

Building Resilient Supply Chain Capabilities

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working world

Agenda

Building Resilient Supply Chain Capabilities

1. Introduction
2. Three Stages of Disruption Handling
3. Q&A

Speaker Introduction



Nelson Chow

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- ▶ President of Institute for Supply Management Hong Kong (ISM-HK)
- ▶ Part-time Lecturer and Programme Advisor on Master Global Supply Chain Programme for leading universities
- ▶ Extensive experience in the fields of large scale supply chain and procurement transformations

An increasing number of unexpected disruptions are hitting supply chains and impacting overall business performance

Is your supply chain **agile** and **prepared** to withstand disruptions?

1 What are the top 3 disruptors impacting your company?

2 What are you doing to address those pressures?

3 How are you progressing?

DISRUPTORS

Trade Wars
Cyber Attacks
natural disasters
Pandemic Economy
Technology
Regulation
Tax policy changes
costs
Distressed suppliers
digital
BREXIT
Workforce talent
Changing Consumer
RESILIENCY
Climate Change

As a result, organisations have become laser focused on resiliency



Strict covid-19 lockdowns in different parts of China are disrupting local and global supply chains e.g. **automobile and electronic raw material shortage**, **manufacturing disruption due to port lockdown**



War in Ukraine is adversely impacting agriculture, energy, semiconductor and weapons supply chains in Asia-Pacific



Crude oil sanction in Russia has put pressure on **energy importing** countries in APAC



The Biden Resilient Supply Chains report is recommending **\$50bn in funding to establish a resiliency program** aimed at monitoring Supply Chain risks and vulnerabilities

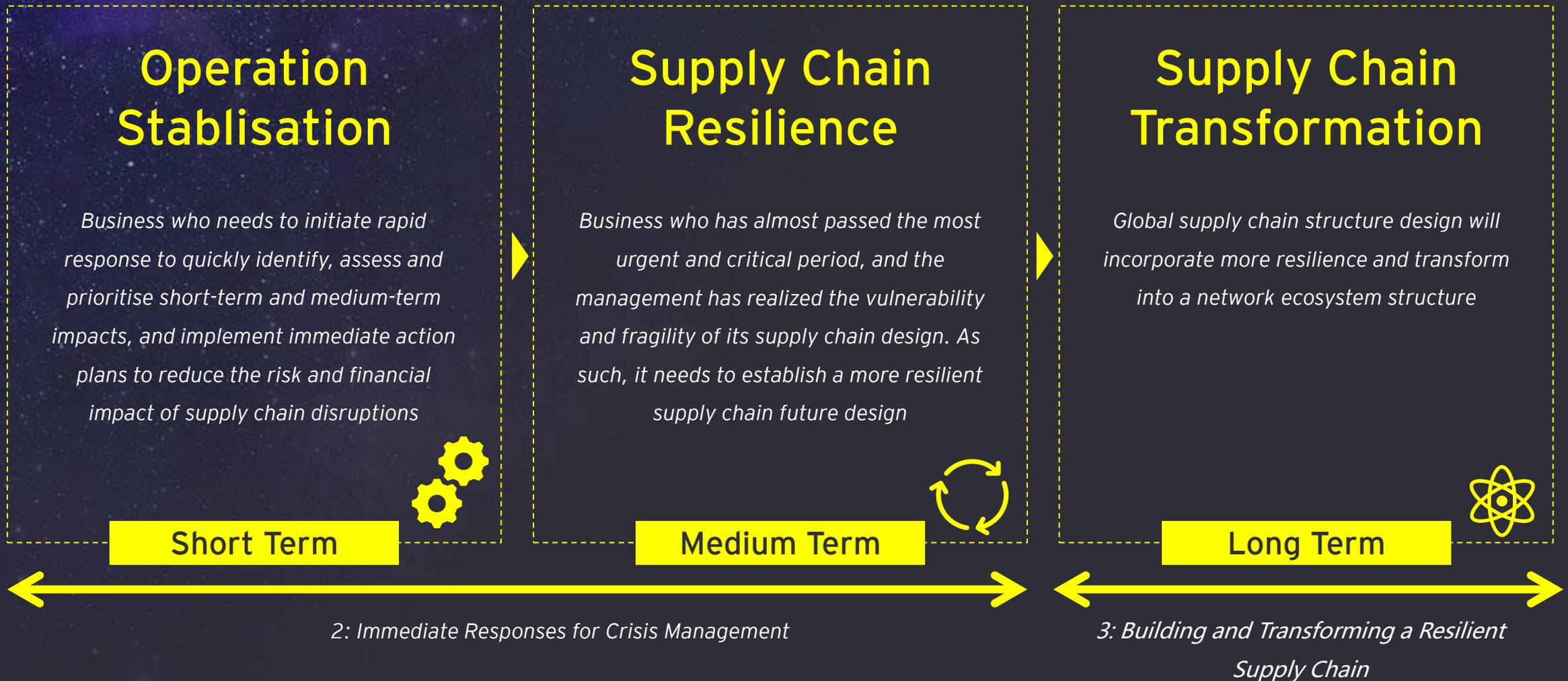


In a EY survey of **>200** senior SC executives, **visibility** and **resilience** are primary issues in supply chains; Increased visibility is the **No.1** priority over the next **12-36 months**

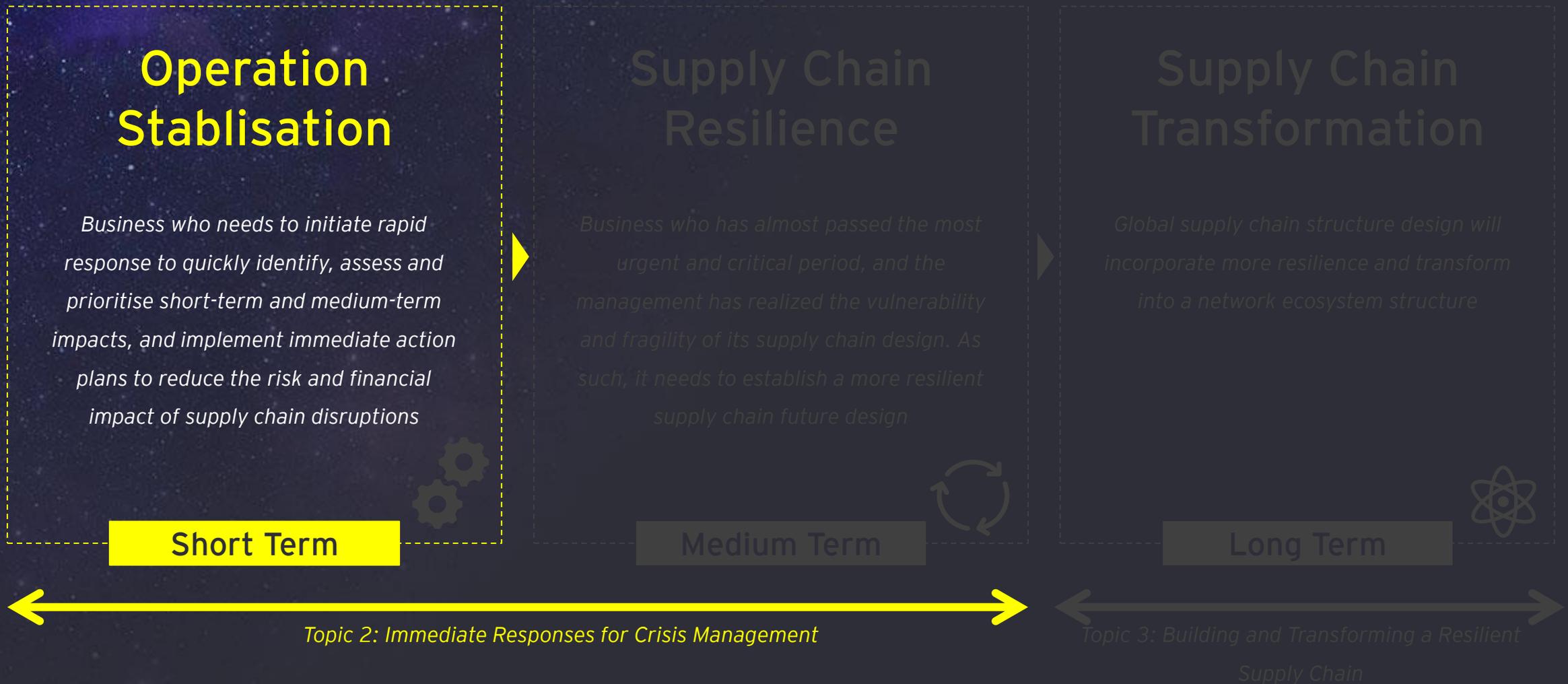


Federal and state government **purchasing requirements are changing**. China, EU, the US and Japan have launched plans to attract critical production on shore

How should companies respond to disruptions?

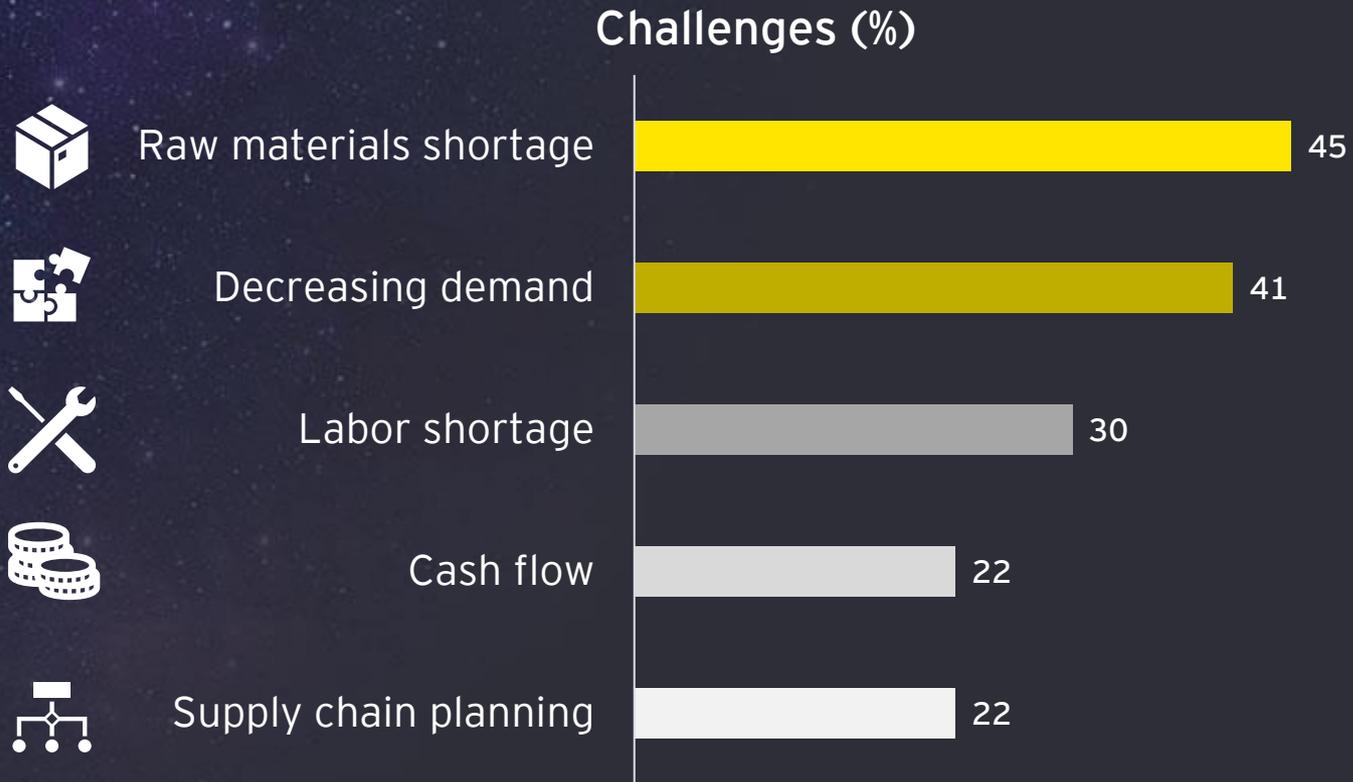


How should companies respond to disruptions?



Global events pose a series of business challenges to enterprises all over the world

Operation
Stabilisation



Others

Change of enterprise culture and employees' sense of belonging

Lack of collaboration and cohesion in enterprises

Changing customers' demands

Risks related to information security, fraud and data theft

1 Source: McKinsey, 2020

Case study: How a global energy company coped with COVID-19

Prepare to improve resilience: crisis management



Develop a crisis management framework and an integrated and cross-functional work group to manage specific work processes (such as communication, legal, financial and operations). EY supported the client to develop a clear framework with well defined roles and responsibilities

Risk responding and scenarios planning

- Leverage EY risk assessment and pressure testing manuals and capabilities to define risk scenarios quickly, including risk alleviation action plans
- Recommend actions plans for the client based on our experience in previous pandemics and COVID-19

For Example:

- Increase **protective measures** and resume work and production
- **Shut down some production lines** or projects
- **Online business** development
- **Intelligent** office
- Recommend **cash flow plans** for the next 30 days



1

Crisis management

- EY has extensive experience in business, finance, supply chain, human resources, taxation and law to quickly assess the entire supply base, customer base and short-term financial impact risks

For Example:

- Source **alternative** labors and suppliers
- **Renegotiate** supplier agreement: leverage existing situation to obtain better prices and terms
- Propose payment plans to maintain the supply of **key business products**
- Develop financial and **risk models**



2

Communication

- EY consulting services provide experience in labor mitigation plans, employee engagement under the pandemic and relevant stakeholder communication plans

For Example:

- Retain and obtain talents, and use **virtual teams that work and lead remotely**



3

Resilience is not inherent in today's supply chain structures

Traditional supply chain structure design focuses more on:

Efficiency

Cost Effectiveness

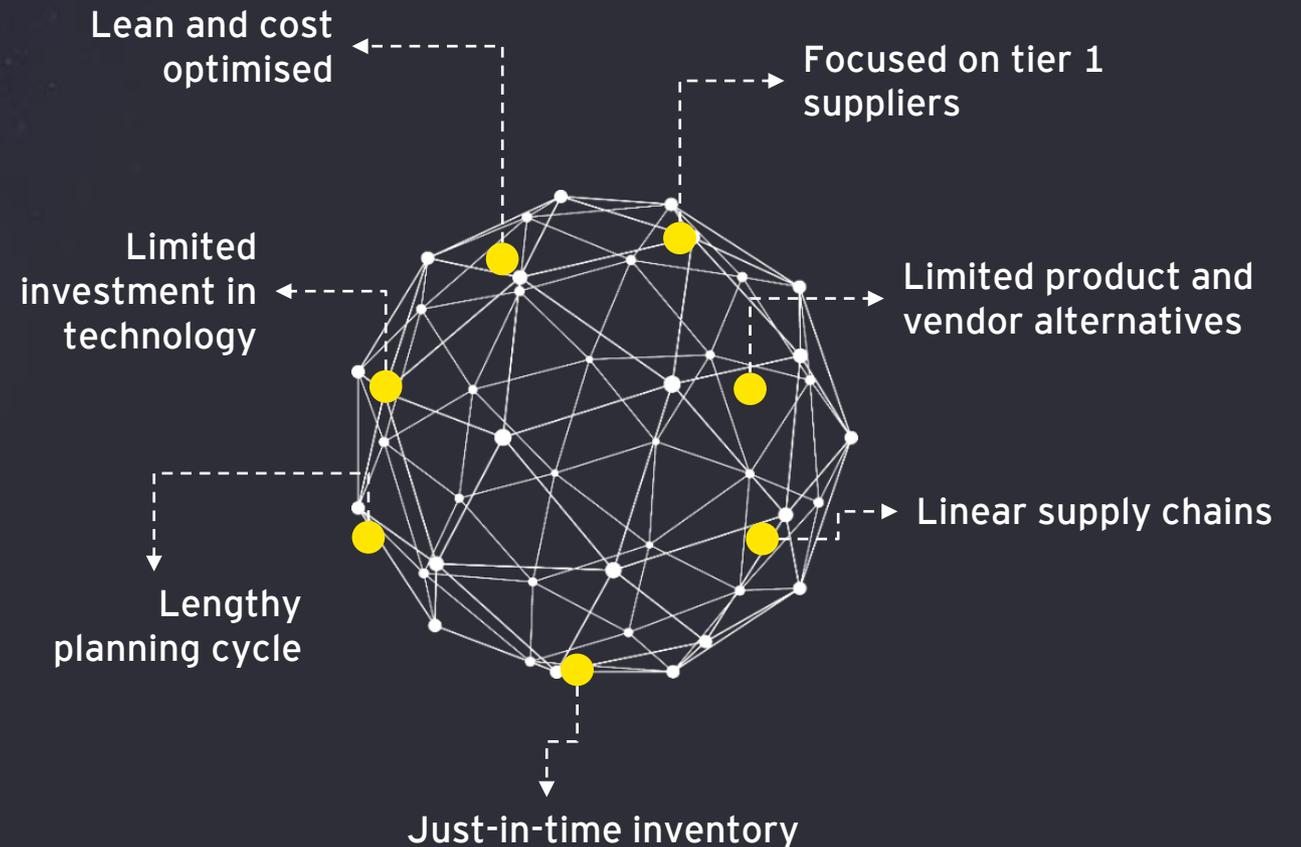
Quality Control

The current supply chain possess the below characteristics:

- ▶ Geographic concentration
- ▶ Vendor concentration
- ▶ Low levels of safety stock
- ▶ Limited flexibility
- ▶ Poor data integrity, quality and security
- ▶ Outdated contingency plans
- ▶ Untested crisis incident management
- ▶ Untested crisis management approach



Traditional global supply chain structures are not equipped to effectively cope with the increasing numbers of unplanned disruptions



How should companies respond to disruptions?



Supply chain resilience assessment and strategic framework



Supply chain risk assessment

End-to-end supply chain risk assessment covers demand to supply, operation performance, global trade impact, customers and people impact, etc.

Define crisis scenarios

Conduct stress tests and assess the supply chain's capability in responding to disruption and the severity of the impacted current state

Develop potential responses

Define response triggers to prevent impact caused by crisis, or use agile response to reduce potential impact on employees, processes and technologies

Identify supply chain issues

Use existing crisis management policies to determine gaps in the existing supply chain model, including qualitative and quantitative impact

Simulate the effectiveness of responses

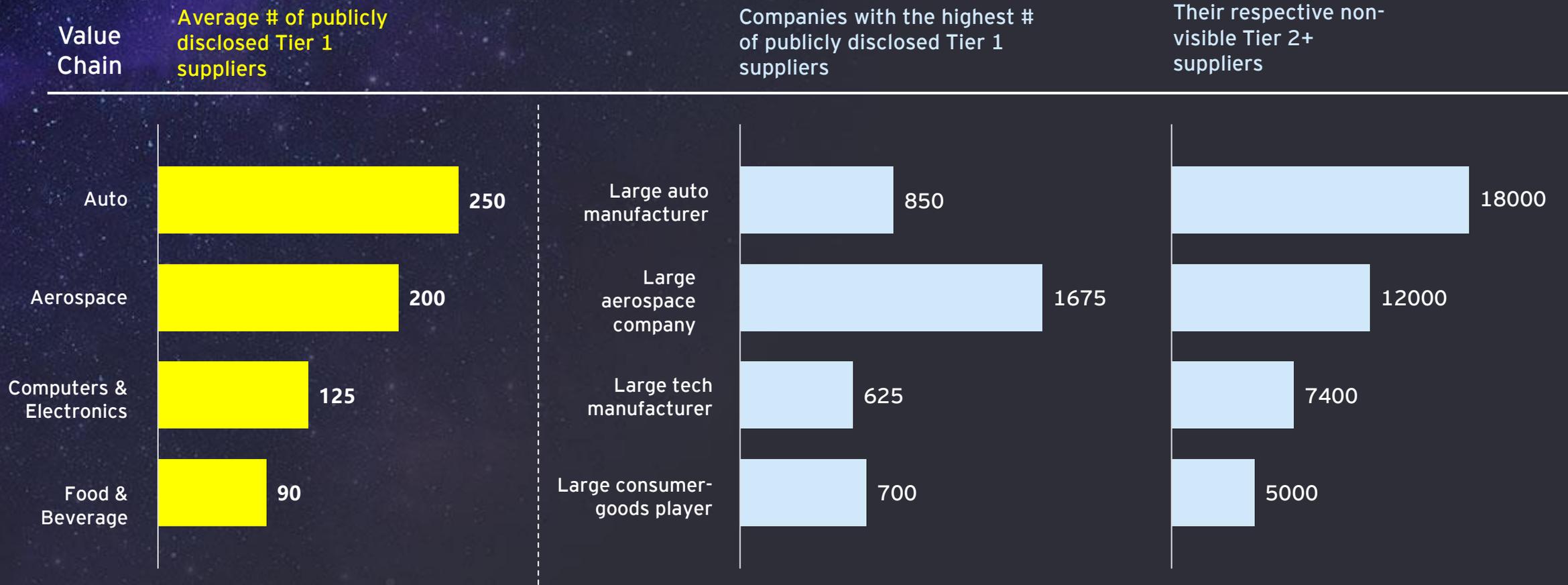
Conduct crisis scenario simulations to test the effectiveness and measure the success of the defined responding measures

Develop business case for intervention

Develop business case for intervention and implement measures that are proven to be able to respond to crisis, including new policies, solutions and value propositions



Nowadays, the global value chain is extremely complex, which involves various suppliers from raw materials to finished goods



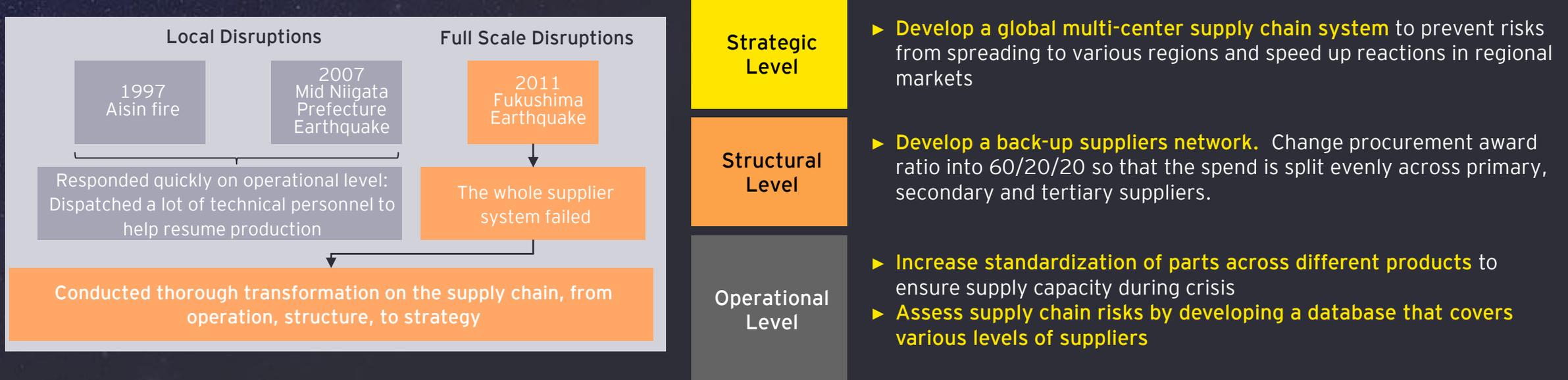
Therefore, by improving the end-to-end visibility of the supply chain, companies can better manage and reduce the overall supply chain risks

Case study: A multinational automobile manufacturer transformed and improved supply chain resilience and financial performance

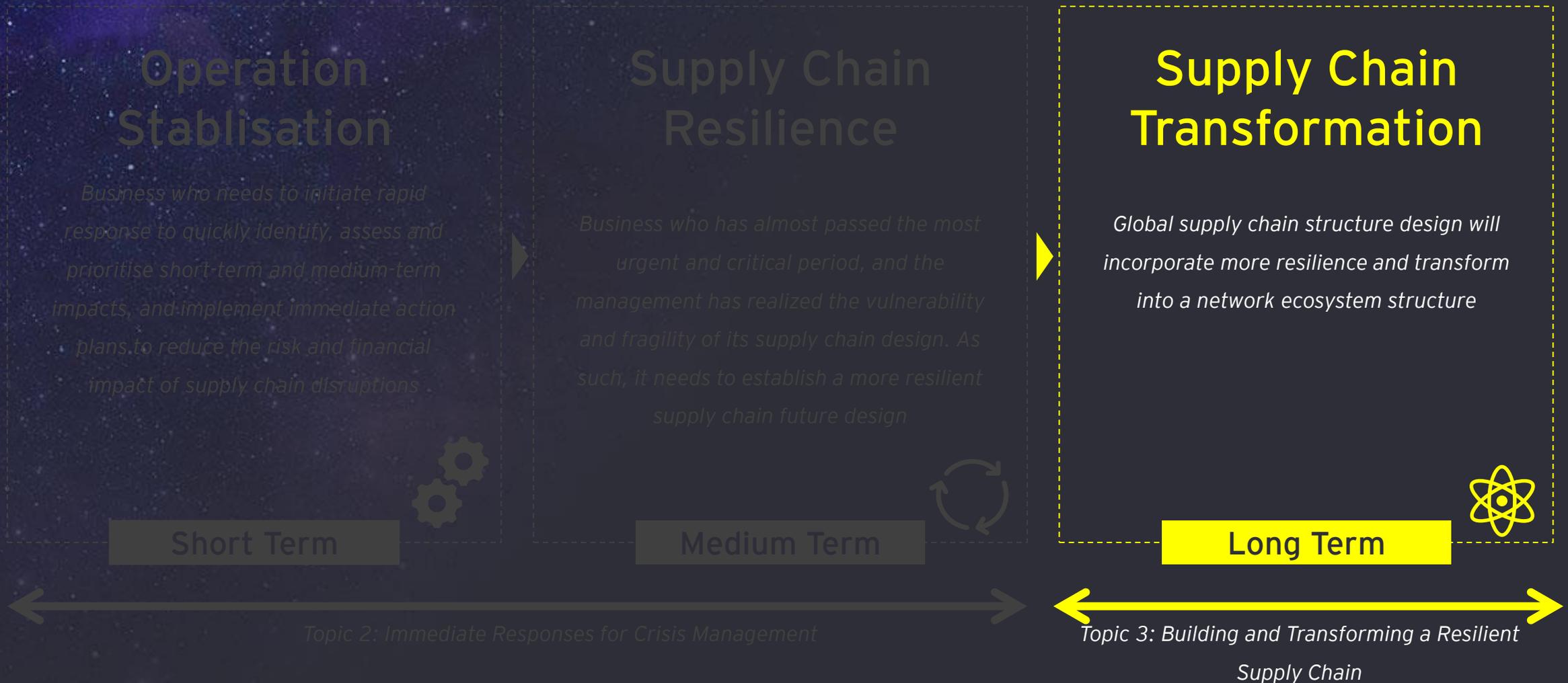


Response to crisis triggered strategic thinking and decision making

- JIT (Just-in-time) is the core competency of supply chain. However, this model is also more prone to supply chain failures during disruptive times
- Previous crisis responses have never prompted the company to reflect on its operation strategy, and it only fixed its operation issues
- The large scale disruptive impact caused by the 2016 Fukushima earthquake eventually prompted the company to reflect on its strategy, and transformed its supply chain



How should companies respond to disruptions?



More and more companies are starting to invest in digital transformation to prepare for future disruptions



Average consumer-business interaction model(%)

Global

Digital trend grew quickly in the recent **three** years



Both experimentation with and investment in digital technologies have played a key role in helping companies navigate successfully through the crisis

Were first in their industries to experiment with new technologies during the crisis



Were not first to experiment with new technologies during the crisis



Invested more than industry peers in digital-related capital expenditures



Did not invest more than industry peers in digital-related capital expenditures



Digital transformation can help companies to build an efficient and integrated supply chain. Besides, it is also an indispensable element for building a resilient supply chain

Looking beyond: Future global supply chain new trends post disruption



Network Supply Chain Ecosystem

Network supply chain ecosystem is the future. The network structure is flexible and can act faster to disruptions. Each network node can be supplied individually or jointly



From Globalisation to Regionalisation

Automation and 3D-printing technologies will reduce product lead time, improve product personalisation, which will move the production closer to market



Cost is Not the Only Consideration

“Cost” will not be the only consideration in supply chain design. Supply chain complexity and resilience should also be considered to balance the cost and risks



Smart Supply Chain

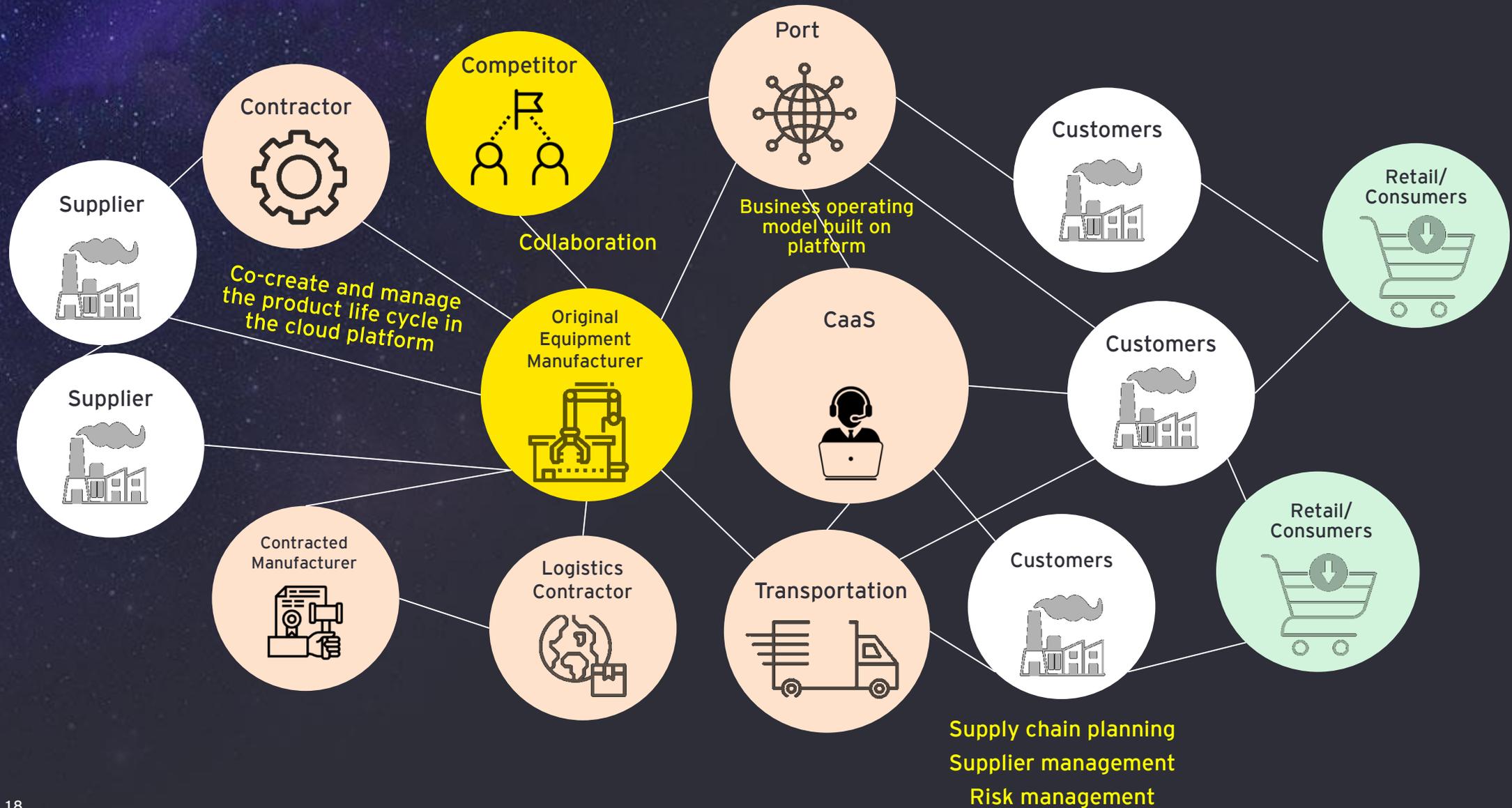
Flexibility, agility and intelligence will become important requirements for future supply chain. Creating a smart supply chain system empowered by big data, network sharing, and intelligent collaboration is the future



Supply Chain Sustainability

Consumers and companies focus on building a sustainable supply chain system. The entire process of product acquisition, processing, packaging, warehousing, transportation, use, and disposal should have minimal impact on the environment and with high resource efficiency

The supply chain will develop into a resilient network structure



What if?

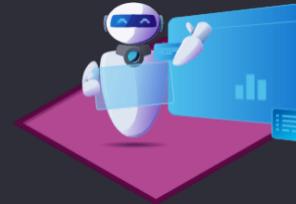
...all industries were to converge into one?



...products and parts re-ordered themselves automatically?



...bots negotiate on behalf of the company?



...every manufacturer becomes a service company?



...products deliver themselves without the need for freight services?



FUTURE OF TOMORROW

...algorithms outpace humans as product designers?



...products are produced at the source of consumption



...massive taxes are placed on ocean, air and land shipping due to climate change?



...100% of products' materials are required to be recyclable or re-usable?



How companies can transform their supply chain structure?

Visibility	Execution				E2E Supply Chain
Supply Chain Smart Maps 	Integrated Digital Planning 	Supply Side Optimisation 	Smart Factory 	Digital Fulfilment 	Agile Business Supply Chain 
<p>Provides insights through E2E quantitative analytics, benchmarking, and qualitative performance assessments. These insights identify the critical areas in which clients can increase performance and achieve their full supply chain potential.</p>	<p>Integrated Digital Planning - holistic E2E approach to align decision-making on operational, tactical and strategic planning levels and enable fast synchronized reaction to changes according to corporate objectives and customer needs.</p>	<p>Enable clients to assess their current supply base for optimization opportunities (consolidation, service alignment, etc.) and to implement effective supplier performance and risk management to update or maintain the optimal portfolio including understanding total delivery cost including taxes and duties.</p>	<p>Transformation of manufacturing performance enabled with digital assets and methods leveraging emerging technologies and EY's heritage of transformative Operational Excellence programs.</p>	<p>Reinvent supply footprint taking into account supply chain and tax aspects and make versus buy decisions through to digital transformation of logistics and warehouse operations with the latest process and technology application.</p>	<p>The application of enterprise SC technology platforms such as SAP, Kinaxis and JDA across the SCR framework to create a more flexible and agile business - able to respond more quickly whether to market issues or business acquisitions or disposals. All designed and implemented in an agile way.</p>

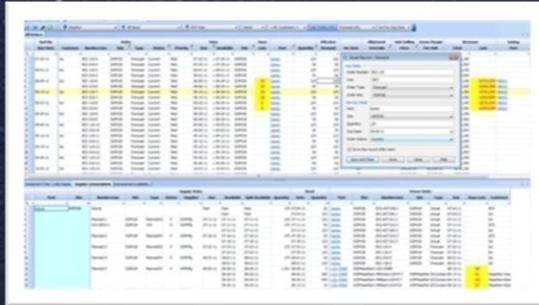
Digital supply chain solution - smart analytics



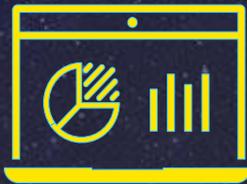
The company's supply chain leveraged digital tools to achieve efficient crisis management during COVID-19. With the regional distribution center in Wuhan closed, its supply chain maintained normal operation and ensured stable supply for markets surrounding Hubei



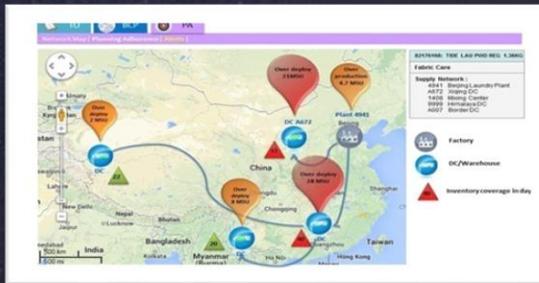
Supply chain simulation



- ▶ Wuhan regional distribution center, one of the company's five regional distribution centers, closed for a long time due to COVID-19
- ▶ Planning center of the company responded quickly to leverage Rapid Response, a digital tool, to conduct simulation analysis and found the best solution
- ▶ Based on the best solution and real situation, the company coordinated with suppliers, factories and the other 4 distribution centers to achieve supply chain coordination and ensure the supply for markets surrounding Hubei



Supply chain visualization



- ▶ The company's timely awareness of the impact of COVID-19 on its supply chain and rapid response depends on its transparent and visual end-to-end supply chain management
- ▶ Based on real-time inventory data, production data and raw material supply data, combined with actual constraints, the company can quickly perform simulation analysis on the impact of COVID-19, and mobilize resources to make rapid responses and corrections



Supply chain traceability



- ▶ The company uses a real-time traceability system to ensure the execution of the response measures
- ▶ Through the implementation of the traceability system, the planning center of the company can clearly understand progress and make timely judgments and adjustments in response to emergencies

Digital supply chain solution - cost optimisation



Deep dive for each focus area

- 1 **Portfolio Complexity**
 - Rationalize parts to consolidated supplier base and negotiate increased volume to take cost out of purchases
- 2 **Sourcing Strategy**
 - Sourcing SKU list simplification
 - Demand drivers optimization
 - Implementation of should-cost modelling
- 3 **Footprint Strategy**
 - Optimize product flow path
 - Identify excess capacity in network
 - Update and optimize SLAs with third party providers
- 4 **Planning Synchronisation**
 - Enabling digital planning tools
 - Visibility - focus on predictive analytics and proactive issue avoidance
- 5 **Aftermarket Services**
 - Proactive fulfilment - right part, at the right place, at the right time;
 - Synchronized repair work bench-process planning with probabilistic demand forecasts
- 6 **Supply Chain Operating Model**
 - RPA for key repetitive tasks (e.g. stockout management)
 - E2E KPIs



Cost reduction tree to quantify and target opportunity

P&L Category	Initiatives to reduce costs	Cost reduction potential	NOW	NEXT	BEYOND
			0-3 Months	3-6 Months	> 6 Months
I Raw Materials and Packaging	Engineering standardization & simplification	●		✓	
	Value Engineering, Design to Value - efficient build/ design of products to optimize margin	●		✓	
	Optimize batch quantity, pack size, and order quantity of raw materials	●	✓	✓	
	SKU/ Parts reduction & rationalization	●	✓	✓	✓
II Manufacturing / Cost Conversion	Optimize inventory parameters and stocking	●	✓	✓	
	Rationalize suppliers and leverage increased volume spend with fewer suppliers	●	✓	✓	✓
	Assess suppliers for supply managed inventory (SMI) opportunities	●	✓		
	Cross-Market simplification - e.g. multi-market labeling to reduce number of SKUs and increase inventory flexibility	●		✓	
III Planning and SC Management	In-house engineering vs. 3 rd Party Engineering	●		✓	
	Reduce training time for personnel due to standard spec/lower part proliferation	●		✓	
	Optimize production schedule by reducing changeovers	●		✓	✓
	Engineer products to run on the same technology and/or have flexibility to run across multiple technologies	●			✓
IV Logistics	Late stage differentiation strategy for similar products	●		✓	
	Define 'guidelines' for future NPD to avoid complexity proliferation (e.g. promotional guides, Ingredients, etc.)	●	✓		
	Optimize warehouse capacity w/ SKU rationalization	●		✓	
	Reduce transportation cost by rationalizing suppliers	●		✓	✓

Note: Size of P&L category box is not indicative of magnitude of P&L cost

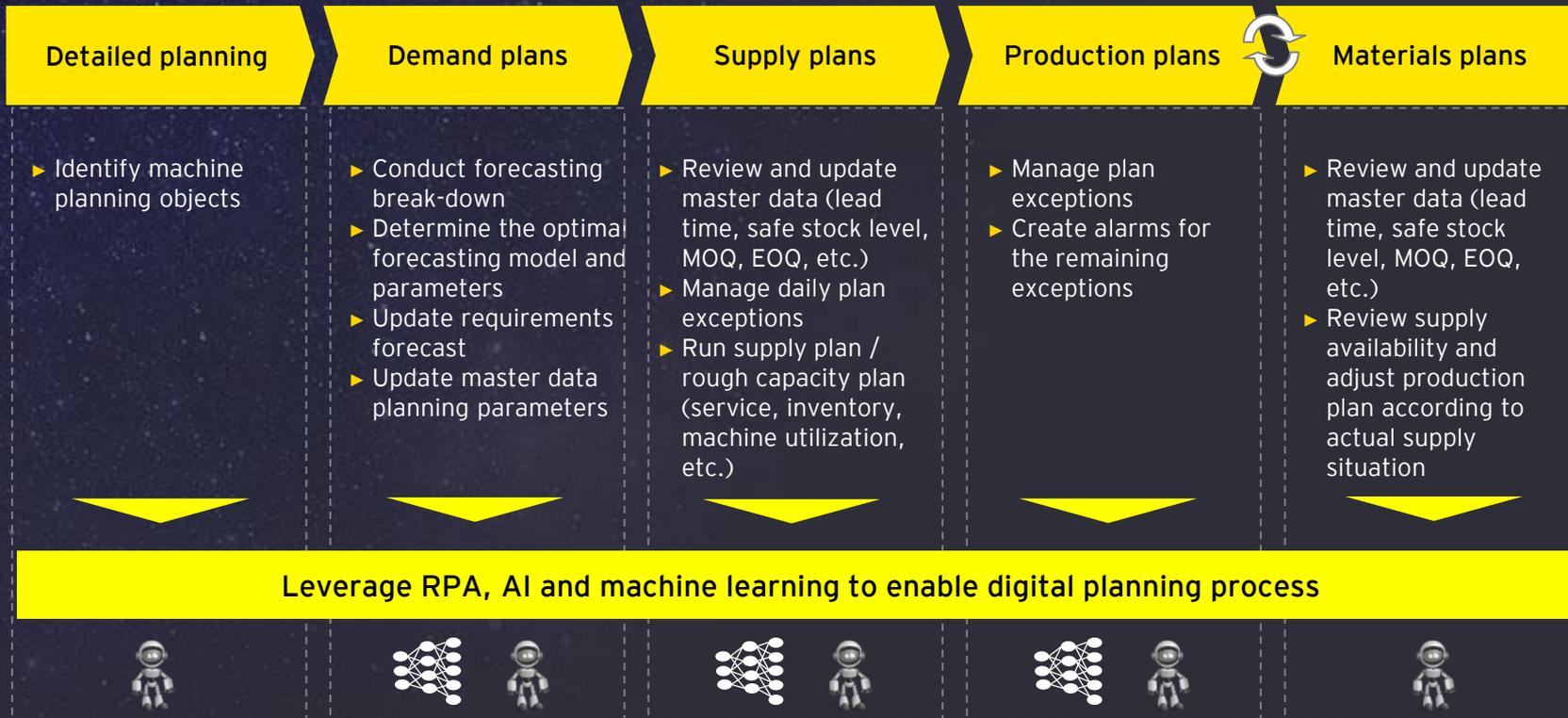
Each focus area delivers a significant supply chain cost savings. Together, they deliver a complete cost savings package across the supply chain and prime the business for sustainable success.

Digital supply chain solution - Integrated Digital Planning

Use automation and AI (machine learning) to enhance efficiency of planning process



More and more daily tasks will be automated through continuous learning, which can free planners from tedious tasks and turn to value-adding work



Potential benefits of automation and AI



More efficient cross-process supply chain planning **based on exceptions** and **value orientation**
Drive response and focus on **high value-adding work**



RPA (robotic process automation)



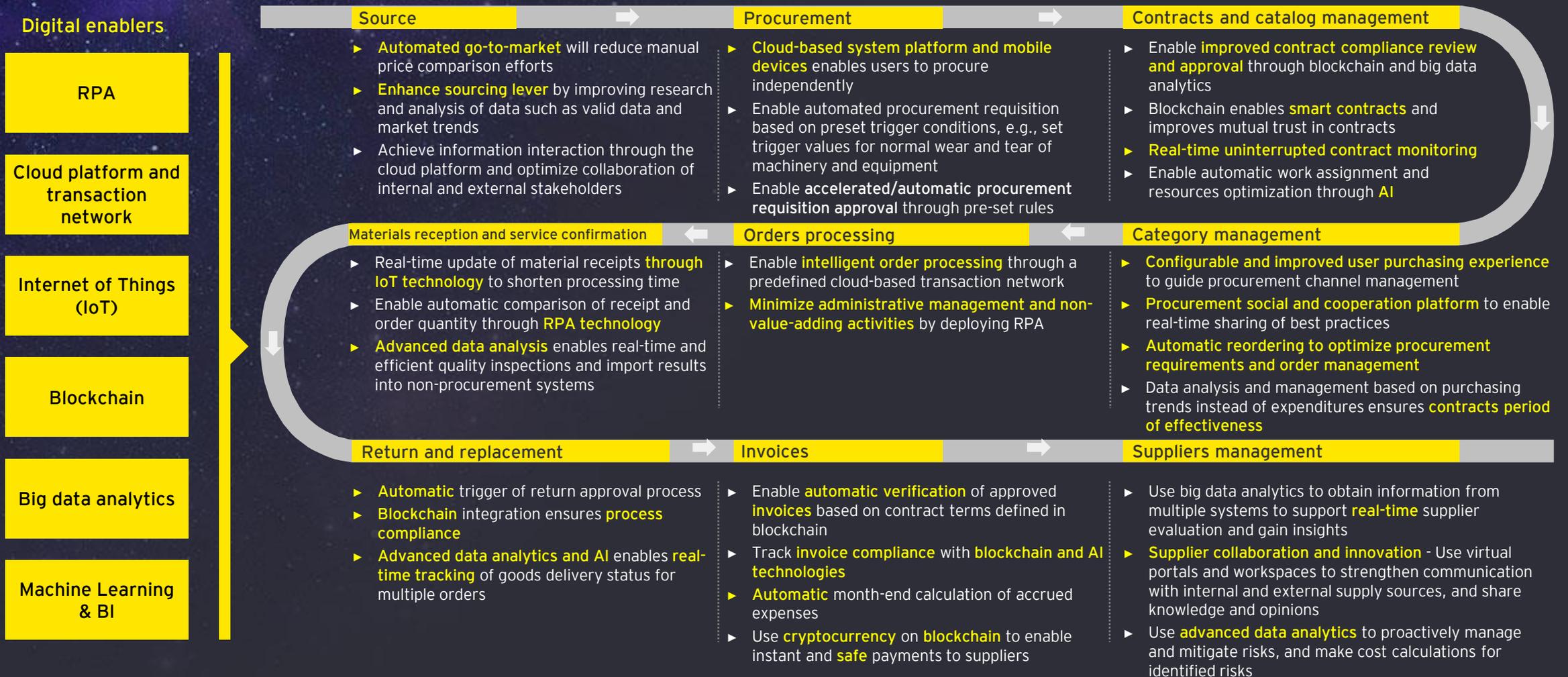
AI (artificial intelligence, machine learning)

Digital supply chain solution - operation optimisation

Digital procurement platform technology



More efficient business processing capabilities, higher data visibility and new business coordination method



Case study: A smart factory for a Chinese electrical appliance

Develop smart resilient supply chain driven by adopting cutting-edge technologies



The company started its digital transformation in 2012. The goal was to digitize its supply chain, including R&D, planning, manufacturing, procurement, quality, logistics and customer service and achieve a fully integrated supply chain. The tower factory demonstrates its digital innovation outcomes



Cutting-edge technologies:

Built smart factory by combining digital operation, intelligent scheduling, industrial AI, full-process digital logistics management and Internet data SaaS platform on Industrial Internet platform

- ▶ Leveraged 5G technology, smart gateway, digital simulation and other advanced technologies and equipment to enable industrial data interoperability
- ▶ Leveraged big data and AI to analyze and generate market insights
- ▶ Fully deployed industrial robots, automatic delivery and automatic production lines



Management ideas:

- ▶ Actively promoted "T-4" and "T+3" models, greatly reduced inventory, improved delivery efficiency, and transformed from inventory-based production to small-batch customized production
- ▶ Promoted human-machine collaboration, humans control and monitor production, while robots undertake tedious work
- ▶ Carried out "358" management mechanism to quickly speed up response to failures



Labor efficiency increased by **28%**



Unit cost lowered by **14%**



Order delivery time shortened by **56%**

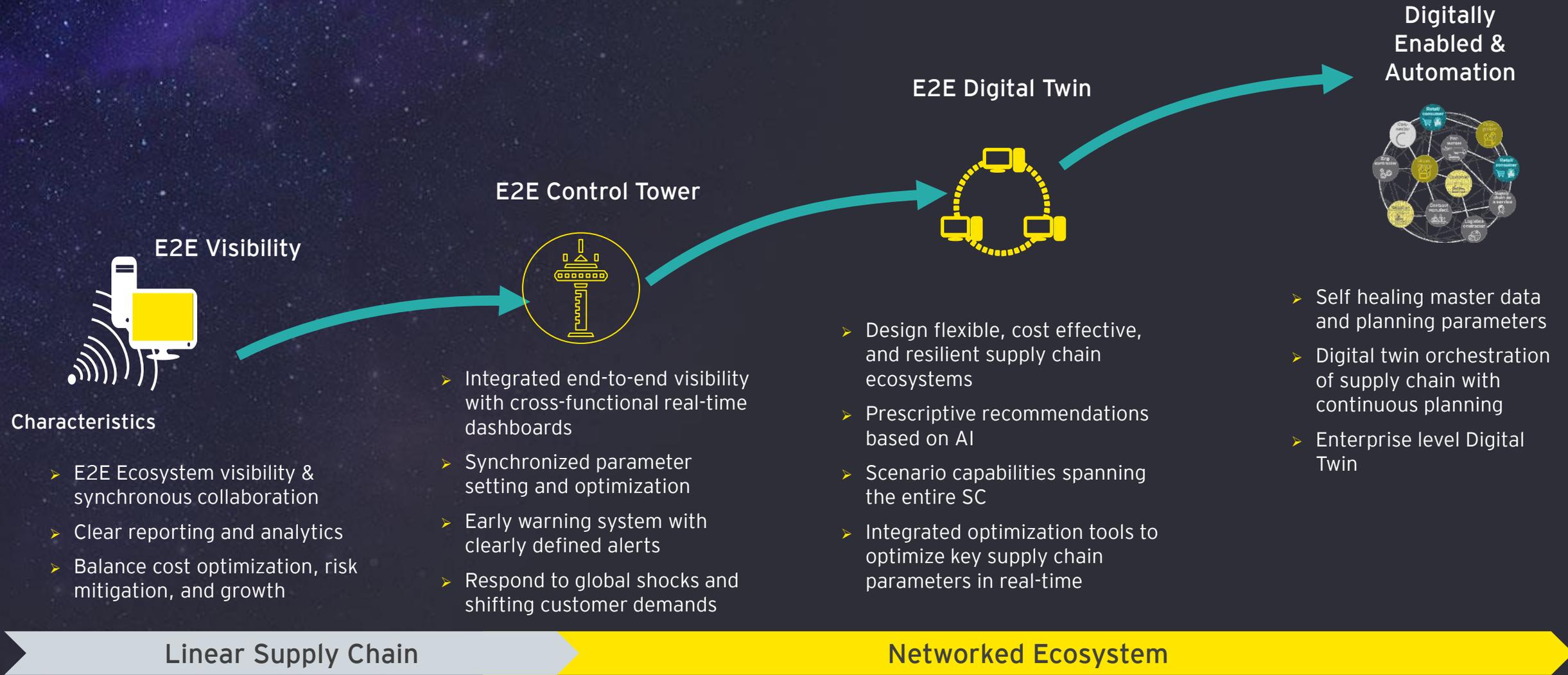


Capability on small-batch customization from appearance to functions

Supply Chain Reinvention - E2E Visibility

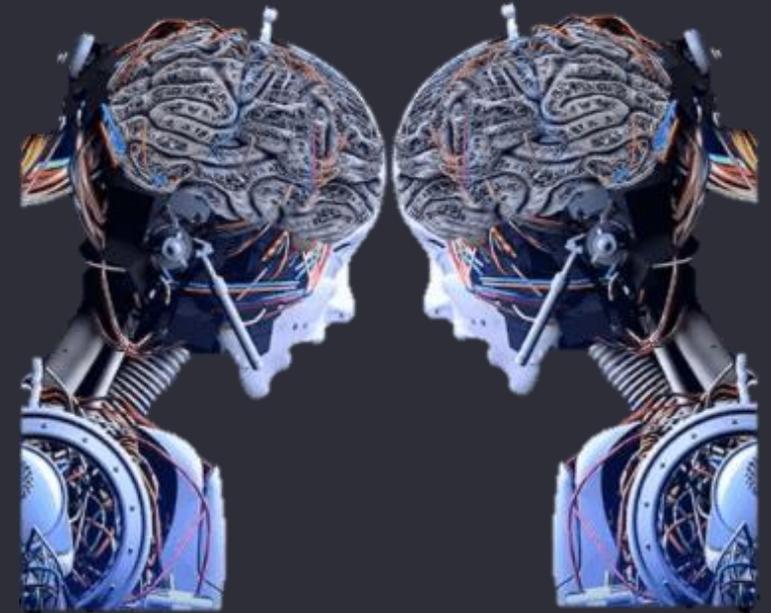
Supply chain visibility can help companies transform to self-correcting ecosystems, therefore creating flexibility

Visibility	Execution	E2E Supply Chain
<p>End-to-end visibility across the supply chain, from raw materials to finished goods, enabling real-time monitoring and analysis.</p>	<p>Automated execution of supply chain processes, such as procurement, production, and distribution, based on data-driven insights.</p>	<p>Integration of visibility and execution data to create a comprehensive digital twin of the supply chain, enabling predictive analytics and optimization.</p>



Leverage digital twins in supply chain management

- Digital twin is a virtual model of the physical supply chain, with a digital copy of each process
- Dynamic model of the connected equipment in the end-to-end supply chain
- It is not necessarily a 3D graphic representation - it reflects the behavior of the equipment, the factory or the entire process
- It enables you to run parallel versions of the supply network containing the same supply entities, parameters and financial goals
- Digital twin connects data from various sources and systems throughout the supply chain, analyzes data to discover problems, and responds to support prescriptive decisions



Supply Chain Reinvention - E2E Visibility

End-to-end control tower - supply chain risk AI control

Category	Function
Supply Chain Control Tower	Operational Pulse
Supply Chain Risk Management	Supply Chain Optimization
Supply Chain Analytics	Supply Chain Collaboration
Supply Chain Sustainability	Supply Chain Compliance
Supply Chain Innovation	Supply Chain Resilience

Supply Chain Control Tower and Digital Twin

- Vital to having an accurate up to date view of end-to-end supply chain
- Starts with end-to-end view of demand, inventory and supply (factories and suppliers)
- Over-lay global and local events data such as pandemic, geopolitical, economic or natural disasters
- Full digital twin allows for scenario modelling to assess and determine the right course of action

Supply Chain Control Tower



Control Tower Analytics

Operational Pulse

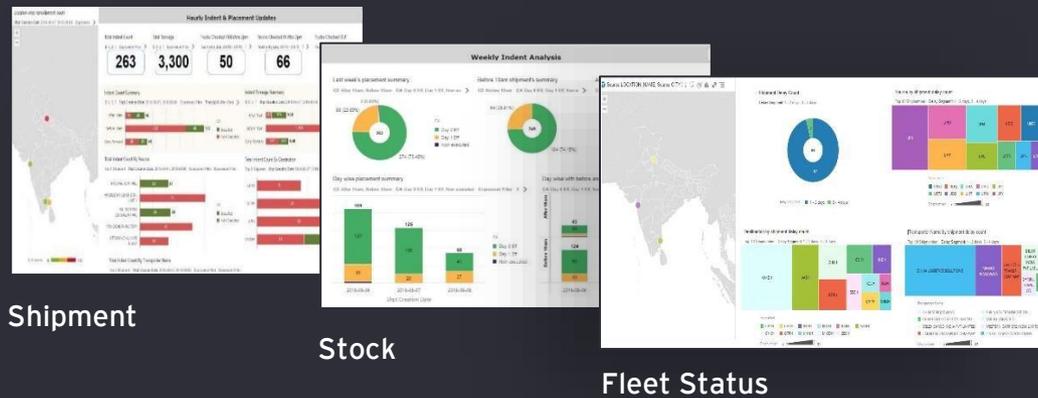


- ▶ Easy Visualisation
- ▶ Onestop Solution
- ▶ Data Integration
- ▶ Report Automation
- ▶ Trend Analytics

BENEFITS

- ✓ Visibility of current state of supply chain
- ✓ Incident monitoring and reporting enables rapid well designed responses in the event of crisis
- ✓ Agile response to day to day frequent but low impact issues - port strikes, production line shut downs, etc.
- ✓ Improved major event responsiveness with crisis response based on modelled scenarios
- ✓ Improved operational excellence

Covering...



These measures are updated every hour. Thus giving a real-time picture of every location's performance.

Supply chains should be reshaped by considering the broader global landscape, national strategies and new opportunities

Dual circulation economy

Development of emerging technologies

Belt and Road overseas economic and trade cooperation

Capital, climate change, geopolitics and population factors

Enterprise missions and roles

Focus vs Diversification

Internationalisation management

Enterprise development strategy and industrial boundaries

Supply chain is the core competence of enterprises

- ▶ How to switch from the old era to the new world?
- ▶ How to turn around in the rapidly changing market?
- ▶ In an era with frequent black swan events, how should companies actively respond and be an agile and resilient enterprise?

Summary

Enterprises should **actively monitor** potential internal and external crises, develop a **rapid response mechanism** and make the right decisions. Enterprises will definitely have a first-mover advantage if they can respond before problems arise

Improve **flexibility and resilience** of **products and supply chains** and accelerate **adjustment of supply chain structure** to mitigate risks and cope with various international economic and trade environments in the future

In the future, industrial and supply chain development will rely more on new infrastructures such as **5G, Internet of Things (IoT), smart technology and big data**, and transform from the rigid and linear model to a complex **network ecosystem**

Black swan incidents will continue to occur. These global disruption events are not only a crisis but also a turning point for many companies. Companies should seize this chance **to turn risk into opportunities.**

Contact Us



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