

Navigating German-Chinese Logistics Networks

—
Successfully Managing Supply Chain Volatility
(Summary of Workshop Results)



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12th Workshop on German-Chinese
Logistics Networks



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In cooperation with:



Agenda

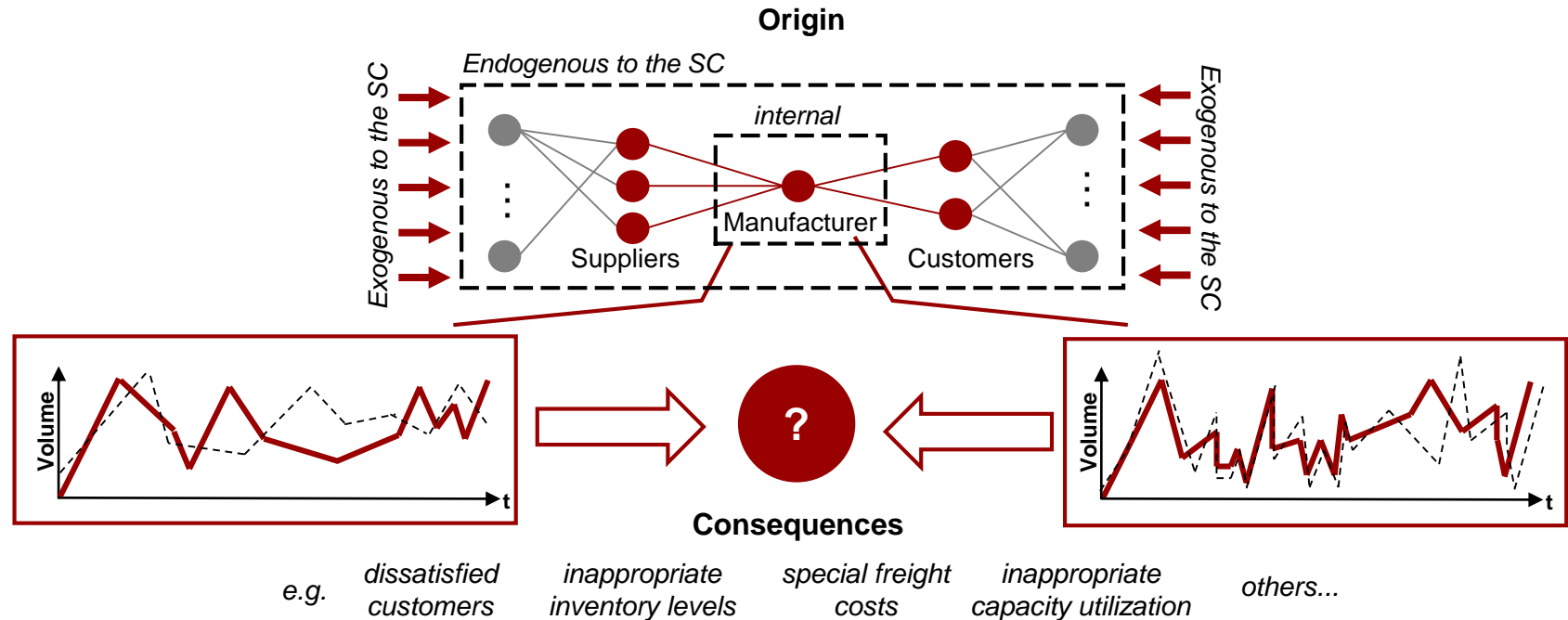
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2. Strategies Dealing with Supply Chain Volatility (Workshop I+II)
3. Future Challenges in International Logistics Networks (Workshop III)

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Volatility – What is it all about?

Development of a definition



Definition of supply chain volatility

Supply chain volatility (SCV) is defined as the **steady state of unplanned variation of upstream and downstream material flows** resulting in a **mismatch of supply and demand** at the focal firm **originating internally, endogenous to the supply chain and exogenous to the supply chain.**

Supply Chain Volatility – Old wine in new bottles?

Traditional Causes

Unpredictable customer demand

Forecasting errors

Inefficient information exchange

Bullwhip-effect

Unreliable suppliers

Others...



Comparatively New Causes

1. Globalization

- Increasing outsourcing rates, especially emerging market sourcing
- SCs are getting more prone to political, legal and currency instability

2. Increasing volatility of markets

- transport and logistics market faces a growing volatility in transport volumes leading to higher logistics costs due to expenses for covering peaks or unutilized capacities

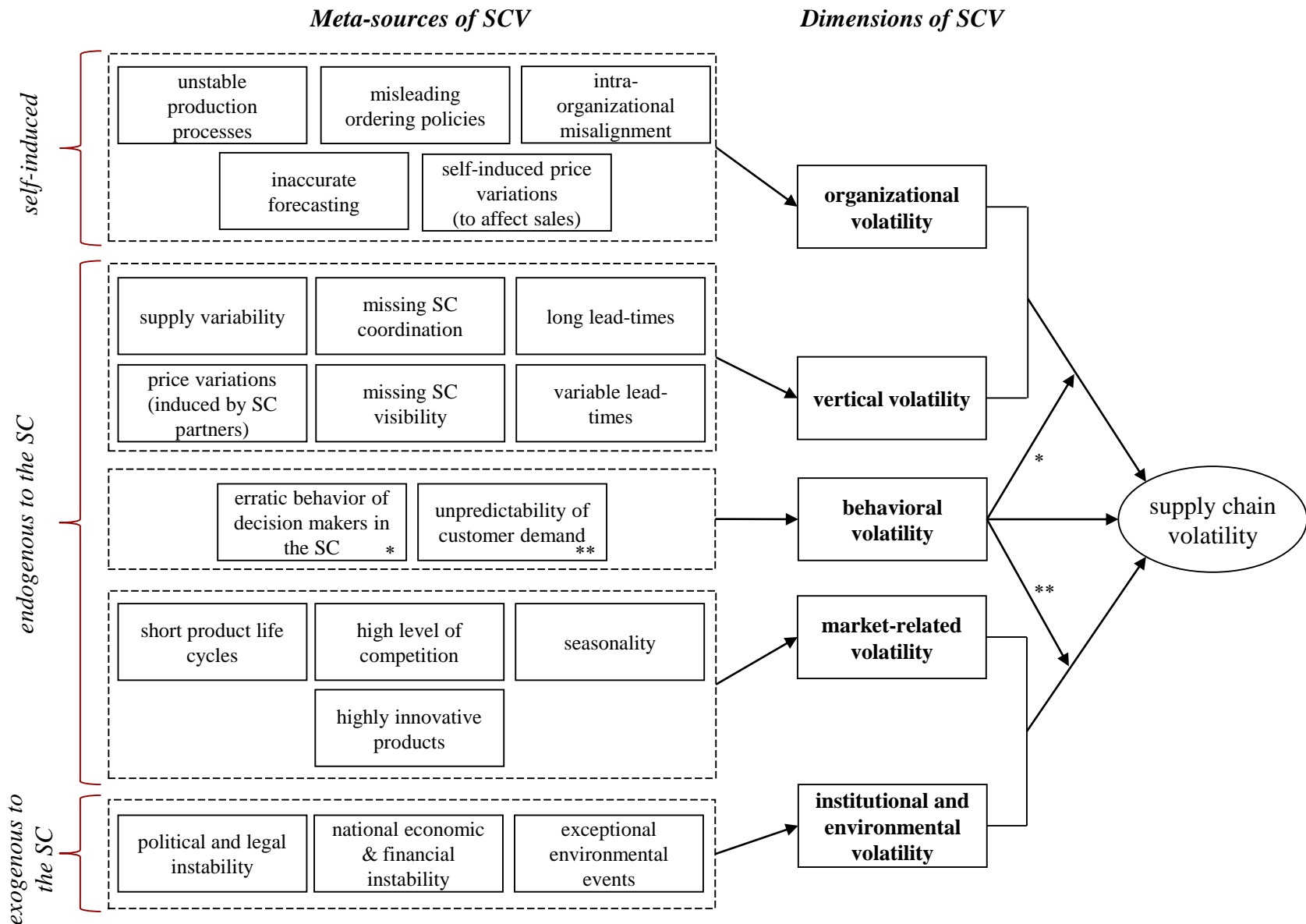
3. Digitalization

- potentially new challenges arising from it (e.g. increasing demand volatility)
- potentially brings relief to many traditional causes of volatility

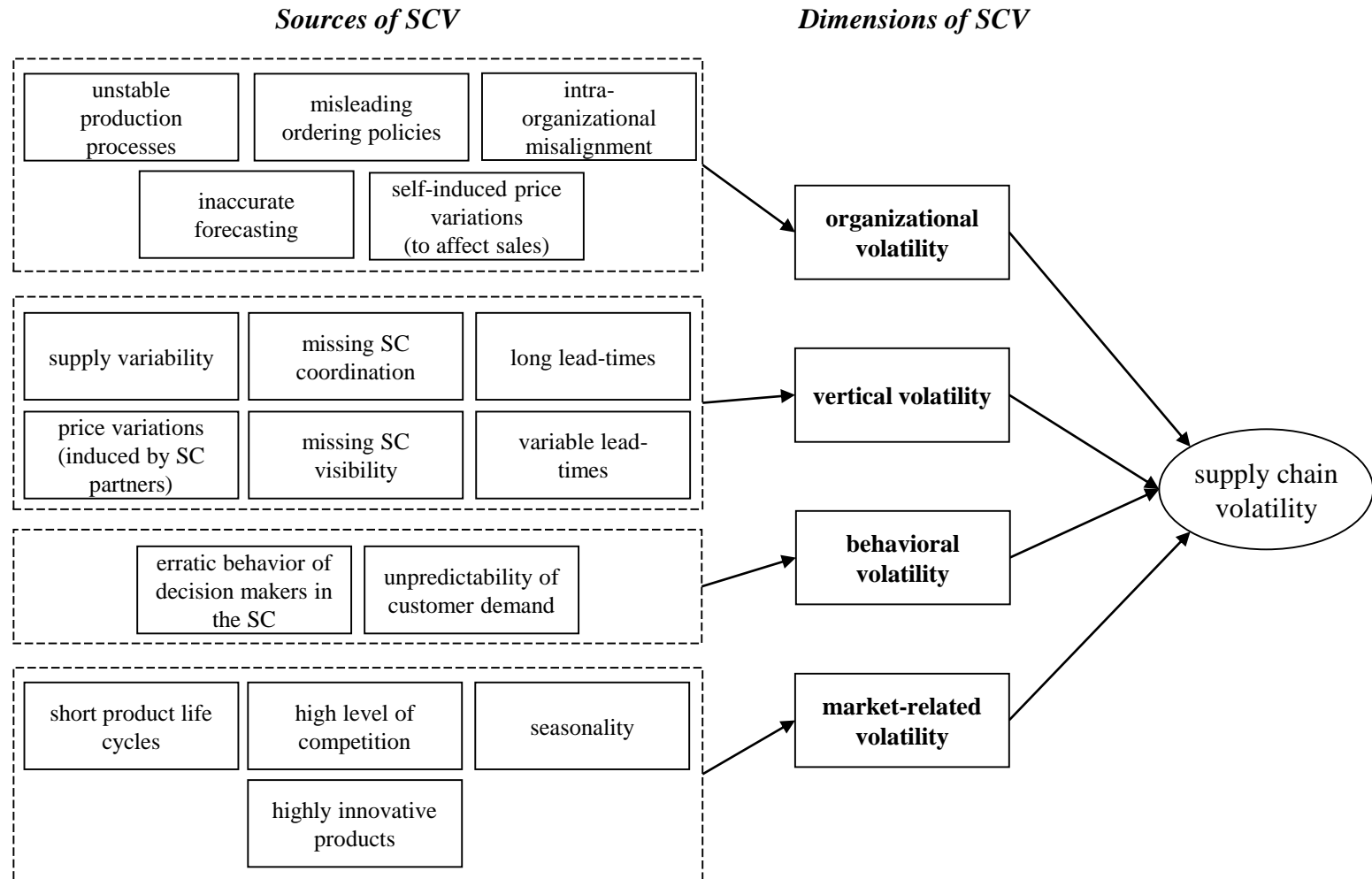
Arising Challenges and Open Questions

- While a lot of companies still struggle to deal with traditional causes of volatility, comparatively new causes challenge them additionally
- To deal with volatility, companies need to understand the mechanisms that cause volatility and identify areas to focus on to efficiently manage their supply chain

Combining a previous workshop with a comprehensive set of literature lead to a conceptual framework of supply chain volatility

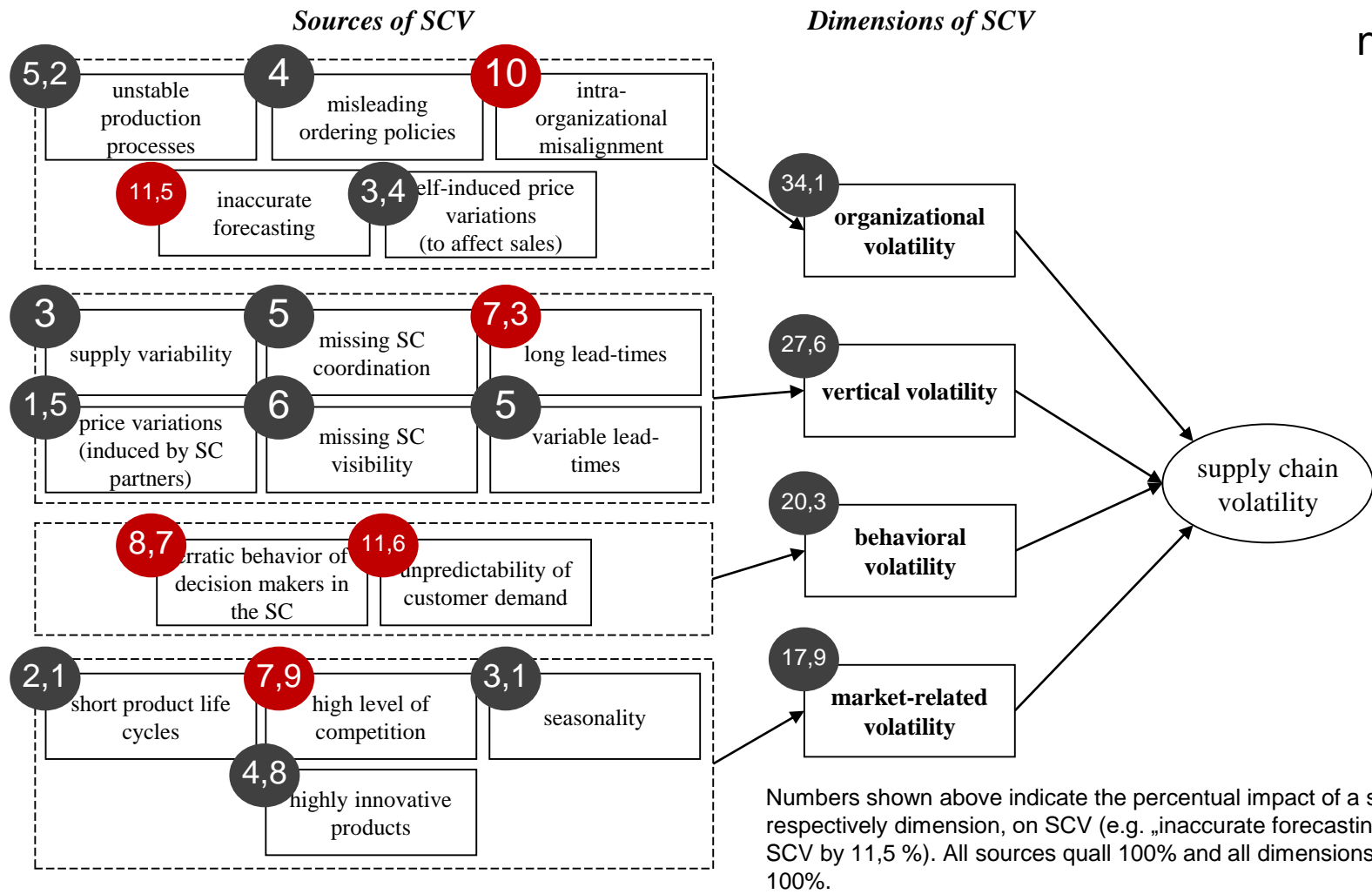


In the following we exclude the dimension of institutional and environmental volatility and focus on the first four dimensions of supply chain volatility.



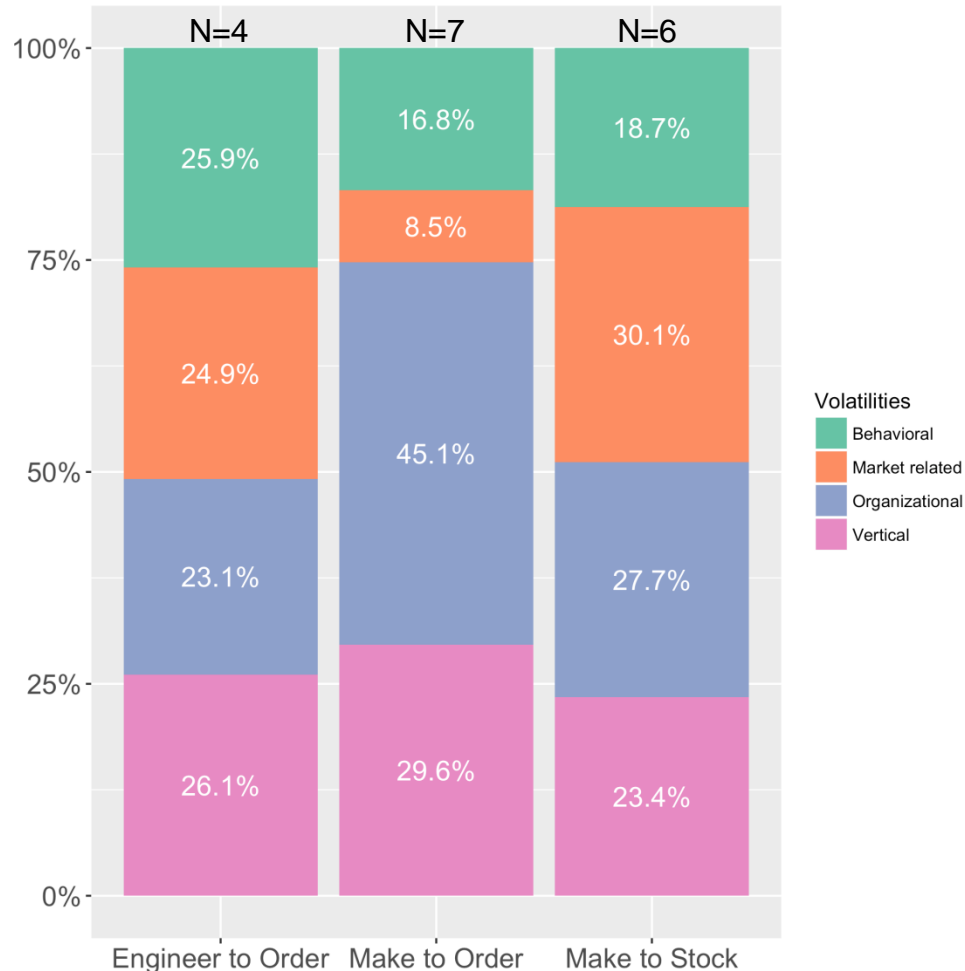
Results of AHP assessment from previous workshop: Average of all participants

n=17



AHP results analyzed by production strategy

Top level: Dimensions of SCV

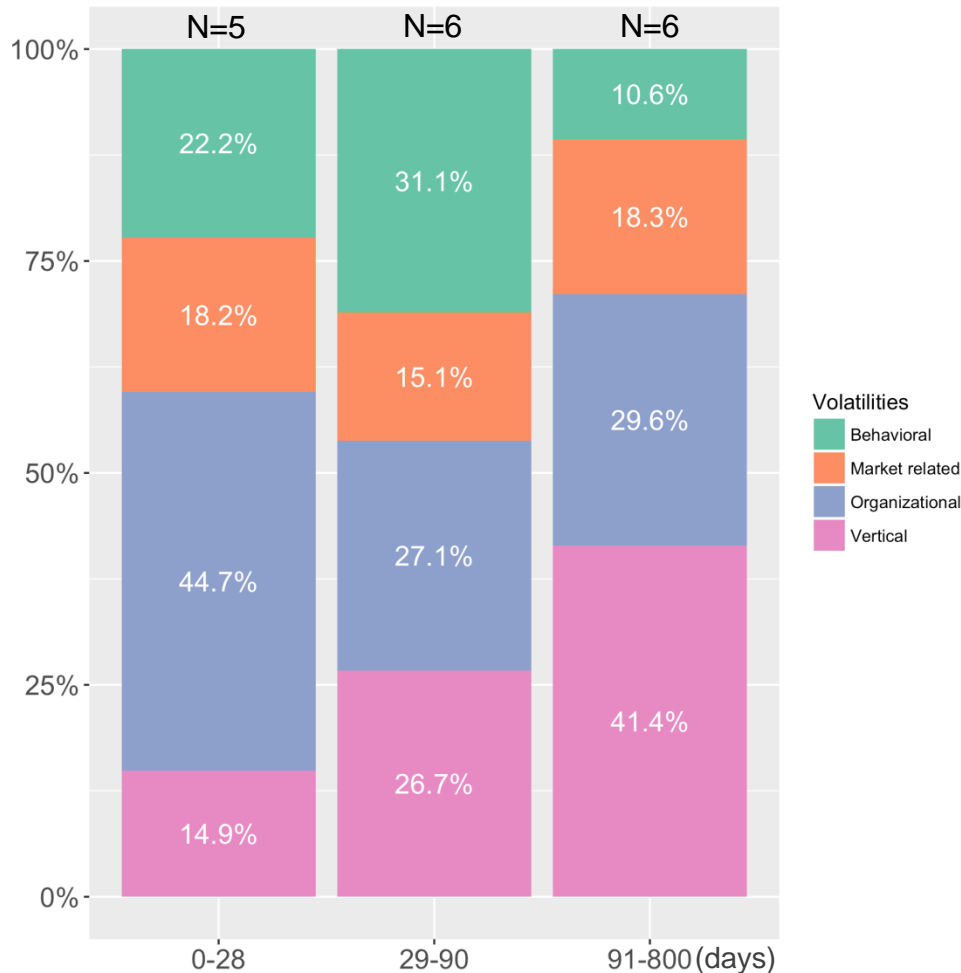


Summary

- For different production strategies, SCV arises from different dimensions.
- For **Engineer to Order** products, SCV evenly arises from all four dimensions while the source of **unpredictability of customer demand** and **high level of competition** seem to have the biggest impact on SCV
- For **Make to Order** products, SCV is mostly induced by **organizational volatility**, more specifically by an **intra-organizational misalignment**
- **Make to Stock** products suffer most from **inaccurate forecasting** and the **unpredictability of customer demand** and a **high level of competition**

AHP results analyzed by lead time (in days)

Top Level: Dimensions of SCV



Summary

- the length of lead times seems to affect the relative impact of the vertical and organizational volatility dimension
- The longer the total lead time of the product gets, the more volatility arises from the vertical dimension
- For products with comparatively short lead times, companies should focus on mitigation self-induced volatility from the organizational dimension, especially arising from an ***intra-organizational misalignment*** and ***inaccurate forecasting***
- Additionally, products with comparatively short lead times suffer more from the ***unpredictability of customer demand***

Key take-aways from previous research on supply chain volatility

SCV has to be understood as a multidimensional phenomena.

SCV results in a mismatch of supply and demand at the focal firm that originates internally, endogenous to the supply chain and exogenous to the supply chain.

SCV arises from five dimensions: (1) organizational, (2) vertical, (3) behavioral, (4) market-related and (5) institutional and environmental volatility.

From the first four dimensions the six most impactful sources of SCV are *intra-organizational misalignment, inaccurate forecasting, long lead times, unpredictability of customer demand, erratic behavior of decision makers in the supply chain and high level of competition.*

For products with comparatively short lead times, companies should focus on organizational volatility first when trying to manage SCV.

The longer the total lead time of a products gets, the more companies should focus on mitigating vertical volatility as well.

The first two workshop aim at identifying measures dealing with volatility.

Workshop I&II

Generation of strategies dealing with supply chain volatility

Goal

- discuss most pressing sources of volatility and their effect on your business
- joint identification of strategies to cope with the selected sources by applying the nominal group technique among interdisciplinary groups

Workshop III

Future Challenges in International Logistics Networks

Goal

- identify and discuss future challenges in international SCM and how research can support practitioners

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In the following, we will focus on six sources that have been rated as impactful in previous workshops

Erratic behavior of decision makers in the supply chain

- degree to which decision makers react irrationally and unpredictably to certain events
- e.g. over- or underestimation of demand or supply signals, strategic interactions among supply chain partners or a lack of consideration of already placed orders, changing order quantities that are generated by system

Long lead-times

- the total amount of days between ordering a component at a supplier and delivering a final product to a customer is very high
- e.g. due to global sourcing

Intra-organiz. misalignment

- Plans and actions of different departments within the own organization are not well coordinated
- e.g. conflicting goals, competition among different value streams, misaligned organizational plans such as forecasts

Unpredictability of customer demand

- the customer demand is very uncertain and hard to predict
- e.g. the customer changes already placed orders on a regular basis

Inaccurate forecasting

- customer demand forecast does not meet the actual demand and has to be changed constantly

High level of competition

- is characterized by a very high number of offered product variants at the market and/or a very high number of competitors

Goal of the workshop

We aim at jointly identifying strategies dealing with the most pressing sources of supply chain volatility.

Don't feel hindered to be creative!

Workshop Groups

Group 1

Moderator: Benjamin Nitsche

Sources of SCV

1. Intra-organizational misalignment
2. Long (and variable) lead times
3. unpredictability of customer demand

Group members

- Grace Guan, Bosch
- Lin Xialoi, Bayer Healthcare
- Jiang Wie, Schaeffler
- Jannis Waldmann, AMA Freight
- Quiong Wang, Rittal

Group 2

Moderator: Peter Verhoeven

Sources of SCV

1. Inaccurate forecasting
2. Erratic behavior of decision makers
3. High level of competition

Group members

- Oliver Scheel, 4flow
- Hatty Wang, Lenze Drive Systems
- Bastian Zhang, Kuehne+Nagel
- Diane Cai, Bayer

Group 3

Moderator: Maurice Palmen

Sources of SCV

1. Intra-organizational misalignment
2. Long (and variable) lead times
3. unpredictability of customer demand

Group members

- Janet Zhang, Bayer
- Thomas Haug, Reyher
- Kelvin Xie, TNT
- Michael Hu, Siemens Medical Eqt.

Workshop I – Generation of strategies dealing with supply chain volatility

1

10 min each

In each group: individual generation of possible strategies dealing with each source.



2

20 min each

In each group: individual sharing of ideas and opinions, followed by a short discussion.



3

10 min each

Short discussion and summary of results on flipcharts.



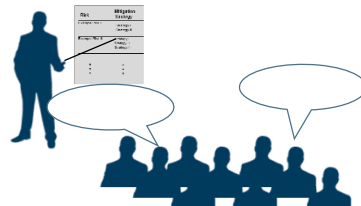
- For each source, please apply this procedure
- At the beginning, choose a **time keeper** and a **group leader** to present the results to the plenum.

Presentation of results of workshop I/II

1

Each Group 5-7 min

Presentation of strategies to deal with volatility



2

3-5 min

Feedback and comments by other groups



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Workshop Overview

Workshop I&II

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Workshop III: 5-3-5 Brainwriting - The Method

Motivation

- German/Chinese Navigator workshops are a origin for **knowledge exchange** between science and industries
- We are currently examining different research areas
- Help shaping our **future research focus**

Procedure

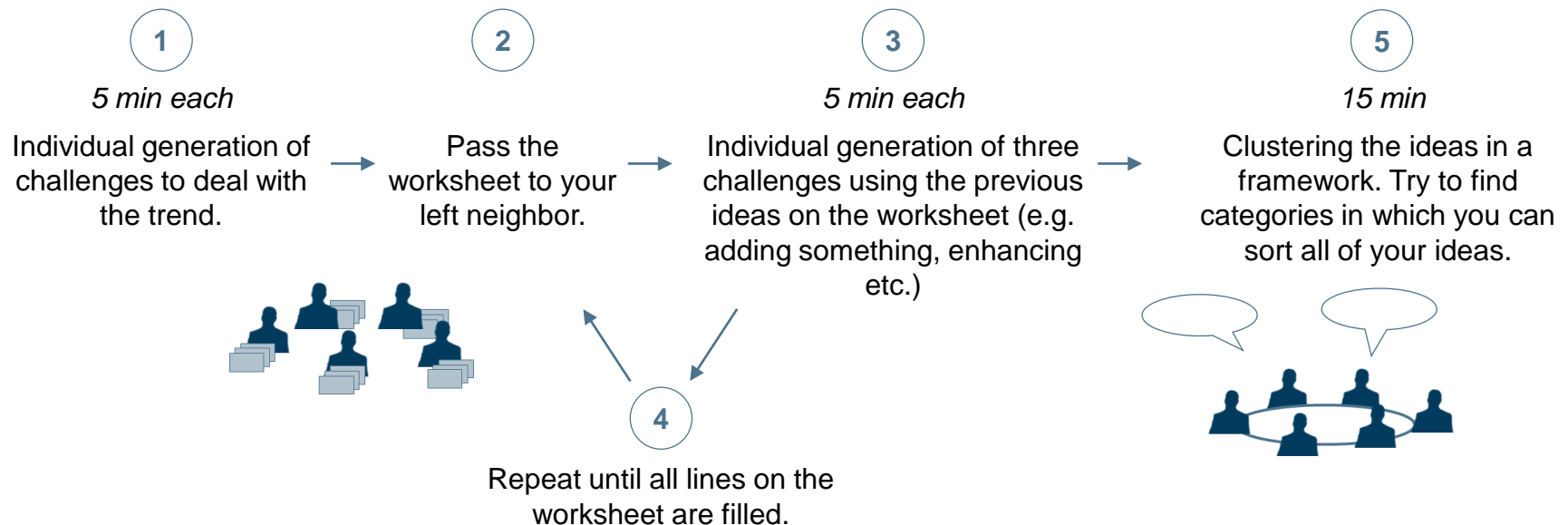
- **4 or 5 participants**
- Steps:
 - Narrow down **the topic**
 - Each participants writes down **3 challenges in 5 minutes**
 - **Pass worksheet** to neighbor
 - Each participants writes down **3 new challenges using the previous ideas**
- (Detailed procedure on the next Slide)

		Challenges		
		1	2	3
Participants	1	...		
	2			
	3			
	4			
	5			
	6			

- **Many ideas** (4/5 people generate **48/75 possible content ideas**)
- **Valorizes** the possible **different backgrounds** of participants since it encourages **sharing and exchanging knowledge**
- Very **efficient** method

Future Challenges in your International Supply Chains

Please elaborate future challenges that you see in your international supply chains in the next years. Preferably in areas where you are seeking scientific support and knowledge exchange with other industries.

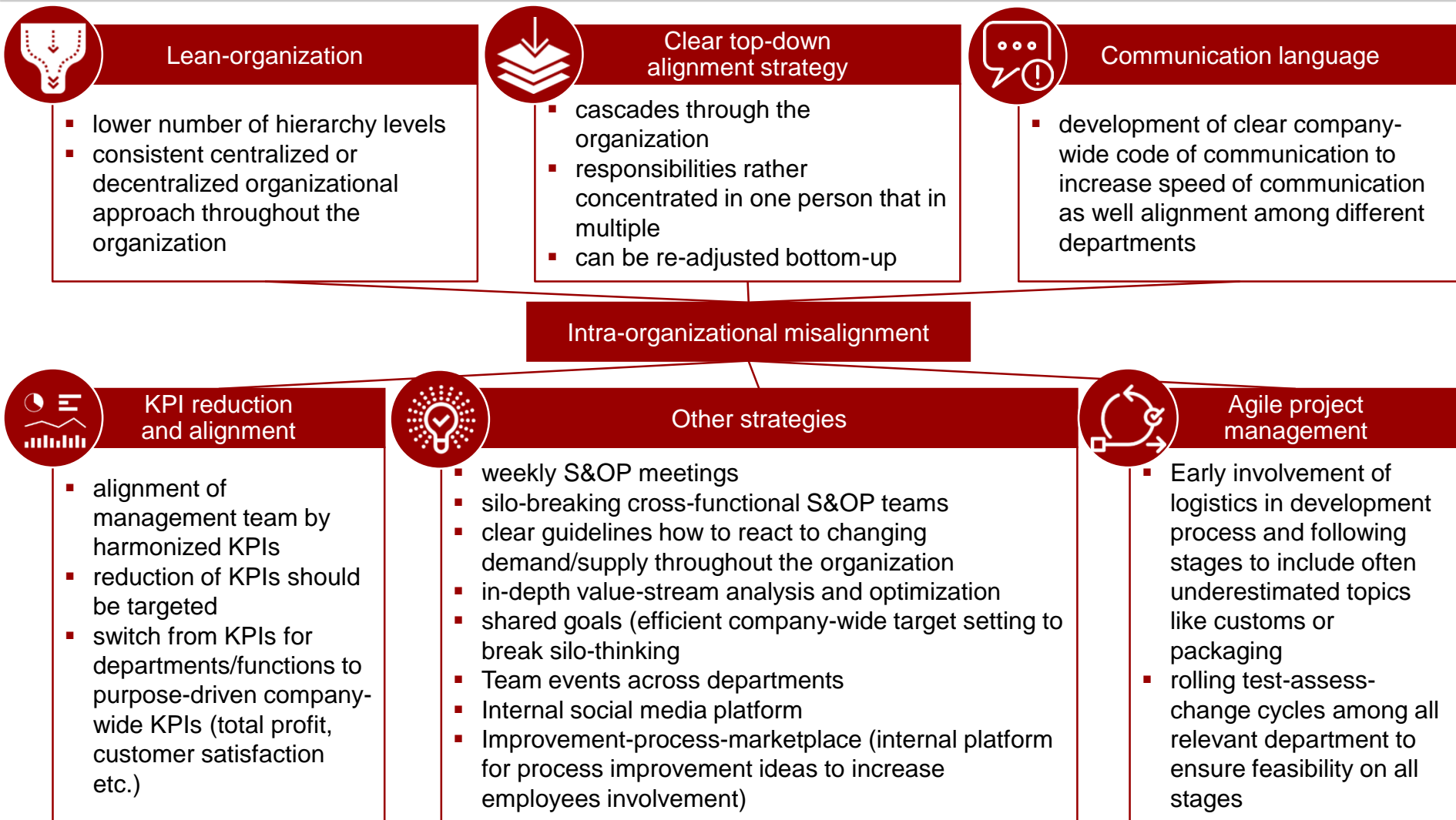


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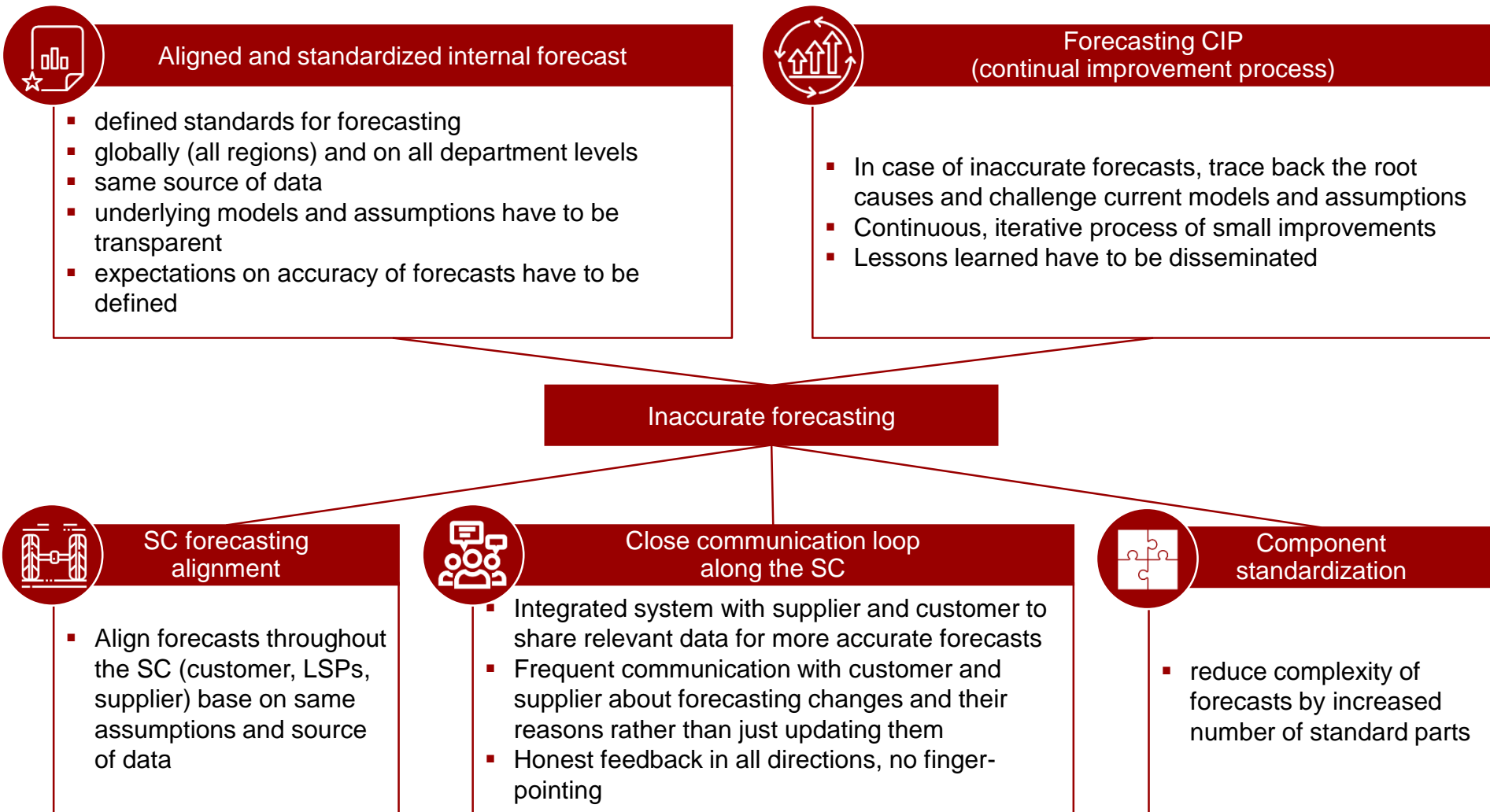
Strategies dealing with „Intra-organizational misalignment“



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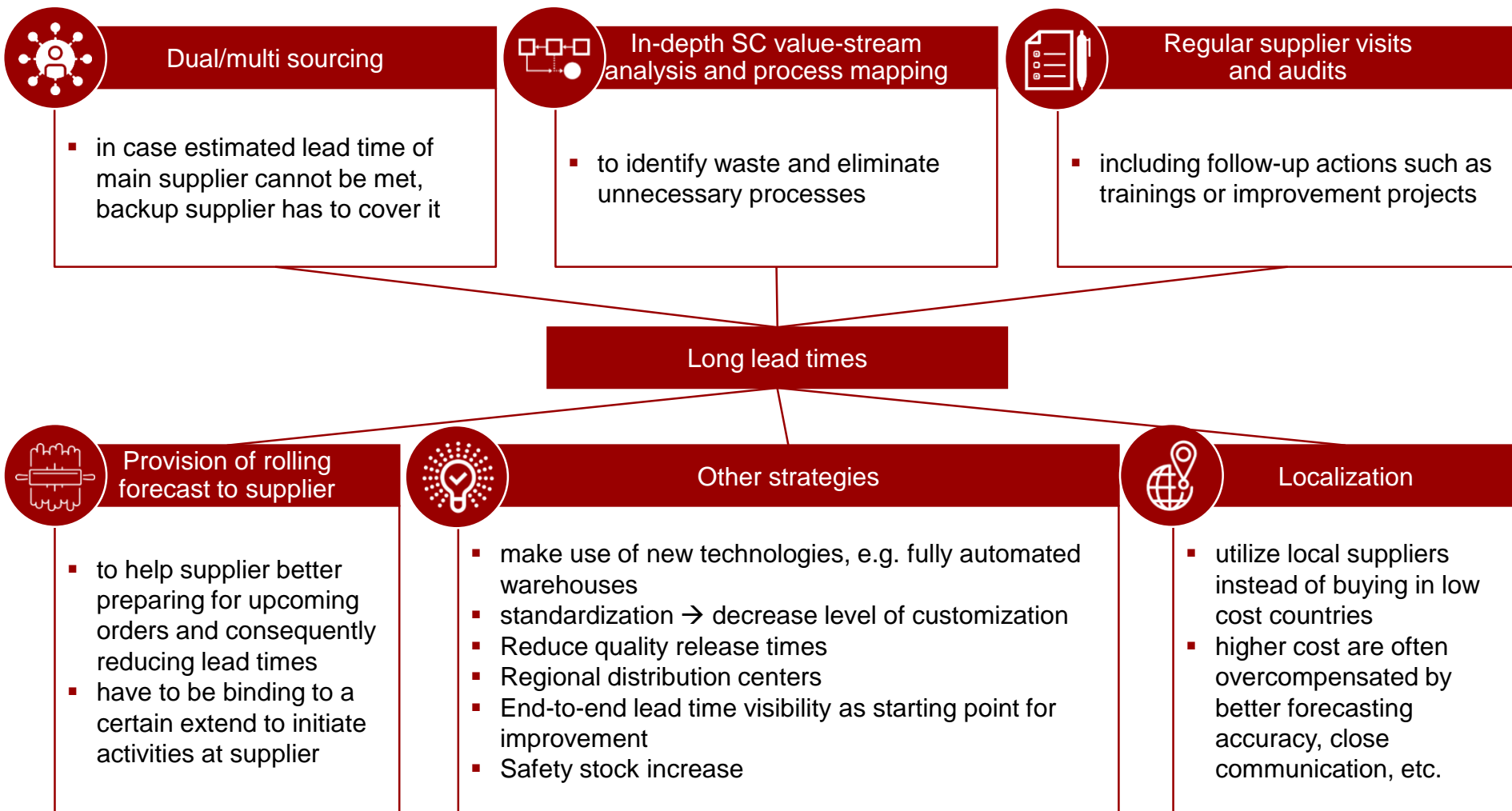
Strategies dealing with „Inaccurate forecasting“



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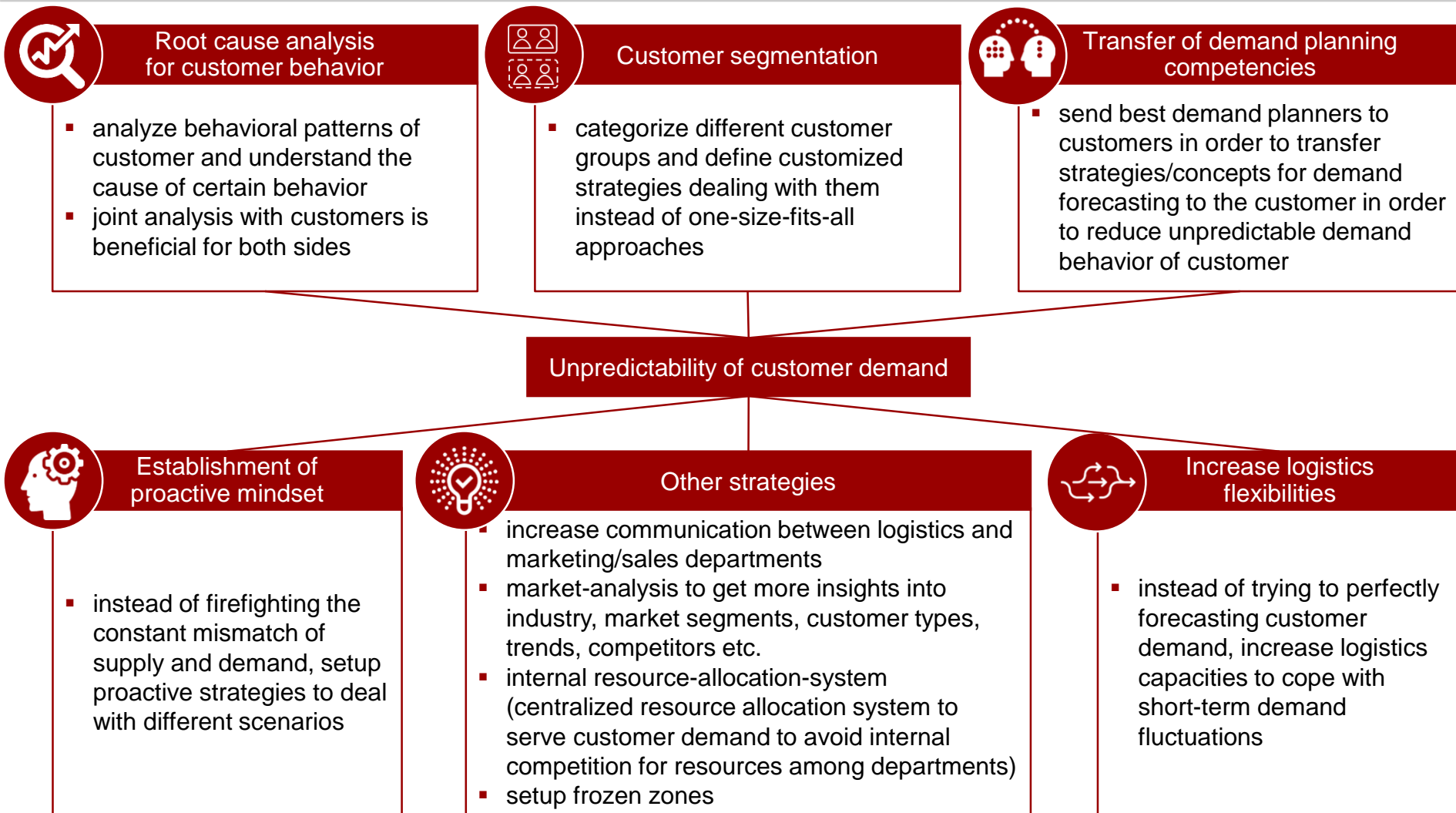
Strategies dealing with „Long lead times“



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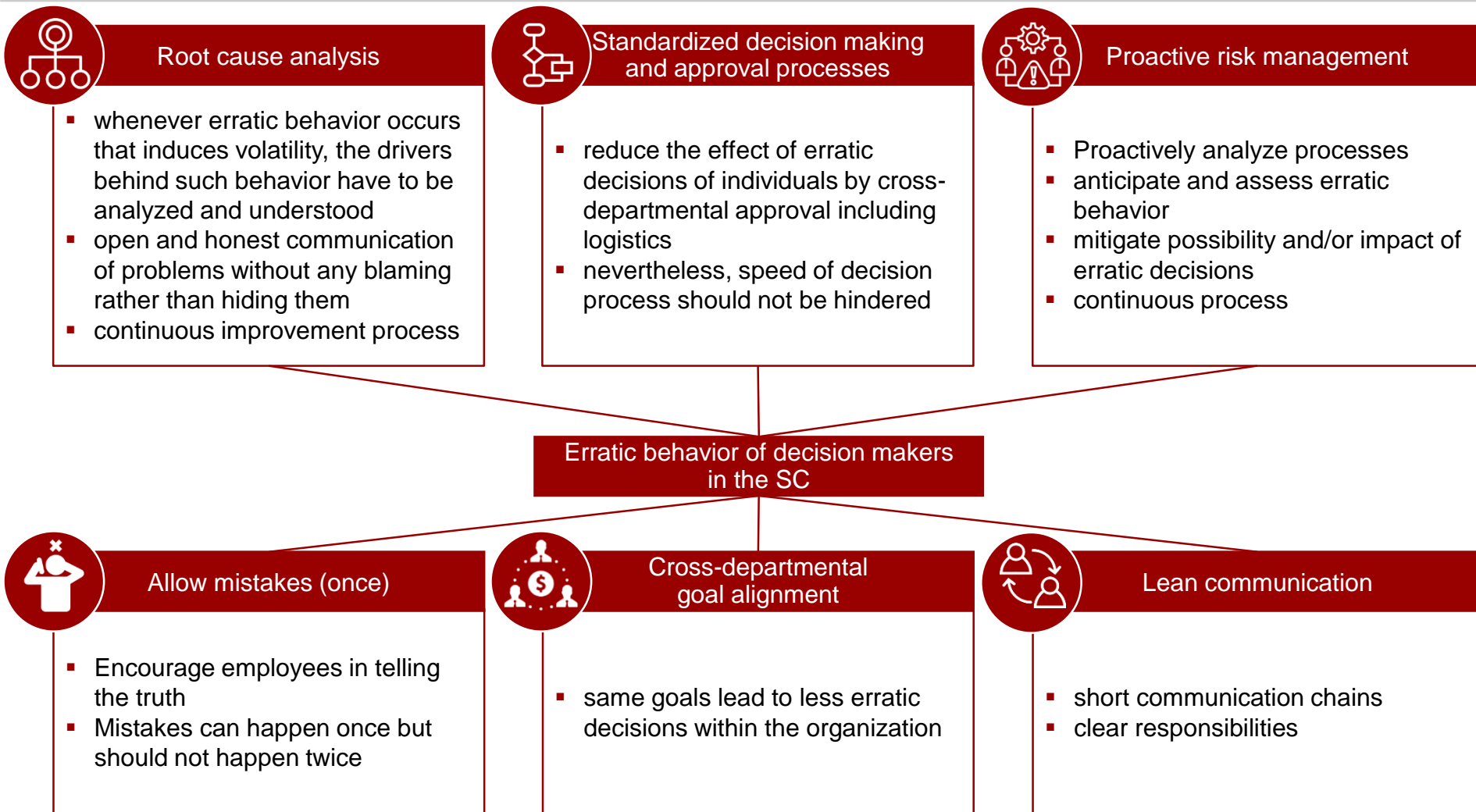
Strategies dealing with „unpredictability of customer demand“



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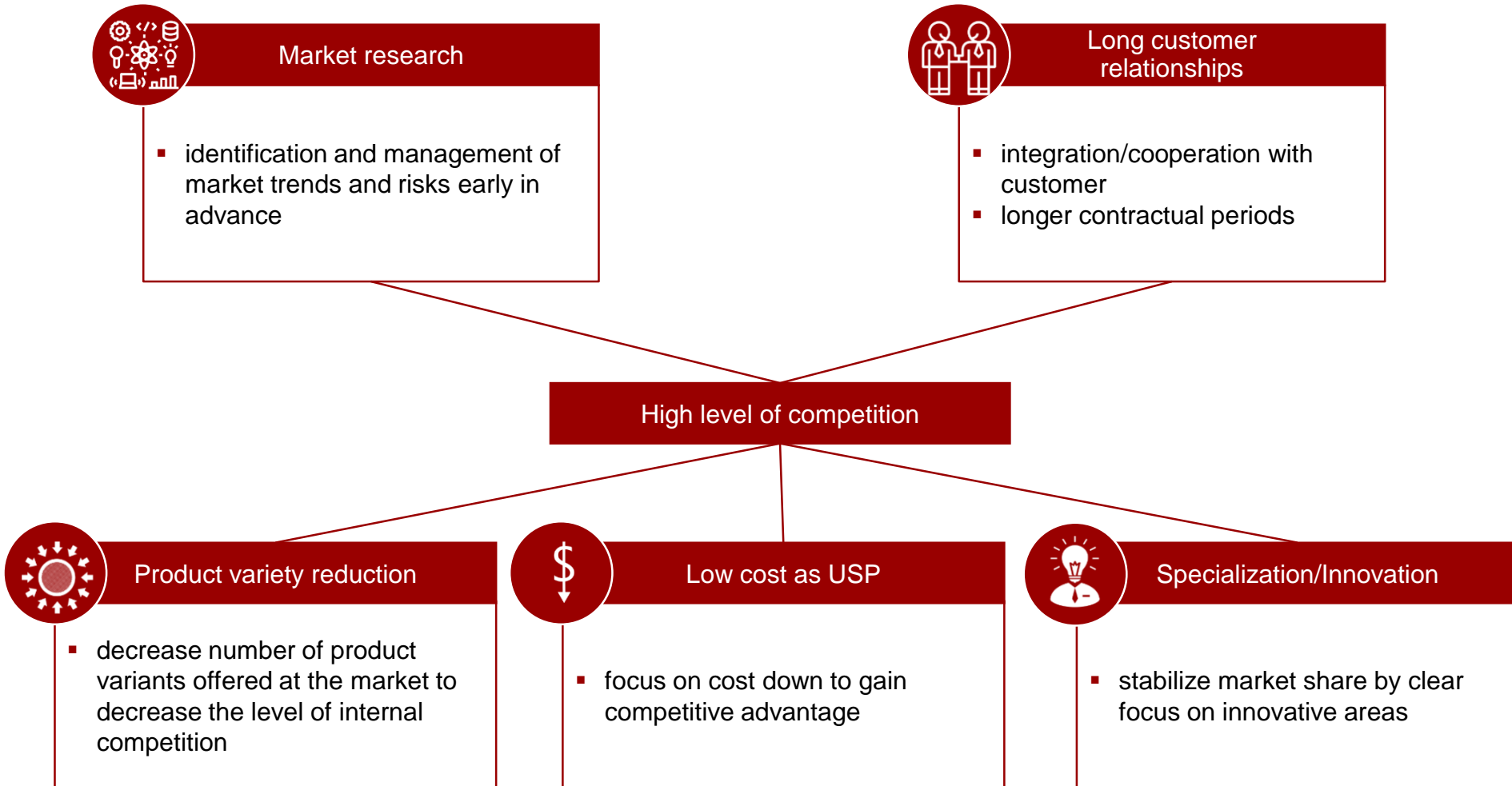
Strategies dealing with „Erratic behavior of decision makers in the SC“



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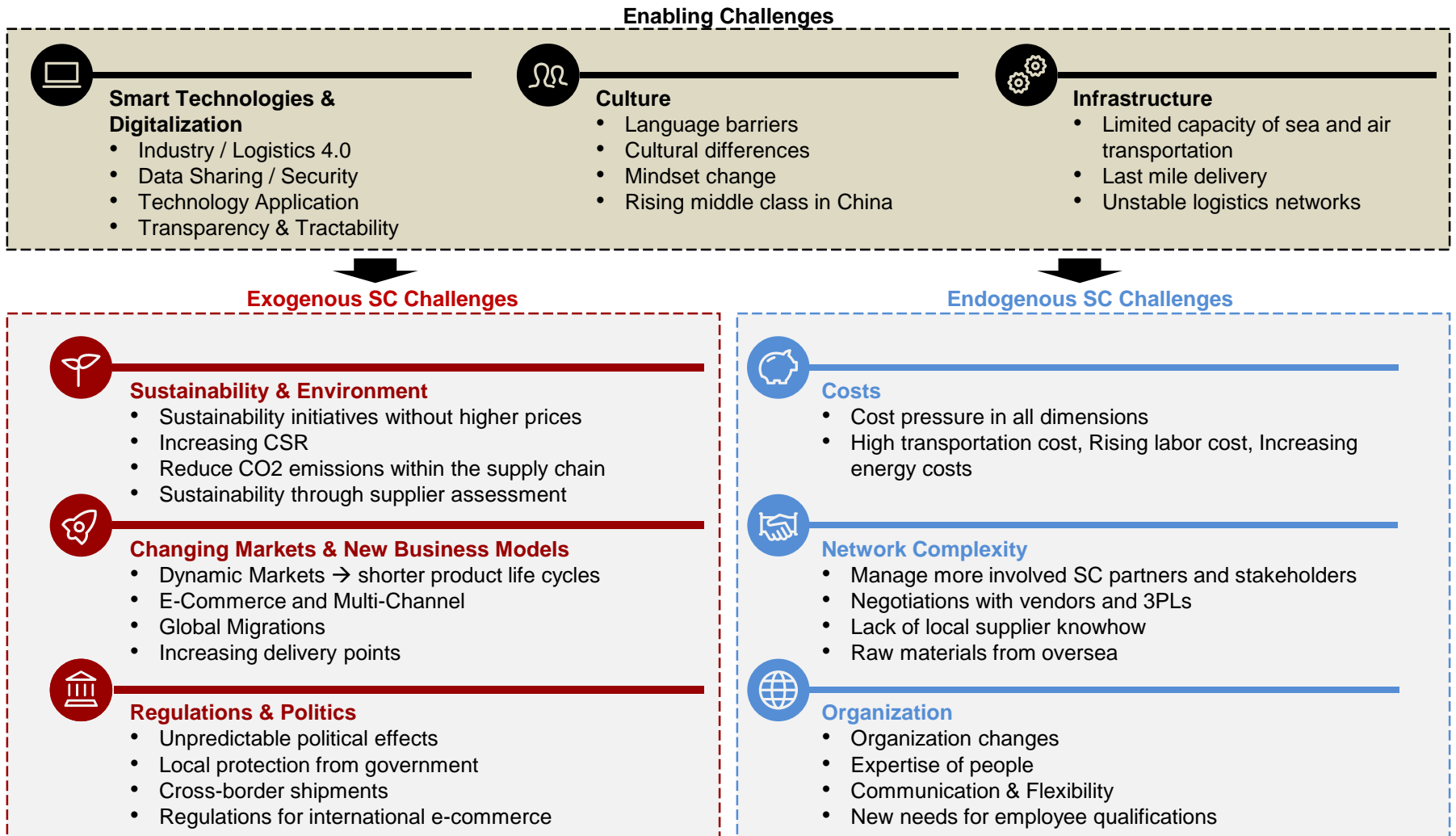
Strategies dealing with „High level of competition“



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Future Challenges & Trends



Successfully Managing Supply Chain Volatility (Summary of Workshop Results)

Prof. Dr.-Ing. Frank Straube

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