

SAP Forecasting & Replenishment – Unified Demand Forecast Integration

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Unified Demand Forecast (UDF)

Unified Demand Forecast (UDF) is a sophisticated statistical forecast in SAP CAR.

UDF combines strengths of various forecasting methods to supply predictive information to all Retail applications. This includes SAP Promotion Management for Retail, SAP Assortment Planning for Retail, and all future consuming applications on the **SAP Customer Activity Repository**.

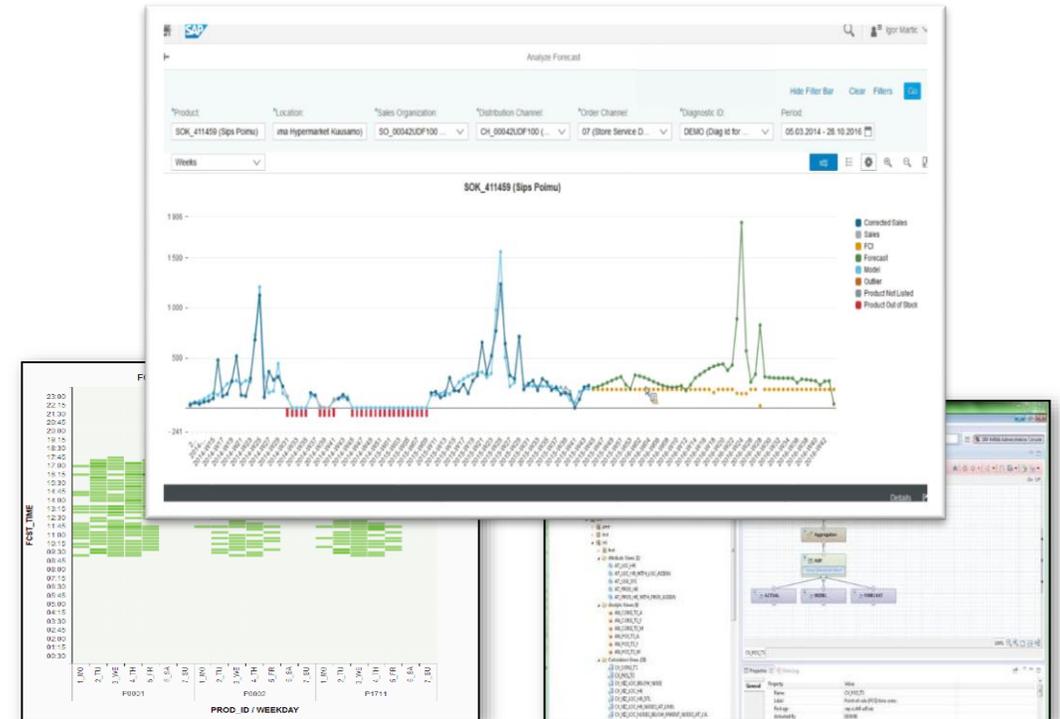
SAP HANA gives the appropriate technology base to run ad-hoc simulations with in-memory performance.

Calculates the **impact of historical factors** that influence demand like promotions, calendar events, seasonality or price elasticity, then uses Bayesian statistics to fill in the gaps of knowledge of what happened in the past.

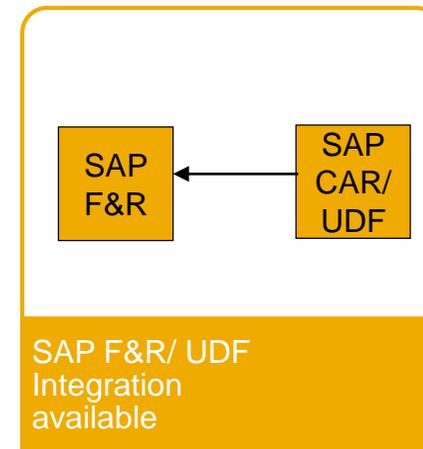
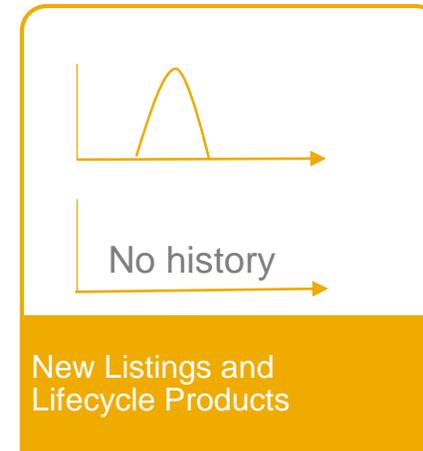
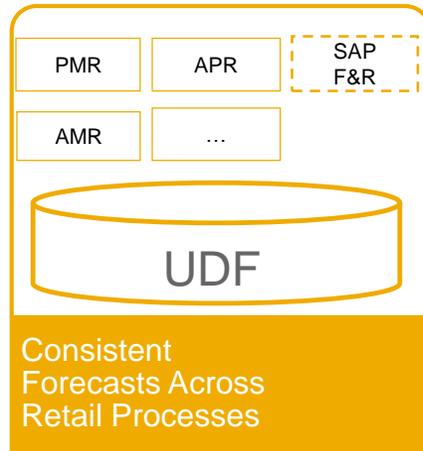
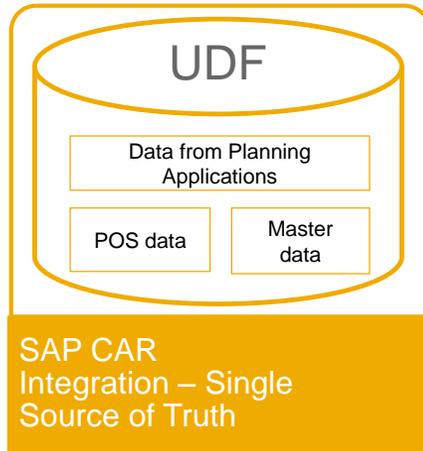
Calculates a forecast per **product / location / channel / promotion / day** – flexible multichannel data model is introduced

Supports **what-if forecasting** capabilities to compare multiple scenarios, or **production forecasting** capabilities for ongoing/analytic access

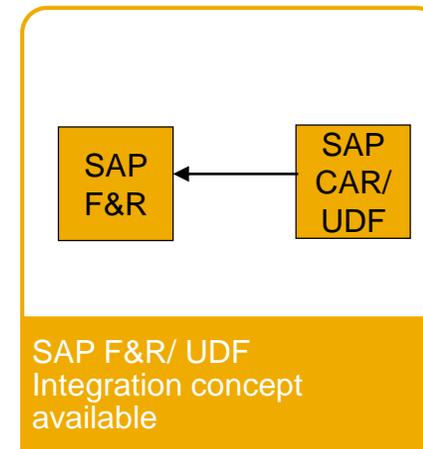
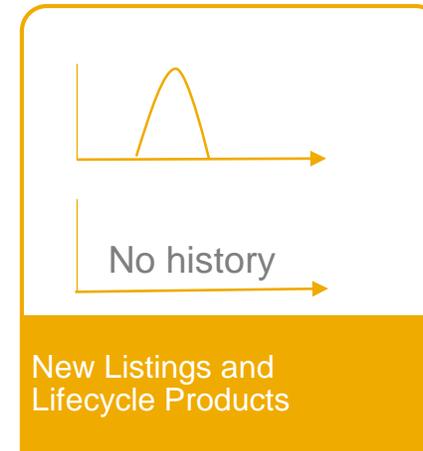
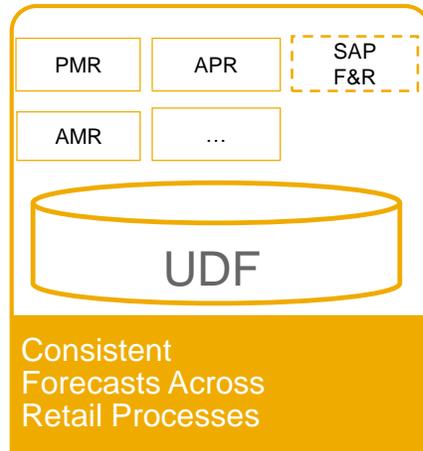
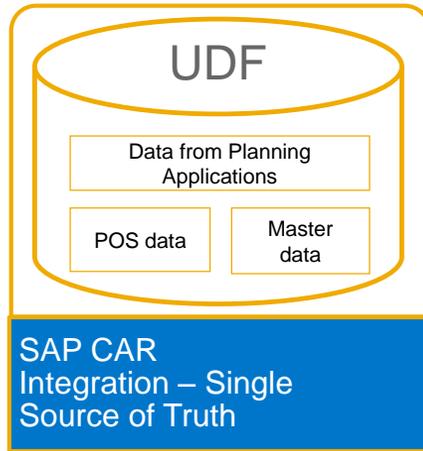
Visualization tools available



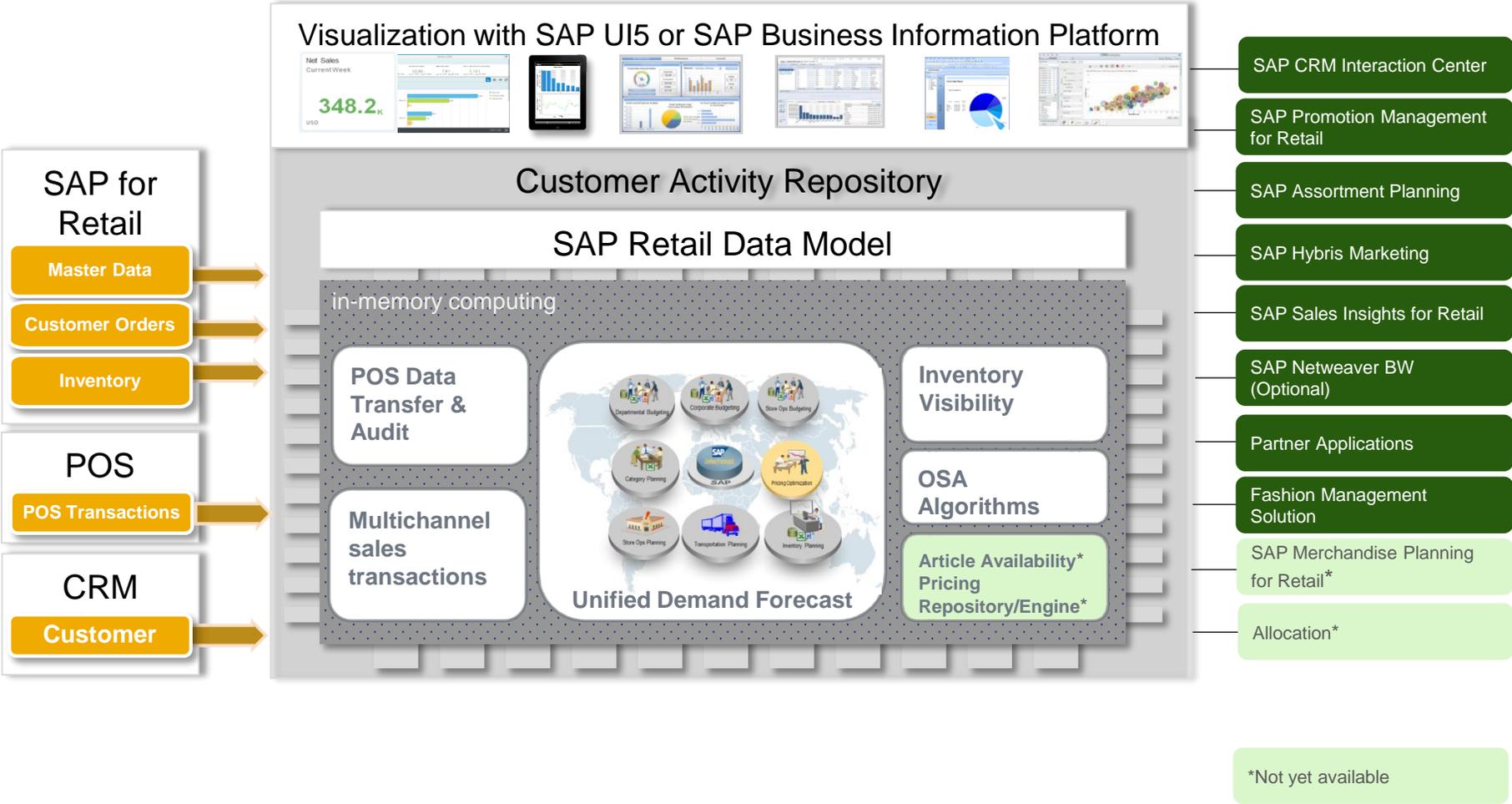
Why it makes sense to integrate SAP F&R with UDF



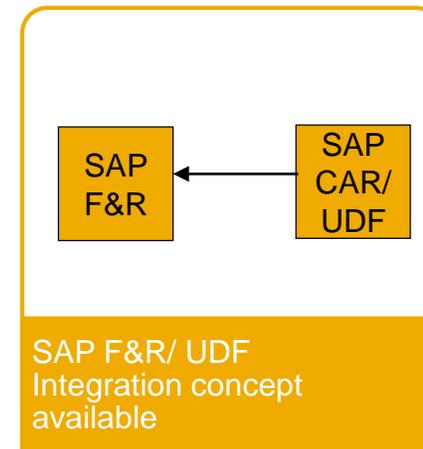
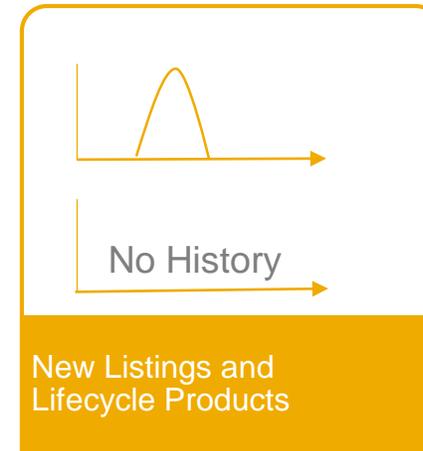
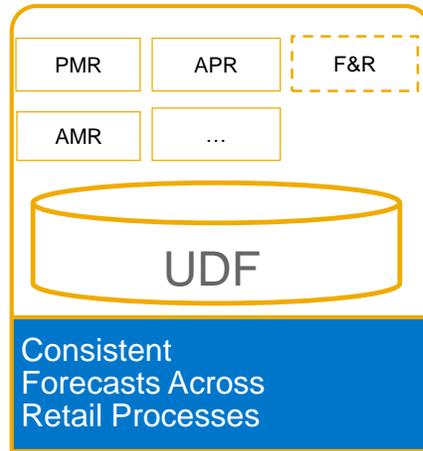
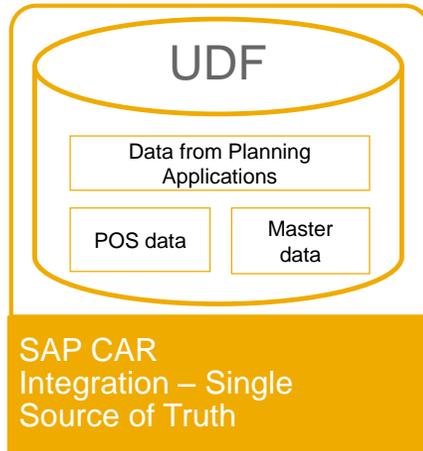
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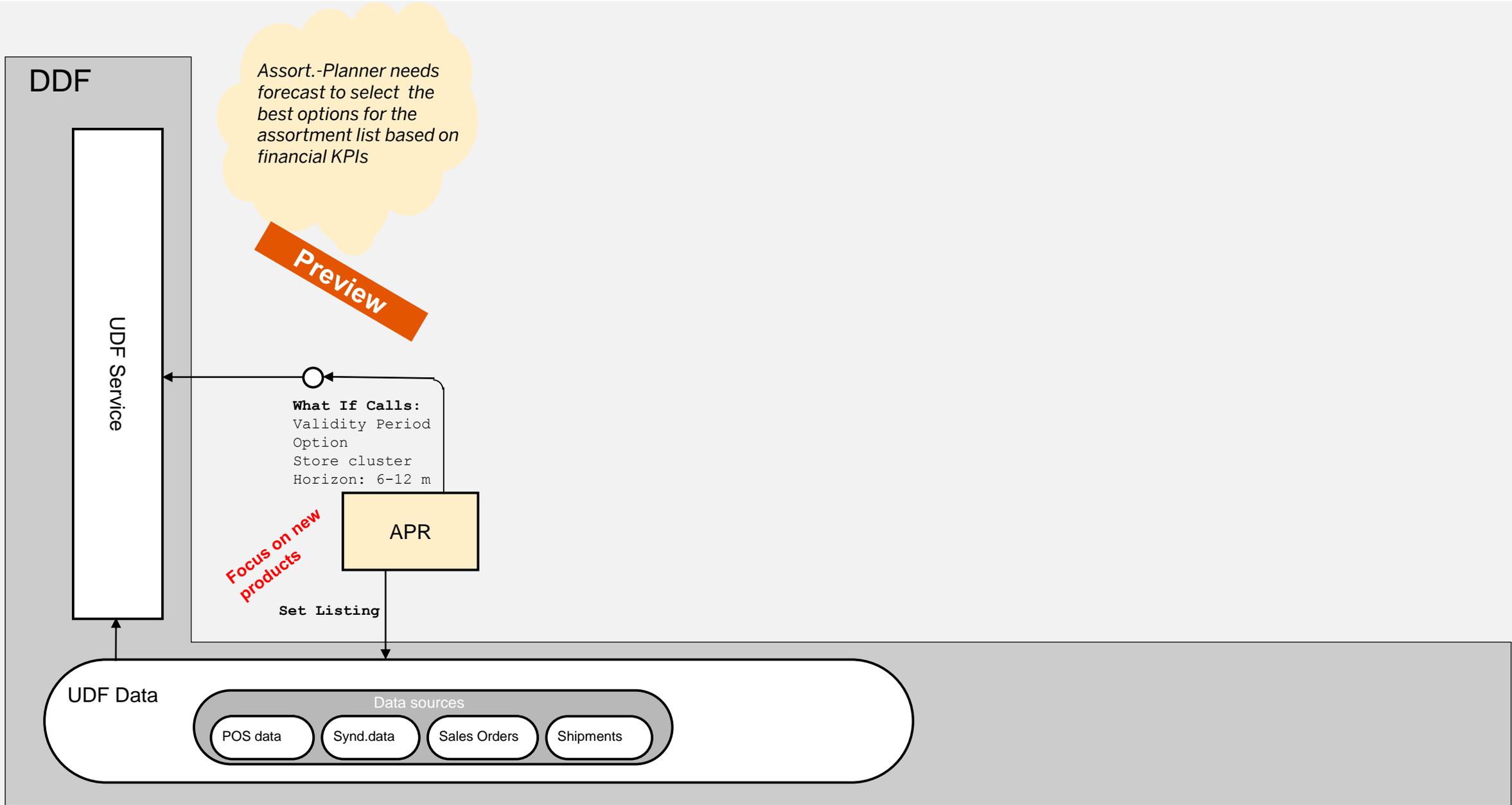


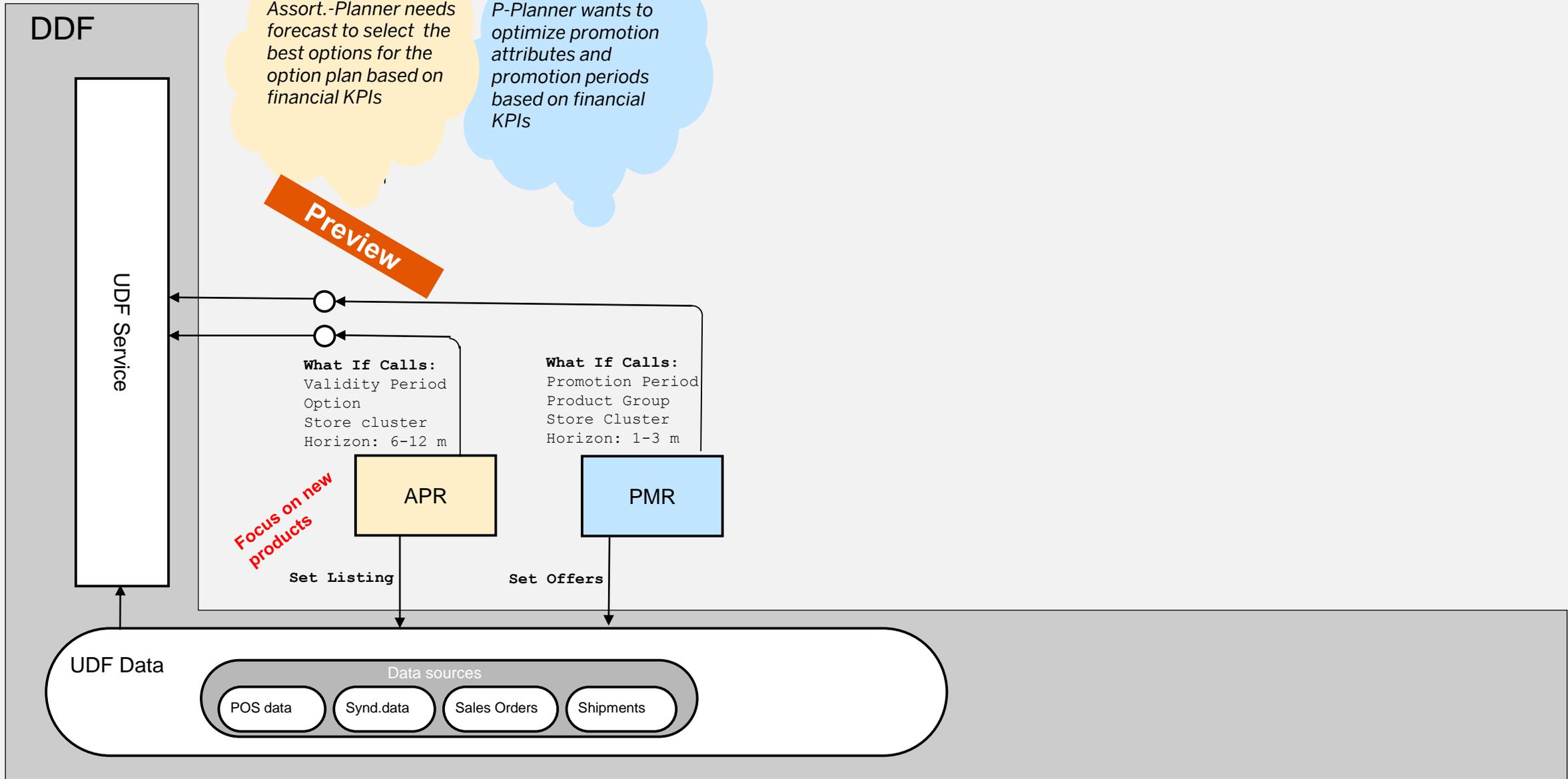
SAP Customer Activity Repository

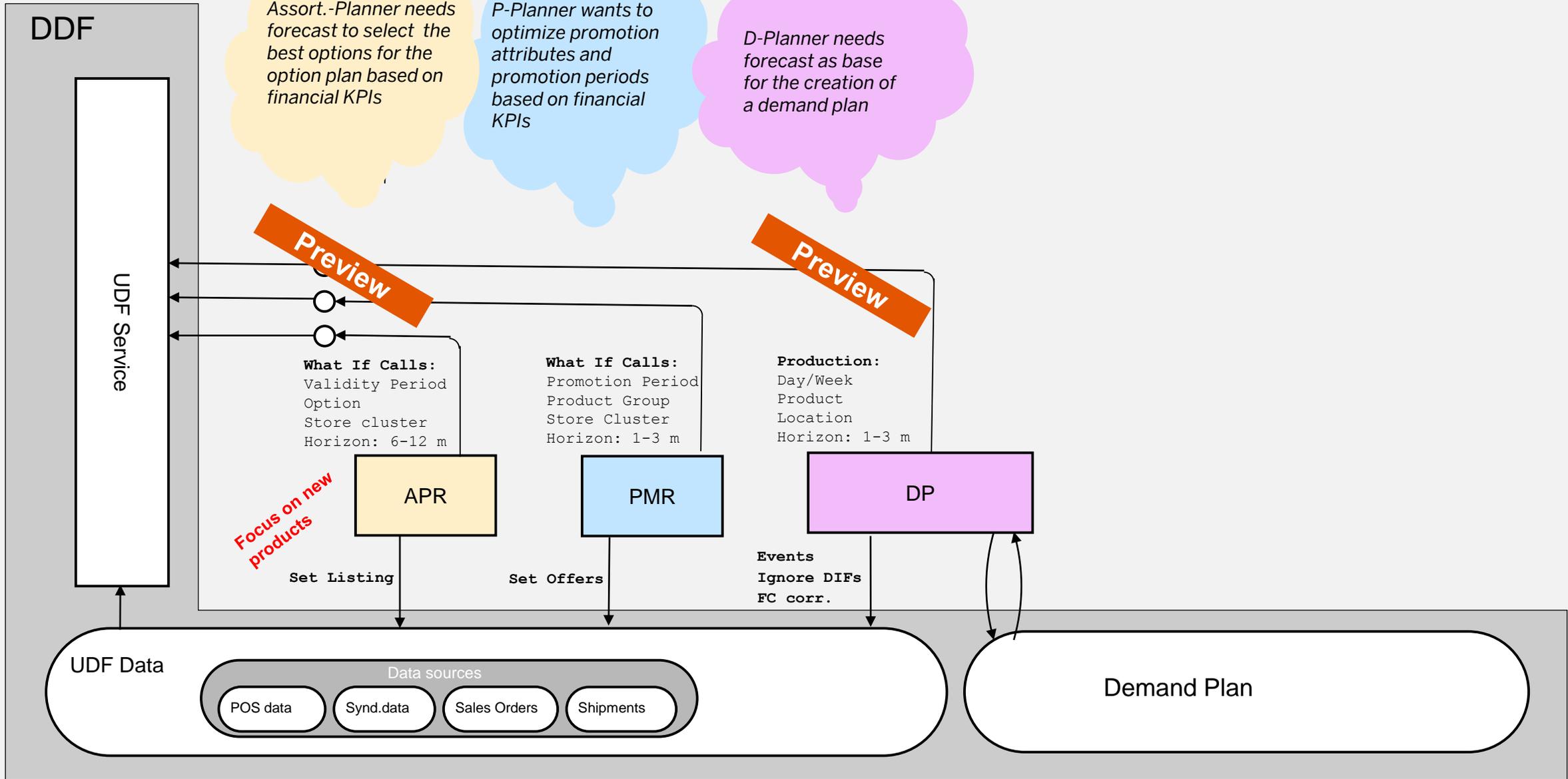


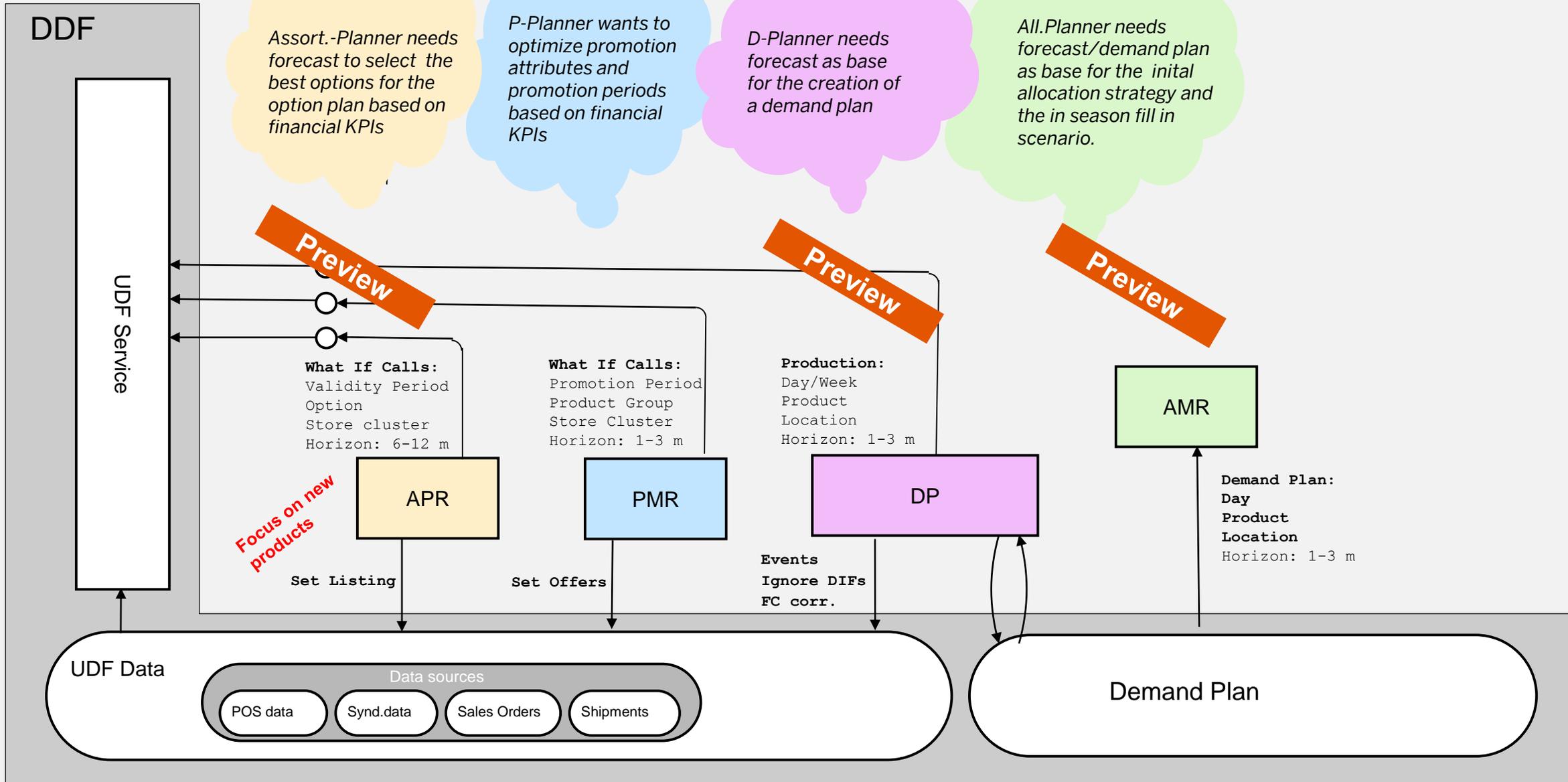
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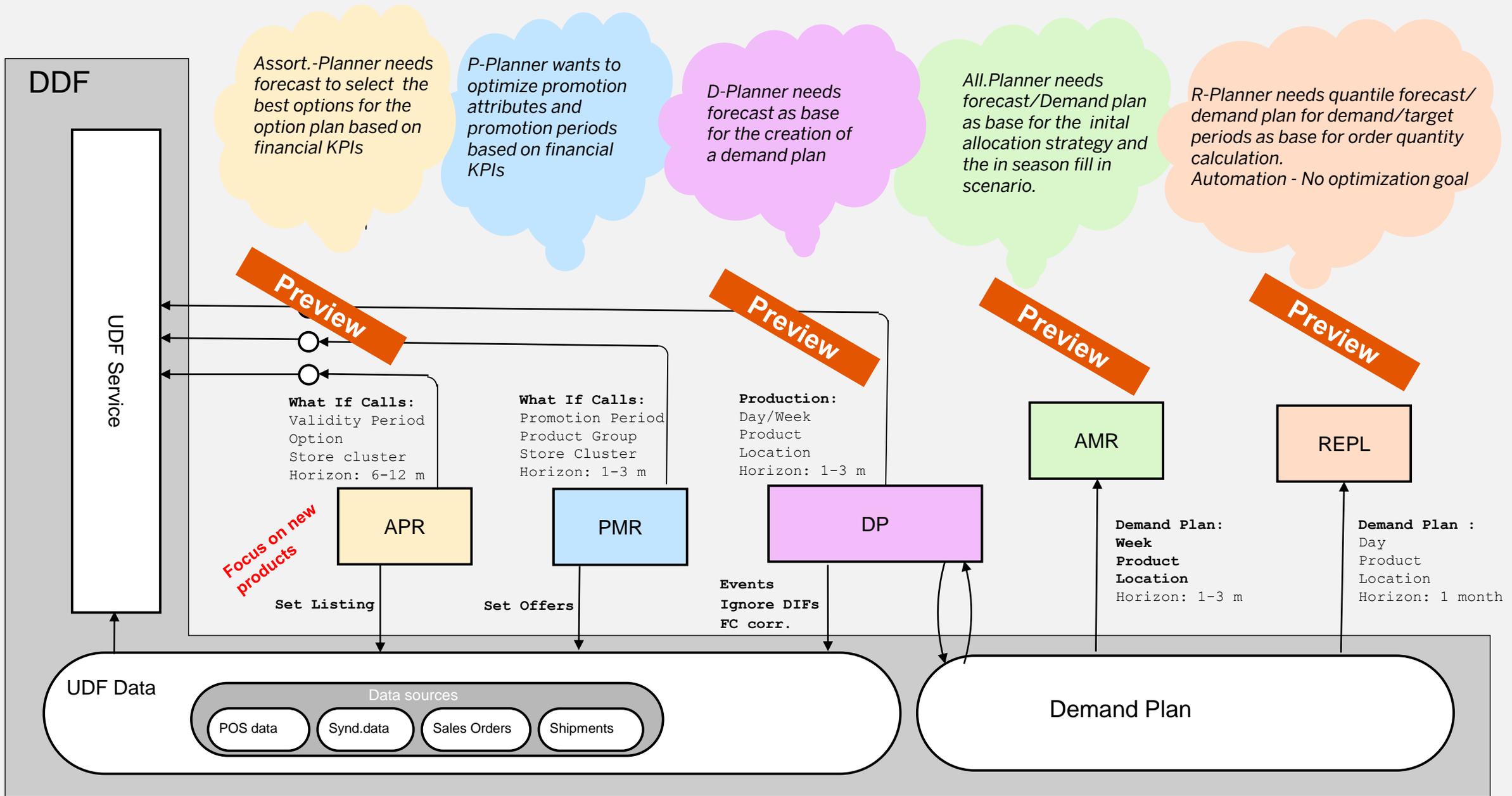




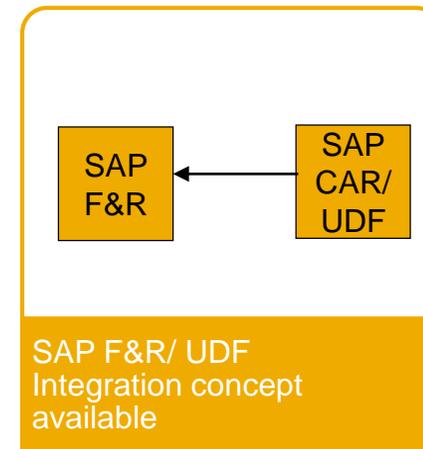
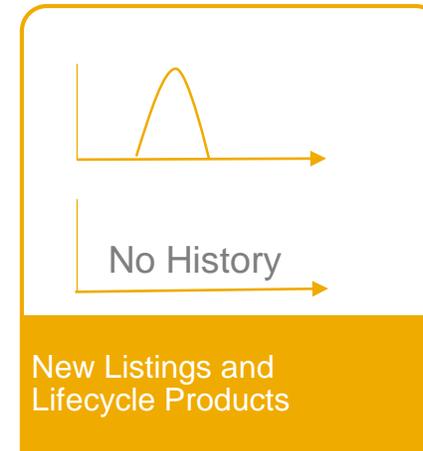
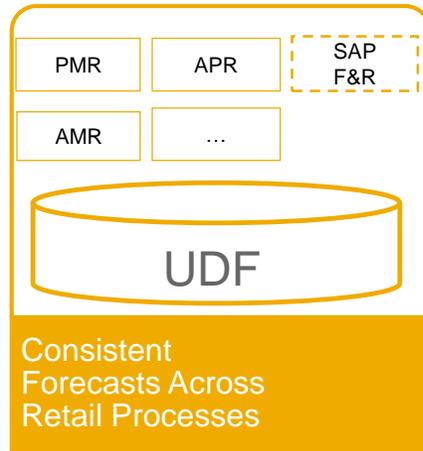
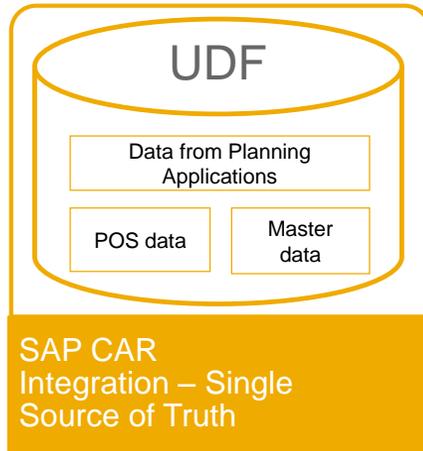






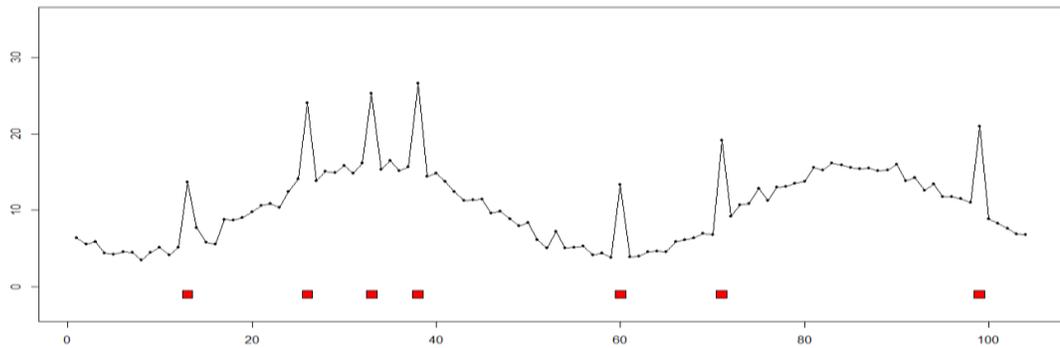


Why it makes sense to integrate SAP F&R with UDF

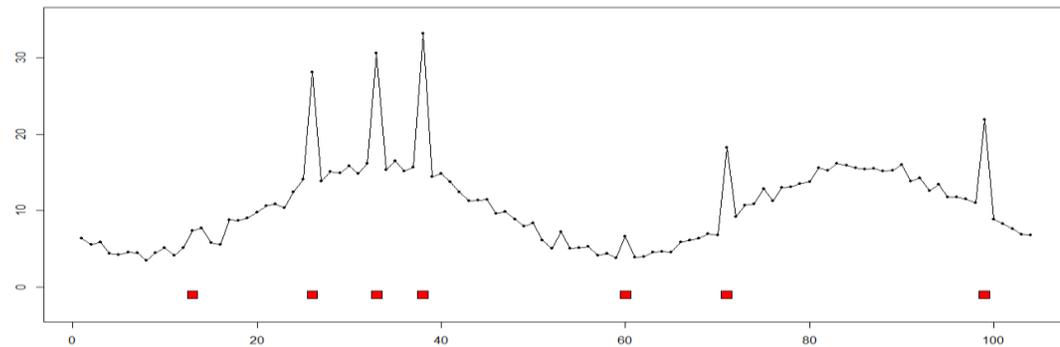


Some Basic UDF Features

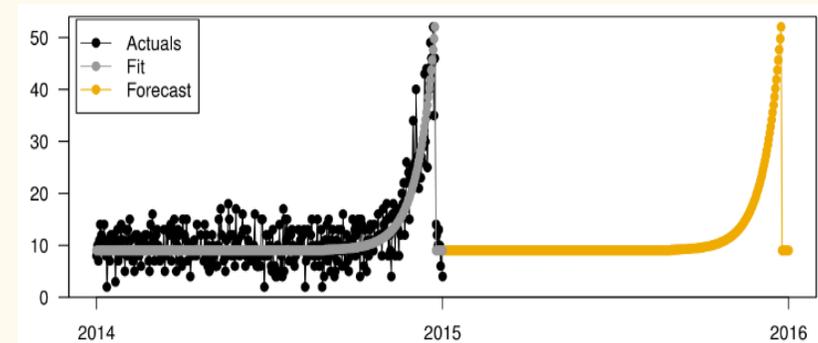
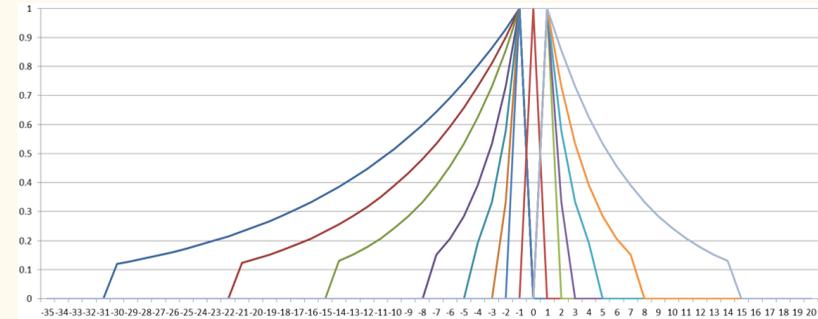
F&R Model



UDF: Mixed Additive Multiplicative Model

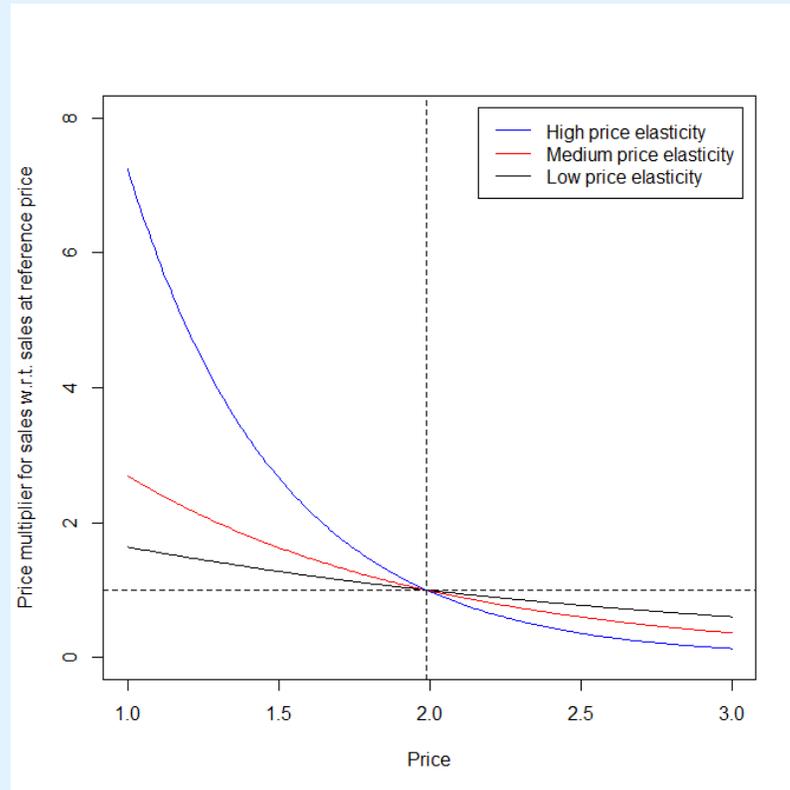


Automated detection of the best fit **ramp-up and ramp-down curve** out of the history for each product- location - public holiday combination



Price and Day of week in UDF

Price elasticity denotes the percentage change in demand caused by a (small) percentage change in price



Retail sales usually depend strongly on the **day of week**





UDF Demo

Analyze Forecast App

Intraday Forecast

Use cases examples:

New intraday forecast can be used for

- Intraday stock projection
- Triggering back-stock activity to avoid out of stock situations
- Scheduling food production
- Planning labor resources around peak activity times

Key Features:

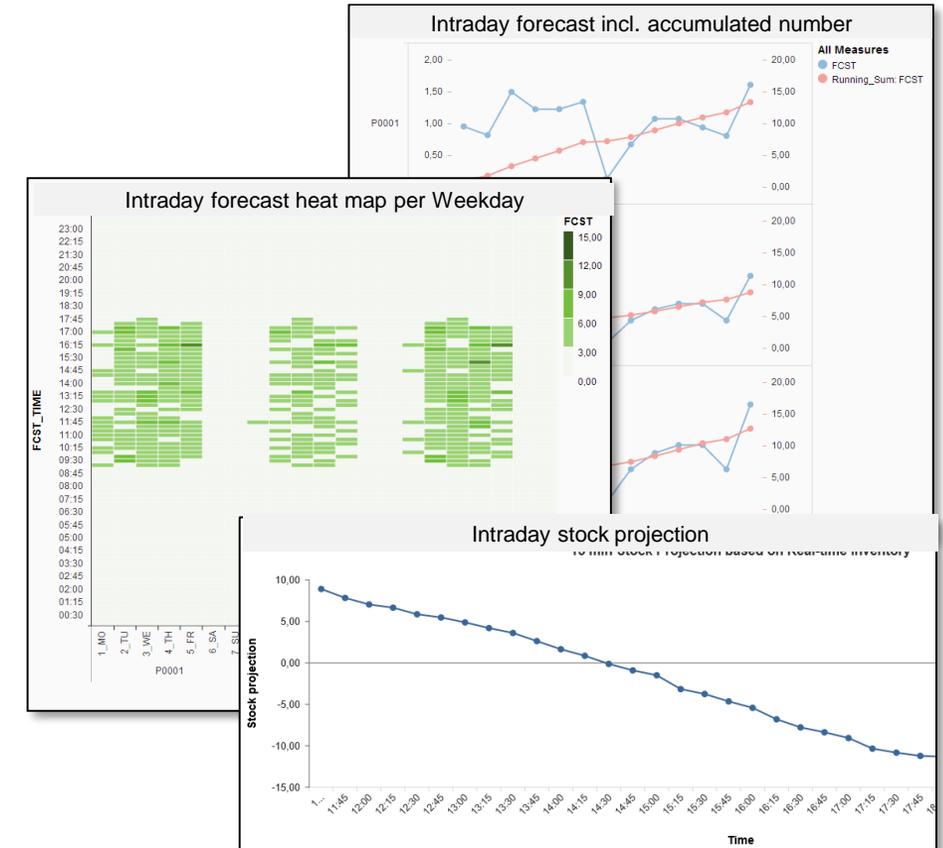
- Configurable time granularity (ex.15 min forecasts)
- Science will utilize category and store data if there are insufficient product-location transactions

Technical Details:

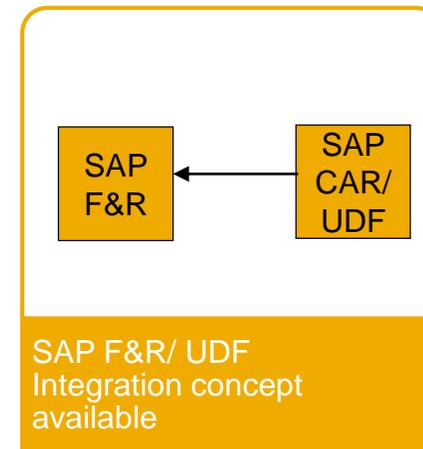
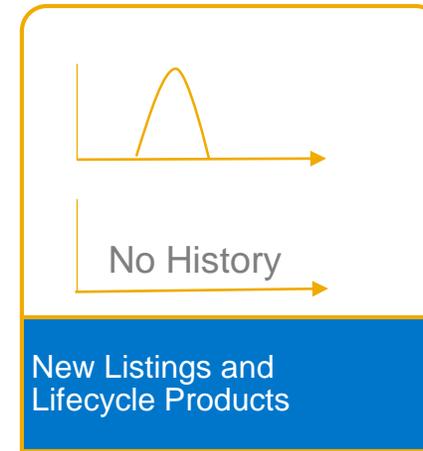
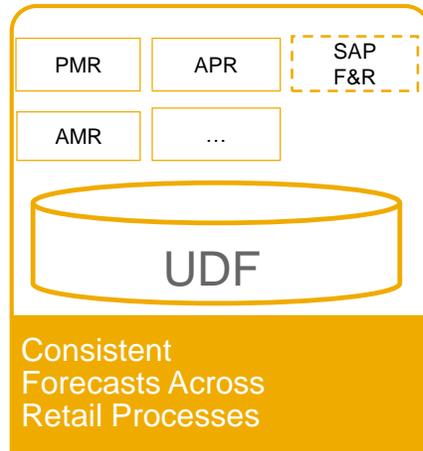
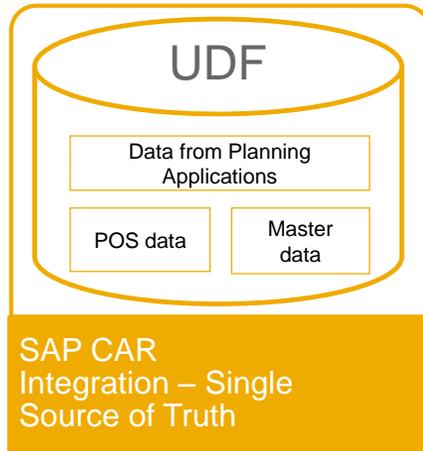
- Feature will be part of SAP Customer Activity Repository
- Lumira* can be used to visualize the results, see example screens

Demo Intraday Forecast

*Lumira visualization is not part of the product



Why it makes sense to integrate SAP F&R with UDF



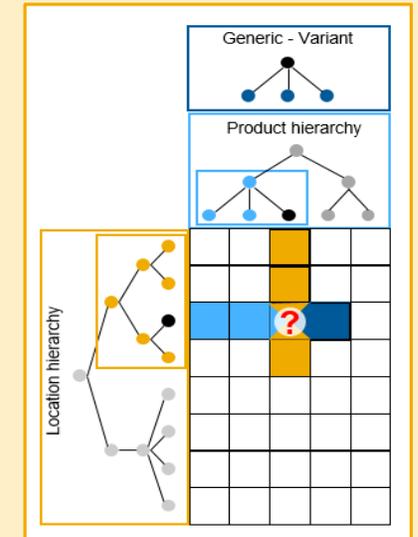
New listings and seasonal products

NEW PRODUCTS

UDF uses a Bayesian methodology with so-called “priors”.

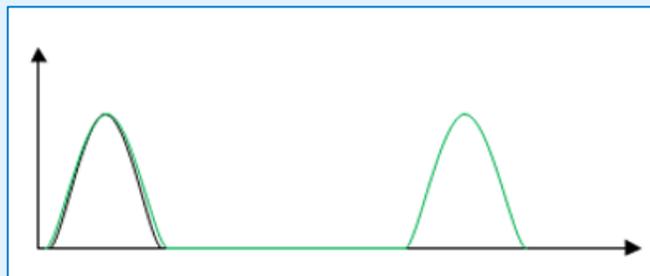
We can forecast things we haven't seen before

- New promotions, calendar events, price changes
- Seasonality even before a year is over
- Completely new items!

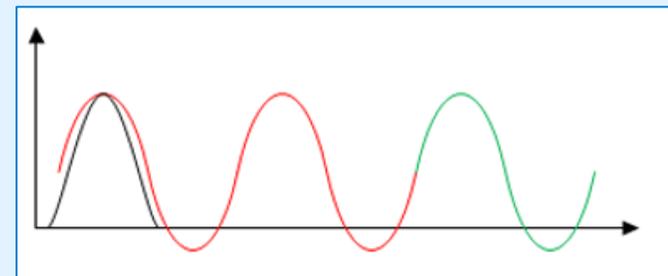


SEASONAL PRODUCTS

Seasonal/Lifecycle Product



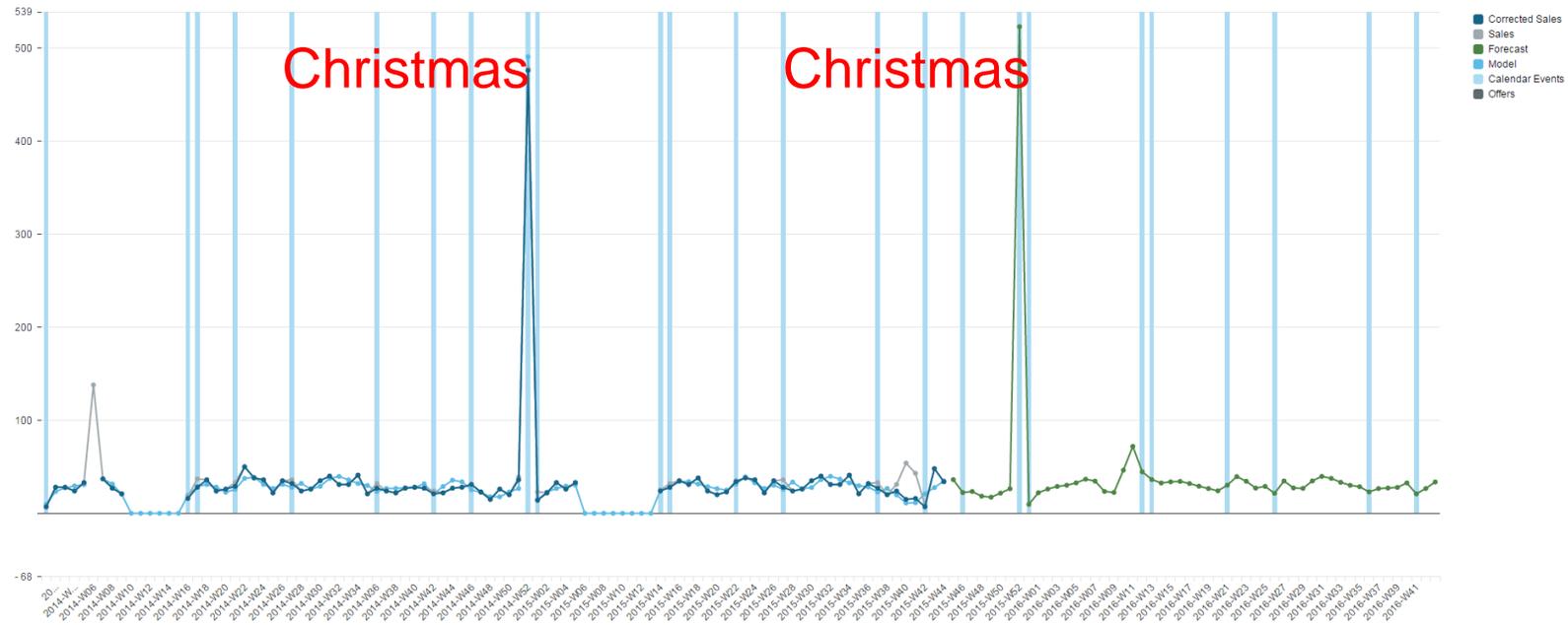
Recurrent



Completely newly listed product gets forecast

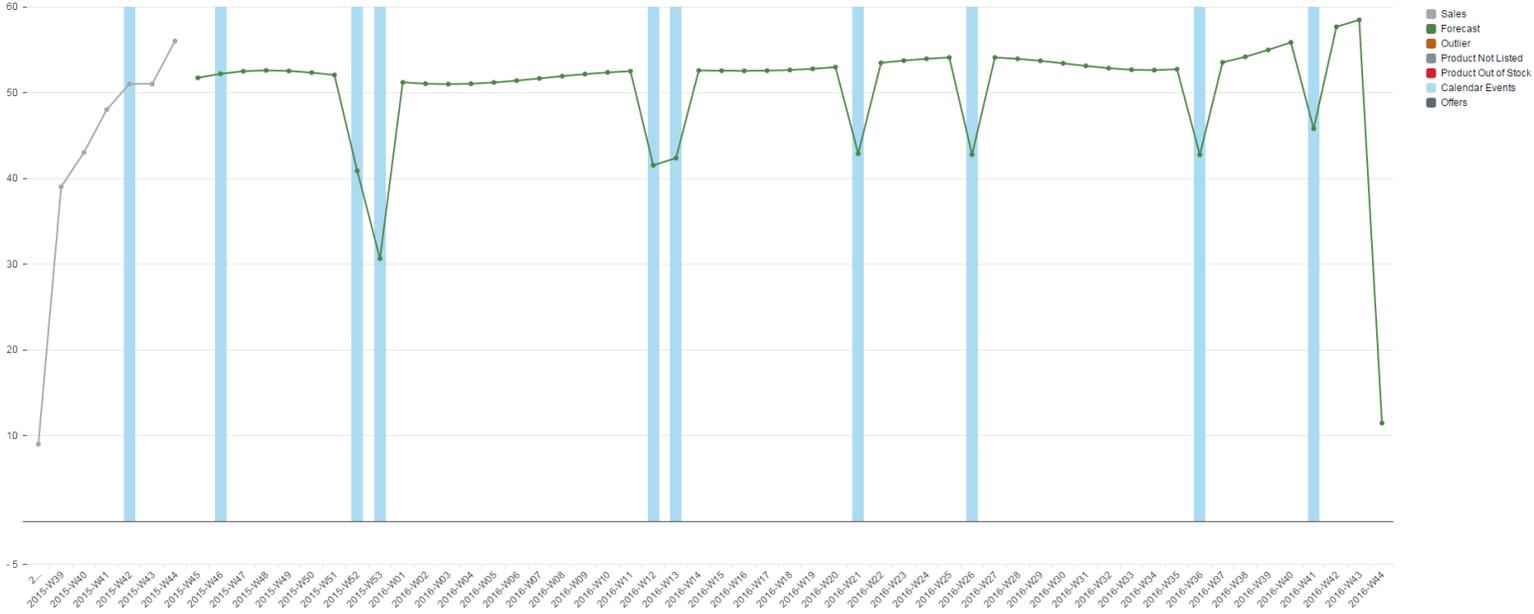


...using HPR from other products from the category

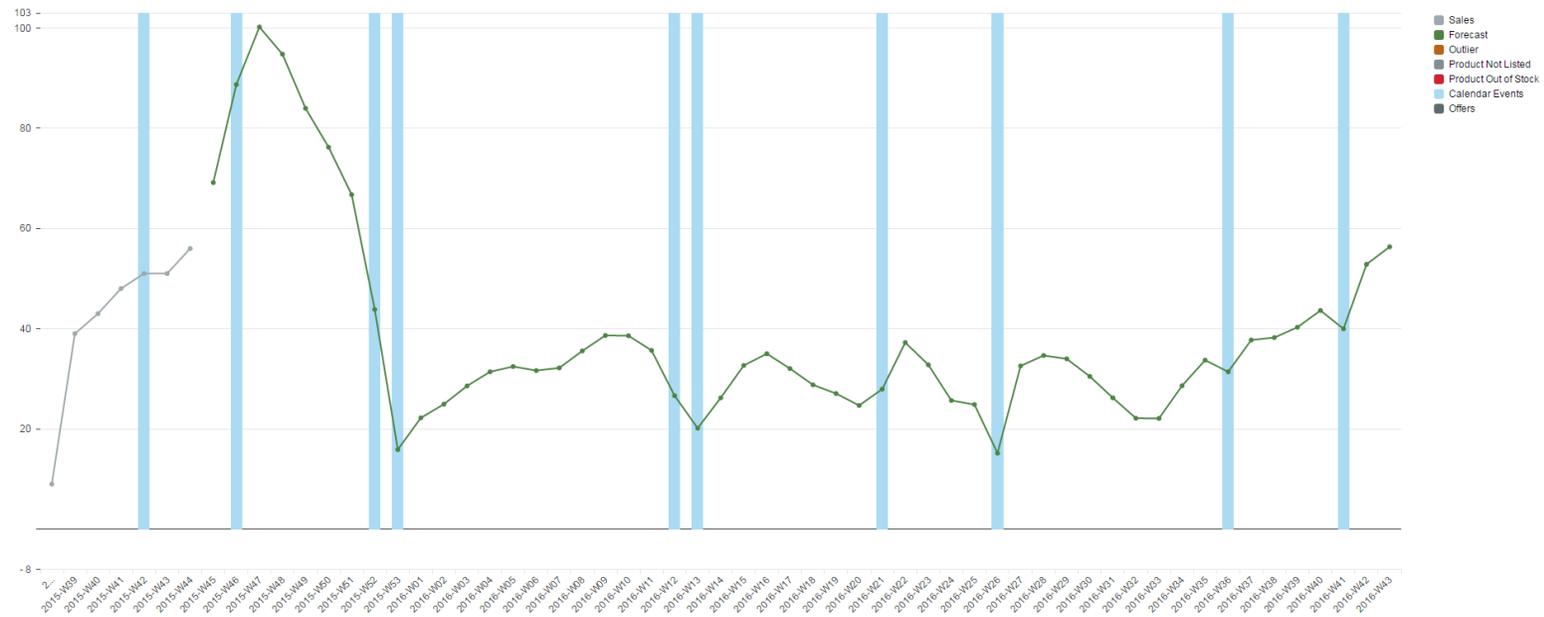


Potentially Seasonal Product (short history) without HPR

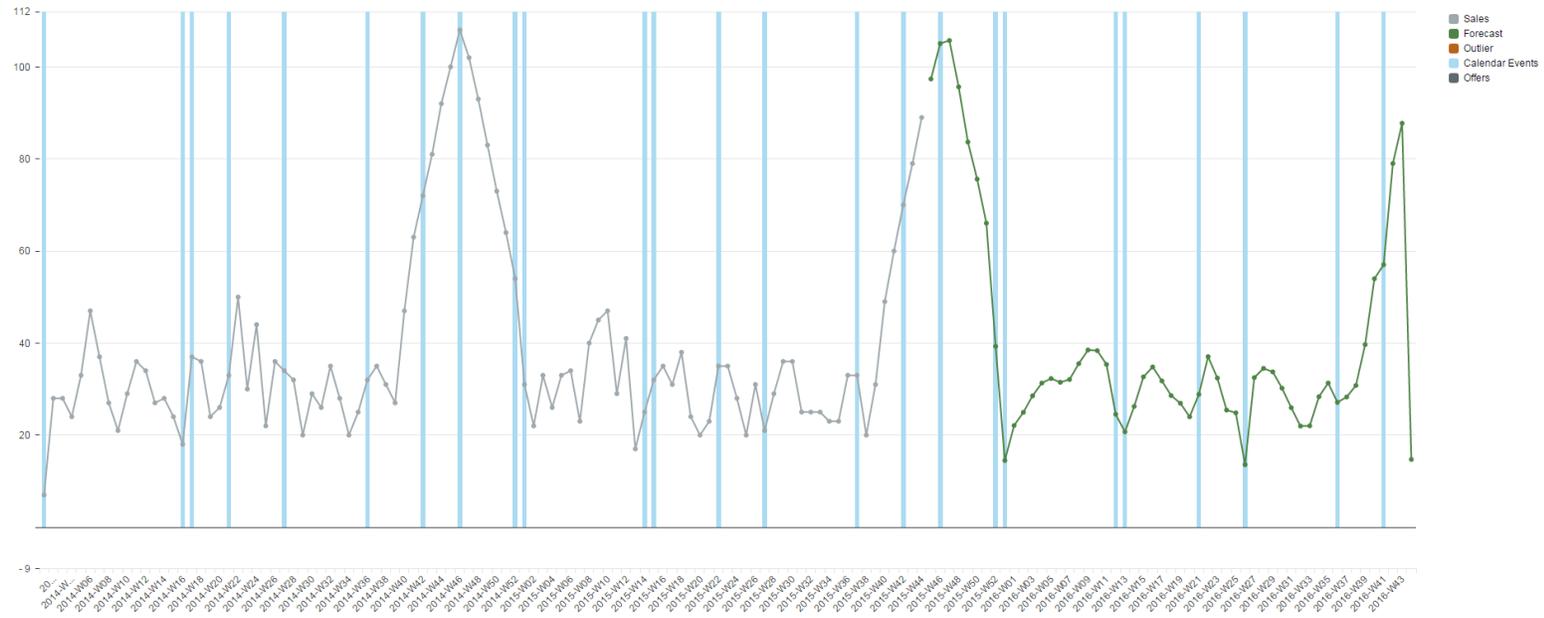
Short History



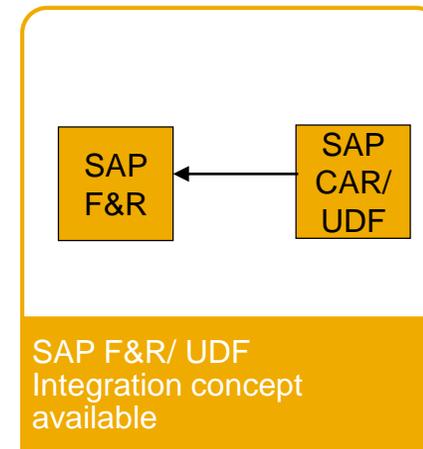
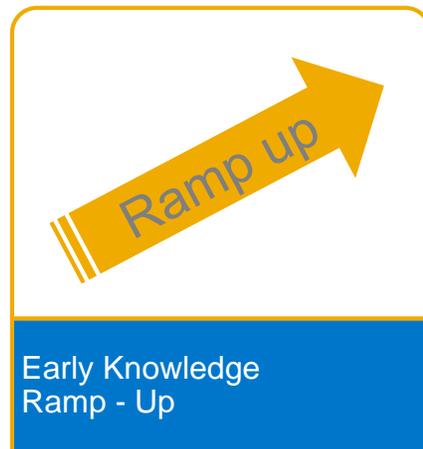
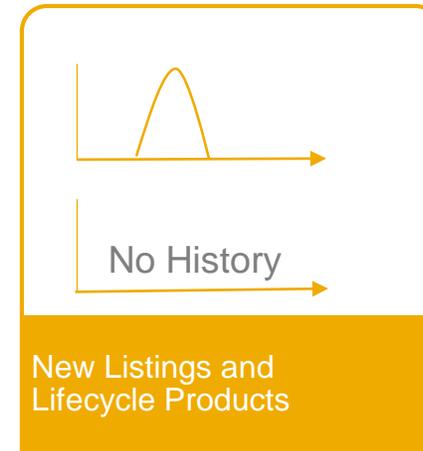
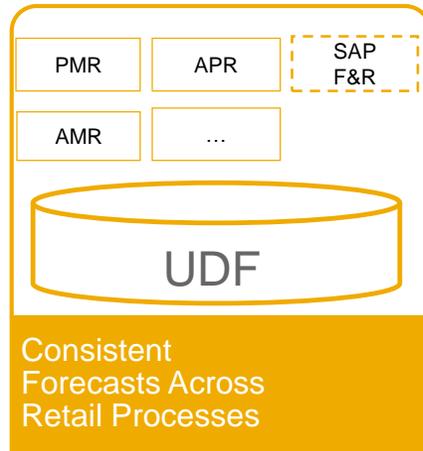
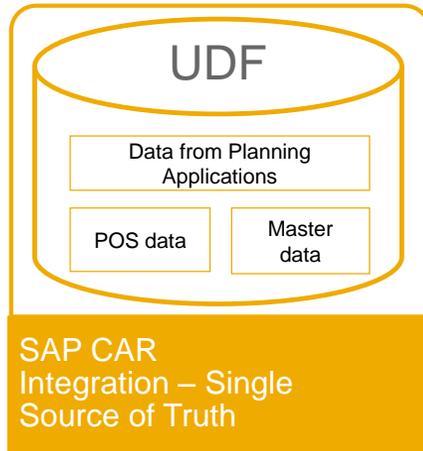
...gets a season...



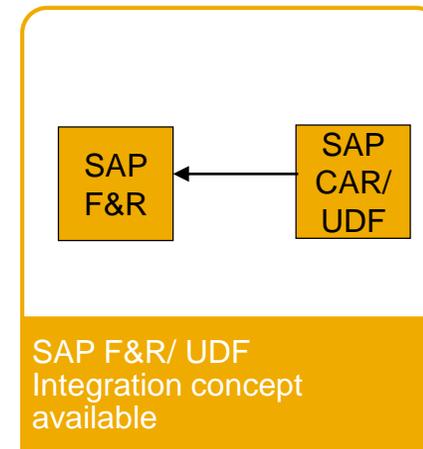
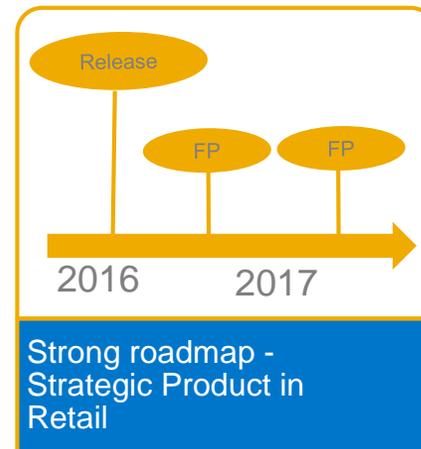
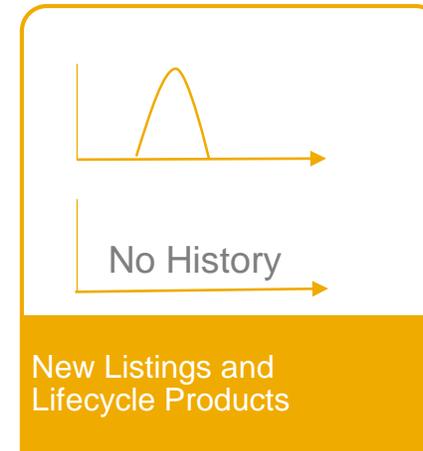
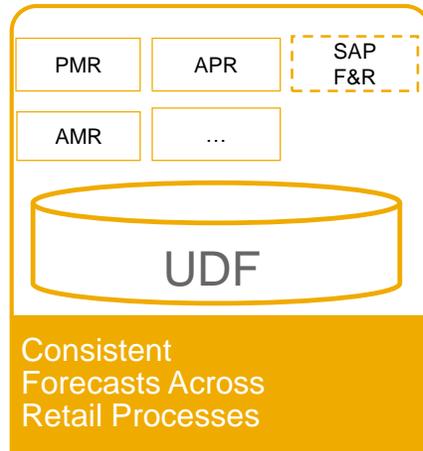
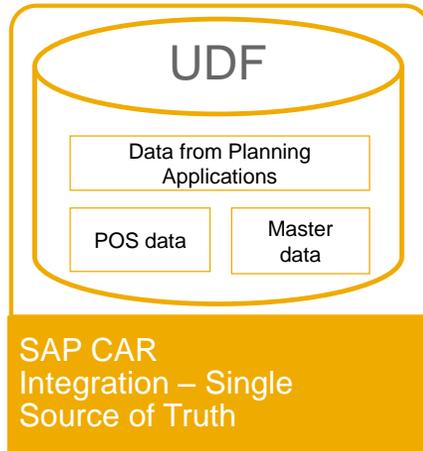
...using HPR from other products from the category



Why it makes sense to integrate F&R with UDF

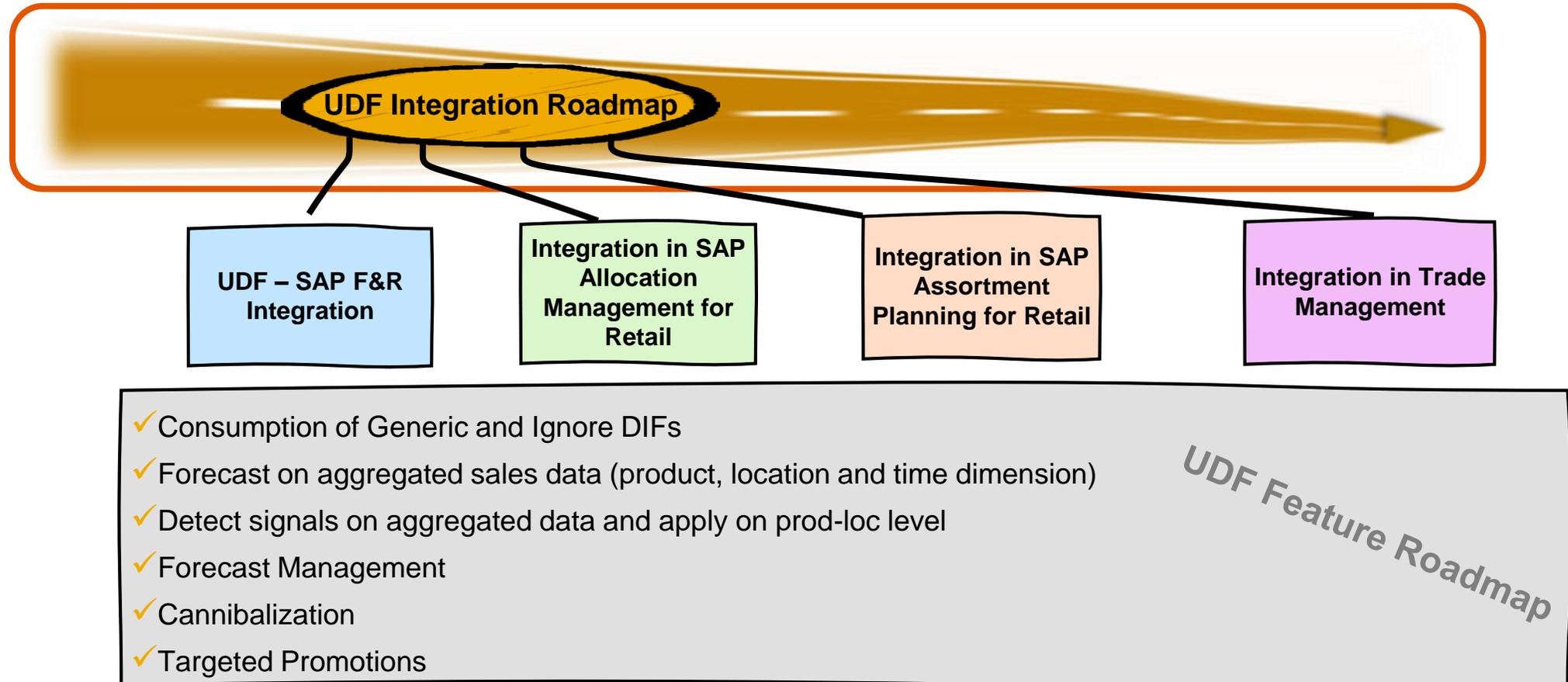


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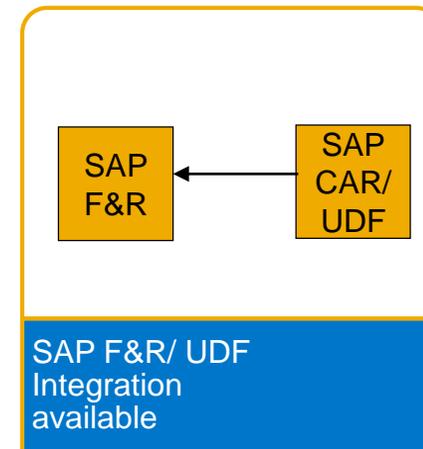
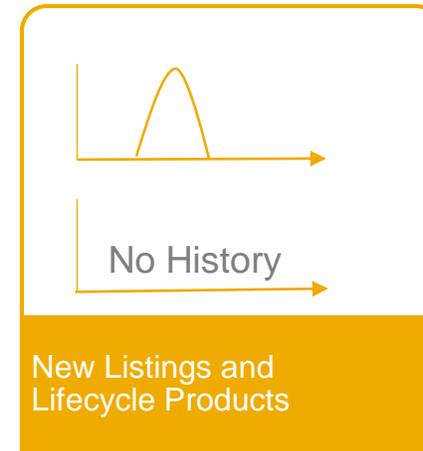
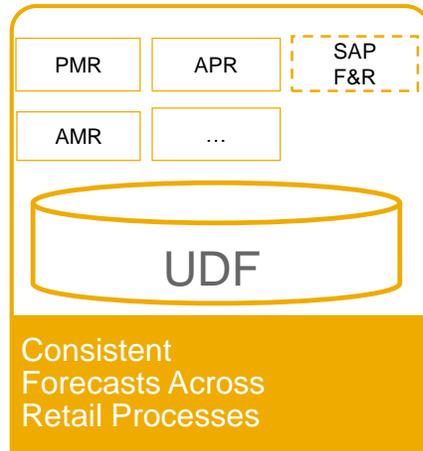
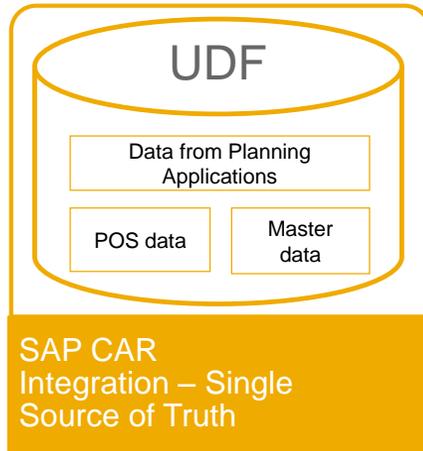


Roadmap Unified Demand Forecast

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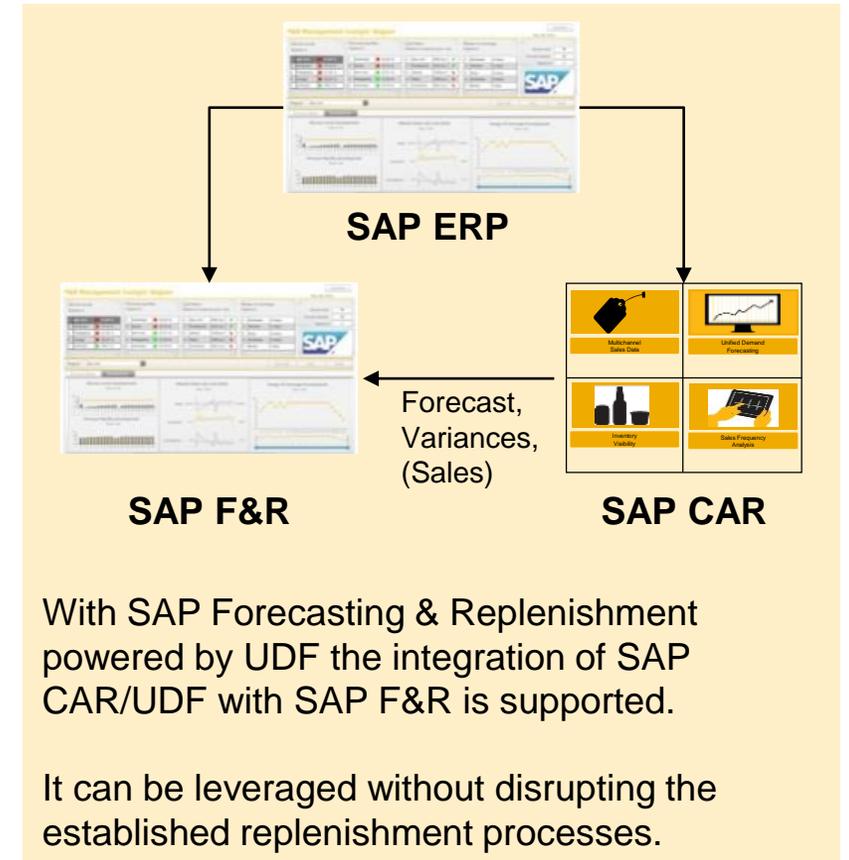
Why it makes sense to integrate F&R with UDF



How does the integration look like...

Solution Sketch:

- UDF could be used by SAP F&R as an **alternative forecast** for selected categories to calculate the replenishment orders **without changing** the established **SAP F&R implementation**
- UDF is operated **independently** from SAP F&R (no data supply from SAP F&R)
- SAP F&R will read required forecasts from SAP CAR in a **pull process**
- Integration of UDF forecast into SAP F&R will be available with **SAP F&R 5.2**
- Integration of UDF forecast into SAP F&R will be delivered **via Note**



Summary of Limitations

Known functional limitations:

- No support of **variable season**
- No DIF schema specific **variances**
- No **Weighting Profile**
- **Traceability** in respect to forecasts will be provided by **UDF** itself
- Restricted product substitution
- No **Generic DIF** concept *
- *No possibility to exclude “bad” observations from history (in SAP F&R possible via **IGNORE DIF**)**

*currently in development



Thank you

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