

SSAC CRITICAL TECHNOLOGIES SCOPING AGREEMENT

Project Title: Exploring the potential opportunities for Scotland's Critical Technologies.

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Project overview: The Scottish Government has identified Critical Technologies as a key economic opportunity for the future through the National Strategy for Economic Transformation and the recently published National Innovation Strategy.

The introduction of a Critical Technologies supercluster brings together Scotland's core industrial and research strengths in the related and adjacent areas of Quantum, Photonics, Semiconductors and Wireless capabilities.

Together, this supercluster comprises over 140 companies, generating more than £3.6 billion in turnover, £1.2 billion GVA and supporting over 10,000 jobs. This cluster is understood to be the largest in the UK, outside of the East and Southeast of England.

Photonics encompasses the technologies, devices, products and processes that generate, transmit, transform, detect and/or manipulate light in any format, colour or location. In Scotland our expertise is primarily in advanced lasers for sensing and instrumentation, and light-based communications. The Photonics Vision Paper sets out the ambition to treble size of the photonics industry in Scotland by 2030, building upon the strong industrial base and world-leading academic groups that currently sees over 95% of outputs exported outside of Scotland.

A new generation of quantum technologies is emerging and is set to revolutionise communications, computing, sensing and imaging over the next decade. The Quantum Vision Paper that sets out the ambition to develop the sector into a £1 billion industry for Scotland by 2030, building upon the leading role Scotland's academic institutions have played in the National Quantum Technology Programme.

Semiconductors are present in almost every consumer and industrial product today and Scotland possesses core capabilities in both silicon and compound semiconductor technologies and is also considered a worldwide centre of excellence in semiconductor design and IP development. Scotland hosts approximately 20% of the UK's semiconductor fabrication facilities.

Wireless technology encompasses a variety communications applications and radar. Scotland has particular expertise in specialist antennas, radar systems, microwave communications components and the Internet of Things.

Alongside this, Scotland has considerable strengths within the space sector, renewable energy and net zero technologies, life sciences and advanced manufacturing that will all be key application areas for critical enabling technologies.

Whilst the individual industries have considerable strengths, and it is the view of the Scottish Government and industry that bringing these industries together under the Critical Technologies supercluster provides a greater economic opportunity and proposition to the international market, we are nevertheless at the early stages of determining what that collective opportunity is and how we go after it.

Aims and objectives:

The project will review the opportunities for Scotland's Critical Technologies, including consideration of both a 'supercluster' and a [mission approach](#). Mission-oriented innovation policy responds to 'grand challenges' by identifying and articulating concrete problems that can galvanise production, distribution, and consumption patterns across various sectors. It will offer recommendations to highlight opportunities that account for the existing strengths of the Critical Technologies ecosystem, including existing capabilities and relevant strengths. The project will set out actions that can be taken by the Scottish Government and other stakeholders to position Scotland to maximise economic opportunities, including setting out where respective ownership of relevant actions best sit.

The report will identify:

- Future opportunities for the Critical Technologies industries over the next 5 years, aligned with Scotland's research and industry strengths, and opportunities to contribute to Scottish Government priorities.
- An assessment of Scotland's research capability and associated set of actions to help Scotland's research community be well positioned to support Scotland's Critical Technologies industries to capture identified opportunities. Including respective strengths of industry, academia, government, capital, and entrepreneurs.
- An assessment of the infrastructure needs across the Critical Technologies industries and a prioritisation of what infrastructure would make the most difference to existing industries
- The main challenges and alternatives that will need to be considered when deciding how to proceed to achieve identified opportunities and will include input from industry, with significant specialist knowledge of these sectors.

Relevance to Scottish Government:

Critical Technologies are currently recognised as a key economic opportunity for Scotland. The SSAC project will directly support thinking in respect to the development of a strategy to deliver growth through the Critical Technologies Supercluster.

Methodology:

- We will create an SSAC Working Group (WG) of up to 8 participants suggested by current SSAC members and networks. The WG will meet fortnightly to discuss an initial horizon scanning exercise exploring emerging

research, technologies and innovations arising from, or of direct relevance to, critical technologies, that align with the strengths of Scotland's ecosystem.

- Informed by the horizon scanning, we will develop a survey questionnaire to be issued to relevant stakeholders in industry, academia and the wider public sector.
- Informed by the survey responses, we will hold a virtual half day workshop with key stakeholders to enable a "deep dive" into opportunities and challenges.
- The Working Group will use the outputs of the workshop, survey and horizon scanning to produce a short report for SG containing the deliverables identified above.

Timeline:

Create working group – 4 weeks

Horizon scanning – 6/8 weeks

Stakeholder consultation survey and workshop – 8 weeks

Write up – 4 weeks