FORTIA INSIGHT
an RSK company

# Evaluation of the Workforce Foresighting Hub

## Final Report

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# 1. Executive Summary

## 1.1 Introduction

This executive summary presents key findings from the evaluation of the Workforce Foresighting Hub (hereafter, 'the Hub'), delivered by Fortia Insight for Innovate UK. The evaluation covers the period 2022–2025 and assesses both the process, impact can value for money (VfM) of the Hub, with recommendations for future development and sustainability. Funding of £6,998,000 was provided by Innovate UK in FY2023/24 - 2024/25 and £3,134,834 in FY2025/26.[1]

## 1.2 Methodology

The evaluation methodology involved:

- **Document and data review:** Analysis of Hub documents and data
- **Stakeholder engagement:** 29 interviews with representatives from the Manufacturing Technology Centre (MTC) Workforce Foresighting teams, Catapult Network Leads, Foresighting Cycle Sponsors, Workshop Participants (mainly representatives from industry / employers, centres of innovation and technology and educators), the Steering Board, and wider sector stakeholders
- **Surveys:** were distributed to Foresighting Workshop Participants (18 responses) and Catapult Network Leads (8 responses)
- **Case studies:** Five case studies were developed, selected according to agreed criteria and in collaboration with Innovate UK and the MTC Workforce Foresighting team. Selection criteria ensured that case studies were representative and offered meaningful insights, considering coverage across sectors and foresighting themes, diversity and representativeness of stakeholders, geographical and demographic spread, stage within the skills value chain, and demonstrable evidence of action or change. The five case studies selected were: Compound Semiconductor Applications (CSA) Catapult; Digital Catapult; Energy Systems Catapult; High Value Manufacturing Catapult; and Offshore Renewable Energy Catapult.

## 1.3 Research questions

The research questions to be addressed in the evaluation are:

### 1. Relevance and Strategic Alignment

- To what extent and how does the Workforce Foresighting Hub align with Innovate UK's strategic impact domains?
- To what extent and how are the foresighting cycles addressing the most critical future skills gaps in priority sectors?

### 2. Process and Participation

- To what extent and how effective is the foresighting methodology in engaging stakeholders across industry, education, and policy?

[1] Innovate UK Grant Offer Letters – August 2023 (FY 23/24 and 24/25) and October 2025 (FY 25/26)

- To what extent and how is the quality and diversity of participation in foresighting cycles representative (e.g. sectoral, regional, demographic)?
- To what extent and how well are the six steps of the foresighting process understood and implemented by participants?

**3. Outputs and Immediate Outcomes**

- What types of outputs (e.g. occupational profiles, skills gap analyses, action plans) have been produced, and how are they being used?
- To what extent and how have the foresighting reports influenced curriculum development, training provision, or workforce planning?

**4. Intermediate and Long-Term Impact**

- What evidence is there that the Hub has contributed to changes in workforce development strategies in key sectors?
- To what extent and how have any new training programmes, apprenticeships, or qualifications been developed because of the Hub's work?
- What are the early signs of impact in sectors like offshore wind, RNA therapeutics, or digital technologies?

**5. Collaboration and Systemic Change**

- To what extent and how has the Hub facilitated collaboration between Catapults, industry, and education providers?
- Is there evidence of improved alignment between innovation and skills systems (e.g. through the Skills Value Chain approach)?

**6. Value for Money and Sustainability**

- What is the perceived value of the Hub to stakeholders, and how does this compare to the investment made?
- What are the prospects for sustaining or scaling the foresighting approach beyond the current funding period?

The key findings for each of the research questions is outlined below.

## 1.4 Key findings

### 1.4.1 Relevance and strategic alignment

The Hub is aligned with Innovate UK's strategic impact domains, particularly Net Zero and Digital & Technology missions. Review of 30 completed or active foresighting cycles shows that Net Zero (14 reports) and Digital (8 reports) dominate the portfolio, reflecting strong coverage of mission-critical areas such as offshore wind, hydrogen storage, semiconductors, and AI. Stakeholders consistently viewed the Hub as addressing a "missing step" between innovation roadmaps and workforce readiness by providing anticipatory intelligence rather than responding to immediate labour shortages.

Survey results reinforce this strategic alignment as 83% of workshop participants and all Catapult Leads rated the cycle topics as highly aligned with Innovate UK priorities. However, while alignment is strong, stakeholders raised concerns about whether cycles consistently address the most critical skills gaps. Specifically, cycles often generated too many occupational profiles, diluting focus, and tended to emphasise highly technical roles at the expense of high-volume technician and operational roles needed

for near-term adoption. Cycles also relied heavily on apprenticeship standards and job advert data, constraining identification of emerging hybrid and frontier roles.

Overall, the Hub is strategically well positioned however would benefit from sharper prioritisation and clearer definition of the highest-impact future roles.

### 1.4.2 Process and participation

The Hub's foresighting methodology is effective at convening diverse stakeholders across industry, education, policy, and the Catapult network. Overall, 1,140 participants have engaged in workshops and related activities, including 357 employers, 358 educators, and 425 technologists, evidence of broad reach and strong interest. Workshop satisfaction was high, with 89% rating facilitation positively, and participants valued the cross-system dialogue created.

Nonetheless, engagement tended to be less sustainable when processes were protracted, excessively detailed, or lacked adequate preparation. Industry sponsors estimated participation demands of 12–18 hours, which limited continuity and full participation, particularly among SMEs and senior leaders. Stakeholders also noted gaps in representativeness, including limited involvement from devolved nations, uneven coverage of SMEs, and mismatch between seniority and workshop task design. Understanding of the six-stage methodology was strong at workshop level (94% of participants understood their role) however, weaker across the end to end cycle. Catapult Leads highlighted variable clarity during early "Consider" and "Identify" phases and noted that implementation steps were inconsistently understood or applied.

Overall, the methodology is valued and broadly effective, however participation is intensive, unevenly representative, and inconsistently sustained across full cycle delivery.

### 1.4.3 Outputs and immediate outcomes

The Hub has produced a substantial body of outputs, including foresighting reports, occupational profiles, capability statements, map-and-gap analyses, curriculum recommendations, and Data Cube assets. Evidence shows these outputs are widely disseminated: 83% of workshop participants received the final cycle report, with most describing them as clear, high-quality, and useful.

However, practical usage varies. The most common uses to date include sharing findings internally (39%), early curriculum design considerations (28%), and initial workforce-planning adjustments (17%). Stakeholders noted an ongoing tension between the richness of reports and the need for more succinct, action-oriented products. Several found outputs too lengthy or technical for non-specialist audiences, prompting some Catapults to create their own shorter summary formats.

Evidence of influence on education and training is emerging but remains early stage. No workshop participants reported immediate organisational change, reflecting the long lead times for curriculum reform. Nonetheless, clear preparatory actions are underway: a Level 6 Data Scientist apprenticeship route, a degree apprenticeship, and an MSc in renewables-aligned disciplines have been initiated or developed with direct reference to foresighting intelligence. In addition, some training providers have begun adjusting short-course provision where apprenticeship standards were saturated.

Overall, outputs are credible and valued, however influence is still nascent and hampered by the need for clearer prioritisation, more actionable packaging, and better alignment with curriculum planning cycles.

### 1.4.4 Intermediate and long-term impact

While the Hub has not yet generated measurable changes in workforce development or skills provision, it is already laying essential groundwork for future impact including:

- **Improved diagnostic clarity** through occupational profiles and skills gap analyses, strengthening the evidence base for future planning.
- **Early influence on organisational strategies**, with several Catapults integrating workforce foresighting into mission roadmaps, talent planning, and future capability strategies.
- **Strengthened cross-sector relationships** as workshops and cycles created new connections between employers, educators, policymakers, and technologists, helping reduce fragmentation.

Impact is recognised but modest as only **44% of participants** viewed the Hub's influence as moderate, and Catapult survey findings indicate slight or no influence to date, with **zero Catapults reporting significant impact**.

Early signs of sector-specific impact include:

- **Offshore wind**: stronger collaboration with universities and regional workforce planners; use of capabilities mapping in local planning.
- **RNA therapeutics / life sciences**: integration of digital/data pathways in Catapult learning platforms.
- **Digital technologies**: foresighting insights informing internal Catapult strategies across AI, cyber, and semiconductors.

Overall, these are credible precursors however sustained progress will require more actionable outputs, stronger handover mechanisms, and funding for implementation.

### 1.4.5 Collaboration and systemic change

The Hub has made meaningful progress in strengthening collaboration across the innovation and skills ecosystems. Collaboration is strongest within the Catapult Network, where multiple cycles were co-convened and cross-Catapult knowledge exchange practices emerged. Workshops fostered new connections between industry, education, and policy stakeholders (67% of workshop participants reported improved alignment).

However, most collaboration remains episodic, typically ending when cycles conclude. Stakeholders consistently cited a lack of structured follow through mechanisms to support joint implementation. Engagement with Skills England and regional bodies exists at strategic levels however is not yet operationalised into joint planning, shared commissioning, or coordinated curriculum reform.

Stakeholders also emphasised that while the Hub has helped create a shared language around future skills, practical alignment remains weak without role-level data, timing estimates, or a coordinated owner for implementation.

Overall, the Hub has improved relationships and awareness across systems, but has not yet created sustained, systemic collaboration or alignment mechanisms.

### 1.4.6 Value for money

The Hub is not currently delivering VfM. Total expenditure to date (FY 2023/24 – FY 2025/26 to February 2026) is £9.1m, with a disproportionate share of funding absorbed by management and overheads rather than front line delivery. Specifically:

- 75.4% (£6.86m) of spend relates to Hub management, subcontractors, and Data Cube development, with only 24.6% (£2.24m) supporting Catapult delivered cycles and reports

While this ratio may have been necessary during start-up, the Hub is now well established and overhead levels should be reduced.

This is supported by performance against delivery targets:

- In FY 2023/24–2024/25, actual cost per completed cycle was £351,410, exceeding the planned level by £118,143
- In FY 2025/26, the cost per cycle is £191,278, £34,537 above budget
- Report production shows mixed performance, with 2023–25 below budget, however 2025/26 currently significantly above planned cost.

Overall, the Hub is overspending at both cycle and report level, while delivery volume is below original targets. Until overhead costs decrease and delivery efficiency improves, the Hub cannot be considered to represent good VfM.

### 1.4.7 Sustainability

The sustainability review of the Hub shows moderate foundations but insufficient maturity, with an overall score of 2.5/5 on a sustainability index assessing organisational/finance sustainability, governance, processes, capabilities and impacts. While core structures and tools are in place, capability, culture, governance, and impact pathways are not yet strong enough to ensure long-term, system wide adoption.

**Key strengths:**

- **Established governance and sponsorship**, with a functioning Steering Board and multi-year Innovate UK funding
- **Robust underlying method**, with a consistent six-stage process and quality-assurance checkpoints.
- **Strong engagement reach**, with over 1,100 participants and positive feedback
- **Valuable assets**, including the Data Cube and a growing library of foresighting outputs.

**Key gaps limiting sustainability:**

- **Weak impact integration**: Foresighting outputs are not consistently informing policy or investment decisions, and adoption pathways are unclear across government, providers, and employers
- **Governance gaps**: The Management Board and Technical Committee are inactive, leaving an "accountability gap" between insight generation and implementation
- **Resource and skills shortfalls**: Reduced FY25/26 funding; fewer convenors trained than planned; limited influencing capability among staff
- **Cultural embedding remains low**: Foresighting is not yet part of routine planning across education, skills, and industry
- **No continuous scanning system**: Trend and signal monitoring is episodic, with insufficient ownership and visibility of Data Cube usage.

**Top priorities for action:**

- **Strengthen accountability & handover to implementation**, ensuring foresighting outputs drive education and workforce policy decisions
- **Refresh governance**, reinstating key boards and including FE/HE funders and Skills England in decision-making roles
- **Improve impact measurement & VfM tracking**, including provider changes and employer actions

- **Establish continuous horizon scanning**, with clear ownership and regular quarterly updates
- **Increase cultural embedding**, building awareness and integrating outputs into provider planning, Local Skills Improvement Plans (LSIPs), trailblazers, and departmental strategies.

### Immediate Actions (6–9 months)

- Set **SMART, outcome-focused success metrics** tied to curriculum updates, standards reviews, and policy integration
- **Split funding** between development and implementation, with outcome linked incentives
- Produce **tiered, concise outputs** to improve usability for employers and providers
- Conduct a **governance reset**, with strengthened representation and scheduled post-cycle reviews.

## Overall conclusion

The Hub has made significant progress in building a national workforce foresighting capability, generating credible intelligence, strengthening cross sector relationships, and raising the visibility of future skills challenges. It has laid important groundwork across diagnostic clarity, stakeholder engagement, and methodological development.

However, the Hub's current impact is preparatory rather than transformative. It has focused on ensuring methodological rigour at the expense of ensuring that the work produced is making a difference on policy and workforce development in the UK. To realise its full potential, significant change is required. The next phase must focus on improving organisational and financial sustainability; increasing efficiencies and usability of outputs; and delivering impacts.

## 1.5 Recommendations

### 1.5.1 Priority 1: Critical actions to unlock impact

The following recommendations address structural and strategic issues. Without progress in these areas, there is a risk continued investment in workforce foresighting will not translate into meaningful system level outcomes.

**Recommendation 1: Reorient the Hub towards adoption and outcomes**

**Recommendation:** Reframe the primary success criteria for the Hub from delivery outputs (e.g. number of cycles completed, or reports produced) to demonstrable adoption and downstream outcomes. This could include:

- Clear, shared definitions of adoption and impact at both Hub level and individual cycle level
- The introduction of SMART outcome targets linked to curriculum change, standards development, funding decisions, or employer behaviour which are incorporated within the Grant Letter of Offer for funding
- Explicit accountability for delivery of these outcomes, agreed at the outset of each foresighting cycle.

**Rationale:** The evaluation finds strong evidence of delivery momentum and stakeholder engagement, but limited systematic evidence of foresighting insights being adopted within education, training, or workforce planning systems. The absence of clear outcome definitions and monitoring currently constrains the Hub's ability to demonstrate impact or VfM.

**Recommendation 2: Redesign governance to focus on driving action and impact**

**Recommendation:** Revise the governance model to focus on enabling adoption and impact, rather than primarily overseeing process and delivery. This could include:

- Reconfiguring the Steering Board's role to set strategic foresighting priorities linked to the Industrial Strategy and Skills England priorities, and to agree expected outcomes for each cycle at the outset
- Strengthening representation from organisations with direct influence over skills funding, standards, and provision, including Skills England, FE/HE decision makers, and employer representative bodies
- Introducing a formal post cycle accountability stage (e.g. a 6–12 month review) to assess progress on implementation and adoption.

**Rationale:** While the current governance arrangements provide broad representation, the evaluation identifies a lack of clear ownership and follow through once foresighting reports are published. Stakeholders consistently report an accountability gap between insight generation and action.

## Recommendation 3: Future Funding Model

**Recommendation:** Review the Hub's funding model to improve VfM, reduce per-cycle cost, and incentivise Catapults to take greater ownership of the "cause-action" phase. This could include:

- Introducing a split funding or modular funding model - move from a single, centrally funded block model to a funding structure that separates (a) cycle delivery; (b) adoption / impacts generated
- Testing an "allocated + competed" funding blend - provide Catapults with a small, allocated baseline to maintain foresighting capability and cover early scoping activity. Introduce a competitive commissioning pot where Catapults (or consortia of Catapults with FE/HE or sector bodies) bid for cycle delivery or implementation funding. Evaluation criteria would include: strength of sponsor commitment, clear route to adoption, quality of implementation partners, and alignment with national missions
- Incentivising adoption through outcome linked payments - shift a portion of funding to be contingent on clear, evidencable steps toward adoption e.g., documented engagement with FE/HE, curriculum proposals submitted, identification of standards routes, or industry led action planning. This encourages Catapults to continue beyond report writing and avoid the "start–stop" pattern highlighted in interviews
- Testing alternative delivery partners for some cycles - where Catapults lack mandate, capacity or stakeholder reach, Innovate UK should be able to commission cycles from other actors (e.g., Sector Skills Councils, professional bodies, clusters or place based partnerships). This creates competitiveness on cost and quality, and avoids over reliance on organisations where foresighting is not core to their mission. It could also encourage Catapults to work with other actors, to ensure they have the required networks and expertise to facilitate the foresighting process and its implementation
- Maintaining a single national data asset to avoid duplication and cost escalation - while cycle delivery could be distributed or competed, the Data Cube could remain centrally governed (e.g. by Innovate UK or Skills England). This prevents fragmentation, protects data quality standards, and ensures all cycles feed a single, updatable national evidence base.

**Rationale:**

- High cost to date without equivalent evidence of downstream adoption makes VfM a strategic concern
- The current model results limited incentives for Catapults to drive implementation or strategic prioritisation
- Catapults vary significantly in skills capacity, resourcing, and relationships with education; a uniform funding model does not reflect this variation
- Stakeholders described a "funding cliff edge" after the foresighting report, leaving adoption unfunded and unattributed
- A more modular, commissioned model allows Innovate UK to prioritise high value, mission-critical areas, align cycle timing with policy windows, and ensure resources are directed to cycles with strong sponsor pull
- Maintaining a central Data Cube prevents fragmentation and ensures cost-effective scaling.

### 1.5.2 Priority 2: High value improvements to effectiveness and credibility

These recommendations would significantly improve the efficiency, credibility, and perceived value of the foresighting offer.

**Recommendation 4: Adoption pathways**

**Recommendation:** Design and resource adoption pathways for foresighting outputs within and beyond the Catapult network to ensure findings are adopted. This may include:

- Formal routes into Skills England processes, LSIPs and devolved nation equivalents, and standards development mechanisms
- Clear expectations about which organisations are responsible for translation and implementation
- The use of alternative or additional delivery partners where Catapults lack the mandate or capacity to drive skills adoption.

**Rationale:** The evaluation highlights significant variation in Catapult capability and remit when it comes to driving downstream skills action. Reliance on Catapults alone risks uneven impact and limits system wide adoption.

**Recommendation 5: Simplify foresighting outputs**

**Recommendation:** Reports to be concise, insightful and action orientated

- A tiered reporting model, comprising concise executive action briefs, practitioner focused summaries, and technical annexes
- Reports need to be developed in line with the needs of the different audiences. All should be concise with the key insights relevant for employers/ educators/ trainers/ policy makers all identified separately.

**Rationale:** Stakeholders consistently value the quality of foresighting outputs however stated that reports are often too dense and insufficiently prioritised to support action. Evidence suggests that more concise, targeted outputs are more likely to be used.

**Recommendation 6: Streamline the foresighting process to reduce burden on participants**

**Recommendation:** Continue to refine the foresighting process to minimise unnecessary burden on stakeholders. This could include:

- Reducing the number and length of workshops where possible
- Increasing the use of surveys, pre-work, and asynchronous engagement
- Aligning participant seniority with task type, and reserving workshops for activities that genuinely require collective sense checking or validation
- Stakeholder involvement only being sought at critical times and where their knowledge of the technology/market can inform the future capabilities required.

**Rationale:** While engagement levels are high, the evaluation identifies time burden, scheduling challenges, and process length as persistent barriers to sustained participation and confidence in VfM.

### 1.5.3 Priority 3: Medium term capability and system building

These recommendations support longer term sustainability and the embedding of foresighting capability across the system.

| Recommendation 7: Address coverage gaps in priority mission areas |
| --- |
| **Recommendation:** Future foresighting activity should be rebalanced to address underrepresented mission areas, particularly health and agriculture, and explicitly linked to priority technologies. |
| **Rationale:** The portfolio is currently focused on Net Zero and Digital areas. This imbalance could lead to a disconnect from broader UKRI and government priorities or future key technology areas. Instead of relying on the current mostly bottom-up approach, UK policy priorities should guide the direction for workforce foresighting, and the cycles should have educators/ trainers and employers bought into addressing these priority gaps. |

# 2. Introduction and Background

## 2.1 Introduction

Fortia Insight (formerly RSM Consulting LLP) was appointed by Innovate UK to conduct a process. impact and Value for Money (VfM) evaluation of the Workforce Foresighting Hub (hereafter, 'the Hub').

## 2.2 Purpose of this document

The purpose of this evaluation was to assess the success of the Hub for the period 2022 to 2025 to understand the impacts realised to date, as well as the strengths and weaknesses of the approach, to help the future direction of workforce foresighting.

## 2.3 Research questions

The research questions to be addressed in the evaluation were:

**1. Relevance and Strategic Alignment**

- To what extent and how does the Workforce Foresighting Hub align with Innovate UK's strategic impact domains?
- To what extent and how are the foresighting cycles addressing the most critical future skills gaps in priority sectors?

**2. Process and Participation**

- To what extent and how effective is the foresighting methodology in engaging stakeholders across industry, education, and policy?
- To what extent and how is the quality and diversity of participation in foresighting cycles representative (e.g. sectoral, regional, demographic)?
- To what extent and how well are the six steps of the foresighting process understood and implemented by participants?

**3. Outputs and Immediate Outcomes**

- What types of outputs (e.g. occupational profiles, skills gap analyses, action plans) have been produced, and how are they being used?
- To what extent and how have the foresighting reports influenced curriculum development, training provision, or workforce planning?

**4. Intermediate and Long-Term Impact**

- What evidence is there that the Hub has contributed to changes in workforce development strategies in key sectors?
- To what extent and how have any new training programmes, apprenticeships, or qualifications been developed because of the Hub's work?
- What are the early signs of impact in sectors like offshore wind, RNA therapeutics, or digital technologies?

### 5. Collaboration and Systemic Change

- To what extent and how has the Hub facilitated collaboration between Catapults, industry, and education providers?
- Is there evidence of improved alignment between innovation and skills systems (e.g. through the Skills Value Chain approach)?

### 6. Value for Money and Sustainability

- What is the perceived value of the Hub to stakeholders, and how does this compare to the investment made?
- What are the prospects for sustaining or scaling the foresighting approach beyond the current funding period?

## 2.4 Evaluation methodology

**Document and data review:** A comprehensive review of Hub documentation including business cases, proposals, grant letters of offer and delivery records alongside secondary data sources and wider literature. This review informed refinement of the Theory of Change (ToC) and ensured the evaluation was grounded in the Hub's activities and intended outcomes. Reviewing wider literature provided contextual information and allowed the Hub to be framed within broader government policy and skills context.

**Evaluation planning and framework development:** The ToC and its associated KPIs were developed using information from the document and data review, supplemented by scoping interviews. A collaborative validation workshop with key stakeholders from Innovate UK, Catapult network leads, and the Gatsby Foundation to further refine the ToC and test assumptions and KPIs. The Monitoring and Evaluation Framework outlined specific methods and data sources used to address Innovate UK's research questions. It was fully aligned with the evaluation themes in the Invitation to Tender and developed according to HM Treasury's Magenta and Green Book standards, ensuring a robust and credible approach to assessing both process and impact.

**Evidence gathering:** The evaluation methodology employed a mixed-methods approach, combining several strands:

- **Stakeholder interviews:** 29 interviews were conducted with representatives from six stakeholder groups, as mapped and agreed with Innovate UK. Interviewees included members of the Manufacturing Technology Centre (MTC) Workforce Foresighting teams, Catapult Network Leads, Foresighting Cycle Sponsors, Foresighting Experts/Workshop Participants, the Steering Board, and wider sector stakeholders
- **Surveys** were distributed to Foresighting Workshop Participants (18 responses) and Catapult Network Leads (8 responses)
- **Case studies:** Five case studies were developed, selected according to agreed criteria and in collaboration with Innovate UK and the MTC Workforce Foresighting team. Selection criteria ensured that case studies were representative and offered meaningful insights, considering coverage across sectors and foresighting themes, diversity and representativeness of stakeholders, geographical and demographic spread, stage within the skills value chain, and demonstrable evidence of action or change. The five case studies selected were: CSA Catapult; Digital Catapult; Energy Systems Catapult; High Value Manufacturing Catapult and Offshore Renewable Energy Catapult.

**Analysis and reporting:** Qualitative data from interviews, workshops, and case studies were thematically analysed. Survey data was cleaned and summarised with descriptive statistics. Contribution

analysis mapped evidence to the ToC to build an impact narrative. A full economic/VfM analysis was not feasible due to delayed quantifiable impacts. Instead, case studies and qualitative methods were used to trace early influence, stakeholder responses, and spillover effects, mapped through the SAV model and triangulated with external data. Spillover pathways were embedded in the ToC to align with recognised standards for system wide impacts.

Qualitative findings are presented using consistent terms:

- “a few” for fewer than 25% of those responding to a question
- “some/several” for between 25% and 50%
- “majority” for between 50% and 75%
- “most” for over 75%

## 2.5 Format of this report

The remaining chapters in this report are as follows:

- Hub Rationale
- Hub Context
- Governance and Delivery
- Research Questions – Key Findings
- Conclusions and Recommendations
- Appendices

# 3. Hub Rationale

## 3.1 Purpose of this chapter

This chapter sets out the rationale for Innovate UK's investment in the Hub, which in turn lays the foundation for our evaluation framework.

## 3.2 Rationale for the Innovate UK Workforce Foresighting Hub

The Hub was launched in 2022 as a flagship intervention within the UK's innovation and skills ecosystem to address a critical structural challenge – the time lag between technological innovation and workforce capability. The time lag refers to how quickly technology advances compared to how long it takes to train and develop the workforce that can use it.

Research underpinning the Hub, particularly the Manufacturing the Future Workforce report[2], identified the UK lacked a systematic approach to anticipate future occupational and skills needs arising from innovation. With 66% of UK businesses reporting difficulty recruiting workers with the right skills and projections suggesting 6.5 million workers will be under-skilled by 2030, Innovate UK recognised the need to pre-empt and avoid a national workforce capability shortfall.

The Hub therefore aimed to directly support national commitments in the UK Innovation Strategy (2021) and DSIT's Science and Technology Framework (2023) commitments to "build a skilled workforce for tomorrow's industries." It also aligned with the Government's "Invest 2035" Industrial Strategy (2024), which sets long-term economic priorities for the UK and identifies skills shortages as a major barrier to productivity, innovation diffusion, and sectoral competitiveness. The rationale for Innovate UK's intervention was:

- To systematically forecast the future workforce implications of technology adoption across the UKRI's strategic innovation domains: Net Zero, Digital & Technology, and Healthy Living & Agriculture
- To bridge the disconnect between industry skill demand signals and the education and training system's ability to respond
- To create a permanent national foresighting capability, embedded across the Catapult Network and connected to Skills England and IfATE, ensuring that skills supply keeps pace with innovation-led economic change
- As the policy environment continues to evolve, the Hub must also respond to shifts in technological priorities. The *Modern Industrial Strategy: Digital and Technologies Sector Plan* (DSIT, 2025) places increased emphasis on a set of **Frontier Technologies** with the highest potential to reshape the UK economy - Advanced Connectivity Technologies, Artificial Intelligence, Cyber Security, Engineering Biology, Quantum Technologies, and Semiconductors. These rapidly developing areas require timely and reliable workforce intelligence to support curriculum reform, talent development, and investment decisions.

The need for the Hub is further highlighted by the conditions present in 2022. At that time, the UK's innovation and skills systems operated with fragmented responsibilities, uneven technical capability, and limited coordination across national and regional actors. While innovation activity was accelerating with growing investment, mission-led policy, and emerging technology clusters the talent ecosystem lacked

[2] The "Manufacturing the Future Workforce" report, published in January 2020, presents findings and recommendations from an international study into workforce development led by the High Value Manufacturing Catapult (HVMC) with funding and support from the Gatsby Foundation.

the infrastructure to translate this momentum into a workforce capable of adopting new technologies at scale. Workforce foresighting was dispersed across multiple bodies, higher-technical training remained underdeveloped, and no consistent mechanism existed for understanding the workforce implications of new technologies. Innovate UK's internal business case highlighted that without a shared evidence base or authoritative leadership on future skills, the UK risked slowing innovation adoption and falling short of ambitions for research intensity and productivity.

The Hub was therefore established to provide an integrated, authoritative capability that connects innovation policy with workforce planning, ensuring that the UK's talent system evolves in step with technological change and supports sustainable, innovation-led growth.

## 3.3 Hub objectives

The Hub's mission was to *"pre-empt and avoid a national workforce capability shortfall."* Its primary objectives, consistent across Innovate UK's internal business case, the delivery plan, and the MTC delivery proposal, were to:

- **Develop and standardise a UK-wide workforce foresighting process**, providing a consistent and transparent approach to identifying future occupational and skills needs
- **Design and operate an open access foresighting system (the "Data Cube")**, integrating multiple data sources to analyse and visualise foresighting intelligence across sectors
- **Build a national community of foresighting practitioners**, training over 40 Catapult-based leads and partners in a consistent foresighting methodology
- **Deliver and publish foresighting cycles and reports** across all 15 Catapults, focusing on technologies with a 2–5-year adoption horizon (e.g. hydrogen storage, floating offshore wind, modern methods of construction, mRNA therapeutics)
- **Facilitate "caused action"** — the translation of foresighting outputs into practical interventions, such as revisions to apprenticeship standards, new course design, or targeted investment in training capacity
- **Strengthen collaboration across the innovation and skills ecosystem**, linking industry, Catapults, Skills England, IfATE, DfE, and regional skills bodies to align foresighting data with workforce policy.

While there were not specific timelines linked to each objective, Innovate UK's business case (2022) set out the following timeline expected achievements of the Hub each year from 2023-2025:

*Table 1: Expected achievements of the Hub each year from 2023-2025*

| Stage | By March 2023 | By March 2024 | By March 2025 |
|---|---|---|---|
| **Set up and Operation** | • Steering Board and Technical Committee in place<br>• Hub core team resources in place<br>• Lessons learnt incorporated<br>• Identity and brand established<br>• Ongoing delivery plan prioritised and agreed with stakeholders<br>• Skills Value Chain widely endorsed | • Operations extended beyond Catapults<br>• Additional funding models agreed and secured<br>• 'Market' review complete and preferred sustainable route recommended<br>• Resourcing / succession secure | • Hub operations become more standardised and transferrable<br>• Operational review – in context of achievements and changing landscape |

| Stage | By March 2023 | By March 2024 | By March 2025 |
|---|---|---|---|
| **Systems, process and tools** | • Version 1 in reserve<br>• Version 2 complete after development and trials<br>• Initial group of Sponsors trained using shared example | • Version 3 using custom web-tools specified to support next stage as required<br>• Data review to establish and publish overarching insight | • Version 3 rolled out to support wider take up and local embedding<br>• Model of sustainable common data ownership defined |
| **Activities, influence and impact** | • Stakeholder take-up of foresighting findings<br>• External foresighting sponsors trained and supported to deliver Activity 0 and Foresighting cycles.<br>• Further target sectors identified | • Additional Sectors take up and share data<br>• Skills Value Chain oversight body in place<br>• Skills Value Chain case studies used in significant campaign | • Future workforce planning embedded in most regional, national, sector and professional bodies |

## 3.4 Hub activities

The Hub operated through a structured, six-stage **workforce foresighting process**, embedded within a repeatable cycle (typically 18–24 weeks):

*Table 2: Workforce foresighting process*

| Stage | Purpose | Typical Activity |
|---|---|---|
| **1. Considering** | Identify broad challenges ("wicked problems") linked to major national missions such as net zero or digitalisation | Horizon scanning workshops, early topic scoping, and policy mapping |
| **2. Identifying** | Define the specific technological disruption and affected occupational areas | Convene domain specialists, establish challenge sponsors, agree focus areas |
| **3. Preparing** | Convene expert panels and foresighting sponsors | Recruit participants from industry, FE/HE, and professional bodies; plan workshops |
| **4. Carrying Out** | Conduct workforce foresighting analysis | Facilitated workshops, Delphi-style exercises, and structured data collection using the Data Cube |
| **5. Communicating** | Translate findings into practical insights | Produce foresighting reports and recommendations for industry, education, and policy |
| **6. Causing Action** | Implement changes and monitor outcomes | Feed findings into SkillsCompass, IfATE standards, and local training provision |

Each cycle generated:

- 25 future occupational profiles
- Sector- and technology-specific reports
- Integration of foresighting data into the SkillsCompass platform (run by IfATE/Skills England) to inform curriculum design and qualification standards.

The **Data Cube** (an AI- and LLM-enabled data architecture) underpinned the process, allowing analysts to map future skill needs, benchmark them against current provision, and conduct "map and gap" analyses across technologies and geographies.

## 3.5 Intended outcomes and impacts[3]

The Hub aimed to deliver both near-term outputs and longer-term systemic change across the innovation skills ecosystem. The intended outcomes and impacts from the original business case are outlined below:

### Short-Term Outcomes

- **Industry representation** – the UK has foresighting requirements for the skills created through UK innovation
- **Stakeholder collaboration** – stakeholders are able respond appropriately to Innovate UK's workforce foresighting findings
- **Skills forecasting** – the ability of partners to respond to consider workforce impact

### Medium to Long-Term Outcomes

- **Infrastructure** – the UK has a consistent and standardised approach to workforce foresighting which plays an integral role in the education and training system
- **Ecosystem** – the UK has the solutions and ecosystem required to meet business demand for innovation talent and skills
- **Education and training provision** – education and training provision reflects changing needs instigated by innovation

### Long-Term Impact

- **UK innovation** – leader in the creation, adoption and diffusion of innovation
- **Ecosystem** – the innovation and education & training systems operating successfully to create the talented workforce needed to grow the UK economy
- **Innovative businesses** – improved performance and resilience of innovative businesses. Increased workforce productivity. Increased R&D investment
- **UK talent –** individuals with the right skills, in the right businesses to realise their potential to the benefit of the UK economy

The following impacts were additionally suggested by Innovate UK:

- Workforce foresighting is embedded across government, catapults, and industry, becoming an integral element in decision-making, shaping strategic skills-related investments, and policy development[4]
- Data Cube is adopted across government as the standard tool for foresighting intelligence and workforce planning.[5]

The outcomes and impacts were further developed and detailed within the ToC (see Appendix 1 – Theory of Change).

[3] Innovate UK WF Hub Business Case 2022-25, and information provided by Innovate UK to Fortia Insight (December 2025).
[4] Additional outcome provided by Innovate UK to Fortia Insight (December 2025).
[5] Additional outcome provided by Innovate UK to Fortia Insight (December 2025).

## 3.6 Hub resources

The Hub was funded and governed by Innovate UK and was delivered through a partnership between the High Value Manufacturing Catapult (HVMC) and the Manufacturing Technology Centre.

*Table 3: Hub resources*

| Category | Details |
|---|---|
| **Funding** | £6,998,000 was provided by Innovate UK in FY2023/24 - 2024/25 and £3,134,834 in FY2025/26 |
| **Delivery Lead** | HVMC, subcontracting to the MTC |
| **Core Team** | Hub Director, Data Cube technical team, foresighting coaches, analysts, marketing/comms support |
| **Governance** | Steering Board, Management Board, Technical Committee; six-monthly strategic reviews and benefits tracking |
| **Partners** | Catapult Centres (14 of 15 active), IfATE/Skills England, DfE, DSIT, sector groups, employers, FE/HE institutions |

# 4. Hub Context

## 4.1 Purpose of this chapter

This chapter outlines current policies that are likely to depend on future skills for success and explains how these considerations shape the Hub's evaluation framework.

## 4.2 Current policies

### UK skills and innovation policy framework

Over the past decade, the UK Government's approach to skills and innovation has rapidly evolved to tackle persistent productivity challenges, regional disparities, and technological disruption. Across a series of major strategies including the Industrial Strategy (2017), Skills for Jobs (2021), the UK Innovation Strategy (2021), the Net Zero Strategy (2021), and the Science and Technology Framework (2023) a consistent theme emerged: the UK's economic growth increasingly relies on its ability to anticipate and develop future skills that align with industrial and technological change.

### Industrial Strategy (2017): Building a Britain fit for the future

The 2017 Industrial Strategy identified "People" as one of five productivity foundations, investing £406 million in STEM, T Levels, and technical pathways to address regional productivity gaps and prepare the workforce for emerging sectors like manufacturing, clean energy, and digital industries. However, evaluations revealed persistent skills mismatches, especially in digital, engineering, and construction, highlighting the need for a more forward-looking approach to workforce planning. Workforce foresighting played a crucial role here by identifying future skills needs in these sectors, thus guiding targeted investments in education and ensuring workforce development aligned with industrial priorities.

### Skills for Jobs (2021): Employer-led technical education reform

The Skills for Jobs white paper (DfE, 2021) shifted the post-16 education system to focus on employer needs, introducing LSIPs, curriculum co-design, and mechanisms like the Lifetime Skills Guarantee and Lifelong Loan Entitlement (2025). These reforms directly addressed shortages highlighted in the Employer Skills Survey (2024), where 27% of vacancies were due to skills shortages, particularly in construction, digital technology, and healthcare. Workforce foresighting supported these reforms by providing evidence on future skills shortages, enabling the education system to proactively respond to employer needs and reduce skills-shortage vacancies.

### Skills and Post-16 Education Act 2022

Employer Representative Bodies (ERBs) were formally established and given statutory powers by the Skills and Post-16 Education Act 2022. This Act gave the Secretary of State the responsibility for designating ERBs to lead the development and review of LSIPs for specified geographical areas in England. ERBs must be representative of local employers and capable of developing LSIPs. They are intended to ensure that employer voices shape local skills provision, making training and education more responsive to labour market needs. Chambers of Commerce and other business-led organisations are typically designated as ERBs for LSIPs. Workforce foresighting provided the potential for ERBs and others to understand the future skills gaps in their areas.

### UK Innovation Strategy (2021): Linking R&D and workforce capability

The UK Innovation Strategy (BEIS, 2021) set a vision for the UK as a global innovation hub by 2035, with "People" as a core pillar. It introduced the "Skills Value Chain", a model encompassing foresighting, developing training and qualifications, and diffusing skills through education and industry. Innovate UK

was tasked with providing foresighting and evidence on future skills needs, a role fulfilled by the Innovate UK-funded Hub, which offered a systematic process for identifying emerging occupational needs. Workforce foresighting thus aimed to ensure that R&D investments were matched by a skilled and adaptable workforce.

## Net Zero Strategy (2021): green industrial revolution and workforce transition

The Net Zero Strategy projected up to 440,000 new jobs by 2030 in net-zero sectors, supported by £26 billion in government investment. The Green Jobs Taskforce identified critical shortages in areas like nuclear safety engineering and offshore wind maintenance. The strategy emphasised reskilling workers from high-carbon sectors and embedding "green skills" in education. The Hub supported these goals by identifying technical competencies needed for net-zero sectors and signalling where education and employers had to adapt, thus supporting job creation and transition to a low-carbon economy.

## Science and Technology Framework (2023): The UK as a science & tech superpower

The Science and Technology Framework (DSIT, 2023) aims to make the UK a "science and technology superpower" by 2030, with Talent and Skills as a pivotal lever. It prioritizes areas like AI, quantum, semiconductors, life sciences, and telecoms, and commits to expanding talent pipelines. The creation of Skills England marks a shift toward system-level foresight and coordination. The Hub aligned with this mission, serving as the national capability for forecasting skills needs in these priority areas.

## Sectoral and technological drivers

Technological transformation in sectors such as AI, advanced manufacturing, clean energy, and life sciences is outpacing qualification reform. There is accelerating demand for new competencies—like robotics, AI ethics, and hydrogen systems—which requires workforce foresighting to prevent chronic skills gaps. For example, the National AI Strategy (2021) identified a shortage of over 110,000 AI and data specialists, but workforce foresighting has been essential to predict evolving skill demands and ensure the skills system keeps pace with technological change.

## Labour market evidence and skills challenges

The UK is facing a deepening skills gap that threatens national productivity, business performance and long-term economic growth. Research from the Industrial Skills Strategy Council indicates that by 2030, up to 20% of the workforce could be significantly under skilled for their roles, creating widespread implications for service quality, innovation, digital transformation and competitiveness. The skills gap is driven by several converging factors:

- Rising economic inactivity since the COVID-19 pandemic has reduced labour market participation by approximately 850,000 people
- Loss of skilled European workers following Brexit have further constrained labour supply
- Rapid advances in technology are changing job requirements at a pace the education system and training infrastructure have struggled to match. Declining public and private investment in skills over the past decade has compounded these pressures, resulting in more unfilled roles despite low unemployment levels.

If current trends persist, the issue will shift from a shortage of workers to a shortage of the right capabilities. Analysis from the Office for National Statistics[6] found that automation and artificial intelligence are expected to alter or replace tasks in up to 1.5 million roles, increasing the urgency of reskilling. Major national priorities, such as expanding green hydrogen manufacturing, delivering large-scale homebuilding commitments, and accelerating digital transformation, risk being constrained

[6] Which occupations are at highest risk of being automated? - Office for National Statistics

by insufficient specialist skills. Without decisive action, the UK could fall behind global competitors in green growth and technological innovation.

Research and analysis[7] by Skills England forecast significant workforce growth across 10 priority sectors by 2030, with nearly 900,000 additional skilled workers required in priority occupations alone. Demand was expected to rise fastest in Digital & Technologies, Clean Energy, Housebuilding, Engineering, and Adult Social Care, with two-thirds of new roles requiring Level 4+ qualifications. High-growth roles include software developers, engineers, and care workers, many of which face existing shortages. Although 285,000 learners enter these occupations annually, this supply is unlikely to fully meet future demand, particularly in STEM and digital fields. underscoring the need for targeted training investment, employer-aligned pathways, and proactive workforce planning.

## 4.3 UK comparison to the international context

The evidence shows that while the UK performs strongly in high-end research and STEM talent production, it simultaneously faces well-documented weaknesses in mid-level technical skills and adult upskilling. The UK demonstrates high tertiary education attainment and a strong pipeline of STEM graduates, placing it among the leading OECD countries in advanced research capability. However, multiple analyses highlight that these strengths coexist with persistent deficits in the technical skills base needed to fully leverage innovation.[8] Specifically:

- The UK experiences shortages in engineering talent, limited vocational training pathways, and some of the highest qualification–skills mismatches in the OECD undermining mid-skilled workforce capacity despite strong university-level output[9]
- International skills benchmarking shows the UK trails leading European economies including Germany, France, and Spain in practical technology and business skills, ranking 45th globally, signalling structural gaps in mid-level technical competence and applied training uptake[10]
- Research on the UK's IT and technology workforce further identifies a shortage of accessible and effective upskilling programmes, contributing to unmet demand for mid-tier technical professionals and hindering innovation diffusion beyond high-end research roles.[11]

## 4.4 Good practice criteria for workforce foresighting

Globally, countries use diverse systems to assess and anticipate skills needs, combining methods like horizon scanning, expert consultation, and labour market analytics. Good practice includes[12]:

- **Early identification of emerging skills:** effective workforce foresighting systems proactively detect new and evolving skill requirements through structured horizon scanning and futures analysis. Countries with advanced foresighting capability such as Finland and Singapore embed systematic

[7] Assessment of priority skills to 2030 - GOV.UK
[8] Solving the UK skills puzzle: what the data really shows - Cambridge Industrial Innovation Policy
[9] Solving the UK skills puzzle: what the data really shows - Cambridge Industrial Innovation Policy
[10] UK Lags Behind Europe in Tech Skills Despite Superpower Ambitions
[11] Hyve-IT-Skills-Gap-Report.pdf
[12] Summarised from: OECD (2023) Supporting Decision Making with Strategic Foresight; OECD (2023) Supporting Decision Making with Strategic Foresight: An Emerging Framework for Proactive Governments; CEDEFOP/ETF/ILO (2016) Developing Skills Foresights, Scenarios and Forecasts: Guide to Anticipating and Matching Skills and Jobs, Volume 2 5; CEDEFOP (2017) Skills Anticipation: Looking to the Future (Briefing Note); ILO (2016) Developing Skills Foresights, Scenarios and Forecasts; ILO (2017) Skill Needs Anticipation: Systems and Approaches; UNESCO (2018) Transforming the Future: Anticipation in the 21st Century; ETF (2025) From Skills Anticipation to Skills Action; ETF (2025) From Skills Anticipation to Skills Action: A Policy Agenda for the EU's Neighbouring Countries; Demos Helsinki (2022) Foresight and Policymaking: Lessons from Singapore and Finland; Futures Platform – Foresight Case Studies; UNESCO-UNEVOC/CEDEFOP (2025) Meeting Skill Needs for the Green Transition: Skills Anticipation and VET for a Greener Future; CEDEFOP (2026) Organisation Overview; EU Agency Overview – CEDEFOP (2026); UNESCO-UNEVOC TVETipedia (2024) CEDEFOP Definition and Mission

trend monitoring and scenario planning across government to anticipate long-term shifts in labour markets and technology.

- **Quantification of future workforce implications:** robust workforce foresighting practice integrates both qualitative expert input and quantitative modelling to estimate future labour demand. International guidance from the ILO, European Training Foundation (ETF) and European Centre for the Development of Vocational Training (CEDEFOP) emphasises the use of occupational forecasts, scenario modelling and econometric approaches to quantify the scale and timing of skills needs. These methods underpin established EU skills forecasting systems that monitor sectoral and occupational change across Member States.
- **Integration of diverse and high-quality data Sources:** high performing systems draw on a wide range of evidence, including labour market information, vacancy data, employer insights, administrative datasets and futures research outputs. OECD foresighting guidance highlights the importance of cross-sectoral data integration, while the ETF Skills Lab Network promotes the use of multi-country datasets and harmonised labour market indicators.
- **Translation of insight into policy and practice:** international best practice demonstrates that foresighting should directly inform decision-making processes, workforce strategies and curriculum development. For example, Singapore's SkillsFuture initiative uses foresighting outputs to refine training pathways and sector transformation plans, while Finnish public sector organisations apply foresighting to operational planning and service design.
- **Transparent, consistent and methodologically sound governance:** credible foresighting systems operate within clear institutional frameworks and use validated, repeatable methodologies. CEDEFOP and ILO stress the importance of transparency, peer review and systematic processes, while OECD frameworks highlight the necessity of formal mandates, well-defined responsibilities and continuous learning loops.
- **Strong stakeholder engagement:** engagement of employers, trade unions, education providers, labour market intermediaries and government agencies is essential for relevance and legitimacy. International guidance emphasises multi-stakeholder collaboration as a core design principle, and advanced systems such as those in Finland and Singapore institutionalise engagement across sectors.
- **Regular updating and iteration:** given the pace of labour market and technological change, foresighting must be an iterative and continuous process. CEDEFOP's guidance identifies regular review cycles as critical to maintaining relevance, while the OECD highlights the importance of feedback loops to refine assumptions and incorporate new evidence.

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## 4.5 Key stakeholders in the skills ecosystem

The skills ecosystem in England is broad and multi-layered, involving a range of organisations, agencies, and representative bodies that work together to anticipate, develop, and deliver the skills needed for economic growth, innovation, and social mobility. These include:

*Table 4: Skills ecosystem key stakeholders and their roles*

| Stakeholder Type | Example Organisations / Bodies | Role in Skills Ecosystem |
|---|---|---|
| **Central Government & Agencies** | Department for Education (DfE), Skills England, Department for Work and Pensions (DWP) | Policy, funding, strategy, oversight |
| **Regional & Local Bodies** | Local Authorities, Combined Authorities, Employer Representative Bodies (ERBs) | Local strategy, planning, employer engagement |
| **Education & Training Providers** | Further Education (FE) Colleges, Higher Education (HE) institutions, schools, independent training providers | Delivery of skills and training |
| **Employers & Industry Bodies** | Businesses, sector skills councils, trade unions | Identify needs, co-design, fund training |
| **Funding & Support Organisations** | National Lottery, Charities, Private Sector | Targeted funding for skills development / training / upskilling |
| **Learners & Communities** | Individuals, jobseekers, communities | End beneficiaries of the skills system |

However, the range of organisations involved leads to fragmentation. The Hub helped to address this by providing a single, coordinated platform that brought stakeholders together around shared foresighting evidence, standardised insights on future skills needs, and aimed to develop a more connected, collaborative decision making across the skills ecosystem.

## 4.6 Funding possibilities

Key funders of skills development in England include:

*Table 5: Summary of England's skills funding ecosystem*

| Funding Source | Role & Focus |
|---|---|
| **DfE / Skills England** | National strategies, apprenticeships, qualifications |
| **DWP / ESF** | Supports disadvantaged/NEET groups through co-financed employment & training |
| **Apprenticeship & Growth Levy** | Employer-driven training, modular units, SME incentives |
| **LEPs & Local Authorities** | Regional investment and programme delivery |
| **Private Sector** | Employer-funded training, levy contributions, private equity investments |
| **Sector Boards (CITB)** | Industry-specific skills grants |
| **Lottery Charities (BFI, etc.)** | Targeted support in cultural and heritage sectors |

Each of these funders play a key role in developing the skills pipeline ranging from universal access and targeted inclusion to sector-specific training. They were also potential funders of workforce foresighting, and this is considered in Section 6.7.

## 4.7 Implications for workforce foresighting

Workforce foresighting is critical to positioning the UK to successfully deliver on technology policies and missions as it provides the necessary data and intelligence to guide decisions. It should play a role in influencing:

- The allocation of government funding for technology education, and skills development
- Employers regarding investments to be deployed to invest in future recruits
- Education providers in determining new courses or revised modules
- Businesses and sector skills councils in identifying the skills investments required for mission critical sectors.

It is important that consideration is given to barriers along this value chain that may impact the ability of the workforce foresighting process to be fully effective. Specifically:

- Foresighting has limited value if it is not aligned with relevant **government policies**
- Stakeholders must **understand its benefits** and know how to leverage the resulting data to shape policy
- **Prioritisation** is crucial: some future skills will be needed sooner than others, and a strategic roadmap necessary to guide funding and provision
- The value of workforce foresighting lies in its ability to **drive action and deliver tangible results.**

# 5. Governance and Delivery

## 5.1 Purpose of this chapter

This chapter reviews the current governance structure and assesses fitness for purpose and delivery against aims and objectives.

## 5.2 Existing governance

The Hub operated through a governance model comprising:

**The Steering Board**[13] provides strategic oversight and direction for the Hub. It was responsible for setting the Hub's priorities and ensuring alignment with broader UK innovation policy missions (e.g. net zero, digital, health). It approved key decisions (e.g. approving which foresighting cycles to undertake), provided continued commitment and endorsement in support of the Hub's objectives, and monitored overall progress to ensure the Hub connected the UK's innovation and skills systems as intended.

**Membership:** The Steering Board had a high-level membership, and includes senior representatives from:

- Innovate UK (including Business Connect)
- HVMC and others from the Catapults network
- Other government departments and agencies: Department for Science, Innovation and Technology (DSIT), Department for Education (DfE), UK Research and Innovation (UKRI), and The Unit for Future Skills (UFS)
- Skills bodies: Skills England (previously IfATE), the Gatsby Foundation, Universities UK, and the Association of Colleges.

**Meeting frequency and attendance:** The Board met quarterly. Attendance from those involved in delivery was consistent as the presentations and updates were delivered by the Hub team and Innovate UK to the Board members. However, the meeting minutes highlight inconsistency in attendance from external Steering Board members from other government departments and skills bodies.

**Information received by the Board:** The Board received high level updates and cycle proposals. The meetings discussed summary reports on progress of ongoing and completed foresighting cycles, risk/issue summaries, proposals for upcoming activities, milestone tracking, and governance/funding updates.

**Actions and decisions:** The Steering Board's actions related to formal approvals or requests for further work. These included approving or rejecting foresighting cycles and other strategic Hub-level decisions.

**The Management Board** oversaw operational management of the Hub. It translated the Steering Board's strategic guidance into execution, overseeing resourcing, scheduling, milestone assurance, and risk management. However, the Management Board is no longer active and did not exist within the governance structure at the time of this evaluation.

**Membership:** Key managers and delivery partners. It included Innovate UK staff (e.g. the Hub Director and team members from Innovate UK's Talent & Skills and Business Connect teams), representatives from HVMC/MTC, and other core partners such as the Gatsby Foundation. A "cross-Catapult representative" had been designated to represent input from all Catapults beyond HVMC.

[13] Source: WFH Terms of Reference Steering Board 2023-04-20 and Steering Board Meeting Minutes

**Meeting frequency and attendance:** The Board met approximately monthly in 2023. The intent was to have frequent check-ins given the active pipeline of foresighting cycles and ongoing setup tasks. Attendance was generally consistent as the Board directly included people responsible for Hub delivery.

**Information received by the Board:** Information included the foresighting cycle progress, RAG status on schedule and deliverables, and any support functions like communications or data management. They received financial updates, resource allocations, and operational metrics (e.g. number of cycles in progress, number of stakeholders engaged).

**Actions and decisions:** The Management Board generated short- to medium-term actions for Hub team members and immediate decisions to keep the Hub's activities on track. Examples of actions include finalising the Innovate UK grant paperwork and contracts, setting up a model ("dummy") foresighting cycle as a training exercise for new team members, and incorporating Steering Board feedback.

**The Technical Committee** was responsible for ensuring the methodological rigor and technical consistency of the foresighting work. The Committee was tasked with developing, reviewing, and improving the foresighting methodology used by the Hub, and overseeing the data and information management aspects. It also supervised the creation and use of the Data Cube. However, the Technical Committee is no longer active and did not exist within the governance structure at the time of this evaluation.

**Membership:** The committee was composed of foresighting methodology experts and practitioners from within the Catapults network. This typically included the methods lead(s) from MTC, Foresighting Sponsors from each Catapult participating in the Hub, and other sector experts.

**Meeting frequency and attendance:** No fixed schedule is documented.

**Information received by the Committee:** The Committee managed all technical information regarding the processes of foresighting and the resulting data. It reviewed the documentation of each stage of the foresighting process, results coming out of completed cycles, and feedback from participants/facilitators of those cycles.

**Actions and outputs:** Their primary actions included devising solutions for the issues or improvements identified and incorporating feedback from foresighting experts and participants.

**Industry Sponsors** are the industry leads for each foresighting cycle, playing a key role in grounding the Hub's activities in real-world needs.

**Membership:** For each foresighting topic, one or more industry sponsors were identified. These were representatives from relevant companies, industry associations, or sector bodies in the area of the cycle.

**Meeting frequency and attendance:** No separate meetings were held solely for Industry Sponsors. Instead, a sponsor participated in the meetings and workshops of their particular foresighting cycle. The sponsor was expected to attend and, in some instances, chair/co-chair key workshops of their foresighting cycles. They may also host or lead the post-report action workshop.

**Information received by the industry sponsors:** Industry sponsors were kept informed on all relevant information about their foresighting cycle. At the outset, they received the plan for the cycle (often they help shape it) and the end of the cycle, they receive the final foresighting outputs.

**Actions and outputs:** The main purpose of having Industry Sponsors was to drive real-world action based on the foresighting findings. Industry Sponsors were tasked with championing a specific foresighting cycle from an industry perspective and carrying the key findings forward into action. Their actions include providing domain expertise, linking the foresighting team with industry network, and being an advocate for the findings within their industry.

## 5.3 Operational delivery

**In FY 2023/25 and FY 2024/25, the grant award process was:** Innovate UK direct award grant to HVMC as the grant recipient / grant holder. HVMC then subcontracted delivery to MTC who administered funding to Catapults. **In FY 2025/26, this arrangement was modified to designate HVMC as the recipient of the grant award and administrator of the associated funding to:**

- MTC to lead and manage the delivery of the Hub
- Other Catapult Delivery Partners for delivery of foresighting cycles.

**HVMC (strategic partner):** HVMC is the recipient of the grant award. It also serves as the financial and contractual conduit for delivery, establishing collaboration/flow-down arrangements, passing funding to delivery partners (including MTC and later from 2025/25 other Catapults), and managing partner claims / spend monitoring.

**MTC (lead delivery partner):** operationally managed the Hub. It ran foresighting cycles, maintained the Data Cube, coordinated partners, and produced foresighting reports. In FY 2023/24 and 2024/25 it managed funds to other Catapults; in FY 2025/26 this financial management role moved to HVMC.

**Catapult Foresight Leads / Cycle Sponsors:** Lead technical engagement and evidence-gathering within specific sectors or technology domains. The Catapult is responsible for suggesting a cycle topic.

**Industry and Training Provider Partners:** Validate future competency requirements and co-develop actionable recommendations.

**Subcontractors:** Used to address resourcing gaps and support delivery capability where the Catapults lack in-house expertise. For the Hub, this has included specialist software developers supporting the Data Cube and associated systems, as well as specialist advisor to develop process and implementation frameworks, align occupational standards with curriculum design, and advance data infrastructure.

**Reporting Requirements:** The Hub follows a structured reporting cycle:

| Report | Frequency | Content |
|---|---|---|
| **Progress & Delivery Report to Innovate UK** | Quarterly | KPI progress, cycle status, risks/issues, delivery forecast |
| **Financial Statement & Claims** | Quarterly | Spend profile, variances, audit evidence |
| **Annual Performance Review** | Yearly | Strategic impact, benefits realisation, lessons learned, future priorities |
| **Foresighting Outputs** | Ongoing | Published report, structured dataset, and “caused action” recommendations |

**Assurance and Controls**

The governance framework was underpinned by standard programme management artefacts, including:

- Programme Mandate and Target Operating Model
- Risk, Issue, and Decision Registers
- Quality assurance protocols for methodology and publication.

## 5.4 Process and Cycle Identification and Selection

The Hub has delivered foresighting cycles through a documented methodology covering six stages: 'Considering', 'Identifying', 'Preparing', 'Carrying Out', 'Communicating', and 'Causing Action'. These stages are structured across three phases:

**Phase 1:** the Catapults propose a foresighting topic and the Hub team supports validation via a survey and a defined process: the challenge is framed against national priorities ('Considering'), then the innovation/solution is clarified and tested with industry and technology experts to agree the topic ('Identifying'). Validated topics are added to a priority pipeline by the Hub Director and are discussed and ratified by the Hub's Steering Board to strengthen governance and prioritisation strategy.

**Phase 2:** relevant stakeholders (technologists, employers, and educators) are recruited and data sources identified ('Preparing'). The convened stakeholders participate in workshops and work through open-source/global datasets to gather and validate insights ('Carrying Out'). Outputs typically include a foresighting report and 20-25 future occupational profiles, which are then published and communicated to inform changes to provision and support action planning ('Communicating').

**Phase 3:** the lead Catapult drives stakeholder-led change based on the recommendations generated from the foresighting cycle ('Causing Action'). This is supported by publication of the report/action plan and by importing foresighting cycle data into the Data Cube to expand the dataset for interrogation through the open access portal.

A summary description of the activities in the above process stages is shown below.




*Source: Innovate UKWFH FY 25-26 Proposal, recreated using Fortia Insight branding*

## 5.5 Strengths and areas for improvement in existing governance

Analysis of stakeholder feedback highlights a governance system that has strengthened over time, is becoming more rigorous, better structured, and increasingly effective at convening cross-system stakeholders. Consultees acknowledged meaningful progress in areas such as cycle scrutiny, representation, and process consistency, while also identifying clear opportunities to further enhance clarity, transparency, and the translation of oversight into downstream action. The table below summarises the key strengths and areas for development emerging from the evidence.

*Table 6: Governance structure strengths and areas for development*

| Strengths | Areas for development |
|---|---|
| • **Increasing rigour in cycle approval and sponsorship scrutiny:** it was suggested the Steering Board became more rigorous in testing sponsor credibility, for example sending back weak proposals and requiring evidence of influence before approval<br>• **Broader, cross-system representation strengthening oversight:** Steering Board membership included cross-government and skills-system organisations (e.g. Steering Board includes Innovate UK, Skills England, UKRI, Gatsby, DfE), enabling broad oversight and strategic alignment across policy, innovation and skills<br>• **Streamlined and more structured governance:** feedback suggested there were initially too many meetings / groups however this evolved into clearer core forums plus weekly operational check-ins to manage risks<br>• **More structured and frequent communication between delivery partners and Innovate UK**: weekly alignment meetings with written follow-ups to reduce ambiguity, improve transparency<br>• **Process efficiency gains:** delivery of cycles has become significantly faster and smoother, supported by the introduction of AI automation, reduced manual work, and major upgrades to the Data Cube and tooling | • **The Board did not contain sufficient influence with education and skills funders** to either a) align with their current funding priorities or b) influence them at a strategic level. Ideally the Board would have the links to ensure the workforce foresighting efforts are concentrated on the most critical future skills to the UK economy<br>• **Lack of clear accountability regarding delivering impacts:** it was highlighted by a number and range of consultees that, after reports and data are produced, no single entity is driving the implementation of recommendations and there is with no structured handover or monitoring. Departments and other users should be more actively represented on the Steering Board to ensure follow through<br>• **Board effectiveness:** consultees suggested there was no structured induction to the Steering Board and / or ongoing support for new members. This results in limited understanding of the program's complexity and intended impacts. The Management Board's role is also unclear, with infrequent meetings and overlapping discussions<br>• **Cycle approval and implementation pathways remain slow and burdensome:** sponsors and conveners experienced delayed approvals and unclear expectations, contributing to compressed or inefficient delivery timelines<br>• **Performance reporting insufficient for strategic oversight:** lack of tracked metrics on dissemination, reach, uptake, and downstream action limits governance insight into impact |

## 5.6 Delivery (FY23/24; FY24/25 and FY 25/26)

### 5.6.1 Cycles completed

To date:

- 28 foresighting cycles have been completed and nine are left to complete
- 25 foresighting reports have been generated across eight of the nine Catapults participating. Medicines Discovery is the only Catapult without a recorded report output in the current monitoring period. These reports have been disseminated to stakeholders, however there is no performance information collected on their usage by these stakeholders.

Hub documentation indicates progress in formalising how foresighting cycle topics are prioritised and categorised.[14] By July 2023, documentation shows prioritisation being explicitly framed against government and UKRI departmental considerations and then mapped to Innovate UK impact domains (Net zero; Digital and Technologies; Healthy Living and Agriculture). Hub documentation from mid-2025

[14] Source: WFH Programme Review 060623

describes a more formalised prioritisation, validation, and quality assurance process operating through staged gates.[15] This includes:

- Front-end "Consider" and "Identify" phases that take place before delivery begins
- An explicit requirement for cycle opportunities to be driven by industrial/sector strategies and supported by relevant national and/or regional policy evidence confirming priority
- A Quality Assurance model structured around Gate 1–3
- A requirement for Catapults to complete a 33-question evidence survey to support cycle proposals.

A review of the cycle topics included in the monitoring dataset shows clear alignment with Innovate UK's national mission areas. This suggests that, while the Hub has been contributing extensively to priority mission areas such as net zero and digital, there is scope to strengthen its coverage of health and associated innovation domains to ensure a balanced portfolio aligned with all national missions.

*Table 7: Overview of number of reports published per UK national mission area*

| UK National Mission Area | Number of Cycle Reports |
|---|---|
| Net zero–related technologies | 14 |
| Digital innovation | 8 |
| Healthy living and agriculture mission area | 3 |

*Table 8: Catapult involvement in foresighting cycles and published reports*

| Catapult Name | Number of Cycles Involved In* | Number of Reports Disseminated | Mission Area(s) of Published Reports |
|---|---|---|---|
| **Cell and Gene Therapy** | 2 | 1 | Healthy living & Agriculture |
| **Compound Semiconductor Catapult** | 2 | 1 | Digital |
| **Connected Places** | 3 | 1 | Digital |
| **Digital** | 5 | 3 | Digital |
| **Energy Systems** | 2 | 2 | Net Zero |
| **High Value Manufacturing**** | 22 | 10 | Net Zero; Digital |
| **Medicines Discovery** | 0 | 0 | N/A |
| **Offshore Renewable Energy** | 7 | 5 | Net Zero |
| **Satellite Applications** | 4 | 2 | Digital |

**Note: "Number of cycles involved in" includes cycles reported as completed, in progress, or planned.*
***Note: within HVMC, all six catapult centres have been involved in at least one cycle to varying degrees.*
*Source: "WFH Impact Review – Monitoring Data 19.11.2025"; provided to the evaluation team by MTC.*

*Catapults not involved and implications for mission coverage.* The monitoring data shows that Medicines Discovery Catapult (MDC) is the only Catapult without a recorded foresighting report. This may represent an important gap in coverage, as MDC sits within the healthy living mission area. MDC did not participate in the foresighting Hub primarily due to internal capacity constraints. Participation remains a future possibility, as the team may revisit the opportunity during upcoming budget planning. MDC also noted that their organisational model, focused on connecting the sector rather than producing tangible products, which makes involvement more complex compared with other Catapults, contributing to their decision not to join at this time.

[15] Source: Innovate UKWFH Steering Board 21st July 2025

### 5.6.2 Foresighting participants trained (technologists, educators, employers)

Monitoring data indicates the Hub has exceeded its target for building a national community of foresighting participants across technologists, educators, and employers. The Hub has engaged 1,140 individuals across foresighting workshops and related activities, including 357 employers, 358 educators, and 425 technologists. This level of engagement demonstrates the Hub has successfully convened a wide and diverse cross-sector group and surpassed the participation target set for this outcome. This breadth of engagement provides a strong foundation for awareness-building, knowledge exchange, and cross-sector dialogue around future workforce challenges. Collaboration is further discussed in section 6.6. In addition, the Hub aimed to enhance foresighting capabilities by providing training for convenors and **33 individuals were trained against a target of 48**.[16]

### 5.6.3 Stakeholder engagement across government, industry, and academia, embedding foresight insights in strategic planning

There is evidence of growing involvement from industry, educators and government. The numbers attending workshops are shown in the following table:

*Table 9: Overview of number of stakeholders engaged via workshops for each stakeholder type*

| Stakeholder Type | Number engaged via workshop |
|---|---|
| Industry / Employers | 357 |
| Educators / curriculum developers | 358 |
| Technology / domain specialists | 425 |

*Source: "WFH Impact Review – Monitoring Data 19.11.2025"; provided to the evaluation team by MTC.*

In addition, across a range of foresighting cycles Catapults documented engagement from stakeholders spanning government, industry, academic, and skills sectors beyond workshop attendance, specifically:

- Government involvement is referenced repeatedly, with mentions of BEIS/DBT, DfE, IfATE, local and regional authorities, and national policy forums engaged in cycle discussions or receiving foresighting outputs
- Industry engagement is similarly strong, with participation from SMEs, large employers, sector bodies, technology specialists, and industry convenors
- FE and HE providers appear frequently in the monitoring data as stakeholders, and universities and specialist research organisations contribute to workshops and advisory roles.

While visibility and engagement are clearly evidenced, the monitoring data contains only early, self-reported indications of foresighting insights being embedded into strategic planning processes. Some Catapults report that foresighting outputs are informing internal strategies, mission-aligned planning, and workforce development considerations.

However, these statements cannot be independently validated through the monitoring data, as the documentation does not provide evidence of:

- Adoption of workforce foresighting recommendations by external education or skills providers
- Integration of workforce foresighting insights into national standards or qualifications
- Formalised planning structures that use workforce foresighting data
- Repeated or systematic use of insights across cycles or organisations.

[16] Source: GOL 22-25

Interviewees consistently highlighted convening as a core strength of the foresighting methodology, noting that workshops created valuable opportunities for interaction between actors who do not routinely engage on skills and workforce planning. Further, survey feedback from workshop participants showed that they felt positively about their engagement, with respondents rating the diversity of participants and opportunities to contribute positively, and expressing high levels of satisfaction with facilitation and communication. These findings suggest that the Hub has been effective in creating visible, credible spaces for engagement and in raising awareness of foresighting approaches across the innovation and skills ecosystem. However, interview and survey evidence also indicate the depth and sustainability of engagement varied and engagement outcomes were highly contingent on several enabling conditions:

- Clear communication of purpose and value of each foresighting process
- Adequate lead time in preparing for workshops
- Alignment between workshop tasks and participants' roles and seniority.

Where these conditions were not fully met, engagement was described as more fragile, with risks of partial attendance, fluctuating participation across sessions, and reduced confidence in the proportionality of outputs relative to the time commitment required. A recurring theme across stakeholder groups was the challenge of sustaining engagement across extended or intensive foresighting cycles, particularly among busy industry stakeholders and senior participants. Industry sponsors and Catapult Leads described the process as demanding in terms of time and effort when cycles involved repeated workshops or granular validation tasks.

### 5.6.4 Lessons learned

The HVMC Workforce Foresighting Hub proposal for FY 2025/26 identified several lessons learned and focus areas to address them, the following table outlines progress made against each area in FY 2025/26:

*Table 10: Lessons learned from FY 2023/24 – FY2024/25*

| Focus Area | Lesson learned | Intended focus for FY 2025/26 | Evidence of progress made (as of February 2026) |
|---|---|---|---|
| **Cycle Delivery** | Cycle uptake – starting and delivering cycles progressed at a slower pace than initially anticipated owing to familiarisation and learning lag. | Identify further efficiencies in the process. | Key changes that enabled quicker foresighting cycles increased volume of cycle reports in FY24/25 include:<br>• Use of AI (with human validation), making workshops more efficient and focused<br>• Development of onboarding materials to help conveners prepare in advance, reducing repeated explanations and improving consistency and workshop effectiveness<br>• Streamlined management with clearer points of contact, replacing multiple project managers with unclear differentiation<br>• Some conveners moved from needing close guidance to being able to lead cycles more independently |
| | Cycle topic selection – to maximise engagement from as many Catapults as possible, flexibility and latitude have been required in the | Revised validation processes (Appendix 2) will be adopted, with increased clarity on the rationale for topic | Hub documentation (mid-2025) describes a more formalised prioritisation, validation and quality assurance process using staged gates. |

| Focus Area | Lesson learned | Intended focus for FY 2025/26 | Evidence of progress made (as of February 2026) |
|---|---|---|---|
| | cycle selection process to ensure the target number of cycles (30) was achieved. | selection and a ratification process developed for Innovate UK or a broader Steering Board. | Evidence also indicates increased rigour in cycle approval and sponsorship scrutiny, including Steering Board testing of sponsor credibility. |
| | Impact domain measurement – to date, each cycle has been allocated to a single Innovate UK impact domain. Many cycles are linked to multiple impact domains, and reporting should be amended to reflect this. Challenges also exist in balancing impact domains due to variation in capability and reach among Catapults—for example, all Catapults deliver Digital, but only three of the fifteen have significant presence in Healthy Living and Agriculture. | Improve reporting to show details of each cycle topic and relevancy to impact domains, and improve the ratio of cycles in Healthy Living and Agriculture to better align with Innovate UK spend across these sectors. | Reporting includes explicit portfolio-level mapping of cycle reports to Innovate UK national mission areas (e.g., Net Zero, Digital, Healthy Living & Agriculture) and Catapult-level reporting of mission area(s) for published reports. There is scope to strengthen coverage of the Healthy Living & Agriculture mission area (including Medicines Discovery having no recorded report output). There is no direct evidence that cycles are now systematically allocated to multiple impact domains (as a reporting standard) or that a rebalancing action has already been implemented in FY2025/26. |
| | Reports – feedback indicates that reports have been difficult to interpret for some Catapults and challenging to read for stakeholders not involved directly in the cycle. | Improve reports to ensure they are more readily digestible for different user groups as well as participants. | Workshop participants rate reports and recommendations as clear and high quality, with mixed views on actionability". Many stakeholders interviewed continue to describe reports as long, dense, and overly technical, with some Catapults having to produce additional concise summary formats to improve usability for non-specialist audiences. |
| **Stakeholder Engagement** | Broader participation in cycles – while participation across industry, education and SMEs has been reasonable, it has not always been sufficiently broad, which may limit Catapults' ability to drive action following a cycle. | Broaden the number and quality of participants in each cycle. | Interview evidence describes the introduction of stakeholder mapping and CRM-style tracking of participants. However, stakeholders continue to note representativeness challenges (e.g., SME participation constraints; limited evidence of systematic engagement across devolved nations; participant seniority mismatches for granular tasks), indicating that breadth has increased, but gaps remain. |
| | Despite engagement with more than 40 universities through cycle workshops, further activity is required as many universities lack awareness of the foresighting work and its potential benefits, particularly regarding curriculum change. | Ensure at least one university participates in every cycle (as part of the agreement-to-proceed process), and increase communication and engagement with a broader range of universities. Explore opportunities to reach universities through trade bodies and other influential organisations. | No clear evidence to date that FY2025/26 improvement recommendations, i.e. improved communication and engagement channels through trade bodies, have been applied consistently. |

| Focus Area | Lesson learned | Intended focus for FY 2025/26 | Evidence of progress made (as of February 2026) |
|---|---|---|---|
| **Data Cube** | Data Cube – Open Data Access – Although cycle-specific data is available within the Data Cube, it is currently accessible only via individual cycle reports on the Hub's website. Datasets can be accessed via report links to the visualisation tool but must be viewed alongside the report to navigate data for each cycle. There is a requirement for direct access to all data through a single entry point. | Increase ease of access by exploring options to maximise accessibility for as many audiences as possible. | A single direct access entry point to all datasets has not been delivered to date. |
| | Data Cube – opportunities for increased automation in processes, enabling time efficiencies. | Automate more of the process to support cycle efficiency. | Some stakeholders said that early AI-generated occupational profiling and Data Cube outputs were not sufficiently accurate or sector-relevant, and often required substantial manual correction, validation, and expert sense-checking. However, they noted that output quality improved over time.<br>Overall, interviewees described efficiency gains from AI-enabled automation, reducing manual effort and supporting major upgrades to the Data Cube and related tooling. They also contrasted this with more time-intensive traditional approaches to developing occupational profiles, while noting a continued desire to increase automation further and reduce the ongoing burden of manual validation. |

## 5.7 Conclusions

The Hub's governance and delivery model has become more structured, rigorous, and aligned with Innovate UK's wider missions. The governance system has clarified roles, streamlined processes, and improved cycle oversight, with the Steering Board increasingly testing sponsor credibility and providing stronger strategic challenge. However, gaps remain particularly around accountability for downstream impact, inconsistent representation from key education and skills funders, and variability in Board engagement and induction. Operational delivery has scaled significantly, with 28 cycles completed, formalised prioritisation processes introduced, and efficiency gains achieved through improved tooling and greater methodological consistency. Nonetheless, imbalances persist across mission areas, with limited coverage of Healthy Living and Agriculture and no current cycle outputs from Medicines Discovery Catapult.

Stakeholder engagement has been substantial, with more than 1,100 individuals involved across industry, education, and technology domains. Despite this breadth, the depth and sustainability of engagement vary, and there is a lack of systematic evidence of foresighting insights being embedded into external education and skills planning. Issues such as participant representativeness, limited university awareness, and uneven seniority alignment continue to constrain follow through.

In addition, there is a need for more accessible reporting formats, further automation within the Data Cube, and more robust mechanisms to monitor action and impact beyond publication. While efficiency and capability have improved, core challenges remain around translating foresighting outputs into system wide change.

Overall, the Hub has demonstrated increasing maturity, credibility, and effectiveness in convening cross-system stakeholders and producing foresighting insights at pace. To maximise future impact, the next phase will require stronger accountability mechanisms, more balanced mission coverage, clearer engagement pathways for education and skills partners, and enhanced visibility of how foresighting outputs drive real world change.

# 6. Research Questions – Key Findings

## 6.1 Purpose of this chapter

This chapter presents key findings, summarising the evidence collected against each of the research questions for the evaluation. The evidence base includes:

- 29 interviews, comprising:
  - Three interviews with MTC and Hub staff
  - Five interviews with Steering Board members
  - Six interviews with foresighting cycle sponsors
  - Seven interviews with Catapults leads
  - Three interviews with workshop participants
  - Five interviews with wider stakeholders
- Two surveys:
  - A survey of Catapult Leads (n = 8)
  - A survey of workshop participants (n = 18)[17]
- Case studies: for five of the Catapults (snap shots are included in this section with full case studies in Appendix 3)

This chapter synthesises the main outcomes, strengths, and challenges identified through the interviews and surveys, providing an overview of the Hub's impact to date.

The following sections present evidence in line with the key research question themes.

## 6.2 Relevance and strategic alignment

**Research questions:**

- To what extent and how does the Workforce Foresighting Hub align with Innovate UK's strategic impact domains?
- To what extent and how are the foresighting cycles addressing the most critical future skills gaps in priority sectors?

### 6.2.1 Alignment with Innovate UK's strategic impact domains

Survey results indicate that most workshop participants found the discussions and outputs highly relevant to Innovate UK's priorities. All Catapult Leads agreed the foresighting cycles matched national strategies, referencing frameworks like UK Net Zero and the Offshore Wind Industrial Growth Plan. Catapult Leads also pointed out that effective alignment requires ongoing cooperation among Catapults, employers, providers, and national organizations. They noted that foresighting cycles are most successful when they are tied to established strategic frameworks or backed by departmental sponsorship, such as DESNZ. Additionally, they stressed the importance of increasing industry participation in selecting relevant topics.

[17] Given the small sample sizes, survey findings are presented as descriptive and illustrative. They should be interpreted as supporting evidence rather than as indicative of causality or generalisable impact.

### 6.2.2 Role of foresighting cycles in addressing the most critical future skills gaps in priority sectors

Stakeholders agree that foresighting cycles play an important role in addressing future skills gaps, helping counter the short-term focus of the existing skills system. Nevertheless, they suggested cycles may not be effectively addressing the most essential gaps in various sectors due to:

- **Lack of prioritisation** – cycles often produce too many outputs (e.g. large sets of occupational profiles), diluting focus. Stakeholders prefer a smaller number of high-impact, clearly prioritised roles
- **Imbalanced role coverage** – cycles sometimes emphasise high-skill engineering roles while under-representing high-volume operational roles that are essential to workforce needs
- **Unclear future horizon** – disagreement exists on whether cycles should focus on long-term technological futures or near-term adoption needs (as nearer horizons can be more actionable)
- **Variable input quality** – findings depend heavily on who participates, what data is used. Reliance on a limited set of apprenticeship standards reduces the ability to surface the most important gaps
- **Timing and format issues** – even when cycles identify the right gaps, outputs often arrive out of sync with sector planning cycles, reducing their practical influence.

Overall, foresighting cycles are seen as valuable and directionally accurate, but their ability to pinpoint the most critical future skills gaps is constrained by issues of prioritisation, role mix, data quality, and timing. Strengthening these factors would improve impact across priority sectors.

## 6.3 Process and participation

**Research questions:**

- To what extent and how effective is the foresighting methodology in engaging stakeholders across industry, education, and policy?
- To what extent and how is the quality and diversity of participation in foresighting cycles representative (e.g. sectoral, regional, demographic)?
- To what extent and how well are the six steps of the foresighting process understood and implemented by participants?

### 6.3.1 Effectiveness of the foresighting methodology in engaging stakeholders

Workshop participants report high satisfaction with facilitation and communication, and most felt the process enabled meaningful contributions.

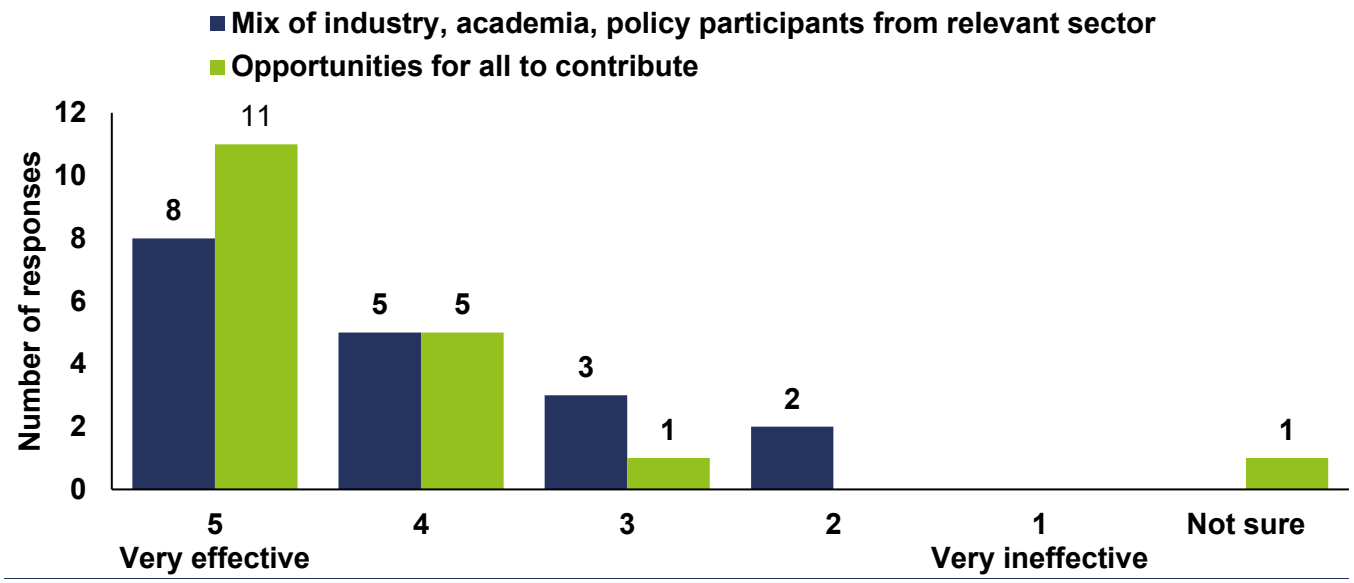
*Table 11: Workshop participant satisfaction with facilitation and communication during workshops*

| Response Options | Respondents | Proportion |
|---|---|---|
| **5 – Very satisfied** | 10 | 56% |
| **4** | 6 | 33% |
| **3** | 2 | 11% |
| **2** | 0 | 0% |
| **1 – Very unsatisfied** | 0 | 0% |
| **Total** | **18** | **100%** |

*Note: survey text read, "Q10. How satisfied were you with the facilitation and communication during the workshop(s)?" Due to small sample size (n = 18), results should be interpreted with cation.*

The foresighting methodology is effective at convening diverse stakeholders and generating productive cross-system dialogue.

*Figure 1: Workshop participant's perception of cycle convening and engagement*




*Note: survey text read, "Q8. How effective was the workforce foresighting process in engaging a diverse range of stakeholders? Please rate each aspect [5—Very effective; 1—Very ineffective]." Due to small sample size (n = 18), results should be interpreted with cation.*

The Catapult Lead survey results reflect these concerns. Most Catapult Leads felt that the foresighting methodology successfully involved the appropriate stakeholders from their sector. However, they also reported encountering at least one obstacle or difficulty when engaging stakeholders throughout the foresighting cycles.

*Table 12: Catapult lead perception of cycle engagement of the right stakeholders*

| Response Options | Number of responses | Proportion (in %) |
|---|---|---|
| **5 – Very effective** | 1 | 12.5% |
| **4** | 3 | 37.5% |
| **3** | 2 | 25% |
| **2** | 1 | 12.5% |
| **1 – Very ineffective** | 0 | 0% |
| **Don't know** | 1 | 12.5% |
| **Total** | **8** | **100%** |

*Note: survey text read, "8. How do you rate the effectiveness of the foresighting methodology, facilitation, and outputs? Please rate each aspect." Due to small sample size (n = 8), results should be interpreted with cation.*

Scheduling and availability issues were the most selected obstacle, alongside stakeholder scepticism about value, an unclear route to achieving impact, and the length of the foresighting process.

> *"Our [foresighting] workshops were often one or two working days apart. If you had to do quality assurance and rework data between workshops, it didn't allow you much space to do that." – Catapult Network Lead*

*Table 13: Catapult lead perception of barriers or challenges in stakeholder engagement*

| Response Options | Number of responses |
|---|---|
| **Scheduling/availability issues** | 7 |
| **Stakeholder (industry, education/training, and policy) scepticism about value** | 5 |
| **Unclear route to achieving impact** | 4 |
| **Length of the foresighting process (e.g., risk of stakeholders losing interest over time)** | 4 |
| **Low awareness** | 3 |
| **Low interest from industry** | 3 |
| **Other (please specify)** | 2 |
| **Insufficient representativeness of foresighting cycle participants** | 1 |
| **Difficulty finding or engaging with the right sponsor for the cycle** | 1 |
| **No significant barriers or challenges** | 0 |
| **Total** | **30** |

*Note: survey text read, "Were there any significant barriers or challenges in engaging stakeholders during the foresighting cycles? (Select all that apply)". Due to small sample size (n = 8), results should be interpreted with cation.*

Stakeholder interviews illustrate that "good engagement" typically encompasses:

- **Clear communication of purpose and process:** participants must understand why they are involved and what is expected of them. Industry sponsors and workshop attendees emphasised that clarity of purpose and well-framed questions enabled meaningful discussion
- **A structured approach that minimises cognitive load:** delivery stakeholders highlighted the value of structured methods, especially when AI-generated starting points are validated by participants. This approach shifted the burden from creation to review, making workshops more efficient and focused
- **Skilled facilitation and coaching:** Catapult Leads stressed that adept facilitation enhanced quality and consistency of foresighting methodology, easing the participant's burden and improving the overall experience.

Stakeholder feedback suggests that the process is most effective when it successfully engages and retains suitable participants throughout its duration. Industry representatives note that, although facilitation is competent, challenges such as prolonged cycles, demanding schedules, and unanticipated task granularity can impede ongoing participation, particularly considering existing work obligations. As a result, these factors often contribute to inconsistent attendance, reduced continuity, and decreased confidence in the process:

> *"If you don't have the coverage or the network of stakeholders from the beginning, whatever happens afterwards cannot fix something that is already defined in a specific way." – Workshop Participant*

While stakeholders and workshop participants noted improvements over time, several design suggestions to improve engagement are still required:

- Providing more lead time and thorough advance briefing
- Increasing the use of offline or asynchronous inputs (e.g., pre-reading or surveys) to reduce the burden of synchronous participation
- Segmenting sessions by participant type and needs (e.g., separating technical/R&D discussion from workforce implementation considerations)
- Leveraging credible sponsorship and convening power, particularly from government entities, to attract and retain key stakeholders.

### 6.3.2 Quality and diversity of participation in foresighting cycles

Survey and interview results are generally consistent. Most participants agreed that key perspectives were represented, but highlighted gaps in employer coverage, value chain representation, and practitioner or regulator voices. Some suggested involving more employers from relevant technologies and increasing diversity among SMEs, large firms, and implementation roles.

*Table 14: Workshop participant perception of workshop representativeness of key perspectives*

| Response Options | Number of responses | Proportion (in %) |
|---|---|---|
| **Yes – to a large extent** | 6 | 75% |
| **Yes – to some extent** | 2 | 25% |
| **No** | 0 | 0% |
| **Not sure** | 0 | 0% |
| **Total** | **18** | **100%** |

*Note: survey text read, "Q11. Do you feel the participant group in your foresighting cycle was representative of all key perspectives needed (e.g., various sub-sectors, regions, demographics)?". Due to small sample size (n = 18), results should be interpreted with cation.*

Other key concerns include:

- **Regional representation** – several interview stakeholders viewed the Hub as predominantly England-focused, noting insufficient evidence of systematic involvement with devolved nations. These stakeholders were concerned not only about workshop participation but also questioned whether the foundational evidence base, including standards comparisons, was adequately comprehensive across the UK to inform action within a devolved skills system.
- **Participant seniority and responsibilities** – several stakeholders expressed the view that comprehensive validation tasks are most appropriately handled by technical staff at the working level, noting that the involvement of senior stakeholders in highly detailed exercises may reduce efficiency and potentially lead to decreased engagement.

Overall, both interview and survey data indicate that foresighting cycles typically involve a diverse group of stakeholders and are widely regarded as representative. However, limitations related to participant availability, process duration, and recruitment efforts restrict the extent of employer and practitioner input. These challenges can impact stakeholder confidence in the representativeness of the results and underscore persistent difficulties in achieving fully balanced participation within resource intensive foresighting activities.

### 6.3.3 Understanding and implementation of the foresighting process

Workshop participants report they fully or mostly understood the process and their role.

*Table 15: Workshop participant perception of the foresighting process and their role*

| Response Options | Number of responses | Proportion (in %) |
|---|---|---|
| **Yes fully** | 6 | 33% |
| **Mostly** | 11 | 61% |
| **Only partially** | 1 | 6% |
| **Not really** | 0 | 0% |
| **Total** | **18** | **100%** |

*Note: survey text read, "Q9. Did you clearly understand the six stages of the foresighting process and your role in each?". Due to small sample size (n = 18), results should be interpreted with cation.*

Catapult lead survey responses offer a mixed perspective on process clarity, though the small sample size limits reliability. As shown in the following table, most Catapult Leads considered the foresighting methodology to be either effective or very effective, while a few were neutral or felt it was ineffective.

*Table 16: Catapult Lead perception of effectiveness of foresighting methodology for clarity of process*

| Response Options | Number of responses | Proportion (in %) |
|---|---|---|
| **5 – Very effective** | 1 | 12.5% |
| **4** | 4 | 50% |
| **3** | 2 | 25% |
| **2** | 1 | 12.5% |
| **1 – Very ineffective** | 0 | 0% |
| **Don't know** | 0 | 0% |
| **Total** | **8** | **100%** |

*Note: survey text read, "Q8. How do you rate the effectiveness of the foresighting methodology, facilitation, and outputs? Please rate each aspect [Clarity of process].". Due to small sample size (n = 8), results should be interpreted with cation.*

Catapult Leads' open-ended responses show that while workshop facilitation was strong and improved over time, the process often lacked clarity for participants. Recommendations included setting clear goals and deliverables early, providing agendas and tools in advance, and explaining how activities produce actionable outputs. Catapult Leads noted that clearer framing at the start would reduce uncertainty and boost confidence, especially for newcomers.

> *"We [workshop participants] did not have the visibility of what was coming to each [foresighting] workshop. I would get to workshops, and it was a bit of a surprise." – Foresighting Cycle Sponsor*

Using the lessons learned through their involvement with the foresighting cycles, stakeholders recommended actions to improve the consistency and effectiveness of the six-step process:

- **Repeat exposure** - understanding deepens as conveners participate in multiple cycles, with a clear "light bulb moment" typically occurring midway through
- **Onboarding materials and preparation packs** - to minimise the need for repeated explanations and allow participants to prepare in advance
- **Clear documentation and decision trails** - maintaining thorough records helps manage expectations and reduce ambiguity around changes and requirements.

## 6.4 Outputs and immediate outcomes

**Research questions:**

- What types of outputs (e.g. occupational profiles, skills gap analyses, action plans) have been produced, and how are they being used?
- To what extent and how have the foresighting reports influenced curriculum development, training provision, or workforce planning?

### 6.4.1 Types of outputs

The Hub did not meet the original commitment within the funding agreement to commence 105 cycles in FY2023/24 - 2024/25. However, it has demonstrated an acceleration in outputs and operational maturity over time:

- Cycle reports increased eight fold, from 2 to 16 in FY24/25
- 93% of Catapults (14 out of 15) have completed or are delivering cycles, establishing network-wide adoption
- Cycle duration reduced from 49 weeks to 18–24 weeks, significantly increasing throughput and capacity.

In addition, the Data Cube has moved beyond proof-of-concept and is supporting all cycle analysis as well as feeding data directly into SkillsCompass. However, as it has not yet been fully tested in an open access environment, there is no end user feedback on robustness and adoption.

Stakeholders consistently describe the foresighting cycles as producing the following outputs:

- **Foresighting reports** (often long, with recommendations and supporting analysis)
- **Future occupational profiles** (FOPs) and capability statements (including role and capability framing)
- **Gap analyses and "map-and-gap" comparisons** between future needs and existing provision/standards (and sometimes job advert data)
- **Data products and tools**, such as the Data Cube, dashboards/visualisations, and related dependencies like the Skills Compass.

The key outputs reported by survey respondents are outlined in the following table:

*Table 17: Outputs received and used by workshop participants and Catapult Leads*

| Response Options | Workshop Participants (n = 18) | Proportion (in %) |
|---|---|---|
| **Final foresighting report** | 15 | 83% |
| **Skills gap analysis data** | 9 | 28% |
| **Occupational profiles** | 5 | 50% |
| **Recommendations/action plan summary** | 5 | 28% |
| **We have not received or used the outputs yet** | 2 | 11% |
| **Other (please specify)** | 0 | 0% |

*Note: Workshop participant survey text read, "Q13. Which foresighting outputs did you directly receive or use? (Select all that apply)." Due to small sample sizes (Workshop participant n = 18), results should be interpreted with cation.*

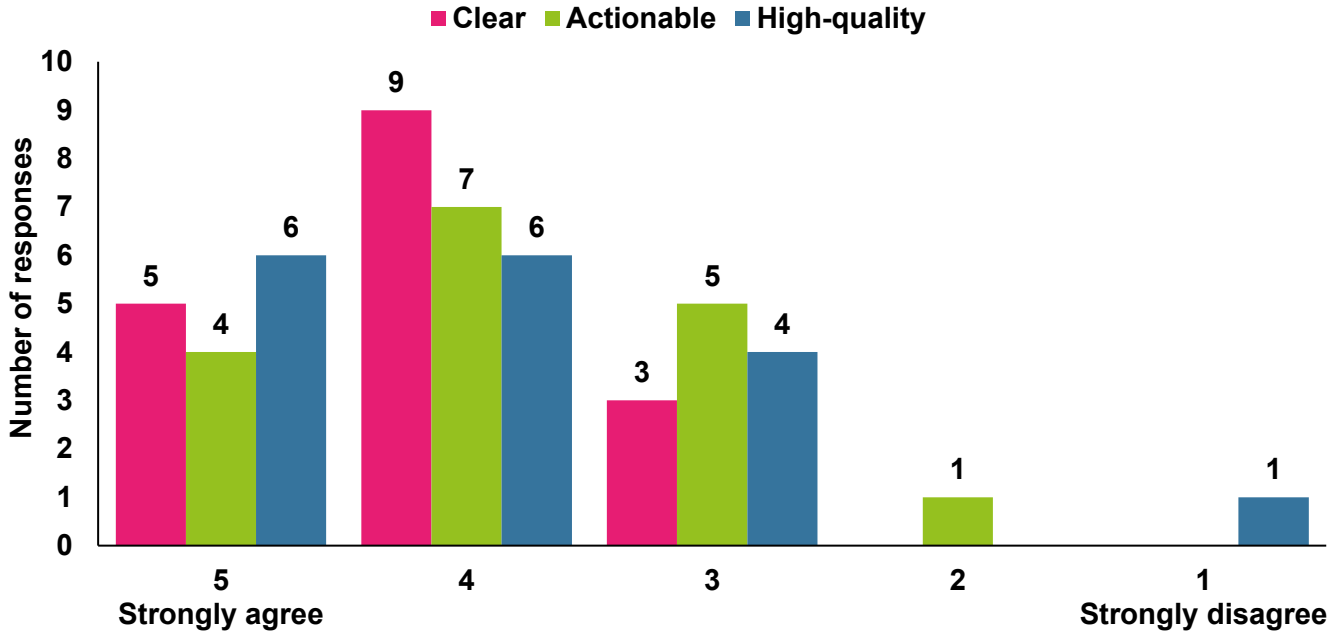
However, there is a lack of consensus among stakeholders on what constitutes the “core output” of the foresighting process. Several industry sponsors and workshop participants regard the final foresighting report as the main output. By contrast, catapults and Hub staff placed greater value on the underlying data architecture and the Data Cube, describing this as the most tangible expression of a system-level asset capable of connecting multiple datasets and supporting future reuse.

Use of outputs amongst interviewees highlighted three main pathways:

- **Evidence assets for dialogue and legitimacy:** Foresighting outputs provide credible, externally validated evidence that lends weight to discussions with government, education partners, and sector bodies
- **Dissemination and network-building:** Outputs are distributed through various channels such as LinkedIn posts, stakeholder mailing lists, and internal newsletters
- **Tool-based planning resources:** A small set of stakeholders find data dashboards and visualisations particularly valuable, as they enable exploration of specific roles/skills and support planning discussions.

Survey feedback provides insight into perceptions of output quality and usability. Workshop participants viewed the foresighting reports and recommendations as clear and high quality.

*Figure 2: Workshop participants’ perceptions of the foresighting report and recommendations*




*Note: survey text read, “’The foresighting report and recommendations are clear, actionable, and high-quality.’ Please rate your agreement with each aspect.” Due to small sample size (n = 18), results should be interpreted with cation.*

### 6.4.2 Influence of foresighting findings on curriculum development, training provision, or workforce planning

Stakeholders noted that foresighting outputs take time to impact curriculum, training, and workforce planning due to course redesign and standards revision. Survey results showed no immediate organisational changes; most respondents chose "Not yet," indicating expected impacts but acknowledging the process is long-term and forward-looking.

*Table 18: Have workshop participants seen any influence of foresighting outputs*

| Response Options | Number of responses | Proportion (in %) |
|---|---|---|
| **Yes** | 0 | 0% |
| **Not yet** | 15 | 87% |
| **Not applicable** | 3 | 17% |
| **Total** | **18** | **100%** |

*Note: survey text read, "Q16. Have the foresighting outputs influenced any immediate changes in your work or organisation?". Due to small sample size (n = 18), results should be interpreted with cation.*

Notable examples of developing outcomes provided by stakeholders include:

- **Apprenticeship pathways:** Introduction of a Level 6 data scientist apprenticeship route, complete with employer onboarding and candidate support
- **Formal education pathways:** Development of a degree apprenticeship and MSc programme aligned with emerging capabilities identified by the Hub in the renewables sector
- **Standards and short courses:** Engagement with apprenticeship trailblazer groups and a shift towards modular short courses where existing apprenticeship standards had reached capacity.

Although few stakeholders indicated the direct creation of entirely new curricula, many noted the implementation of significant preparatory or enabling measures. For instance, an Industry Sponsor emphasised collaborative efforts with universities to discuss and plan subsequent steps. This trend is further supported by workshop participant survey data, which show that those who utilised the outputs most frequently reported internal dissemination of reports. A smaller subset incorporated insights into curriculum or training development or applied them to workforce planning initiatives.

*Table 19: How workshop participants have used outputs*

| Response Options | Number of responses | Proportion (in %) |
|---|---|---|
| **We have not yet used the outputs yet.** | 8 | 44% |
| **Shared/disseminated the report with colleagues or stakeholders.** | 7 | 39% |
| **Integrated insights into our curriculum or training design (e.g., updated a course, created new module).** | 5 | 28% |
| **Informed our workforce planning or skills strategy (e.g., adjusted hiring or upskilling plans based on identified future needs).** | 3 | 17% |
| **Initiated or proposed new initiatives based on recommendations.** | 1 | 6% |
| **Other (please specify):** | 1 | 6% |

*Note: survey text read, "Q14. How have you or your organisation used the foresighting outputs so far? (Select all that apply)". Due to small sample size (n = 18), results should be interpreted with cation.*

Many respondents explicitly reported limited or no observable outcomes, offering clear explanations. The most common challenges cited were:

- **Role and workforce mismatch -** Foresighting outputs did not reflect their organisation's roles or did not produce the data needed to inform curriculum/standards changes
- **Capacity / funding constraints and weak incentives to influence impacts -** Catapults lacked the resources or clear mandate to translate findings into funded curriculum changes or new standards.

> *"When the funding [resourcing] stops after the report's published, being able to carve out that time to do the work [cause action] and you [Catapults] haven't got a project to charge to is a challenge." – Catapult Network Lead*

> *"The impact [of foresighting outputs] is limited because nobody gives you extra resources to do something with it." – Workshop Participant*

Open-ended survey responses noted that outputs were often detailed and information-rich, making them time consuming to engage with and, in some cases, difficult to translate directly into action. Some Cycle sponsors and Catapult Leads reported that early AI-generated occupational profiling and Data Cube outputs were not sufficiently accurate or sector-meaningful, requiring substantial manual correction, validation, and expert sense-checking to make them industry relevant and actionable. They noted that AI-supported skills-to-role matching and task-to-profile allocation created a high manual validation burden, with some teams resorting to spreadsheet-based manual reconstruction to interpret outputs.

> *"We [the Catapult] had to redo the future occupational profiles that the Data Cube generated because it did not reflect real life, because it was still learning." – Catapult Network Lead*
>
> *"That [foresighting report] is quite an academic report. It's not very user friendly. I know the [stakeholders from] skills ecosystem and [the interviewee] gets incredibly lost in it." – Wider Stakeholder*

Participants indicated a preference for concise summaries and improved signposting of priority actions, especially for audiences not directly involved in the workshops. Catapult Leads echoed these concerns, noting that foresighting reports can sometimes appear overly procedural or may lack adequate focus on practical implementation. They emphasized that the greatest value is realised when report outputs are restructured into action-oriented formats relevant to curriculum development, funding strategies, or sector priorities. There was widespread endorsement for a multi-tiered reporting approach, including executive summaries, distinct action plans, and optional technical annexes, as well as explicit guidance linking foresighting outputs to pertinent standards, funding opportunities, or local policy frameworks.

> *"If there was an executive summary that takes the main [foresighting] findings and aligns with actions for employers, that would benefit employers and industrialists." – Workshop Participant*

**Compound Semiconductor Applications Catapult (CSAC)**

The CSAC Workforce Foresighting cycle produced a formal report identifying future skills requirements, skills gaps, and 24 FOPs related to radio frequency (RF) and microwave technologies for advanced connectivity and semiconductors. The immediate outcome was the creation of a shared, credible evidence base on future workforce needs in a sector characterised by rapid technological change and long development timelines. Foresighting outputs were disseminated through the Hub and CSAC networks and used by universities to support bids for research and training funding and to inform early discussions on curriculum relevance. While no immediate curriculum or training changes were reported, early engagement with education stakeholders supported informed consideration of future workforce implications.

**Digital Catapult**

Digital Catapult's Workforce Foresighting activity generated a range of tangible foresighting outputs, including foresighting reports, skills gap analyses, Future Occupational Profiles, capability maps, and interactive dashboards across three cycles focused on advanced media production, quantum sensing, and AI in telecommunications. These outputs were produced through structured workshop programmes involving employers, technology developers, higher education institutions, and sector stakeholders.

The immediate outcomes were primarily enabling, with foresighting improving clarity around how emerging digital technologies are expected to reshape roles, workflows, and skills in areas not well captured by existing occupational frameworks. Evidence indicates that higher education stakeholders were the most consistent early users of outputs, drawing on foresighting insights to inform curriculum reviews, research planning, CPD modules, and early discussions on micro-credentials. While no large-scale training or workforce changes are documented, foresighting outputs are being used to support early planning, awareness-building, and longer-term workforce discussions in rapidly evolving digital technology domains.

## 6.5 Intermediate and long-term impact

**Research questions:**

- What evidence is there that the Hub has contributed to changes in workforce development strategies in key sectors?
- To what extent and how have any new training programmes, apprenticeships, or qualifications been developed because of the Hub's work?
- What are the early signs of impact in sectors like offshore wind, RNA therapeutics, or digital technologies?

The medium- and long-term outcomes identified in the Hub's ToC extend beyond the current delivery period. It is therefore not expected that the monitoring data or Hub documentation available at this stage would provide direct evidence of these outcomes having been achieved. Instead, this section assesses whether the Hub is beginning to establish the necessary preconditions for these outcomes to be realised in future years. The analysis that follows focuses on the:

- Evidence of preconditions observable in current monitoring data
- Additional qualitative insights from stakeholder interviews regarding whether the Hub is on a credible pathway to achieving these outcomes.

### 6.5.1 Hub's contribution to changes in workforce development strategies in key sectors

The evidence indicates that, although significant sector-level transformations in workforce development strategies have not yet occurred, the Hub has made progress in establishing key foundational conditions and fostering initial behavioural changes necessary for long-term advancement. These developing outcomes are reflected in enhanced diagnostic capabilities, improved cross-sector coordination, and preliminary impacts on organisational planning.

**Strengthening diagnostic capability and future skills insight** - throughout several foresighting cycles, Catapults have generated skills gap analyses and occupational profiles, clarifying where future shortages and necessary capabilities for new technologies will arise. While these insights have yet to yield measurable sector changes, they form a foundation for a more proactive skills system by identifying long-term needs.

**Early translation into curriculum and training recommendations** - monitoring data shows the production of curriculum recommendations, training pathways, and curriculum change roadmaps. These outputs demonstrate that foresighting insights are beginning to be converted into actionable guidance for educators and training bodies. However, uptake of these recommendations is not yet visible. Further action is required from Catapults and other system actors to encourage implementation and to ensure future foresighting cycles include projected skills volumes and timing, which stakeholders emphasised as necessary for education and training planning.

**Emerging influence on organisational planning and strategy** - self-reported evidence from Catapults indicates that foresighting outputs have begun to inform:

- Internal mission roadmaps
- Future skills planning
- Strategic decision-making frameworks.

These claims suggest a nascent shift toward more proactive workforce planning. Stakeholders described these changes as largely preparatory or mindset-shaping, with some organisations working to embed insights into role design or annual planning cycles. These developments are early steps rather than visible strategic transformation.

**Progress in tools and data infrastructure** - delivery and Steering Board stakeholders referred to the development of advanced data architecture linking multiple datasets, which has attracted strong interest from educators. These tools have stimulated discussions on addressing curriculum gaps and improving employer engagement, signalling potential future contributions to strategic capability in the skills system.

**Overall** - currently the evidence does not demonstrate measurable changes in workforce development strategies or reductions in skills lag. Catapult survey responses reflect this early-stage impact:

- 57% (4 of 7) reported only slight influence
- 29% (2 of 7) reported no influence
- None reported significant influence
- 63% (5 of 8) have not yet integrated foresighting into organisational operations.

Nevertheless, the Hub has contributed meaningfully to the precursors of strategic change, including improved diagnostic insight, early shaping of organisational planning, and enhanced data and tools. These developments position the system for greater progress between 2026–2030, if efforts continue to focus on implementation, monitoring uptake of recommendations, and strengthening links to education and training providers.

### 6.5.2 New training programmes, apprenticeships, or qualifications developed through the Hub's work

Emerging evidence of how the Hub's insights are beginning to shape provision include:

**Development of new training offers and digital learning pathways** - a Catapult described using Hub foresighting findings to update its online learning platform, now the Life Science Learner Hub, by introducing a new digital/data training category aligned with the foresighting theme.

**Apprenticeship pathway development** - the same Catapult reported linking its foresighting cycle directly to the development of apprenticeship pathways, including:

- Launch of a Level 6 Data Scientist apprenticeship route
- Collaboration with employers and training providers to onboard partners and support candidates
- Ongoing work to secure provider sign up and implementation.

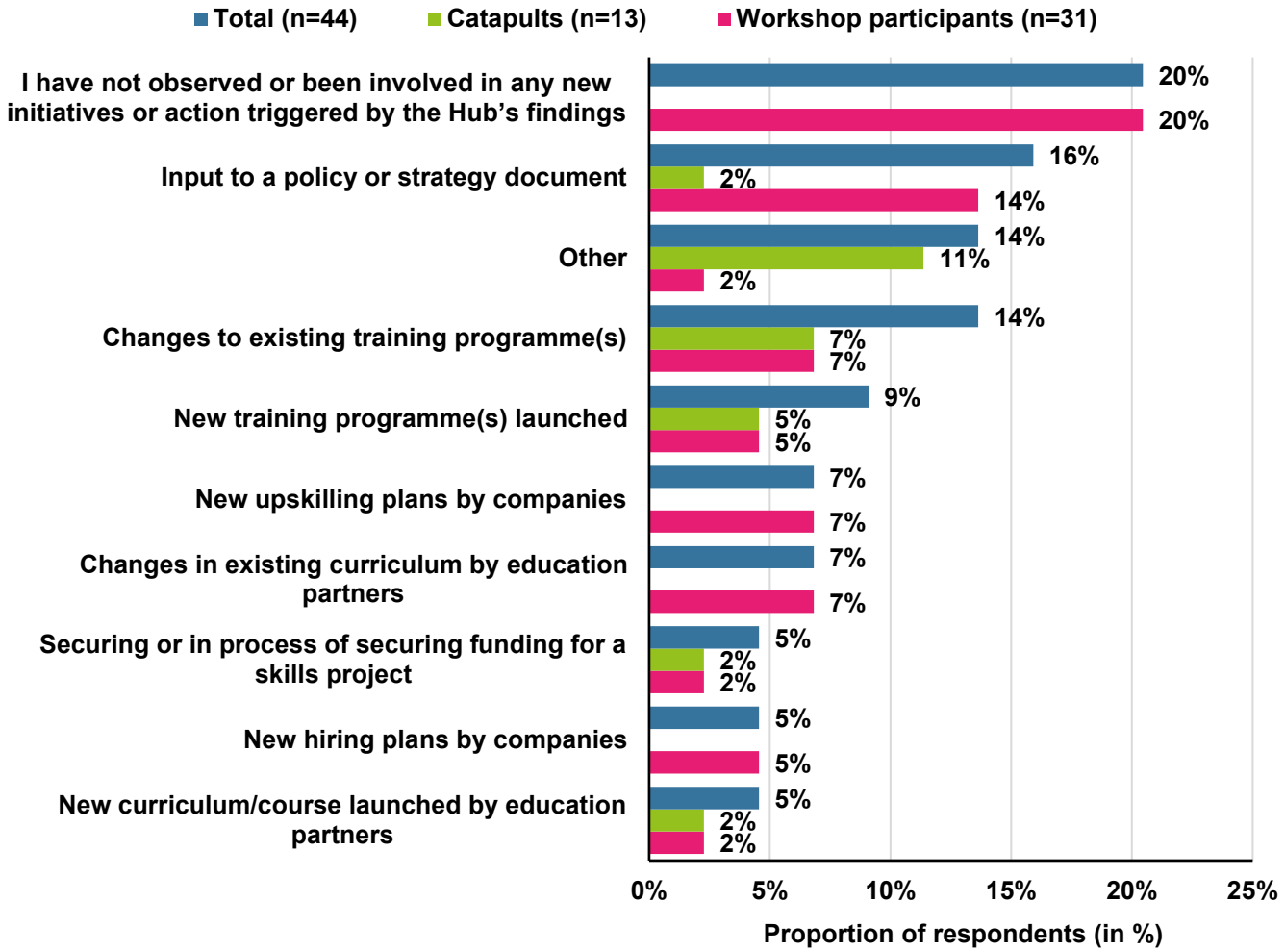
**Higher level education pathways (degree apprenticeship and MSc)** - another Catapult highlighted that education partners are developing (both targeted at emerging needs in the renewables sector), a degree apprenticeship pathway and an MSc programme.

**Evidence of scale** - survey results indicate limited but emerging change:

- 9% (4/44) reported new training programmes launched
- 5% (2/44) observed new curricula or courses launched by education partners
- 6.8% reported changes to existing curricula
- 13.6% identified changes to existing training programmes
- 15.9% reported the Hub's contribution to policy or strategy documents, suggesting upstream influence
- 20% reported no new initiatives observed, consistent with the long term nature of education change.

**Overall** - to date there is limited evidence that the Hub has directly shaped new training programs, apprenticeships, or qualifications at scale. Given the long lead times in education and developing technologies, this is not unexpected. However, stakeholders emphasise that providers now require quantitative projections of skills demand and timing to turn foresighting insights into concrete curriculum decisions.

*Figure 3: Stakeholder perception of new initiatives or actions trigged by the foresighting findings (n=44)*




*Note: survey text read, "Since the foresighting exercise, have you observed or been involved in any new initiatives or actions that were triggered by the foresighting findings?".*

**Barriers limiting the pace of new programme development** - stakeholders identified several factors slowing translation into new provision:

- Technology and market immaturity delays curriculum change decisions
- Lack of funding, ownership, or resourcing to act on foresighting recommendations
- Foresighting outputs are sometimes too broad, requiring further iteration to become actionable modules
- Misalignment between foresighting capability focus and major workforce segments (e.g., production roles), which hampers organisational uptake.

### 6.5.3 Early signs of impact

Expected impacts concern system-level change such as workforce resilience, productivity improvements, and contributions to GDP, which typically emerge over extended periods and rely on the combined actions of multiple actors and policy interventions. Accordingly, this section does not seek to assess achievement and considers whether early enabling conditions are being established that could support progress towards these impacts over the longer term, including beyond 2030.

**Early identification of future skill needs in mission-critical sectors** - many of the completed and ongoing foresighting cycles focus on mission-critical sectors (particularly net zero and digital transformation). For example:

- In **offshore wind**, ORE Catapult foresighting has identified workforce implications associated with floating offshore wind deployment, robotic inspection systems, automated manufacturing, and HVDC infrastructure integration. Interview evidence indicates these insights have helped industry and education stakeholders anticipate future capability requirements linked to large-scale offshore wind expansion.
- Within **life sciences**, CPI foresighting activity has articulated workforce challenges associated with scaling RNA therapeutics manufacturing and transitioning to sustainable pharmaceutical production. These cycles have highlighted emerging skills requirements linked to automation, digitalisation, regulatory compliance, and sustainability-driven process innovation. Early engagement with education providers and apprenticeship trailblazer groups suggests foresighting is helping align workforce planning discussions with anticipated sector growth. By directing analytical attention to these strategically important areas, it is building early awareness of the skills required to support future innovation. This targeted focus helps lay the groundwork for workforce readiness in the sectors most central to the UK's long-term economic and societal goals.
- In **digital and emerging technology** sectors, Digital Catapult foresighting has helped define workforce implications associated with immersive media production, AI-enabled telecommunications, and quantum sensing technologies. These cycles have supported clearer articulation of workforce needs in fast-evolving fields where occupational definitions and training pathways remain underdeveloped.

**Creation of diagnostic assets that articulate future skills needs** - across sectors, foresighting cycles have produced structured analytical outputs such as skills gap analyses, capability frameworks, and FOPs. These diagnostic tools provide detailed insight into emerging workforce requirements and are beginning to influence workforce planning and curriculum design discussions. For example, CPI produced FOPs for advanced manufacturing and RNA therapeutics roles, while Digital Catapult developed occupational frameworks and interactive tools mapping future digital capability requirements. ORE Catapult similarly developed multiple sets of FOPs across offshore wind technologies, helping define how automation and advanced engineering systems are expected to reshape existing roles and create demand for new capabilities. While large-scale workforce changes have not yet materialised,

case study evidence suggests these diagnostic assets are increasingly used as reference points by employers, education providers, and policymakers when considering future workforce development priorities.

Together, these findings suggest that workforce foresighting is beginning to influence how workforce challenges are understood and addressed across priority sectors. Evidence indicates growing use of foresighting outputs to support workforce strategy discussions, training design, curriculum development, and funding considerations. However, translation into coordinated system wide workforce change remains dependent on follow-on coordination, investment, and stakeholder ownership beyond the foresighting cycles.

**Areas for development** - while foresighting is successfully generating forward-looking workforce intelligence, translating insight into coordinated workforce development activity remains a key challenge. Case study evidence consistently highlights limited clarity around ownership of post-cycle implementation and uncertainty around workforce demand signals required to justify new training provision. Strengthening mechanisms that support translation of foresighting outputs into coordinated action will be important to ensure that workforce foresighting contributes to sustained UK competitiveness in mission-critical sectors.

**CPI (High Value Manufacturing Catapult Centre)**

CPI's foresighting cycles on RNA therapeutics manufacturing and sustainable API production demonstrate emerging intermediate impacts. Across two cycles, CPI generated skills gap analyses, 22 Future Occupational Profiles, and workforce recommendations designed to inform medium to long term workforce development. Foresighting insights were used to inform university curriculum development, apprenticeship discussions, and CPD provision, with several universities developing new or revised courses and apprenticeship providers engaging with outputs to support alignment with emerging manufacturing requirements. Industry partners also reported using foresighting insights to inform internal workforce strategies and learning platforms.

## 6.6 Collaboration and systemic change

**Research questions:**

- To what extent and how has the Hub facilitated collaboration between Catapults, industry, and education providers?
- Is there evidence of improved alignment between innovation and skills systems (e.g. through the Skills Value Chain approach)?

### 6.6.1 Collaboration between Catapults, industry, and education/training providers

**Collaboration between catapults, industry, and education/training providers** - evidence from monitoring data, stakeholder interviews, and survey findings indicates the Hub has facilitated collaboration across the skills ecosystem to varying degrees. Progress is most advanced within the Catapult network, with emerging but less structured collaboration among industry, education providers, and wider system stakeholders. Overall, collaboration is developing but remains uneven and not yet embedded in sustained joint action.

**Collaboration within the Catapult Network** - collaboration within the Catapult network is the strongest and most consistent form of coordination facilitated by the Hub. Many foresighting cycles involve multiple Catapults acting as collaborators or co convenors, reflecting shared interest in addressing skill needs

across overlapping missions. Events and workshops frequently include cross Catapult communication or results sharing activities, suggesting the emergence of structured knowledge exchange practices. While these interactions do not yet represent joint planning of training provision, they provide a strong platform for future coordinated approaches.

**Engagement with industry and education providers** - the foresighting process brought together employers, educators, technologists, skills bodies, and industry sponsors, helping reduce fragmentation. Stakeholders widely valued the creation of new networks, peer-learning relationships, and sustained connections formed through the foresighting cycles. However, collaboration often does not extend beyond the workshop environment. Stakeholders highlight the absence of a feedback loop showing how foresighting outputs are acted upon, which limits sustained engagement. Collaboration outcomes also depend on whether participants include individuals capable of implementation, such as those responsible for training delivery, recruitment pipelines, or standards-setting. When participation is limited to technical or education specialists, opportunities for translating foresighting findings into practical action are reduced.

> *"It's [the collaboration is] momentary and it's not the hub that brings those people together. We [participants/stakeholders] bring those people together." – Wider Stakeholder*

**Cross catapult collaboration strengthening system coherence** - case study evidence indicates that foresighting activity is supporting new forms of collaboration across industry, education, and policy stakeholders. For example, in offshore wind, foresighting outputs have informed regional skills planning discussions and early curriculum development activity, including collaboration between universities and industry partners. In life sciences, CPI foresighting outputs have supported engagement between manufacturers, training providers, and apprenticeship standards groups. In digital technologies, foresighting has convened stakeholders across fragmented innovation ecosystems, supporting shared understanding of workforce challenges. Across sectors, these collaborative networks are contributing to improved coordination of workforce planning discussions, even where implementation remains at an early stage.

**Engagement with Skills England (previously IfATE)** - Skills England's membership on the Hub Steering Board indicates early strategic level engagement. While this provides a channel for high level input, there is limited evidence to suggest operational collaboration between Skills England, Catapults, or other stakeholders facilitated through the Hub.

**Engagement with regional bodies** - some foresighting cycles reference regional stakeholders, including combined authorities and regional skills partners, and acknowledge regional workforce challenges. These references suggest early steps toward integrating regional perspectives. Nevertheless, there is no evidence of structured coordination with regional bodies, such as joint planning, co-commissioning of provision, or regional uptake of foresighting outputs. Stakeholders note that improving regional collaboration will require better alignment with local planning cycles, deeper engagement with devolved authorities, and the production of more actionable outputs.

### 6.6.2 Alignment between innovation and skills systems

There is partial and uneven evidence of improved alignment between innovation and skills systems. Stakeholders consistently recognise the *intent* and *potential* of the Hub to bridge innovation and skills, and there are clear examples of improved *shared understanding*, *common language*, and *cross-system convening*. In addition, Steering Board members and Innovate UK stakeholders described the foresighting process and reports as building a "people roadmap" to sit alongside innovation and technology roadmaps, helping to surface longer term skills needs that existing systems tend to overlook.

There is also evidence of improved relational alignment through convening. The cycles bring together technologists, employers, educators and policy-adjacent bodies who do not typically collaborate in structured ways. Many participants described this as inherently valuable, particularly for building mutual understanding of constraints across systems (for example, the time required to change curricula versus the pace of technological change). Catapult and sponsor interviews provide examples of new or strengthened networks continuing beyond workshops, and of foresighting outputs being used as a shared evidence base in discussions with education providers, industry bodies and policy stakeholders.

Despite these positive signals, the interview evidence consistently highlights that alignment weakens significantly beyond the production of outputs. Across delivery partners, sponsors, Steering Board members and wider stakeholders, there is a recurring concern that responsibility for "what happens next" is unclear once foresighting reports are published. While foresighting is intended to support the Skills Value Chain, many interviewees described the chain as effectively breaking at the handover point between insight and action.

A key issue raised is unclear ownership and accountability for translation into skills system change. Delivery teams and Catapults noted that they are not resourced or mandated to drive system-wide implementation, while education bodies, standards setters and policy actors are not consistently embedded in cycles in ways that enable direct uptake. Steering Board members and system stakeholders observed that alignment depends heavily on whether the "right actors" (i.e. those with authority over curricula, standards, funding or workforce planning), are engaged early enough and remain involved beyond the workshops.

Several stakeholders explicitly questioned the effectiveness of the Skills Value Chain framing as currently operationalised. While the concept is understood, some interviewees described it as overly linear and insufficiently reflective of how skills systems function, particularly the feedback loops, institutional constraints and incentive structures that shape whether foresighting evidence is acted upon. In practice, alignment often relies on informal translation by Catapults or sponsors rather than on a clearly designed, system-level pathway from foresight to provision.

**Offshore Renewable Energy Catapult (ORE Catapult)**

ORE Catapult's delivered five foresighting cycles, bringing together employers, education providers, and sector bodies across complex offshore wind supply chains to develop shared understanding of future workforce needs. Repeated delivery strengthened ORE Catapult's internal capability to translate technical developments into workforce-relevant insights and supported development of shared occupational language and sector-level workforce intelligence. Foresighting informed early collaboration with universities on apprenticeship and postgraduate provision. However, there were also challenges in post-cycle ownership, meaning foresighting has primarily supported alignment and shared understanding, rather than fully embedded system-wide change to date.

## 6.7 Value for money and sustainability

**Research questions:**

- What is the perceived value of the Hub to stakeholders, and how does this compare to the investment made?
- What are the prospects for sustaining or scaling the foresighting approach beyond the current funding period?

### 6.7.1 Perceived value of the Hub

Stakeholders most commonly describe the Hub's current value as a combination of:

- A mechanism that convenes the relevant stakeholders to create a shared understanding of future skill needs
- A structured evidence output that gives credibility ("weight") to future skills discussions
- A method/data capability (AI-enabled processing plus human validation and data architecture/tooling) that is seen by many as more efficient than traditional approaches.

Companies interviewed highlighted the Hub is valued for:

- Structuring thinking about future skills and roles including grouping roles (e.g. manager, operator, technical expert) and clarifying the skills associated with each, while recognising limits to how far a single cycle can progress
- Providing credible, externally usable evidence that added weight beyond informal industry assertions, particularly when engaging external stakeholders.

However, companies also noted:

- Reports were long, technical, and difficult to use which reduces their practical value for system-level stakeholders and return on investment. One interviewee suggested there was limited clarity on how education bodies should use the outputs, or how they connect to curriculum or change required
- The process is time-intensive, with repetition and a significant time burden alongside core business activities. It was suggested industry participants were not surprised by many findings and the process could be streamlined to improve value relative to effort.

In addition, government departments also suggested the process provided a:

- Useful insight into future skills needs
- Structured evidence (reports and dashboards)
- A way to fill knowledge and evidence gaps that departments lacked capacity to address internally, noting the perceived value outweighed the low-risk, non-financial investment.

Departments expressed concerns regarding uncertainty in post-report follow-up, which reduced clarity about downstream effects. Nevertheless, these concerns did not diminish the acknowledged value of the evidence generated.

**Additionality:** additionality results are low, suggesting the Hub is not delivering sufficient added value.

- Catapult Leads' survey responses show that 80% (8 of 10) respondents indicated they would rely on internal efforts or separate studies, if foresighting was not available.

- Workshop participants' (representatives from industry / employers and educators) survey responses found 59% (13 of 22) expect to revert to internal foresighting or separate studies. Only a quarter (5 of 22) indicate that without the Hub they would lack a clear view of future skills needs.

### 6.7.2 Budget and spend / VfM

HVMC are the grant holder and manage the Hub's funding from Innovate UK to the Hubs. The HVMC subcontracted delivery of the Hub to MTC which is a part of the HVM Catapult. Funding of £6,998,000 was provided by Innovate UK in FY2023/24 - 2024/25 and £3,134,834 in FY2025/26:

*Table 20: Funding (FY 2023/24 – FY2025/26)*

| Costs | | 23/24 | 24/25 | 25/26 (10 months[2]) |
|---|---|---|---|---|
| **High Value Manufacturing Catapult / MTC Hub management costs** | Labour (cost of team delivering the Hub e.g. Hub manager, coaches, business functions) | £1,421,000 | £1,286,000 | £731,133 |
| | Materials | £60,000 | £60,000 | £12,000 |
| | Overheads | £0 | £0 | £594,093 |
| | Travel and subsistence | £0 | £0 | £24,275 |
| | Subcontractors (cost of external consultants / specialists) | £636,000 | £655,000 | £669,450 |
| **Catapults – cycles costs** | Labour | Not stated | Not stated | £585,781 |
| | Overheads | Not stated | Not stated | £288,592 |
| | Subcontract | Not stated | Not stated | £229,356 |
| | Other Costs1 | Not stated | Not stated | £152 |
| | Overall (not broken down in years 23/24 and 24/25) | £1,382,000 | £1,498,000 | |
| **Total** | | **£3,499,000** | **£3,499,000** | **£3,134,834** |
| **Total Funding: £10,132,832** | | | | |

*Sources: Innovate UK Grant Offer Letter – August 2023 (FY 23/24 and 24/25). HVMC costs in FY 2025/26 are from Innovate UK Grant Offer Letter dated December 2025 titled 'Workforce Foresighting Hub'. Catapult costs in FY 2025/26 are from Innovate UK Grant Offer Letter dated February 2026 titled 'CATAPULTS – Direct Award'*
*Note: HVMC and MTC cost split for 2023/24 – 2024//25 was not available from Innovate UK.*

VfM is assessed in several different ways:

**(1)** the percentage of spend going into overhead functions against the percentage spend on conducting the cycles, producing the reports and delivering impacts. The more spent on delivering the work, rather than overheads, the more efficient and effective the Hub can be.

Total spend in FY 2023/24 - FY 2025/26 (up to February 2026) was £9,098,914.

- **£6,860,841 / 75.4% relates to Hub management** (e.g. costs of Hub manager, coaches, business functions) and subcontractors (external consultants / specialists) and the core support needed for Data Cube technology (approx. 26% of MTC costs relate to Data Cube development). HVMC = £81,834 / 1% to HVMC. HVMC costs relate to administration of the grant to MTC and in FY2025/26 to both MTC and the Catapults and managing the claims process.
- **£2,238,072 / 24.6% relates to funding provided to the Catapults completing cycles**.

This split of funding may have been needed at the start-up phase however as the Hub is now well underway, the overheads need reduced and more of the spend invested in actual delivery of the cycles and reports, including overseeing implementation.

**(2)** Second, reviewing performance against targets and whether the Hub is delivering as expected.

- **FY 2023/24 – FY 2024/25** - the original commitment within the funding agreement was to commence 105 cycles, this was revised to 48 cycles and later reduced further to 30 commenced cycles and 18 reports. Based on these revised targets and total funding provided the planned cost per cycle was £233,267[18] and the planned cost per report was £388,778.[19] Actuals for this period are shown in tables 21 and 22. The actual cost was £118,143 more per completed cycle that what was budgeted.
- **FY 2025/26** - for the 10 months from 1st June to 31st March 2026 the target was to complete 14 new cycles, finish 12 half cycles from previous years and produce 26 reports (with a further two reports at final stages of completion). Based on these targets and total funding provided the planned cost per cycle was £156,741[20]. The actual cost was £34,536 higher than planned, based on 10 cycles completed to date and the assumption that half of the remaining nine cycles are complete. The cost of completed reports for FY 2023/24 – 2024/25 was below budget, however high. The figures for FY 2025/26 are estimated to be approx. £129,218 higher than the budgeted value. It will be important that the reason for this potential overspend (based on the assumptions set out in table 22) is investigated and action taken to reduce the cost per report.

*Table 21: Budgeted and actual cost per cycle*

| Funding period | Budgeted cost per cycle | Actual cost per completed cycle | Variance |
|---|---|---|---|
| **FY 2023/24 and 2024/25** | £233,267 | £351,410 | £118,143 |
| **FY 2025/26** | £156,741 | £191,278 | £34,537 |

*Source: Budgeted costs and targets based on Innovate Grant Letters of Offer and WFH Proposal for FY 25-26 Actual costs and completed cycles based on information provided by the Hub to Fortia Insight (November'25 – February'26)*

*Table 22: Budgeted and actual cost per report*

| Funding period | Budgeted cost per report | Actual cost per completed report | Variance |
|---|---|---|---|
| **FY 2023/24 and 2024/25** | £388,778 | £351,410 | -£37,368 |
| **FY 2025/26** | £111,958 | £396,218 (based on seven reports currently completed) | £284,260 (based on seven reports currently completed) |
| | | £241,176 (based on 11.5 reports – 7 completed reports plus assumed 50% of reports for remaining nine cycles is completed) | £129,218 (based on 11.5 reports – 7 completed reports plus assumed 50% of reports for remaining nine cycles is completed) |

*Source: Budgeted costs and targets based on Innovate Grant Letters of Offer and WFH Proposal for FY 25-26. Actual costs and completed reports based on information provided by the Workforce Foresighting Hub to Fortia Insight (November'25 – February'26)*

**Summary:** The Hub is not delivering VFM at present due to:

- The high overhead cost relative to delivery costs and the overspend at cycle and often report level
- The low level of additionality with close to 60% of workshop participants' (industry / employers and educators) stating they would revert to internal foresighting or separate studies. Only a quarter indicate that without the Hub they would lack a clear view of future skills needs
- Limited success in effecting change by ensuring the implementation of recommendations from foresighting reports.

[18] Total budget £6,998,000 divided by 30 cycles
[19] Total budget £6,998,000 divided by 18 reports
[20] Total budget £3,134,834 divided by 20 cycles (14 new for FY 25/26 + 12 partly completed in previous years) = 20 in total. Assumes all legacy (i.e. commenced in previous FY) cycles are on average 50% complete at the start of FY 2025/26

### 6.7.3 Wider benefits of the Hub

Feedback from the MTC Hub team; Steering Board members (notably Innovate UK / Skills England perspectives) and Catapult Leads indicated the Hub was seen as providing structured future-oriented occupational and capability data that underpins the Data Cube. Specifically:

- Stakeholders repeatedly described the Data Cube as being populated by future occupational profiles, capability statements, and workforce implications derived from foresighting cycles, rather than relying only on existing standards or short-term labour market data
- The foresighting process fills a "missing step" by linking technology and system changes to workforce and skills needs, which are then codified into structured data.
- Foresighting data allows the Data Cube to predict future roles and skills that will be needed as technology develops, rather than only identifying what is currently in demand. This method differs from traditional approaches that typically use employer panels or established standards, which stakeholders noted tend to focus on past needs
- Without foresighting cycles, stakeholders suggested the Data Cube would risk becoming a thinner, more conventional aggregation of existing datasets.

Some interviewees mentioned benefits of the Data Cube for LSIPs and regional planning, however timing, accessibility, and planning cycle alignment have limited its impact. Data collected for this evaluation showed little evidence of widespread external adoption to date.

### 6.7.4 Sustainability

The *sustainability* of the foresighting Hub is assessed based on organisational and financial sustainability; process sustainability and impact sustainability.

Each criterion has been scored 1 (weak) to 5 (strong) based on the interviews and surveys conducted and as detailed in the previous sections of this report. The following tables summarise the scores and the analysis below the tables provide the evidence.

*Table 23: Organisational and financial*

| Criterion | Description | Score |
|---|---|---|
| **Leadership commitment** | Visible long-term sponsorship | 3 |
| **Governance** | Formal roles and oversight structures | 3 |
| **Skills & resources** | Dedicated funds, training, staffing | 2.5 |
| **Culture** | Foresighting norms embedded | 2 |

*Table 24: Process*

| Criterion | Description | Score |
|---|---|---|
| **Methodological robustness** | Clear, repeatable process | 3 |
| **Learning & iteration** | Feedback loops, scenario updates | 3 |
| **Engagement** | Ongoing stakeholder involvement | 3 |
| **Monitoring system** | Continuous scanning capability | 2 |

*Table 25:* Impact

| Criterion | Description | Score |
|---|---|---|
| **Strategic integration** | Decision-makers use outputs | 2 |
| **Value and outcomes** | Tangible benefits and insights | 2 |
| **Longevity of outputs** | Regular refresh cycles | 3 |
| **Organisational adaptability** | Evidence of improved resilience | 2 |

The sustainability assessment for the Hub shows strengths and gaps:

## Organisational and financial sustainability

- **Leadership commitment & sponsorship — 3 (gap 2)**
  There is visible strategic sponsorship and a quarterly Steering Board however inconsistent attendance from external members and uncertainty about next-year funding reduces stability.
- **Governance & structure — 3 (gap 2)**
  While the Steering Board remains in place, both the Management Board and Technical Committee are no longer active, resulting in an accountability gap between insight and action. There is a lack of input from essential policy stakeholders necessary to ensure effective impact. The Board's focus should shift from technical or process related matters to identifying barriers to impact and developing strategies to address them.
- **Resources & capabilities — 3 (gap 2)**
  Multi-year Innovate UK funding has been secured, and both the Data Cube and trained convenors are in place. However convenor training did not meet its target, indicating capability development has not progressed as planned. It will also be necessary for staff to develop the ability to influence stakeholders who must be engaged to achieve desired impacts.
- **Cultural embedding — 2 (gap 3)**
  Cross-sector engagement has grown however adoption is episodic and foresighting outputs are not yet embedded in sector/skills planning across education, skills and industry.

## Process sustainability

- **Methodological robustness — 3 (gap 2)**
  A six-stage method with QA gates is documented, and cycle time has improved, though early AI outputs needed manual revision. Reports should be refined for clarity and usability.
- **Iteration & learning — 3 (gap 2)**
  Lessons have been documented, and improvements in efficiency have been observed. Nevertheless, stakeholder feedback indicates that additional enhancements are possible, which could further alleviate the demands placed on external parties.
- **Stakeholder engagement quality — 3 (gap 2)**
  There has been 1,140 participants and high workshop satisfaction however participation is time intensive, uneven for SMEs/devolved nations, and not always consistent over long cycles.
- **Signal & trend monitoring system — 2 (gap 3)**
  The Data Cube is operational and supports SkillsCompass; however, a continuous horizon-scanning process across missions has not been established, and access as well as usage visibility remain limited.

## Impact sustainability

- **Integration into decisions/strategy — 2 (gap 3)**
  Moderate influence reported (e.g., internal roadmaps), however many Catapults show slight/no influence and there is no systematic handover into funded action.
- **Measurable outcomes & value — 2 (gap 3)**
  Early education/training signals exist, yet few observable organisational changes; VFM concerns and limited outcome tracking.
- **Longevity of outputs — 3 (gap 2)**
  The extensive collection of reports and FOPs, together with the Data Cube as a national asset,

demonstrates significant value; however, the processes for adoption and routine updates have yet to achieve consistency.

- **Organisational resilience & adaptability — 2 (gap 3)**
  Credible precursors (relationships, diagnostics) are evidence however to date there is no evidence of faster system response or sustained improvements.

**Summary:** The overall average score is 2.5, demonstrating that significant action is required to deliver a Hub that can be sustainable. **The key areas for action include**:

- **Accountability & handover to implementation (gap 3)** There is a need for sustained funding. However, to achieve this, the Hub needs to deliver VFM for those expected to pay for it. There are a range of potential funders (those that could gain value from the work from regional authorities/ professional or sector bodies alongside Departments/ Agencies responsible for developing or implementing government policies on skills/ education. To deliver VFM the work needs to demonstrate impacts through informing education /workforce policy decisions. At present, this is not happening to any significant degree.
- **Governance depth (gap 3)** — There is a need to review/ refresh the Management Board & Technical Committee functions and add Skills England/FE/HE funders in decision-right roles.
- **Impact measurement & VFM (gap 3)** — There is a need to track adoption, provider changes, trailblazer/standard updates, and employer behaviours post-publication. At present this is not happening in a consistent way. The funding needs to cover not only the development stage of the report but also coordination of the implementation.
- **Signal system (gap 3)** Move from episodic cycles to continuous scanning cadence with clear ownership and access telemetry (who uses Data Cube, where, for what).
- **Cultural embedding (gap 3)** There needs to be greater awareness amongst target stakeholders as to how foresighting outputs can benefit their work. Foresighting outputs need to become integrated into the planning of Departments (education/skills policies), LSIPs, trailblazers, and education/training providers.

Additional, immediate actions over next 6–9 months could include:

- **Reframe success** - set SMART cycle-level outcomes (e.g., curricula updated, standards revisited, integration into relevant stakeholder policies, pilots being implemented) and include outcome targets in funding letters of offer.
- **Split funding** - split cycle and implementation funds (with competition for funding after cycle completed to access the implementation funding) and outcome-linked payments to incentivise follow-through.
- **Tiered concise outputs** - deliver a 4–6-page employer/provider ready brief and technical annex including quantified role volumes and timing for providers.
- **Cadenced scanning** - publish a quarterly signals brief per mission that updates Data Cube assets and flags education/policy windows.
- **Governance reset** - a smaller board with Skills England/FE/HE funders, regional reps, and explicit post-cycle review at 6/12 months after reports published.

# 7. Conclusions and recommendations

This section outlines key findings based on the evidence collected against the evaluation questions and includes recommendations for any next phases of the Hub.

## 7.1 Conclusions

### 7.1.1 Relevance and strategic alignment

The Hub is aligned with Innovate UK's strategic impact domains, particularly Net Zero and Digital & Technology missions. Review of 30 completed or active foresighting cycles shows that Net Zero (14 reports) and Digital (8 reports) dominate the portfolio, reflecting strong coverage of mission-critical areas such as offshore wind, hydrogen storage, semiconductors, and AI. Stakeholders consistently viewed the Hub as addressing a "missing step" between innovation roadmaps and workforce readiness by providing anticipatory intelligence rather than responding to immediate labour shortages.

Survey results reinforce this strategic alignment as 83% of workshop participants and all Catapult Leads rated the cycle topics as highly aligned with Innovate UK priorities. However, while alignment is strong, stakeholders raised concerns about whether cycles consistently address the most critical skills gaps. Specifically, cycles often generated too many occupational profiles, diluting focus, and tended to emphasise highly technical roles at the expense of high-volume technician and operational roles needed for near-term adoption. Cycles also relied heavily on apprenticeship standards and job advert data, constraining identification of emerging hybrid and frontier roles.

Overall, the Hub is strategically well positioned however would benefit from sharper prioritisation and clearer definition of the highest-impact future roles.

### 7.1.2 Process and participation

The Hub's foresighting methodology is effective at convening diverse stakeholders across industry, education, policy, and the Catapult network. Overall, 1,140 participants have engaged in workshops and related activities, including 357 employers, 358 educators, and 425 technologists, evidence of broad reach and strong interest. Workshop satisfaction was high, with 89% rating facilitation positively, and participants valued the cross-system dialogue created.

Nonetheless, engagement tended to be less sustainable when processes were protracted, excessively detailed, or lacked adequate preparation. Industry sponsors estimated participation demands of 12–18 hours, which limited continuity and full participation, particularly among SMEs and senior leaders. Stakeholders also noted gaps in representativeness, including limited involvement from devolved nations, uneven coverage of SMEs, and mismatch between seniority and workshop task design.

Understanding of the six-stage methodology was strong at workshop level (94% of participants understood their role) however, weaker across the end to end cycle. Catapult Leads highlighted variable clarity during early "Consider" and "Identify" phases and noted that implementation steps were inconsistently understood or applied.

Overall, the methodology is valued and broadly effective, however participation is intensive, unevenly representative, and inconsistently sustained across full cycle delivery.

### 7.1.3 Outputs and immediate outcomes

The Hub has produced a substantial body of outputs, including foresighting reports, occupational profiles, capability statements, map-and-gap analyses, curriculum recommendations, and Data Cube assets. Evidence shows these outputs are widely disseminated: 83% of workshop participants received the final cycle report, with most describing them as clear, high-quality, and useful.

However, practical usage varies. The most common uses to date include sharing findings internally (39%), early curriculum design considerations (28%), and initial workforce-planning adjustments (17%). Stakeholders noted an ongoing tension between the richness of reports and the need for more succinct, action-oriented products. Several found outputs too lengthy or technical for non-specialist audiences, prompting some Catapults to create their own shorter summary formats.

Evidence of influence on education and training is emerging but remains early stage. No workshop participants reported immediate organisational change, reflecting the long lead times for curriculum reform. Nonetheless, clear preparatory actions are underway: a Level 6 Data Scientist apprenticeship route, a degree apprenticeship, and an MSc in renewables-aligned disciplines have been initiated or developed with direct reference to foresighting intelligence. In addition, some training providers have begun adjusting short-course provision where apprenticeship standards were saturated.

Overall, outputs are credible and valued, however influence is still nascent and hampered by the need for clearer prioritisation, more actionable packaging, and better alignment with curriculum planning cycles.

### 7.1.4 Intermediate and long-term impact

While the Hub has not yet generated measurable changes in workforce development or skills provision, it is already laying essential groundwork for future impact including:

- **Improved diagnostic clarity** through occupational profiles and skills gap analyses, strengthening the evidence base for future planning
- **Early influence on organisational strategies**, with several Catapults integrating foresighting into mission roadmaps, talent planning, and future capability strategies
- **Strengthened cross-sector relationships** as workshops and cycles created new connections between employers, educators, policymakers, and technologists, helping reduce fragmentation.

Impact is recognised but modest as only **44% of participants** viewed the Hub's influence as moderate, and Catapult survey findings indicate slight or no influence to date, with **zero Catapults reporting significant impact**.

Early signs of sector-specific impact include:

- **Offshore wind**: stronger collaboration with universities and regional workforce planners; use of capabilities mapping in local planning
- **RNA therapeutics / life sciences**: integration of digital/data pathways in Catapult learning platforms
- **Digital technologies**: foresighting insights informing internal Catapult strategies across AI, cyber, and semiconductors.

Overall, these are credible precursors however sustained progress will require more actionable outputs, stronger handover mechanisms, and funding for implementation.

### 7.1.5 Collaboration and systemic change

The Hub has made meaningful progress in strengthening collaboration across the innovation and skills ecosystems. Collaboration is strongest within the Catapult Network, where multiple cycles were co-convened and cross-Catapult knowledge exchange practices emerged. Workshops fostered new connections between industry, education, and policy stakeholders (67% of workshop participants reported improved alignment).

However, most collaboration remains episodic, typically ending when cycles conclude. Stakeholders consistently cited a lack of structured follow through mechanisms to support joint implementation.

Engagement with Skills England and regional bodies exists at strategic levels however is not yet operationalised into joint planning, shared commissioning, or coordinated curriculum reform.

Stakeholders also emphasised that while the Hub has helped create a shared language around future skills, practical alignment remains weak without role-level data, timing estimates, or a coordinated owner for implementation.

Overall, the Hub has improved relationships and awareness across systems, but has not yet created sustained, systemic collaboration or alignment mechanisms.

### 7.1.6 Value for money

The Hub is not currently delivering VfM. Total expenditure to date (FY 2023/24 – FY 2025/26 to February 2026) is £9.1m, with a disproportionate share of funding absorbed by management and overheads rather than front line delivery. Specifically:

- 75.4% (£6.86m) of spend relates to Hub management, subcontractors, and Data Cube development, with only 24.6% (£2.24m) supporting Catapult delivered cycles and reports

While this ratio may have been necessary during start-up, the Hub is now well established and overhead levels should be reduced.

This is supported by performance against delivery targets:

- In FY 2023/24–2024/25, actual cost per completed cycle was £351,410, exceeding the planned level by £118,143
- In FY 2025/26, the cost per cycle is £191,278, £34,537 above budget
- Report production shows mixed performance, with 2023–25 below budget, however 2025/26 currently significantly above planned cost.

Overall, the Hub is overspending at both cycle and report level, while delivery volume is below original targets. Until overhead costs decrease and delivery efficiency improves, the Hub cannot be considered to represent good VfM.

### 7.1.7 Sustainability

The sustainability review of the Hub shows moderate foundations but insufficient maturity, with an overall score of 2.5/5 on a sustainability index assessing organisational/finance sustainability, governance, processes, capabilities and impacts. While core structures and tools are in place, capability, culture, governance, and impact pathways are not yet strong enough to ensure long-term, system wide adoption.

**Key strengths:**

- **Established governance and sponsorship**, with a functioning Steering Board and multi-year Innovate UK funding
- **Robust underlying method**, with a consistent six-stage process and quality-assurance checkpoints
- **Strong engagement reach**, with over 1,100 participants and positive feedback
- **Valuable assets**, including the Data Cube and a growing library of foresighting outputs.

**Key gaps limiting sustainability:**

- **Weak impact integration**: Foresighting outputs are not consistently informing policy or investment decisions, and adoption pathways are unclear across government, providers, and employers
- **Governance gaps**: The Management Board and Technical Committee are inactive, leaving an “accountability gap” between insight generation and implementation

- **Resource and skills shortfalls**: Reduced FY25/26 funding; fewer convenors trained than planned; limited influencing capability among staff
- **Cultural embedding remains low**: Foresighting is not yet part of routine planning across education, skills, and industry
- **No continuous scanning system**: Trend and signal monitoring is episodic, with insufficient ownership and visibility of Data Cube usage.

**Top priorities for action:**

- **Strengthen accountability & handover to implementation**, ensuring foresighting outputs drive education and workforce policy decisions
- **Refresh governance**, reinstating key boards and including FE/HE funders and Skills England in decision-making roles
- **Improve impact measurement & VfM tracking**, including provider changes and employer actions
- **Establish continuous horizon scanning**, with clear ownership and regular quarterly updates
- **Increase cultural embedding**, building awareness and integrating outputs into provider planning, LSIPs, trailblazers, and departmental strategies.

**Immediate Actions (6–9 months)**

- Set **SMART, outcome-focused success metrics** tied to curriculum updates, standards reviews, and policy integration
- **Split funding** between development and implementation, with outcome linked incentives
- Produce **tiered, concise outputs** to improve usability for employers and providers
- Conduct a **governance reset**, with strengthened representation and scheduled post-cycle reviews.

## 7.2 Recommendations

### 7.2.1 Priority 1: Critical actions to unlock impact

The following recommendations address structural and strategic issues. Without progress in these areas, there is a risk continued investment in workforce foresighting will not translate into meaningful system level outcomes.

**Recommendation 1: Reorient the Hub towards adoption and outcomes**

**Recommendation:** Reframe the primary success criteria for the Hub from delivery outputs (e.g. number of cycles completed, or reports produced) to demonstrable adoption and downstream outcomes. This could include:

- Clear, shared definitions of adoption and impact at both Hub level and individual cycle level
- The introduction of SMART outcome targets linked to curriculum change, standards development, funding decisions, or employer behaviour which are incorporated within the Grant Letter of Offer for funding
- Explicit accountability for delivery of these outcomes, agreed at the outset of each foresighting cycle.

**Rationale:** The evaluation finds strong evidence of delivery momentum and stakeholder engagement, but limited systematic evidence of foresighting insights being adopted within education, training, or workforce planning systems. The absence of clear outcome definitions and monitoring currently constrains the Hub's ability to demonstrate impact or VfM.

**Recommendation 2: Redesign governance to focus on driving action and impact**

**Recommendation:** Revise the governance model to focus on enabling adoption and impact, rather than primarily overseeing process and delivery. This could include:

- Reconfiguring the Steering Board's role to set strategic foresighting priorities linked to the Industrial Strategy and Skills England priorities, and to agree expected outcomes for each cycle at the outset
- Strengthening representation from organisations with direct influence over skills funding, standards, and provision, including Skills England, FE/HE decision makers, and employer representative bodies
- Introducing a formal post cycle accountability stage (e.g. a 6–12 month review) to assess progress on implementation and adoption.

**Rationale:** While the current governance arrangements provide broad representation, the evaluation identifies a lack of clear ownership and follow through once foresighting reports are published. Stakeholders consistently report an accountability gap between insight generation and action.

## Recommendation 3: Future Funding Model

**Recommendation:** Review the Hub's funding model to improve VfM, reduce per-cycle cost, and incentivise Catapults to take greater ownership of the "cause-action" phase. This could include:

- Introducing a split funding or modular funding model - move from a single, centrally funded block model to a funding structure that separates (a) cycle delivery; (b) adoption / impacts generated
- Testing an "allocated + competed" funding blend - provide Catapults with a small, allocated baseline to maintain foresighting capability and cover early scoping activity. Introduce a competitive commissioning pot where Catapults (or consortia of Catapults with FE/HE or sector bodies) bid for cycle delivery or implementation funding. Evaluation criteria would include: strength of sponsor commitment, clear route to adoption, quality of implementation partners, and alignment with national missions
- Incentivising adoption through outcome linked payments - shift a portion of funding to be contingent on clear, evidencable steps toward adoption e.g., documented engagement with FE/HE, curriculum proposals submitted, identification of standards routes, or industry led action planning. This encourages Catapults to continue beyond report writing and avoid the "start–stop" pattern highlighted in interviews
- Testing alternative delivery partners for some cycles - where Catapults lack mandate, capacity or stakeholder reach, Innovate UK should be able to commission cycles from other actors (e.g., Sector Skills Councils, professional bodies, clusters or place based partnerships). This creates competitiveness on cost and quality, and avoids over reliance on organisations where foresighting is not core to their mission. It could also encourage Catapults to work with other actors, to ensure they have the required networks and expertise to facilitate the foresighting process and its implementation
- Maintaining a single national data asset to avoid duplication and cost escalation - while cycle delivery could be distributed or competed, the Data Cube could remain centrally governed (e.g. by Innovate UK or Skills England). This prevents fragmentation, protects data quality standards, and ensures all cycles feed a single, updatable national evidence base.

**Rationale:**

- High cost to date without equivalent evidence of downstream adoption makes VfM a strategic concern
- The current model results limited incentives for Catapults to drive implementation or strategic prioritisation
- Catapults vary significantly in skills capacity, resourcing, and relationships with education; a uniform funding model does not reflect this variation
- Stakeholders described a "funding cliff edge" after the foresighting report, leaving adoption unfunded and unattributed
- A more modular, commissioned model allows Innovate UK to prioritise high value, mission-critical areas, align cycle timing with policy windows, and ensure resources are directed to cycles with strong sponsor pull
- Maintaining a central Data Cube prevents fragmentation and ensures cost-effective scaling.

### 7.2.2 Priority 2: High value improvements to effectiveness and credibility

These recommendations would significantly improve the efficiency, credibility, and perceived value of the foresighting offer.

**Recommendation 4: Adoption pathways**

**Recommendation:** Design and resource adoption pathways for foresighting outputs within and beyond the Catapult network to ensure findings are adopted. This may include:

- Formal routes into Skills England processes, LSIPs and devolved nation equivalents, and standards development mechanisms
- Clear expectations about which organisations are responsible for translation and implementation
- The use of alternative or additional delivery partners where Catapults lack the mandate or capacity to drive skills adoption.

**Rationale:** The evaluation highlights significant variation in Catapult capability and remit when it comes to driving downstream skills action. Reliance on Catapults alone risks uneven impact and limits system wide adoption.

**Recommendation 5: Simplify foresighting outputs**

**Recommendation:** Reports to be concise, insightful and action orientated

- A tiered reporting model, comprising concise executive action briefs, practitioner focused summaries, and technical annexes
- Reports need to be developed in line with the needs of the different audiences. All should be concise with the key insights relevant for employers/ educators/ trainers/ policy makers all identified separately.

**Rationale:** Stakeholders consistently value the quality of foresighting outputs however stated that reports are often too dense and insufficiently prioritised to support action. Evidence suggests that more concise, targeted outputs are more likely to be used.

**Recommendation 6: Streamline the foresighting process to reduce burden on participants**

**Recommendation:** Continue to refine the foresighting process to minimise unnecessary burden on stakeholders. This could include:

- Reducing the number and length of workshops where possible
- Increasing the use of surveys, pre-work, and asynchronous engagement
- Aligning participant seniority with task type, and reserving workshops for activities that genuinely require collective sense checking or validation
- Stakeholder involvement only being sought at critical times and where their knowledge of the technology/market can inform the future capabilities required.

**Rationale:** While engagement levels are high, the evaluation identifies time burden, scheduling challenges, and process length as persistent barriers to sustained participation and confidence in VfM.

### 7.2.3 Priority 3: Medium term capability and system building

These recommendations support longer term sustainability and the embedding of foresighting capability across the system.

| Recommendation 7: Address coverage gaps in priority mission areas |
| --- |
| **Recommendation:** Future foresighting activity should be rebalanced to address underrepresented mission areas, particularly health and agriculture, and explicitly linked to priority technologies. |
| **Rationale:** The portfolio is currently focused on Net Zero and Digital areas. This imbalance could lead to a disconnect from broader UKRI and government priorities or future key technology areas. Instead of relying on the current mostly bottom-up approach, UK policy priorities should guide the direction for workforce foresighting, and the cycles should have educators/ trainers and employers bought into addressing these priority gaps. |

# Appendix 1 – Theory of Change

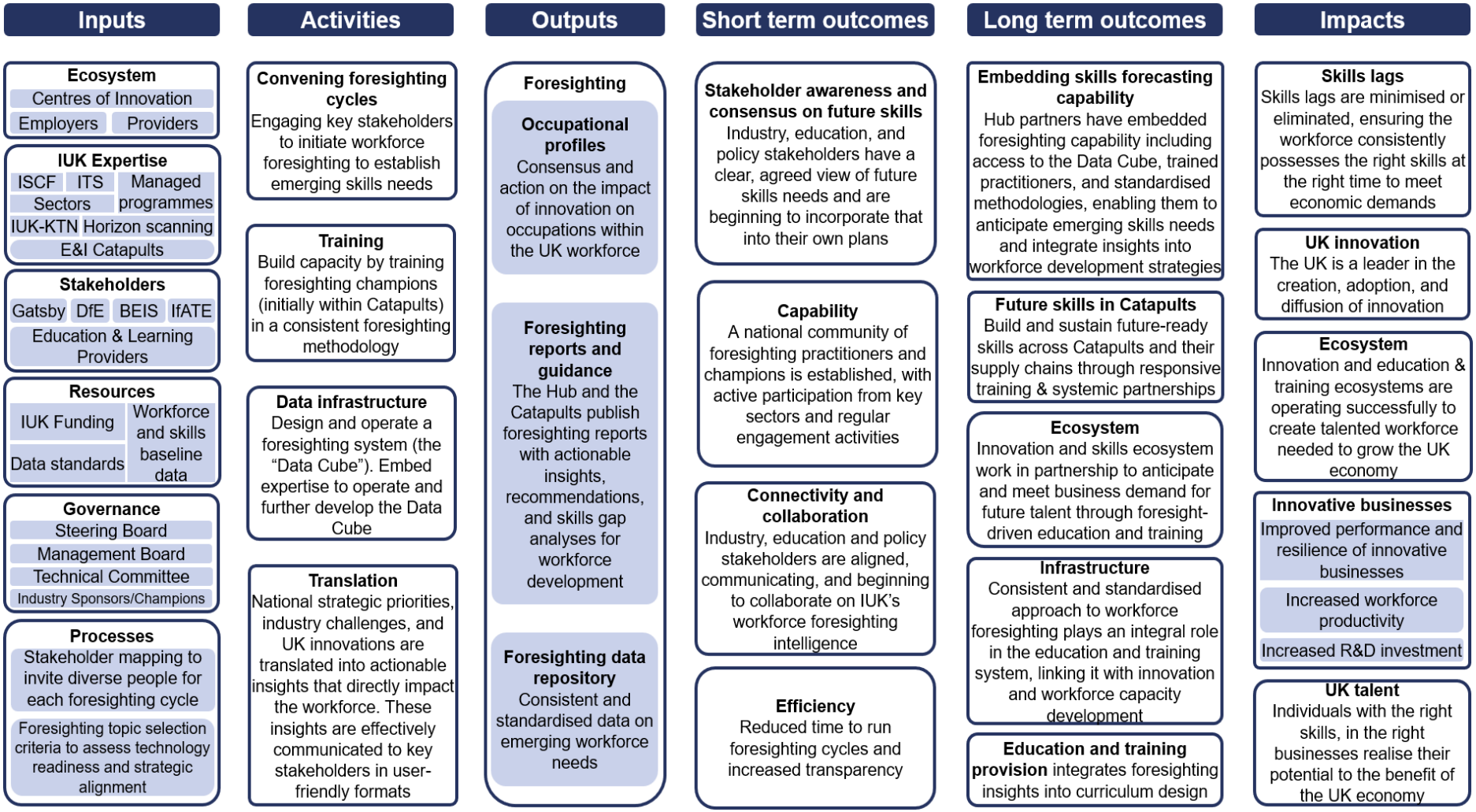
## Introduction

A ToC is a comprehensive description and illustration of how and why a desired change is expected to happen from an intervention. It outlines a clear roadmap for achieving intended objectives through causal links from inputs and activities to outputs, outcomes, and impacts, detailing assumptions and risks involved at each step. By articulating these elements, a ToC informs the M&E framework by establishing clear KPIs and benchmarks for measuring the intended objectives and outcomes. It ensures that the M&E framework is aligned with the overall objectives of the Hub, allowing for systematic tracking of outcomes and facilitating adjustments to the evaluation approach based on evidence and learning.

The ToC and its associated KPIs were developed using multiple sources to ensure it accurately reflects current inputs, activities, outputs, and the expected outcomes and impacts, thereby enhancing its relevance and effectiveness in monitoring and evaluating the Hub. A collaborative workshop with key stakeholders from Innovate UK, Catapult network leads, and Gatsby Foundation was held to refine the ToC and test the KPIs. This workshop included comprehensive discussions on each component of the ToC, including its assumptions and risks.

The ToC assumes that outputs are within the sphere of influence of the Hub and therefore can be attributed to investment and support provided through the Hub. The Hub is expected to drive outcomes and impact, but these are also influenced by and/or dependent on external factors.

*Figure 4: Theory of Change for the Workforce Foresighting Hub*



**Assumptions for the Hub's ToC are:**

| ToC Element | Assumptions |
|---|---|
| **Inputs → Activities** | • Foresighting topics are aligned with national priorities, sector maturity, and priority innovation areas<br>• The right mix of stakeholders will be identified and engaged in each foresighting cycle |
| **Activities → Outputs** | • Industry sponsors will continue to support and advocate for the foresighting intelligence<br>• Foresighting methodology remains relevant, consistent, and adaptable |
| **Outputs → Short-term outcomes** | • Skills ecosystem will be responsive to foresighting intelligence<br>• Education/ training providers, policymakers, companies, and funding bodies acknowledge the foresighting findings and respond appropriately to act on recommendations |
| **Short-term outcomes → Long-term outcomes** | • Government and industry stakeholders invest to implement changes based on foresighting findings<br>• Accreditation bodies, funders, and other stakeholders are receptive and supportive of the foresighting findings, allowing education providers to act on recommendations |
| **Long-term outcomes → Impacts** | N/A |

## Inputs

The ToC for the Hub is supported by the following input categories:

**Ecosystem partners:** The Hub actively collaborates with a diverse array of ecosystem partners, including Catapults (Centres of Innovation), industry employers, and education providers. These partnerships are essential, enabling the Hub to draw upon wide-ranging expertise and perspectives. *We will review who is involved and are the right organisations involved.*

**Innovate UK expertise:** Central to the Hub's function is Innovate UK's internal capabilities. This includes Innovate UK's internal expertise (e.g., horizon scanning), industry networks (e.g., Innovate UK-KTN), and related programmes (e.g., Industrial Strategy Challenge Fund). Innovate UK's internal expertise guides the Hub's focus. *We will review Innovate UK's involvement beyond funding and report on the processes used.*

**Stakeholders:** Key stakeholders encompass 'change makers' such as Gatsby, the Department for Education (DfE), the Department for Business and Trade (formerly BEIS), Skills England (formerly IfATE), and various education and learning providers. Their early and active participation is a key input, as their perspectives inform each foresighting cycle. *We will review who is involved and are the right organisations involved.*

**Resources:** The Hub is supported by financial and in-kind resources, including £7 million in funding from Innovate UK (2022–2025), with initial contributions from Gatsby. The lead organisation, MTC, leverages this funding to facilitate foresighting cycles. Additionally, Catapult staff provide in-kind support. Other resources such as robust data and evidence from labour market intelligence and technology trend data are essential for informing foresighting cycles by understanding the current state of the workforce and training. *We will document the resources used and factor this into an assessment over value being generated for the inputs.*

**Governance:** The Hub operates through a governance model comprising:

- **Steering Board:** Responsible for strategic oversight, the Steering Board sets the Hub's priorities, ensures alignment with key policy missions (e.g., net zero, digital, health), and conducts periodic performance reviews. Membership includes representatives from Innovate UK (including Business Connect), HVMC, Gatsby Foundation, Association of Colleges, Skills England, Universities UK, DSIT, and Catapult organisations
- **Management Board:** Tasked with operational management, the Management Board oversees resourcing, scheduling, milestone assurance, and risk management. Its members include Innovate UK & Innovate UK Business Connect, HVMC, MTC, Gatsby Foundation, and sector leads
- **Technical Committee:** This committee ensures methodological rigour and data integrity. Its remit includes reviewing the foresighting methodology, overseeing Data Cube development, ensuring consistency of processes, and driving continuous improvement. Membership comprises MTC methods leads, Catapults, and specialist sector foresighting experts
- **Industry Sponsors:** Each foresighting cycle is anchored by an industry lead, ensuring practical relevance and sector-specific insight throughout the process.

**Preparatory processes**: Two critical preparatory processes are conducted at the input stage, prior to convening a foresighting cycle:

- **Stakeholder mapping:** This process identifies key industry, education, and policy stakeholders prior to launching each foresighting cycle, ensuring diverse engagement
- **Foresighting topic selection criteria:** Topics for foresighting are assessed based on technological or sectoral maturity and their alignment with Innovate UK's strategic priorities.

## Activities

The Hub's core activities are structured around convening foresighting cycles, delivering training internally, establishing robust data infrastructure, and supporting the effective translation of findings into actionable insights.

We will review these activities and using stakeholder feedback comment on the efficiency and effectiveness of these.

## Outputs

For each foresighting cycle, the Hub adopts a structured and consistent approach to generate outputs. Following the completion of workshops, the Hub team conducts the analysis and synthesises the collective findings into a suite of foresighting knowledge products. These outputs are designed to inform, guide, and support a diverse range of stakeholders in planning for future workforce requirements. The key outputs include:

- A set of **future occupational profiles** (with descriptions)
- **Foresighting reports**, with actionable insights and evidence-based recommendations
- Tailored **summaries of findings**
- Current vs future skills gaps.

These outputs are reviewed by the Technical Committee and the Steering Board for accuracy and validation before being finalised.

We will review data on users of the reports, feedback on stakeholders satisfaction with the report's content, presentation and dissemination.

## Short-term outcomes

Short-term outcomes refer to immediate or near-term outcomes, often expected within the pilot timeframe or shortly after each foresighting cycle. Within the ToC framework, these outcomes denote the critical shifts expected among Hub partners, stakeholders, and the broader skills and innovation ecosystems, demonstrating how the Hub's outputs translate into tangible outcomes. The ToC specifies five short-term outcomes:

**Stakeholder awareness and consensus on future skills:** Industry, education, and policy stakeholders have a clear, agreed view of future skills needs and are beginning to incorporate that into their own plans.

**Foresighting capability:** A national community of foresighting practitioners and experts is established, with active participation from key sectors and regular engagement activities.

**Connectivity and collaboration:** Industry, education and policy stakeholders are aligned, communicating, and beginning to collaborate on workforce foresighting intelligence. This outcome reflects improved communication and sustained collaboration among stakeholders facilitated by the Hub. While there is some overlap between this outcome and the stakeholder awareness outcome, a distinction exists: connectivity pertains to the establishment of new relationships and information exchange, whereas the awareness-related outcome concerns consensus among stakeholders regarding skills and workforce requirements.

**Efficiency:** Reduced time to run foresighting cycles and increased transparency. This is an internal/operational outcome expected to materialise in the short-term.

## Long-term outcomes

Long-term outcomes refer to intermediate outcomes that are expected beyond the pilot, often expected to materialise within 2 - 5 years. These outcomes are more specific than the ultimate impacts. These long-term outcomes assume that government and industry invest to implement changes, acting on the recommendations. The ToC specifies five long-term outcomes:

**Embedding workforce foresighting capability:** Hub partners have embedded foresighting capability including access to the Data Cube, trained practitioners, and standardised methodologies, enabling them to anticipate emerging / future skills needs and integrate insights into workforce development strategies. This outcome emphasises the importance of sustained foresighting practice instead of ad-hoc approaches. This relates to continued workforce foresighting by Catapults and others without always needing central funding.

**Future skills in Catapults**: Build and sustain future-ready skills across Catapults and their supply chains through responsive training & systemic partnerships. This pertains to addressing the skills gaps identified in key innovation sectors within the Catapults.

**Ecosystem:** The UK innovation and skills ecosystem works in partnership to anticipate and meet business demand for future talent through foresighting-driven education and training. This broad outcome relates to bridging gaps between innovation (industry/technology) and skills (education/training). Achieving this outcome depends directly on improving connectivity and collaboration between stakeholders in the short term.

**Infrastructure:** Consistent and standardised approach to workforce foresighting plays an integral role in the education and training system, linking it with innovation and workforce capacity development. This means that mechanisms such as the Hub become a routine part of how the education system plans for the future.

**Education and training provision** integrates foresighting insights into curriculum design. This outcome centres on colleges, universities, and training providers creating new courses or revising existing curriculum to meet future skills needs.

## Impacts

Impacts refer to the high-level, long-term and multi-causal results that the Hub aspires to contribute to. These impacts are beyond the direct control of the Hub and influenced by many factors. The ToC for the Hub lists the following impacts:

**Skills lags:** Skills lags are minimised or eliminated, ensuring the workforce consistently possesses the right skills at the right time to meet economic demands.

**UK innovation:** The UK is a leader in the creation, adoption, and diffusion of innovation.

**Ecosystem:** Innovation and education & training ecosystems are operating successfully to create talented workforce needed to grow the UK economy

**Innovative businesses:**

- Improved performance and resilience of innovative businesses
- Increased workforce productivity
- Increased R&D investment.

**UK talent:** Individuals with the right skills, in the right businesses realise their potential to the benefit of the UK economy.

# Appendix 2 – Spend per financial year

*Table 26: Spend (FY 2023/24)*

| Innovate UK funding | 2023/24 | | | | | |
|---|---|---|---|---|---|---|
| | Spend | % of total spend | Reports Completed | Reports part completed | Cycles Completed | Cycles part completed |
| **Hub Management** | | | | | | |
| **High Value Manufacturing Catapult (HVM) - Strategic Partner Role** | £0.00 | N/A | N/A | N/A | N/A | N/A |
| **MTC (for delivery of the Innovate UK Workforce Foresighting Hub)** | £2,221,693.92 | 92% | N/A | N/A | N/A | N/A |
| **Catapult cycles** | | | | | | |
| **High Value Manufacturing Catapult - comprised of six Centres including AMRC, CPI, MTC, NCC, NMIS and WMG** | £46,693.00 | 2% | 1 | 0 | 1 | 3 |
| **Cell and Gene Therapy Catapult** | £0.00 | 0% | 0 | 0 | 0 | 0 |
| **Compound Semiconductor Applications Catapult** | £0.00 | 0% | 0 | 0 | 0 | 0 |
| **Connected Places Catapult** | £36,696.82 | 2% | 0 | 0 | 0 | 0 |
| **Digital Catapult** | £0.00 | 0% | 0 | 0 | 0 | 0 |
| **Energy Systems Catapult** | £0.00 | 0% | 0 | 0 | 0 | 0 |
| **Offshore Renewable Energy Catapult** | £106,339.00 | 4% | 1 | 0 | 1 | 1 |
| **Satellite Applications Catapult** | £0.00 | 0% | 0 | 0 | 0 | 1 |
| **Total Funding** | £2,411,422.74 | | | | | |
| **Reports completed** | | | 2 | | | |
| **Reports part completed** | | | | 0 | | |
| **Cycles completed** | | | | | 2 | |
| **Cycles part completed** | | | | | | 5 |

*Source: Information provided by the Hub to Fortia Insight (November'25 – February'26)*

*Table 27: Spend (FY2024/25)*

| Innovate UK funding | 2024/25 | | | | | |
|---|---|---|---|---|---|---|
| | Spend | % of total spend | Reports Completed | Reports part completed | Cycles Completed | Cycles part completed |
| **Hub Management** | | | | | | |
| **High Value Manufacturing Catapult (HVM) - Strategic Partner Role** | £7,834.71 | 0% | N/A | N/A | N/A | N/A |
| **MTC (for delivery of the Innovate UK Workforce Foresighting Hub)** | £2,600,361.95 | 66% | N/A | N/A | N/A | N/A |
| **Catapult cycles** | | | | | | |
| **High Value Manufacturing Catapult - comprised of six Centres including AMRC, CPI, MTC, NCC, NMIS and WMG** | £633,296.60 | 16% | 9 | 0 | 9 | 3 |
| **Cell and Gene Therapy Catapult** | £66,310.00 | 2% | 1 | 0 | 1 | |
| **Compound Semiconductor Applications Catapult** | £54,178.93 | 1% | 0 | 0 | 0 | 1 |
| **Connected Places Catapult** | £79,723.87 | 2% | 1 | 0 | 1 | 2 |
| **Digital Catapult** | £146,957.45 | 4% | 2 | 0 | 2 | 1 |
| **Energy Systems Catapult** | £24,799.50 | 1% | | 0 | | 2 |
| **Offshore Renewable Energy Catapult** | £133,739.00 | 3% | 2 | 0 | 2 | 2 |
| **Satellite Applications Catapult** | £166,761.00 | 4% | 1 | 0 | 1 | 1 |
| **Total Funding** | £3,913,963.01 | | | | | |
| **Reports completed** | | | 16 | | | |
| **Reports part completed** | | | | 0 | | |
| **Cycles completed** | | | | | 16 | |
| **Cycles part completed** | | | | | | 12 |

*Source: Information provided by the Hub to Fortia Insight (November'25 – February'26)*

*Table 28: Spend (FY2025/26) – to date as of February 2026*

| Innovate UK funding | 2025/26 | | | | | |
|---|---|---|---|---|---|---|
| | Spend | % of total spend | Reports Completed | Reports part completed | Cycles Completed | Cycles part completed |
| **Hub Management** | | | | | | |
| **High Value Manufacturing Catapult (HVM) - Strategic Partner Role** | £74,000.00 | 3% | N/A | N/A | N/A | N/A |
| **MTC (for delivery of the Innovate UK Workforce Foresighting Hub)** | £1,956,951.00 | 71% | N/A | N/A | N/A | N/A |
| **Catapult cycles** | | | | | | |
| **High Value Manufacturing Catapult – comprised of six Centres including AMRC, CPI, MTC, NCC, NMIS and WMG** | £206,870.35 | 7% | 1 | 0 | 2 | 6 |
| **Cell and Gene Therapy Catapult** | £47,847.00 | 2% | 0 | 0 | 0 | 1 |
| **Compound Semiconductor Applications Catapult** | £23,222.19 | 1% | 1 | 0 | 1 | 1 |
| **Connected Places Catapult** | £65,938.98 | 2% | 0 | 0 | 2 | |
| **Digital Catapult** | £132,336.00 | 5% | 1 | 0 | 1 | 2 |
| **Energy Systems Catapult** | £29,743.11 | 1% | 1 | 0 | 1 | |
| **Offshore Renewable Energy Catapult** | £140,345.76 | 5% | 2 | 0 | 2 | 2 |
| **Satellite Applications Catapult** | £96,274.00 | 3% | 1 | 0 | 1 | 2 |
| **Total Funding** | £2,773,528.39 | | | | | |
| **Reports completed** | | | 7 | | | |
| **Reports part completed** | | | | 0 | | |
| **Cycles completed** | | | | | 10 | |
| **Cycles part completed** | | | | | | 14 (5 cycles cancelled; nine left to complete) |

*Source: Information provided by the Hub to Fortia Insight (November'25 – February'26)*

Note – the spend to date is expected to increase once all cycles are completed and invoices received by MTC.

# Appendix 3 – Case studies

# Centre for Process Innovation Catapult (CPI Catapult)

## Case Study



### overview

| 2004 | 2 | 18 |
|---|---|---|
| Year established | Cycles completed | Workshops conducted |

**Strategic areas:**

- Advanced Medicines and Biomanufacturing
- Sustainable Manufacturing and Net Zero
- Digitalisation and Smart Manufacturing

### IIntroduction: CPI's Engagement with Workforce Foresighting

CPI, a social enterprise and innovation catalyst, is a founding member of the High Value Manufacturing Catapult (HVMC) which catalyses advanced tech and manufacturing solutions that benefit people, places, and our planet. CPI became involved in workforce foresighting through the Emerging Skills project, which preceded the Workforce Foresighting Hub. CPI's engagement was driven by concerns that technological advances in manufacturing were progressing faster than the workforce and skills system could respond, and by recognition that traditional labour market intelligence provided limited forward-looking insight.

Through the Workforce Foresighting Hub, CPI led two foresighting cycles:

- ***Intensification of RNA Therapeutics Manufacturing*** (2023 – mid-2024), focusing on workforce implications of scaling advanced RNA-based medicines manufacturing.
- ***Sustainable Active Pharmaceutical Ingredient (API) Manufacturing*** (November 2024 – February 2025), focusing on workforce implications of adopting sustainable solvent technologies.

Across both cycles, CPI acted as a sector convenor, defining scope, recruiting stakeholders, and supporting delivery of the foresighting methodology.

### Rationale for Foresighting Topics & Alignment with Government & Sector Priorities

The life sciences and process manufacturing sectors face rapid technological change driven by automation, digitalisation, sustainability requirements, and increasing regulatory complexity. CPI selected foresighting topics where these pressures were expected to create significant future workforce implications that were not yet well understood.

The *RNA therapeutics* cycle aligned with priorities in the UK Life Sciences Vision to strengthen domestic biomanufacturing capability and maintain global competitiveness in advanced therapeutics. CPI identified emerging workforce challenges associated with scaling RNA manufacturing, including increased digitalisation, process complexity, and heightened quality and regulatory requirements.

The *sustainable API manufacturing* cycle focused on workforce implications of transitioning to environmentally sustainable pharmaceutical production. This work aligns with UK the Net Zero Strategy and wider industrial sustainability objectives. CPI anticipated that adoption of sustainable solvent technologies would require new capabilities related to sustainability strategy, lifecycle analysis, and sustainability-by-design approaches.

Across both cycles, foresighting focused on medium- to long-term workforce change rather than short-term skills shortages.

## Foresighting Sponsorship and Stakeholder Engagement

Industry sponsors played an advisory role in shaping and validating foresighting topics. FujiFilm Diosynth Biotechnologies sponsored the *RNA therapeutics* cycle, while the Medicines Manufacturing Industry Partnership (MMIP) sponsored the *sustainable API* cycle. Both cycles engaged broad stakeholder groups across industry, academia, skills bodies, and technology developers (see the published foresighting reports for comprehensive lists of participating stakeholders).

CPI's sector credibility and established relationships were critical in securing participation. Interview evidence indicates that engagement required significant convening effort, particularly among industry stakeholders balancing commercial priorities with workforce planning activities.

## Role of CPI in Supporting the Cycle

CPI acted as the central coordinating body across both cycles. Responsibilities included scoping topics, recruiting participants, facilitating workshops, and synthesising outputs in collaboration with the Workforce Foresighting Hub. CPI also played a significant role in translating technical workshop discussions into workforce-focused outputs accessible to education providers, skills organisations, and industry decision-makers.

Interview evidence highlights that CPI's role was essential in maintaining a workforce focus and ensuring discussions extended beyond technical considerations to explore how emerging technologies would reshape roles, skills, and training requirements.

## Activities Undertaken and Outputs Generated

Activities across both completed cycles included structured preparation, facilitated workshops, and post-workshop synthesis. In total, 18 workshops were conducted.

**Cycle 1: RNA Therapeutics Manufacturing Cycle.** The RNA therapeutics manufacturing cycle involved a series of structured workshops which examined workforce implications of scaling RNA therapeutics manufacturing across production, process development, quality assurance, and supporting functions. Outputs included a foresighting report identifying skills gaps, curriculum implications, and workforce recommendations. CPI also conducted additional synthesis work to translate complex technical discussions into workforce-relevant insights.

**Cycle 2: Sustainable API Manufacturing Cycle.** The sustainable API manufacture cycle followed a similar structure to the first cycle but focused on workforce implications arising from the adoption of sustainable solvent technologies and into pharmaceutical manufacturing processes. Outputs from this cycle included skills gap analysis, 22 Future Occupational Profiles (FOPs), and recommendations for industry, education providers, and skills bodies. Interview evidence suggests that learning from the RNA cycle informed how outputs from the second cycle were structured, with greater emphasis on clarity, accessibility, and explicit articulation of what skills were changing relative to current practice.

**Outputs Across Both Cycles.** Outputs across both cycles were designed to inform long-term workforce planning and support dialogue between industry, education providers, and policymakers rather than prescribe immediate changes to training provision. Outputs were disseminated through CPI and Workforce Foresighting Hub networks, including circulation to participating industry, education, and sector stakeholders, and publication as formal foresighting reports.

## Impacts achieved to date

ICPI's workforce foresighting activity has generated a set of tangible outputs and early enabling impacts, primarily focused on improving shared understanding, informing strategic decision-making, and supporting alignment between industry needs and education and training provision. Specifically, their impacts include:

**Improved Understanding of Future Workforce Requirements.** Foresighting provided structured analysis of how emerging manufacturing technologies are expected to reshape roles and skills. Interview and documentary evidence indicates that the foresighting cycles supported clearer articulation of workforce requirements linked to economic growth, Net Zero ambitions, and productivity improvements. CPI used foresighting insights to inform discussions about updates to university chemical engineering curricula and process engineering apprenticeship standards.

**Supporting Industry-Led Workforce Planning.** Industry partners reported using foresighting outputs to inform workforce strategy and internal capability development. One large UK medicines manufacturer incorporated foresighting insights into an internal learning platform designed to upskill employees. CPI also worked with the Resilience UK Medicines Manufacturing Skills Centre of Excellence to use foresighting outputs to inform provision designed to both upskill current employees and strengthen future talent pipelines.

**Strengthening Engagement Between Industry and Apprenticeship Providers.** CPI shared foresighting insights with apprenticeship providers to support curriculum alignment with emerging manufacturing requirements. Examples include collaboration with Teesside University and Aston University to inform apprenticeship provision linked to process engineering and procurement.

**Supporting Higher Education Planning.** Universities including University College London, the University of Strathclyde, and Teesside University used foresighting insights to inform development of new or revised courses in areas such as lifecycle analysis, data science, and aseptic manufacturing.

Overall, impacts to date are primarily enabling rather than systemic, supporting awareness and planning rather than delivering large-scale workforce change.

## Barriers to Implementation and System Constraints

Despite these enabling impacts, stakeholders identified significant barriers to translating foresighting insights into widespread action.

Industry barriers include limited capacity to engage in skills initiatives, duplication of intelligence requests, and commercial pressures that reduce incentives for workforce investment. The technical complexity of foresighting outputs also created challenges in translating findings into actionable recommendations.

Education providers reported uncertainty about learner demand and funding constraints as major barriers to developing new provision. Apprenticeship funding levels and requirements for large cohort sizes further limited responsiveness.

Across both sectors, stakeholders emphasised that responsibility for implementing foresighting recommendations was not clearly defined. While reports identified recommended actions, coordination across industry, education, and policy actors remained limited, constraining progress.

## Potential impacts that could be achieved - actions from foresighting reports

Actions identified through CPI's two workforce foresighting cycles have primarily contributed to validation, dissemination, and early curriculum and standards-related activity. Progress has been strongest where foresighting outputs aligned with existing education, training, and standards-development processes, and more limited where action depended on clearer demand signals or additional funding.

In the short term, foresighting outputs were used by education and training providers to review and adapt existing provision, particularly where FOPs aligned with current occupational standards. Example uses include the development of a provision focused on sustainability and digitalisation and RNA-specific CPD courses. Insights were also shared with the Process Engineer Trailblazer Group, contributing to discussions informing the development of a revised apprenticeship standard aligned with emerging industry needs.

Progress on mid-term actions has been more limited. While employers and providers have engaged with foresighting outputs to inform workforce development thinking, further action has been constrained by uncertainty around the scale and timing of future workforce demand. Interview and stakeholder feedback indicates that this uncertainty presents a barrier to more substantive curriculum development, given the need for education providers to ensure sufficient learner volumes to maintain commercial viability.

## How the Catapult is contributing to the high-level, longer term Hub impacts

CPI's workforce foresighting cycles have contributed to the Hub's longer-term Theory of Change primarily by strengthening forward-looking workforce intelligence, improving collaboration across the skills ecosystem, and supporting early workforce planning activity. Foresighting has helped identify emerging workforce capability requirements and supported engagement with education providers, skills bodies, and apprenticeship trailblazer groups, improving alignment around future skills needs. The cycles also helped establish collaborative networks linking employers, technologists, and educators, supporting knowledge exchange and strengthening connections between innovation developments and workforce planning. However, wider system uptake remains uneven, and stakeholders noted that while foresighting has potential to reduce duplication in skills intelligence activity, this has not yet been fully realised.

There is emerging but limited evidence of organisational-level uptake, including employers using foresighting insights to inform workforce capability development. Foresighting has also supported clearer articulation of future skills requirements, helping education providers and employers plan for emerging roles. However, impacts on productivity, R&D investment, and individual career outcomes are expected to occur only over the medium to long term, once training provision and workforce practices adapt. Overall, CPI's foresighting activity has contributed to improved understanding and coordination across the skills system, but translation into measurable workforce and economic outcomes remains dependent on further uptake, investment, and coordinated action beyond the foresighting cycles.

## Learnings and Barriers

### What worked well

- Iterative delivery improved usability and clarity of foresighting outputs.
  - Experience from the RNA cycle informed refinements in later work, including clearer structuring of outputs, improved report templates, and sharper articulation of how skills were changing relative to current practice.
- CPI's sector convening role enabled cross-sector engagement.
  - Interview evidence highlights that CPI's convening role was essential in securing cross-sector participation and keeping discussions focused on workforce implications rather than purely technical issues.
- Explicit focus on emerging and changing skills improved relevance.
  - CPI found that foresighting outputs were most useful when they explicitly highlighted skills and capabilities that were expected to change or newly emerge as a result of RNA manufacturing scale-up and sustainable API processes.
- ·Foresighting supported shared understanding.
  - The foresighting process helped align industry and academic stakeholders around a common view of future workforce challenges.

**Barriers and challenges**

- ·Limited clarity over ownership of post-cycle implementation.
  - While foresighting generated robust insight, interviewees noted that responsibility for translating findings into coordinated action across the skills system was not clearly defined, constraining momentum beyond the reporting stage.
- ·Early outputs required substantial synthesis to improve accessibility.
  - Initial outputs were perceived by some stakeholders as technically detailed but difficult to interpret in workforce and education contexts, requiring significant post-workshop synthesis from CPI to clarify implications for roles, skills, and training.
- Workforce and training changes operate over long timescales.
  - Structural barriers within large organisations, including regulatory constraints and long investment cycles, limit the potential for rapid workforce or training changes.
- Translation into curriculum or training change remains uncertain.
  - While foresighting outputs provide a strong evidence base for future planning, interview evidence suggests that direct influence on training or curriculum change is more likely to emerge over a longer time horizon.

**Source:** Case study informed by interviews with Catapult Network Leads, workshop participant, and cycle sponsors, as well as administrative performance monitoring data provided by MTC (November 2025).

# Offshore Renewable Energy Catapult (ORE Catapult)

## Case Study



### overview

| 2013 | 5 | 45 |
|---|---|---|
| Year established | Cycles completed | Workshops conducted |

**Strategic areas:**

- Accelerating offshore wind deployment
- Advancing technology innovation and commercialisation
- Smart Operations and Maintenance (O&M)

### Introduction: ORE Catapult's Engagement with Workforce Foresighting

ORE Catapult is the UK's leading technology innovation and research centre for offshore renewable energy. Established in 2013, ORE Catapult operates across multiple sites with world-leading research, testing, and demonstration facilities and collaborates extensively with industry, government, and academic partners.

ORE Catapult became involved in workforce foresighting to explore how emerging technologies such as automation, robotics, and advanced power systems would reshape workforce roles beyond immediate hiring needs, particularly as offshore wind moves toward large-scale industrialisation.

ORE Catapult has now completed five foresighting cycles:

1. ***Inter-array Dynamic Cable Systems for Floating offshore Wind***, which addressed the combination of new technology in floating offshore wind, the scale of demand, and low number of specialists in the field. This cycle was January to March 2024.
2. ***Robotic and Autonomous System (RAS) and Operations and Maintenance (O&M) in UK Offshore Wind***, which focused on technological and workforce challenges relating to ensuring the sustainable growth of the UK's offshore wind sector. This cycle ran from August to October 2024.
3. ***Automated Welding for Offshore Wind Flotation Structures***, which considered the organisation capabilities needed for augmenting or replacing manual welding of offshore wind floating structures with robotic/automated welding equipment. This cycle ran from October through December 2024.
4. ***Advancing Manufacture of Blades for Offshore Wind Turbines***, which considered the organisational capabilities needed in replacing manual lay-up and preparation of wind turbine blades with robotics and automation. This cycle ran from November 2024 through January 2025.
5. ***UK Manufacture of High Voltage Direct Current (HVDC) Cable Systems***, which explored future skills needs linked to HVDC cable and converter manufacture in the UK, and integration with offshore wind generation and power transmission. This cycle ran from January to April 2025.

This sustained engagement across five cycles has allowed ORE Catapult to iteratively refine the process in response to industry feedback and practical delivery challenges, positioning it as an example of adaptive practice within the Hub.

## Rationale for Foresighting Topics & Alignment with Government & Sector Priorities

The offshore renewable energy sector faces rapid technological development, ambitious Net Zero targets, and major supply chain expansion. ORE Catapult's selected foresighting topics aligned with UK energy policy priorities and sector growth strategies.

The Dynamic Cables cycle responded to rapid expansion of floating offshore wind and workforce challenges associated with specialised cable design, installation, and maintenance. The RAS and O&M cycle explored workforce implications of automation and remote inspection technologies expected to shift demand toward data, systems integration, and asset management skills.

The Automated Welding and Blade Manufacturing cycles examined workforce implications of industrial-scale manufacturing automation required to improve productivity and support domestic supply chain growth. The HVDC cycle addressed skills requirements linked to grid infrastructure expansion and offshore wind integration.

## Foresighting Sponsorship and Stakeholder Engagement

Industry sponsorship supported validation and relevance of foresighting topics. RenewableUK acted as a key sector sponsor across cycles, reflecting its role as a sector-wide convenor and strategic voice for offshore wind and renewable energy. Over successive cycles, sponsor involvement shifted from more hands-on engagement to a higher-level advisory role as ORE Catapult's internal foresighting capability developed.

Beyond formal sponsors, ORE Catapult engaged stakeholders across complex offshore wind supply chains, including manufacturers, developers, higher education institutions, and training providers (see the published reports for comprehensive lists of participating stakeholders). Industry participants primarily contributed technical and operational insight, while education stakeholders supported interpretation of outputs within training and curriculum systems. Interview evidence indicates that early engagement conversations with participants improved retention, clarified expectations, and strengthened workshop contributions.

## Role of ORE Catapult in Supporting the Cycle

ORE Catapult acted as the central coordinating body across all cycles. Responsibilities included topic scoping, stakeholder recruitment, workshop facilitation, and synthesis of outputs in collaboration with the Workforce Foresighting Hub.

A particularly significant element of ORE Catapult's contribution related to the preparatory and engagement work undertaken ahead of workshop delivery. Preparatory work involved mapping supply chains, identifying priority organisations, and conducting desk-based research to ensure workshops were appropriately scoped. ORE Catapult introduced introductory engagement with participants prior to workshops to improve alignment and participation.

Interview evidence suggests this approach increased engagement quality but required substantial resources. Over time, ORE Catapult identified a three-month lead-in period as necessary to support recruitment, research, and onboarding activities. ORE Catapult also undertook significant post-workshop synthesis, translating technical discussions into workforce-relevant insights accessible to industry and education stakeholders. This translation function became a key capability developed through repeated delivery.

## Activities Undertaken and Outputs Generated

ORE Catapult completed five foresighting cycles supported by over 50 workshops. Interview evidence indicates that early cycles were more exploratory, involving multiple workshops and broad stakeholder participation, while later cycles became more targeted and streamlined in response to feedback about participant time burden.

Across cycles, delivery included structured preparation, facilitated workshops, and post-workshop synthesis. ORE Catapult refined the process iteratively by reducing workshop numbers, feeding improvement suggestions to the Workforce Foresighting Hub, and introducing structured "sense-making" stages to validate and refine outputs, particularly those generated using AI. These changes were introduced following feedback that early outputs were overly complex and difficult to translate into practical workforce planning actions.

Primary outputs included formal foresighting reports supported by skills gap analyses, capability statements, and Future Occupational Profiles (FOPs). These outputs focused on identifying how emerging technologies would reshape roles and generate demand for new capabilities.

Outputs were disseminated through ORE Catapult and Workforce Foresighting Hub networks, including circulation to participating stakeholders and publication of foresighting reports. ORE Catapult also undertook targeted dissemination activity to translate findings for different audiences. For example, presentations to the Energy Coast Skills Group explored how emerging capabilities could be embedded across curriculum levels.

ORE Catapult also contributed to early downstream education development, including collaboration with Newcastle and Durham Universities to design a joint master's programme informed by capability themes emerging across foresighting cycles.

However, responsibility for progressing foresighting outputs has not consistently been assumed by participating organisations. Although the identification of an industry champion has been recommended across cycles, this has rarely translated into sustained follow-on activity. Interview evidence suggests this reflects both the presence of multiple sector skills bodies, such as the OWIC Skills & Talent Group, and limited industry capacity to prioritise long-term workforce planning. ORE Catapult reported greater traction when focusing on cross-cycle synthesis and sector-level workforce insights rather than technology-specific actions.

## Impacts achieved to date

Impacts from ORE Catapult's foresighting activity are emerging and primarily relate to improved understanding, stakeholder awareness, and early downstream education influence.

**Strengthened Internal Capability.** Repeated delivery of foresighting cycles strengthened ORE Catapult's internal capability to analyse workforce implications of emerging technologies and translate technical developments into workforce-relevant insights. Interview evidence suggests this capability developed through sustained industry engagement and iterative learning.

**Increased Stakeholder Awareness.** Foresighting increased awareness among industry, academic, and skills stakeholders of how emerging technologies could reshape workforce requirements. Interviewees noted that foresighting supported earlier discussion of workforce needs, particularly in areas where employers traditionally struggle to articulate future demand. Outputs have informed occupational mapping and early thinking about career pathways linked to emerging offshore wind roles.

**Cross-Sector Engagement.** Foresighting outputs generated interest from adjacent sectors, including advanced manufacturing and automotive, exploring workforce mobility and transferable skills. Education stakeholders have also increased engagement with ORE Catapult to better understand technological workforce implications and support regional economic planning.

**Early Education and Training Influence.** There is early evidence of foresighting influencing training provision. Newcastle University developed a high-voltage pathway within a degree apprenticeship programme linked to Dynamic Cables findings. ORE Catapult is also collaborating with universities to develop postgraduate programmes incorporating foresighting insights.

Overall, foresighting has influenced understanding, language, and early workforce planning responses, although coordinated system-level change remains limited.

## Potential impacts that could be achieved - actions from foresighting reports

In earlier cycles, impact was assessed on a cycle-by-cycle basis. However, ORE Catapult later moved away from this approach, recognising that the absence of a consistent industry champion or dedicated funding to support ownership of individual cycle outcomes limited the feasibility of sustained follow-on activity at a technology-specific level. In response, ORE Catapult increasingly focused on cross-cycle synthesis and meta-analysis, reframing impact at a sector level rather than around individual technologies.

Across cycles, foresighting outputs have contributed to the development of workforce intelligence, shared occupational language, and early curriculum development. There is evidence of some apprenticeship and training pathway development, alongside ongoing industry workforce planning activity. However, progress toward broader system-level actions such as coordinated workforce demand modelling, large-scale curriculum reform, and supply chain workforce planning remains limited. ORE Catapult has sought to address this by prioritising sector-level insights and cross-cycle learning, which were perceived to offer greater relevance and traction than technology-specific outputs alone.

## How the Catapult is contributing to the high-level, longer term Hub impacts

ORE Catapult contributes to the Hub's long-term Theory of Change primarily through knowledge generation, stakeholder convening, and workforce intelligence development.

Foresighting has improved understanding of emerging capability requirements and supported dialogue across innovation and skills ecosystems. Collaborative networks established through foresighting have strengthened alignment between technological development and workforce planning. Impacts on workforce productivity, innovation adoption, and talent development are expected to occur over longer timeframes as workforce training and capability development respond to foresighting insights.

## Learnings and Barriers

### What worked well

- Iterative adaptation of the foresighting methodology improved usability.
  - Early outputs were technically detailed but difficult for non-specialists to interpret, and workshop formats did not fully support educator participation. Later cycles streamlined workshops, reduced complexity, and strengthened articulation of implications, improving accessibility and usefulness.
- Strong internal capability built through repeated cycles.
  - Running multiple cycles strengthened ORE Catapult's ability to scope topics, facilitate workshops, and synthesise outputs. This reduced reliance on external support and enabled a more proactive role in translating technical developments into workforce-relevant insights.
- Strategic alignment with sector growth plans strengthened relevance and engagement.
  - Foresighting topics were deliberately linked to offshore wind priorities such as manufacturing scale-up, automation, grid integration, and O&M. This increased credibility with industry stakeholders and supported engagement by linking workforce analysis to recognised sector ambitions and Net Zero objectives.
- Emphasising genuinely new or changing skills improved the relevance and credibility of outputs.
  - Later cycles placed greater emphasis on identifying emerging skills linked to automation, robotics, advanced manufacturing, and power systems. This helped differentiate foresighting outputs from existing workforce analysis and improved stakeholder perception of value.

### Barriers and challenges

- Outputs perceived as overly technical and insufficiently accessible for industry decision-makers.
  - Early outputs were difficult for industry decision-makers to interpret, requiring substantial post-workshop synthesis to simplify language and foreground workforce implications. Accessibility improved in later cycles but remained an ongoing learning area.
- Tension exists between methodological completeness and practical usefulness.
  - Delivering comprehensive foresighting sometimes conflicted with stakeholders' need for concise, actionable outputs. ORE Catapult introduced additional sense-making stages to balance analytical depth with practical usefulness, though this remained a challenge.

- Strong stakeholder engagement requires significant time investment.
  - Meaningful participation typically required two to three hours of preparatory engagement per participant, alongside follow-up and synthesis activity. While this improved engagement quality, it raised concerns about scalability if delivery budgets were reduced.
- Absence of follow-on activity to convene stakeholders around how recommendations should be taken forward in practice
  - Interview evidence indicates that coordinated implementation planning rarely occurred after report publication. Workforce foresighting formally concludes at report publication, and any subsequent action has therefore depended on independent ORE Catapult activity rather than the funded foresighting process.

**Source:** Case study informed by interviews with Catapult Network Leads, workshop participant, and cycle sponsors, as well as administrative performance monitoring data provided by MTC (November 2025).

# Digital Catapult
## Case Study

**overview**

| 2013 | 3 | 27 |
|---|---|---|
| Year established | Cycles completed | Workshops conducted |

**Strategic areas:**

- Artificial Intelligence and Data-Driven Technologies
- Immersive and Advanced Media Technologies
- Emerging Deep Technologies

### IIntroduction: Digital Catapult's Engagement with Workforce Foresighting

Digital Catapult, established in 2013, is a UK deep tech innovation organisation focused on accelerating the practical application of deep tech across industry and the public sector. Its remit spans a range of emerging and convergent technologies, including artificial intelligence, immersive technologies, advanced media production, and quantum technologies, with applications across multiple sectors rather than a single industry domain.

Digital Catapult became involved in workforce foresighting during the early trial phase that preceded the formal Workforce Foresighting. Interview evidence indicates that Digital Catapult's involvement was motivated by recognition that rapid digital technology development was reshaping roles, workflows, and skills requirements across multiple sectors, while existing labour market intelligence and occupational frameworks struggled to capture these requirements. Foresighting was viewed as a mechanism to anticipate future skills needs associated with emerging technologies before they reached large-scale deployment, rather than responding to shortages retrospectively.

Digital Catapult delivered three foresighting cycles during the evaluation period, with an additional two cycles in the planning stages, and an early trial cycle before the Hub was established. The three cycles completed in collaboration with the Hub were:

1. **Advanced Media Production: Foresighting Skills for the Future**, which explored skills needs linked to immersive and advanced media technologies. This cycle ran from January to March 2023.
2. **Designing, developing and implementing Quantum Sensing Technologies for enhanced positioning and monitoring of modes of transport**, which focused on workforce implications of quantum sensing technologies for transport applications. This cycle ran from October 2024 through January 2025.
3. **Operationalising AI pipelines to optimise telecommunication networks for enhanced network access quality and customer experience**, which examined how AI systems would reshape roles and skills in the telecommunications sector. This cycle ran from March through July 2025.

Across all three cycles, Digital Catapult acted as a sector convenor, shaping the scope of the work, recruiting stakeholders, and supporting delivery of the Workforce Foresighting Hub methodology.

## Rationale for Foresighting Topics & Alignment with Government & Sector Priorities

The digital technology sector faces persistent and complex skills challenges driven by the pace of technological change, the convergence of technologies, and their application across multiple industries. Interviewees described a lack of clarity around how emerging digital technologies translate into specific occupational roles, particularly where technologies are still at an early stage of maturity. This creates challenges for employers, education providers, and policymakers seeking to plan for future workforce needs.

Foresighting topics were selected based on emerging technologies where skills implications were expected to be significant but insufficiently articulated within existing occupational frameworks, and where there was clear alignment with government and sector priorities. The topic selection was driven by identified knowledge gaps within priority technology areas.

The *Advanced Media Production* foresighting cycle was selected in response to rapid technological change within the UK's creative industries, particularly the increasing use of immersive technologies, virtual production techniques, and advanced digital workflows. HM Treasury's Plan for Growth and the Department for Science, Innovation and Technology (DSIT) and Department for Business and Trade Innovation Strategy both identify the creative industries as a priority growth sector, with digital and immersive technologies recognised as central to future competitiveness and productivity. Interview evidence indicates that while technological capability in advanced media production is developing quickly, there is limited clarity across industry and education about how these changes translate into workforce roles and skills requirements, particularly as production models shift away from traditional workflows.

The *Quantum Sensing in Transport* cycle aligned with government priorities on advanced connectivity, transport innovation, and quantum technologies, as set out in the UK Science and Technology Framework and DSIT's National Quantum Strategy. These strategies highlight the strategic importance of developing both technological capability and the skilled workforce required to support deployment of quantum technologies in real-world applications, including transport systems.

The *AI in Telecoms* cycle aligned with priorities on digital infrastructure, AI adoption, and telecommunications resilience, as reflected in the UK Digital Strategy and Wireless Infrastructure Strategy, which set out the UK's ambition to lead integration of AI and expansion of 5G-enabled infrastructure. The cycle explored how AI-enabled systems are expected to reshape network management, operations, and engineering roles, addressing workforce implications associated with increasingly automated and data-driven telecommunications.

Across all three cycles, foresighting was used to explore medium- to long-term workforce implications rather than immediate skills shortages, enabling early consideration of how roles and skills might evolve as technologies mature and diffuse across sectors.

## Foresighting Sponsorship and Stakeholder Engagement

Cycle sponsors played an advisory role in shaping and validating foresighting topics. Digital Catapult sponsored the Advanced Media Production cycle, the Department for Transport sponsored the Quantum Sensing cycle, and CGI sponsored the AI in Telecoms cycle.

In addition to the sponsors, a wide range of stakeholders participated in the foresighting workshops including technology developers, sector bodies, employers, and universities relevant to each technology domain. Sponsors and stakeholders were identified for their strategic position within relevant technology ecosystems and their ability to provide context into technology development and workforce challenges.

Interview evidence indicates that sponsor involvement focused on sense-checking scope, validating relevance, and supporting engagement, rather than owning post-cycle implementation or driving immediate training change. Stakeholder engagement was strongest where technologies were closer to deployment and where employers could clearly see relevance; participation was more challenging in earlier-stage or more speculative technology areas. This uneven engagement influenced the depth and breadth of employer insight available in some cycles.

## Role of Digital Catapult in Supporting the Cycle

Across all three foresighting cycles, Digital Catapult acted as the central coordinating and delivery body, drawing on its technology expertise, convening capability, and cross-sector networks. Digital Catapult's role included:

- Defining the scope of each cycle, translating high-level technology priorities into focused foresighting questions with clear workforce relevance.
- Stakeholder recruitment and facilitation, leveraging its relationships to secure participation from employers, technology specialists, and education stakeholders. Interviewees emphasised that Digital Catapult's role as a trusted intermediary was critical in engaging diverse stakeholders, particularly given the cross-cutting nature of digital technologies and the absence of a single, clearly bounded sector.
- Post-workshop analysis to refine outputs, improve accessibility for non-technical audiences, and clearly distinguish genuinely new or changing skills from existing competencies.

## Activities Undertaken and Outputs Generated

Each foresighting cycle followed the Workforce Foresighting Hub methodology, including structured preparation, facilitated workshops, and synthesis of outputs. Across three cycles, 27 workshops were delivered involving employers, education providers, technology developers, and sector stakeholders. Outputs included foresighting reports, skills gap analyses, Future Occupational Profiles (FOPs), capability maps, and interactive dashboards. Across cycles, 16 FOPs were developed for Advanced Media Production, 17 for Quantum Sensing, and 21 for AI in Telecoms. Interactive dashboards introduced in later cycles enabled stakeholders to revisit foresighting outputs as technologies evolved. Interview evidence suggests these resources improved usability and supported longer-term workforce planning discussions.

Interview evidence indicates that delivery experience varied across cycles, with stronger traction where employer engagement was higher and where technology maturity enabled clearer articulation of workforce change.

Outputs were disseminated through Digital Catapult and Workforce Foresighting Hub networks, including circulation to participating stakeholders and publication as formal foresighting reports. Monitoring data suggests that several presentations and briefings have also been conducted at industry events (e.g., Economist Impact Commercialising Quantum event) to help further disseminate cycle findings to key stakeholders. Interview evidence suggests that outputs were used primarily to support strategic discussions, awareness-building, and longer-term planning rather than immediate operational change. This has included embedding this thinking at the Combined Authority Level and in research projects that are looking at skills formation in tertiary education (led by the SKOPE Research Centre, University of Oxford). Higher education stakeholders were the most consistently engaged users of the outputs, using them to inform discussions about future skills needs, research priorities, and longer-term curriculum considerations, although no direct curriculum changes are documented in the available data.

## Impacts achieved to date

Evidence suggests that Digital Catapult foresighting has supported early improvements in understanding emerging workforce requirements across digital technology sectors. Stakeholders reported increased clarity regarding:

- Future workforce skills required for quantum sensing, AI, and immersive media technologies
- How emerging technologies reshape roles, workflows, and occupational boundaries
- Capability gaps that may limit technology deployment

Foresighting outputs have supported strategic planning across education, industry, and policy stakeholders. Universities have used FOPs to inform curriculum reviews and research planning, while employers have used capability maps to inform workforce planning and internal training discussions. There is also evidence that foresighting insights have supported development of short training programmes, CPD provision, and discussions around micro-credentials. For example, capability

frameworks developed through foresighting informed CPD modules delivered through further education colleges and training programmes linked to advanced media production technologies. In the quantum sensing cycle, foresighting outputs informed engagement with national quantum skills initiatives and supported sector awareness activities. However, formal training provision and apprenticeship development remain at early stages.

Overall, impacts to date are primarily enabling, supporting awareness, workforce planning, and early education system responses rather than large-scale workforce change.

## Potential impacts that could be achieved - actions from foresighting reports

Across the *Advanced Media Production* cycle, early activity focused on embedding emerging digital production skills into training provision. Workshops and CPD modules supported development of training related to real-time rendering engines, immersive production workflows, and employability skills. Regional initiatives, including programmes delivered through Digital Catapult's AMP studios and the IMMEX programme, supported SME workforce development and work-based learning opportunities. However, more ambitious actions such as new apprenticeship standards, structured capability training frameworks, and sector-wide skills coordination have not yet progressed.

The *Quantum Sensing* cycle established a cross-sector working group that supported dissemination of findings and awareness-raising across transport and quantum technology networks. Engagement with national quantum skills initiatives and awareness events has supported early dialogue around training pathways and apprenticeship adaptation. However, many recommended actions, including development of skills bootcamps, apprenticeship standards, and specialised training modules, remain at planning stages.

The *AI in Telecoms* cycle is the most recent and therefore has limited evidence of implementation. Early discussions have occurred within regional digital infrastructure and skills planning forums, and initial cross-Catapult collaboration has begun exploring workforce implications across 5G and AI-enabled infrastructure. However, most recommended training and curriculum adaptation activities have not yet progressed due to uncertainty around future programme funding and ownership.

Across cycles, foresighting outputs have therefore supported awareness-building, stakeholder engagement, and early training discussions, but translation into coordinated workforce system change remains limited.

## How Digital Catapult is contributing to the high-level, longer term Hub impacts

Digital Catapult's foresighting activity contributes to the Hub's long-term Theory of Change primarily through strengthening workforce intelligence, enabling collaboration, and supporting workforce planning discussions in emerging technology sectors. Foresighting has supported early identification of workforce capability requirements in areas where occupational frameworks are still evolving. Collaborative networks established through cycles have improved dialogue between industry, education providers, and policymakers, supporting alignment between innovation development and workforce planning.

However, there is limited evidence of impacts on workforce productivity, business performance, or R&D investment at this stage. These outcomes are expected to emerge over longer timeframes as training provision and workforce practices adapt to foresighting insights.

## Learnings and Barriers

**What worked well**

- Focusing on emerging and differentiating skills improved relevance and credibility.
  - Interviewees noted that explicitly identifying new or changing skills, rather than restating existing roles, helped stakeholders understand where workforce adaptation would be required and improved the credibility of outputs by making workforce implications more tangible and forward-looking.

- Iterative refinement of the foresighting process improved the usability of outputs over time.
  - Interview evidence suggests that learning from earlier cycles informed later delivery, resulting in clearer presentation, improved structuring of reports, and greater emphasis on usability, including dashboards.

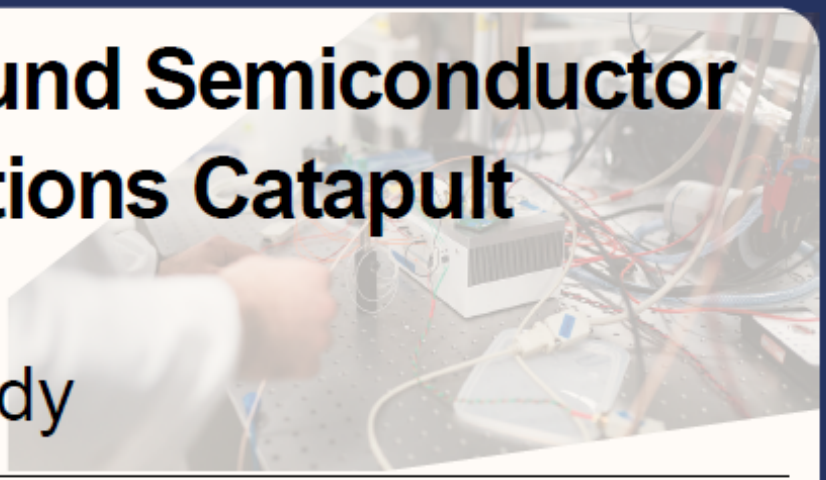
**Barriers and challenges**

- Uneven employer engagement across some cycles impacted representativeness of insights.
  - Interviewees reported that employer engagement was stronger where technologies were closer to deployment and where workforce implications were more immediately recognisable. In contrast, participation was more limited in earlier-stage or more speculative technology areas, which constrained the depth and breadth of employer input in some cycles. This uneven engagement affected the representativeness of insights, particularly where fewer industry perspectives could be captured.
- Limited clarity around post-cycle ownership and implementation of recommendations limited momentum post-cycle.
  - Interviewees described foresighting as generating credible and structured insight, however highlighted responsibility for translating recommendations into training provision, workforce action, or policy change sat beyond the cycle itself and was not clearly defined, limiting momentum beyond the reporting stage.

**Source:** Case study informed by interviews with Catapult Network Leads, workshop participant, and cycle sponsors, as well as administrative performance monitoring data provided by MTC (November 2025).

# Compound Semiconductor Applications Catapult (CSAC)

## Case Study



### overview

| 2018 | 1 | 9 |
|---|---|---|
| Year established | Cycles completed | Workshops conducted |

**Strategic areas:**

- Power Electronics
- RF and Microwave Technologies
- Photonics (including sensing and optical communications)

### Introduction: CSAC's Engagement with Workforce Foresighting

The Compound Semiconductor Applications Catapult (CSAC), established in 2018, is an Innovate UK centre focused on accelerating the development and commercialisation of compound semiconductor technologies, including applications in telecommunications, power electronics, photonics, and advanced connectivity. CSAC works closely with industry, academia, and government to support the growth of the UK compound semiconductor sector and its associated supply chains.

CSAC led one foresighting cycle **"Adopting Systems Engineering for Secure, Resilient, and Energy-Efficient Radio frequency (RF) and Microwave Systems to Address Skills Gaps and Enhance Open RAN Integration"**. The cycle's carry out phase ran from November 2024 through March 2025.

### Rationale for Foresighting Topics & Alignment with Government & Sector Priorities

The compound semiconductor sector faces long-standing skills challenges driven by rapid technological change, increasing system complexity, and the need for highly specialised engineering expertise. Interviewees described difficulties attracting and retaining specialist engineers, an ageing workforce, and limited visibility of future skills demand beyond immediate recruitment needs. These challenges are particularly acute in areas where technologies are progressing towards deployment, but where workforce planning has remained largely reactive. Interviewees described that while employers recognised the strategic importance of workforce development, short-term delivery pressures often limited engagement in longer-term skills planning.

The foresighting topic was selected based on CSAC's internal technology roadmaps, and government priorities relating to advanced connectivity and semiconductor capability. The focus on RF and microwave technologies linked to 5G and emerging 6G systems reflects their strategic importance to the UK's digital infrastructure and advanced manufacturing ambitions. Government policy documents, including the UK Science and Technology Framework and the National Semiconductor Strategy, identify compound semiconductors and advanced connectivity technologies as critical to national competitiveness, economic resilience, and technological sovereignty. These strategies emphasise not

only technology development, but also the need for a skilled workforce capable of supporting design, manufacturing, integration, and deployment at scale.

At a sector level, RF and microwave technologies are recognised as enabling technologies underpinning telecommunications, defence, transport, and advanced electronics. Interview evidence indicates that CSAC identified this area as one where future workforce implications were expected to be significant but poorly articulated, particularly given long development timelines and capital-intensive manufacturing environments. Foresighting was therefore used to explore medium- to long-term workforce requirements, rather than short-term skills shortages, providing early insight into how occupational roles and skills needs may evolve as these technologies mature and are integrated into national infrastructure and supply chains.

## Foresighting Sponsorship and Stakeholder Engagement

The primary industry sponsor was Filtronic. A wide range of stakeholders also participated in the foresighting cycle, including industry employers, higher education institutions, skills bodies, and policy stakeholders Engagement was secured through extensive outreach by CSAC and the Hub, drawing on universities, government teams, sector networks, and individual firms (see the published report for comprehensive lists of participating stakeholders).

Interview evidence indicates that participating organisations were identified for their strategic position within the compound semiconductor ecosystem and their ability to provide contextual insight into technology development and workforce challenges. Their involvement focused on shaping and sense-checking the scope of the work, validating the relevance of emerging findings, and supporting engagement with wider sector stakeholders.

Wider stakeholder groups played distinct but complementary roles. Industry participants contributed practical insight into emerging technologies, operational constraints, and workforce challenges helping to ground discussions in real-world conditions. Higher education and skills stakeholders supported interpretation of foresight outputs within existing education and training structures, enabling early consideration of curriculum and provision implications. Interviewees emphasised the importance of engaging higher education stakeholders early in the process, noting that this helped ensure that foresighting outputs were framed in ways that could be interpreted within existing academic structures, supporting later discussions about curriculum relevance and potential alignment with research-led training provision.

## Role of CSAC in Supporting the Cycle

Throughout the foresighting cycle, CSAC acted as the coordinating body, leveraging its sector expertise and industry relationships to define the scope of the work, recruit stakeholders, and support delivery of the Hub methodology. Interviewees described CSAC's role as central to maintaining a workforce focus and ensuring that discussions remained oriented toward future skills implications rather than purely technical considerations. Interview evidence also highlights that securing participation required significant convening effort, and that CSAC's position within the sector was critical in achieving cross-sector engagement, including participation from industry, academia, and policy stakeholders.

## Activities Undertaken and Outputs Generated

CSAC completed one foresighting cycle involving nine structured workshops with industry, academic, and policy stakeholders, supported by preparatory work and post-workshop synthesis facilitated through the Hub. Interviewees emphasised the significant time commitment required, especially for industry participants, and noted that engagement was strongest where stakeholders could clearly see the relevance to future sector development.

The primary output was a formal foresighting report identifying future skill requirements, priority 24 Future Occupational Profiles (FOPs), skills gaps, and recommendations for education and training providers.

Interview evidence indicates that the report was circulated to participating stakeholders and published as part of the Workforce Foresighting Hub's output portfolio. In addition, several presentations and briefings are planned to distribute the cycle findings to key audiences (e.g., DSIT Future Telecoms, CSA catapult event). LinkedIn is also being used to facilitate dissemination and engagement.

## Impacts achieved to date

Impacts from CSAC's foresighting activity to date are primarily enabling, meaning that the work has supported improved shared understanding of the skills challenge rather than direct workforce or training change. Interview evidence indicates that the process helped consolidate and legitimise existing sector knowledge about skills gaps, providing a shared evidence base that could be used in discussions with government, funders, and education providers. In some instances, the foresighting output has already been used by universities to support bids for research and training funding, demonstrating early downstream use even where bids were not ultimately successful. However, interviewees suggested impacts are likely to materialise only over the longer time horizons. Interviewees highlighted fragmentation across the skills system as a key challenge to enacting change. Although foresighting activity identified FOPs and emerging skills requirements, weak coordination between industry, education providers, and funding bodies constrained the translation of insight into funded training provision. This disconnect was described as a systemic issue rather than a limitation of the foresighting process itself.

## Learnings and Barriers

**What worked well**

- Alignment with CSAC's technology roadmaps and government priorities strengthened relevance and credibility:
  - Interviewees emphasised that aligning the foresighting cycle closely with CSAC's internal technology roadmaps was critical to securing buy-in and ensuring relevance for industry participants. Interviewees also noted that the focus on RF and microwave technologies linked to emerging 6G systems resonated strongly with national priorities on advanced connectivity.
- Authoritative evidence supported engagement with policymakers and funders:
  - Interview evidence indicates that foresighting outputs helped consolidate and legitimise existing sector knowledge about skills gaps, providing a structured evidence base that could be used in discussions with government bodies, funders, and sector partners. Further, the foresighting process generated structured evidence that has already been used to support academic institutions' engagement with government and funding bodies.
- Early engagement with education providers supported consideration of curriculum implications:
  - Engagement with higher education stakeholders enabled early discussion of how emerging skills needs might translate into future provision. While interviewees did not report immediate curriculum change, they emphasised that early engagement supported more informed discussions about how emerging skills needs might influence future curriculum development.

**Barriers and challenges**

- High time demands limited sustained industry participation:
  - Interviewees described the foresighting process as time-intensive, particularly for industry participants balancing commercial pressures. The intensity of workshops and preparatory activity constrained the ability of some employers to engage consistently
- Uneven sector engagement reduced breadth of employer input:
  - Interviewees suggests that engagement was strongest among organisations already closely connected to CSAC or directly affected by RF and microwave workforce challenges, though they did not name specific organisations. Uneven engagement across the sector may limit the representativeness of employer perspectives.
- Limited coordination with downstream funding mechanisms constrained implementation:
  - Interviewees highlighted fragmentation across the skills system as a significant barrier. Although foresighting identified FOPs and emerging skills requirements, weak alignment between industry, education providers, and funding bodies limits translations of insights into provision.

**Source:** Case study informed by interviews with Catapult Network Leads, workshop participant, and cycle sponsors, as well as administrative performance monitoring data provided by MTC (November 2025).

# Energy Systems Catapult (ES Catapult)

## Case Study



**overview**

| 2015 | 2 | 13 |
|---|---|---|
| Year established | Cycles completed | Workshops conducted |

**Strategic areas:**

- Whole energy system transformation
- Heat, buildings, and consumer transition
- Digitalisation and energy market innovation

### Introduction: ES Catapult's Engagement with Workforce Foresighting

The Energy Systems Catapult is a UK innovation centre focused on supporting the transition to a net zero, secure, and affordable energy system. ES Catapult works across energy generation, networks, flexibility, heat, transport, and whole-system integration, combining technical, economic, and behavioural expertise to support policy development, innovation, and system transformation.

ES Catapult became involved in workforce foresighting through Innovate UK–funded activity, building on its prior work examining skills requirements for the energy transition. ES Catapult's engagement was motivated by concern that, while policy ambition for decarbonising buildings was clear, the skills and capability requirements, particularly at the design and commissioning stages, were poorly articulated and not well supported by existing training provision.

Through the Workforce Foresighting Hub, ES Catapult led two foresighting cycle:

- ***"Skills for an Integrated and Customer Focussed Retrofit Process"*** (undertaken between September 2022 and March 2023) which focused on identifying the skills and knowledge required to create a Net-Zero mission-driven, customer-focused workforce for retrofitting homes in the UK. It aimed to address the significant skills gaps in energy efficiency, low carbon heating design, customer advice, property assessment, technology integration, and post-installation monitoring.
- ***"Decarbonisation of large non-domestic buildings over 1,000m²"*** (undertaken between March and July 2025) which focused on future skills requirements for designing a clean heat system for non-domestic (e.g., offices, hospitals, shops, hotels) buildings.

### Rationale for Foresighting Topics & Alignment with Government & Sector Priorities

The UK energy sector faces profound and interconnected skills challenges driven by decarbonisation, system integration, digitalisation, and regulatory change. Interviewees described concerns that, while policy ambition for net zero is clear, the workforce implications of delivering a whole-system energy transition are not yet well articulated or coordinated across sectors. ES Catapult's foresighting activity aligned closely with UK government priorities on net zero and energy system transformation, including

commitments set out in the Net Zero Strategy to require net zero emissions for all greenhouse gas emissions by 2050.

The *Skills for an Integrated and Customer Focussed Retrofit Process* cycle focused specifically on addressing the need to retrofit homes in the UK to make them more energy-efficient and affordable to heat. This aligns with government and sector priorities, particularly considering the cost-of-living crisis, rising child food poverty, and the increasing number of households in fuel poverty. The project supports the government's Mission Zero independent review, which identified significant skills gaps in energy efficiency, low carbon heating, and consumer advice for home upgrades. It emphasises the importance of an integrated retrofit process that improves customer experience and outcomes, which is critical for achieving the scale of retrofitting required to meet Net-Zero targets. Additionally, the project aligns with government and sector priorities by focusing on diversity in the workforce, addressing the underrepresentation of women and ethnic minorities in the heating industry, and ensuring the dissemination of knowledge to educational institutions for effective training.

The *Decarbonisation of large non-domestic buildings over 1,000m²* cycle focused specifically on the decarbonisation of large non-domestic buildings, an area identified as both strategically important and operationally complex. In 2024, emissions from non-domestic buildings accounted for 27% of total UK building emissions, and while large non-domestic buildings (>1000m²) represent only around 7% of all non-domestic buildings, they account for over 60% of electricity consumption and 70% of gas consumption. Interview evidence indicates that ES Catapult viewed this part of the system as a critical leverage point for achieving emissions reductions, but one where workforce roles, responsibilities, and skills requirements were poorly defined. The foresighting cycle was therefore designed to explore the implications associated with delivering large-building decarbonisation, including the coordination required across energy, construction, digital, and operational domains. Interview evidence confirms the topic was selected because failures in design were already leading to poor installations, cost overruns, and underperforming systems, with implications for workforce readiness.

## Foresighting Sponsorship and Stakeholder Engagement

Industry and policy sponsors played a key advisory role in shaping and validating the foresighting topics across both cycles. E.ON, EDF, and JPJ Boilers sponsored the Skills for an *Integrated and Customer-Focussed Retrofit Process* cycle, while the Department for Energy Security and Net Zero (DESNZ) sponsored the *Decarbonisation of Large Non-Domestic Buildings Over 1,000m²* cycle. In both cases, sponsor involvement helped ground the work in real-world delivery and policy priorities and added credibility when engaging stakeholders.

Both cycles convened broad cross-sector groups spanning industry, technology providers, academia, consumer bodies, and skills organisations, reflecting the multi-disciplinary nature of the two cycle topics. Sector credibility and existing networks from the ES Catapult and their sponsors were central to securing participation. Interview evidence indicates that, while engagement was wide-ranging, depth of participation varied. For example, interviewees noted the significant time commitment associated with participating in workshops and suggested that this burden could be a barrier to participation for smaller organisations. Further, an interviewee also noted that the workshop content was often very granular and technical, and although the correct organisations were at the table, some workshop attendees were too senior within their organisations to participate in such detail. They suggested further clarity and information from the Hub about expectations of the workshops in the beginning of the cycle would have allowed them to do more work up front to identify the correct stakeholders; however, other interviewees noted that time pressures did not allow for adequate time for stakeholder recruitment.

## Role of ES Catapult in Supporting the Cycle

ES Catapult acted as the convening and analytical lead for the foresighting cycle, leveraging its system-wide perspective and analytical expertise. Interviewees described ES Catapult's role as critical in maintaining a whole-system focus and avoiding fragmentation into technology- or sector-specific discussions.

ES Catapult led implementation of the foresighting approach, supported stakeholder convening, and undertook post-workshop synthesis to translate diverse inputs into structured insights. Interview evidence highlights that this role was particularly important given the complexity of energy system interactions and the difficulty of mapping system-level change onto existing occupational structures. ES Catapult also played a key role in framing outputs for policy and skills audiences, ensuring that findings could be interpreted alongside existing energy and skills strategies.

## Activities Undertaken and Outputs Generated

Activities for the *Retrofit Process* cycle included structured preparation, facilitated multi-stakeholder workshops, and post-workshop synthesis and validation. Preparatory work involved mapping existing retrofit standards, identifying key customer journey touchpoints, and analysing gaps in current training provision to establish an evidence base for the cycle.

The cycle convened four multi-stakeholder workshops bringing together industry, skills, and technology partners. These sessions focused on role evolution across the retrofit process, customer needs and experience, technology integration, and opportunities for system-level redesign. Post-workshop synthesis generated skills gap summaries, capability maps, and a set of prototype Future Occupational Profiles (FOPs). Outputs were subsequently tested and refined with selected industry and skills stakeholders, including installers, further education providers, and retrofit coordinators.

The *Decarbonisation of Large Non-Domestic Buildings* cycle comprised nine workshops, each convening a tailored mix of stakeholders including estates teams and building operators, heat pump and wider technology providers, designers and consultants, academic experts, and skills organisations. This breadth of participation reflected the technical and operational complexity of large-building decarbonisation.

The primary output was a formal foresighting report, which set out future skills challenges for the energy system, provided occupational change insight in the form of 14 Future Occupational Profiles (FOPs), highlighted gaps in current skills provision, and set out recommendations for next steps to carry the work forward. The report emphasised the need for system-level capabilities, interdisciplinary skills, and improved coordination between education, industry, and policy. The report also linked to interactive data visualisations (e.g., the "Fit and Surplus Factors" tool), enabling deeper interrogation of how FOPs align with existing training provision.

Output refinement followed a structured quality assurance process involving: (1) internal Energy Systems Catapult review for technical coherence; (2) Hub QA to ensure workforce implications were accurately articulated; and (3) validation with sponsors and technical participants to sharpen insights related to system integration and commissioning.

Outputs were disseminated through ES Catapult's networks (e.g., via LinkedIn) and through publication of the foresighting report. Interview evidence indicates that dissemination was targeted primarily at policy audiences, education stakeholders, and sector organisations involved in energy system planning. Interviewees described the outputs as being used to support strategic discussions about energy skills policy and longer-term workforce planning. There is limited evidence of direct or immediate changes to training provision, but the outputs were viewed as a credible evidence base to inform future policy development and coordination.

## Impacts achieved to date

Impacts from the foresighting work are still emerging, but evidence indicates it has helped consolidate and clarify system-level skills challenges that were previously understood in fragmented ways across the energy sector. Across both cycles, stakeholders consistently identified structural coordination issues in retrofit and building decarbonisation delivery, including fragmented responsibility for design and commissioning, weak integration between fabric and heating measures, low digital-tool adoption, and blurred role boundaries. By convening actors who do not typically work together, the process enabled a shared mapping of where responsibilities overlap or break down and how knowledge should flow across

the delivery chain, creating a stronger foundation for future standards alignment, integrated training pathways, and policy development.

To date, the most tangible impact has been improved shared understanding among policymakers and sector stakeholders rather than immediate workforce change. There is growing convergence around key capability needs (notably whole-building design skills, stronger commissioning competence, enhanced customer-facing capability, and interoperable digital data flows) alongside a perceptual shift toward viewing retrofit as a coordinated end-to-end process. Early movement toward provision change is visible but remains formative: the work has informed recommendations for modular courses and apprenticeships, supported development of several ES Catapult training modules, and begun to influence the wider evidence base (including citation in the Construction Leadership Council's Roadmap of Skills for Net Zero), indicating emerging traction within strategic skills discussions.

## Potential impacts that could be achieved - actions from foresighting reports

There are credible early signals that the foresighting work could translate into more concrete changes in training provision and workforce development, although most activity remains at the scoping stage. Energy Systems Catapult reports that the outputs are already informing potential interventions, including a modular retrofit survey and assessment course aligned to PAS 2035, an expanded Low Carbon Heating Technician pathway with stronger system-integration and customer-engagement content, and a proposed Retrofit Coordinator Plus CPD module covering digital tools, monitoring, and sequencing. The foresighting process has helped define the required competencies and provided structured capability statements that FE and training providers are beginning to use in course design.

Early traction is visible across the sector. Some FE colleges are reviewing retrofit curricula to embed whole-house design modules, while industry partners are piloting digital Bill of Materials process mapping and providers are scoping energy-calculation, monitoring, and customer-needs content. In the large non-domestic buildings space, discussions between Energy Systems Catapult, BESA, and FE partners are exploring strengthened heat pump design and commissioning training, alongside new CPD focused on digital design tools (e.g., BIM, digital twins). Several universities have also begun reviewing engineering programmes to better align with emerging large-building retrofit competencies.

## How the Catapult is contributing to the high-level, longer term Hub impacts

Across both cycles, Energy Systems Catapult is contributing primarily through evidence generation, convening, and capability articulation. The work is helping to reduce skills lags by producing clear capability statements and Future Occupational Profiles (FOPs) to inform FE and HE curriculum updates, while also supporting UK innovation by identifying system-level skills needed for decarbonisation and digital integration. Through its convening role, ES Catapult is strengthening ecosystem coherence by bringing together designers, installers, technology providers, skills bodies, and policymakers, and is supporting innovative businesses by improving visibility of emerging role requirements (e.g., commissioning and digital optimisation).

Looking ahead, planned contributions include continued support for curriculum alignment, expansion of stakeholder engagement, and further integration of foresighting insights into national skills planning processes.

## Learnings and Barriers

### What worked well

- ·Whole-system framing and alignment with government policy priorities strengthened relevance and engagement.
  - The focus on large non-domestic building decarbonisation aligned closely with DESNZ policy priorities on net zero delivery, helping to ensure the foresighting cycle addressed a clearly defined and policy-relevant problem space. Interviewees noted that this alignment made it easier to articulate the value of foresighting to stakeholders and positioned the work as complementary to existing policy debates rather than detached from delivery realities.

- ·Convening cross-sector stakeholders supported shared understanding of workforce challenges.
  - ES Catapult's convening role enabled participation from industry, technology providers, academics, and skills stakeholders who do not typically engage together on workforce planning. Interview evidence suggests that workshops helped surface different perspectives on skills needs and delivery constraints, contributing to a more holistic understanding of workforce implications.

**Barriers and challenges**

- Difficulties with stakeholder recruitment and uneven stakeholder engagement affected depth of insight.
  - While engagement was broad, interviewees noted that participation varied across stakeholder groups, reflecting differences in capacity, knowledge, and proximity to implementation. Time constraints to begin the cycle within the fiscal year negatively impacted the ability to recruit the right stakeholders, and time commitments place significant burden on participants which impacts recruitment. This uneven engagement limited the depth of insights and reinforced challenges associated with coordinating across a diverse, fragmented delivery landscape.
- Limited clarity on ownership beyond the foresighting cycle
  - Interviewees noted that while the foresighting process generated credible insights, responsibility for taking recommendations forward into action was not clearly defined. This lack of ownership limited translation of findings into coordinated next steps, particularly across policy, funding, and delivery organisations.

**Source:** Case study informed by interviews with Catapult Network Leads, workshop participant, and cycle sponsors, as well as administrative performance monitoring data provided by MTC (November 2025).

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Economic Research Services Limited t/a **Fortia Insight**
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