



The logo for INFORM, featuring a teal square followed by the word "INFORM" in a bold, sans-serif font.

Inventory Planning
and Forecasting

“Why Measure
Forecast accuracy ?”

Women in Logistics - IT and Logistics

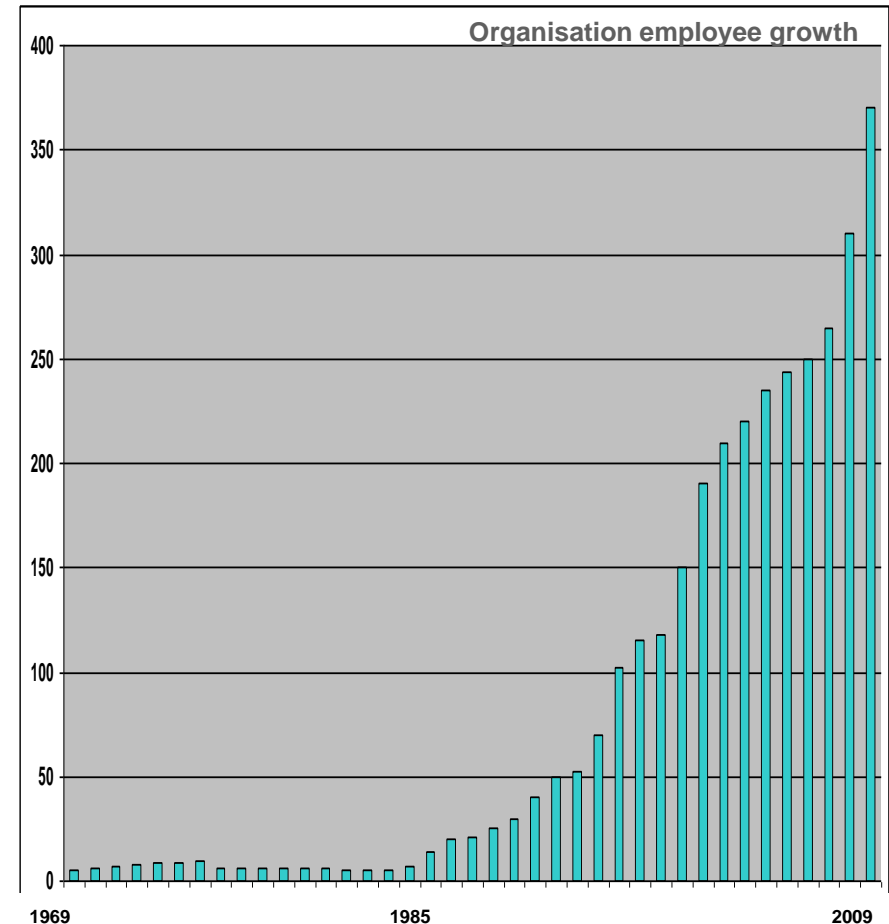
12th May 2011

Cathy Humphreys, UK Country Manager, INFORM

INFORM

Institute For Operations Research and Management GmbH

- HQ in Aachen, Germany
- 1969 origins as university research spin-off
- Since 1985 22% growth per year
- 350+ employees today
- Self-funded growth
- Privately owned





Decision Support Systems

Optimisation

Transaction systems

e.g. SAP, other ERP Systems,
Materials Management Systems, etc.

**IT Infrastructure
Databases / Network systems**

e.g. DB/2, Oracle,
Informix, Sybase

e.g. TCP/IP,
UNIX, NT



*Inventory is required at points in the supply chain
when the required lead time is less than the replenishment lead time
OR it is more cost effective to hold stock than replenish small quantities*

Inventory Planning determines

- ▶ What
- ▶ is needed where
- ▶ in which quantity
- ▶ at which date

The goals:

- ▶ Ensure the ability to supply
- ▶ Minimise tied capital costs (inventory costs)
- ▶ Minimise provision costs

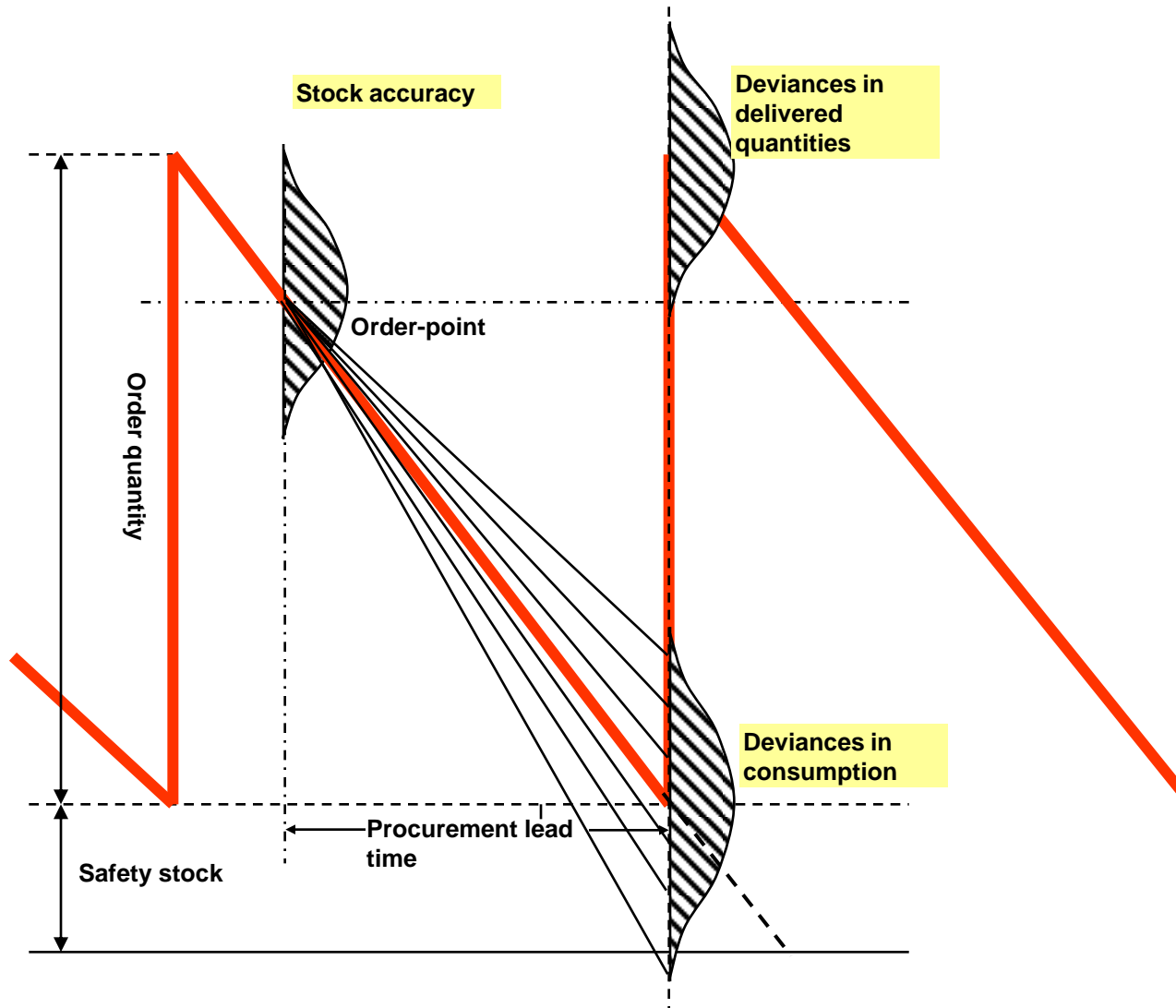
- ▶ The **most expensive** material is the one that is **not available** when it is needed.
- ▶ The **second most expensive** material is the one that is available but **not needed!**



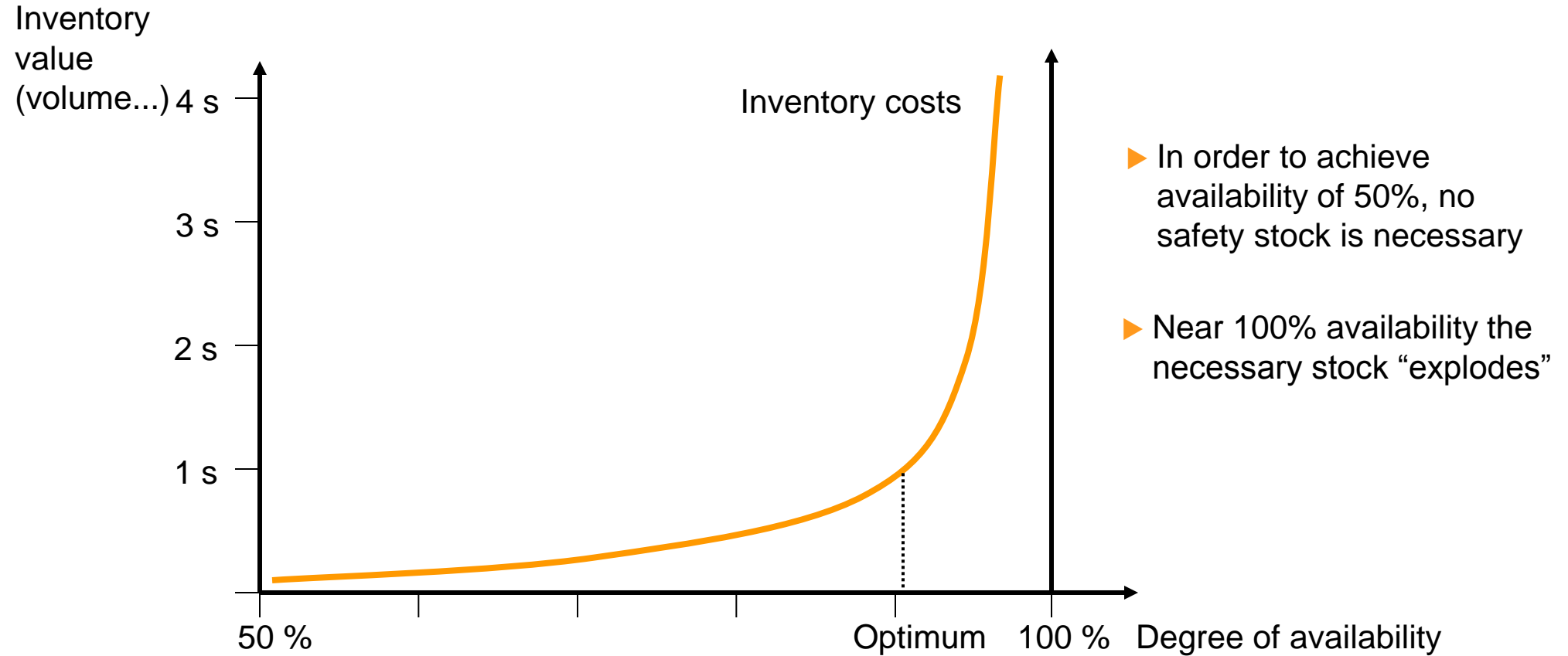
Why do we need safety inventory?

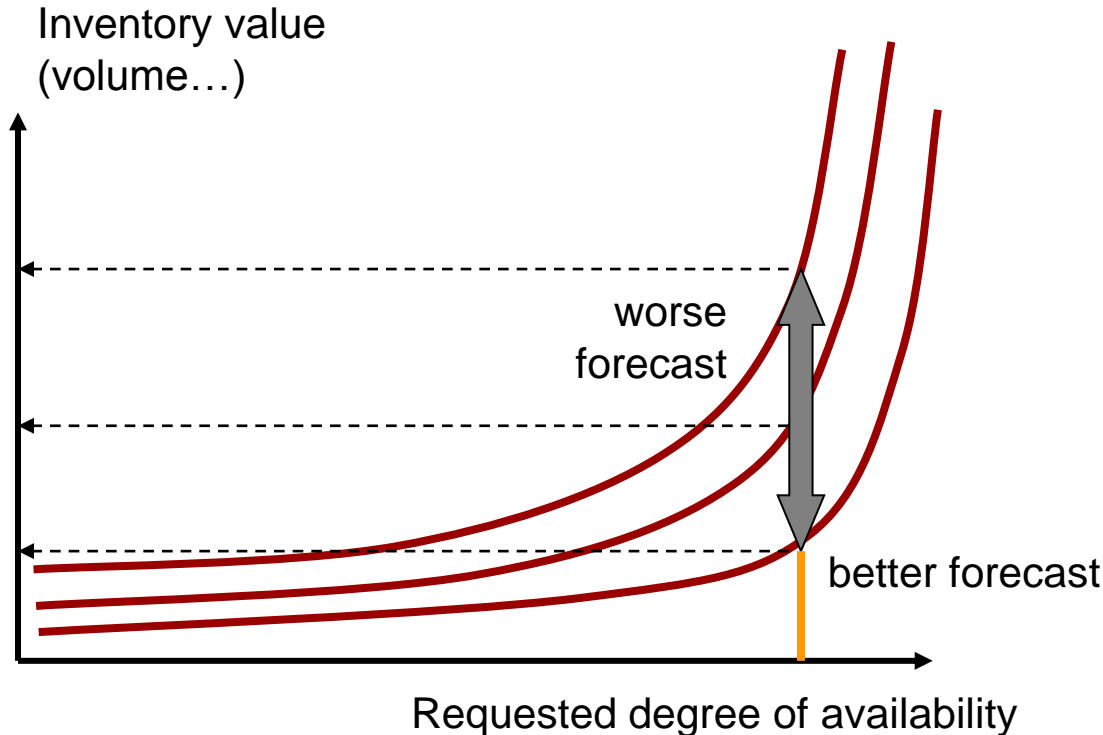


add*ONE



What does availability cost?





- ▶ The forecast error (“sale“ and “purchasing“) determines the position of the service / inventory curve
- ▶ If the forecast quality considerably worsens, more material has to be stocked in order to maintain the same service level
- ▶ Vice versa, an enhancement of the forecast helps to considerably decrease stock levels
- ▶ If there is no good forecast, especially “new items” and “seasonal items” require very high stock levels while the inventory risk is extremely high at the same time!



With a high forecast quality (and more effort / expense) the same level of availability can be achieved with considerably less stock

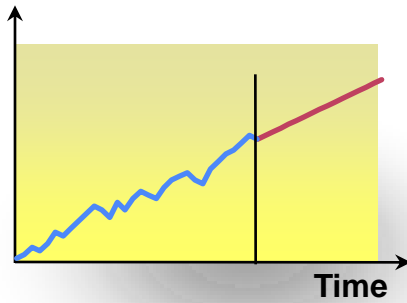


Forecast – Consumption patterns



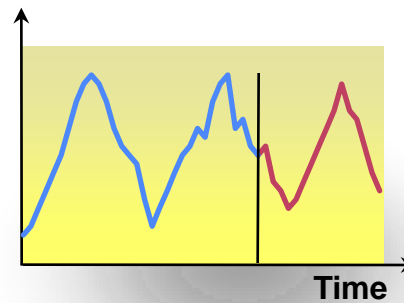
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Demand



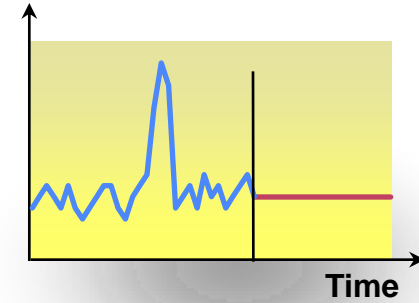
Trends

Demand



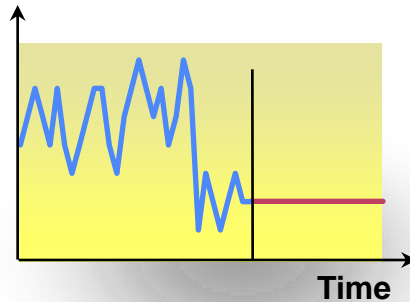
Seasonal fluctuations

Demand



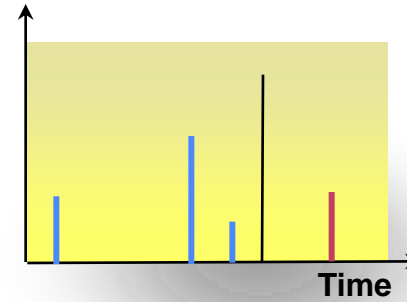
Statistical outliers

Demand



Structural interruptions

Demand



Sporadic demand



Understanding Demand behaviour



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steady **Predictability** random

Forecast precision	X	Y	Z
Financial value			
A	High information density High planning accuracy	High information density Medium planning accuracy	Procurement in case of demand
B	Medium information density High planning accuracy	Medium information density Medium planning accuracy	Reorder-point planning
C	Consumption driven planning, Order-point- or Order frequency method – automated replenishment		

high

Consumption value

low

high

Target of stock turnover

low

high

Consumption frequency

low

Runners

Repeaters

Strangers

- ▶ *Understand* Demand accuracy and volatility
- ▶ Improve forecast accuracy
- ▶ Calculate the right safety stocks dynamically
- ▶ Calculate optimal replenishment based on forecast and dynamic EOQ not historical position
- ▶ Manage by exception, proactively re-positioning stock levels.



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