

SUPPLY CHAIN NETWORK MANAGE MENT

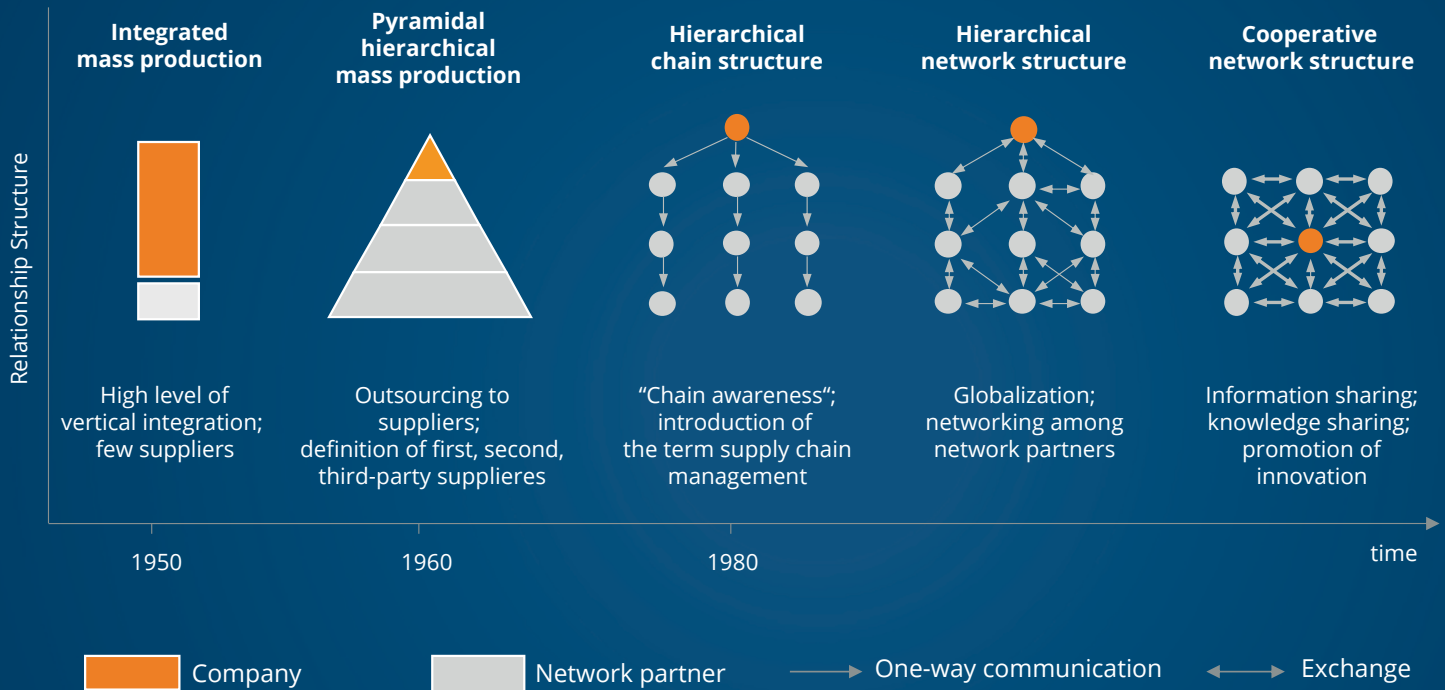
RECONFIGURING
SUPPLY CHAIN NETWORKS –
GLOBALLY AND LOCALLY

STAUFEN.

INTRODUCTION

Optimization measures generally concentrate on internal processes. However, a company's own value-creation network with an increasing number of partners is far too rarely in focus. This is a mistake, because when crisis situations arise, it becomes clear that many companies must reconfigure their supply chain. We think holistically: From traditional supply chain management to supply chain **network** management.

Industrial production in its current form is based on complex multi-stage supply chains. These supply chains enable an unprecedented level of efficiency and productivity. But, they are also susceptible to faults. A low level of vertical integration, just-in-time logistics with sea transports lasting weeks and regional concentration of suppliers according to cost criteria require smooth processes with no risks.



After the crisis: Reconfiguring the supply chain

A worldwide pandemic with quarantines, bans on going out and shutting down half the economy – until just a few months ago this seemed like something we would only see from Hollywood. But it has become a reality. The 2020 corona crisis has placed a spotlight on the many risks and uncertainties in companies. The market environment has broken away beneath their feet leaving supply chains that no longer function and inaccessible sales markets. Industrial companies in all sectors are now faced with a new task: Reconfiguring their supply chain to detect disruptions early on, minimizing risks and managing the consequences of a crisis.

From supply chain to supply chain network

Companies rely on an extensive and often worldwide network of suppliers for their value creation. Numerous production sites, an extensive product portfolio and customized manufacturing increase the complexity of supply and the risk of disruptions.

Then there is the entire sales side, often involving global distribution. In some cases, this also takes place over several stages with various organizational units and trading partners until it reaches the end customer. The same applies to the suppliers. They have their own suppliers whose products in turn impact their products and those of their customers.

Increasing complexity and susceptibility to crisis of supply chains connected in networks clearly shows that traditional supply chain management is no longer sufficient. A holistic view is needed: Supply chain network management (SCNM) that also encompasses risk management.

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WHAT IS SUPPLY CHAIN NETWORK MANAGEMENT?

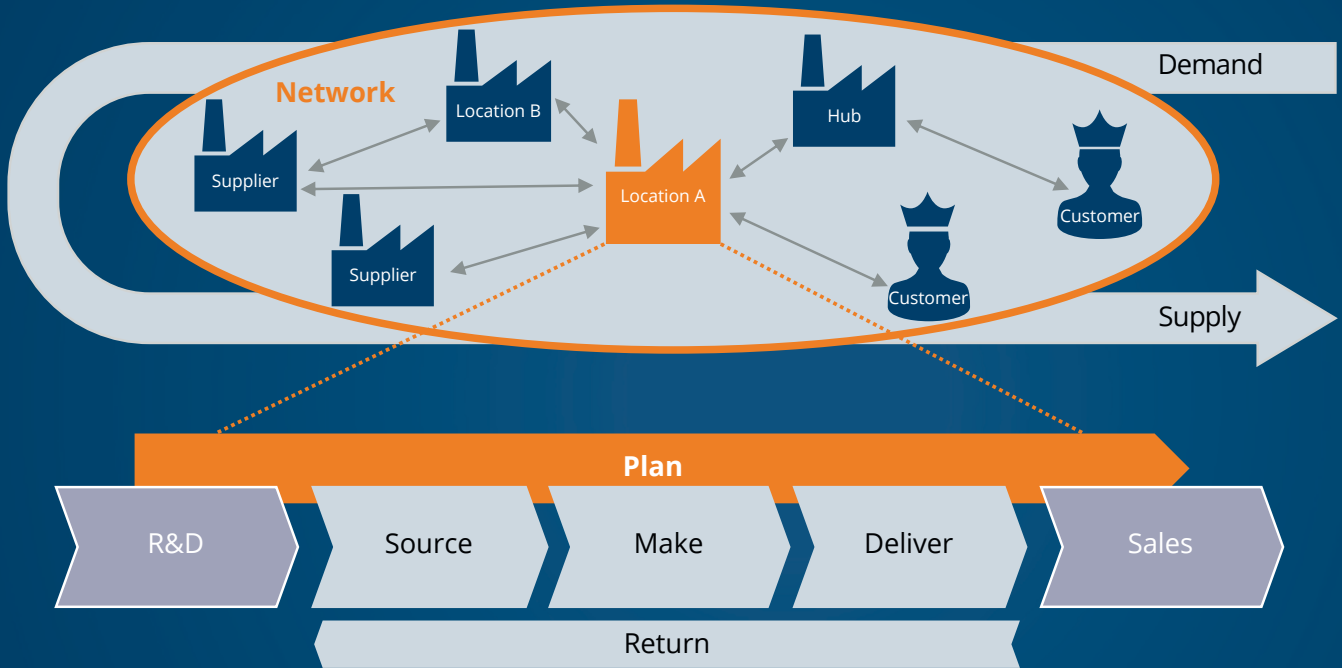
Due to the low level of vertical integration that is common today, a large portion of the value chain has moved to suppliers. And as a result, they have become much more important. They are now given the status of business and development partners who contribute their own value to the products and services of their customer. As a consequence: Competition will no longer take place between individual companies but rather between entire networks.

In order to survive, companies must network their pool of suppliers with others and within itself. This involves intensive communication as well as networking value and data streams. Exchanging information within the network, ensuring a high

degree of transparency and the cooperation of individual teams are becoming much more important than the question of which supplier is more cost-effective.

Supply chain network management's main task: Making the entire network and cooperation of the individual network partners more efficient. Those who come out on top will be supply chain networks with sufficient and agile customer orientation. However, a number of conditions must first be met. All network partners require

- Short Time2Market,
- High level of reactivity,
- Short processing time,
- Cross-location process standards,
- Lowest possible inventory,
- High transparency,
- Reduction of communication and media disruptions,
- Dissolution of silo thinking,
- and consistent planning.



Management system

Strategy development

Visualization in the network

Organizational development

Leadership - change management

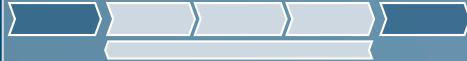


Sales & Operations Planning

Order Fulfillment

Start-up and phase-out control

Plan



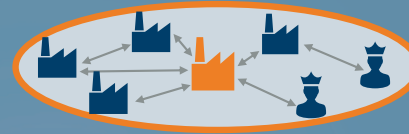
Planning

Network

Configuration & segmentation

Footprint

Network maintenance & development



Digital Strategy

Business Intelligence

Digital networking

Digital processes



Information Mgmt.

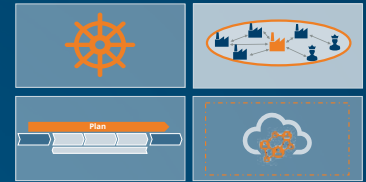
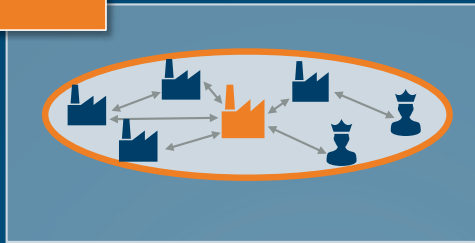
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THE FOUR DIMENSIONS OF SUPPLY CHAIN NETWORK MANAGEMENT

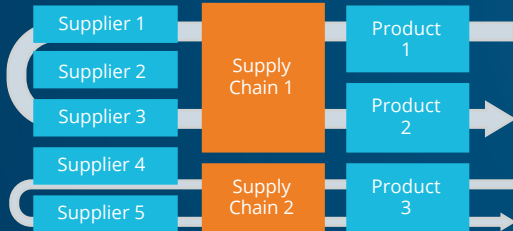
To meet these requirements, supply chain network management focuses on four central dimensions: Network, management system, information management or IT systems and planning.

- The **network** is a configuration of different parties, such as production facilities, hardware and software developers, delivery hubs, suppliers and their subcontractors as well as logistics service providers, sales and distribution partners and even end customers.
- **Management systems** are the regulating force in a supply chain network. This involves aspects such as strategy and organizational development or network-wide change management.
- **Planning** is essentially understood in terms of Sales & Operations Planning (S&OP) and Product Lifecycle Management (PLM). This requires end-to-end consideration in order to achieve an optimal result.
- **Information management or IT systems** provide the applications and digital tools without which a supply chain network cannot be built: Digitization facilitates networking.

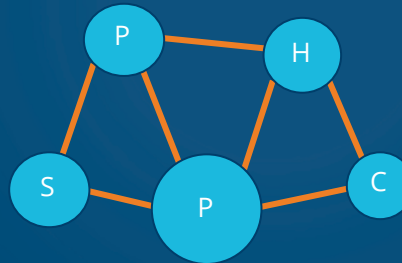
Network



Configuration & segmentation



Footprint



Network maintenance & development



Dimension 1: Network

Normally, a supply chain network is looked at from the position of the company itself. The main question here is how the company organizes its supplier and distribution network. In doing so, it must consider its general conditions.

For all companies, complexity is increasing. This is driven by ever faster innovation and development cycles, a trend towards shorter delivery times and increasing product variance and individualization, the emergence of disruptive business models and greater market volatility.

These aspects require a stable network of partners, which of course are subject to the same contributing factors. As a result, the demands placed on the management of the supplier network increase. Processes and interfaces are defined,


controlled and optimized on an inter-company basis. In B2B markets in particular, such networks also include customers who are also actively involved in topics such as product development, quality or sustainability.

In many cases, such networks do not yet exist and must first be established. This includes selecting the right partners and forming adequate relationships among them. To achieve this, companies must focus on four important aspects:

1. Configuration and segmentation: A company selects network partners according to their performance regarding specific products or orders. Smart network segmentation, i.e. division into corresponding "subnetworks," limits disruptions to the supply chain: Different supply routes should not impede each other. A company must also keep an eye on the supply chains of its suppliers. As a result, there are hundreds or thousands of supply flows and companies must therefore develop the ability to quickly adapt important sections of its value network to new targets. The importance of individual

supply flows or network partners changes dynamically as business objectives evolve.

2. Footprint: Selecting the right network partners must take several factors into account, for example, proximity to the company's locations. Conversely, new locations can be established within close proximity to suppliers. Problems relating to allocation and distribution must also be taken into account when "designing" the supply chain network. Network partners are assigned different priorities in the network, which is defined according to the importance of certain products. Within a company's own network, value flows must be optimized and default risks minimized so that production can continue and customer service can be guaranteed in crisis situations. Business-critical dependencies on suppliers are based on

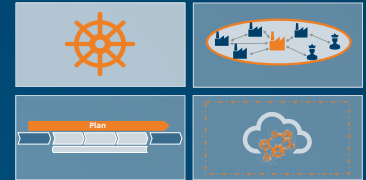


their share of the supply but also their locations. For example, concentrating suppliers in one region can lead to supply chain disruption faster than broader regional distribution.

3. Order fulfillment: Order control within SCNM takes place across networks and must take different decoupling points into account. Mass production of standard products (MTS = Make to Stock), for example, requires supply chains that are organized differently from those of special machine designs (ETO = Engineer to Order) or contract manufacturing (MTO = Make to Order). Companies must therefore organize the cooperation with their network partners in a corresponding manner.

4. Network maintenance and development: A supply chain network must not remain static. It must always be expanded by new or alternative suppliers. Distribution channels and sales organizations also need to be continuously adapted to changing customer needs. In addition, network partners must be able to develop themselves further. This requires regular digital and personal communication.

Management system

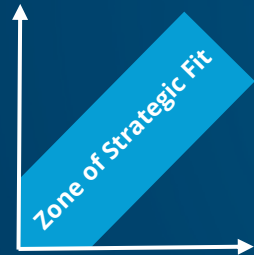


Strategy development

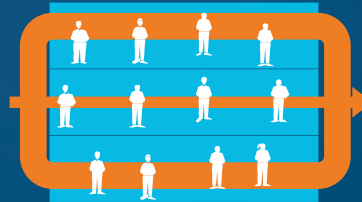
Visualization in the network

Organizational development

Leadership - change management



Category	Item 1	Item 2	Item 3	Item 4	Item 5
Item 1	Item 1.1	Item 1.2	Item 1.3	Item 1.4	Item 1.5
Item 2	Item 2.1	Item 2.2	Item 2.3	Item 2.4	Item 2.5
Item 3	Item 3.1	Item 3.2	Item 3.3	Item 3.4	Item 3.5
Item 4	Item 4.1	Item 4.2	Item 4.3	Item 4.4	Item 4.5
Item 5	Item 5.1	Item 5.2	Item 5.3	Item 5.4	Item 5.5



Dimension 2: Management systems

The term management system refers to the fact that a supply chain network must be comprehensively managed, controlled and strategically developed. This task is defined by four decisive factors:

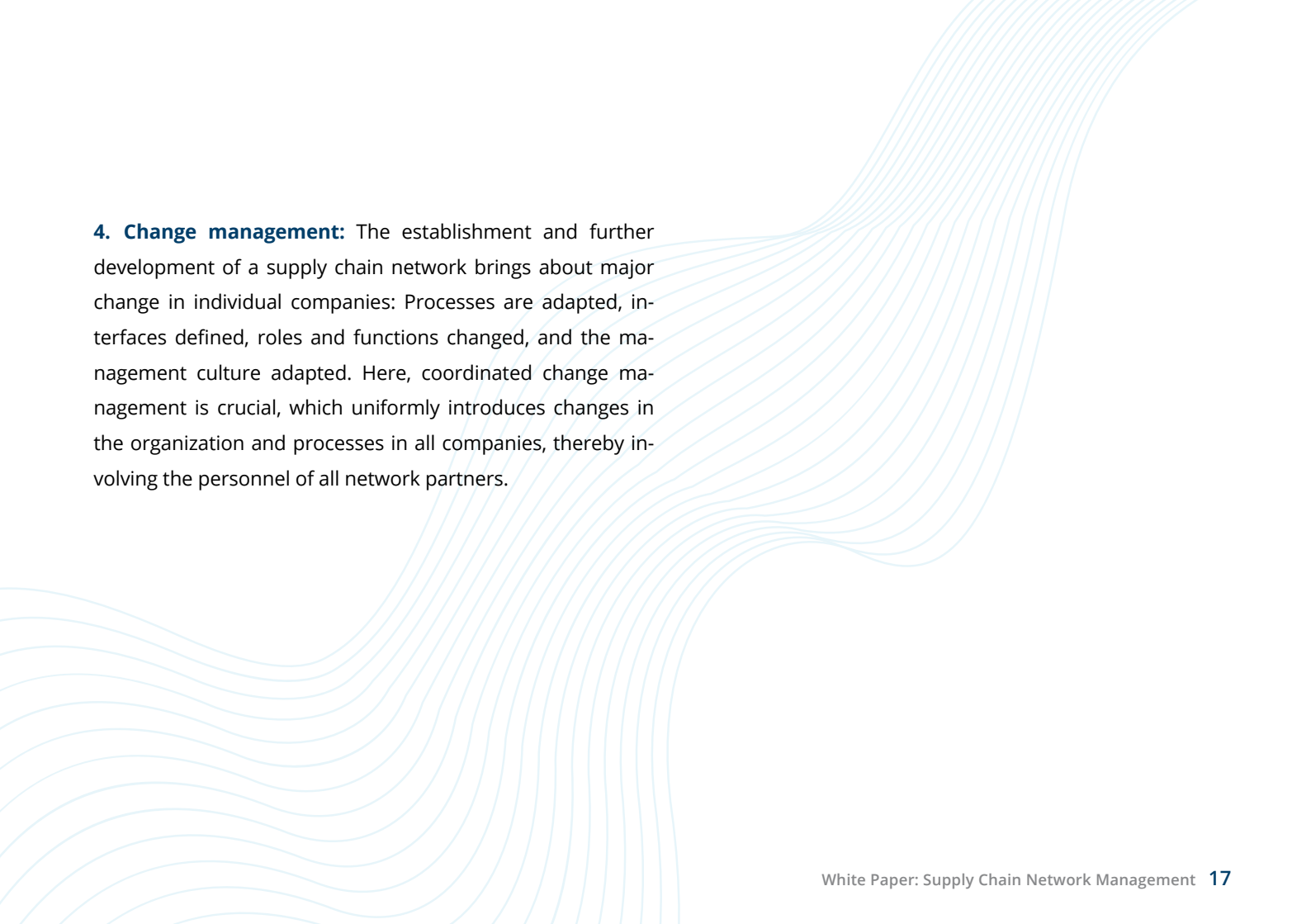
1. Strategy development: The strategy for setting up the supplier network depends on the general corporate strategy and is a result thereof. If the direction the partners want to take is not clear from the outset, disagreements and friction will ensue. Furthermore, companies with different strategies do not fit well together. For example, a company with a specific innovation strategy needs correspondingly innovative network partners.

An important aspect of strategy development is also the introduction of risk management. Companies must identify all "nodes" in the supplier network that could involve risk in advance. Examples of this are regional concentrations of vital suppliers, a lack of alternative suppliers for essential primary products and raw materials or unstable communication channels between individual business partners.

In addition, there are numerous external risks that must be taken into account when configuring the supply chain network: For example, a country's political and social stability, long-term climate developments or unforeseeable situations such as natural disasters or a global pandemic. It is not possible to take precautions for all risks, but companies should establish procedures to ensure early warning and preparation. Overall, the risk management of a supply chain network must be integrated into comprehensive business continuity management.

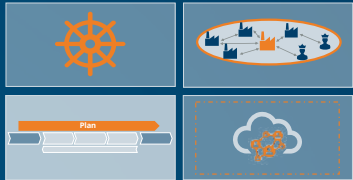
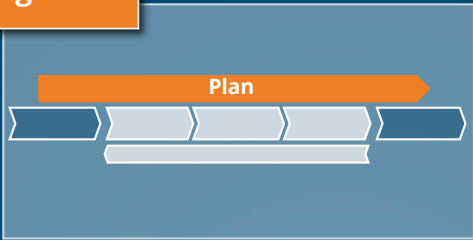
2. Visualization: Management dashboards are important for implementing and controlling the strategy, just like in individual companies. Network-oriented KPIs are necessary for this. They are no longer directed at the focus company, but rather aggregate and cumulate specific key figures.

3. Organizational development: Certain structural elements such as procurement or logistics of individual companies should shift to the network level. Double functions and roles should be prevented in order to reduce friction. Purchasing cooperations for standard products are another option, for which cost reduction can likely be achieved.



4. Change management: The establishment and further development of a supply chain network brings about major change in individual companies: Processes are adapted, interfaces defined, roles and functions changed, and the management culture adapted. Here, coordinated change management is crucial, which uniformly introduces changes in the organization and processes in all companies, thereby involving the personnel of all network partners.

Planning



Sales & Operations Planning

Order Fulfillment

Start-up and phase-out control

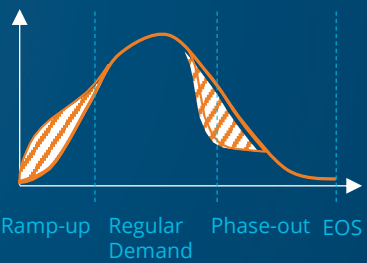
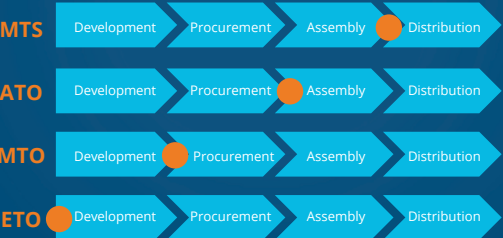
Operations Planning

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Demand

Supply

Sales Planning



*MTS = Make to Stock; ATO = Assemble to Order; MTO = Make to Order; ETO = Engineer to Order

Dimension 3: Planning

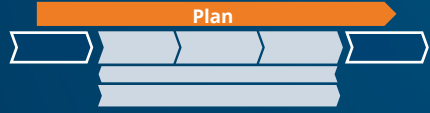
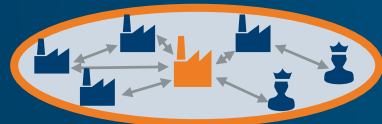
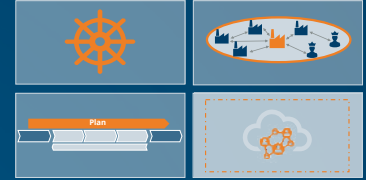
The overarching tasks within a supply chain network also include planning value flows. This means planning all production and sales processes, controlling the product life cycle and forming interdisciplinary cooperation among different planning instances within the network.

1. Sales & Operations Planning (S&OP): Sales planning as well as planning and controlling the process chain can only be highly effective if they are carried out across the network. In doing so, the demand and capacities of the overall network are brought into line. This involves a significantly higher degree of coordination. Each network partner must coordinate its own S&OP with that of all others. Process chains should form a continuous value stream.

2. Start-up and phase-out control (phasing products in and out): The same coordination requirement applies to the life cycle of products or services. Coordinating individual phases prevents disruptions to the supply chain or overproduction. For this, the network requires comprehensive product life-cycle management (PLM).

3. Interdisciplinary planning: An important requirement for successful supply chain network management is the coordination of different functions within the network, such as procurement, research and development, production or marketing. All these functions must exchange information across the network in order to perform their tasks within the right time frame.

Information Mgmt.



IT as a business enabler



Digital Strategy

BI

- KPIs
- Visualization
- Consolidation
- Big Data

Digital Networking

- Overall IT-architecture
- System integration/partner
- Master Data Management/Data integration
- Internet of Things

Digitized processes

- Organization and processes
- Applications and systems
- Infrastructure
- Service Level Agreement

Dimension 4: Information management or IT systems

IT systems form the basis of supply chain network management and enable the entire network to be set up and operated in the first place. To achieve this, companies must have a modern IT infrastructure consisting of three types of IT systems. They focus on the three aspects of management systems, network and planning.

1. Digitalized processes or IT application landscape: This forms the basic infrastructure of CRM, PLM, ERP, process automation and other applications.

2. Digital networking: In a supply chain network, the number of interfaces should be kept to a minimum to prevent inefficiencies. This requires an overall IT architecture as well as integration of different systems and IoT data from network partners – including master data management.

3. Business Intelligence (BI): Data analyses lead to strategic decisions based on aggregated and cumulated KPIs. This includes consolidating and visualizing data. Applications suitable for big data are essential, as the amount of data in a supply chain network can grow significantly.

Change Management & Communication

Project preparation

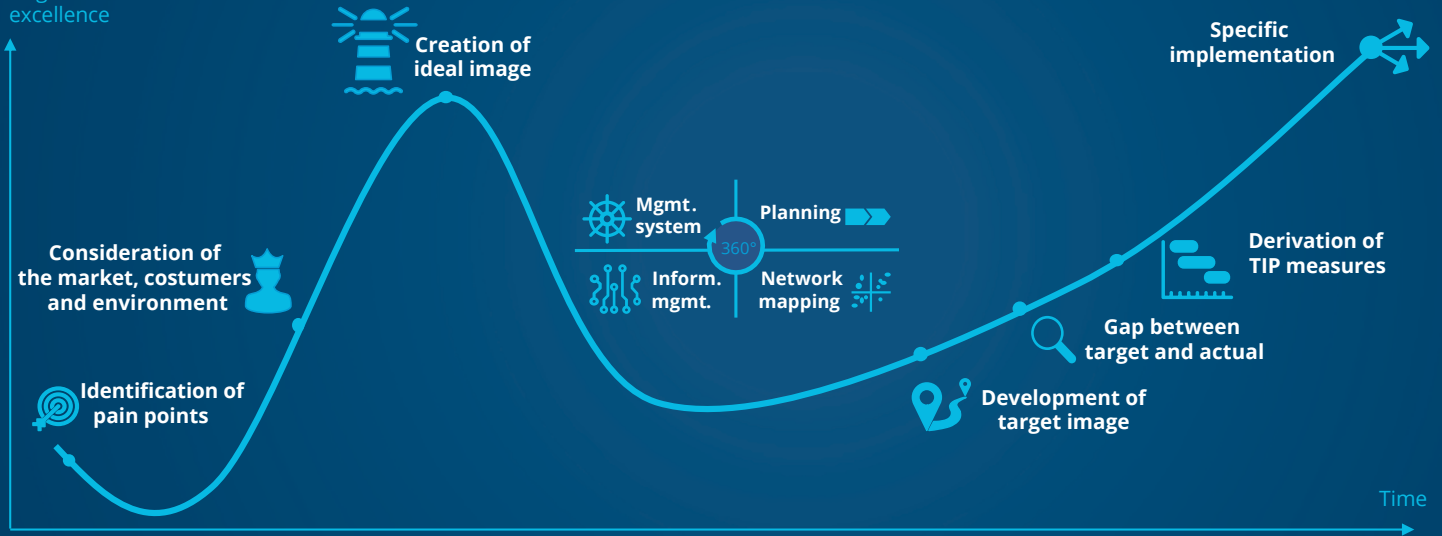
Ideal image

Analysis

Concept

Implementation

Degree of excellence



3

INTRODUCING SUPPLY CHAIN NETWORK MANAGEMENT

Most companies do not only operate within a single linear supply chain. As soon as several suppliers and customers and an extensive product portfolio are involved, a multidimensional network inevitably forms. For large corporations, this do not necessarily have to involve external companies. The complexity of a supply chain network is also evident within the company.

This can lead to problems due to low transparency, lack of communication and cumbersome delivery routes, even

between group subsidiaries that supply each other. No matter whether they are external companies or subsidiaries, the need to actively manage the network is immediate in both cases. In practice, it quickly becomes apparent that a supply chain network must be built up in a superordinate and holistic manner, otherwise numerous inefficiencies will arise.

Because of this, it is important for a company to introduce an active supply chain network management that takes the entire network into account. This process is supported by Staufen AG, which recommends a three-step approach:

1. Analysis: A realistic examination of the current situation is vital. In this phase questions are answered such as: Why are individual network partners important to us? Do interfaces already exist or do they first have to be created? Are our processes and IT systems that support them able to guarantee intensive

communication and a high level of transparency? Is our management culture focused on managing independent partners?

2. Conception: Supply chain network management is not self-evident. Companies must first develop a target image that takes important strategic decisions into account. For example, the network must be geared towards a specific product strategy, such as innovation, market or cost leadership.

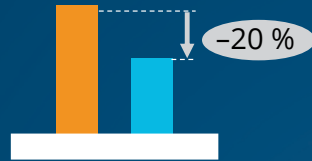
3. Implementation: Introducing a comprehensive supply chain network management is a highly complex task that also impacts individual network partners – everyone must work together. It is important that the four dimensions mentioned (network, planning, management systems, IT systems) are implemented in context.

To ensure that the introduction of supply chain network management is successful within a manageable period of time, companies must set clear focus areas. For this reason, the analysis includes identifying the most important "pain points"

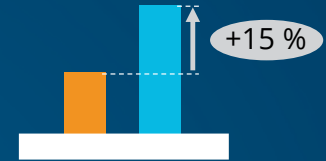
in order to subsequently give them greater priority during the design and implementation phases. In doing so, it is recommended to focus first and foremost on segmentation of the network and ensuring transparency.

Supply chain network management can help close optimization gaps that are still present in all companies of the network. This makes it possible to reduce end-to-end lead times by up to 20 percent and supply chain costs by 10 percent. In return, delivery performance and flexibility in the face of fluctuations in demand are significantly improved. Last but not least, this leads to an increase in sales, as "lost sales" decrease.

End-to-end lead time



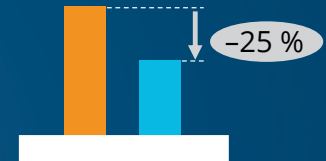
Flexibility with fluctuations in demand



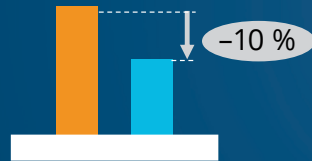
Delivery performance (on-time, in-full)



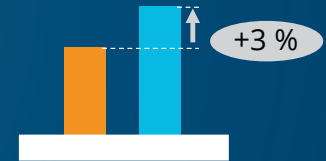
Inventory in the network



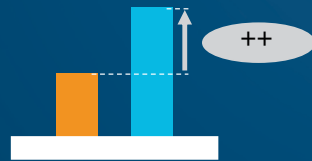
Supply chain costs



Increase in sales (reduction of lost sales)



Transparency in the corporate network



SUMMARY

Supply chains are increasingly developing into multidimensional, complex and global value chains. Accordingly, they now go far beyond the traditional understanding of purchasing, production, logistics and distribution. In the future, competition will take place between entire networks, not between individual companies.

Mastering complex value chains is therefore becoming an important factor. Those who come out on top will be supply chain networks with sufficient and agile customer orientation. Individual network partners are like gears that must perfectly interlock. For them to succeed, information must flow and maximum transparency must be created.

The Staufen approach to supply chain network management supports companies from strategy to implementation. Optimally aligning the network to constantly changing fundamental requirements and controlling it with confidence using transparent management systems is crucial. Companies can strengthen their future viability if they create a network that encompasses all important partners in the value chain.



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THERE IS AN EVEN BETTER ONE.