

# BUILDING RESILIENT SUPPLY CHAINS

How auto and industrial firms  
can mitigate supply chain risks  
after COVID-19

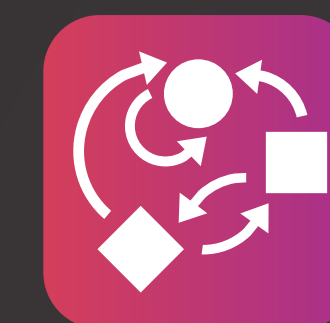
Manufacturing



PURPOSE-DRIVEN



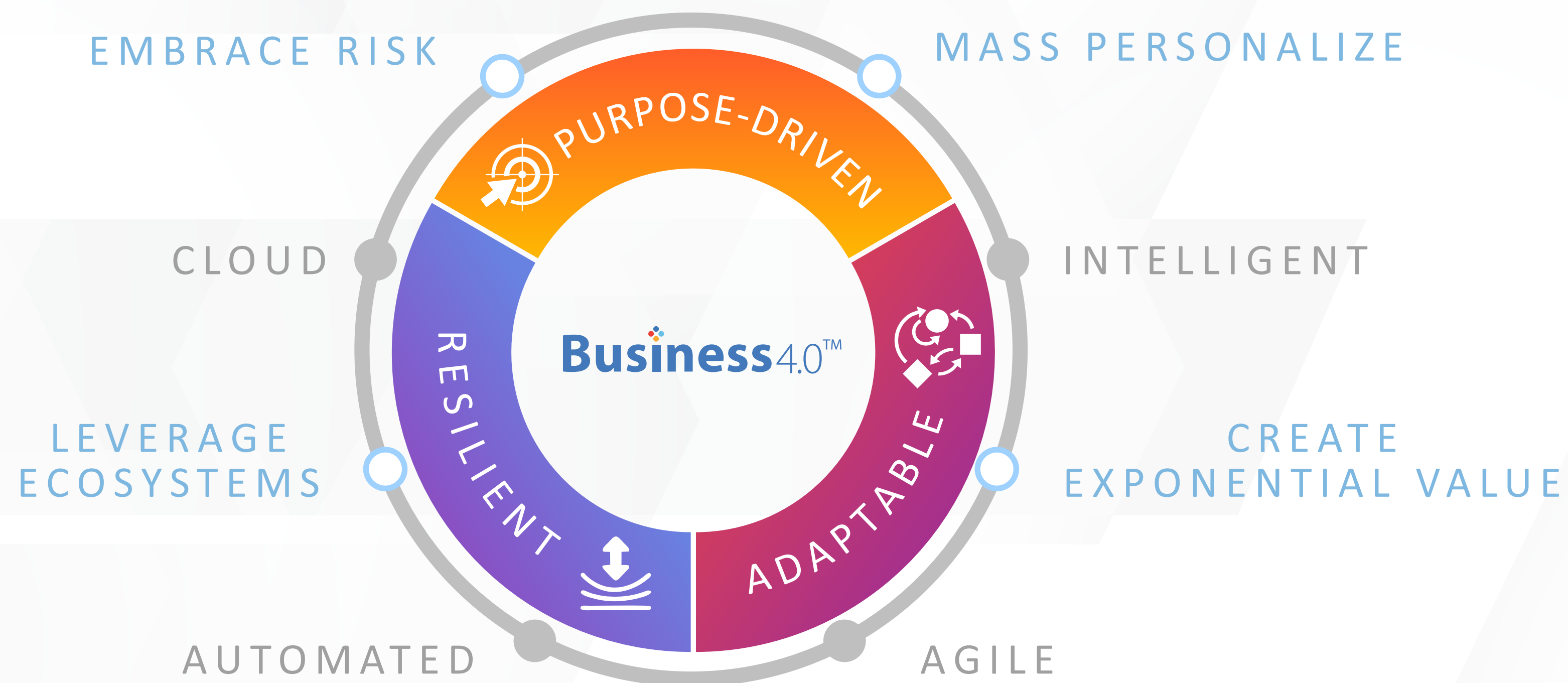
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## Executive summary

The COVID-19 pandemic has massively impacted the world economy and the underlining supply chain driving it over the last four months. The impact of the pandemic began as a 'supply' problem for automotive and industrial firms, before quickly turning into a 'demand-supply' problem affecting the entire world. With operations either completely

shut down or partially running, business heads are strategizing effective business continuity plans with supply chain at the core to continue operating in the post COVID-19 world. This paper explores how automotive and industrial firms can mitigate supply chain risks and create a resilient supply chain network in the future.



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# Impact of COVID-19 on the Automotive and Industrial Sector

The ongoing pandemic is affecting not just global businesses but world economies. The US and global gross domestic product are expected to hit negative growth, according to data from the International Monetary Fund and the US Federal Reserve<sup>1</sup>, implying that the incoming recession will be on par with the 2008 global financial crisis. Automotive manufacturers and certain industrial manufacturers are expected to be disproportionately impacted as compared to other industry verticals. Global automobile sales for the second quarter of the financial year 2021 could be down by as much as 50% and the annual volume is expected to decline by 20%<sup>2</sup>. Further, more than 90% of production is offline for automotive original equipment manufacturers (OEMs) and their suppliers<sup>3</sup>. Many automotive companies face significant

shortages of raw materials and components as their logistics has been disrupted. Industrial manufacturing demand could slow by 15-50% during Q2. Consumer demand will be at an all-time low, impacting most automotive and industrial firms, either directly or indirectly.

Amid this crisis, industrial and automotive firms need to determine how prepared their supply chains are to deal with such a pandemic and to determine a strategy to handle the aftermath of Coronavirus disruptions<sup>4</sup>. The initial findings from various analyst reports and research, including TCS' own internal assessments, are not very encouraging. This paper examines what organizations can learn from this pandemic to better prepare themselves in the advent of another such global crisis.

<sup>1</sup> IMFBlog; The Great Lockdown: Worst Economic Downturn Since the Great Depression; April 14, 2020; <https://blogs.imf.org/2020/04/14/the-great-lockdown-worst-economic-downturn-since-the-great-depression/>

<sup>2</sup> Statista; Coronavirus: impact on the automotive industry worldwide; April, 2020; <https://www.statista.com/study/71599/impact-of-the-coronavirus-pandemic-on-the-auto-industry-worldwide/>

<sup>3</sup> Fortune; 94% of the Fortune 1000 are seeing coronavirus supply chain disruptions: Report; February 21, 2020; <https://fortune.com/2020/02/21/fortune-1000-coronavirus-china-supply-chain-impact/>

<sup>4</sup> HFS Research; Manufacturers Should Focus on Supply Chain Visibility and Risk Management Measures to Face a Crisis like COVID-19; March 23, 2020; <https://www.hfsresearch.com/pointsofview/Manufacturers-should-focus-on-supply-chain-visibility-and-risk-management-measures-to-face-a-crisis-like-COVID-19>





# An Approach to Mitigating Supply Chain Risk

To effectively address the supply chain disruptions, it is helpful to analyze the current scenario in three phases, as illustrated below:

**Pre COVID-19**

Prior to December 2019

**COVID-19 Phase**

January – June 2020

**Post COVID-19**

Beyond June 2020

Figure 1: The three phases of supply chain risk amid Coronavirus



## The Pre-COVID-19 Phase

Before arriving at any actionable points on the supply chains of manufacturing industries during COVID-19, it is worthwhile to look at the actions, or lack thereof, of auto and industrial businesses during previous crises. In the aftermath of earlier crises, many firms spoke about the need to create flexible and responsive supply chains, monitor and safeguard their supply base, and even align their inventories with demand patterns. There was general consensus that action would be triggered towards making the supply chain better prepared for future crises in both the auto and industrial segments. But the fact remains that a very small percentage of the firms actually implemented those actions, and more so, majority of those measures were limited to inward-looking initiatives such as improving specific functions within the company and not necessarily for ecosystem resiliency<sup>5</sup>.

Hence, most companies have been unprepared for the current pandemic, which has had a more devastating impact on the supply chain than previous crises over the last 20 years.

The following points highlight the state of supply chains in the auto and industrial sector before Coronavirus:

- Most auto and industrial manufacturers have good reactive risk management plans for their supply chains.
- Focused proactive risk management is not widely practiced and understood.
- Supply chain mapping, covering all nodes of supply chain, are largely unavailable.
- The capability to manage COVID-19 disruptions across supplier tiers is not available.
- Limited ability, in terms of insightful impact assessment and prescriptive mitigation actions, to respond in a planned manner to a crisis such as COVID-19.

<sup>5</sup> Harvard Business Review; Coronavirus Is a Wake-Up Call for Supply Chain Management; March 27, 2020; <https://hbr.org/2020/03/coronavirus-is-a-wake-up-call-for-supply-chain-management>





## The COVID-19 Phase

Considering the lack of structural preparedness of supply chain organizations to deal with crises such as COVID-19, this paper presents an action plan that auto and industrial companies can implement to better tackle such scenarios. The foundational steps of this action plan (refer to the highlighted boxes in Figure 2) can be undertaken by a small dedicated team comprising of internal resources that will serve organizations in current and future crises.

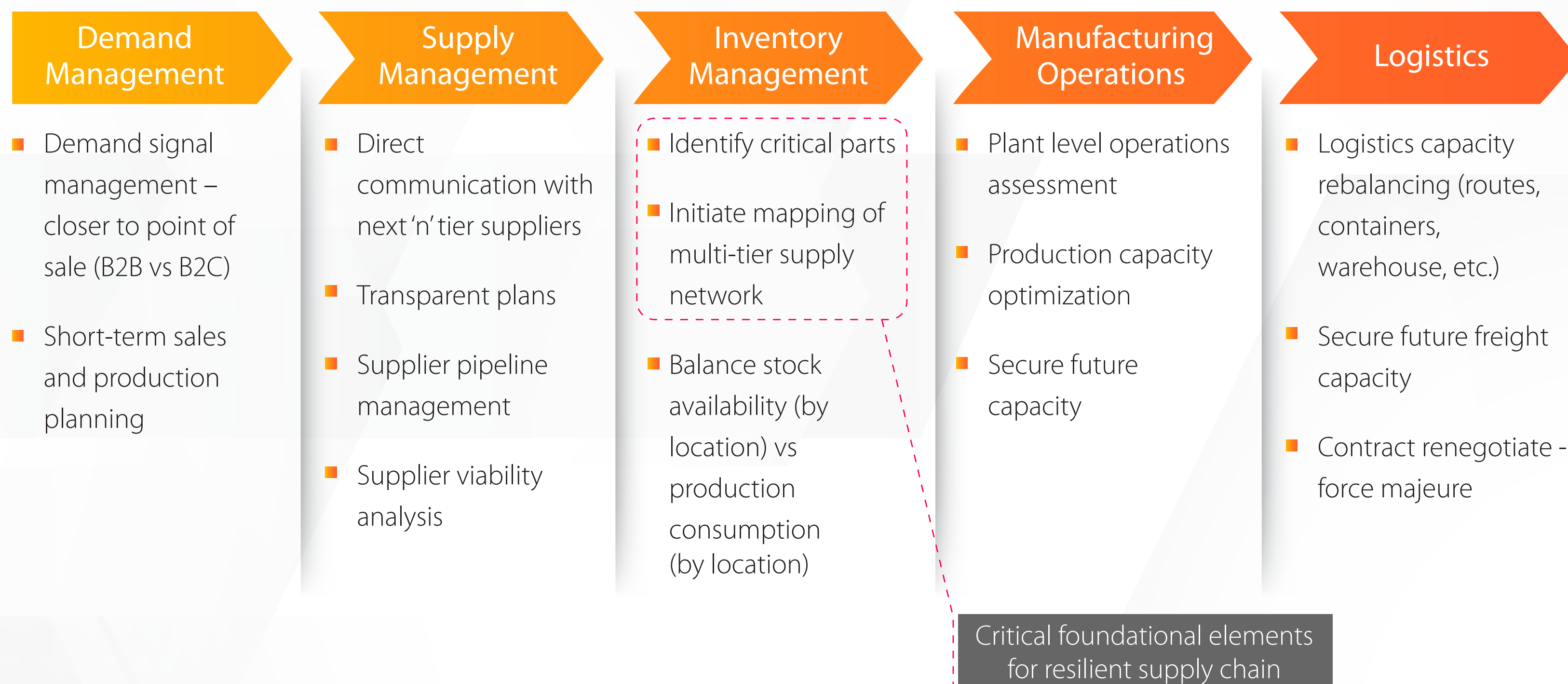


Figure 2: An action plan to strengthen the supply chain during crises



As illustrated in figure 2, the first foundational step firms must take is to identify critical parts and map multi-tier supply nodes as a response to crises such as Coronavirus<sup>6</sup>. For auto and industrial companies, this is an important move, as their supply chains are typically multi-tiered and global (many auto component suppliers are in China, India, and Mexico). Steps of the action plan are listed below:



### Defining critical raw material component parts and critical service parts:

Firms can give a criticality rating for each part based on criteria like usage, alternate suppliers, and alternate parts. An understanding of critical parts is important as it offers firms visibility into these parts particularly during such times of crisis. It will further help firms secure adequate inventory from their suppliers.



### Mapping the supply grid:

Organizations can map the supplier attributes for each part such as capacity, location, plants, etc., not only for the immediate Tier but even further upstream (like the supplier's supplier and so on). This will help companies understand their supply base better and thereby reduce supply risk. This is known as the supply grid.



### Creating risk profiles for parts:

After determining the parts criticality rating and mapping the supply grid, organizations must create a parts risk profile grid. For parts with high criticality, firms can explore a higher stock buffer or alternate supplies.



### Identify alternate suppliers for every part:

As every part in manufacturing is important, companies must have a plan B for all parts, should the primary supplier fail to deliver, especially during situations such as the ongoing pandemic.



### Identify alternate logistics providers:

Every route and mode combination needs a logistics player, and firms must have backup contracts with alternate providers in case of emergencies.

<sup>6</sup> CNBC; Automakers are 'scrambling' for parts and preparing war rooms as coronavirus spreads; February 29, 2020; <https://www.cnbc.com/2020/02/29/automakes-scramble-for-parts-prepare-war-rooms-as-coronavirus-spreads.html>



The outcome of these action plans will help auto and industrial organizations to create foundational elements towards building a resilient supply chain. These steps are very critical and fundamental for auto and industrial firms because of their deep supply chain networks, which comprises at least six to seven tiers.

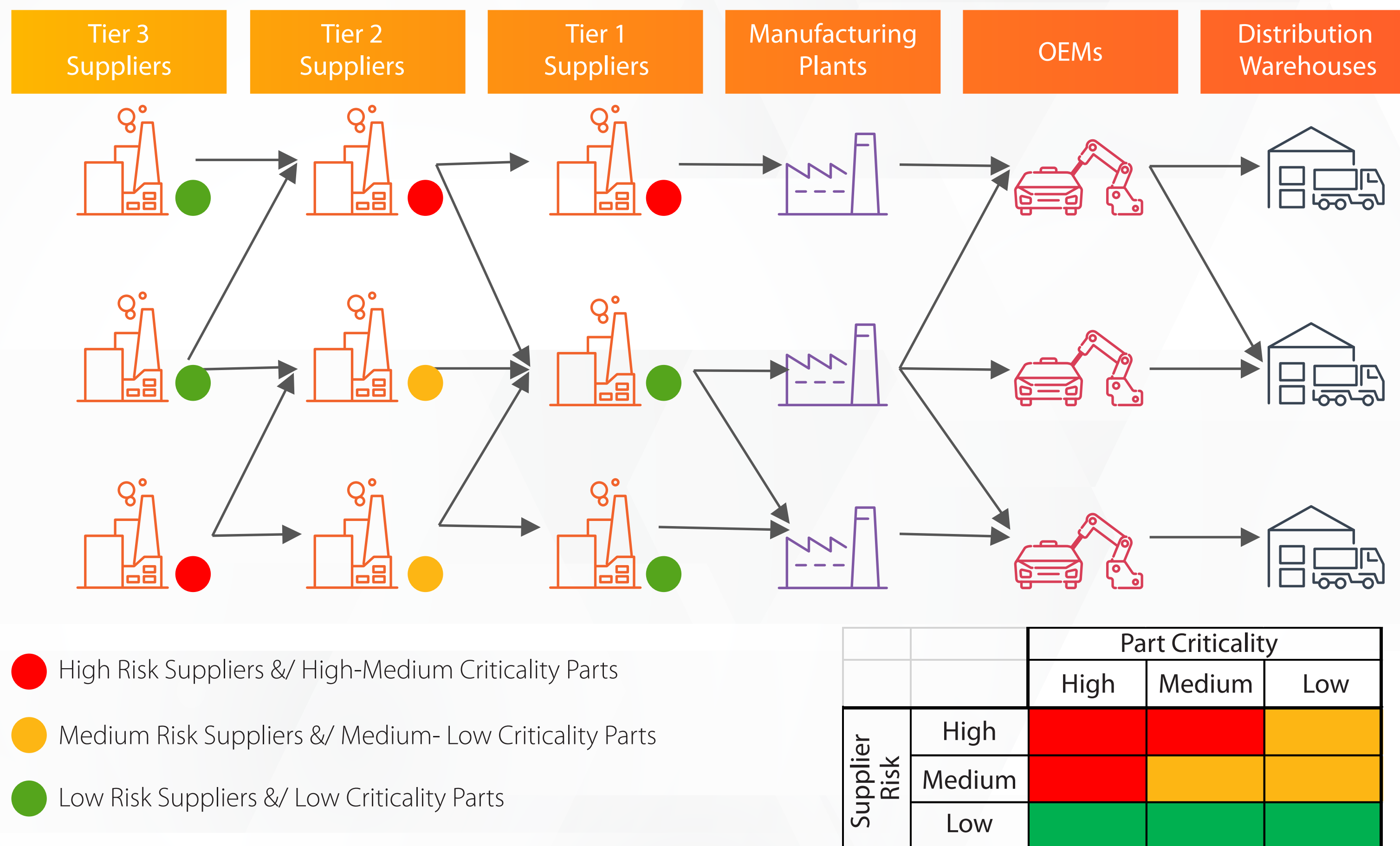


Figure 3: Risk profile grid, supplier risk, and parts criticality





## A task force for supply chain management to drive resiliency

As mentioned before, most companies do not fare well in terms of proactive risk management. By taking a proactive or a preventive approach, the impact of a disaster can be blunted to a large extent. This refers to upstream thinking.

To implement a strategic upstream activity, we recommend that firms set up a permanent decision-making task force for the supply chain<sup>7</sup>. The main objective of this task force is to recommend and implement steps to prevent or minimize the impact from potential disasters. The team's key tasks can be outlined as follows:

- Monitor a company's preparedness level for any kind of disruption.
- Implement plans to improve a company's capabilities to tackle disruptions.
- Schedule monthly meetings to discuss risks, health, and status of the supply chain management implementation.
- Publish reports about the risks and a company's preparedness for uncertainty.
- Monitor the global situation early on for any supply chain risks and notify senior management.

<sup>7</sup> Gartner; Coronavirus Requires Supply Chain Leaders to Adopt Enhanced Decision-Making Abilities; February 14, 2020; <https://www.gartner.com/en/documents/3980983/coronavirus-requires-supply-chain-leaders-to-adopt-enhanced>





## Post COVID-19 Phase

To better prepare for COVID-19-like events, this paper presents the initial steps that companies can take to transform their current supply chains into digital, resilient networks. Two paradigms can explain this shift, which is possible thanks to technological advancements. The points below illustrate how technology has to evolve to make such paradigms possible:

- Access to a variety of cloud software applications for demand driven material requirements planning (DDMRP) to jumpstart change from deterministic planning to resilient planning.
- Fairly well-developed collaboration platform products like E2Open to transform one dimensional supply chains to a supply network for full visibility and control.
- Easy availability and ability to adopt digital twins to mimic the physical supply chain network and simulate different supply chain scenarios.
- Maturity of the full stack of digital tools such as analytics, machine learning, cloud computing, and more.

### Paradigm shift 1: Deterministic to resilient planning

The best example of deterministic planning is traditional MRP found in most enterprise resource planning (ERP) solutions or homegrown packages. However, deterministic planning is only as effective as the inputs of the final forecast it receives. It also lacks the ability to adapt to changing scenarios and leads to problems such as bi-modal inventory and adverse customer service.

The pivotal point of this shift is buffers, which is not a new concept and is of different types—time buffer (lead times), stock buffers, capacity buffers, skills buffer, alternate suppliers, and more. Companies need to decide the right buffers at the right places in the supply chain for every part. This will effectively arrest the ravages of supply and demand variations. Monitoring and adjusting buffers dynamically based on changing demand and supply trends are key features for resilient supply chains.

To implement the first paradigm, organizations must carry out the following actions:

1. Perform analysis to identify the nodes in the supply chain for strategic buffer positioning.
2. Digitize the planning process.
3. Determine the buffer level (inventory or suppliers) for work centers and parts.
4. Pilot with methods like DDMRP to experiment with planning and execution based on dynamic buffers.
5. Deploy analytics/artificial intelligence/ML tools to monitor and manage buffers.



## Paradigm shift 2: Linear to collaborative supply chain

The pre-requisite to developing a collaborative supply chain is to have digital capabilities for inventory, capacity, demand, and more within an organization and the entire supply chain network. This requires creating an entirely new way of setting up systems, processes, and training people to enable a collaborative work environment. This approach will bring radical improvement over the current deterministic planning method. In addition, a better demand and supply signal from this collaborative network will directly feed into a new resilient planning approach.

To enable a collaborative supply chain network, organizations must implement the following action plans:

- Collaboration is central to the second paradigm.
- Many tools can help companies put in place a collaborative supply chain network.
- To test the paradigm, organizations can run a pilot with a few chosen suppliers and customers and gain visibility into inventory, capacity unitization, forecasts, or real demand across the supply and demand network.

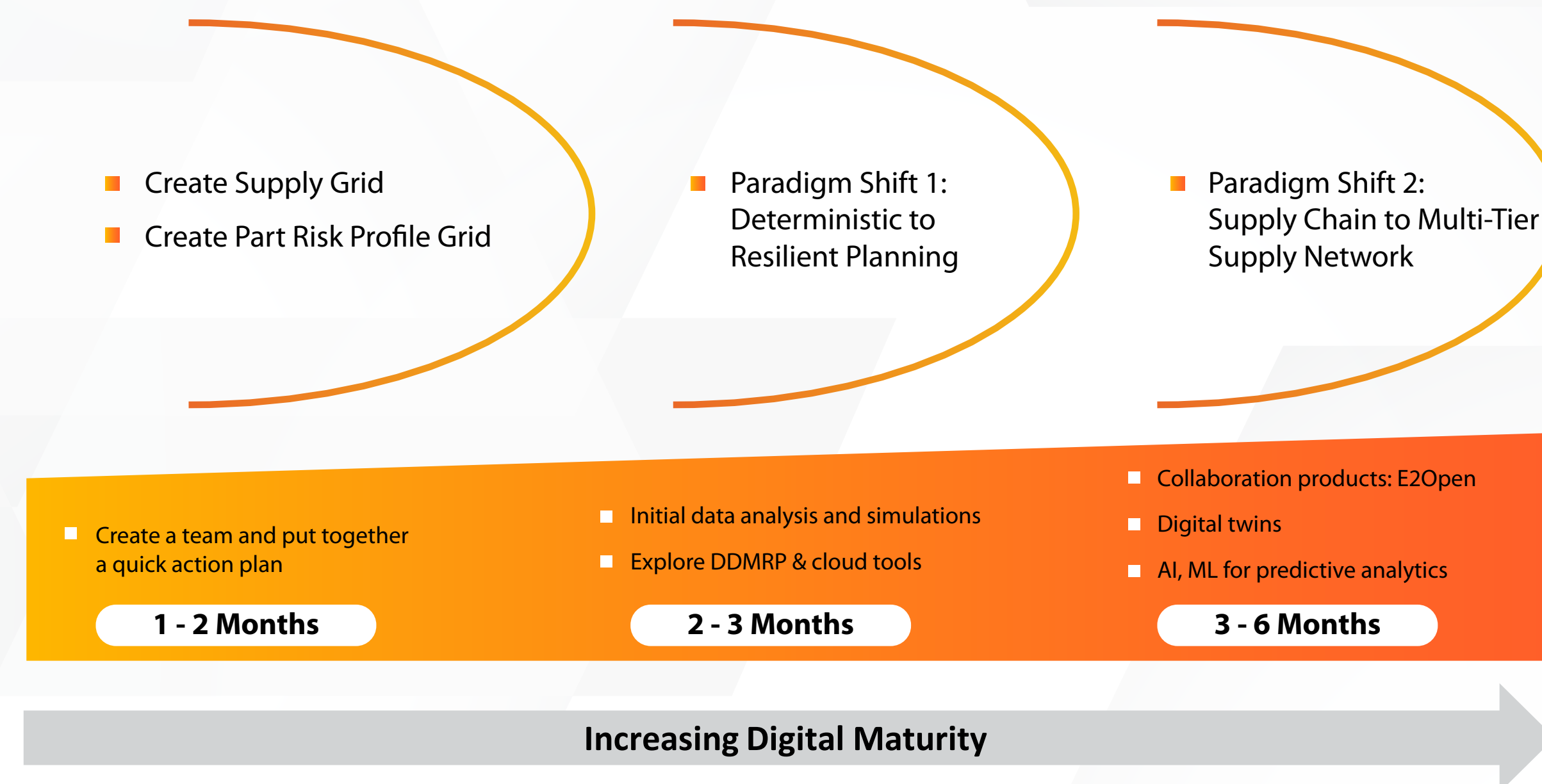


Figure 4: Developing resilient supply chains – A step-by-step approach



## Building Future-Proof Supply Chains

While no company's supply chain is protected completely from black swan events like COVID-19, organizations can certainly be better prepared by building strong foundations with a supply grid and parts criticality grid, as described above. Further, digital technologies and collaboration will help establish resilient networks.

The ongoing pandemic is an opportunity for companies to change and implement crucial paradigm shifts,

which were put on the back burner by top management due to lack of time or day-to-day business needs. This is a crucial time for auto and industrial organizations to pause, reflect, and take the right action to developing resilient and adaptive supply chain networks.





# About the **Authors**

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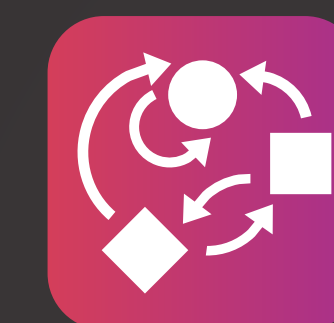
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