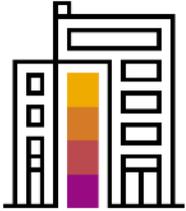


SAP Innovation Awards 2021 Entry Pitch Deck

Powering Predictive Financial Forecasts with SAP Analytics Cloud

F. Hoffmann-La Roche AG

PUBLIC



Company Information

| | |
|---------------------|--------------------|
| Headquarters | Basel, Switzerland |
| Industry | Healthcare |
| Web site | www.roche.com |

Our Company has a 120-year history of advancing the field of medicine and bringing novel treatments and diagnostics to patients. We are guided by our purpose: **Doing now what patients need next**. The patient is and will remain at the core of what we do, the reason we come to work every day.

Roche in Numbers

- World's largest biotech employing **97,735** people
- Sales of CHF **61.5** billion
- R&D core investments of CHF **11.7** billion (#1 R&D investor in healthcare)
- **63** million patients treated with Roche medicines
- **32** Roche medicines on the WHO Model List of Essential Medicines
- **11** years in a row ranked as one of the sustainability leaders by DJSI*

*Dow Jones Sustainability Indices

Ambition

- Roche's ambition for the next 10 years is to **deliver twice the number of medical advances at half the cost to society**. As healthcare demands are increasing and healthcare systems are looking for ways to manage their spend, it is essential that we contribute our part to the solution.
- **Roche R&D Finance together with IT are taking a leading role** in supporting this ambition by optimizing end-to-end processes and accelerating our digitalization journey.
- **SAP Analytics Cloud is powering this journey!**

Powering Predictive Financial Forecasts with SAP Analytics Cloud

Roche



"Our 10-year ambition requires a radical shift in the way we work. I am excited to see Finance at the forefront of this digital transformation."

Alan Hippe
Chief Financial and IT Officer

"Our purpose is to deliver exceptional value to Roche through new ways of working and increased efficiency in end-to-end processes. This innovation showcase is setting precedent for effective digitalization, which will help us achieve our ambition."

Carsten Reibe
Head of Roche Services & Solutions

"Every minute we allow our R&D organization to focus on the science has an exponential impact on bringing transformative medicines and treatments to society."

David Dubowsky
Head of R&D Finance
Centre of Excellence

Challenge

Meeting our 10-year ambition requires a radical shift in the way we work. R&D Finance had to find more efficient ways to manage our time-consuming, manual, and un-harmonized financial forecast process across decentralized R&D business units. Generating a CHF 4 billion forecast several times a year across multiple sites was too complex and did not serve our patients' needs.

Solution

R&D Finance and IT automated the financial forecasting process using SAP Analytics Cloud's predictive planning capability. By connecting our existing SAP BW, edition for SAP HANA data foundation to SAP Analytics Cloud, we were able to leverage years of historical data to generate a more accurate and harmonized forecast in record time.

Outcome

By building a new forecasting experience and streamlining our forecasting process, Finance now has time to focus on more valuable activities like guiding our scientists in optimal resource allocation and decision making. We will continue to build on our digital and analytics solutions to increase the success in drug discovery and development, achieve operational optimization, and get closer to the vision of personalized healthcare.



2

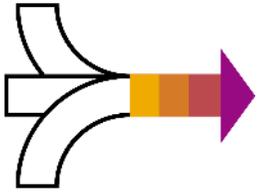
Hours to generate a CHF 4 billion financial forecast vs **several weeks** involving 30 Finance resources

14k

Out of 20k forecast **entry data points now automated** with SAP Analytics Cloud

7%

Improvement in forecast accuracy using **predictive planning** vs manual process

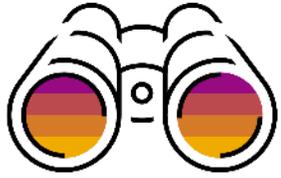


Business Challenges and Objectives

The manual R&D Finance forecast process involved multiple entities and business units across the globe. Generating a financial forecast was costly, reactive, and time consuming due to this decentralized and complex environment. Each forecast required significant manual effort from Finance to collect the forecast data points, consolidate, and align on the final forecast numbers. Despite all their efforts, the process and forecast lacked transparency and accuracy. The complexity and time consumed in the process prevented us from providing our scientists with optimal resource allocations and decision making, bringing descriptive analysis instead of predictive or even prescriptive insights.

To meet our 10-year ambition, R&D Finance had to change the way we worked. So, we set out to free up Finance time to provide our scientists with data-driven business insights. To make it happen, our objectives for the initiative were defined as:

- The solution had to be universal and scalable across the entire R&D Finance organization.
- It needed to provide more transparency and accuracy than the decentralized manual forecast processes.
- The forecasting process had to be automated.

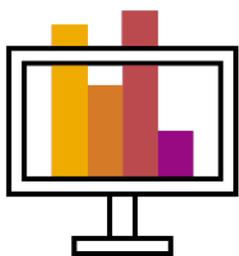


Project or Use Case Details

The digitalization journey for our financial forecast started by comparing open-source technics (R/Python) vs. the SAP Analytics Cloud predictive planning capabilities. While both approaches showed comparable results in forecast accuracy, SAP Analytics Cloud predictive planning was chosen because it generated faster results and easier adoption.

We tested our solution in a sandbox environment with a 6-week turnaround. At first, we deployed SAP Analytics Cloud predictive planning in a forecasting cycle for a single R&D business unit. This enabled us to generate a CHF 800 million forecast with 2,000 automated data points in a few hours that had an accuracy error of 0.7% vs. actual spend. The results validated our solution and allowed us to get buy-in from all R&D departments to deploy this solution at a bigger scale.

We have now deployed SAP Analytics Cloud predictive planning across all R&D business units. The financial forecast that used to take weeks and required significant manual effort is now completed in 2 hours, with 70% of forecast data points predicted by SAP Analytics Cloud. This has freed up 30 Finance professionals to guide our scientists in optimal resource allocation and decision making.



Benefits and Outcomes

Business or Social

- Generation of a CHF 4 billion forecast went from several weeks to 2 hours
- 14k out of 20k forecast data entry points now automated with SAP Analytics Cloud
- Improved forecast accuracy by 7%
- Finance now drives business insights rather than manual data manipulation
- Simplified methodology
- Increased user appetite for new technology solutions

IT (optional)

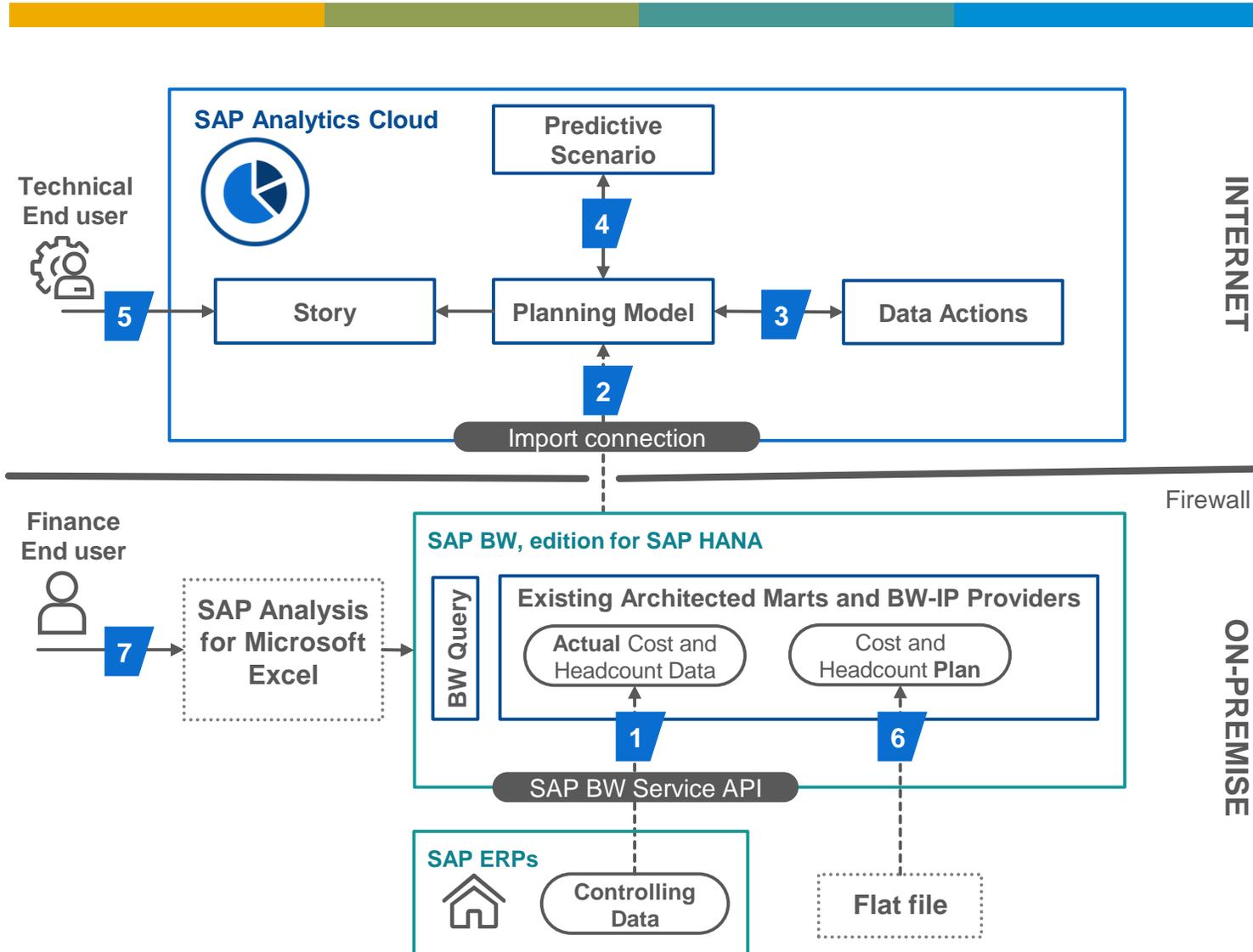
- Single, integrated, scalable solution across all R&D units
- Upskill developers' SAP Analytics Cloud predictive planning competencies
- Faster implementation and deployment time compared to R/Python industrialization
- Lower maintenance effort and reduced costs
- Adoption of new digital analytics capabilities within Roche

Human Empowerment

- Shifted R&D Finance organization focus from traditional bottom-up financial forecast to automated predictive forecast process
- Efficient cross-functional collaboration between IT, Business Units, and Finance Centers of Excellence
- Enabled the spirit of "fast fail and learn"
- Accelerated transformation and new ways of working
- Created new learning opportunities



Architecture



Process Flow

- 1 Data Load of actual line items from several SAP ERPs to SAP BW, edition for SAP HANA
- 2 Import historical data into SAP Analytics Cloud planning model
- 3 Data preparation via triggering Data actions
- 4 Generate predictive forecast in Smart Predict and save it back to the Planning model
- 5 Generate a flat file from a Story*
- 6 Load the Smart Predict baseline to SAP BW Planning InfoProviders*
- 7 Financial adjustments and reporting on existing BW queries

*Flat file upload is currently being replaced by writeback from SAP Analytics Cloud to SAP BW



Deployment

Deployment status Live

Date January 2021

Number of users 30

SAP® technologies used:

| | SAP product | Deployment status (live or proof of concept [POC]) | Contribution to project |
|---|-----------------------------------|---|---|
| 1 | SAP BW, edition for SAP HANA | Live | ETL, harmonization of actual cost for data foundation |
| 2 | SAP Analytics Cloud | Live | Predictive Planning; Data Preparation to optimize historical data for predictive forecast |
| 3 | SAP Analysis for Microsoft Office | Live | Planning, Analytics |
| 4 | SAP ERP (multiple) | Live | Transactional records with actual costs |

If you have used one or more of the services or support offerings from SAP Services and Support during the implementation or deployment phase, please indicate which one(s) below with an

SAP MaxAttention™

SAP ActiveAttention™

SAP Advanced Deployment

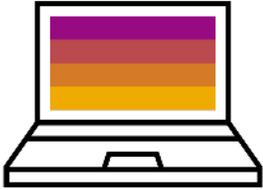
SAP Value Assurance

SAP Model Company

Others:

SAP Innovation Services

SAP Innovative Business Solutions



Advanced Technologies (1 of 2)

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

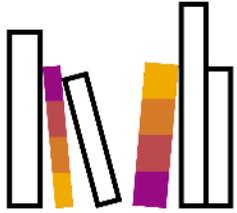
| Technology or use case | Product used* | Contribution to project and how product used integrates with SAP products |
|---|---------------------|---|
| 1 Machine learning or artificial intelligence Robotic process automation, conversational AI, AI-based knowledge graph | N/A | |
| 2 Intelligent data management Multi-cloud, data virtualization and governance, smart data tiering, persistent memory, data privacy | N/A | |
| 3 Advanced and augmented analytics <ul style="list-style-type: none">Real-time and streaming analytics, spatial analyticsNatural language query and generationAutoML to identify trends, patterns, outliersPredictive analytics (time series analysis and forecasting, regression, classification) | SAP Analytics Cloud | Predictive analytics (time series forecasting at scale) |
| 4 Data and analytics solutions in the cloud <ul style="list-style-type: none">Unified data and analytics cloud platforms by SAPModern/self-service data to analytics | SAP Analytics Cloud | Planning, Analytics |



Advanced Technologies (2 of 2)

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

| Technology or use case | Product used* | Contribution to project and how product used integrates with SAP products |
|---|---------------|---|
| 5 Advanced cloud integration <ul style="list-style-type: none">• API economy (monetization and API marketplaces)• AI-based or crowdsourced integration• High throughput, low-latency digital integration hub | N/A | |
| 6 Industry cloud platform | N/A | |
| 7 Blockchain | N/A | |
| 8 Internet of Things | N/A | |
| 9 3D printing | N/A | |



Additional Information

In 2021, we will redesign our integrated solution to transfer all reporting and planning currently done in SAP BW, edition for SAP HANA to SAP Analytics Cloud.