

# TRANSFORMING GLOBAL MANUFACTURING AND SUPPLY NETWORKS

Working with multinational  
companies to capture value from  
their international operations



## About us

### Institute for Manufacturing (IfM)

The IfM is part of the University of Cambridge. It brings together expertise in management, technology and policy to address the full spectrum of issues which can help industry and governments create sustainable economic growth.

### IfM Education and Consultancy Services (IfM ECS)

IfM ECS provides consultancy and executive development – based on the ideas and approaches developed at the IfM – to help manufacturing and technology companies around the world create and capture value more effectively.

### Centre for International Manufacturing (CIM)

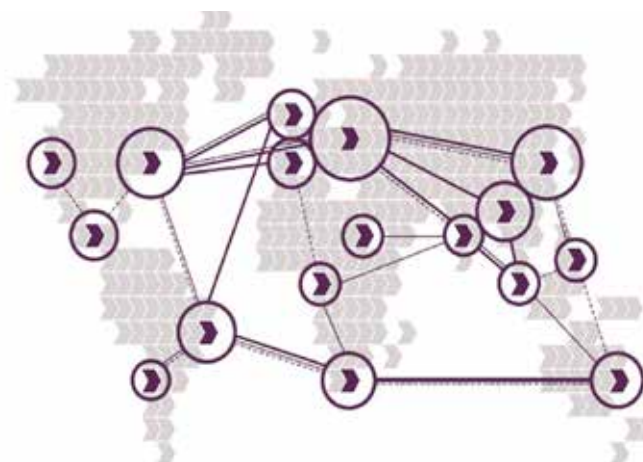
CIM is one of the IfM's main research centres. It focuses on strategic and operations management research in close collaboration with industrial partners. The Centre has developed a strong industrial-policy-making-academic community and provides expertise and support in the area of international manufacturing and global value networks, with particular focus on capability development and strategic network design. It provides briefings on globalisation and international manufacturing for industry and government.



Read more about our combined research and practice approach to network transformation in *Capturing Value from Global Networks*, edited by Jagjit Singh Srani and Paul Christodoulou, £35. Buy online at: [www.ifm.eng.cam.ac.uk/global-networks](http://www.ifm.eng.cam.ac.uk/global-networks)

### Why choose IfM ECS?

- ▶ **We are not a conventional consultancy: our approach is highly collaborative, designed to help you achieve your goals and build your capabilities.**
- ▶ **All our practitioners have extensive industrial experience at a senior level in multinational companies.**
- ▶ **Everything we do is derived from research from one of the world's leading universities – and the work we do with companies directly informs our research programmes.**
- ▶ **We get results: the companies we have worked with have seen significant benefits to their business.**
- ▶ **We share our techniques with you so that you can continue applying them after the project has finished.**
- ▶ **Our methods, often workshop-based, are designed to build consensus and communicate the results throughout your organisation and beyond.**
- ▶ **We gift our profits to the University of Cambridge to fund future research.**



To find out more about how we can help your company transform its networks, email: **Paul Christodoulou** [pac46@cam.ac.uk](mailto:pac46@cam.ac.uk) or **Eric Harris** [ejh80@cam.ac.uk](mailto:ejh80@cam.ac.uk)



## Achieving competitive advantage through network transformation

Designing and operating effective global networks is a fundamental source of competitive advantage for manufacturers. As networks have become increasingly complex and fragmented, it is more important than ever that international manufacturers are able to 'make the right things in the right places', have agile and resilient supply chains, and the right people and processes to run them.

### Identifying and exploiting opportunities

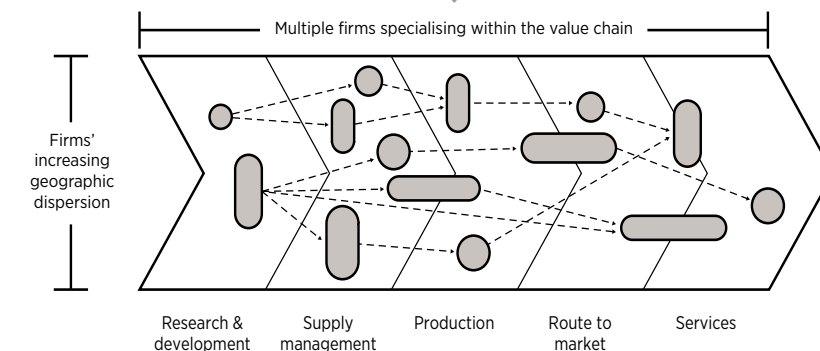
In recent years many companies have undergone rapid global expansion in order to access new markets and cheaper resources. At the same time, firms within supply chains have had to become more specialised in order to master increasingly complex technologies. And these specialised firms tend to be located all round the world. Optimising such complex networks so that they deliver the manufacturer's strategic aims is challenging, particularly as each network partner has its own goals and business models.

However, getting this right is an opportunity to achieve significant competitive advantage. Well-designed networks can:

- ▶ deliver more innovative products and services at a lower cost
- ▶ respond to rapidly changing market conditions
- ▶ secure access to scarce resources
- ▶ remain resilient in the face of an increasingly unpredictable external environment.

### How we can help

We have worked with more than fifty leading companies on network projects and have developed a set of structured approaches which support organisations through strategic and operational change. We can work with companies to address specific challenges or opportunities, or we can take a 'whole system' approach to achieve maximum competitive advantage from network optimisation. We also provide executive and professional development to improve companies' network capabilities.



We highly value our work with the IfM in contributing inspiring thinking to help us constantly step up in our approach to optimising end-to-end operations.

*Chief Operating Officer,  
Global Toy Manufacturer*



### Companies we have worked with recently include:

- ▶ BAE Systems
- ▶ Beiersdorf
- ▶ Bombardier
- ▶ Caterpillar
- ▶ Electrolux
- ▶ GlaxoSmithKline
- ▶ Grundfos
- ▶ Huntsman
- ▶ Huawei
- ▶ IKEA
- ▶ Invensys
- ▶ Johnson Matthey
- ▶ The LEGO Group
- ▶ Rolls-Royce
- ▶ SABIC
- ▶ Sealed Air
- ▶ Schneider Electric
- ▶ Shell
- ▶ Unilever
- ▶ Wavin



# Designing an effective network

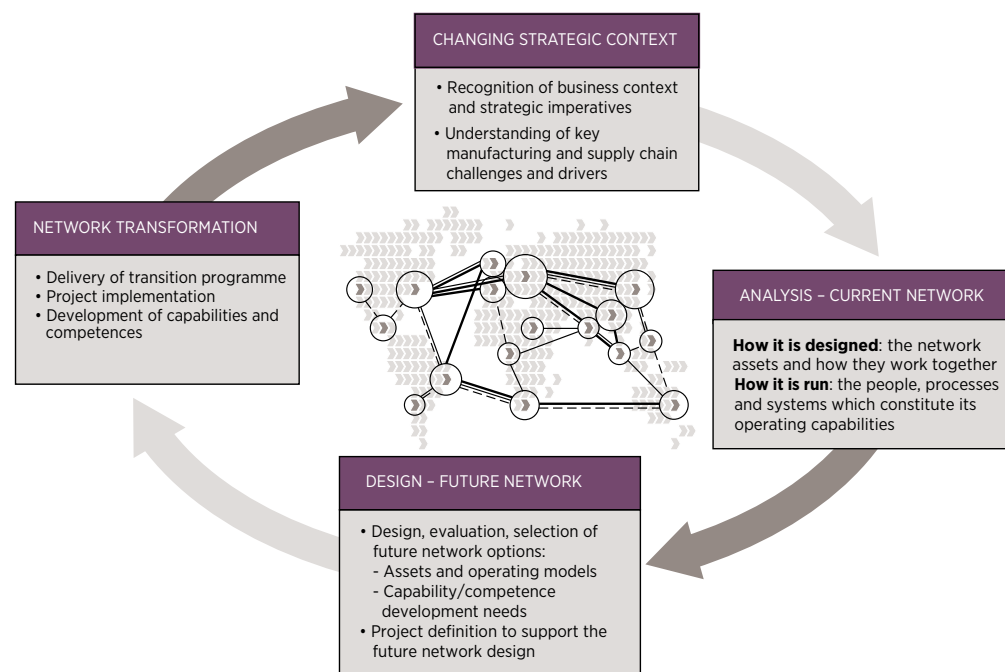
By an effective network, we mean one that has its assets in the right places, has an efficient, resilient and agile supply network, and the right people and processes to run it.

How do you move from where you are now to having the best network for your organisation?

Our four-step approach uses a combination of data analysis and decision tools, enabled through workshops with senior stakeholders, to build a deep understanding of key drivers and support informed decision-making. The result is a network transformation strategy that is both ambitious and practical. It is also 'owned' by the management team and fully supported by those tasked with putting it into practice.

- ▶ Context mapping and landscaping is used to clarify external drivers and to identify potential opportunities for – and threats to – your organisation.
- ▶ We analyse your current networks within your business context to validate the opportunities identified above and to reveal others. We do this by looking both at how your assets are organised and your capabilities for managing them.
- ▶ We design new networks that will capitalise on those opportunities, again both by configuring your assets and developing your capabilities.
- ▶ The final step is network transformation. We work with you to put in place the new network design and support you in developing new capabilities you might need, particularly through executive and professional development.

Network transformation is not a one-time-only activity. Nothing stays the same, either inside or outside the business. Our aim is to give you the knowledge and skills you need to continue applying our methods once the project has been completed.



# Choosing the right approach

The design process may identify particular areas for improvement – production, supply or product-service networks – or prompt a 'whole network' transformation project. We have four approaches (see below) to address each of these eventualities and help organisations achieve their strategic goals. But network improvement does not stop there. Further challenges and opportunities lie ahead and we are developing a new set of techniques to address them.

In addition, we provide executive and professional development programmes to help companies build their capabilities. We can also guide and support them through the process of network transformation.

## Transforming global production footprints to reduce cost and increase responsiveness

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Our approach guides the design of global production networks to lower costs, improve access to growing markets and vital resources, and enhance agility and resilience in the face of changing market conditions.

## Gaining competitive advantage from an effective end-to-end supply chain

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We can help you redesign your supply chain and enhance your operating capabilities to achieve sustainable competitive advantage.

## Designing global value networks for emerging and disruptive technologies

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New technologies and disruptive business models are forcing changes to existing networks and creating new ones. We support corporate strategists (and government policymakers) by mapping complex industrial ecosystems, designing new global networks in response to disruption and integrating these networks to improve performance.

## Developing a successful service supply network

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More and more global companies are offering services to support their products but these services often need several primary suppliers working together to deliver them. We have extended our network configuration tools to provide a clear framework for integrating the activities of different partners.

## Addressing tomorrow's network challenges

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We have also developed a number of approaches to address some of the most pressing strategic challenges facing companies: how to create more resilient and sustainable networks, how to manage network integration after a merger or acquisition, and how to develop smarter supply networks in response to innovations in e-commerce.

## Executive and professional development

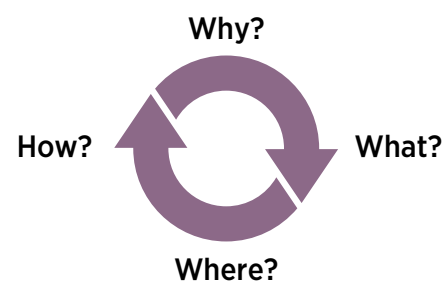
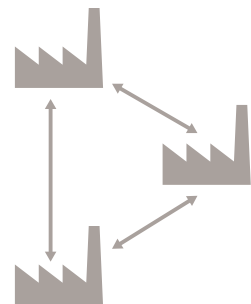
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Global networks need people with the right knowledge and skills and the ability to both drive and manage change. We provide bespoke executive and professional development programmes to nurture your in-house talent and build their capabilities.

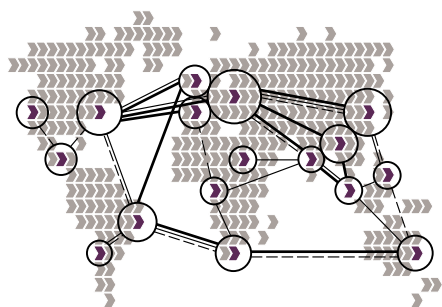




Markets	
Products	
Production	
Technologies	
Resources	



Make	Alliance/ Risk analysis
Supplier development	Buy



## Transforming global production networks

'Production' is a critical activity in the value network: it often represents the majority of a firm's assets and embodies key differentiating capabilities. Many companies think about redesigning their production networks in order to reduce their costs. But a well-designed production network can do much more than save money, important though that is. Gaining access to the most attractive markets can be at least as important. A well-designed network can also improve your access to key resources, your ability to innovate and to be more agile, and to manage risk more effectively. It is also the case that most global manufacturers do not design their footprint from scratch but inherit a network that has evolved over time and is often the product of several mergers and acquisitions. It is very unlikely, therefore, to be configured in a way that supports the company's strategic objectives.

The IfM has a four-step approach to help companies 'make the right things in the right places' and continue to do so over time as conditions both inside and outside the business change.

**Why does the company need to change from its current position?** We explore this question to make sure the production network strategy is aligned with the overall business strategy and any technology trends.

**What should the company make and what should it buy?** What are the manufacturing capabilities it should invest in and what types of supply partners will it need?

**Where should the company locate its manufacturing operations?** And what roles should each of them adopt to ensure the whole exceeds the sum of its parts?

**How should the company put the strategy into practice?** And what new capabilities does it need to support the implementation?



We are one of the world's largest manufacturers, with sales approaching \$50bn, and the main reason for starting this process was to secure the long-term optimisation of our production network. Over time the 'burning platform' has changed but the process remained the same, allowing us to constantly update the vision as conditions evolve. Since 2008 this approach has been used in all business divisions and services to guide our annual, multi-billion dollar capital spend through co-ordinated investments across the vertically integrated company.

*Manager of Global Production Network Planning,  
Construction Equipment Manufacturer*

We worked closely with IfM ECS to develop and direct the Global Manufacturing Strategy, which will expand our global production capabilities in developing markets around the world, as well as re-aligning our existing production into manufacturing centres of excellence within an optimised framework. Our goal is to significantly improve our operating efficiencies, lower our overall cost structure and implement new technologies more effectively, whilst not compromising service, quality or EHS.

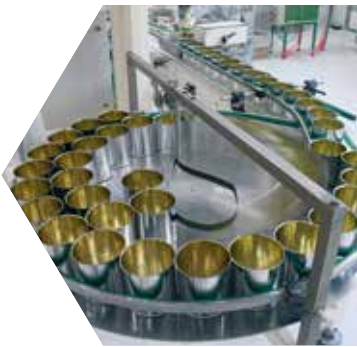
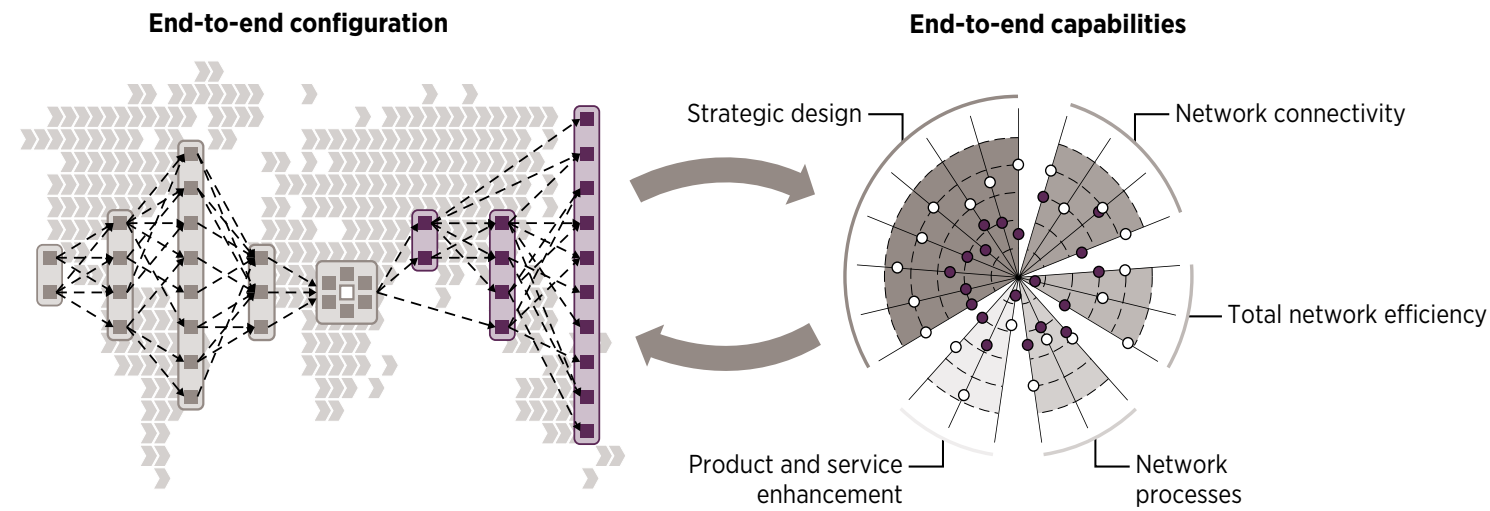
*Vice-President, Global Manufacturing and Supply Chain,  
Packaging Manufacturer*



### How we can help

We have been working with companies on production network design for more than ten years and seen them benefit in a number of different ways.

Benefit	Our work with global companies
<b>Cost reduction</b>	This was a key objective for every project. We typically identified a potential for 10-20% cost reduction. One company announced \$55 million repeating annual savings.
<b>Access to emerging markets</b>	Considered equal in importance to cost reduction. Most of our projects have involved reshaping the network towards emerging economies, aimed more at accessing new markets than low-cost labour.
<b>Better performance</b>	In every case we have seen a step improvement in operating performance as a result of better definition of plant roles within a coherent network philosophy.
<b>Innovation</b>	Significant benefits can be delivered by coordinating innovation across the global network. Our projects have helped accelerate the worldwide launch of new products and technologies. Companies have also benefited from capturing and sharing best practice.
<b>Extracting value from M&amp;A</b>	Growth by merger and acquisition presents significant operational challenges. We have worked with companies to redesign the production network as part of both the pre-deal valuation and the post-deal integration.
<b>Network agility</b>	All the companies we worked with recognised the need to have a network that can respond to unforeseen changes. We have improved network agility through increased harmonisation of products and processes and by establishing new global roles in co-ordinating transfers.
<b>Sustainability</b>	Companies are placing increasing importance on the design of sustainable production networks, particularly in terms of access to scarce resources, reduction in transportation, and impact on communities and the environment.



## Managing the end-to-end supply chain

As supply chains have become more fragmented and dispersed, designing and managing them has become increasingly difficult. The process of getting physical products to the final customer may involve a multi-tier network of partners – distributed globally – across which innovation needs to be faster and more effective than ever before.

A well-designed supply network should deliver your strategic objectives, but in such a complex environment it can be challenging to identify where – and why – this may not be happening. We have developed a set of approaches which helps companies optimise their supply chains and develop advanced operations capabilities.

### Configuring the supply chain

We use four mapping tools to visualise and redesign complex supply chains:

- ▶ **Total supply network** analysis captures key macro level data such as sales volumes, geographic dispersion, cost allocations and lead times.
- ▶ **Unit operations** analyses the structures of the major operating units to reveal opportunities and potential flaws in the current network design.
- ▶ **Product value structure** looks at how the parameters such as product portfolio, architecture, mix and costs, innovation opportunities and rates of innovation may affect the 'ideal' supply chain structure.
- ▶ **Supply network relationship** maps the roles and relationships between key network partners.

### Developing advanced capabilities

However well designed your supply chain, you also need the right capabilities to run it. We have developed a set of tools to analyse your current strengths and weaknesses, determine your future needs and create an action plan to drive improvement. From our experience of working with companies, these are some of the questions you may need to address:

- ▶ **Strategic design:** is your network delivering your strategic goals, and do you have the leadership and network design skills to ensure that it does?
- ▶ **Network connectivity:** how good are you at working with others across the network to improve quality, service and cost – with suppliers, with customers and within the business?
- ▶ **Total network efficiency:** does your network optimise product replenishment times, and minimise waste, inventory and unnecessary movements?
- ▶ **Network processes:** how effective are your manufacturing, logistics and supplier management processes?
- ▶ **Product and service enhancement:** is your network able to enhance products and services, develop and integrate new product and process technologies and find new business opportunities?



The study has enabled us to articulate our Global Supply Chain Strategy for Wireless Products for the first time, with a detailed capability assessment activity setting out development and implementation opportunities. The detailed analysis is now available for the company to exploit as it supports the move to 4G, as well as for geographic growth opportunities around the world. There has been considerable transfer of know-how leaving the team able to conduct future studies across different product groups.

*Senior Specialist, Supply Strategy Planning  
ICT Solutions Provider*

Our work with IfM ECS has resulted in a range of new strategy tools with very practical application. These tools have helped ... to drive business performance in manufacturing and supply chain, and commercially. We estimate that this work has underpinned investment decisions affecting more than £50m of investment and supported the development of our new product capability supporting revenue in excess of £500m.

*SVP Head of Network Strategy, Global  
Manufacturing and Supply,  
Healthcare Company*

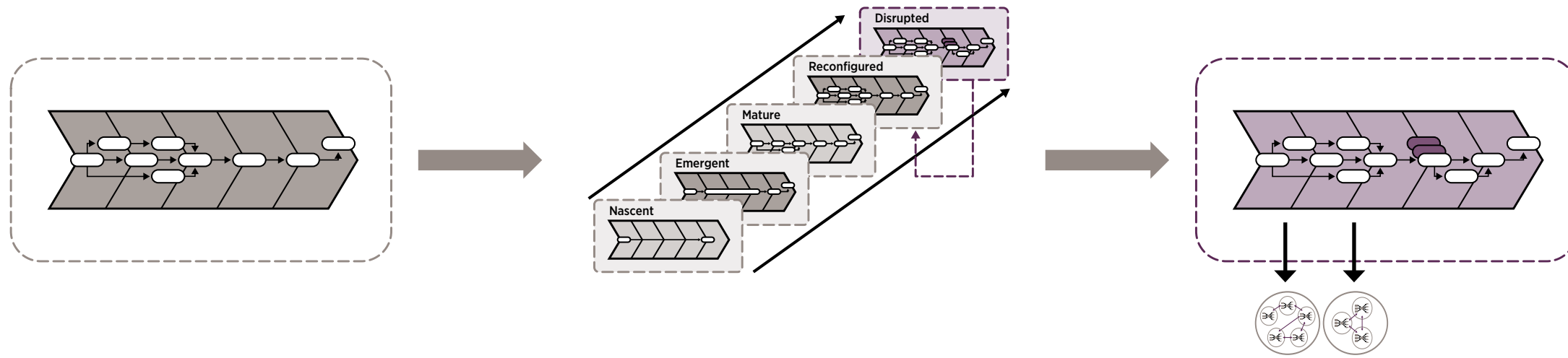


### How we can help

We have considerable experience of working with companies on end-to-end supply chain design, and have observed the delivery of benefits in a number of areas.

Improvement areas	Observed benefits
<b>Process development</b>	A shared understanding of E2E supply chain processes; clear and effective communications that support integration across functions and with partners; a change management process that engages and mobilises E2E supply chain teams.
<b>KPI development</b>	Ability to measure both the progress of project delivery in E2E supply chain initiatives and their effectiveness against business objectives.
<b>Relationship development and collaboration</b>	Effective conversations based on targeted information flows help overcome boundaries both within the company and across network partners to maximise overall business benefit.
<b>Capability development</b>	People at all levels and across all functions are informed, engaged and confident in their roles in the delivery of E2E supply chain change and in the management of the future E2E supply chain.
<b>Systems development</b>	Developing systems that give process and information support to the future E2E supply chain, based on a full understanding of business needs.
<b>Business transformation</b>	Creating integrated business processes that support improvement in activities across the organisation, such as budgeting, financial performance management and annual planning. E2E supply chain development underpins changes in 'the way we do business around here'.
<b>Value generation</b>	The 'traditional' drivers of cost reduction, service improvement, innovation support, and inventory management are all supported by E2E supply chain initiatives. However, (as indicated above), our experience would suggest that improving E2E supply chain configuration and capabilities offers value that is significantly greater and more wide-ranging than these traditional measures would suggest.





Mapping the existing ecosystem

Designing the disrupted global value network

Integrating the critical subsystems



## Configuring a global value network for disruption

Disruptive technologies, new business models and changing market conditions create challenges for both companies and policymakers. The Centre for International Manufacturing has developed an approach to configuring global value networks in these circumstances that can help firms and governments improve their competitive positions.

Our approach consists of three related activities:

**Mapping the existing ecosystem:** when a new technology emerges, a radically different approach to network design is needed. To understand a sector fully – and hence how the value chain should be configured – you need to map not just the companies involved but all the external stakeholders who have a strong interest in, and influence on, reconfiguration. These could be investors, governmental institutions, research agencies or universities. Our mapping tools have been designed to capture the complexity inherent in this scenario.

**Designing the disrupted global value network:** our approach to global value network design reflects the typical stages in network development and the trends that drive redesign. This involves tracing the evolution of the network from the point when a technology first appears and the value network is highly disorganised (nascent), through a process of experimentation (emergent) and stabilisation (mature) to the point when the network becomes suboptimal and needs to be reconfigured. This is likely to be followed by the emergence of a new disruptive technology or business model, and the cycle of reconfiguration and disruption starts again. Our design tool allows us to develop different scenarios and understand how to configure the global value network to respond to disruption.

**Integrating the critical subsystems:** a further challenge is that global value network performance is often hindered when semi-independent subsystems become disconnected, often as a consequence of disruption-driven reconfiguration. Our approach helps to reveal the critical subsystems and define their intrinsic characteristics, and drives systematic reintegration that ensures enhanced performance for all players in the value network.

### Ecosystem mapping: automotive sector in NW England

This study was commissioned to help vehicle manufacturers in the North West of England, and their tier 1 suppliers, address some of the challenges facing the automotive sector in general, and this region in particular. Mapping the ecosystem led to a clear understanding of the strengths and weaknesses of the sector's supply chain. The findings were used to inform a supply chain improvement process, which included: targeting market segments with the highest growth potential; establishing a supply chain capability development programme; and looking at more efficient use of resources to support long-term sustainability.

### Reconfiguring pharmaceutical supply chains

IfM is playing a pivotal role in a major project looking at how to reconfigure the UK's pharmaceutical supply chains in order to capitalise on technology advances in both medicines and patient-centric delivery models. The £23m project is jointly funded by the UK government and leading pharmaceutical companies.



This funding brings together 20 partners from across industry and academia in an innovative partnership with the aim of transforming how medicines are made and ensuring we are even more responsive to the changing needs of patients. This bid, which will focus on areas such as continuous manufacturing and new technology platforms, creates and safeguards jobs across the partnership and helps keep the UK at the forefront of life sciences.

*President,  
Global Manufacturing and Supply,  
Healthcare company*



### How we can help

We have used our approaches to configuring global value networks with a wide range of industry sectors where disruptions to a product or process technology – or to supply and business models – are leading to radically different value networks.

Improvement areas	Benefits
<b>Reconfiguring supply chains</b>	Designing new supply models that will deliver more personalised customer service, safeguard jobs and achieve significant projected savings by: increasing the level of right-first-time manufacturing and reducing inventory held and days of supply, cycle times and the cost to market of new product development.
<b>Developing sector strategies</b>	Establishing sector-wide capability development programmes to address issues such as: the need for better business processes within tier 1 and 2 suppliers; skills deficits; lack of regional innovation strategies.
<b>Designing new networks</b>	Exploring trends, scenarios and possible intervention strategies to help firms achieve 'first-mover' advantage at the very early, chaotic stages of an emerging industry and identify potential opportunities and barriers to serving new or previously elusive markets.



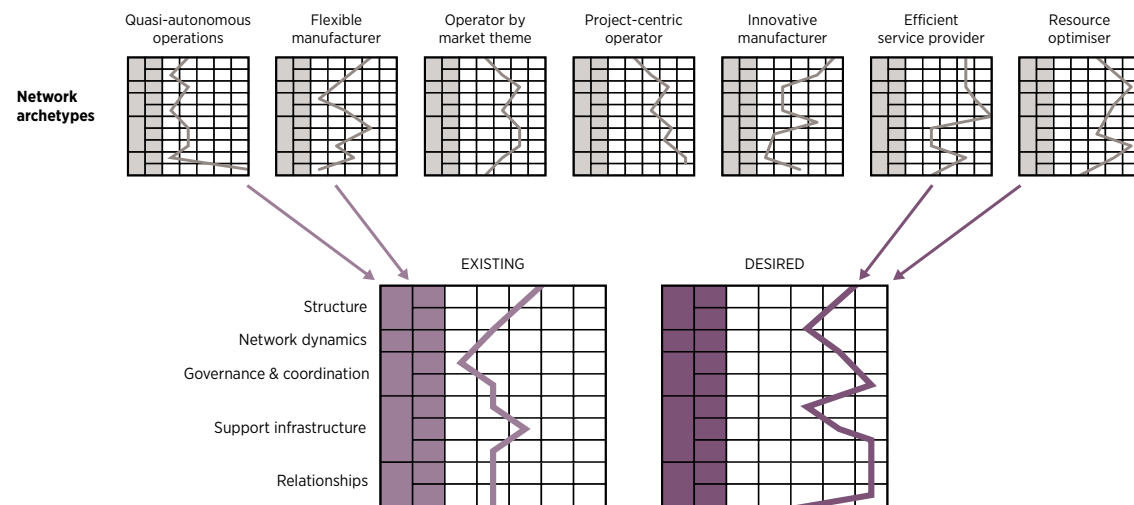
# Supply networks for complex service providers



Many global manufacturers are adding a service dimension to their business models, both to create new revenue streams and to get closer to their customers. For most companies, however, this is not a straightforward task. From a network perspective, it adds significant complexity to an already complex picture, with the primary supplier often having to coordinate a number of different partners to deliver the service.

To address these challenges, we have extended our work on end-to-end supply chains to develop new strategic approaches to designing and integrating multi-organisational service networks.

As illustrated below, we do this by reviewing the configuration of the current network and designing a new one that better aligns with the business strategy. We consider five dimensions: structure (geographical footprint), network dynamics, governance and coordination, support infrastructure and relationships. By comparing these configurations with a range of network 'archetypes' we can derive the type of product-service network that will best support the company's strategic objectives. Once the desired configuration has been fully explored and refined, we work with you to develop strategic plans for implementation.



The network design tools ... provide a structured approach to develop industrial capability, and help guide the proactive reconfiguration of the network to shape future engineering and industrial capability across the design-build-service-support operation. We have used these methods and supporting tools to help design and down-select options for our engineering operating framework.

*Engineering Director, Systems and Strategy,  
Aerospace and Defence Systems*



# Addressing tomorrow's network challenges



To support our four main network design tools, we are developing new approaches to tackling some of the more pressing challenges facing manufacturers. We are currently researching and testing these approaches with industrial partners and are always looking for more collaborators to help us refine them further. Companies that work with us benefit from the latest thinking in these key areas.

## Managing risk and building resilience

Risk is an important issue in today's increasingly uncertain world, with companies needing to know that they can prepare for, and quickly recover from, unforeseen events. We can work with you to develop your understanding, manage your risks and build greater resilience into your networks.

## Designing sustainable supply networks

Making supply networks more sustainable has become an increasingly important objective for many multinational companies. However, doing this across a large number of network partners is not straightforward. We are developing approaches that can improve industrial practice in this regard.

## Extracting value from M&As

Multinational companies often use mergers and acquisitions (M&As) to accelerate growth or redirect their businesses. However, these deals often fail to meet their strategic objectives because the need for operational integration is not properly understood or managed effectively. Our framework helps companies realise the benefits of their M&As.

## Sharing knowledge across networks

Global companies face particular challenges in bringing together knowledge across their geographically dispersed sites, having to overcome differences in language, culture, equipment and operational conditions. We have developed an integrated approach to addressing knowledge management within the context of international value network design.

## Developing supply networks for e-commerce

New routes to market have emerged in recent years, partly as a result of innovations in e-commerce. Our research examines these developments, both in the business-to-consumer and business-to-business contexts. In the former, it addresses the network implications of creating more customer-focused delivery models and, in the latter, how smart supply chains may deliver 'just-in-time' or 'just-in-place'. It also considers the roles of 'big data' analytics and social media in business model and supply chain design.

If you are interested in working with us in any of these areas, contact:  
**Paul Christodoulou**  
pac46@cam.ac.uk  
or  
**Eric Harris**  
ejh80@cam.ac.uk



## Executive and professional development



Having people with the right skills and knowledge to understand and manage your global networks, and who can respond to change when it happens, is a vital component of an operations strategy. We can help you develop your organisational capabilities by creating education programmes designed for global specialists in all operations functions, including production, supply chain, engineering, purchasing, finance and commercial areas. We will equip them with:

- ▶ a clear understanding of the principles of network design and how they are applied within your organisation
- ▶ the knowledge and skills not just to manage operations networks effectively and to continuously improve them, but also to drive structural change.

IfM ECS is an experienced provider of executive and professional development, helping global manufacturers and technology-based companies create and capture value more effectively. We offer bespoke development programmes, designed to ensure they are relevant to your sector and are fully aligned with your company strategy, systems and expertise.

We can provide in-depth programmes for companies wanting to develop their global network talent to be able to perform at a strategic business level. We can also provide shorter, more focused programmes to develop specific capabilities.

All our programmes are delivered by Cambridge academics, IfM industry experts and associates, IfM learning and development specialists and, if appropriate, senior executives from your company and key business partners. We transfer our knowledge, tools and techniques to your delegates, giving them the practical skills they need to put our approaches into practice within their own companies.



Participants took away a lot of practical tools and insights. They also benefited from discussing the big picture and their roles in supporting the future of our company.

*Leader,  
Advanced Operations  
Excellence Programme,  
Power and automation  
technologies*



### Talent development for one of the world's largest manufacturers of construction equipment

First run in 2011, this annual programme is delivered by IfM ECS in conjunction with leading universities in Asia and the USA. Managers from different business units come together in Cambridge to take a series of modules that deepens their understanding of manufacturing. Projects help them fully assimilate what they have learnt and apply it in 'real life' to deliver immediate benefits to the business.

As well as equipping each participant with key strategic capabilities, the programme creates a global network of managers who 'talk the same language' and can drive and manage change across the organisation.

To find out more about our executive and professional development programmes, contact:  
Judith Shawcross  
jks45@cam.ac.uk

## Research and practice team



**Paul Christodoulou** is a Principal Industrial Fellow with IfM ECS, working for the last 12 years with large multinationals on major projects focused on global production footprint transformation. Prior to that, he spent 19 years in senior roles with international manufacturers based in the UK, US and France. Paul is currently undertaking a part-time PhD on 'synergies from configuration of global production networks'.



**Dr Don Fleet** is a Principal Industrial Fellow with IfM ECS helping multinationals benefit from research outputs, particularly in the redesign of global manufacturing and supply footprint. Don joined the Centre for International Manufacturing initially as a researcher after a 26-year career at Unilever in a range of senior international operations and central coordination roles.



**Dr Tomás Harrington** is a Senior Research Associate in the Centre for International Manufacturing with particular interests in product-service network design and networks for emerging technologies. He has been involved in consultancy projects with multinational companies and in the development of management tools for industry. Before joining CIM in 2009, he had senior product design and engineering roles at Intel.



**Eric Harris** is a Senior Industrial Fellow with IfM ECS. He has held senior supply chain roles in a number of multinational businesses, and has leveraged this experience in providing advice to clients through independent consultancy. In his current role, he applies IfM research outputs to support supply chain strategy, configuration and capability development within large industrial companies.



**Dr Mukesh Kumar** is a Research Associate in the Centre for International Manufacturing specialising in the areas of risk and resilience and international manufacturing and supply networks. His previous roles were in the financial sector as a senior analyst and corporate finance consultant.



**Dr Jagjit Singh Srai** is Head of the Centre for International Manufacturing. His research, and that of his group, involves working closely with industry in the analysis, design and operation of international production, supply and service networks. Jag also has significant consultancy experience applying the latest research with leading multinationals and government organisations.



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### **IfM EDUCATION & CONSULTANCY SERVICES LIMITED (IfM ECS)**

IfM ECS works with companies of all sizes to help create and capture value and with national and regional governments to support and grow their industrial sectors. It does this by transferring the new ideas and approaches developed by researchers at the IfM through a programme of education and consultancy services. IfM ECS is owned by the University of Cambridge. Its profits are gifted to the University to fund future research activities.

### **CENTRE FOR INTERNATIONAL MANUFACTURING (CIM)**

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[www.ifm.eng.cam.ac.uk/cim](http://www.ifm.eng.cam.ac.uk/cim)

## **The Cambridge International Manufacturing Symposium**

Held each September, the Symposium brings together global business leaders, policymakers and academics to share their approaches and experiences.

Find out more at:

[www.ifm.eng.cam.ac.uk/events](http://www.ifm.eng.cam.ac.uk/events)

