

# Arup Futures Framework Prospectus

Government Office for Science Futures Procurement Framework

August 2023



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# 01 Foresight at Arup

Foresight helps organisations understand trends, explore new ideas, and create resilience in the face of uncertainty.

We examine the many forces shaping the future of the built environment – from social mega trends, such as urbanisation and an ageing population, to

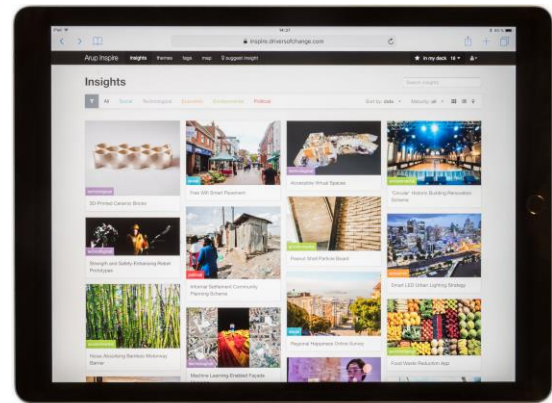
technology trends like robotics and automation. Our team enables Arup’s long-term decision making in a fast changing and uncertain world, with the aim of delivering positive outcomes for society, communities and the environment.

## Arup Drivers of Change

Arup Inspire is a web-based collection of case studies, benchmarks and exemplars from across the globe, providing access to exportable foresight research. Accessible externally as well as internally, Inspire supports research, collaboration and project work, and keeps users aware of emerging built environment trends.

## Arup Inspire

Arup Inspire uses a participatory approach to gather and share built environment case studies and benchmarks from across the globe on a web-based platform. The Inspire tool raises awareness of the innovation taking place outside of Arup, supporting ideation processes and enabling creative thinking. The tool has recently been made accessible to external organisations.



## 02 Our expertise

We are a design-led team of multidisciplinary practitioners who combine the use of foresight and design methodologies to imagine futures and create strategies for any project.

We are experienced in using a broad range of Foresight tools and techniques, including those articulated in the Government Office for Science (GOS) Futures Toolkit. Our experience of designing, facilitating and delivering future-facing research and engagements span all three critical parts of the foresight journey.

### **What? what is changing?**

Our systematic gathering of intelligence on what is changing includes Horizon Scanning and Benchmarking; the analysis of knowledge and insight from a diverse range of sources audiences and using increasingly participatory methods and tools. Our position within a large global engineering firm means we have the mechanisms to gather wide ranging insights from our colleagues, clients, research collaborators and industry institutions. Horizon scanning can be used to identify trends and drivers - we draw on our Drivers Of Change cards and our database of global, regional, local and market specific trends. We also use horizon scanning to identify innovations and developments (using Arup Inspire), opportunities, risks and uncertainties.

### **So what? what does that mean for possible futures?**

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### **Now what? what action do we take?**

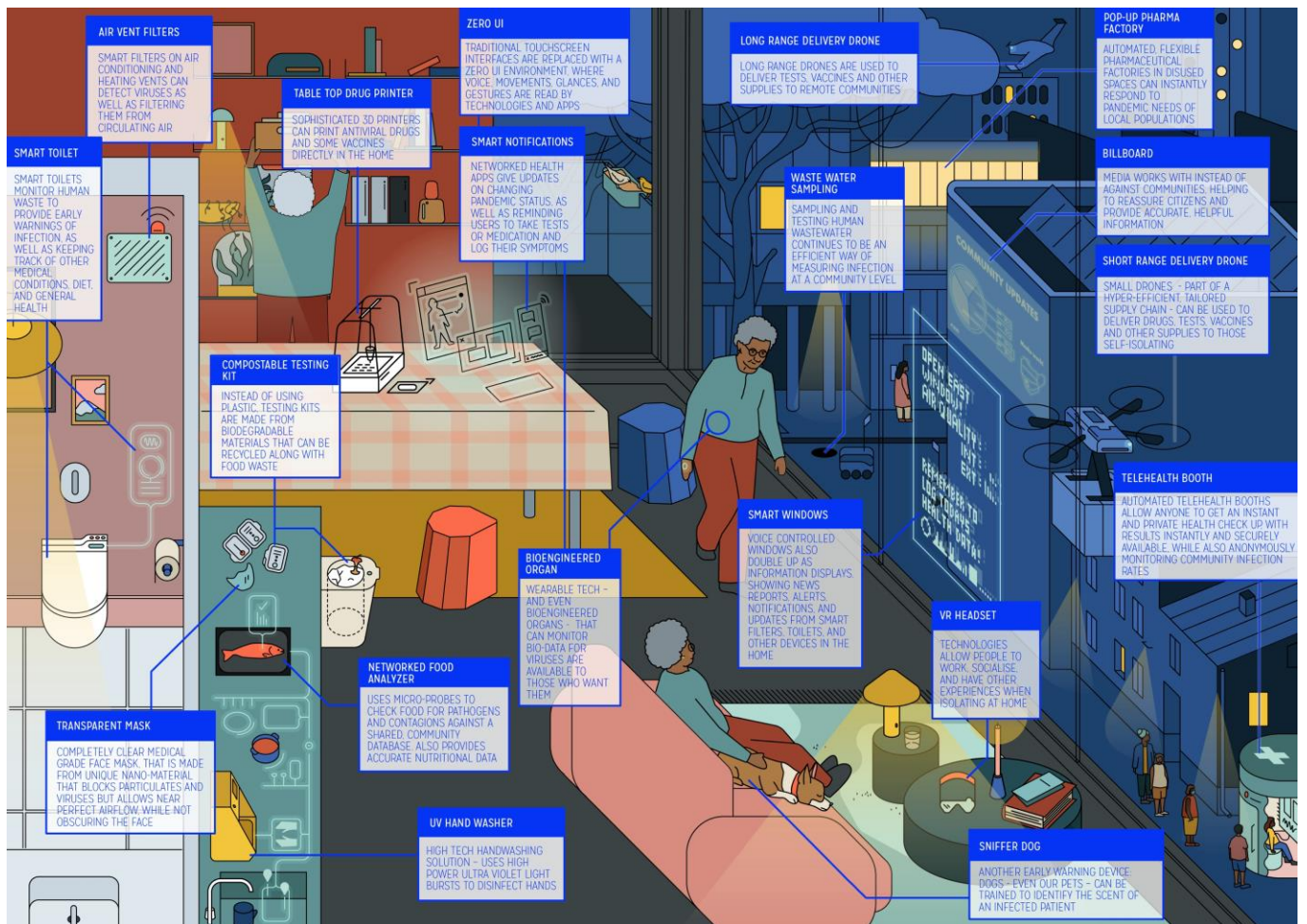
Roadmapping and Backcasting are just two examples of ways in which we help clients connect tomorrow's futures to today's decisions, using timelines to describe how futures are shaped. We frequently use backcasting to understand how we get to a particular possible future or set of alternative possible futures. We also commonly use road-mapping to identify how inputs shape the future context over time.

## 02 Our expertise

We are experts in Visioning and Scenario Development: describing plausible, possible and preferred futures. Using our foresight toolkit, we develop visions (a preferred future) and scenarios (sets of alternative plausible futures) to support company strategies and create alternative futures visions.

Dependent on the project, we develop highly visual and immersive workshop tools and experiences which support the process of co-creation of scenarios with the client and create evocative artifacts which demonstrate strategic direction and vision.

We have developed visions and scenarios for many clients across different markets, including energy, water, transport, cities and healthcare.



WHO: The future of pandemic surveillance

## 03 Our expertise

### **Research**

Our team has experienced designers and analysts, all involved in the research across our projects; this capability plays a fundamental role in delivering foresight services ensuring our work is contextually relevant and incorporates the latest thinking and innovation.

Foresight is part of Arup University (AU) and draws on 50+ specialist Skills Networks and AU Library Services to support research, and accesses knowledge and expertise from our offices around the world. Furthermore, we draw on research in collaboration with universities, industry institutions and clients to deliver world-leading research (in FY 2022/23 Arup spent £6.8m on research).

### **Thought leadership**

Our thought leadership is demonstrated through a range of inspiring and provoking reports, immersive exhibitions, films, roundtables, workshops, all tailored to reach the desired audiences and create most impact. Combining foresight and design methodologies, our programmes put forward innovative approaches and solutions to help clients prepare for an uncertain future through imagining a range of pathways and outcomes.

Our two major Foresight led thought leadership programmes are our 'Future Of' series, examining the future of the built environment, and our 'Cities Alive' series, exploring some of the key themes shaping the future of city vitality.

### **Engagement and facilitation**

Our team are experienced in facilitation to elicit high value insight in a collaborative, cross-disciplinary environment. We take design-led approach in producing and delivering highly interactive and visually arresting discussions and workshops. For example, we facilitated a workshop on the Future of Identity for the Government Office for Science. The participants worked with fictional personas, scenarios and wind-tunnelling techniques to understand what drivers impact and influence individual and group identity and what policy levers can be used to mitigate societal risks. At another event we led in Palestine, we used voting technology to solicit anonymised opinions from a large group of city stakeholders.

## 03

### Our team

#### Our core team

##### *Josef Hargrave, Global Foresight Leader*

As Global Foresight Leader Josef is responsible for the delivery of foresight services, tools, and projects globally, working across Arup's Americas, Australasia, East Asia, Europe and UKIMEA regions. Josef's clients and collaborators include Arup leadership teams as well as external organisations from a broad range of sectors. Josef leads a multi-disciplinary team of designers and consultants that specialise in strategy, innovation, thought leadership, and vision making on the future of the built environment. This includes identifying and analysing trends, mapping strategic implications, exploring opportunities for innovation, roadmapping strategies for business transformation, and developing future scenarios. Josef has delivered projects in over 20 countries and 30 cities. He is an experienced team leader, project manager, facilitator and public speaker. His work combines world-class foresight practice with Arup's global design and engineering expertise, providing clients with unique insights and recommendations on the future of their business.

##### *Marcus Morrell, UKIMEA Foresight Leader*

Marcus leads Foresight in the UKIMEA region and is responsible for helping clients from multiple sectors manage future uncertainty by exploring medium to long term futures with a focus on strategy, foresight and innovation. Marcus is experienced in utilising a range of foresight methods. Marcus is a member of the Association of Professional Futurists; Fellow of the Royal Society for the encouragement of Arts, Manufactures and Commerce (FRSA) and a finalist for the MCA Awards Thought Leader of the Year 2019.

##### *Charlie Warwick, Associate Director at Foresight*

Prior to joining Arup, Charlie led the Futures Practice (Europe) for Kantar, consulting global multinationals from Ikea to HSBC on longer-term strategic challenges, and was more recently Head of Futures Advice in UK government, where she applied her foresight expertise to policymaking across departments, agencies and ALBs. Charlie received the Next Generation Foresight Practitioner Award for her work on rural town revival and is a Fellow at the Centre for Science and Policy, Cambridge University.

##### *Rob Gear, Senior Foresight Consultant*

Rob is a professional Futurist and expert in strategic foresight, and emerging trends and technologies and their implications for business and society. He has over 20 years' experience in the use of strategic foresight to create strategy, mitigate risk, and drive product and service innovation in multiple sectors including healthcare, FMCG, Public Sector, Energy & Utilities, Transport, Financial Services, Media and Telecommunications, and Charities / Third Sector. Rob is also an expert in Digital Business and the strategic use of ICT for transformation and competitive advantage. Prior to joining Arup, Rob worked as a Futurist and consulting engagement lead at Ipsos between 2021 and 2023, and for 17 years as a Corporate Futurist at PA Consulting Group, including a period as leader of PA's Digital Innovation Lab. He began his career in research exploring emerging Information and Communication Technologies at the research consultancy Ovum.

## 03 Our team

### ***Ben Kidd, UKIMEA Research Leader***

Foresight, research, and innovation professional, with a track record in cultivating, leading and delivering quality research and innovation related to the built environment. Expertise in global research portfolio management, research fund management, research strategy development, brokering new collaborations, programme management, workshop facilitation, research contracts, knowledge and technology transfer and research-based business opportunity creation. He has both a broad and deep understanding of the research and innovation landscape in the UK, as well as experience of facilitating research in India, the Middle East and South Africa.

### ***Malina Dabrowska, Foresight Design Lead***

Malina is Design Lead in the Arup Foresight team, working on a range of internal and external projects which explore the future of the built environment through design and research. Before joining Arup, she practiced as an architect for over 10 years, working on education, residential and mixed-use buildings, transport infrastructure and art galleries. Malina is a systems thinker concerned with using imagination and design research to tackle climate change. She uses workshops, design and foresight methodologies, as well as immersive experiences to engage audiences and provide strategic direction.

### ***Tobias Revell, Design Futures Lead***

Tobias Revell is Design Futures Lead working within Foresight at Arup University (AU). Tobias works on the development of design futures and speculative design capability within AU.

Before joining Arup, he ran a design research company (Strange Telemetry) and was a head of department (Programme Director) at University Arts London. Beyond design thinking and research, he has extensive experience in project and resource management and direction, strategic development and programming.

### ***Ros Vose, Senior Foresight Consultant***

Ros is a Senior Foresight Consultant in the UKIMEA region. She specialises in delivering both foresight and advisory projects. This includes developing visions and strategies, horizon scanning and the analysis of future trends, scenario development and identifying new business opportunities. Ros is a chartered Civil Engineer and with this brings a good understanding of the built environment, notably in the transport and energy sectors.



## 04 Our experience

### **Imagining the future of pandemics and epidemics, World Health Organisation (2021-22)**

#### **What was the challenge?**

In 2021, the World Health Organization (WHO) commissioned Arup to imagine what the future of the COVID-19 pandemic and other infectious threats might look like in the next three to five years. They wanted to leverage lessons learned from the pandemic, explore its plausible future directions and ensure that we are better prepared for new viruses, or multiple pandemics happening at once; addressing the key question of what areas to invest in today to make sure we can respond more quickly and effectively next time. For everyone agrees: there will be a next time.

#### **How did we approach it?**

Arup developed four scenarios illustrating the possible directions of the current and future pandemics. The scenarios were refined and validated in two workshops with 55 subject matter experts from a variety of fields. They were then used during two public roundtables and five webinars, to kickstart a strategic dialogue between 100 scientists, community representatives, and leaders. Ultimately, the scenarios catalysed the development of 15 strategic recommendations and 75 practical ways forward for policy and decision makers across the 194 WHO Member States.

*“A pandemic will always start and end in communities. This work is an example of how we can influence these communities to make better and more informed decisions, protect public health, manage emerging risks, shield our economies and, above all, save lives.”*

Dr Mike Ryan, Executive Director of the WHO Health Emergencies Programme



## 04 Our experience

### **Developing a 2050 vision, Uisce Éireann (formerly Irish Water) (2021-23)**

#### **What was the challenge?**

Arup Foresight was appointed by Uisce Éireann (UE) to lead a strategic foresight project to develop a vision for the water sector in Ireland in 2050. UE wishes to develop their capacity to plan adaptively, manage future uncertainty and deliver resilient and sustainable outcomes into the long term.

#### **How did we approach it?**

The work was a collaboration between Arup's Advisory, Water and Foresight disciplines and involved two key phases. The first focussed on ascertaining sectoral insights to determine desired outcomes for the wider water sector, long-term driving forces and how they may plausibly interact to shape alternative future scenarios. This phase engaged a broad range of stakeholders through workshops, including central and local government, the sector regulator, environmental organisations, water industry bodies, public health organisations, economic development agencies, academia and other research-focussed entities. The second phase focussed on demonstrating how an alternative approach, drawing on systems thinking and back-casting, can be applied to support strategic planning for the future. A series of opportunity pathways looking out to 2050 were developed alongside strategic enablers.

#### **What was the outcome or impact of the work?**

UE were able to recognise the systemic nature of their operating environment and the wider water sector, and work with stakeholders in a more effective way to support long term transformation of the sector. The approach demonstrated could lead to greater shared understanding, a more integrated delivery of resilience, better and more holistic solutions at lower cost and improved overall levels of service.



## 04 Our experience

### **Emerging Technologies Horizon Scan and Capability Building, Office for Product Safety & Standards (2023)**

#### **What was the challenge?**

Arup Foresight recently completed a comprehensive review of emerging technologies for the UK Government's consumer product regulator, the Office for Product Safety and Standards. OPSS was created in January 2018 to deliver consumer protection and to support business confidence, productivity and growth. OPSS wishes to become a more proactive and future facing regulator through building a new horizon scanning function to assess future technologies, and systematically assess future technologically driven changes (TDCs) 10-15 years ahead.

#### **How did we approach it?**

Having reviewed and iterated the initial OPSS draft technology taxonomy, Arup Foresight, supported by Arup in-house research services and deep technology domain experts, completed an in-depth horizon scan that looked at the 73 technologies identified, and their potential impacts on industry and consumers. Working closely with the client team, we systematically assessed future TDCs using a Multi-Criteria Analysis.

#### **What was the outcome or impact of the work?**

The project identified high priority technologies for OPSS to consider for future regulation. The project was also delivered to transfer knowledge and upskill the OPSS' Foresight function so that their team can run horizon scanning repeatedly over time. We achieved this by working together in a "one team" environment and by sharing our insights and expert knowledge in relation to key foresight methodologies and approaches.

## 04 Our experience

### Sellafield Ltd Corporate Futures, 2019/20

#### What was the challenge?

We finalised a major a futures project for Sellafield Ltd (SL), to identify opportunities and ensure their medium- to long-term strategy is focused on optimising value and minimising environmental impact in the delivery of their core mission. We are using a Foresight led approach and delivering the following activities:

#### *Activities*

- A. Corporate Challenge
- B. Stakeholder Engagement
- C. Horizon Scanning
- D. Scenario Development
- E. Potential Roles
- F. Hypothesis Testing
- G. Value Propositions
- H. Re-positioning

#### *Objective*

- Agree study envelope
- Source perspectives on potential roles
- Identify trends and issues
- Identify plausible futures
- Screen and shortlist roles
- Validate (or otherwise) shortlisted roles
- Describe how roles will generate value
- Identify key activities to transition

#### What was the outcome or impact of the work?

In the context of an evolving public agenda and SL role, a range of strategic decisions need to be made in the coming years. These need to be informed by a deep understanding of high impact external drivers (mega-trends) and developments in a dynamic external marketplace, all of which bring significant uncertainty. This work will inform SL strategy as well as feed into the NDA's Strategy 4.



**Contact:**

Rob Gear, Futures Framework Manager  
rob.gear@arup.com

Marcus Morrell, UKIMEA Foresight Leader  
marcus.morrell@arup.com

We shape a better world.