

SUPPLY CHAIN NETWORK MANAGEMENT

**BOOSTING ROBUSTNESS, RESILIENCE,
AND RESPONSIVENESS**



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1. SUPPLY CHAIN CHALLENGES – THE PRESSURE IS INCREASING

Regardless of whether corporate group or small or medium-sized company – today, industrial operations are incorporated into complex value creation networks. Raw materials, components, and spare parts are purchased around the world, and just in time if possible. Products are also distributed around the world via complex sales channels. The number of partners involved in value creation has increased exponentially across all levels. The consequence: Networking and complexity will therefore continue to increase. These days, competition no longer takes place between individual companies, but between entire networks. Yet the events of the recent past have shown that the networks are more fragile than we thought. The Global Supply Chain Pressure Index calculated by the US Federal Reserve indicates how much pressure supply chains have been under given the ongoing crises that began in 2020:

GLOBAL SUPPLY CHAIN PRESSURE INDEX



*Based on 27 variables, including freight costs and demand; high value = many disturbances / zero axis = average 1997-2021;
Sources: Federal Reserve Bank of New York; <https://de.statista.com/infografik/27038/globale-lieferkettenstoerungen-nach-dem-global-supply-chain-pressure-index/>*

According to the ifo Institut, at the end of 2022, nearly two-thirds of industrial companies complained about material shortages. Especially affected: mechanical engineering (86.2%) and the automobile industry (82%). The consequences of the current situation: 87% of companies in processing industry have changed their procurement strategies, significantly more than in other industries.

Therefore, one must ask the question whether events such as the Corona pandemic, the war in Ukraine, blocked routes, a lack of raw materials, and the energy crisis by themselves or in sum have caused the delays, breakdowns, and increasing costs. Aren't they just relentlessly revealing the failures of the past as a result of increased focus on costs and the neglecting of other dimensions?



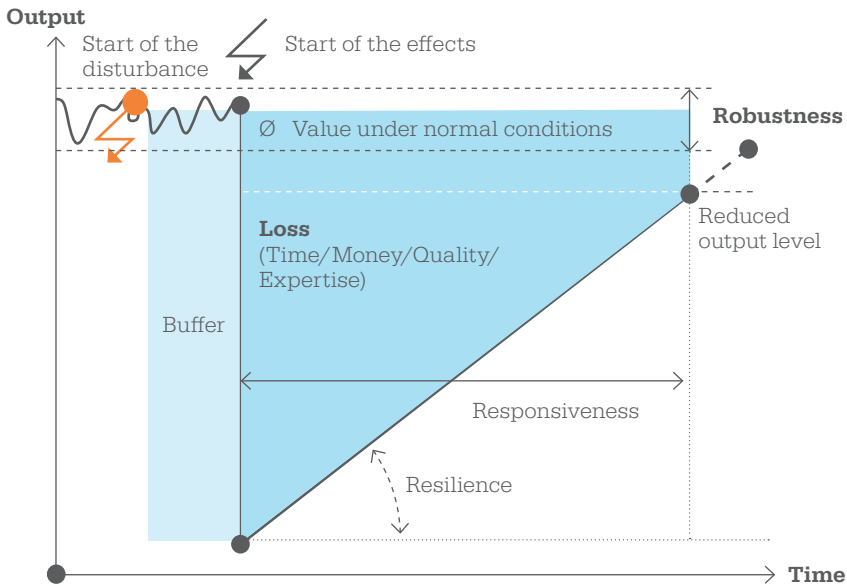
Before the pandemic, the goals were almost exclusively focused on traditional "competitive priorities" - costs, time, flexibility, quality, and innovation. Now, robustness and resilience are at the top of the list.

Prof. Dr. Thomas Friedli / University of St. Gallen (HSG) / Institute for Production Management



In the future, it will not be possible to completely prevent negative effects and influences on the supply chain. The challenges and bottlenecks won't go away in the foreseeable future.

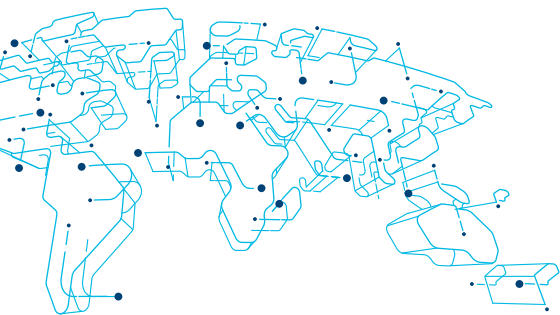
In addition to the classic performance criteria, that's why the Staufen approach to supply chain network management focuses on the dimensions of **robustness, responsiveness, and resilience** and demonstrates how the loss zone can be minimized and a return to a normalized output level achieved.



The consultants at Staufen AG are convinced that companies should go further and reconfigure their supply chain networks. With optimized value streams and transparency across the entire network, they can therefore ensure greater productivity, less loss, and better cooperation on all levels of the organization. This will result in quicker reactions in case of future disruptions. The winners will be supply chain networks that align themselves to customers' needs in agile fashion, maintain transparency across all levels, are digitally networked and integrated, deploy active control elements, and thus have the three "R properties" -- **R**obustness, **R**esilience, and **R**esponsiveness.

2. A CONVERSATION WITH EXPERTS: "NETWORKING ON ALL LEVELS OF VALUE CREATION"

It's been a long time since supply chains could be mapped as linear chains. Due to additional production locations, a large product portfolio, and individual manufacturing to customer requirements, they have been transformed into complex, multi-stage networks. In worldwide networks, manufacturers are connected to suppliers and their suppliers in turn. How can companies succeed in maintaining an overview, and what benefits would a reconfiguration bring? The experts at Staufen AG and Staufen.Inova provide answers to the most important questions.



Current crises have made clear just how fragile global supply chains are. Geopolitical risks, increased regulation, and cyber attacks that are becoming more and more sophisticated are just a few examples that will ensure pressure in the future.

Will global networks that can be successfully managed still exist at all in the future?



Canan Jungel, Principal, STAUFEN.AG

Canan Jungel: Yes, in the future, a global network will remain an important building block for maintaining international contacts and access to global markets.

The biggest problem are the disrupted value streams, the resulting vulnerability, and long reaction times to changes.

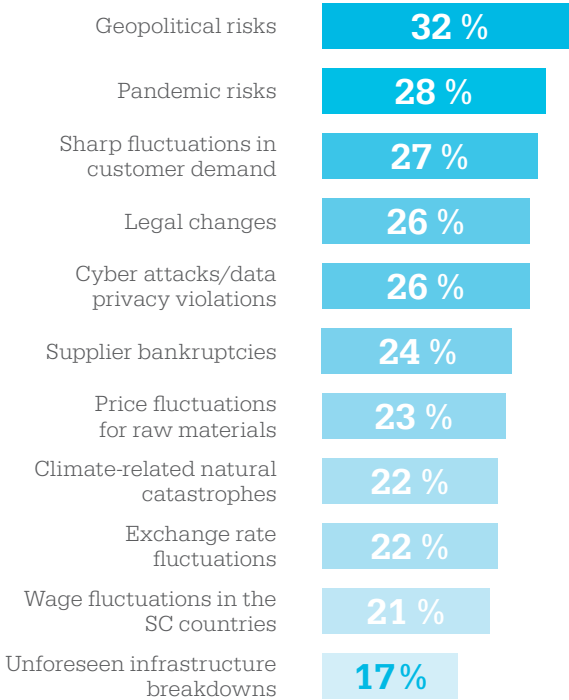
What could be the negative effects of this?

Canan Jungel: It can cause great damage to a company's image and ability to do business. If, for example, there are delays during production, customers complain about long delivery times and may seek out other suppliers. Companies could lose market shares. In addition, in case of disturbances, the company must count on higher procurement costs and reduced productivity.



Thomas Spiess, Senior Partner, Staufen, Inova

FACTORS THAT REPRESENT A RISK FOR THE SUPPLY CHAIN NETWORK



Source: The Economist Intelligence Unit, 2021 – THE BUSINESS COSTS OF SUPPLY CHAIN DISRUPTION / N = 400 / US & Europe

What does the supply chain network of tomorrow look like?

Canan Jungel: The goal is to come as close as possible to the "local for local" ideal. This is an ideal network structure that assumes that a company maintains different competence centers around the world and produces locally for the local market in each one. The benefit: Short delivery times, lower transport costs, lower Co₂ emissions as compared to global material flows, and fewer disrupted value streams.

What do companies need in order to manage the complex network structures? Is traditional supply chain management sufficient?

Thomas Spiess: No, even before the current crises, it was clear that traditional supply chain management is no longer sufficient. Instead of this, companies need a comprehensive approach, supply chain network management, in order to counter the vulnerability of the network to crises and persist given international competition. This is possible with a reconfiguration of the network.

What specific benefits would arise from a reconfiguration?

Thomas Spiess: So that a network can perform optimally, it must have three capabilities: It must be robust and resilient, and it must be able to react quickly to changes. All reconfiguration measures are geared towards strengthening these three capabilities. Companies then benefit from the fact that a robust network has suitable measures in place to protect them against minor events and it enables continuous operation. If events are more serious, measures for resilience must be implemented so that the organization can adapt to the changed conditions. The more responsive the network is, the quicker the company is capable of making suitable adjustments and to continue with the performance.

Can a reconfiguration help implement the German Supply Chain Act?

Canan Jungel: Yes. Companies need transparency across their entire supply chain network in order to identify potential risk factors and ensure that human rights and environment protection are complied with all along the supply chain. Networking with the supplier and introducing risk management are therefore the prerequisites for procuring the necessary data and ensuring the required "big picture" view.

With the Corporate Sustainability Reporting Directive (CSRD), the EU obligates companies to engage in extensive sustainability reporting. Does modern supply chain network management offer companies the opportunity to become more sustainable?

Canan Jungel: Absolutely. A competitive edge and climate protection measures go hand in hand. Sharply increasing costs and inflation are forcing companies to reduce costs for transport, energy, and material. An efficient deployment of tools not only positively affects operating results, it also reduces the company's CO₂ footprint. A reconfiguration of the supply chain network thus also offers the opportunity to do justice to the topic of sustainability. Together with its partners, Staufen has developed a method for analyzing greenhouse gases along the value stream. Through the analysis, the relationship between waste and greenhouse gas emissions becomes clear, and companies see their potential for improving quality and performance and reducing costs with a green value stream.



Learn how companies can achieve climate neutrality in 5 steps in the free Staufen white paper "goGREEN."

<https://www.staufen.ag/insights/studien-whitepaper/whitepaper-gogreen-2022/>



The German Supply Chain Act (LkSG)

Starting in 2023, the act obligates companies with more than 3,000 employees to take responsibility for their entire supply chain. This affects both their own area of activity as well as those of their direct and indirect suppliers. The goal of the German Supply Chain Act is to protect basic human rights and especially to prevent children from doing child and forced labor. Attention must also be paid to environmental concerns in order to protect people's health. Compliance is monitored by the Federal Ministry of Economic Cooperation and Development; there are fines in case of violations. Starting in 2024, the due diligence will be expanded to companies with more than 1,000 employees.

The EU's Corporate Sustainability Reporting Directive (CSRD)

For a few years already, the EU has required large companies to report about their sustainability. With the CSRD to be passed by the EU, reporting duties will be expanded considerably starting in 2024. For gradually by 2026, large, medium-sized, and small companies will be obligated as part of their annual report to report about the effects of their own business operations on people and the environment, as well as the effects of sustainability aspects on the company. Like financial reporting, sustainability reporting will be audited externally in the future.

3. THE STAUFEN APPROACH: SUPPLY CHAIN NETWORK MANAGEMENT

Staufen has developed an approach for modern supply chain network management (SCNM). Decisive for the development of the SCNM framework was consultants' insights that managing increasingly complex value chains is becoming an important competitive factor and those networks that can orient themselves to customers' needs in agile fashion will emerge the winners.



Businesses that are closely networked with their suppliers and partners benefit from the exchange and strengthen their future viability."

**Thomas Spiess, Senior Partner
Staufen.Inova**



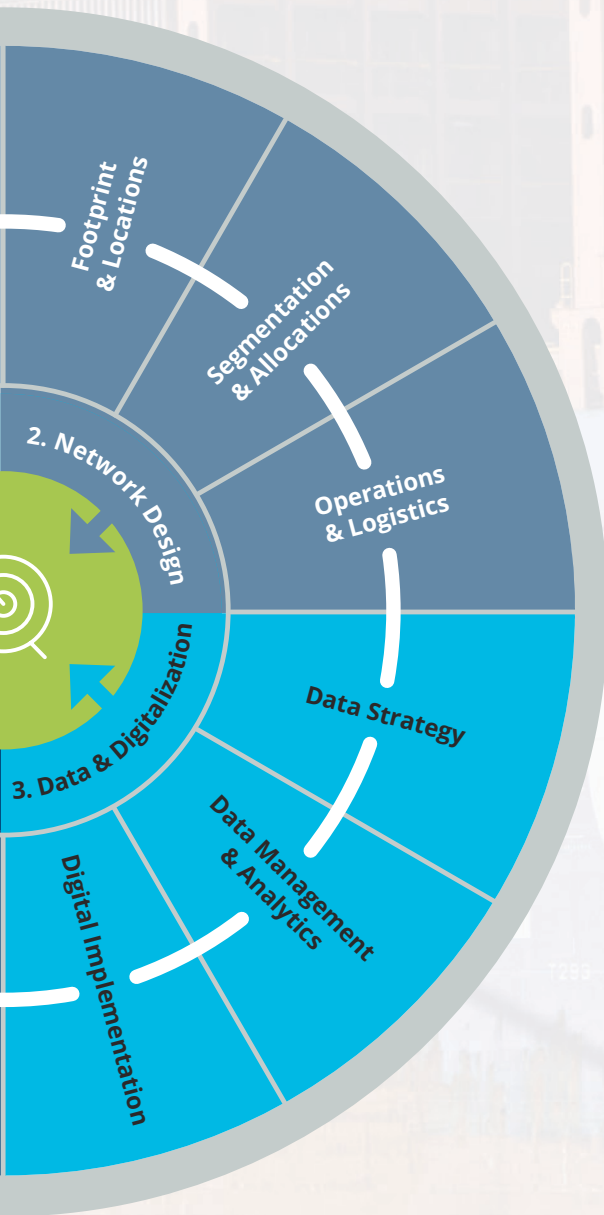
SUPPLY CHAIN NETWORK MANAGEMENT FRAMEWORK

1. Operating Model

SCN Risk Management System

4. Planning & Control





2. Network Design




= Network Performance & Resilience

3. Data & Digitalization

4. THE FOUR DIMENSIONS OF SUPPLY CHAIN NETWORK MANAGEMENT

1. Operating Model



The operating model includes all activities that are connected to the strategic orientation of the supply chain network. The operationalization of the business model also falls in this area. It includes make or buy decisions (value creation strategy), robust network management (network coordination and management), and efficient communication and a clear distribution of roles within the network.



2. Network Design

With network design, the focus is on the structure of the supply chain network. In this context, the geographic distribution of the network elements (footprint) is examined, as is the allocation of products, processes, and services within the network (segmentation), and all operating processes (operations), with the goal of having as few disrupted value streams as possible (local for local).

3. Data & Digitalization

This segment includes all aspects of the digital supply chain. Coordinated with the other dimensions of the network, data & digitalization focuses on the IT infrastructure and the formulation and anchoring of a data strategy. The establishment of data management and data analytics, as well as the use of suitable digital tools and technologies are part of this segment.

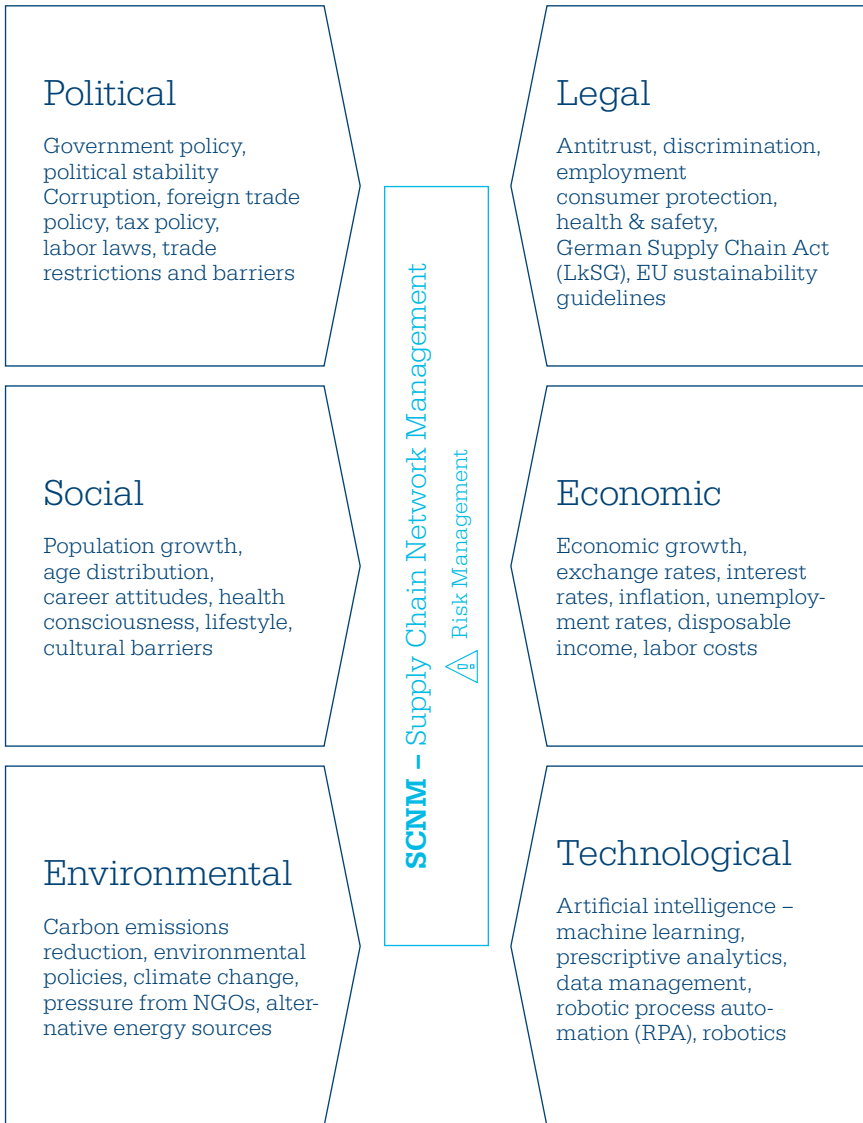
4. Planning & Control

Planning & control includes the business-spanning orientation of the production process to anticipated market developments. Here, the smooth interplay between long-term (integrated business planning), medium-term (sales and operations planning, S&OP and inventory management), and short-term (execution planning) planning activities are the key to success.

5. SUPPLY CHAIN NETWORK RISK MANAGEMENT

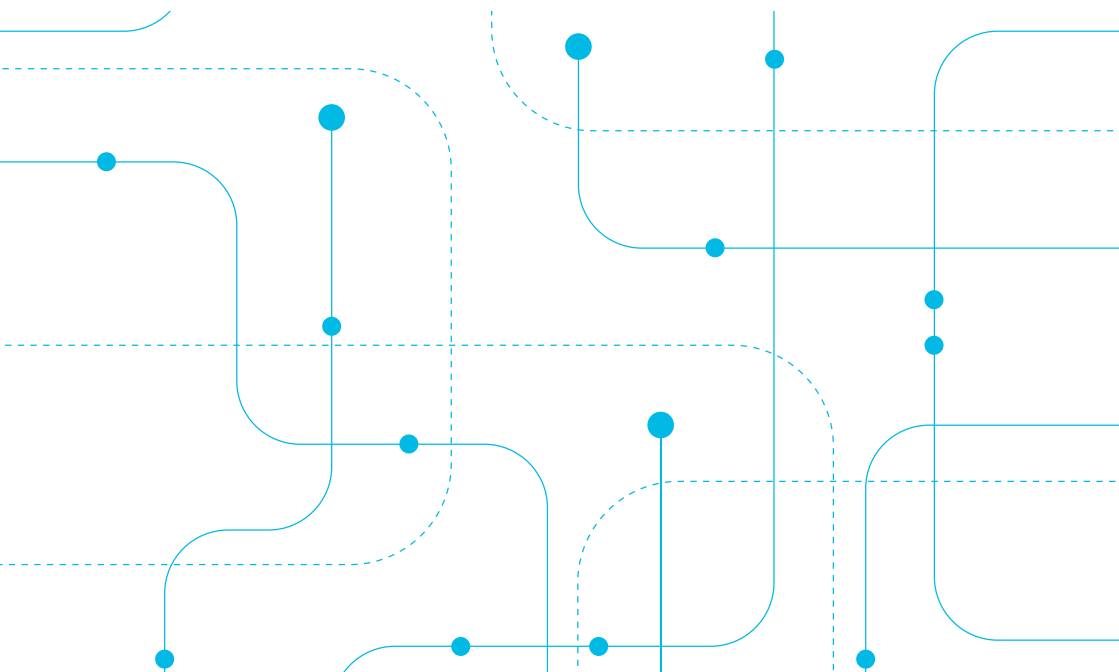
The threats to supply chain networks will continue to increase in the future. Pandemics, geopolitical risks, natural catastrophes, strikes, sanctions, fires, and bankruptcies are just a few examples of influencing factors and drivers that can cause disturbances. Contractual penalties, production breakdowns, fines, and long-term reputation damage are the possible negative consequences. In addition, governments, (non-profit) organizations, and the capital market are forcing increased transparency and reporting duties with respect to supply chains, for example in the form of new ethical regulations such as the Uyghur Forced Labor Prevention Act in the United States, the German Supply Chain Act, and the EU sustainability guidelines for companies.

INFLUENCING FACTORS & DRIVERS OF THE SUPPLY CHAIN NETWORK MANAGEMENT



In a world of increasingly intense pressures and threats, integrated supply chain network risk management is becoming much more important.

Here, the point is no longer just to avoid problems. Proactive risk management can and must create a direct, measurable value for supply chain organization in that stability, continuity, transparency, corporate social responsibility (CSR), performance with regard to the environment, social, and governance (ESG), and compliance with regulations and supplier management are improved. An extensive supply chain risk management system includes visibility and active monitoring of every kind of risk, for all levels of care, for all stakeholders, and all intersections of the network.



Supply chains are complex systems of people, processes, and technologies that are supposed to create added value for customers. Without risk management anchored across the company for the monitoring, identification, evaluation, and proactive avoidance of precisely these risks, companies of every size are relatively helpless.

Establishing first-class risk management is therefore a crucial success factor in the new normality. Companies must increase their efforts significantly and find the right mixture of employees, processes, and technologies. Creating the necessary transparency in the entire network is the first step here (see Chapter 6). Proactive management of influencing factors and drivers not only protects companies against damage, it also enables the configuration of the network dimensions on a higher output level and therefore becomes the competitive advantage of tomorrow.

6. CREATING A SUCCESSFUL NETWORK STEP BY STEP

1. Preparation and initiation

- Specification of the project organization & stakeholders in the network
- Management workshops for corporate strategy, about framework conditions and future SCNM requirements

2. Analysis

- 360-degree assessment of the SCNM fields of action for specifying the most important levers
- Top-down- & bottom-up analyses of defined SCNM topics

3. Concept

- Development of an ideal state & of SCNM guidelines
- Derivation of actual state scenarios
- Qualitative and quantitative assessment of the scenarios
- Business Case & recommendations for action

4. Implementation

- Implementation planning with a tactical implementation plan
- Implementation support for the defined topics
- Validation & results reporting

5. Roll-out

- Roll-out to additional areas, locations, network partners

7. THE GOALS OF CONSISTENT SUPPLY CHAIN NETWORK MANAGEMENT

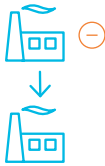
The implementation of state-of-the-art supply chain network management taking into consideration the framework conditions described and with the strategic approach depicted ensures an efficient and resilient network. This network

- guarantees complete transparency on all levels of the network,
- increases delivery performance,
- ensures that all necessary data and information on all network levels are up-to-date and accessible,
- offers alternative scenarios for critical areas and processes,

● has prioritized action areas and an implementation roadmap and

● and effective monitoring and control system.

Companies can profit significantly from this and increase their value creation network:



**Reduction of
End-2-end lead time**



Risk minimization



Less inventory



Increase in sales



More flexible reaction to demand fluctuations

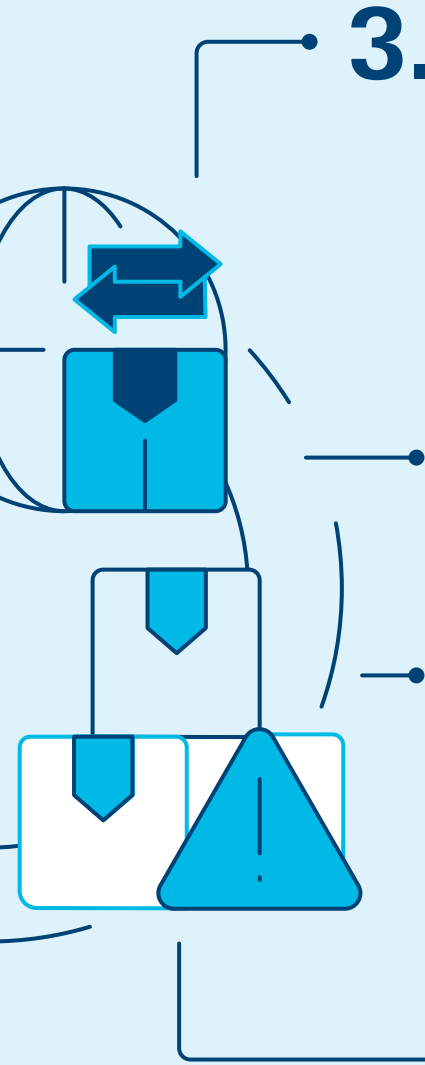


Increased sustainability

8. KEY LESSONS

- 1.** The current supply chain bottlenecks will continue to affect the economy for some time to come and will continue to cause delays throughout the value creation networks and ensure cost increases in industry.
- 2.** Companies need to respond more quickly to disruptions in the network and market influences if they are to be better equipped to meet future challenges.





3. Classic supply chain management is not sufficiently equipped to manage increasingly complex networks and ensure transparency along all processes and resources on all levels.

4. State-of-the-art supply chain network management improves network performance by helping to align the individual segments across functions.

5. Introducing supply chain risk management ensures the ability to detect potential risks early and to strengthen network resilience.

6. A well performing network helps companies to increase their competitive advantage.

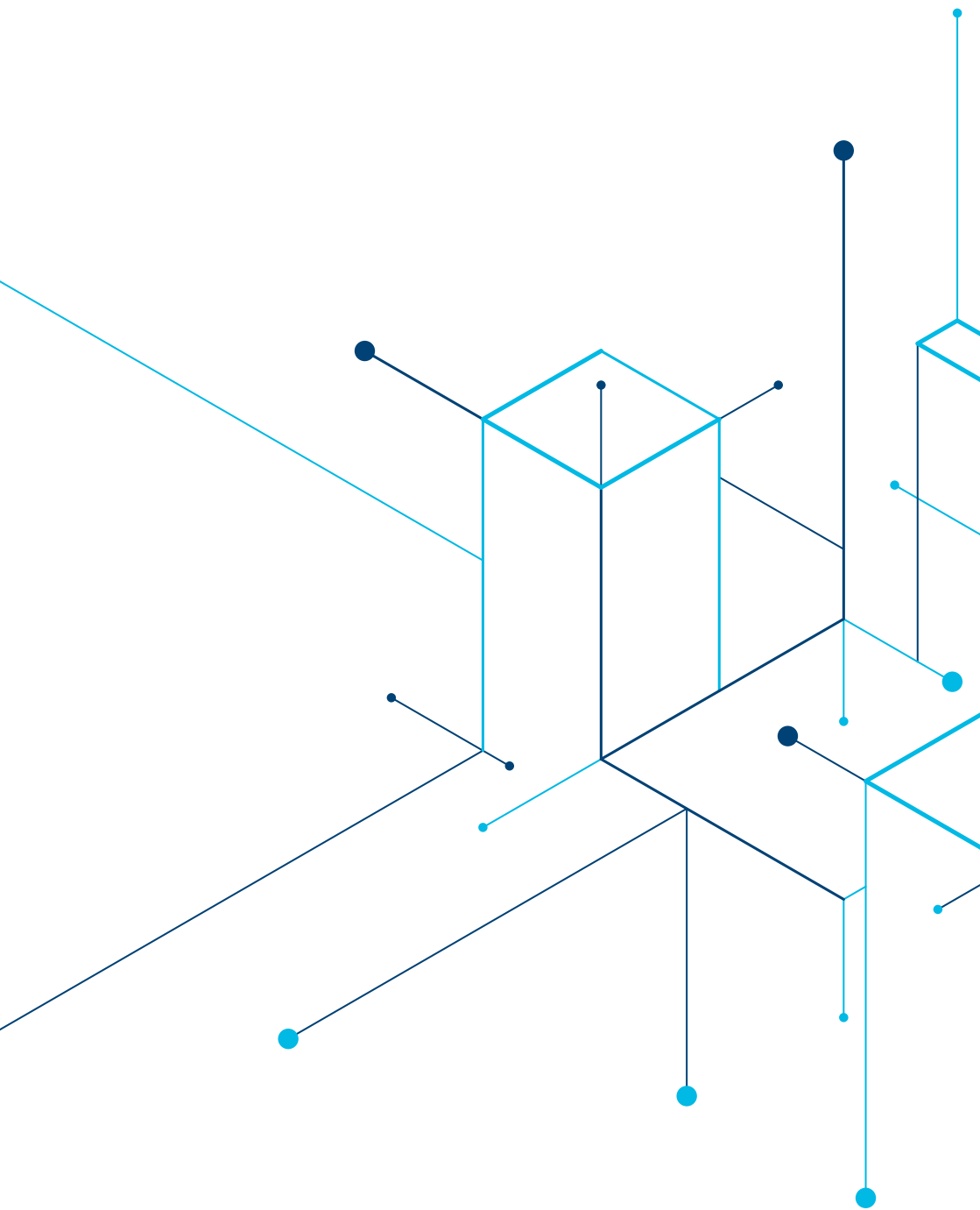
9. HOW STAUFEN CAN HELP

Staufen AGs comprehensive approach to supply chain network management helps to reconfigure global networks successfully. This approach includes the areas operating model, network design, data & digitalization, and planning & control. Improvements in these areas will ensure transparency, stability, and resilience. Staufen's consultants analyze their customers' existing network and help to reorganize it. The approach has already proven itself at numerous companies at home and abroad.

Do you want your company to be able to be robust, resilient and respond quickly to new requirements? Our consultants look forward to speaking with you in person and working with you!

Call us at [+49 7024/80560](tel:+49702480560).

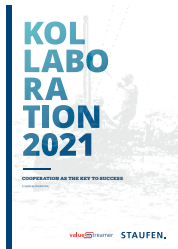






STUDIES AND WHITE PAPERS

All Staufen AG studies and white papers can be found online at www.staufen.ag/studien



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