



SAP Data Hub: The Journey to a Productive Use Case at BASF

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Andreas Wesselmann, SAP SE
Session ID # 82702

About the Speakers

Frank Strohmaier

- Director Data Science, BASF SE
- Globally responsible for Data Engineering and Data Science Technologies applied to Business Analytics Projects.

Andreas Wesselmann

- SVP T&I Big Data, SAP SE
- Globally responsible for R&D of Big Data and Data Management solutions.

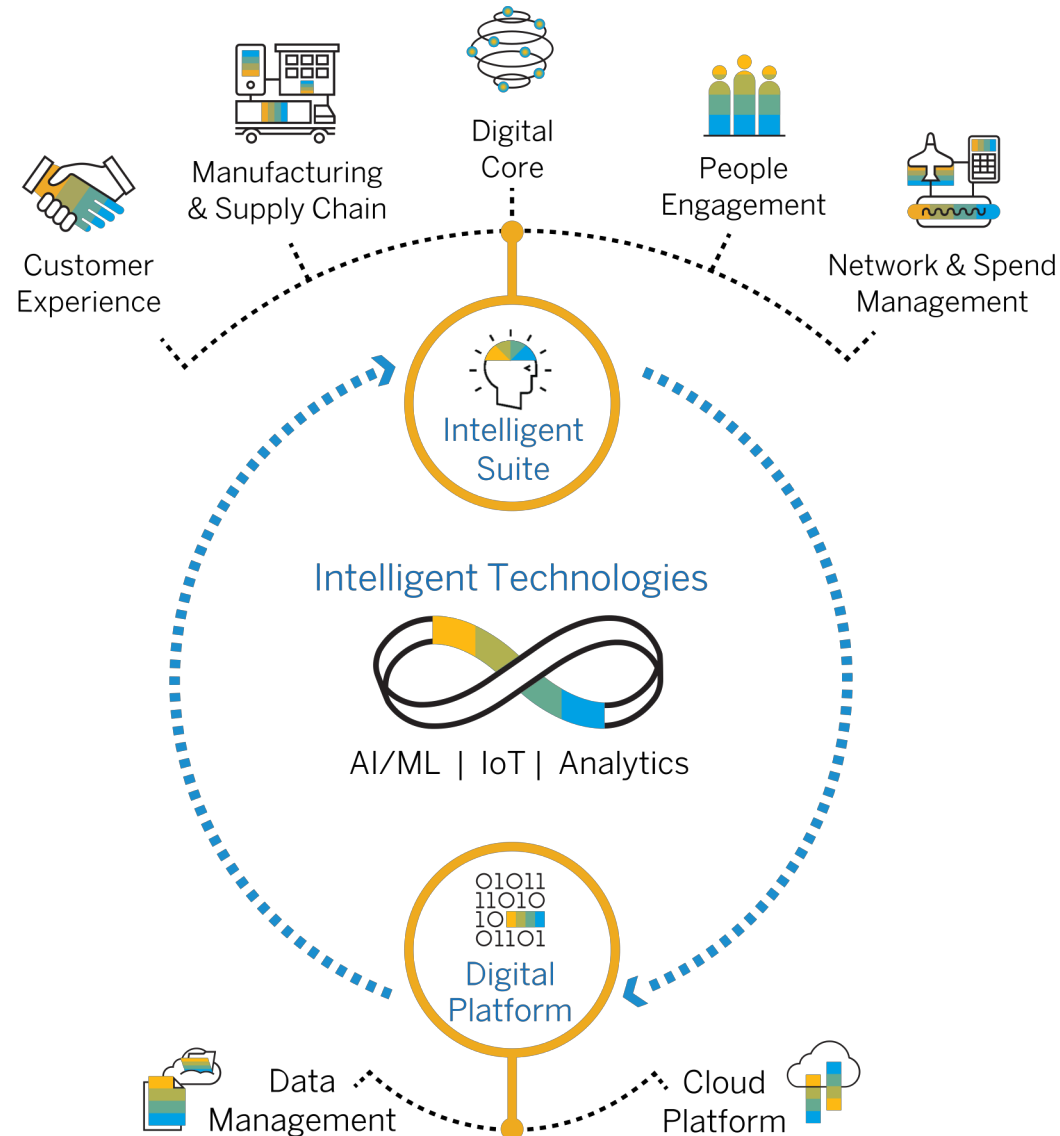
Key Outcomes/Objectives

1. Know SAP Data Hub and its role in the Intelligent Enterprise
2. Understand the BASF Business Challenges
3. Learn how BASF uses SAP Data Hub to enable and scale out machine learning-based application use cases across different business units

Agenda

- Overview SAP Data Hub
- BASF business use cases for machine learning
- Conclusions and Outlook

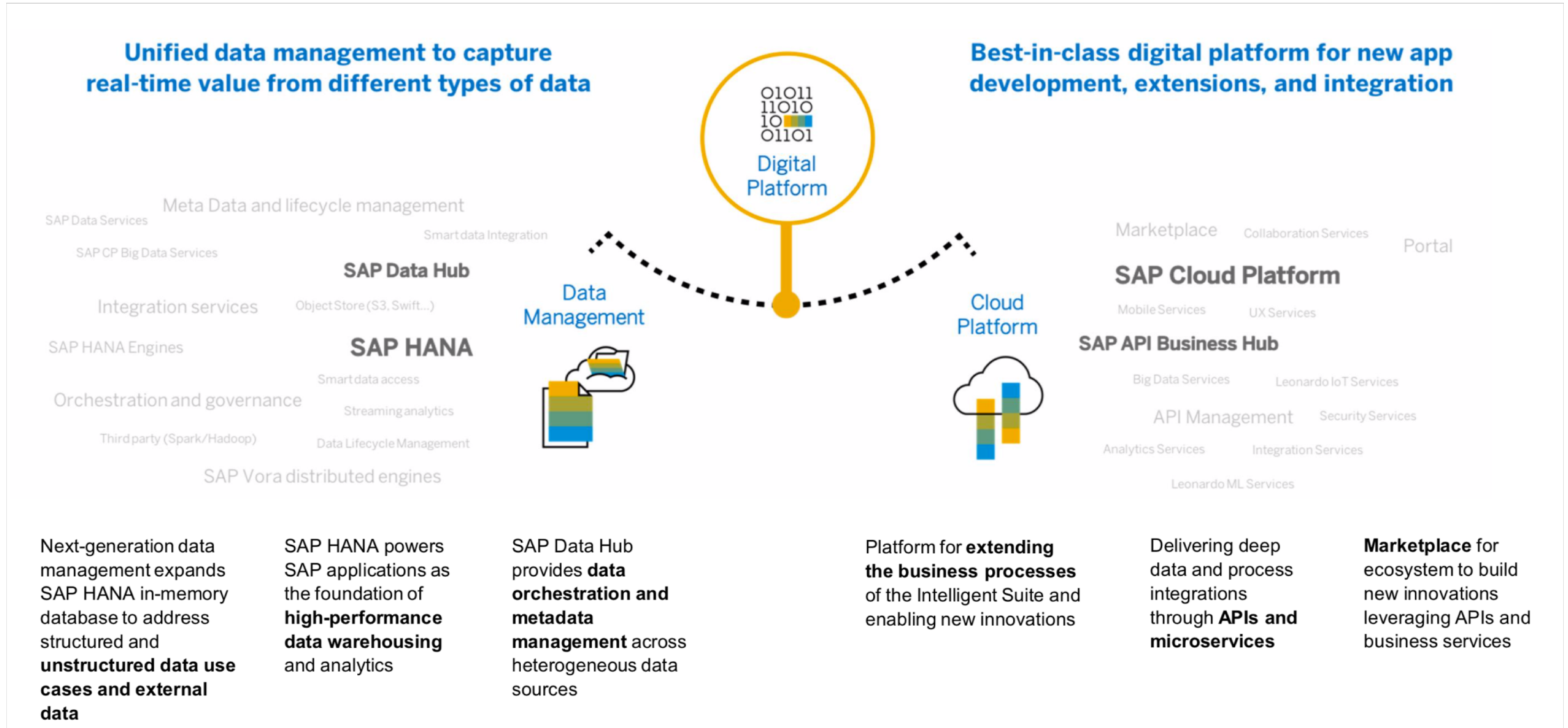
SAP Strategy – Deliver the Intelligent Enterprise



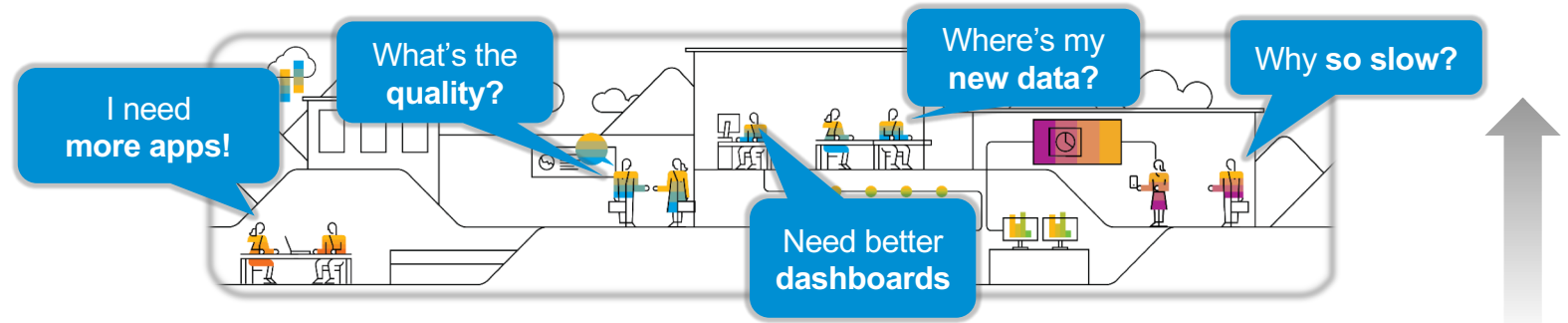
THE INTELLIGENT ENTERPRISE
features 3 KEY COMPONENTS

- 1 Intelligent Suite
- 2 Digital Platform
- 3 Intelligent Technologies

Digital Platform: Unlock data-driven intelligence and innovation



Enterprise data landscapes are growing increasingly complex



LANDSCAPE CHALLENGES

GOVERNANCE

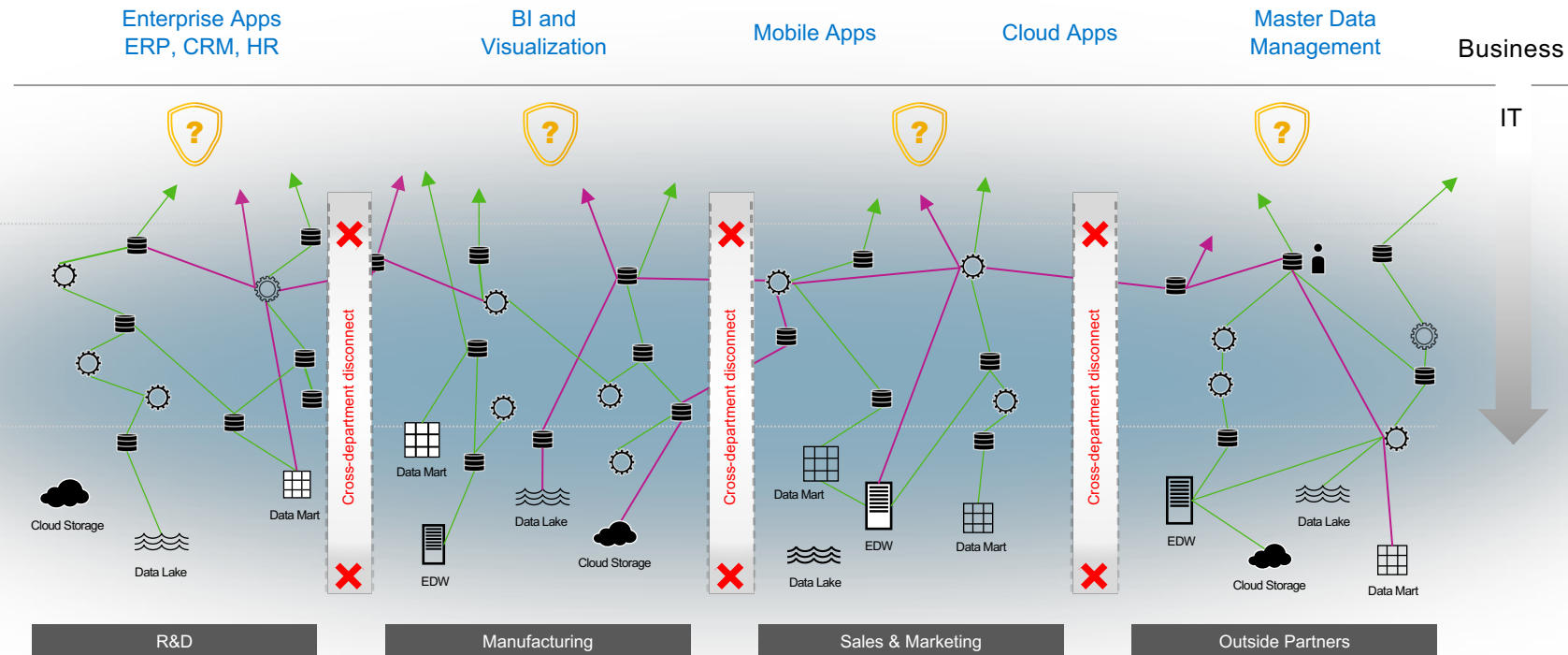
Lack of security and visibility. Who changed the data? What was changed? Who is accessing it?

LIMITED TOOLS

Lack of enterprise readiness. High effort to productize complex data scenarios across data landscape

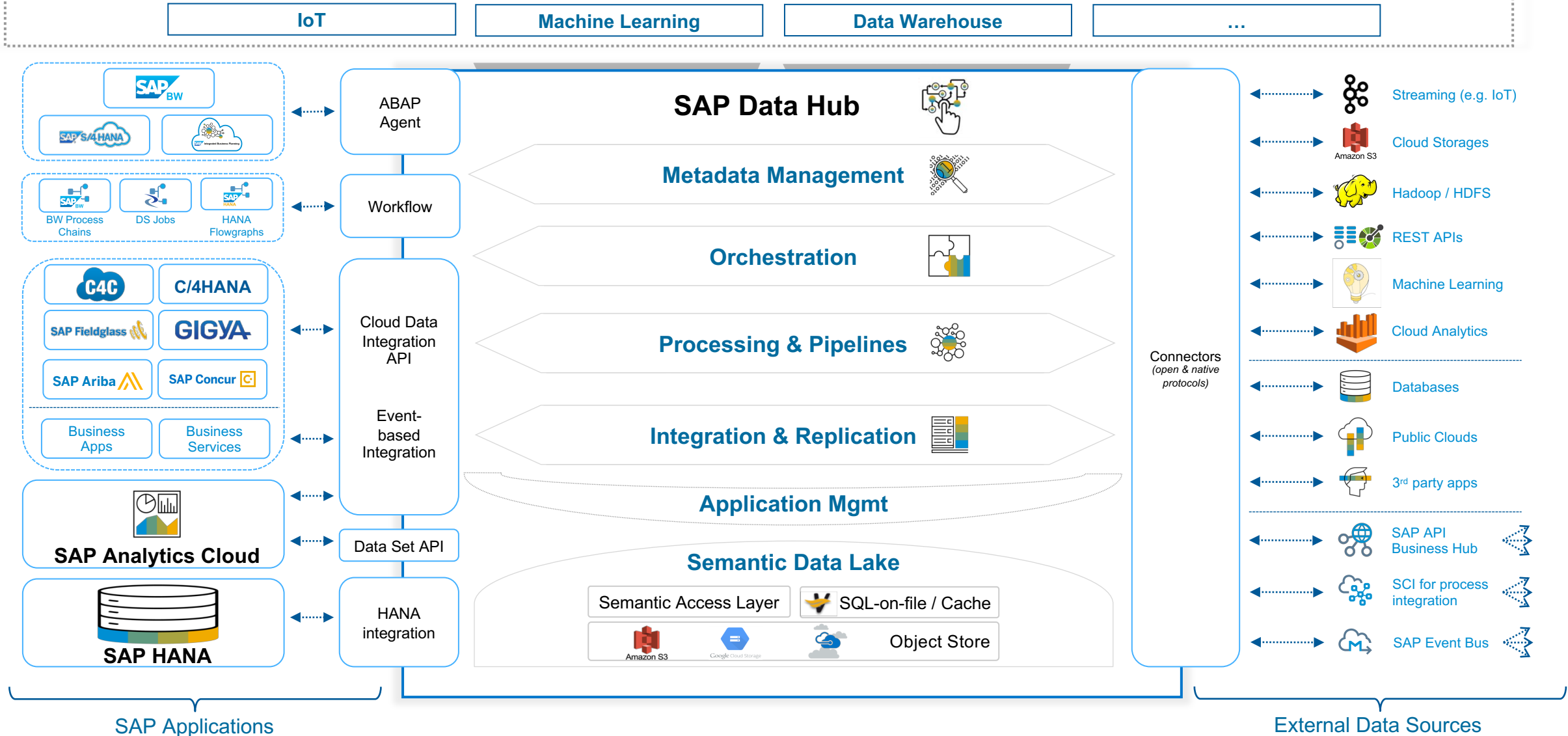
MISSING LINK

Between Big Data and Enterprise Data. Data is kept in silos across the enterprise.



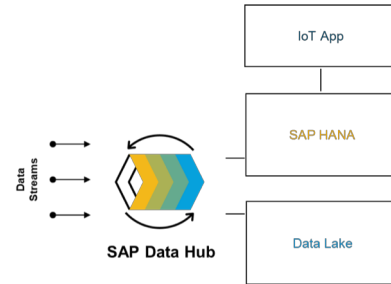
SAP Data Hub – Unified Data Integration for the Intelligent Enterprise

Data-driven applications

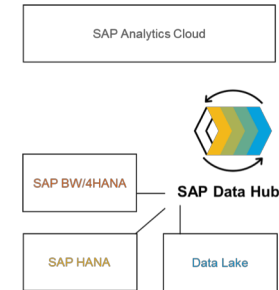


Patterns and Use Cases

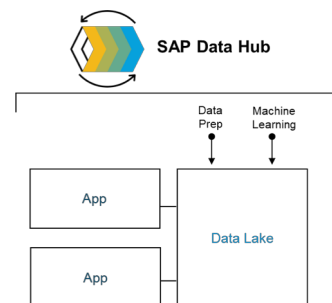
Overview



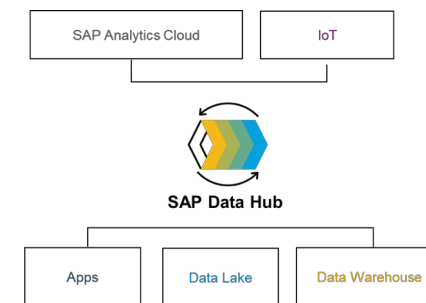
IoT Ingestion & Orchestration
Understand real-world performance



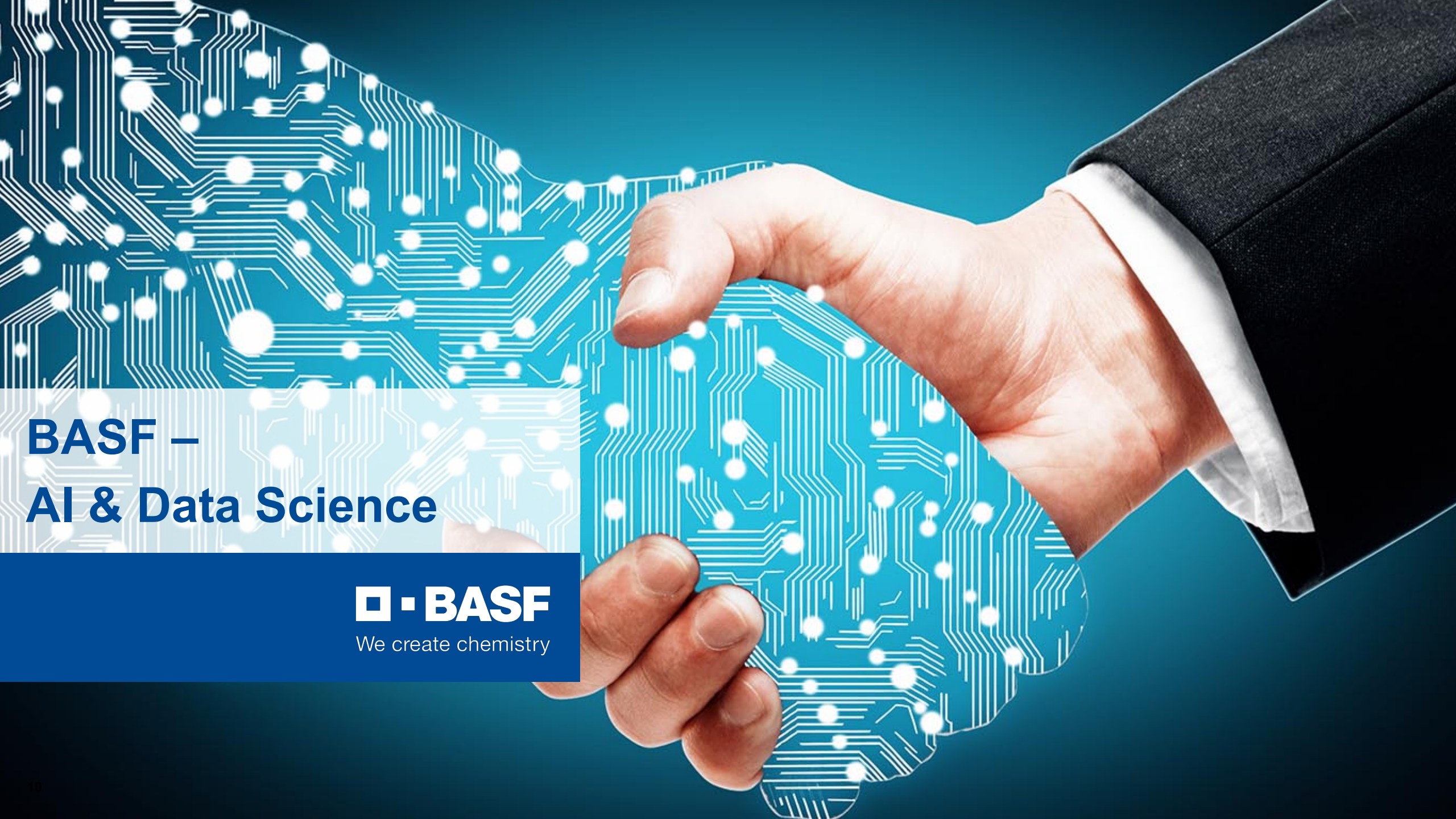
Intelligent Data Warehouse
Rapidly integrate and leverage new data sources



**Data Science &
ML Data Management**



Governance / Data Cataloging
Understand and secure your data



BASF – AI & Data Science

 **BASF**

We create chemistry



BASF – AI & Data Science

BASF
We create chemistry

BASF – We create chemistry

- Our chemistry is used in almost all industries
- We combine economic success, social responsibility and environmental protection
- Sales 2018: €62.7 billion
- EBIT before special items 2018: €6.4 billion
- Employees (as of December 31, 2018): 122,404
- 6 Verbund sites and 355 other production sites
- Over 90,000 customers from various sectors in almost every country in the world



BASF's segments



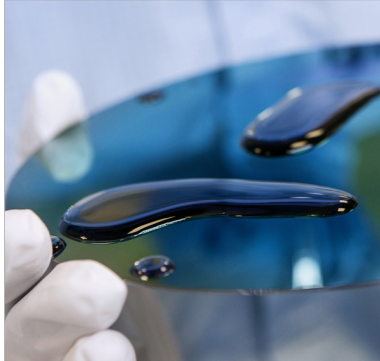
Chemicals

Petrochemicals
Intermediates



Materials

Performance Materials
Monomers



Industrial Solutions

Dispersions & Pigments
Performance Chemicals



Surface Technologies

Catalysts
Coatings
Construction Chemicals*



Nutrition & Care

Nutrition & Health
Care Chemicals



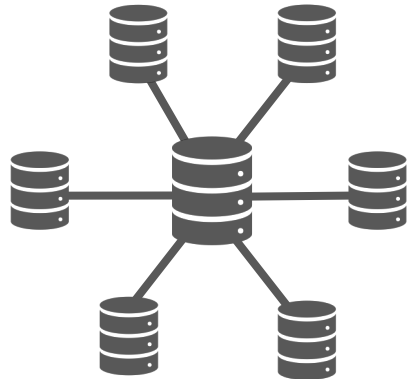
Agricultural Solutions

* We are considering the possibility of merging our construction chemicals business with a strong partner, as well as the option of divesting this business. The outcome of this review is open. The Construction Chemicals division will be reported under the Surface Technologies segment until signing of a transaction agreement.

We are co-creating tailor made product recommendations jointly with every business partner using a workshop approach.

Concept

1. Data selection and preparation



Data Sources

- Sales
- Controlling
- + partner specific data

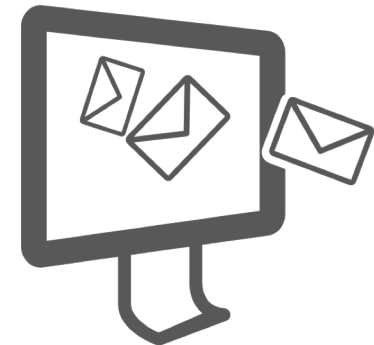
2. Method selection and configuration



Methods

- Association rules
- RPART
- (GBT)

3. Result enhancement and delivery

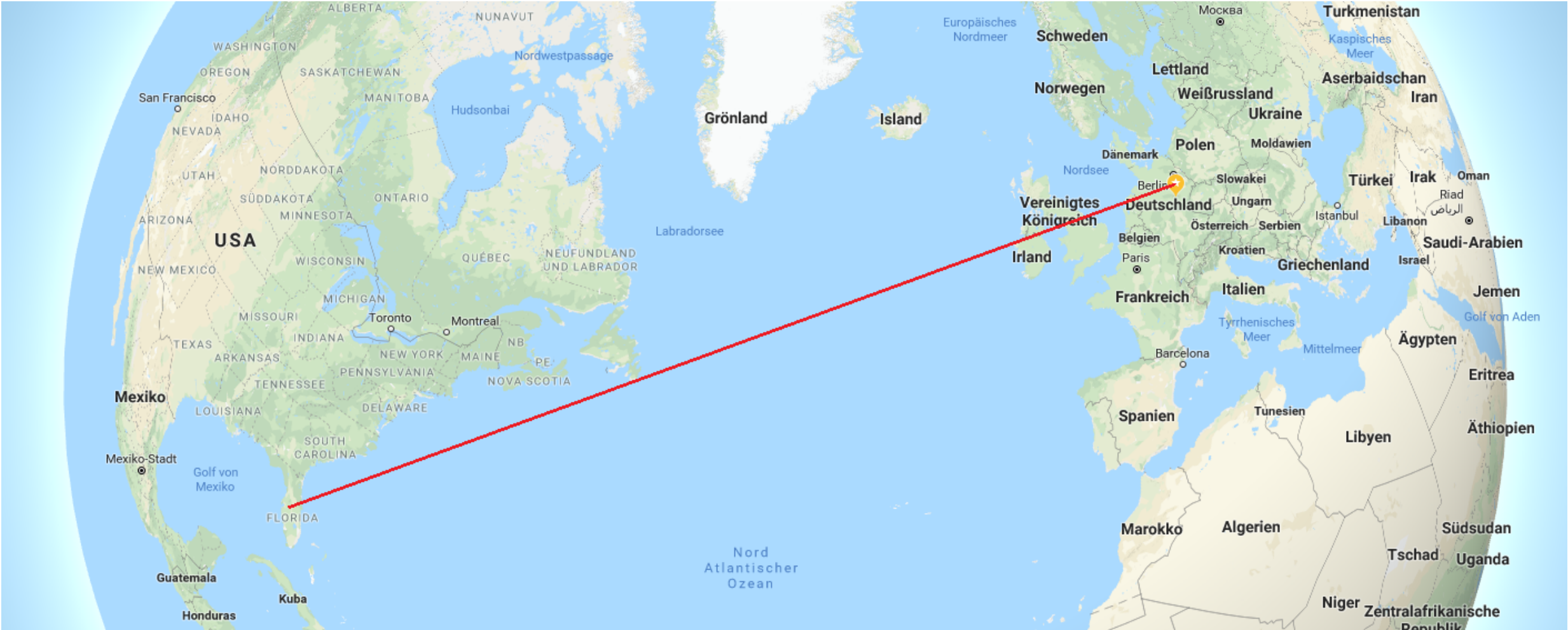


Output

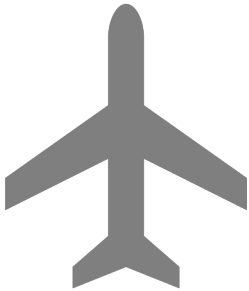
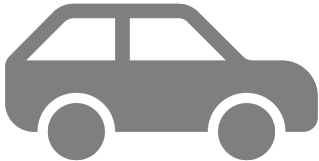
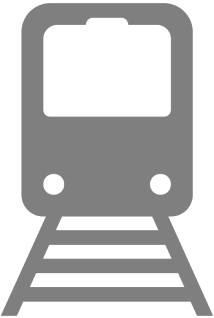
- Excel
- Dashboard
- Integrate output

Find the right combination and configuration per partner

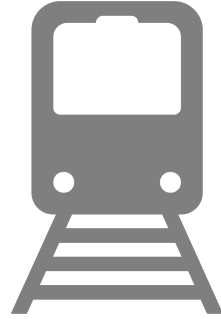
Suppose: we need to travel from Germany to Orlando, Florida



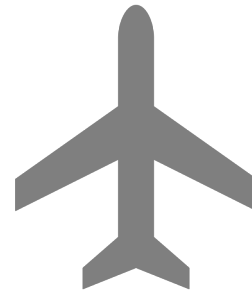
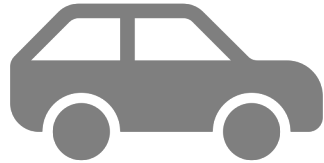
Which mode of transport would be fastest?



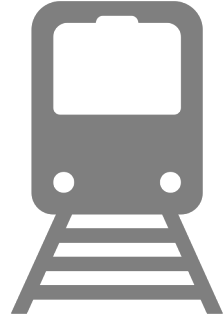
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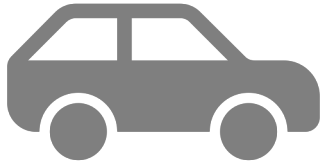
Which one would *you* choose?



Which mode of transport would be fastest?



Should you go for the airplane?



Still convinced that an airplane would be fastest?



Cars, planes, boats etc. are configurable

- Not every plane is faster than every car, in every situation.
- It depends on the *configuration*, e.g. what engine to put in your car, what wheels to put under your car.



https://mir-s3-cdn-cf.behance.net/project_modules/disp/e6e81b16082179.560398e20a60b.jpg

Comparing modes of transport

For properly assessing what will get us to Orlando, Florida fastest, we could do the following:

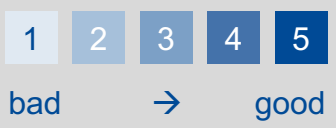
1. Find the best configuration for each individual mode of transport.
2. Compare the best plane to the best car to the best boat etc.

Analogy: model selection in machine learning

Traveling from Germany to Florida	Recommending products to customers
Mode of transport (car, plane, boat, ...)	Machine learning model (support vector machine, gradient boosted trees, deep learning, ...)
Configuration (wheel size, engine, spoiler, ...)	Hyperparameters (misclassification cost, tree depth, kernel width, learning rate, ...)
Finding the optimal configuration	Hyperparameter optimization (grid search, stochastic search, ...)
Comparing the best car to the best plane to the best ...	Model selection

ABA's product recommendation toolkit: GFreclab

1	2	2	5	5	2	5	3	4	CPU
1	1	1	5	4	2	5	3	3	Memory
4	4	4	3	1	3	2	5	4	Quality
1	1	1	1	1	1	1	5	5	Extensibility
5	5	5	4	3	5	5	2	4	Interpretability
APRIORI	ECLAT	FPGROWTH	SNA	LIBMF	FHM	POPULAR	GBT	RPART	



ABA's product recommendation toolkit: GFreclab

Probably should not use this on a cell phone!

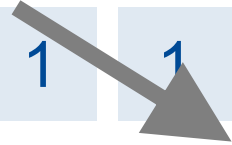
1	2	2	5	5	2	5	3	4	CPU
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4	4	4	3	1	3	2	5	4	Quality
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ABA's product recommendation toolkit: GFreclab

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5	5	5	4	3	5	5	2	4	Interpretability
APRIORI	ECLAT	FPGROWTH	SNA	LIBMF	FHM	POPULAR	GBT	RPART	

Probably should not use this if the customer wants an explanation of the recommendation!

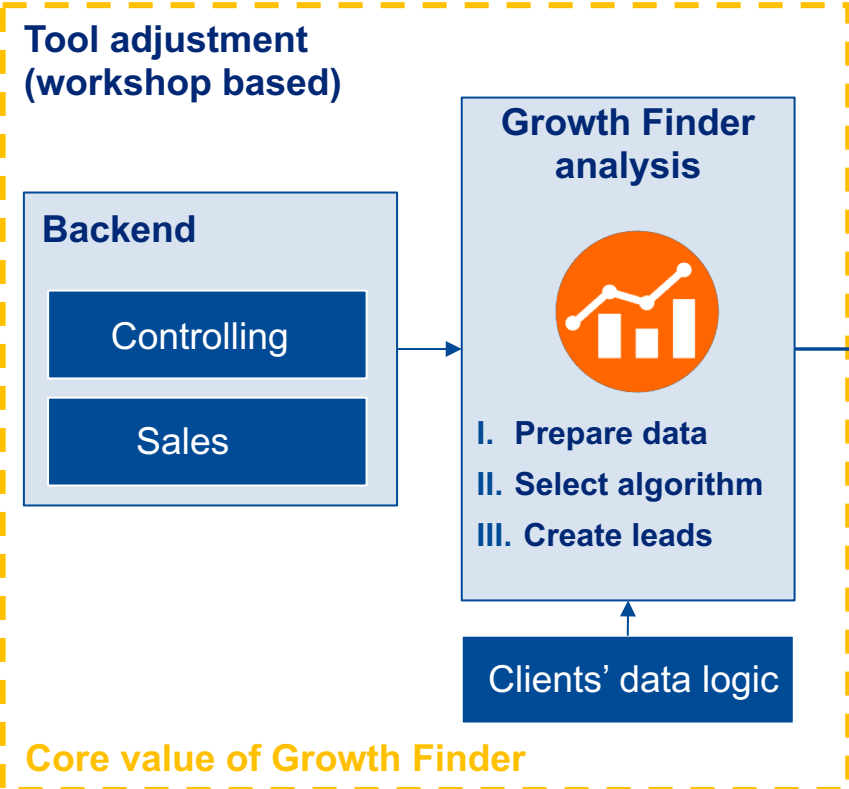


1 2 3 4 5
bad → good

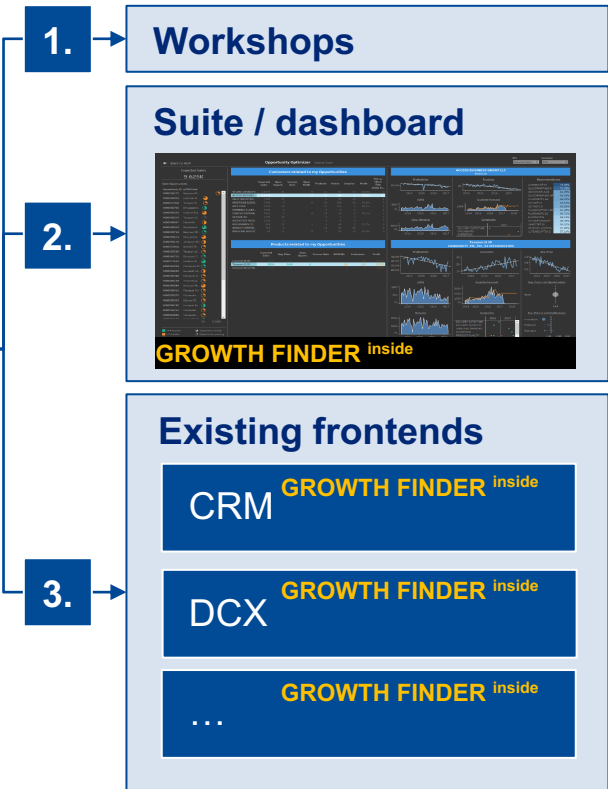
The offering combines the customizing of the Growth Finder methodology with a flexible integration to business operations

GROWTH FINDER as steady state

I. Customization of method and generation of recommendations



II: Integration into business based on customer preference



Solution description

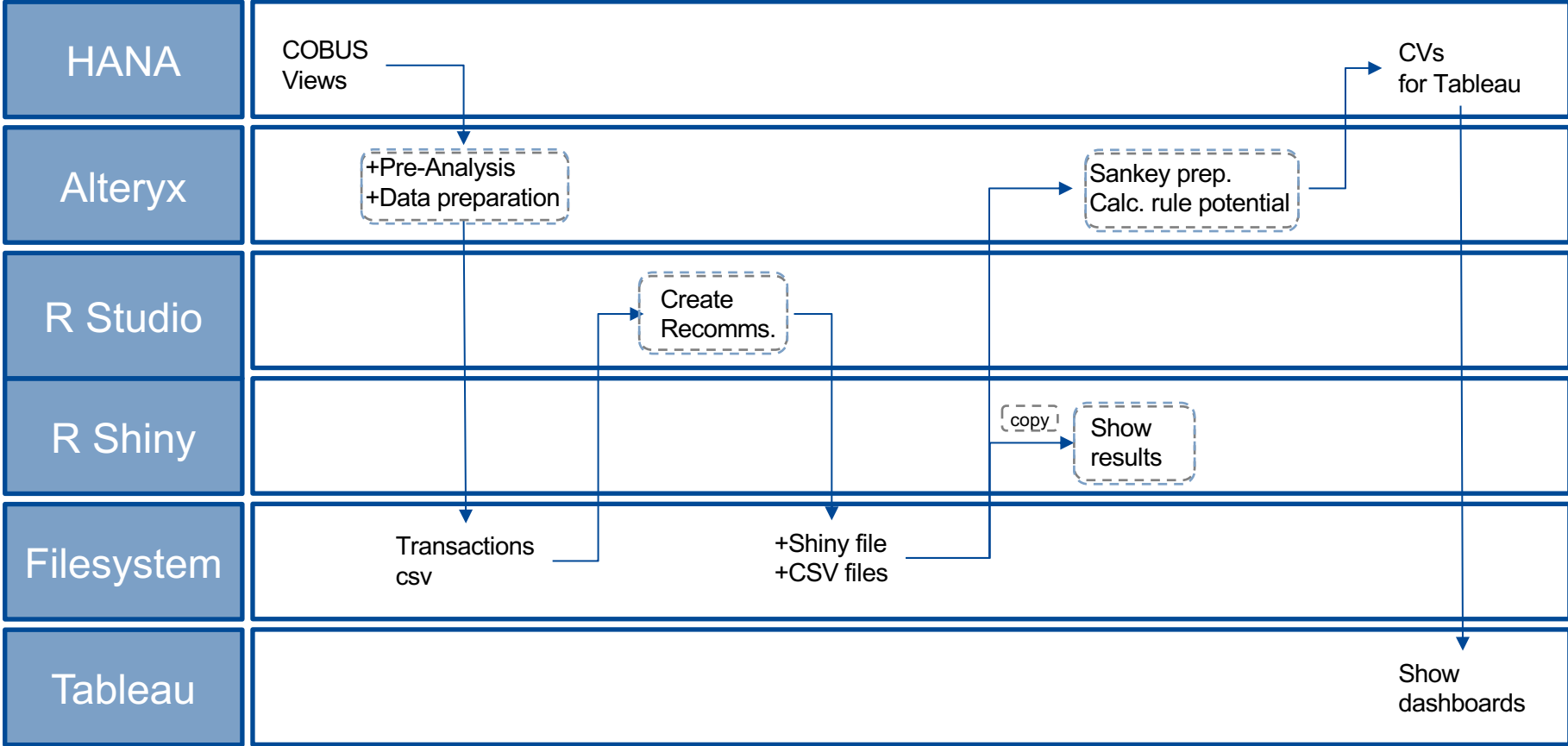
I. Generation of recommendations

- The core value of the Growth Finder offering is the **recommendation engine**
- For each client a **customized solution** is developed through workshops, incl. several iterations of analysis.

II. Implementation to business

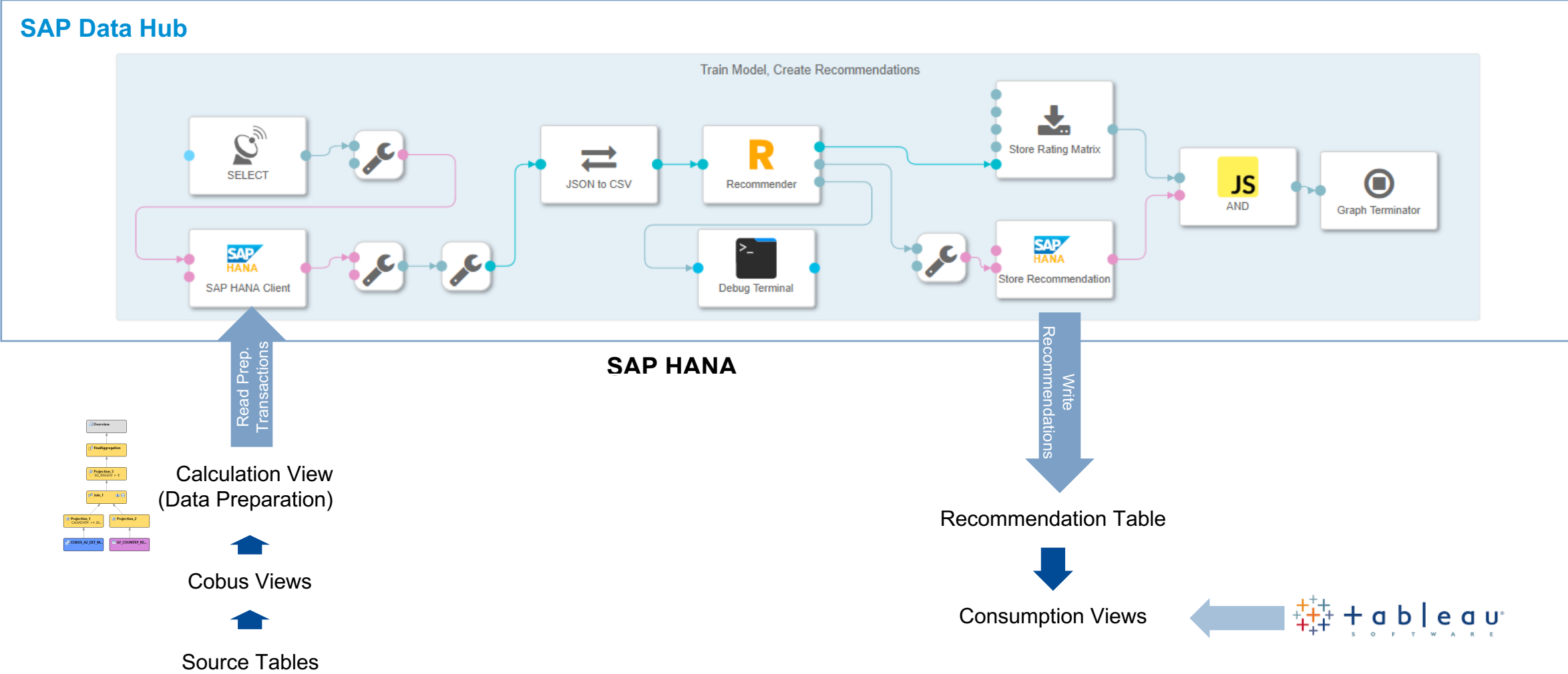
According to the business needs and processes of **each client**, **several solutions** can be offered to work recommendations in daily business

Process needs to be adapted for every new partner during onboarding

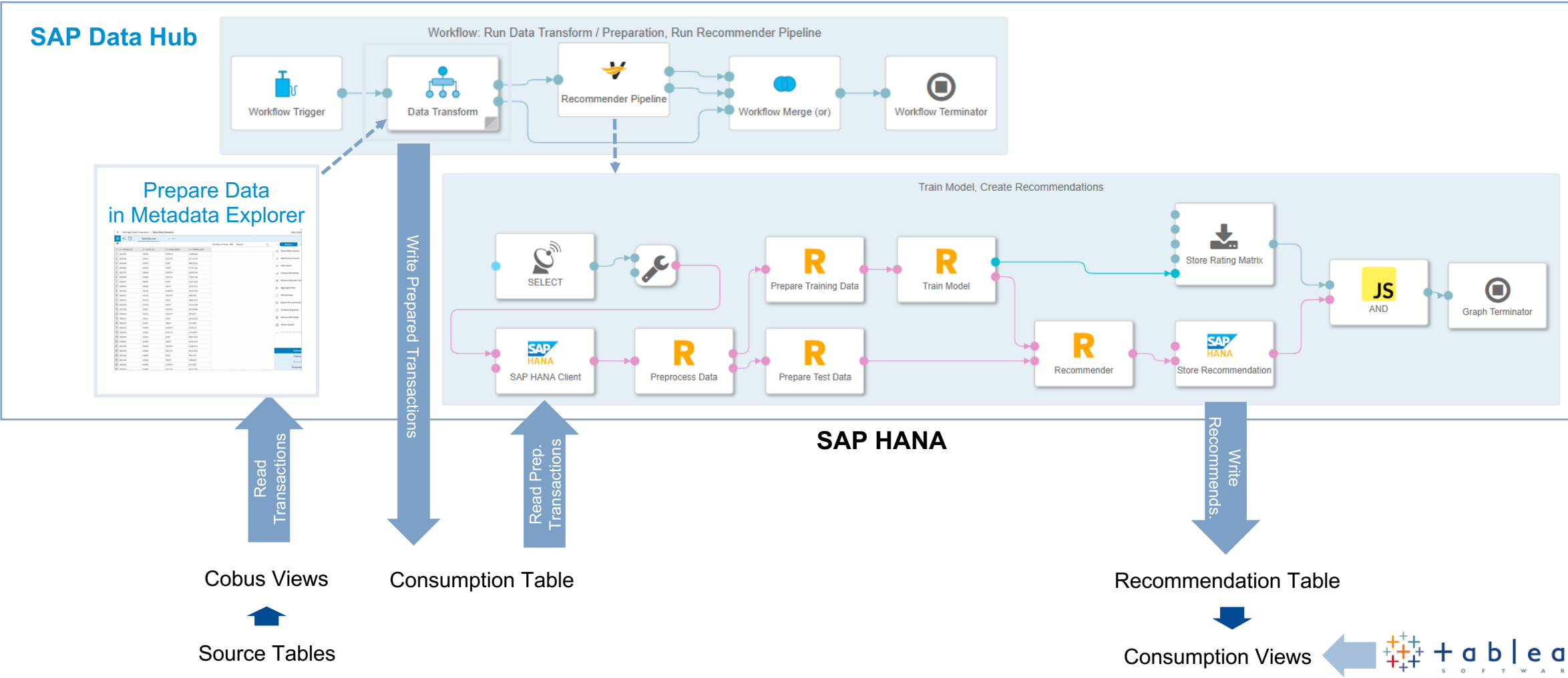


manally locally

Growth Finder Implementation with SAP Data Hub Today



Growth Finder Implementation with SAP Data Hub Planned



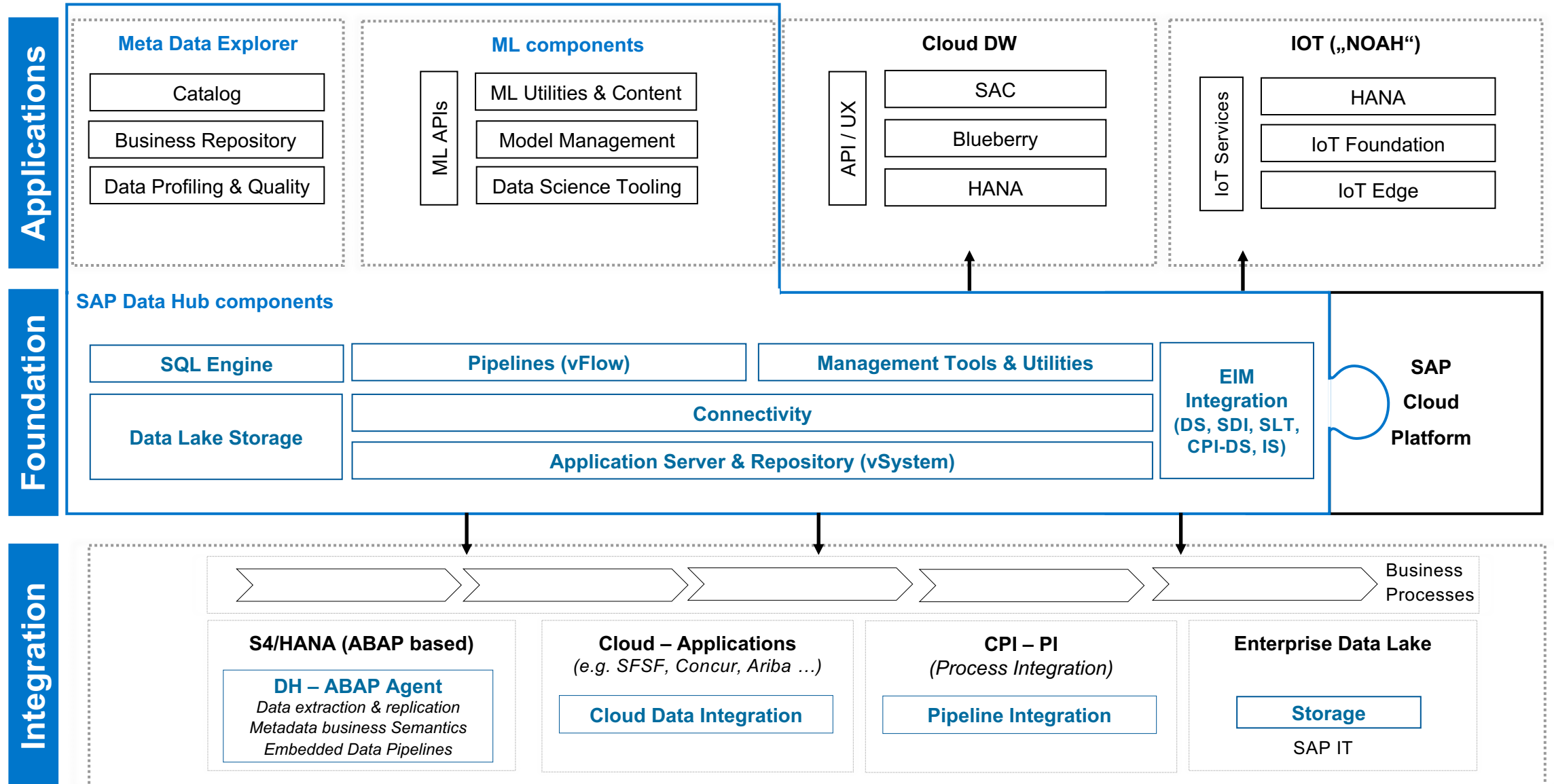
Demo



Key learnings & challenges

1. Close working relationship with Business Units is key.
2. If you want to scale, you need to automate.
3. If you want to innovate, you need the willingness to adopt new technologies.
4. Do not underestimate the technology challenges.
5. SAP Data Hub is the solution to orchestrate, automate and innovate data driven business processes.

Overview and Outlook SAP Data Hub



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Presentation Materials

Access the slides from 2019 ASUG Annual Conference here:

<http://info.asug.com/2019-ac-slides>

Q&A

For questions after this session, contact us at
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