



NAFF

Nätverk för Affärsutveckling
i Försörjningskedjan

Forecasting Accuracy

Webinar, 2010-11-08

Huvudmän:



Samarbetspartner:



- **Project background**
- Project Aim
- Models
- The project, how do we do it?
- Results so far
- Plan ahead

Project background

- Pre study initialized in 2009
- Found major problems with bad forecasting accuracy
- Found that there is a big interest in the area
- Found that there is a lot of potential savings

- Project initiated and founded by Tillväxtverket february 2010

Problems identified at the suppliers

- Low transparency of information in forecast, old demands remain in the schedules received with bull whip effect as a result
- Low forecast quality
- No common used methods of measurement and as result hard to communicate with a fact based understanding of the situation
- Additional cost for premium freight

Reasons and results

- Un-nessecary high changes in demand in close time due to wrong parameter settings (ordermultiples) or use of concepts as full load
- Long lead time in combination with low forecast accuracy creates problem as the supplier gets squeezed in between
- Low forecast accuracy forces the suppliers to take unappreciated actions as Increase safety stock, keep over capacity to cope with increase flexibility or killing the transparency by changing the customer forecast.

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Project aims to :

- Gather interested parties, OEMs and suppliers,
- Identify current forecast quality and it's effects
- Identify potential improvements
- Propose a best practice way of working with the issues deriving from forecast quality
- Identify measurements (KPI's) and modells and potential usage to enable follow up and continous improvement in the area.
- Participate as Swedish representative in the Odette International group in the area
- Map current forecast quality and its effects
- Visualize and bring the issue to a better "knowledge level" and increase awareness

Project participants

- Autoliv
- Bulten
- Haldex
- Lesjöfors
- Leax
- SAPA Heat Transfer
- SKF
- TitanX Engine cooling
- Volvo Group
- Volvo Parts

International project - planned members

- SKF, Luc Graux (PM)
- Odette Sweden, Meridion Johan Bystedt
- Bulten: Folke Östlund
- AB Volvo, Henry Rostén
- Bosch, Name to be confirmed
- Continental Name to be confirmed
- GALIA, Jean Francoise Tahon
- German OEM (to be confirmed),
- Iveco, Name to be confirmed
- Renault, Name to be confirmed
- SMMT, Jeff Turner
- VDA (Supplied by Werner Mock)

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Currently we have several models of displaying data and setting values of the forecasting accuracy. We have analyzed 3 of them

- VDA (Odette)
- Volvo
- SKF

Results of VDA-forecast project group

VDA

Verband der
Automobilindustrie

Definition of forecast-quality indicators

R = Reference demand, n = number of forecasted demands

P_i = i^{th} forecasted demand volume for the demand period

Forecast-quality indicator:
$$\text{FQ} = \frac{\sum_{i=1}^n |P_i - R|}{R * n} \geq 0 \text{ [in \%]}$$

The higher the demand fluctuations, the larger the FQ value (MAPE)

Tracking Signal:
$$\text{TS} = \frac{\sum_{i=1}^n P_i - R}{\sum_{i=1}^n |P_i - R|}, \quad -1 \leq \text{TS} \leq +1$$

Demand over- / underestimation \Leftrightarrow TS value = positive / negative

Classification of forecast quality

Horizon	Demand Period	Forecast Period	FQ in %	Classification
Short-term	Days	Week 0 to -2	<3%	good
			3-8%	medium
			>8%	bad
Medium-term	Weeks	Week -3 to -8	<5%	good
			5-10%	medium
			>10%	bad
Long-term	Months	Week -9 to -x	<10%	good
			10-15%	medium
			>15%	bad

Horizon	Demand Period	Forecast Period	FQ in %	Classification
Short-term	Week	0-2 Month	<5%	good
			5-10%	medium
			>10%	bad
Medium-term	Month	3-5 Month	<10%	good
			10-20%	medium
			>20%	bad
Long-term	Month	6+ Month	<20%	good
			20-30%	medium
			>30%	bad

Horizon	Demand Period	Forecast Period	FQ in %	Classification
Short-term	Week	1 Month	To be defined: The values seems much to tight compared to current values	good
				medium
				bad
Medium-term	Month	+2 Month		good
				medium
				bad
Long-term	Month	+9 Month		good
				medium
				bad

VDA
recommendation

Volvo
recommendation

Our
recommendation

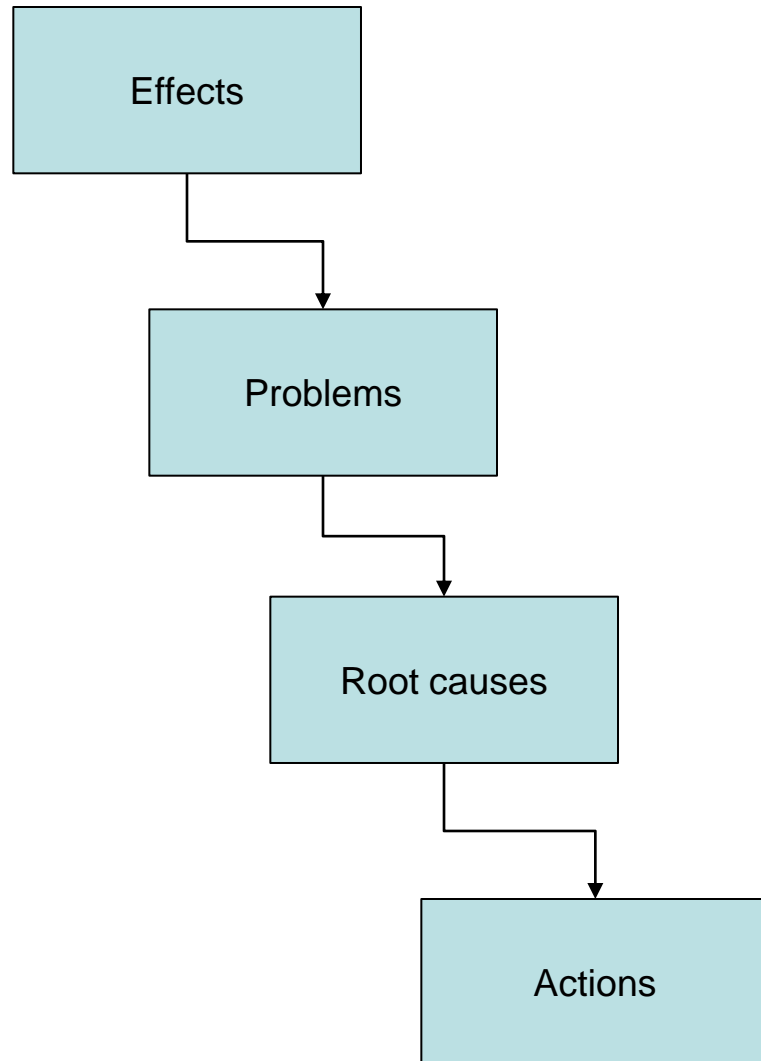
Pros and Cons with presented models

- Three different models – different results for same basic data
 - Does not facilitate a common understanding and communication
 - Normalization – 0 % or 100 %
 - What model to use for pilot in this project?
- Communication is one of the major identified issues
 - How to improve communication?
 - Keep 3 models
 - Get all to use same model
 - Documentation that describes differences

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Work so far



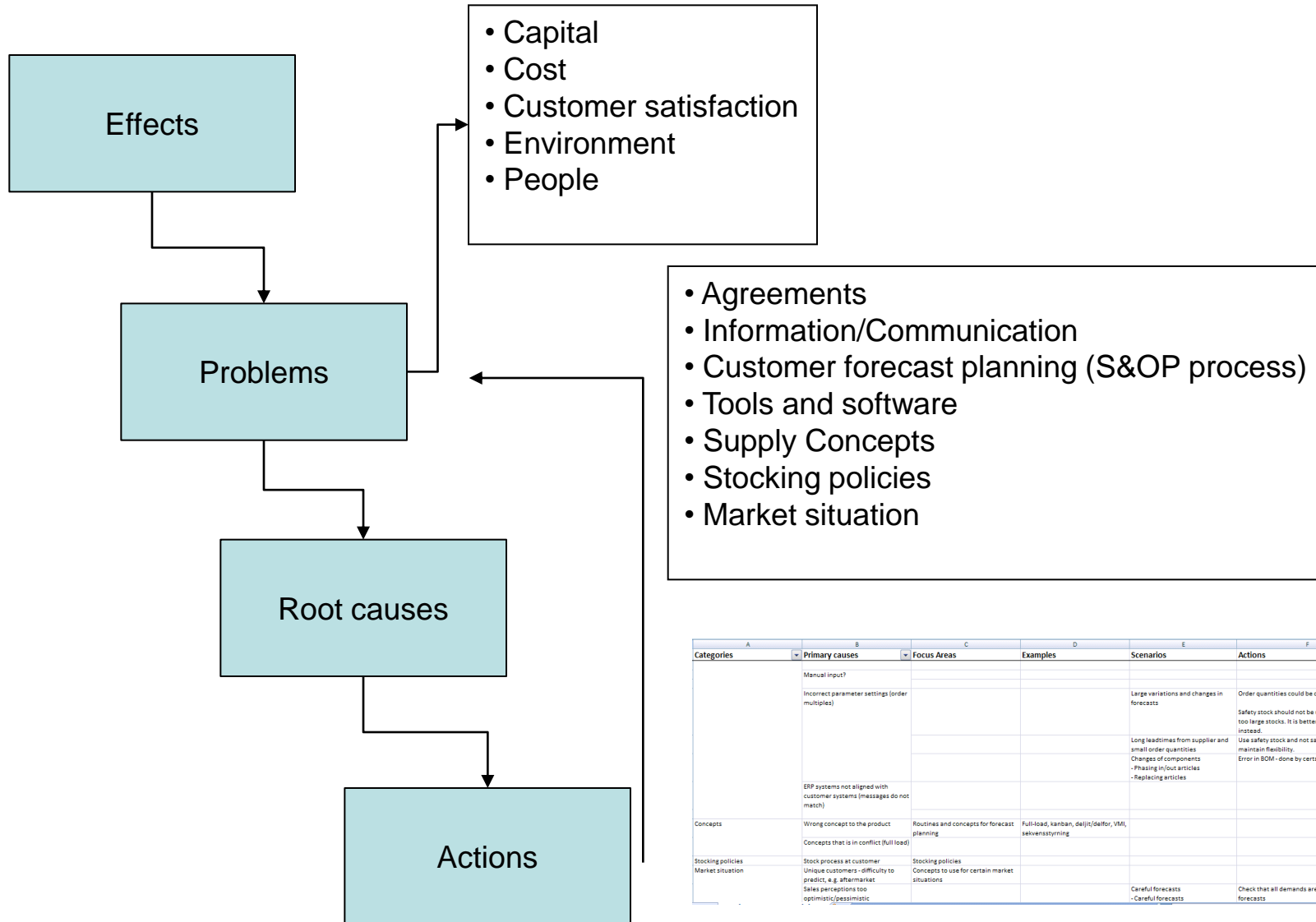
Overview of results from Workshop I

Identified effects of lacking forecast accuracy were groups as follows:

- Capital
- Cost
- Customer satisfaction
- Environment
- People

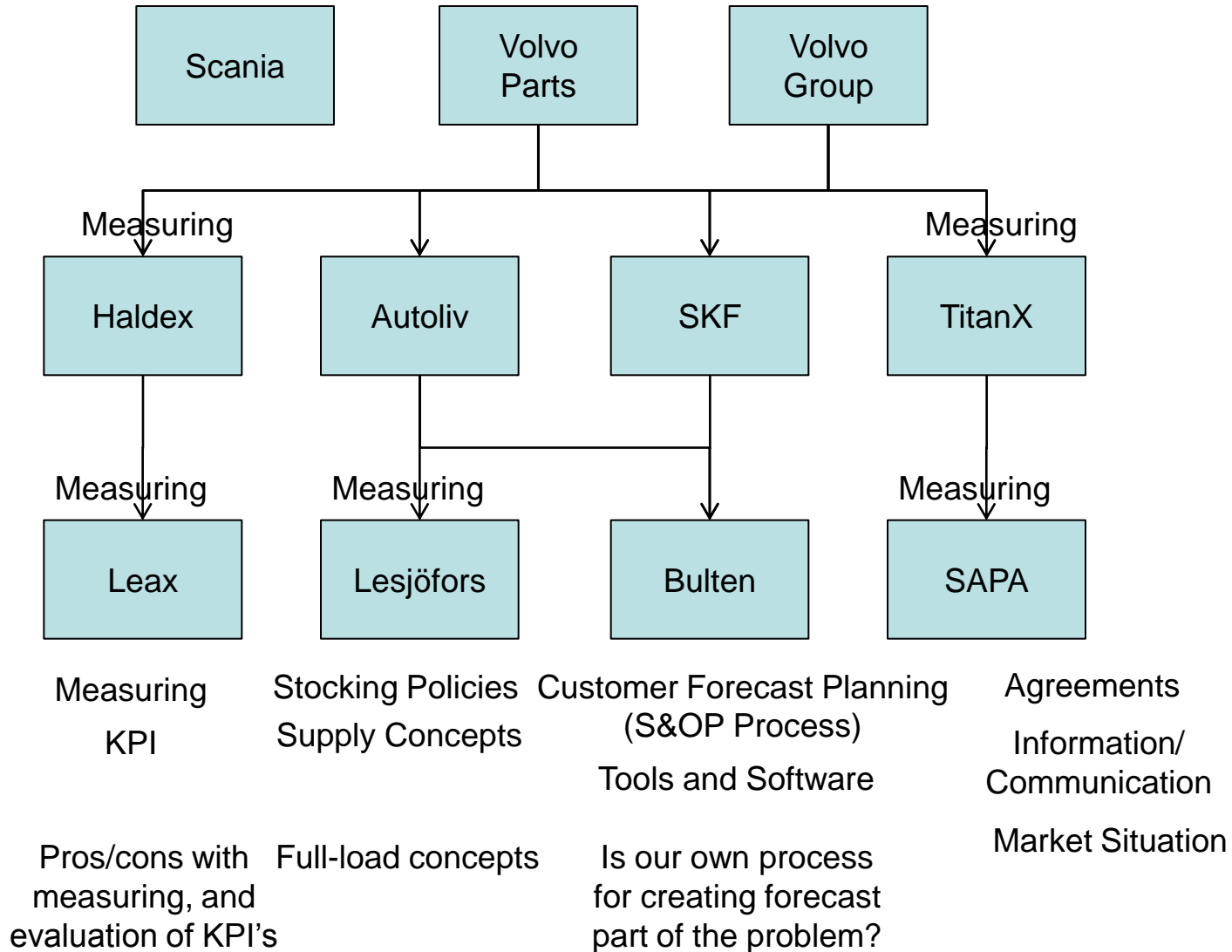


Effects down to actions



Categories	Primary causes	Focus Areas	Examples	Scenarios	Actions	Comments
	Manual input?					
	Incorrect parameter settings (order multiples)			Large variations and changes in forecasts	Order quantities could be decreased. Safety stock should not be used since it creates too large stocks. It is better to use safety time instead.	
	ERP systems not aligned with customer systems (messages do not match)			Long leadtimes from supplier and small order quantities Changes of components - Phasing in/out articles - Replacing articles	Use safety stock and not safety time in order to maintain flexibility. Error in BOM - done by certain data or adhoc	
Concepts	Wrong concept to the product Concepts that is in conflict (full load)	Routines and concepts for forecast planning	Full-load, kanban, del(jc/delta), VM, selvenstyrning			
Stocking policies	Stock process at customer	Stocking policies				
Market situation	Unique customers - difficulty to predict, e.g. aftermarket Sales perceptions too optimistic/pessimistic	Concepts to use for certain market situations		Careful forecasts - Careful forecasts	Check that all demands are included in forecasts	

Action areas



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Results so far

- All companies in the group are measuring
- The implementation guideline is under construction
- European project still under coordination but not up and running

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Next meeting 24 november in Gothenburg

How should we spread information about this project and its findings?

- Information letter to be used internally and externally to inform about the project and its aims
- Participation at international meetings – Odette International?
- Publication in newspaper?
- Open seminars?