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# Maschine Learning Solutions for the CFO Office

- Sales/Margin Prediction -

10.01.2020

# Sales prediction with Machine Learning: 4-Day PoC

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## Summary

4 Days „Proof of Concept (PoC)“ approach for assess, define and implement an automated sales revenue prediction based on your datasources.

## Details

Verovis is a consulting company and Microsoft Partner, specialized on Advanced Analytics for the Controlling/Accounting function. With this offering we enable clients to make future cash management projections based on historical liquidity data. For this we use data from the customer's SAP system and feeds it into self-developed models. The accuracy is to be expected > 90% for first iteration and we will assist in fine-tuning for even better results and continuous model improvements

## Agenda:

- Day 1 – Scoping Workshop incl. Prerequisites-Check
- Day 2 – Data Load and Machine Learning
- Day 3 – Customizing of Report Templates
- Day 4 – Presentation of Results and recommended actions/roadmap for going-live

## The Approach:



## Duration

4d

## Cost

free

## Target Group

- CFO / Business Decision Maker (BDM)
- All Branches

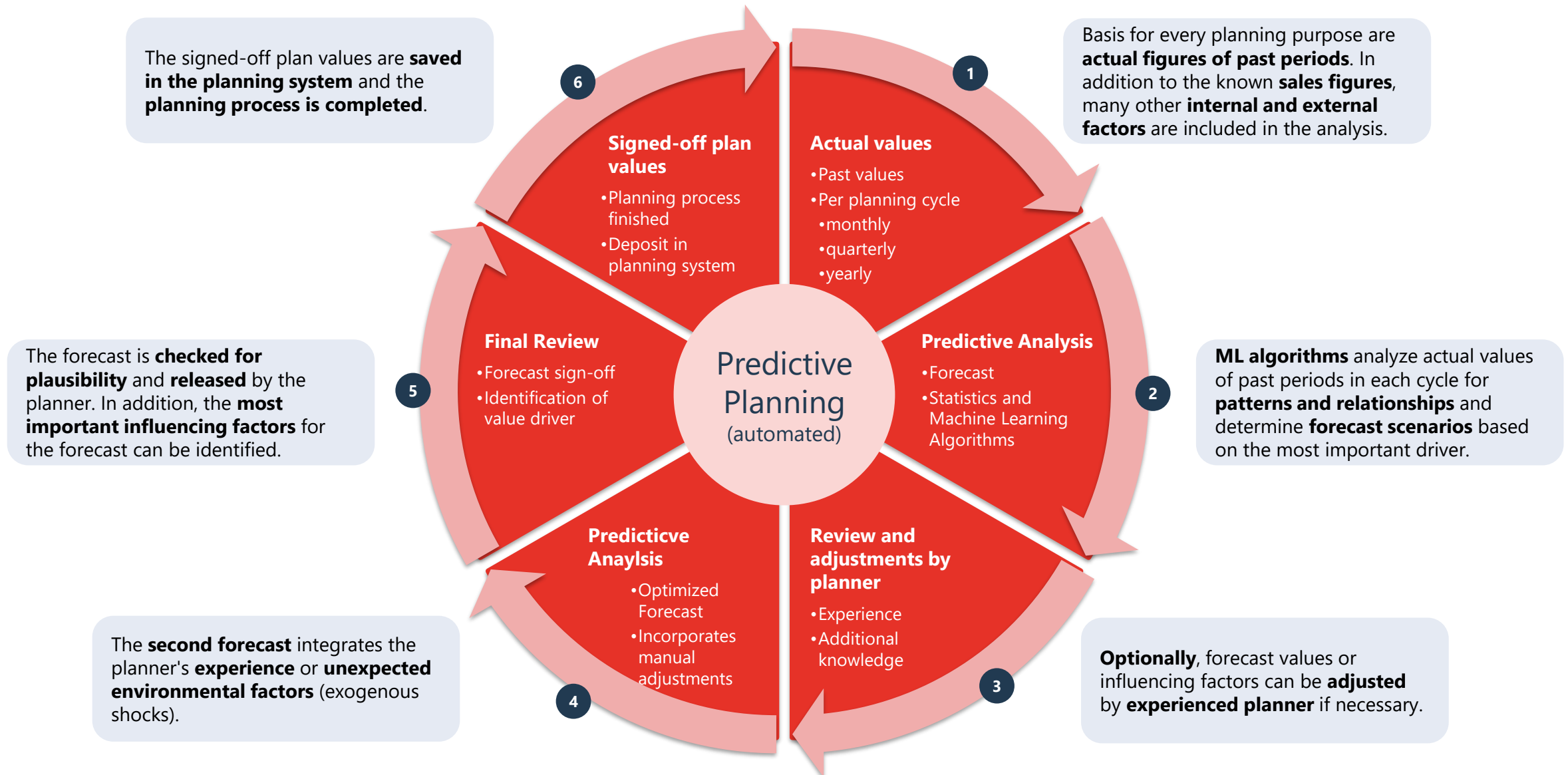
## Top 3 Benefits & Results

1. Showcase potential of automated revenue/margin prediction
2. Identification of potential drivers
3. Roadmap for machine-learning integration in finance

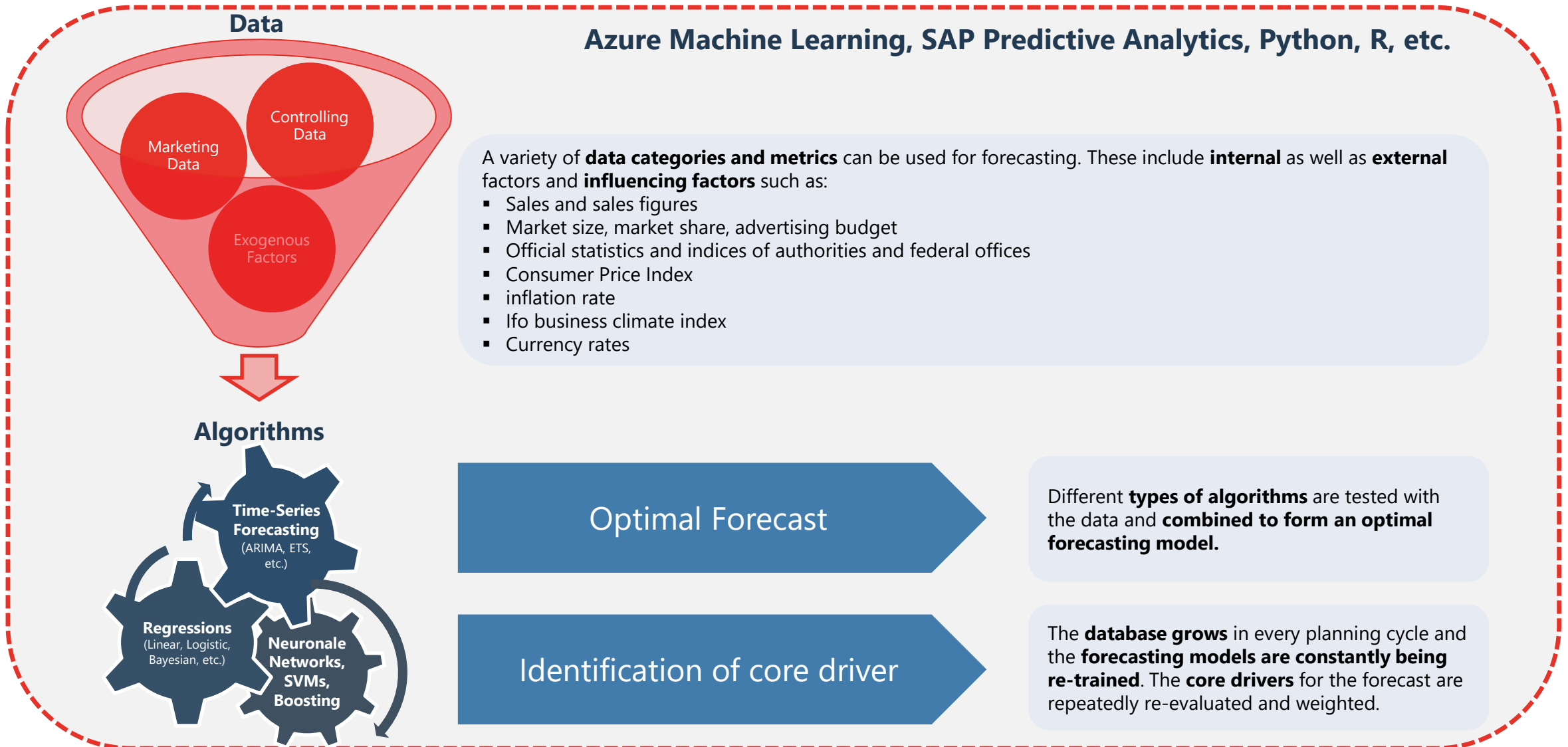
## Topics

- Financial Intelligence
- Enterprise Performance Management
- Automated Predictions based on Machine Learning
- Microsoft Azure Data Services
- Microsoft Power BI
- SAP ECC/HANA/BW

# Objective and Approach



# Predictive Planning uses a variety of data and algorithms



# Two-Step Revenue Prediction

## Data

	PKW-Neuzulassungen, VW-AG	NFZ-Neuzulassungen	Bus-Neuzulassungen	Gesamtbevölkerung
2001	1008628	541263	10902	81852682
2002	978842	308233	10478	81754634
2003	985544	305161	10288	81634655
2004	1002355	331732	9719	81403636
2005	1030112	345655	9847	81332296
1131495	361500	10419	81332296	

Our **demonstration of revenue prediction** in the automotive industry uses **public data**:

- New registrations in Germany
- New registrations of the target company in Germany
- Consumer price index for traffic
- employment rate
- commodity prices
- exchange rates
- And more...

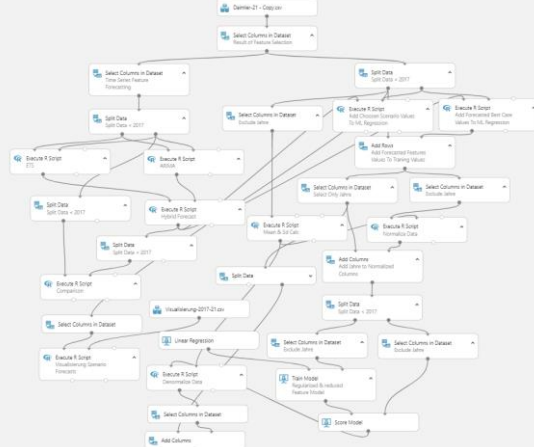
### Step 1:

For forecast years, the available data is extrapolated. A **hybrid** of the **Error Trend Seasonality (ETS)** and the **Auto-Regressive Integrated Moving Average (ARIMA)** achieve the best results.

### Step 2:

The extended data record is divided into **training and test data record**. Subsequently, the **"Multiple Regression" algorithm** independently determines the **most appropriate weighting** of the predictors.

## Hybrid Model in Azure ML

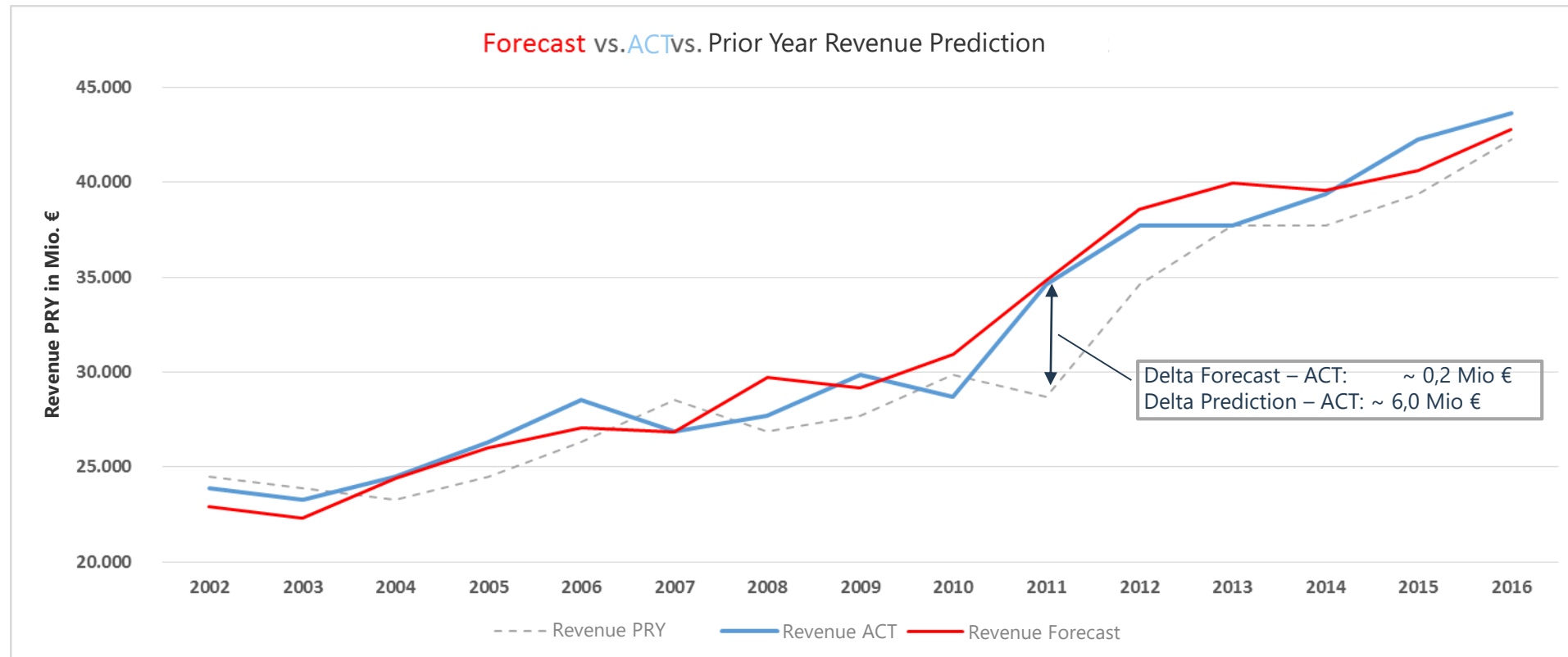


Optimal Forecast

Identification of core driver

Results	Linear update Previous year	Hybrid Model
R <sup>2</sup>	88%	97%
Middle absolute error (in Mio. EUR)	1.812,67	981,40
Middle relative error (in %)	5,73%	3,10%
Unemployment rate		2.092
Employed		5
VIP for traffic		354
EUR-USD		-8.820
Intercept		-219.549

# Integration of dynamic environmental factors for the planning process **verovis**



Optimal Forecast

The forecast based on the machine learning algorithms is on average basis **significantly closer to the actually generated sales** than an update of the previous year's value. **Including important internal as well as external factors**, the **Predictive Planning approach** is able to react much more **automatically and earlier** to **changes in environmental conditions**. In addition, **untapped sales potential** can be identified.

# Kontakt



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What's in for you? Strategie- & Entscheidungssicherheit | Better Practise-orientierte Business Advisory | Erfolgreiche Transformation & Programmsteuerung | Erhöhung Prozesseffizienz & Governance | Effektive Systemeinführung SAP S/4HANA, SAP BPC & Tagetik | Höhere Analysetiefe, Datenqualität & erfolgreicher Change | verovis GmbH



# Machine Learning Use Cases for the Office of the CFO!

## Cash Prediction



**Benefits:** Automated cash-in prediction and cash value driver analytics.  
**Data Sources:** Accounts receivables and sales on document level as well as plan data on aggregated level.

## Revenue Prediction



**Benefits:** Automated revenue prediction for plan data validation.  
**Data Sources:** Sales information on document level as well as external indices and internal plan data accuracy.

## EBIT Prediction



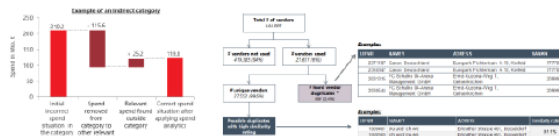
**Benefits:** Automated EBIT prediction for plan data validation.  
**Data Sources:** Group/entity reporting on group/entity account level as well as notes information.

## Group Reporting Anomaly Detection



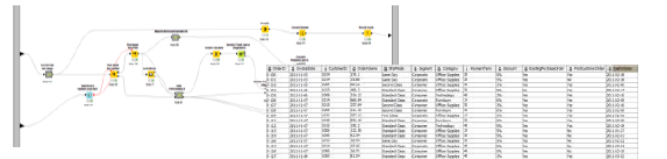
**Benefits:** Rapid detection of false values as well as controlling console for data quality, including commentary information.  
**Data Sources:** Group reporting on group account level.

## Purchase-to-Pay Anomaly Detection



**Benefits:** Spend volume accuracy and automated category assignment.  
**Data Sources:** Accounts payables as well as general accounting and procurement information on document level.

## Tax Analytics



**Benefits:** VAT monitoring and fast identification of tax reduction opportunities.  
**Data Sources:** Accounts receivables, accounts payables and general accounting information on document data.