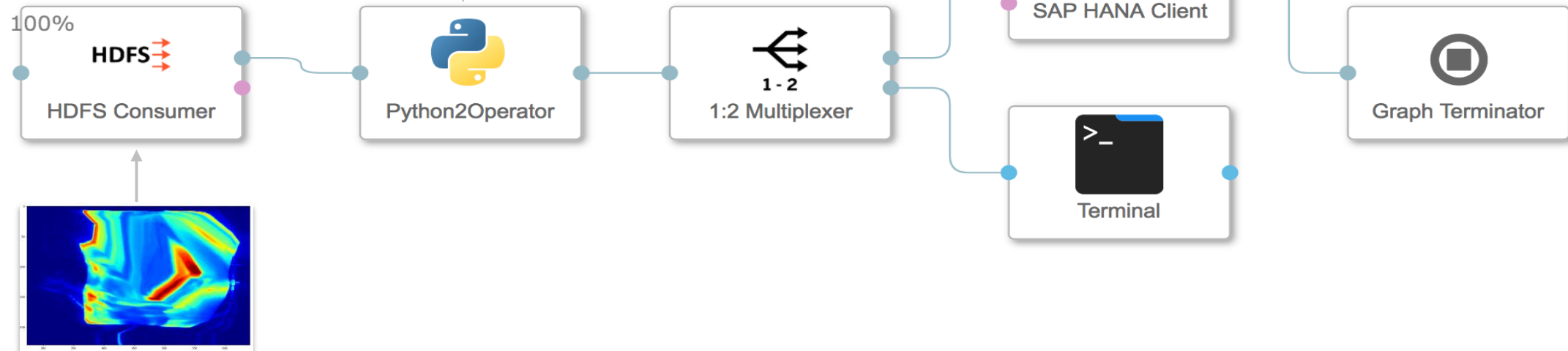
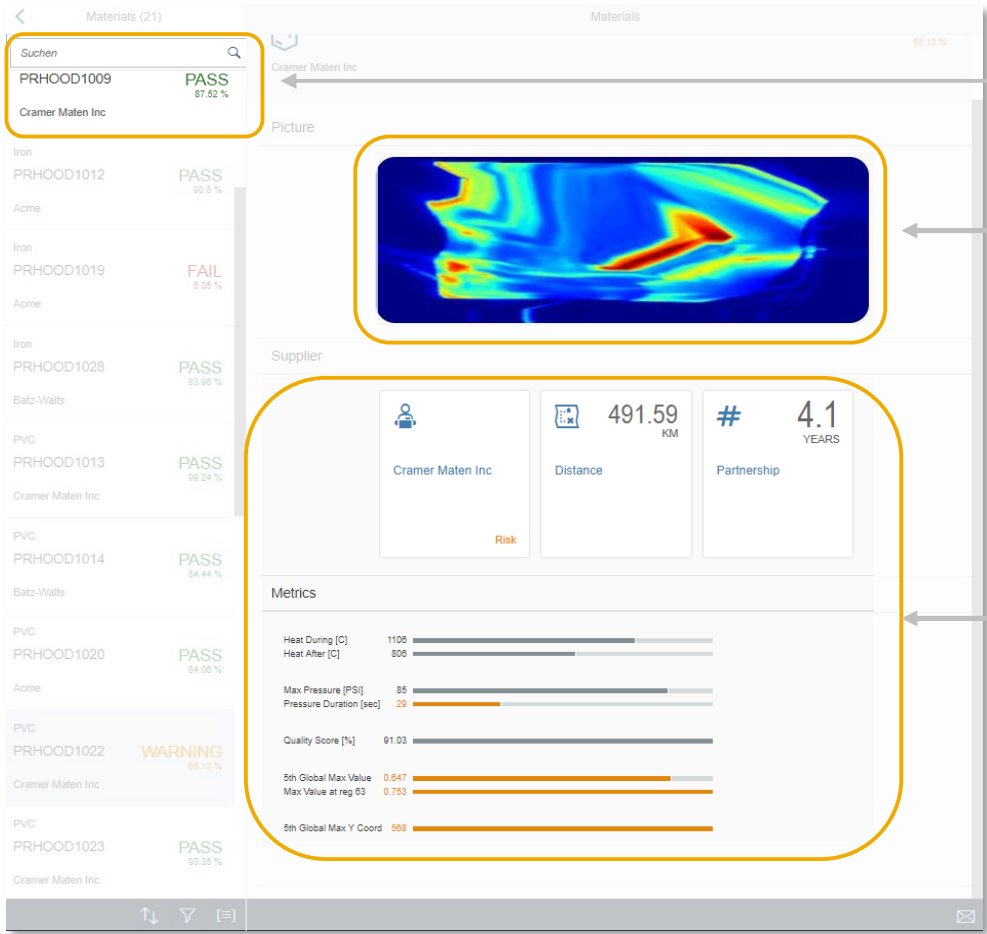


Table Name: PPARAM

Columns	Indexes	Further Properties	Runtime Information
Name	SQL Data Type	Di...	Column Store Data Type
1 MATERIAL_ID	NVARCHAR	10	STRING
2 HEAT1	INTEGER		INT
3 HEAT2	INTEGER		INT
4 PRESSMAX	INTEGER		INT
5 PRESSDUR	INTEGER		INT



Frontend: Monitoring UI



Track the products on the production line with the quality check results

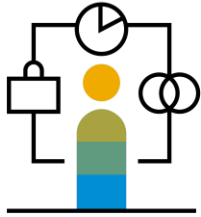
IR Image of the production line for optical validation

Main contributing variables with their values can be seen here. If they are over the limit, it is indicated by red font

Enabling a single view on Consumer

Use Case: **Data Science & Machine Learning**

Industry: **Fashion / Retail**



Business Scenario

A global footwear and sports equipment retailer wants to become a consumer centric business as one of the key strategies in its Growth Plan 2020. This requires them to become a more data driven organization.



Challenge

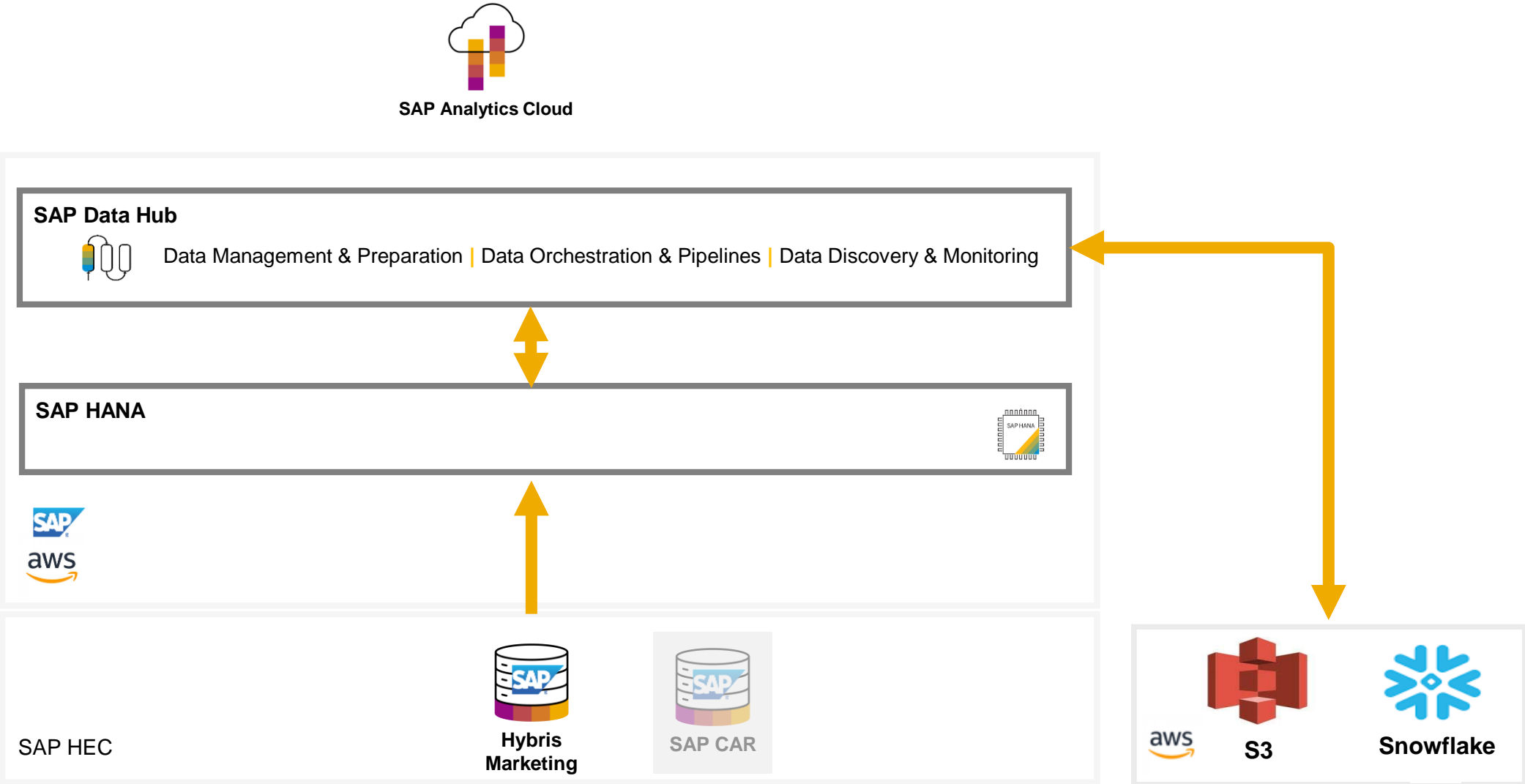
- Data is currently available in silos only whereby the consumer transaction history is spread across SAP environments and the real-time consumer running patterns are captured and analysed in Snowflake (AWS)
- It is not possible to get a 360 / consolidated view of the consumer as and when required.



Solution

Extend the level of insight the organization can get on their consumers – e.g. Move from “Top sellers per region” report to “Top sellers who run 10K marathons with a specific shoe brand per region”

POC Landscape

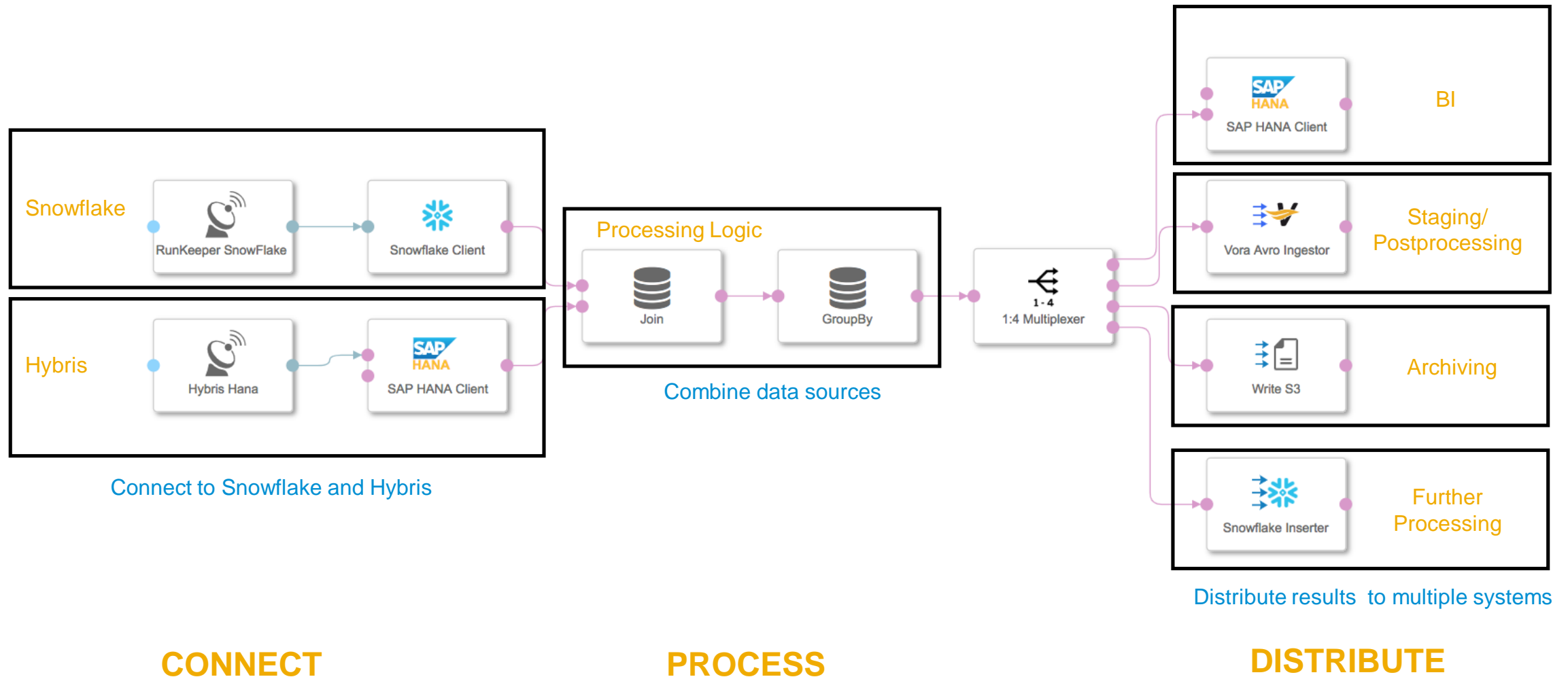


SAP Data Hub Pipeline Overview

Integrating Snowflake and SAP

Use Case: **Data Science & Machine Learning**

Industry: **Fashion / Retail**

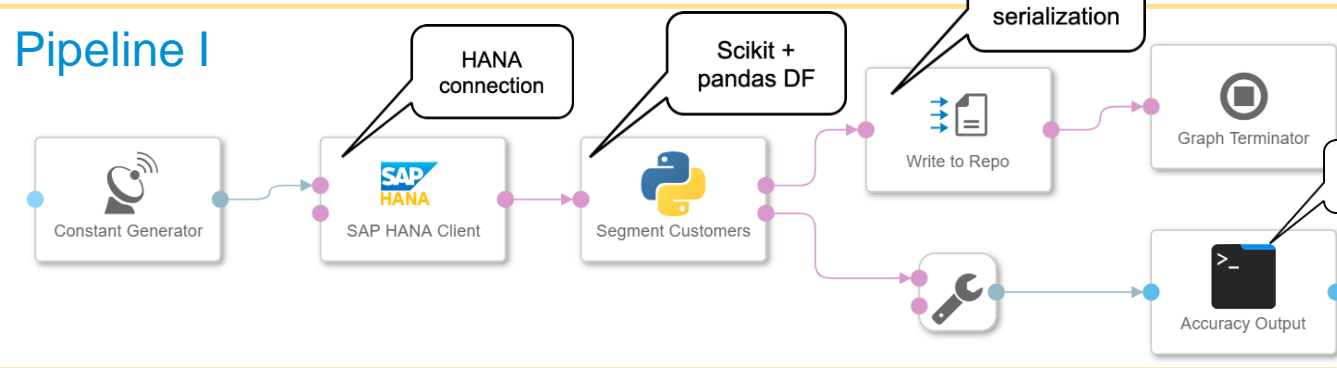


Extending Insights with Data Science

Use Case: **Data Science & Machine Learning**

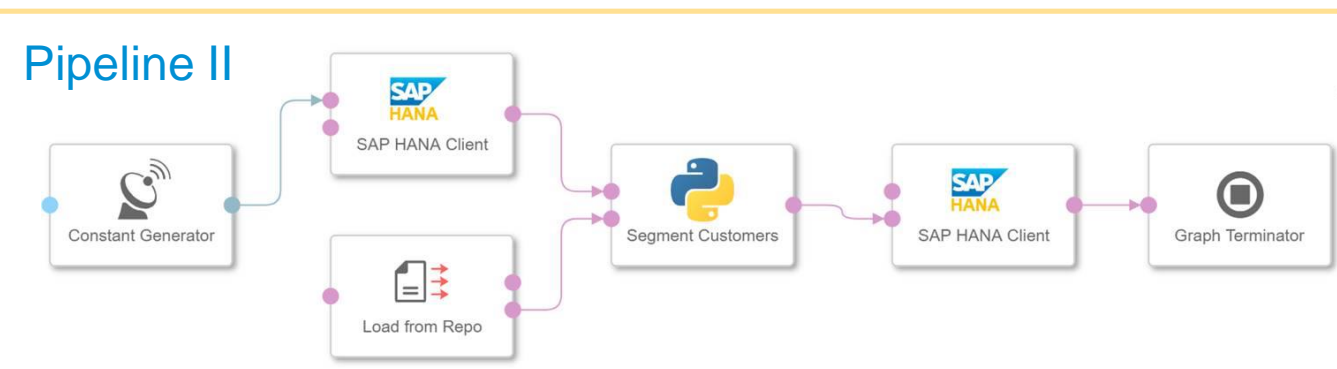
Industry: **Fashion / Retail**

Predict the spending amount of customers by assigning them to a predefined class (lowest spending, low spending, high spending, highest spending) based on combined sales and tracking data.



Faster time-to-market for Data Science projects by :

- Providing a runtime environment for Data Scientists (no need to install and maintain a separate Python, R, etc.. environment)
- Automating model training, creating and execution processes
- Reducing the time to access data (without the need to move data across systems)
- Providing end to end visibility on the process execution to reduce errors and latency

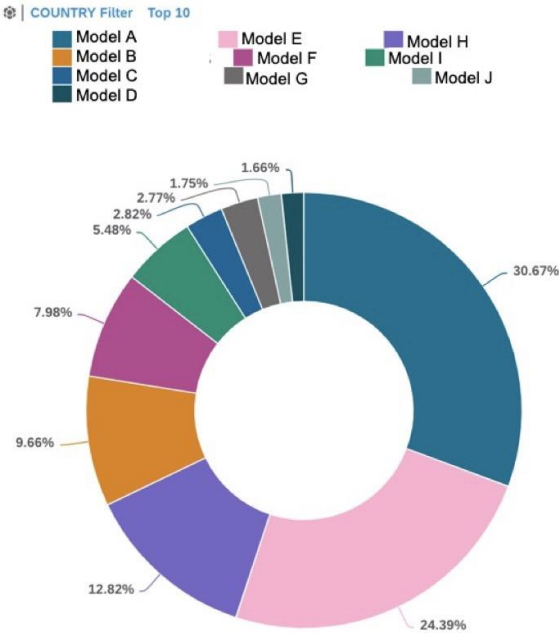


Sample Insights on Consolidated Data

01

What are the footwear top sellers by region ?

Most successful models - US



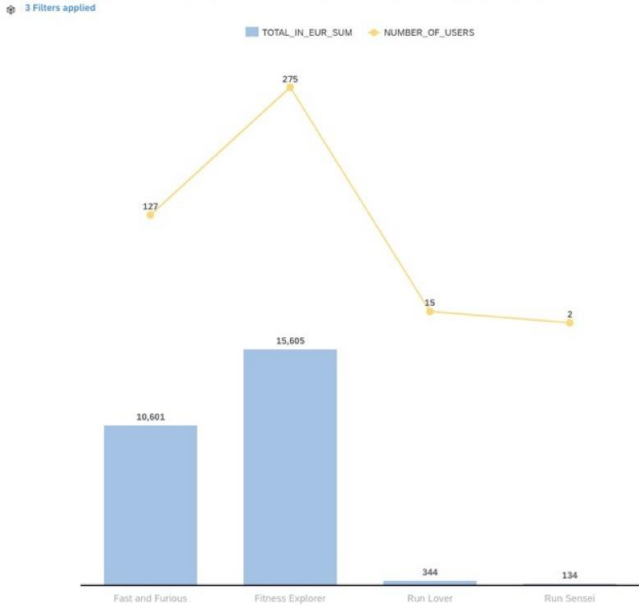
Data Source : SAP



02

Who's using Model A (top seller footwear)

NUMBER_OF_USERS, TOTAL_IN_EUR_SUM per RUNNING_PERSONA, LAST_SHOE_MODEL for Actual

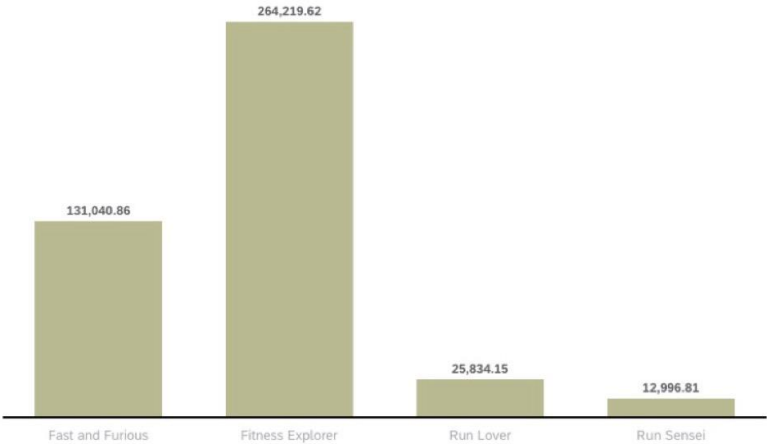


SAP + Snowflake



03

What's the total spending for running persona ?

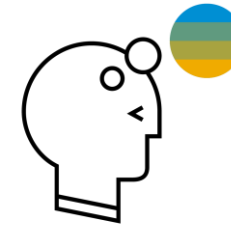
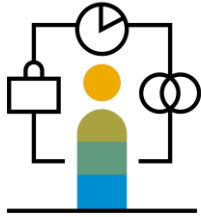


Snowflake + SAP

Renewables Simulation Centre

Use Case: **Data Warehousing**

Industry: **Utilities**



Business Scenario

- For a large European Utilities company Municipalities are the most important customer. They expect value added services beyond pure grid operations and maintenance
- Municipality retention at risk for each contract renewal period
- Initiative started to create new revenue streams by providing advisory services to Municipalities on enabling “Green Cities” as :
 - Municipalities need to create a more “green” environment but don’t necessarily have visibility to the most effective investment options and the infrastructure required
 - The Utilities company has access to data that can enable insights on energy production and consumption patterns & recommend where and what to produce renewable energy

Challenge

- Many diverse data sources required to enable such analytics and services, e.g. customers, assets, energy consumption & production values, grid load, energy price data, etc.
- Data is distributed across multiple systems
- Establishing a unified view requires significant effort and is complex to maintain

Solution

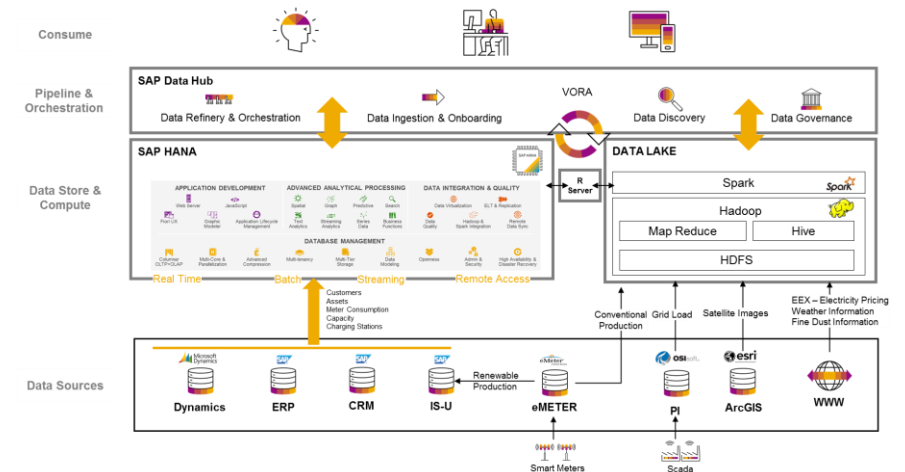
- Easily combine datasets from multiple different systems
 - Customer & Energy Consumption (SAP Utilities)
 - Assets and Capacity (SAP ERP and non-SAP CRM)
 - Grid Load (Historian/Scada systems)
 - Energy Pricing, Weather, Fine Dust data (online – open source)
- Provide E2E monitoring on the overall process, quickly identify errors
- Create interactive end user UIs in HANA

SAP Data Hub Benefits

- Orchestrate data flows between :
 - Source systems (SAP, non-SAP) and HANA
 - Source systems and Data Lake (Hadoop)
 - HANA and Data Lake
- Orchestrate scripting and Machine Learning (R) algorithms applied to data sets during these data flows using SAP Data Hub Pipelines
- Enable data transparency and bi-way communication between enterprise data and data lake (Hadoop) using SAP VORA
- Provide end-to-end visibility on data flows – e.g. monitor & identify bottlenecks
- Provide data discovery capabilities on HANA and Data Lake to ensure further visibility on datasets used in pipelines

Use Case: **Data Warehousing**

Industry: **Utilities**

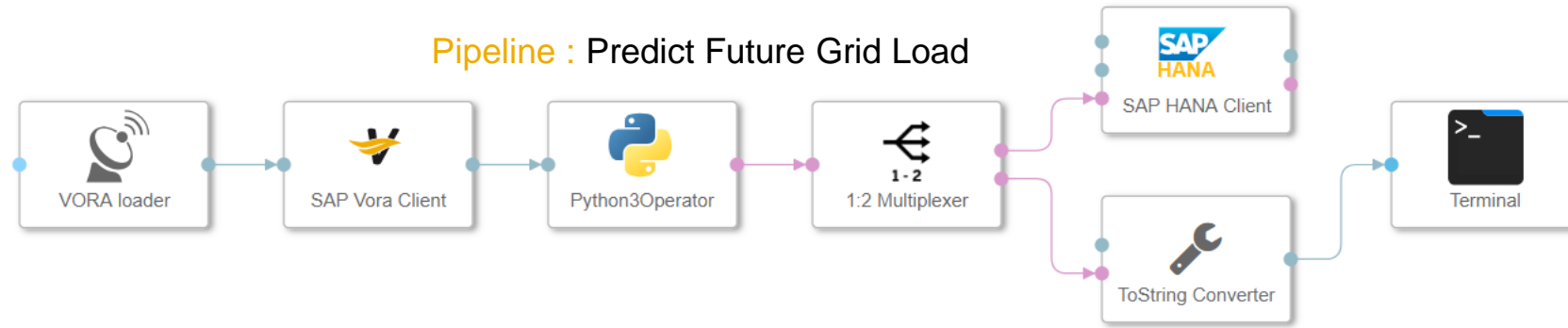


Without SAP Data Hub; each of these activities needed to be managed & monitored by different toolsets preventing end to end visibility on data flows which eventually reduces agility in getting insight from data

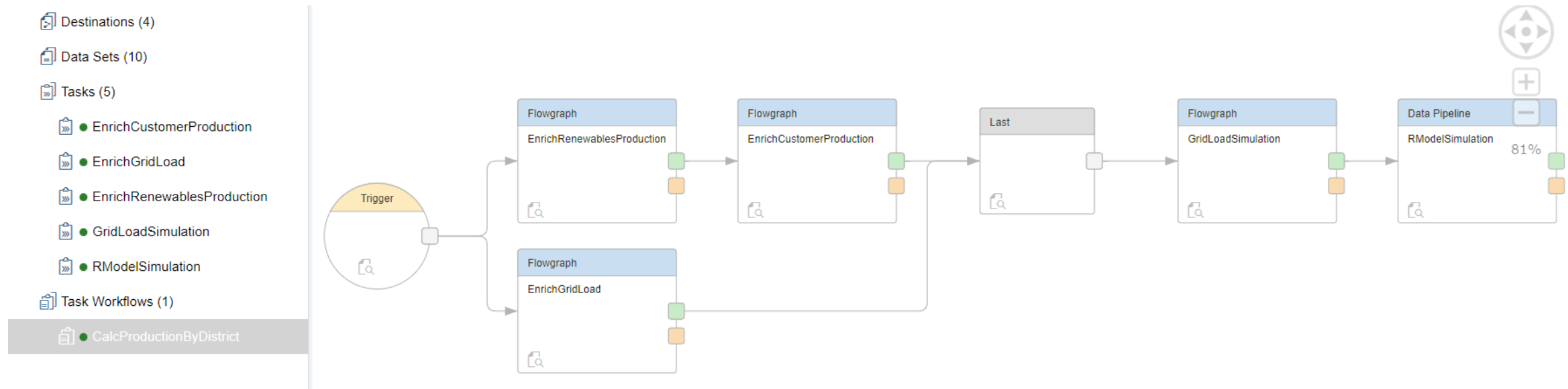
SAP Data Hub Models

Use Case: **Data Warehousing**

Industry: **Utilities**



Task Workflow: Combine Energy Production, Customer, Location, Grid Load information and Predict Future Grid Load

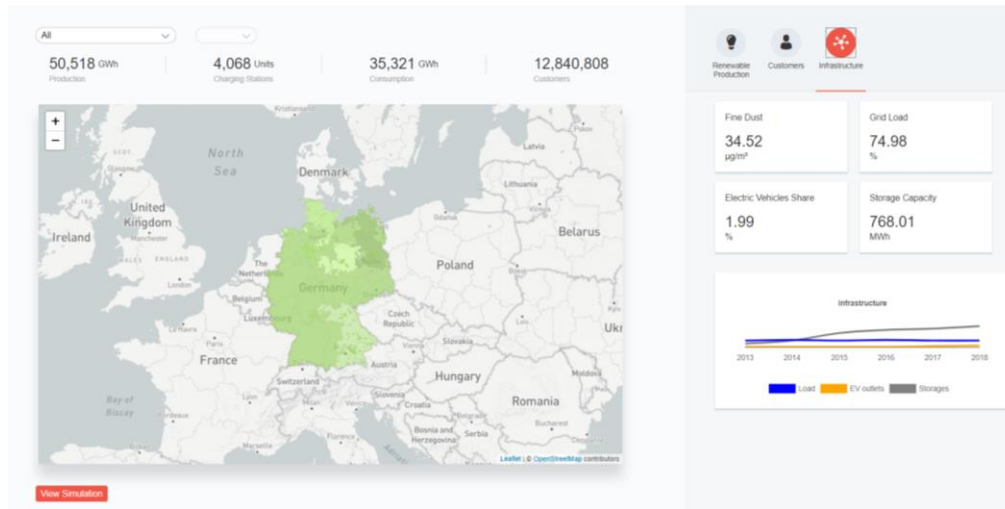


User Experience

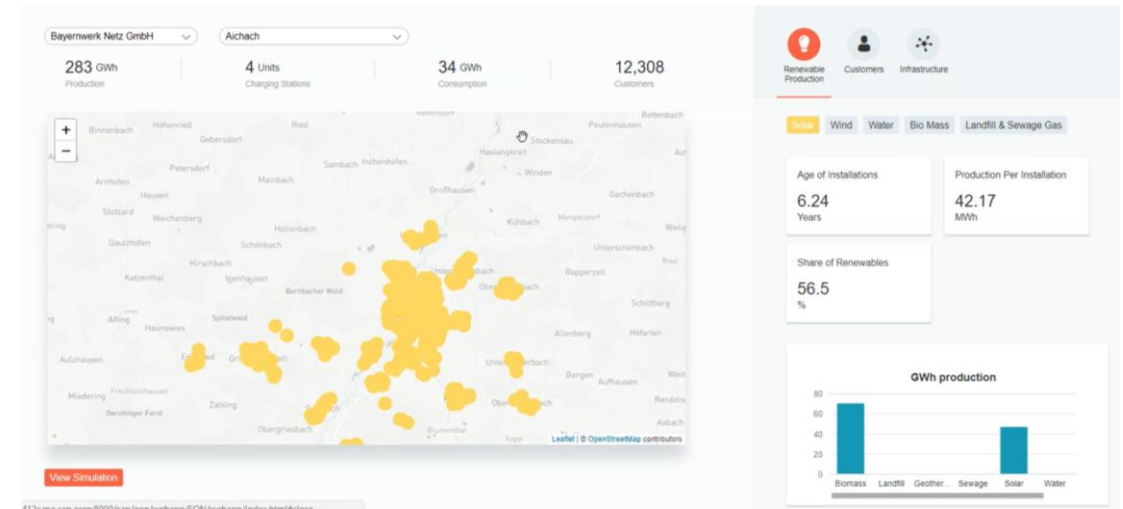
To be used by the Municipality Business Development Manager

Use Case: Data Warehousing

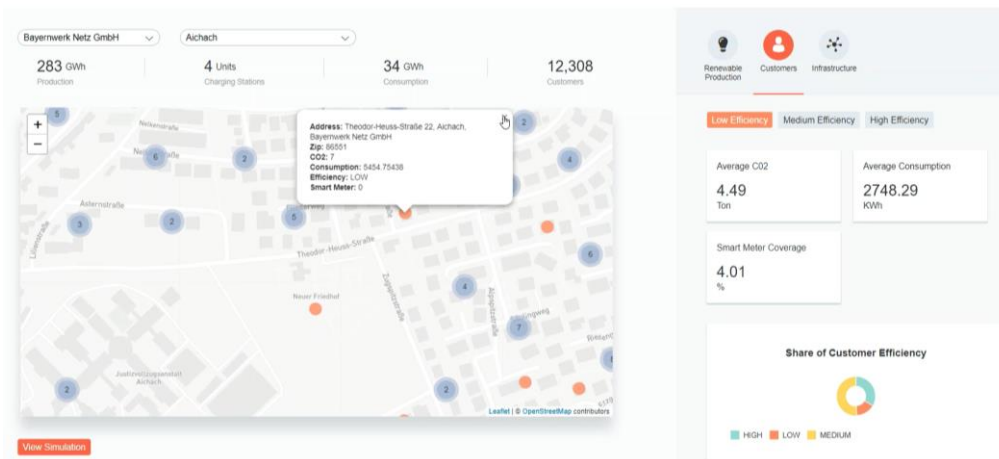
Industry: Utilities



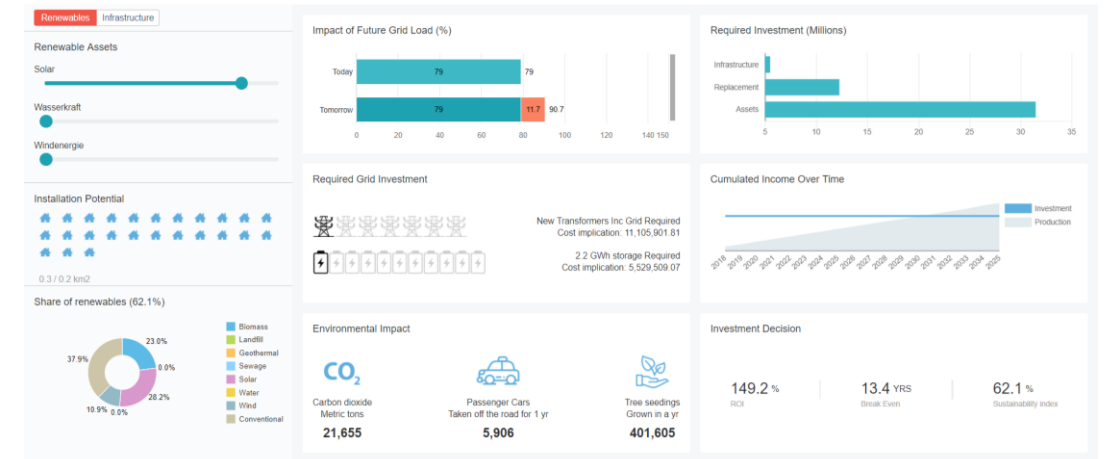
01 – Infrastructure details on map



02 – Renewable Production details on map



03 – Customer consumption details on map



04 – Renewable production simulation & impact on investment

Customer Risk Intelligence with S/4 HANA Cloud

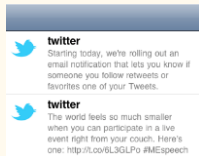
The business objective: safeguard sales process via fine-grained risk scoring

Big and Diverse Data



Credit Management Data

Business partner master data



Twitter feed



SAP Ariba Supplier Risk

Ariba risk score

Applied Intelligence

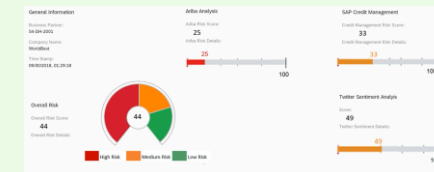


Sentiment Analysis

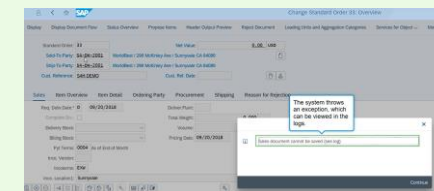


ML-driven scoring algorithm

Reimagined Business Processes



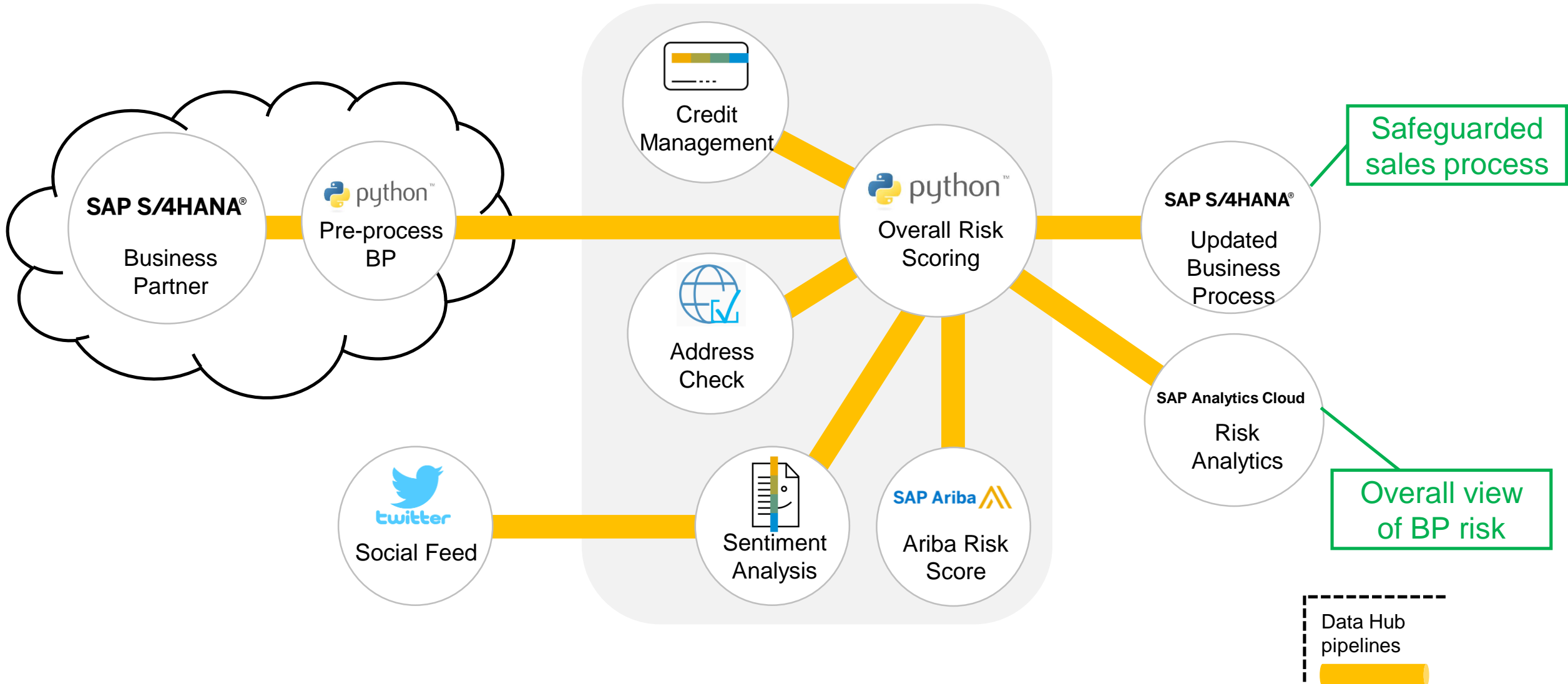
Risk score analytics



Risk-safe sales process

Customer Risk Intelligence with S/4 HANA Cloud

The implementation: customer risk scored across all disparate data assets!



S4-DH-2001

Edit Delete

On this screen, you can see the Overall Risk Score as well as the individual risk score results – SAP Credit Management, Address Quality, Ariba Analysis, and Twitter Sentiment Analysis.

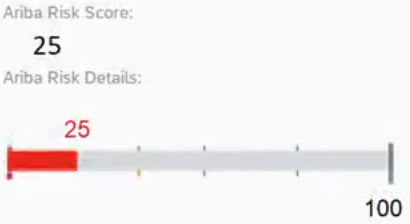
General Information

Business Partner:
S4-DH-2001

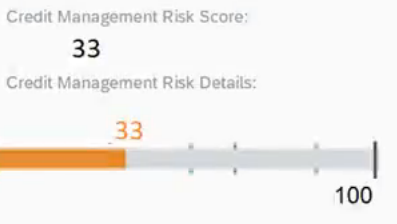
Company Name:
WorldBest

Time Stamp:
09/30/2018, 01:29:18

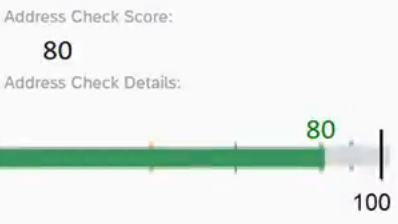
Ariba Analysis



SAP Credit Management



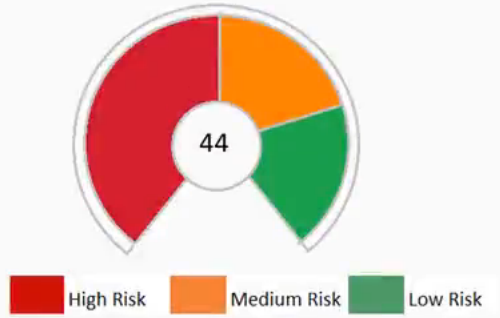
Address Quality



Overall Risk

Overall Risk Score:
44

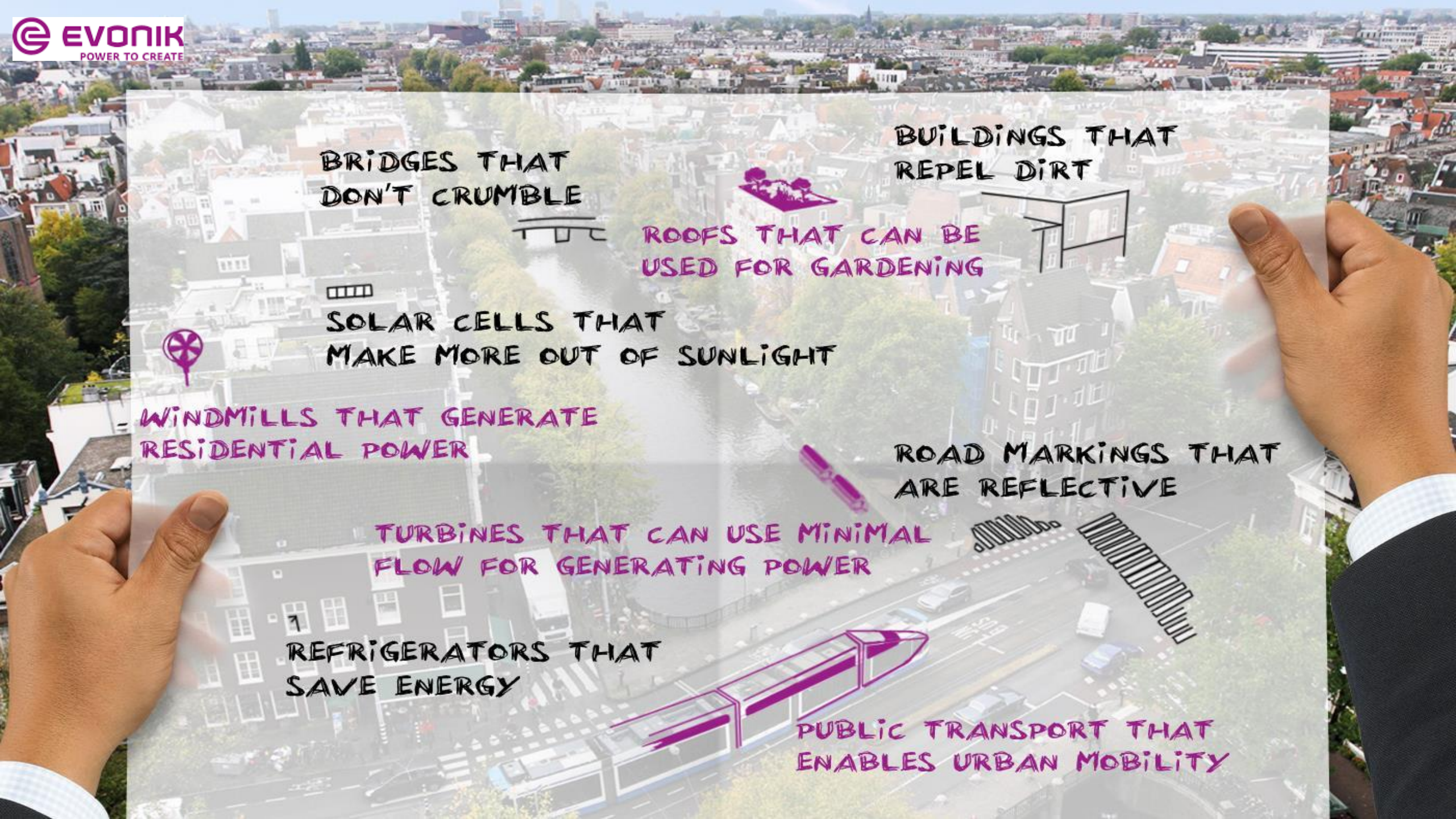
Overall Risk Details:



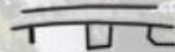
Twitter Sentiment Analysis







BRIDGES THAT
DON'T CRUMBLE



BUILDINGS THAT
REPEL DIRT



ROOFS THAT CAN BE
USED FOR GARDENING



SOLAR CELLS THAT
MAKE MORE OUT OF SUNLIGHT



WINDMILLS THAT GENERATE
RESIDENTIAL POWER

ROAD MARKINGS THAT
ARE REFLECTIVE



TURBINES THAT CAN USE MINIMAL
FLOW FOR GENERATING POWER



1
REFRIGERATORS THAT
SAVE ENERGY



PUBLIC TRANSPORT THAT
ENABLES URBAN MOBILITY

Problem statement: high manual efforts tied to packaging material creation

Packaging specs. in multiple formats...

...requires a materials master to be created...

...for classification

Spezifikation 

drstraetmans
An Evonik brand.

PACKAGING SPECIFICATION

Unit code	Packaging unit	Material
S04	drum	steel

Specifications

Product Name: 200L open drum DM-10
Generic Name: Steel open drums
Manufacturer: JFE Container
9-1 Ohnumanishi, Sakai, Osaka 590-0977 Japan

Dimensions:

Body	
Depth:	620 mm
Width:	620 mm
Height:	890 mm
Thickness:	1.2 mm
Tare weight:	20,000 g

Appearance:



Cover:

Depth:	600 mm
Width:	600 mm
Height:	24 mm
Thickness:	1.2 mm
Tare weight:	3,000 g



Manually

~ 8.000 packaging materials
= 160.000 lines

Textzeile

Packmittel-Typ : F-IBC mit Vierfach-Aufhängung mit Aluminiumliner

Geändert am : #01.12.2014 AI
Nach DIN/EN : 55461/1898
Zulassung : UN/13H4/Y/...
Bedruckung : 2-seitig, gemäß Vorlage "Cyanurchlorid" 03/2013

Technische Maße

Körper

Länge (mm): 880 (+/-10)
Breite (mm): 880 (+/-10)
Höhe (mm): 1150 (+/-50)
Einlaufschürze (mm): 850 (+50/-0)



Manually

Attributes are **derived manually** by experts

Klassifizierung

Objekt

Material: 91006570 FIBC 880X880X1100 ALU-INL., UN, CC, AV
Klassenart: 001 Materialklasse

Zuordnungen

Klasse	Bezeichnung	Sta...	S...
20240400	FIBC, Kunststoff (Big Bag)	<input type="checkbox"/>	1
MIGRATION_INFO	Migrationsinformationen Material	<input type="checkbox"/>	1

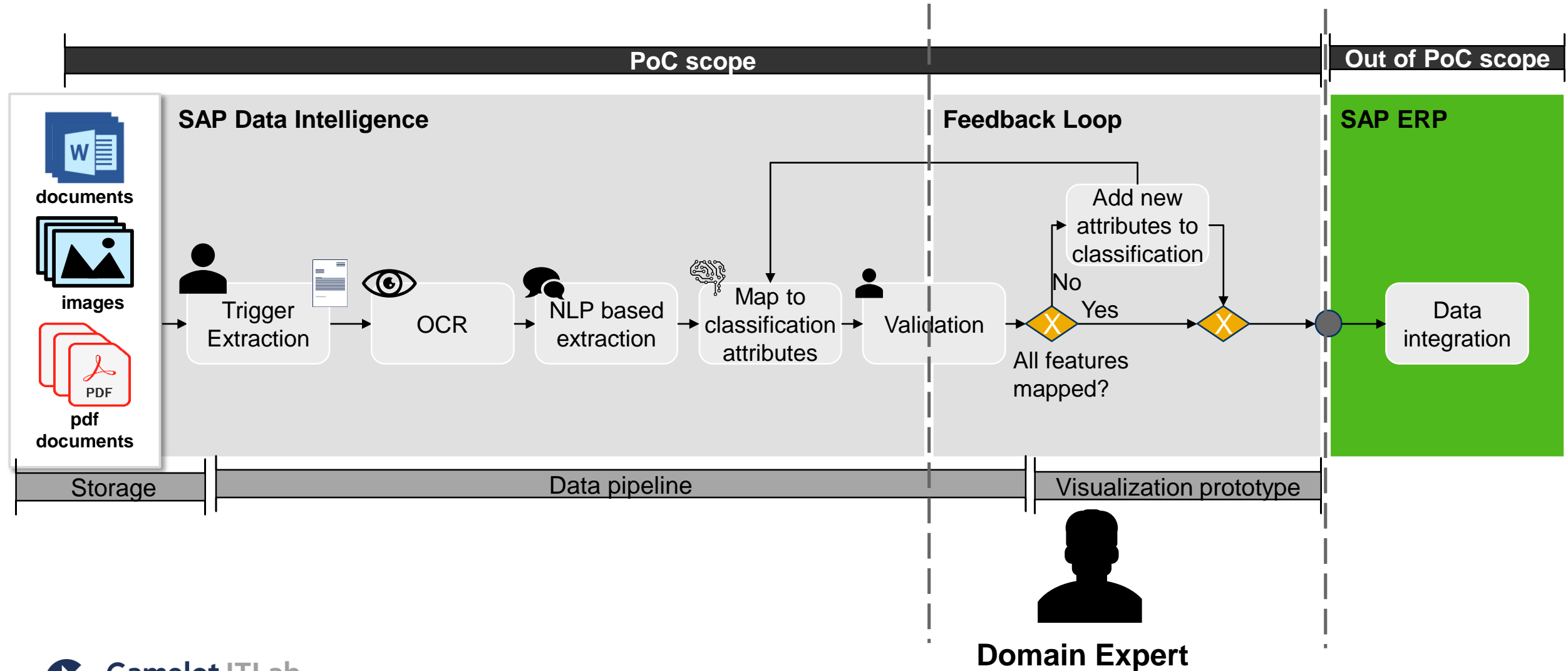
Eintrag 1 / 2

Bewertung zu Klasse 20240400 - Objekt 91006570

Algemein

Merkmalbezeichnung	Wert
Erstellungsdatum/User	
Änderungsdatum/User	
Spezifikation	
Daten***	
Verpackungstoff	
Instruktion/Bauart	

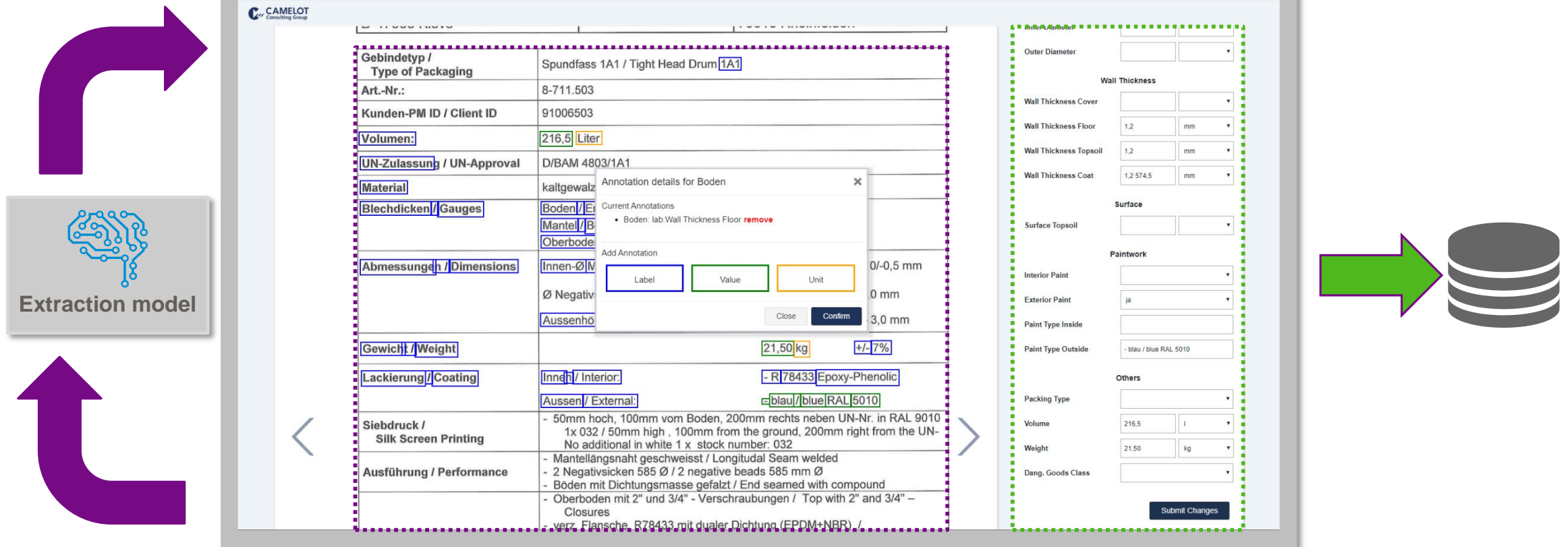
PoC scope: focus was to deploy AI-model on the SAP Data Intelligence



PoC outcome: pre-trained application for data extraction & validation

Validate and correct annotations

Validate and correct extraction



Result: end-users take advantage of a much faster & convenient process

Field	Value
Gebindetyp / Type of Packaging	Spundfass 1A1 / Tight Head Drum 1A1
Art.-Nr.:	8-711.503
Kunden-PM ID / Client ID	91006503
Volumen:	216,5 Liter
UN-Zulassung / UN-Approval	D/BAM 4803/1A1
Material	kaltgewalz
Blechdicken / Gauges	Boden: 0,5 mm Mantel: 0,5 mm Oberboden: 0,5 mm
Abmessungen / Dimensions	Innen-Ø: 0,5 mm Ø Negativ: 0 mm Aussenhö: 3,0 mm
Gewicht / Weight	21,50 kg +/- 7%
Lackierung / Coating	Innen / Interior: R 78433 Epoxy-Phenolic Aussen / External: blau / blue RAL 5010
Siebdruck / Silk Screen Printing	- 50mm hoch, 100mm vom Boden, 200mm rechts neben UN-Nr. in RAL 9010 1x 032 / 50mm high, 100mm from the ground, 200mm right from the UN- No additional in white 1 x stock number: 032
Ausführung / Performance	- Mantellängsnaht geschweisst / Longitudinal Seam welded - 2 Negativsicken 585 Ø / 2 negative beads 585 mm Ø - Boden mit Dichtungsmasse gefalzt / End seamed with compound - Oberboden mit 2" und 3/4" - Verschraubungen / Top with 2" and 3/4" - Closures - verz. Flansche, R78433 mit dualer Dichtung (EPDM+NBR) /

Annotation details for Boden	
Current Annotations	
Boden: lab Wall Thickness Floor	remove

Add Annotation	
Label	Value Unit
	0/-0,5 mm
	0 mm
	3,0 mm

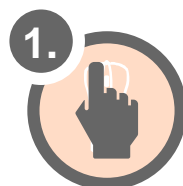
Advantages

- ✓ Fields are prepopulated
- ✓ Values and annotations are displayed in a clear interface
- ✓ Can easily apply corrections into the ERP system
- ✓ Corrected annotations are played back into the system

= System continuously converges to it's best possible state



End-user
work steps



1. Validate &
correct
annotations



2. Validate &
correct
extraction

Thank you.

Contact information:

Stein Tronstad

SAP Senior Solution Advisor

Stein.Tronstad@sap.com