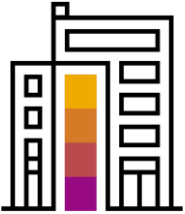




# SAP® Innovation Awards 2020 Entry Pitch Deck

Taking a Fast Train to Reshape Rail Asset Management with SAP Intelligent Asset Management Solutions

SBB AG



## Company Information

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<b>Headquarters</b>	Bern, Switzerland
<b>Industry</b>	Travel and transportation
<b>Web site</b>	<a href="http://www.sbb.ch">www.sbb.ch</a>

For more than 100 years, SBB AG has been one of the largest service providers for transportation in Switzerland. As the backbone of the Swiss public transport system, SBB plays a vital role in keeping the country moving. Every day, the rail company transports 1.25 million passengers on more than 6,000 trains across Switzerland and into neighboring countries.

Keeping these trains running in a reliable fashion and maintaining optimal customer service levels as demand for rail travel increases are top priorities for SBB. With rail travel set to rise by more than 50% by 2040, SBB has already invested in modern, high-performance train sets and digitalized its operations and business processes.

As an intelligent enterprise wanting to gain optimal operational use of its new, technologically advanced train sets, SBB has transformed asset management. The rail company is using integrated cloud technologies and predictive analytics to monitor the condition of specific equipment and rolling stock, allowing it to predict the best time to perform maintenance activities and plan labor, parts, and resources accordingly.

# Taking a Fast Train to Reshape Rail Asset Management

SBB AG



**By digitalizing our maintenance activities using SAP Intelligent Asset Management solutions, we have transformed the way we manage our train sets. This is helping us optimize end-to-end train maintenance activities and enhance rolling stock reliability while reducing maintenance costs. For our passengers, this means they can expect quality railway travel that is punctual, safe, and clean.**

Urs Gehrig, Senior Consultant  
Business Development, SBB AG

## Challenge

Committed to meeting rising customer expectations for modern mobility services and trains that are safe, comfortable, and punctual, SBB needed to adopt reliability-centered maintenance (RCM) processes to optimize maintenance activities, reduce maintenance costs, and minimize equipment downtime.

## Solution

SBB AG sought to implement SAP® Intelligent Asset Management solutions to optimize its RCM processes, integrating real-time on-board and trackside monitoring data from multiple tracking systems.

## Outcome

With this innovation, SBB can take a proactive maintenance approach across its entire rolling stock. Access to data insights allows SBB to optimize maintenance activities, predicting which materials are required in workshops and optimizing labor planning and resource management while reducing costs and delivering operational efficiencies.



**6,000**

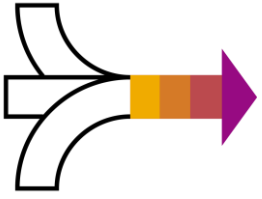
Trains running  
daily

**1.25  
million**

Passengers  
traveling daily

**50%**

Increase in demand  
for passenger  
services by 2040



## Business Challenges and Objectives

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To satisfy customer expectations for modern mobility services and trains that are safe, comfortable, and punctual, SBB acquired a modern fleet of train sets. To gain optimal operational use of its new, technologically advanced trains, SBB needed to:

- Replace traditional time-based maintenance strategies with a proactive maintenance approach based on the maintenance strategy blend consisting of run-to-failure, time-based, condition, predictive, and prescriptive maintenance strategies
- Take advantage of modern fleet management processes
- Maximize productivity in maintenance activities and reduce maintenance costs

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To bring this vision to life, SBB sought to use integrated cloud solutions to:

- Enable next-generation maintenance processes with a reliability-centered maintenance approach, collecting, storing, and analyzing critical outputs across its entire rolling stock
- Further enhance this approach by integrating the tool sets of intelligent asset management using real-time data and analysis to create asset management insights, allowing the rail company to predict and manage issues before they arise
- Speed up the maintenance process, with access to data that predicts the materials required in workshops and enables better labor planning and resource management



## Project or Use Case Details

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To maintain its fleet in a more progressive way, SBB used SAP Intelligent Asset Management solutions to replace traditional time- and cycle-based maintenance strategies, helping the firm:

- Implement a reliability-centered maintenance approach using the SAP Asset Strategy and Performance Management application to ensure its train services meet customer expectations
- Enhance communication with multiple suppliers on one platform, using SAP Asset Intelligence Network to enable collaboration on asset performance, equipment efficiency, and best practices to prolong an asset's life – keeping more trains running on time
- Create digital twins of its assets in SAP Asset Intelligence Network to improve asset failure discovery, helping ensure problems are detected before they become critical
- Take advantage of pervasive data integration and a set of technologies that help maintenance processes run smoothly, using data to inform every stage of the maintenance process – from the vehicle fleet level down to the bill of materials for individual assets
- Create more-efficient maintenance processes, with access to data that optimizes labor planning and resource management and predicts materials required in workshops
- Further optimize reliability-centered maintenance by integrating the SAP Predictive Maintenance and Service solution with data from on-board monitoring systems on the train sets



# Benefits and Outcomes

## Business or Social

- Transformed maintenance approach from a run-to-failure to a run-to-success methodology
- Better-planned and better-controlled maintenance spend by predicting and managing issues before they arise
- Increased overall asset availability and better use of assets
- Enhanced productivity in maintenance activities, with reduced maintenance costs

## IT

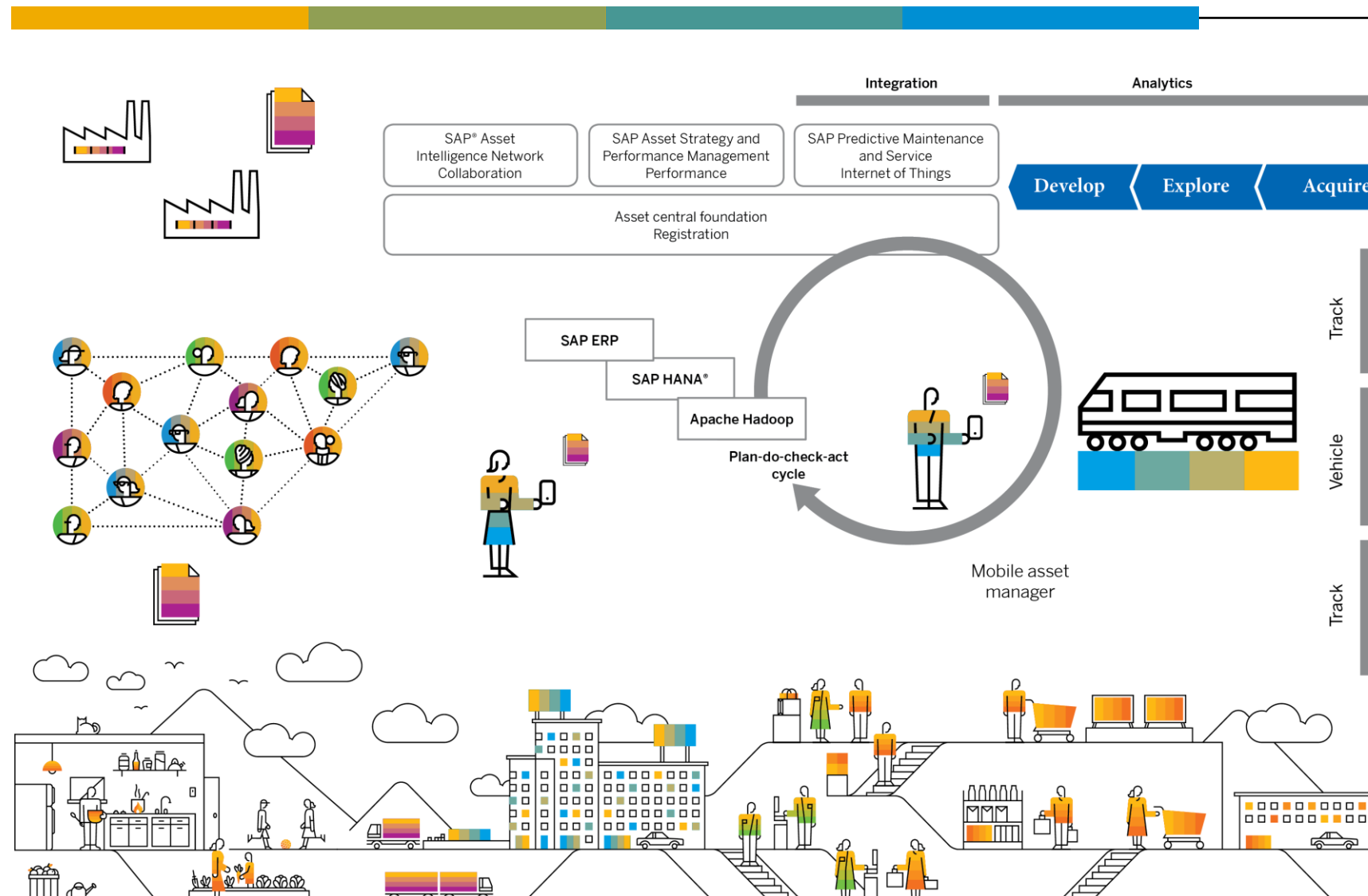
- Implementation of cloud-based, integrated, and scalable solutions equipped to grow with the organization
- Reduced complexity

## Human Empowerment

- Enhanced insight into asset use and the condition of specific equipment, minimizing the need for human intervention
- Improved labor planning around maintenance activities based on sensor data
- Optimized maintenance output thanks to accurate prediction of materials required in workshops
- Increased employee morale, with equipment downtime reduced to a minimum



# Architecture





# Deployment

Deployment status DEV

Date POC Q3/2019, DEV Q1/2020 Number of users 50/2020, 250/2021

## SAP technologies used:

	SAP product	Deployment status (live, development [DEV], test, or proof of concept [POC])	Contribution to project
1	SAP Asset Intelligence Network	POC, DEV, Test	Provides a collaborative platform for SBB and suppliers to track an asset's performance and ways to prolong its life
2	SAP Asset Strategy and Performance Management	POC, DEV, Test	Forms the foundation for SBB's reliability-centered maintenance approach, to manage maintenance on the failure-mode level
3	SAP Predictive Maintenance and Service	POC, DEV, Test	Enables asset management insights, allowing SBB to predict and manage issues before they arise

If you have used one of the services or support offerings from SAP Digital Business Services during the implementation or deployment phase, please select with ☒ one or more of the following offerings:

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> SAP MaxAttention™       | <input type="checkbox"/> SAP ActiveAttention™              | <input type="checkbox"/> SAP Advanced Deployment |
| <input type="checkbox"/> SAP Value Assurance     | <input type="checkbox"/> SAP Model Company                 | <input type="checkbox"/> Others:                 |
| <input type="checkbox"/> SAP Innovation Services | <input type="checkbox"/> SAP Innovative Business Solutions |  |

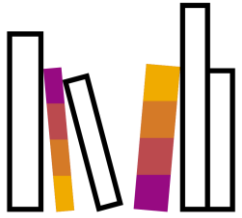




# Advanced Technologies

The following **advanced technologies** were part of the project.

	Technology or use case	Yes or No	Contribution to project
1	3D printing	No	
2	Blockchain	No	
3	Internet of Things (IoT)	Yes	Integration with real-time on-board and trackside monitoring data from multiple tracking systems
4	Machine learning or AI	Yes	Predictive algorithms for the prediction of flat spots on wheel sets for train sets, locomotives, and freight wagons publishing in SAP Intelligent Asset Management solutions
5	Conversational AI	No	
6	Robotic process automation	No	
7	Data anonymization	No	
8	Augmented analytics	No	



## Additional Information

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With customer demand for train services set to soar over the next 20 years, SBB has already set the wheels in motion to deploy SAP Predictive Maintenance and Service. This will further optimize the operational aspects of asset management, with:

- Pervasive data integration from the vehicle fleet and trackside monitoring systems paired with analytical capabilities and machine learning, making every stage of its maintenance process completely data driven
- Data insights to predict the materials required in workshops and enable optimal labor planning and resource management, empowering SBB to take advantage of resource management cost savings from reduced employee hours spent on maintenance
- Data intelligence able to predict failures before they happen and maximize productivity in maintenance activities to further reduce maintenance costs