

Forecast Accuracy

Maximize the Effectiveness of Business Planning

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Agenda

Business Analytics at SAP

Forecast Accuracy – Definition, Common Issues and Benefits

Key Concepts in Forecast Accuracy

- People and Process
- Accuracy Metrics
- Forecast Compilation
- Reporting and Analytics
- Source Data
- Forecast Architecture

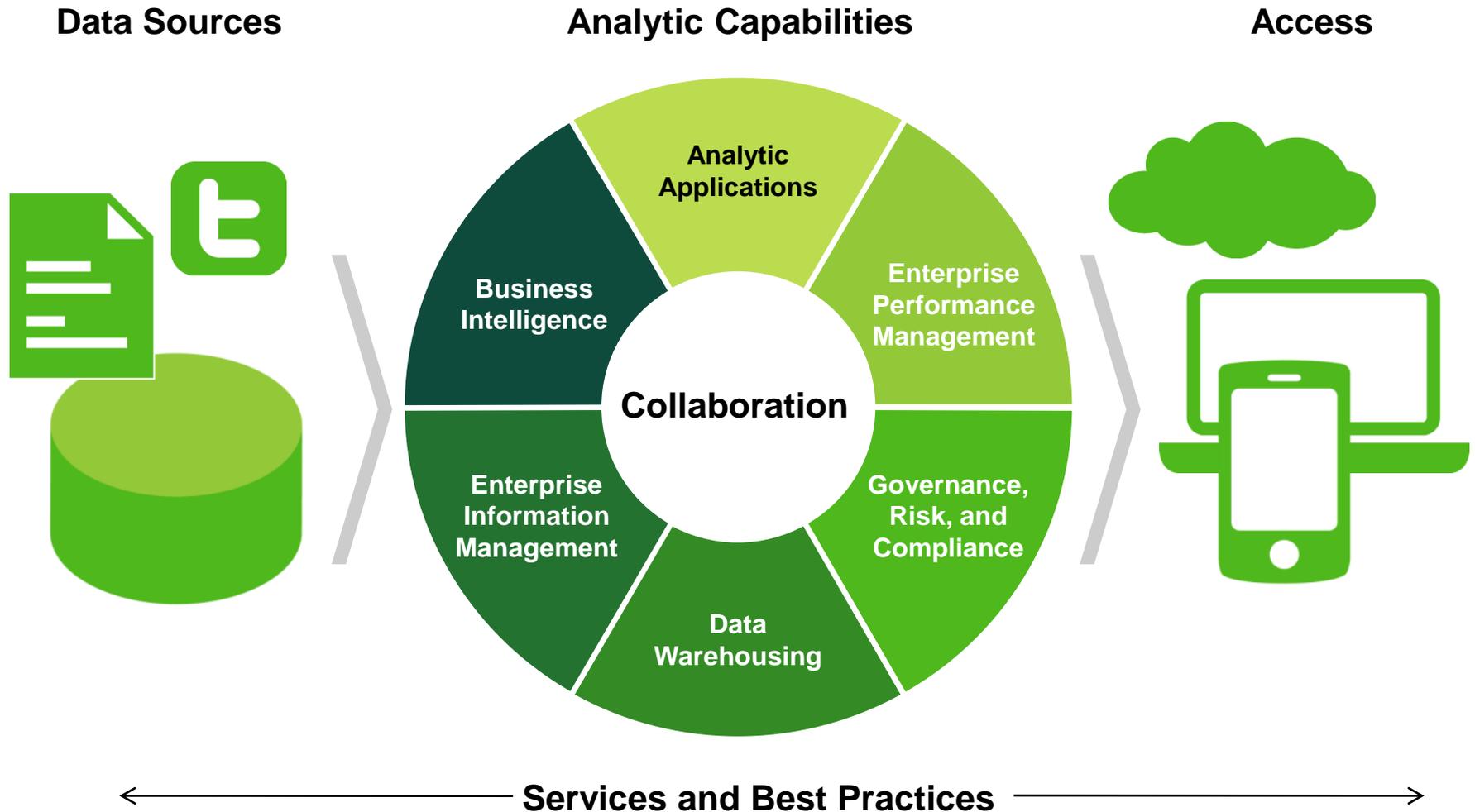
Recap



"Unfortunately, we were a little off-target again this quarter."

Business analytics solutions from SAP

Our approach



Problems with Forecast Accuracy

Common Anecdotes

Our forecast must predict the “unpredictable”

Our business plans are created in a vacuum of supporting data

Forecast methods that worked in the past are no longer accurate

We are forecasting measures that are not reflective of our business



Forecast results are not actionable for “real time” decision making

Forecast Accuracy

Many definitions and applications

At a high level, forecast accuracy can be defined as **how closely do your forecasts reflect your actual business results.**

Forecast accuracy must be measured both **retroactively as well as predictively.**

There are many different statistical methods that can provide mathematical results for the accuracy of forecasts, but **themselves do not solve the problems of closely matching business results to business plans.**

While forecast accuracy is a concept that is often associated with sales and demand planning, in this discussion it applies to all domains:

- Financial and Operational Planning
- Human Capital and Information Technology Planning
- Industry-Specific Scenarios

Forecast Accuracy

Benefits of Accurate Forecasting

Many industry benchmarks point to improved overall financial performance and profitability of companies that forecast accurately.

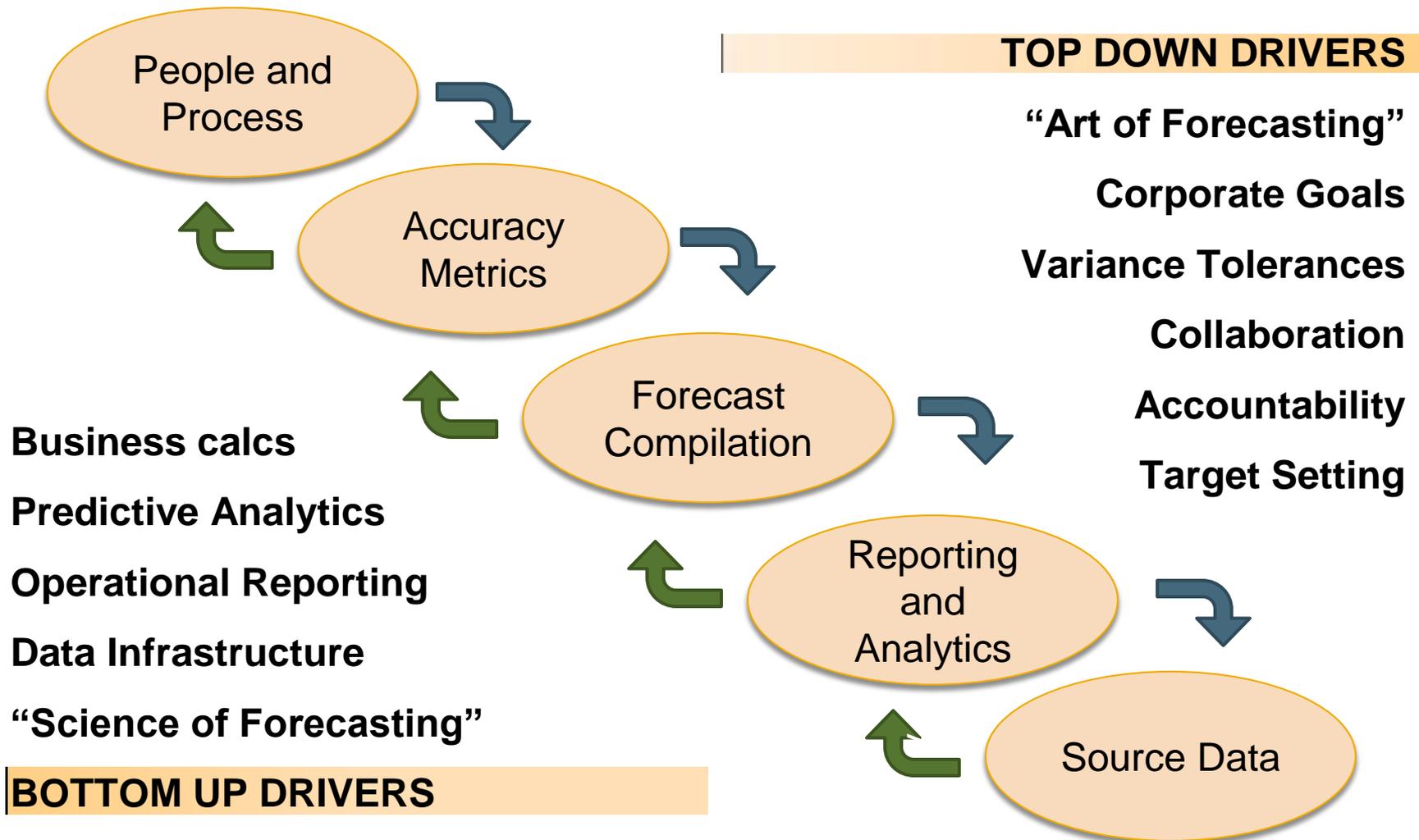
AMR Benchmark data suggests that the MOST accurate forecasters have...

- 15% less overhead costs
 - 10% higher revenues
 - 5% to 7% better profit margins
-

Along with the obvious financial benefits, many intangible benefits are achieved as well, including:

- Increased efficiency of processes, leading to better shorter cycle times
- Reduced importance of Annual Budgeting Process (or potential elimination of it)
- Better overall business intelligence and reporting capabilities
- Culture impacts (avoiding arbitrary decisions, better collaboration, etc)

Key Concepts In Forecast Accuracy



Top Down Drivers of Forecast Accuracy

Focus on driving ACCURACY into the plan, not just setting financial targets. Accuracy against the target is the objective, not setting the target itself.

- **This is the “Art of Forecasting”**

- Providing guidance that is realistic and achievable (using tangible and intangible information)
- Catalyzing motivation and accountability at all levels of the process
- Preventing contamination of the plan with unrealistic goals or “sandbagging”
- Focusing on open and honest collaboration, with trust in your data and processes



Bottom Up Drivers of Forecast Accuracy

The ultimate foundation of the forecast is how well data and forecasting solutions can support the need for providing necessary baselines and core logic for the forecast.

- **This is the “Science of Forecasting”**
 - Providing data that has been cleansed and aggregated to reflect actuals and prior forecasts
 - Simulating possibilities to allow for best choice models for the future
 - Blending of business intelligence and reporting details with forecasting solution
 - Providing feedback loops between bottom up and top down processes for improvement
 - Rapidly providing information is critical to ensure success – Timing is everything!



Forecast Accuracy Best Practices

People and Process

Improving forecast accuracy starts with analyzing your processes and who is involved in executing them.

- **Look to tie together different “pockets” of forecasting within a business**
- **Manage any imbalance of manual and systematic processes**
- **The more people that touch the forecast, the GREATER the chance for error**
- **The fewer number of people that make decisions on the forecast results, the more effective those decisions become**
- **How much predictive/statistical analysis is utilized vs. manual decisions?**
- **Is your forecast simply forward-looking, but not predictive?**
- **Is the forecast obsolete before it’s published due to speed of the business?**

Forecast Accuracy Best Practices

People and
Process

Improving forecast accuracy starts with analyzing your processes and who is involved in executing them.

TIMING

- **Time horizon?**
- **Time granularity?**
- **How often to forecast?**
- **How much history to use as a baseline?**

WHAT TO FORECAST

- **High Impact vs Low Impact**
- **Financial vs Operational (and how they link together)**
- **Segmentation of impact metrics vs. how accurate the forecasts on those items were over time**

Forecast Accuracy Best Practices

Accuracy Metrics

Incorporation of metrics to evaluate the deviation of the forecast to the actual data is important to measure for accuracy improvements.

Accuracy metrics are different than typical variance analysis. Variance reflects a point in time, accuracy is measured over a time horizon.

In the following example, traditional variance analysis shows the following:

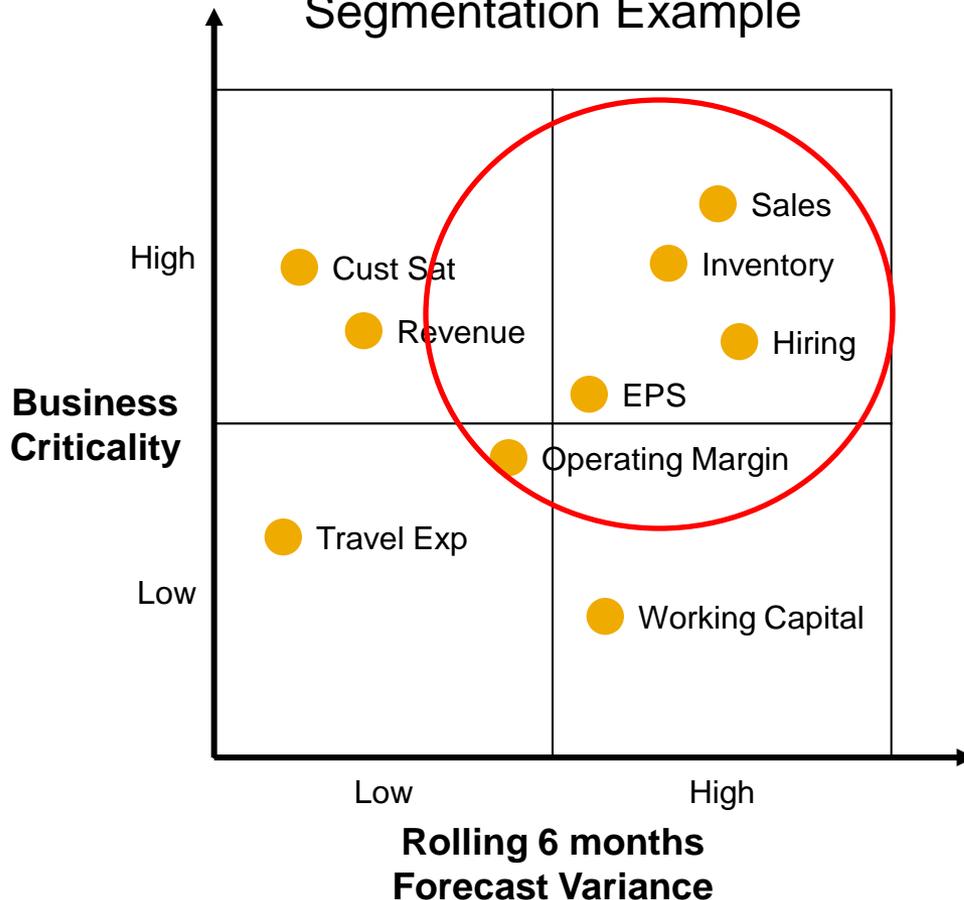
REVENUE (in Millions)	Jan	Feb	Mar	Q1 TOTAL
Forecast	25.45	12.10	13.30	50.85
Actual	17.20	18.50	15.20	50.90
Variance	-8.25	6.40	1.90	0.05

Overall variance for Q1 was minimal, but the standard deviation over time was very high (7.6). The forecasting process for revenue in this case is very inaccurate.

There are many different statistical formulas to measure forecast accuracy, standard deviation is the most basic.

What to Forecast

Segmentation Example



Creating a segmentation analysis can help identify which business critical metrics require accuracy analysis.

In the example at left, we are comparing the overall business criticality (as determined by the management), with the overall variance to forecast for the last 6 months.

Note that the measures circled are the least accurately forecasted, but also most critical to business health, and should be focus for accuracy metrics.

Forecast Accuracy Best Practices

Forecast Compilation

Compilation is defined as the combination of people, technology, and tools coming together to create the forecast itself.

The forecast compilation process is important for overall accuracy as it requires inputs from various sources to create the plan:

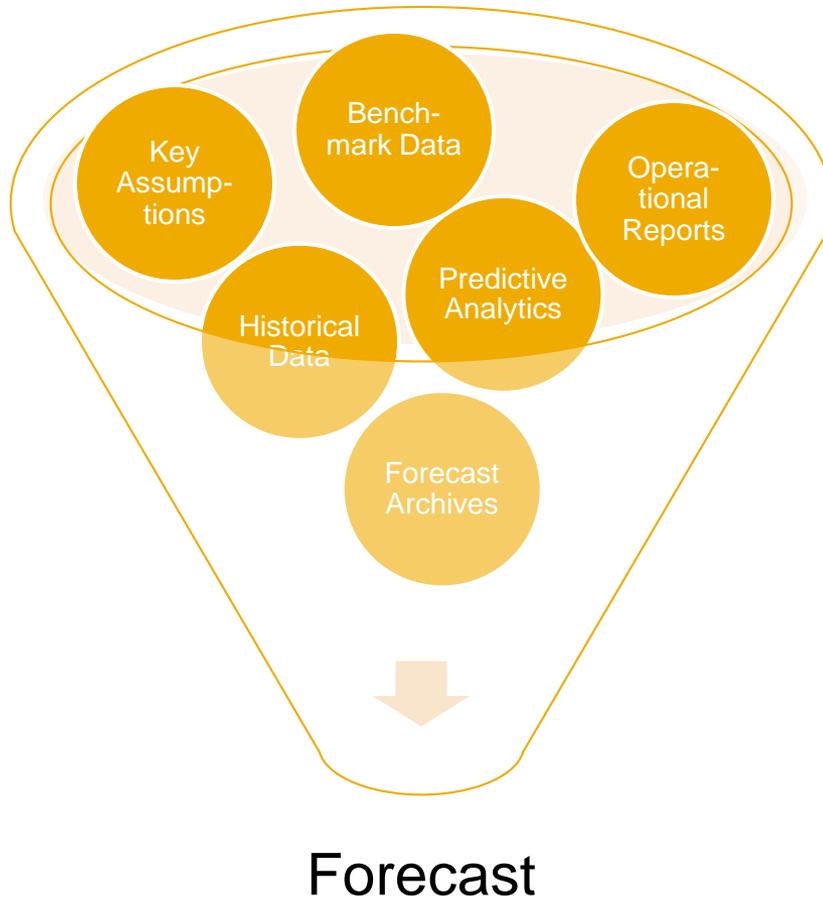
Historical Data can serve as the primary basis for extending trends, linear regression and seasonality logic, however, history does not always predict the future well.

Predictive Analytics algorithms can drastically improve forecast accuracy using external benchmarks and advanced scientific methods.

Operational Reporting gives up to the minute reporting of company performance, thereby providing the most recent picture of the measures to be forecasted.

Forecast Archives show previous plans for forecast periods prior to the current, and allow forecasters to make changes based on accuracy metrics as an input.

Forecast Compilation



Inputs used from as many sources as possible can assist in creation of more accurate forecasts

Key assumptions allow for quick simulations, while benchmark data can add external perspectives to the plan.

Near real time operational data combined with predictive algorithms can impact accuracy.

Looking at past forecasts also give perspectives to forecasters.

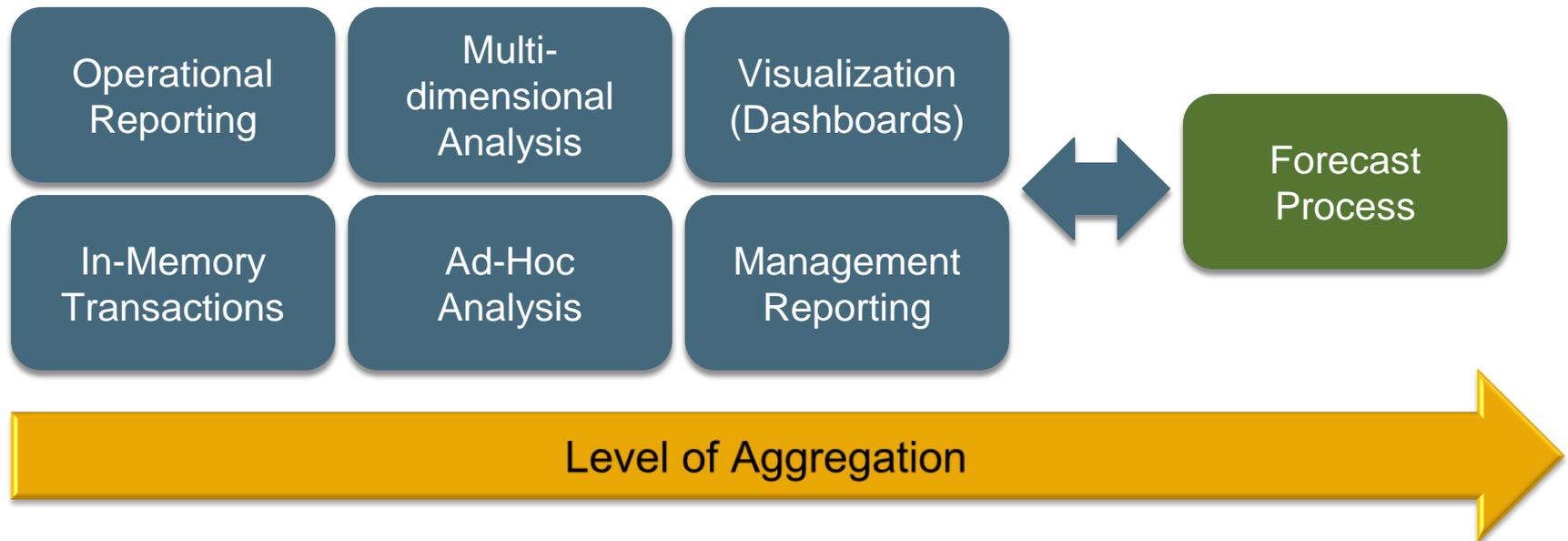
NOTE: It is a best practice to AUTOMATE these inputs, not add more manual complexities to the process.

Forecast Accuracy Best Practices

Reporting
and
Analytics

Reporting and Analytics is both an input and output of an effective forecast process. Insights gained are rolled into new forecasts.

Reporting must simultaneously reflect the dimensionality of the business for quick analysis needs, but also ability to investigate detailed data.



Forecast Accuracy Best Practices

Source Data

Quick integration and cleansing of data from various sources (internal and external) is critical to support forecast accuracy.

Data sources for forecast data are often spread across an enterprise in different formats, systems, databases, and spreadsheets.

It is critical to create an information management strategy to consolidate and organize this data quickly so insights can be gained from it before, during and after the forecasting process. Your EIM strategy should encompass:

Master Data Management – Ensures common definitions of metrics and dimensions across all systems and promotes common understanding of the business

Data Cleansing – Important to establish trust in the data, as any erroneous or unorganized data can lead to serious accuracy issues

Data Integration – As source data for comprehensive enterprise forecasts often comes from many sources, a data integration platform is required to consolidate

Forecast Architecture

Executive Reporting (Dashboard Analytics, SAP Strategy Management)

Forecast Application

Core Forecasting Application with embedded business logic and core forecasting model

Forecast Accuracy Application

Separate model focused entirely on monitoring forecast accuracy and archives

Tools

SAP Business Planning and Consolidation

Tools

SAP Business Planning and Consolidation

Platform

Financial Information Management (FIM)

In Memory

SAP HANA

Enterprise Information Management and Operational Reporting

Data Services

MDM

Explorer

WebI

Cleansing

ETL

XCelcius

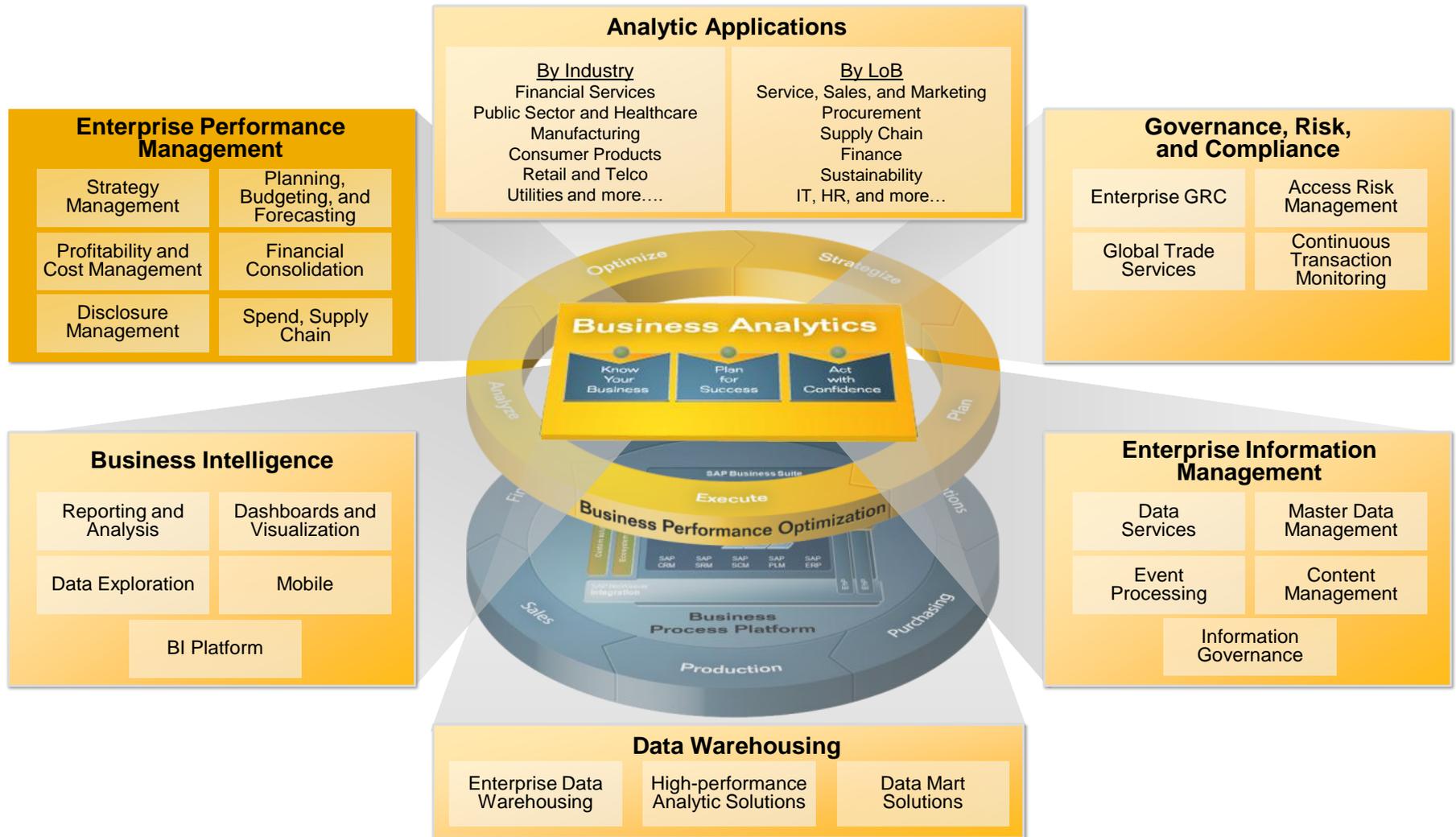
Crystal Reports

Predictive

PIO

Source Data

Business Analytics Solutions from SAP



Recap

- ❑ **Forecasts are driven both by “art” and “science”, and each have an impact on the overall business performance**
- ❑ **Forecast accuracy is affected by a wide range of potential influences, from cultural to systematic**
- ❑ **Implementation of forecast accuracy metrics can dramatically help measure the effectiveness of your process**
- ❑ **Utilize many inputs into the compilation of the plan to drive accuracy**
- ❑ **Good reporting and analytics builds confidence in data**
- ❑ **Data integration provides the foundation for the entire process**
- ❑ **SAP has a range of products and services to drive accurate forecasting architectures and solutions**

Further Information



SAP Community Network

Business Analytics community

<http://www.sdn.sap.com/irj/boc>

EPM page

<http://www.sdn.sap.com/irj/boc/epm>

EPM discussion forum

<http://forums.sdn.sap.com/forum.jspa?forumID=270>



Social Media

The Decision Factor Blog

<http://www.the-decisionfactor.com/>

Twitter

<http://twitter.com/#!/SAPEPM>

<http://twitter.com/sapcommnet>

Facebook

<https://www.facebook.com/sapcommunitynetwork>



Upcoming Webinars

Business Analytics Webinar Series

<http://www.sdn.sap.com/irj/scn/businessobjects-webinars>



Thank You!

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