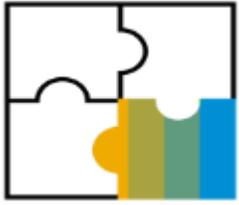# SAP Innovation Awards 2019 Entry Pitch Deck

Sustainable Shopping & The Vision of "Zero Waste"
Improving Customer Experience of Today with Artificial Intelligence (AI)

Coop

THE BEST RUN **SAP**

Company Overview

Coop

Sustainable Shopping & The Vision of "Zero Waste"
Improving Customer Experience of Today with Artificial Intelligence (AI)

About Coop:

Operating more than **2,400 branches** and outlets across **Switzerland**, Coop is one of the country's **largest** supermarket **chains**. Coop **manufactures**, **distributes**, and **wholesales** foods. Coop also **deliver**s goods to restaurants, hotels, and staff cafeterias across **Europe**.

Headquartered in **Basel**, Coop has around **2.6 million** cooperative members and employs almost **86,000** people, generating annual sales of CHF30.7 Billion (**USD $30.5 Billion**).

Introduction to:
Sustainable Shopping & The Vision of "Zero Waste" by Coop

Starting the journey of a new retail business model with an omnichannel shopping experience to meet the growing demand of customers for a flexible shopping experience, Coop offered click-and-collect services for a wide range of products.
When the roadmap started 3 years ago, the question was:
"How do we ensure stock is at the right place at the right time?"

Now Coop is into the latest evolutionary step. To support changing shopping styles and selling actions with the integrated vision of "Zero Waste," Coop expanded its' business model again – not only using real-time insights into orders and inventory to increase customer experience, but to predict the prediction with artificial intelligence (AI).

Sustainable Shopping & The Vision of "Zero Waste"
Coop

"Quote"

"Imagine that we currently have around 20 million individual decisions in our team throughout Switzerland based on plans for promotional goods.

We will be able to reduce these to less than 8 million decisions.

This of course means an enormous gain in time for our employees in the stores!

In addition, we can reduce residual quantities - and thus waste - and offer customers exactly the goods they actually require in the respective store."

Heiner Hanser

*Head of Master Data Management and Marketing Processes
Coop*

Challenge

- **Coop** has a heavily **Promotion-Driven Business** in all product **categories** (60,000+ products)
  - Determining correct quantity is extremely difficult, as promotional items are often not standard items within regular assortment
  - Risk: **Inaccurate Planning** leads to **Overstocking** (more waste), or lost sales

Solution

- **SAP UDF** (Unified Demand Forecast) uses historical **Sales Data** (per store & per product) to determine the **exact promotion quantities**
- In order to **improve On-Site Process Control** in each store, the **quality** & the **probability** of the forecast itself is defined by an additional, **self-learning AI Algorithm** - and this is in Real-Time

Outcome

- **Goods** are **distributed Intelligently** & **according** to **Demand** via the Individual History of the stores, no longer via a Static Distribution Key
- **Increased Sales** while **simultaneously** drastically **reducing overstocking**, & **increasing conservation** of resources
  - This is in line with Coop's sustainable concept
- Considerable **Reduction** in the **effort** by stores using the AI solution

Goal: Determine Optimal amount of **Promotional** Food Product **Quantities** in all stores throughout Switzerland (around **1,000 branches**)

60%+ Reduction in Stores' Campaign **Time Investment**

Self-Learning **AI Improves Forecasting** with each new **Sale**
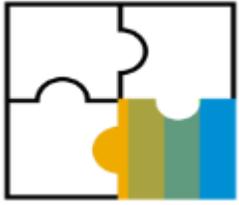
Partner Information

IBM and retailsolutions

Both Coop Project Partners, Supporting Coop with Best in Class HANA 2.0 Infrastructure & SW Development Support

> Running SAP HANA on IBM Power Systems allowed Coop to simplify and streamline its IT environment, thereby improving its ability to scale to meet growing demand.
>
> The new IBM POWER9 family of systems will accelerate organizations' ability to use AI to drive productivity, application development and evolving thought processes for business.
>
> The SAP Retail consulting company retailsolutions is a leading expert in the implementation of PMR solutions for well-known retail companies. Also their engagement as co-innovation partner of SAP as well as research projects in the field of machine learning made retailsolutions a valuable partner in the development of the Coop solution.
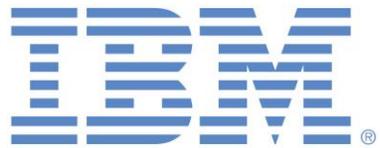
Business Challenge & Objectives

Challenges:

- **Sale** of **promotional** items is an extremely **important** component of Business for Coop
  - A few weeks before the start of Promotion, Planned **Quantities** are **determined** by Categories & **Distributed** to **Stores** using a rule-based Concept
  - In the **past**, this meant that the Allocation **Quantities** often did **not** meet **Demand** & the **Distribution** to Stores was extremely **Static**

Real-Life Example:

- **Smaller stores** were **unable** to **carry** all promotional **products**, which resulted in:
  - "Zeroing" (**discarding**) of the Suggested Product Quantity
  - **Disappointed Consumers** despite Active Demand
- **Consequences** of the **Incorrect** Static **Allocation**:
  - **Incorrect** & not enough Demand-Oriented Promotional **Quantities** in **Stores**, which in turn led to **Increased Costs**, **Overstocking**, or **Lost Sales**
  - **Loss** in **Trust** of Store **Employees** in the Campaign Process

Objectives:

- **Automatically** offer the **Optimum Quantity** for every **Campaign** in every **Store**
  - **Derived** from **Consumer** Behaviour according to **Demand**
- **Increase** in **Turnover** through better availability of Goods
- **Reduction** in **depreciation** due to fewer overstocks
- **Sustainable goods** management (vision "**Zero Waste**")
- **Increased** degree of **automation** for **reducing** planning **times** for product categories
  - **Results** in **lower** Process **Costs** & **increased** Employee **Confidence** in the overall process

In a nutshell: **Coop strives** to be an Organization with a high degree of Environmental Orientation (**Saving Resources**), Customer **Flexibility** & a strong focus on **Sustainability**

Project / Use Case Details

- Coop relies on SAP UDF (Unified Demand Forecast) to calculate promotion quantities (AI-supported forecast of consumer behavior), because it offers advantages over other forecasting tools

- Prior Functionality offers a clear competitive advantage for new products, or sporadically appearing products

- Daily Sales of the Branches are uploaded to the SAP CAR (Customer Activity Repository), & serve as the basis for the above
  - The Daily Sales go through an in-house developed data cleansing process, which cleanses the data of " undesirable noise"

- Promotions are created in SAP PMR (Promotion Management for Retail)
  - At the push of a button, the data is transmitted to the SAP UDF (Unified Demand Forecast), which plays back a forecast for each location product (article/branch combination)
  - The above is evaluated in terms of quality using an attribute model which signals every user the trust-level of the prediction
    - The model uses an AI algorithm, which is fully written in SAP Hana (Predictive Analysis Library)
    - The model trains with various historical data containing over 100 attributes
      - Regular training and the enrichment of new data improve the model from run to run
  - The campaign quantities and the trust-level are then transferred from SAP PMR (Promotion Management for Retail) to SAP ERP and further on to the branches
  - The high quality of the forecast quantities supports the store in the processing of currently more than 450 promotion proposals per week and promotes a transformation to exception handling.
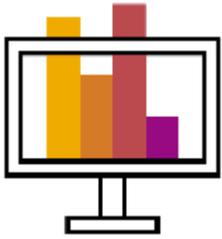
Benefits and Outcomes

Business / Social

- **Sustainable**, **Ecological** Solution due to **fewer** Overstocks & Rejects, thus significantly **reducing Waste**

- **Fresher** Goods for Customers & optimum **availability** of Goods, thus increasing Customer **Satisfaction** & Customer **Experience**

- Less effort in the Stores (e.g. **no** need to "**zeroing**") on Inadequate Suggestions

- Less tied up **Capital** by **Reducing Excess** Stocks in Stores & **targeted allocation** of Goods

- Coop increased Reputation among Consumers through Ethical Action

IT

- Use of new **Technologies** & **Self-Learning Algorithms** lead to an **increased** degree of **Automation** &, over time, to increasingly **accurate forecasts**

- **Increase** In-House **IT** Customer **Satisfaction**

- **Uniform** System **Landscape** for the entire **Process Chain** (Promotion Quantities are planned with the same tool as Standard Quantities)

Human Empowerment

- The Employee now handles **Exceptional Cases** instead of processing each single promotion proposal

- While now handling only exceptions, the saved amount of time is used in order to establish **greater Customer Relations** - making the shopping at Coop even more satisfactional

Architecture
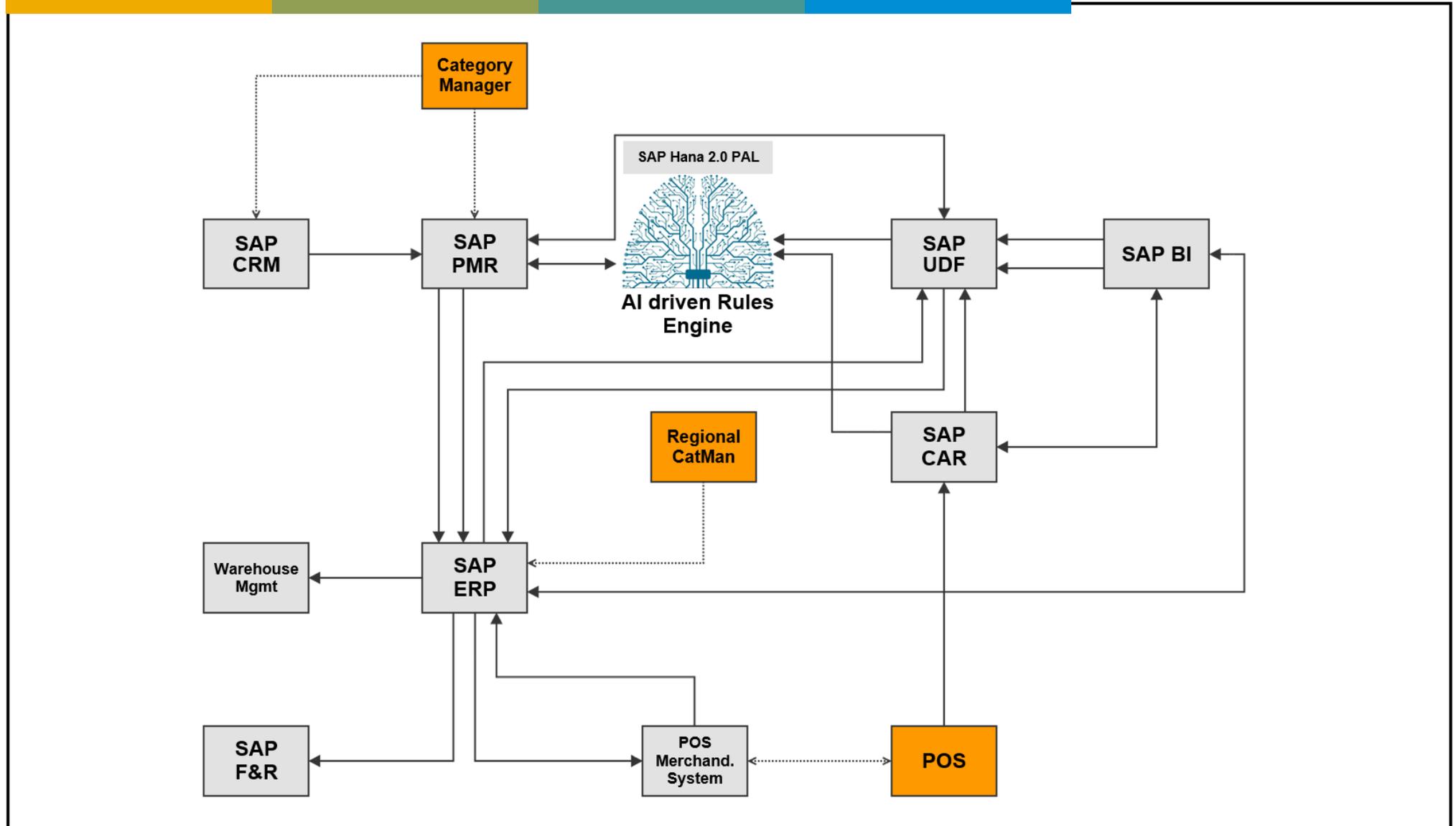
Deployment

Date of Deployment or POC: | 30.01.2019 (Deployment)

Number of live users: | 2'000 (1 Category, All Stores => till Mid 2019 Half of the Categories

SAP Technologies Used:

SAP Hana 2.0 (incl. Predictive Analytics Library)   Live

SAP UDF (CARAB2.0 SPS5 FP03)   Live

SAP PMR Fiori UI (Dito)   Live

SAP BI on Hana (7.50, SP11)   Live

Server Processor: | IBM Power System E980 / 160 POWER9 cores 3.7-3.9 GHz, 16 TB active memory

Linux Distribution: | SUSE Linux Enterprise Server for SAP Applications Release 12

Emerging Technologies and Use Cases

The following Emerging Technologies and use-cases are part of the project and describe the contribution

	Technology or Use Case	Yes/No	Contribution to Project
1.	Machine Learning / Artificial Intelligence	Yes	Forecast the Quality of the SAP Unified Demand Forecast (UDF) with ML Technologies within SAP HANA 2.0 Predictive Analysis Library
2.	IoT	No	
3.	3D printing	No	
4.	Blockchain	No	
5.	API Economy / Integrate the Intelligent Enterprise	Yes	Expand the SAP Digital Core (ERP, CARAB with PMR/UDF) with AI functionality
6.	Cloud Native / Event Based Architectures	No	
7.	Extending the digital core with SAP CP / ABAP in SAP CP	No	
8.	SAP Leonardo Application (extending SAP application, using Industry Innovation Kits or result of Design Thinking workshop)	No	