IfM EDUCATION & CONSULTANCY SERVICES

A WHOLLY-OWNED SUBSIDIARY OF THE UNIVERSITY OF CAMBRIDGE

About Us

The Institute for Manufacturing (IfM) is a division of the University of Cambridge's Department of Engineering. The IfM conducts research spanning management, technology and policy issues related to manufacturing.

IfM Education and Consultancy Services (IfM ECS) provides consultancy and executive and professional development – based on the new ideas and approaches developed at the IfM – to help policymakers and manufacturing and technology companies around the world create and capture value more effectively. Our profits are gifted to the University of Cambridge to fund future research.

We have a core team of policy, industry and technology experts who work with our government partners. Based on the requirements of a project, we look to utilise our network, including experts from across the IfM, University of Cambridge and further afield to bring insights, knowledge and clarity to complex and multifaceted policy issues and challenges.

Experience with "Futures"

IfM ECS has extensive experience in identifying different potential future outcomes given a particular initial condition or government policy area. Our expertise combines established 'futures' techniques such as scenario development or options development with systems thinking approaches including impact grids and roadmapping.

The Government Office for Science's Futures Toolkit identifies roadmapping as one of the most 'most flexible and emergent tools' for 'developing and testing policy and strategy'. The IfM is recognised as a world centre of excellence for roadmapping, training hundreds of professionals in the tool each year and supporting partners across government and industry through projects that are at the forefront of knowledge and practice in this area.

Key areas of expertise

IfM ECS work is based on research developed at the IfM with a strong emphasis on practical application. We have over 70 research-underpinned tools and frameworks which are used through our work with government and industry, often helping organisations to explore and make decisions about the long-term future.

- ✓ Roadmapping
- ✓ Competence mapping
- ✓ Organisational strategy
- ✓ Business model innovation
- ✓ Visioning
- ✓ SWOT analysis
- ✓ Case study analysis
- ✓ Literature reviews
- ✓ Innovation and technology management
- ✓ Scenario development and scenario planning
- ✓ International policy approaches

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WE BRING TOGETHER MULTIPLE PERSPECTIVES...

We are experts in designing, developing and delivering successful engagements and workshops to solicit multi-stakeholder group input, synthesising outputs to usefully inform future policy actions. These projects can range from individual half-day engagements with a few participants to larger scale engagements with multiple inputs and workshops with over 100 domain experts.
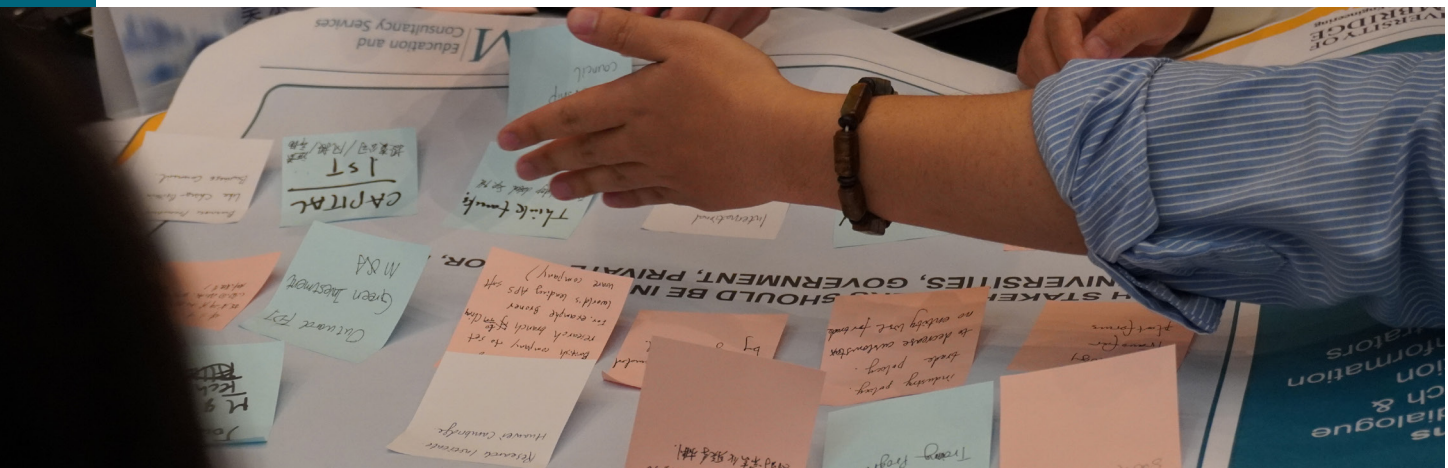
TO INFORM POLICY THINKING...

We are an experienced and effective disseminator of policy advice and outcomes. We employ a range of dissemination methods including policy workshops, briefs, publications, webinars and logic models. We ensure pertinent information is communicated at a useful level of detail, using accessible language, and meets the needs of the intended audience.

LEVERAGING EXPERTISE FROM CAMBRIDGE AND BEYOND

When working with our government and industry partners, we complement their knowledge and skills with our unique network of experts from within the Institute for Manufacturing, across the University of Cambridge and beyond to bring additional skills, experience and insights where required.

WHO WE WORK WITH

IfM ECS works with many public organisations in the UK and abroad. In the United Kingdom, we have facilitated multiple engagements with central government, as well as collaborating with regional government including Local Enterprise Partnerships. Through this work we have developed a good understanding of the business cycle and structure of government departments at all levels including regional, central and supranational.

Public sector:

In the UK: British Standards Institution (BSI) | Department for Business, Energy and Industrial Strategy (BEIS) | Department for Transport | DSTL | Government Office for Science | High Value Manufacturing Catapult | Innovate UK | Knowledge Transfer Network | Liverpool City Region LEP | Ministry of Defence | Swindon & Wiltshire LEP | UK Research and Innovation (UKRI)

Internationally: Asian Development Bank (ADB) | Australian Department of Industry, Innovation and Science | European Bank for Reconstruction and Development (EBRD) | Inter-American Development Bank (IDB) | Ireland's Department of Business, Enterprise and Innovation | Organization for Economic Co-operation and Development (OECD) | United Nations Development Programme (UNIDO)| United Nations Industrial Development Programme (UNDP)

Private sector:

ABB | Airbus | AstraZeneca | Atos | BAE Systems | BOC-Linde I Bombardier | BP | BT | Caterpillar | Crown Packaging | Cryovac | dB Broadcast | Electrolux | GE Healthcare | General Mills | GKN | Grundfos | GSK I Henkel | IHI Corporation | IKEA | Innocent | Mars | Microsoft | Pfizer | Rexam | RNLI | Rolls-Royce | Schlumberger | Siemens | Stainless Metalcraft | Subsea 7 | Sulzer | The LEGO Group | Unilever

CASE STUDIES ►►►►►

Study on the Practical Impact of Digital Manufacturing (2018) | A project for Innovate UK

This study gathered international evidence on the observed and future impacts of digital technologies in manufacturing. The aim was to inform Innovate UK's business case for supporting digital technology deployment. The project involved an international review of impact evaluations and frameworks for characterising the application areas of emerging digital manufacturing technologies. This included the review of foresight reports from specialist policy units, research institutes, think-tanks, national academies, industry associations and government departments from key manufacturing countries such as China, France, Germany, Korea, Japan, Singapore, the US and Canada. research institutes, think-tanks, national academies, industry associations and government departments fcountries such as China, France, Germany, Korea, Japan, Singapore, the US and Canada.

> This study provided Innovate UK with key evidence for the business case for an additional £120 million investment in the 'Made Smarter' Industrial Strategy Challenge Fund.

Road4FAME (2016) | A project for European Commission's 7th Framework Programme

This project delivered a strategic research and innovation roadmap for IT architectures and services in manufacturing. The key aims of this project were to align future ICT (information and communication technology) research from each scenario with the needs of European manufacturing businesses, and to provide a reference against which they can derive innovation strategies and identify novel business opportunities. This work was conducted over a three-year period and involved four facilitated workshops. Almost one hundred people from across academia, research centres and industry contributed to the development of the roadmap at different stages. Some of the main methodologies used were data visualisation, trends analysis, driver analysis, scenario development, roadmapping, portfolio analysis techniques, impact grids, expert panel management and engagement, structured interviewing, and literature reviews.

Future of Mobility in Europe (2016) | A project for BP plc.

The aim of this project was to develop and explore different possible future scenarios for mobility in Europe. Specifically, the workshop sought to: harvest insights from world-leading experts into how the transport sector might develop in Europe by 2040; understand the largest drivers that will shape the transport sector in Europe; identify the highest-priority emerging technologies and understand how they could be developed and adopted by 2040 within the transport sector in Europe.

This work was conducted over a four-month period and it involved one facilitated workshop with several different stakeholders. Sixteen people from across academia and industry contributed to the development of future scenarios.

Some of the main methodologies used were horizon scanning, scenario development, roadmapping, impact grids, and expert panel management and engagement.

Navigating Complexity in Foresight: Lessons from the UK Future of Manufacturing Project (2014)

This report analysed the complexity involved in conducting manufacturing foresight, reflecting in particular on the experience of the UK Future of Manufacturing Project. Led by the UK Government Office for Science (GO-Science), this project took a strategic look at manufacturing out to 2050, to identify trends and drivers, opportunities and challenges to inform policy actions.

Manufacturing foresight is becoming an increasingly complex task, due to the rapidly evolving nature of modern manufacturing systems. The future of manufacturing and its role in national economies is being shaped not only by technological innovation but also by a broad spectrum of socio-economic forces such as environmental concerns and increasing global competition. The report suggests new approaches and identifies effective practices to navigate the complexity of manufacturing foresight and inform policy thinking.

Other futures oriented policy projects (links)

- *An International Review of Emerging Manufacturing R&D Priorities and Policies for the Next Production Revolution (2017). A project for the Organisation for Economic Co-operation and Development (OECD).*

- *Emerging Trends in Global Advanced Manufacturing: Challenges, Opportunities and Policy Responses (2017). A project for the United Nations Industrial Development Organisation (UNIDO).*

- *International approaches to understanding the future of manufacturing (2013). A report for the Government Office for Science (GO-Science).*

Core delivery team for BEIS Futures Framework at IfM and IfM ECS

We have a core team of policy, industry and technology experts who work with our government partners. Based on the requirements of a project, we look to utilise our network, including experts from across the IfM, University of Cambridge and further afield to bring insights, knowledge and clarity to complex and multifaceted policy issues and challenges.

Dr Eoin O'Sullivan, Director, Centre for Science, Technology & Innovation Policy, IfM

Eoin conducts academic research on the ways science and engineering R&D is translated in new technologies, industries and economic wealth. Eoin's policy-related activities have included studies for the UK Department of Business, Innovation & Skills; the Engineering & Physical Sciences Research Council; the UK Government Office of Science; Innovate UK; and the Higher Education Funding Council of England.

Dr Rob Phaal, Director of Research, Strategic Technology and Innovation Management, IfM

Rob conducts academic research in the area of Strategic Technology and Innovation Management (STIM). Particular interests include the emergence dynamics of technology-based industry and the development of practical management tools and toolkits. Strategic roadmapping is a key area of ongoing interest, in terms of both research and practice.

Dr Nicky Athanassopoulou, Head of Solution Development, IfM ECS

Nicky is responsible for developing custom-designed services to support the strategy and innovation activities of organisations of all sizes. She has worked with organisations across many sectors, including engineering, oil and gas, food, defence, software and telecoms. She has helped numerous companies to develop their strategy, innovation, technology and product-development processes.

Dr Carlos Lopez-Gomez, Head of Policy Links, IfM ECS

Carlos is an expert in Innovation Ecosystems with extensive research and advisory experience in the fields of industrial and innovation policy. Carlos joined the IfM after starting his career as an engineer in the automotive industry. Since then, he has advised several national and regional governments as well as international organisations including UNIDO, OECD, ADB, UNCTAD and the World Economic Forum.

Dr Imoh Ilevbare, Senior Solution Development Specialist, IfM ECS

Imoh's key expertise is in Strategic Technology and Innovation Management, and has developed tools/solutions in and around strategic roadmapping, technology strategy, risk management, portfolio selection, product/service design, strategic marketing, creativity, and the assessment of innovation and technology management capabilities.

Dr David Leal Ayala, Principal Policy Analyst, Policy Links, IfM ECS

David has expertise in manufacturing engineering and innovation and several years of experience in consultancy and industrial and academic roles, both in the UK and abroad. Before joining the IfM, he was the Co-founder and Chief Scientist of Reduse Ltd., a Cambridge spin-out company based on his PhD research, and he also held a postdoctoral position mainly focused on Industrial Ecology research.

Dr Diana Khripko, Solution Development Specialist, IfM ECS

Diana is part of the team which consults industry and public sector. Through these consultancy projects she supports the customisation of IfM tools and approaches to create bespoke solutions for partners.. She is a qualified PRINCE2 project manager and professional consultancy experience within energy sector and energy market regulation.

Dr Michele Palladino, Senior Policy Analyst, Policy Links, IfM ECS

Michele is an Economist and Project Manager with more than ten years of experience in academia and the consulting sector, both in the UK and abroad. His expertise includes development and industrial economics, with a focus on science, technology and innovation policy, including Industry 4.0, national systems of innovation, industry structural analysis, and industrial strategies.

Dr Jennifer Castaneda-Navarrete, Policy Analyst, Policy Links, IfM ECS

Jennifer provides expertise in development economics and innovation policy for the work conducted by Policy Links. She has over 10 years' experience in policy analysis in developing and developed contexts. Before joining the Policy Links unit, Jennifer worked in academia and in a regional ministry for industrial development in Mexico.

IfM ECS is in a unique position within the University of Cambridge to have access to a range of world-leading researchers. We have in-house expertise in executive education as well as a team of events and marketing professionals. In addition to this, we have an international network of consultants with in-depth knowledge of our tools and facilitation techniques which enables us to increase our delivery capacity.