## Successfully Navigating Supply Chain Disruptions

Center for Automotive Research (CAR) Webinar















## Here with us today



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# Supply chain agility is the #1 business priority for companies over the next 1-2 years



Survey of Automotive and Industrial Manufacturing Clients<sup>1</sup>

(n=607)

% denotes those who selected high/very high priority for each item

1. Question: "What level of priority is your company giving to the following business areas over the next 1-2 years?" Survey Size: 607 respondents Source: PwC Global Manufacturing COO Pulse Survey 2021

## Supply chain disruptions are occurring with increased frequency Supply chain survival of disruptive events is considered a new norm for global business operations



Sources: <u>HIEC</u> "US-China Trade War and Impacts on the European Auto Industry"; <u>Carmichael Fischer</u> "The Effect of Trade Wars on the US Automotive Industry"; <u>Statista</u> "Cars Sold Worldwide Between 2010 and 2021"; PwC Analysis

Global automotive production has declined ~16% due to COVID and the global chip shortage, and a recovery is not expected until late 2022



#### Based on industry forecasts, the global chip shortage and supply chain disruptions will result in ~\$260B - \$300B<sup>1</sup> lost revenue for automotive OEMs globally in 2021 and will likely persist through the end of 2022

1. Assumes weighted average global retail price of \$30K / vehicle and average dealership new vehicle gross margins of 8-10%. Sources: Automotive News, Moody's, IHS Markit; J.D. Power, MarketWatch, Statista, MercerCapital, and PwC Autofacts analysis

The global microchip shortage was driven by massive demand shifts during COVID and long lead times for new orders and new capacity

### Semiconductor 2020 revenue by Customer Industry



Automotive industry has low purchasing power accounting for only 8% of total sales

### **Chip Shortage Root Causes**

- - Covid-19 related demand shock and drastic reduction in automotive orders



Rising demand in consumer electronics and other industries during Covid-19



Investment reluctance in old technology among chip producers



Export curbs on US equipment to Asian foundries manufacturing for Huawei



Downtime of a large-scale production facility causing additional bottlenecks

Sources: <u>SIA</u> "Strengthening the global semiconductor supply chain in an uncertain era"; <u>IDC</u> "PC Demand Remained Strong in the Second Quarter Amid Early Signs that Market Conditions may be Cooling"; PwC Analysis

Beyond microchips, there are several other critical automotive materials that may be at risk of future disruptions



#### Other Materials at Risk Due to

- Limited Supply
- Expected automotive demand growth
- Expected demand growth from other industries

Important that OEMs and Suppliers Identify the Materials within their systems and sub-systems that are Critical

In addition to the examples above, other critical materials such as resin, neodymium, and copper pose a supply chain risk

Sources: <u>Automotive World</u> "Survey Reveals Aluminum Remains Fastest Growing Material"; <u>BBC</u> "Why the world is running out of sand"; <u>BusinessWire</u> "Global Construction Market Expected to Reach \$16.6 Trillion by 2025, Growing at a CAGR of 7%"; <u>Reuters</u> "Shortages flagged for EV materials lithium and cobalt"; <u>NS Energy</u> "Profiling the world's largest cobalt-producing countries"; <u>NS Energy</u> "Lithium prices could triple by 2030 as demand outpaces supply"; <u>PR Newswire</u> "Graphite Market to hit \$36,889.1 Mn Revenue by 2030"; <u>The Car Guide</u> "Is Rubber the Next Shortage Threatening the Auto Industry?"; PwC Analysis

## Industry leaders are employing advanced supply chain risk management methods to create supply chain resilience

Supply Chain Risk Management - Maturity Model

		Level 3: Agility	Decision Support
	Level 2: Enterprise Visibility	Smart Control Tower to sense & respond based on real time data	<ul> <li>based on leading indicators</li> <li>Predictive supply chain risk management capabilities</li> </ul>
Level 1: Basic Visibility	Harmonized Enterprise Supply Chain Visibility	Real time demand sensing and risk apprais planning	<ul> <li>Proactive risk management of all critical supply chains</li> </ul>
Ad-hoc & Reactive leveraging SC portals	<ul> <li>Single consolidated view into enterprise supply chain risks</li> </ul>	<ul> <li>risk scenario planning</li> <li>Automated decision rules and algorithms for re-allocating</li> </ul>	<ul> <li>New sources of supply for critical materials and technologies</li> </ul>
<ul> <li>Basic visibility to tier-1 SC risks using drill-down dashboards</li> </ul>	<ul> <li>Integrated forecasting beyond tier-1 suppliers</li> </ul>	inventory and production scheduling	<ul> <li>Integrated risk simulation and SIOP processes for Tier-N suppliers</li> </ul>
<ul> <li>Ad-hoc and reactive supply chain risk management methods</li> </ul>	<ul> <li>Ad-hoc management of logistics disruptions based upon current conditions</li> </ul>	<ul> <li>Integrated forecasting through Tier-N suppliers</li> </ul>	<ul> <li>Proactive and dynamic logistics rerouting based upon real-time</li> </ul>
<ul> <li>No logistics contingency or risk mitigation plans</li> </ul>	conditions	<ul> <li>Logistics plans and operations include multiple routings, carriers</li> </ul>	data inputs
Supply Chain Risk Management Maturity			

#### Basic

Advanced

Level 4: Resilience

**Predictive Analytics and** 

## Creating E2E visibility, agility, and resilience are critical to mitigate the risk of future disruptions



How mature is your organization in managing supply chain risks?

Supply Chain Risk Management - Maturity Model

Visibility

Enterprise

Visibility

Level 1: Basic Visibility

Ad-hoc & Reactive leveraging supply chain portals

#### Level 2: Enterprise Smart Control Tower to Sense & **Respond** based Harmonized on real time data **Supply Chain**

Level 3: Agility

Level 4: Resilience

**Predictive** 

**Analytics and Decision Support** based on leading indicators

Supply Chain Risk Management Maturity

**Advanced** 

# Questions?

## Please submit questions using the Q&A function on your toolbar

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