

Glasgow City Region Cabinet

Report by Kevin Rush, Director of Regional Economic Growth

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Glasgow City Region Innovation Accelerator

Purpose of Report:

To update the Cabinet on:

- The projects which have been approved for funding through the GCR Innovation Accelerator programme;
- The further development of a regional innovation action plan.

Recommendations

The Cabinet is asked to:

- a) note the project portfolio which has been finalised for the GCR Innovation Accelerator programme;
- b) agree to receive a further report on a draft regional innovation action plan.

1. Introduction

- 1.1 This report updates the GCR Cabinet on the final project selection for the Innovation Accelerator (IA) programme and sets out the next steps in developing a regional approach to the innovation agenda.
- 1.2 Members have considered a report on this work at a previous meeting of the Cabinet. It was noted that:
- Glasgow City Region was pre-selected by the UK Government (together with Greater Manchester and West Midlands) for an equal share of £100 million investment in an Innovation Accelerator programme. The funding commitment was re-stated in the Chancellor's spring budget statement in March 2023.
 - This approach is intended by government to support the Levelling Up agenda on tackling regional disparities across the UK and to promote more rapid growth and market entry of industry-led innovation.
 - Partners across the public, academic and private sectors had identified key sectors for further progression in the city-region, from which specific project proposals were then developed.

2. Background to project proposals

- 2.1 The development of the GCR IA programme has drawn on a group of key principles which have been set at both national and local level for this work. They include:
- Applying a focus on innovation rather than science or pure research, seeing this programme principally as an economic development one to generate jobs, investment and growth.
 - Ensuring a good level of co-investment and significant private sector leverage over the lifetime of the programme in addition to national funding.
 - Accelerating existing innovation by drawing on local strengths and assets such as the Innovation Districts already established in GCR.
 - Building partnerships and drawing on existing collaboration, especially across higher education and business.
 - Looking for a broad sectoral mix of projects, based on the GCR IA Partnership's assessment of local strengths and market opportunities.
 - Aligning the IA programme with other policy developments and funding streams in order to enhance the overall programme and its reach, with City Deal and the UK Government's Shared Prosperity Fund offering prominent likely opportunities.
- 2.2 In this light, the anticipated outcomes of the IA programme have been linked to the key aims of the GCR Economic Strategy - and in particular for the city-region to become one of the most innovative, sustainable and inclusive economies in the UK by 2030. Various iterations of a programme approach were undertaken across 2022 as part of a process of 'asymmetric co-creation' between GCR and Innovate UK, with the main steps being:
- Establishment by GCR of an industry-led IA Partnership in March 2022.

- Submission of a local IA programme plan in June 2022 to Innovate with a project longlist corresponding to the key sectors identified by local partners.
 - Refinement of this longlist with the support of university partners as key intermediaries, leading to a total of 17 projects being submitted to the Innovate portal by the deadline of 2 November 2022 and with a total ask of the IA funding of £55 million.
- 2.3 Following an assessment of the 17 projects by Innovate UK, a regional selection panel was convened to consider its outputs and to propose a final portfolio of projects. A shortlist of 11 of these projects was put forward by the panel to the GCR Regional Partnership meeting of 2 February 2023. They have a total funding requirement from the IA programme of £32.73 million, with more than a 1:1 co-investment of other funds currently committed across the aggregate project lifetime. Members of the Regional Partnership agreed to recommend these projects for funding through the Innovation Accelerator programme and a summary of each project proposal is appended to this report.
- 2.4 These 11 projects are focused on the key sectors which regional partners had previously identified as representing particular areas of local strength. They represent a good mix of ones which will deliver specific products and processes together with those which will create the enabling conditions for future innovation, especially through offering opportunities for SME growth.
- 2.5 Many of the selected projects draw upon strong links between business and the higher education sector in particular, which is a key asset for the city-region and a foundation on which further progress in growing an innovation economy can be built. All of them provide a springboard for growth in jobs and GVA. Some present opportunities for the city-region to focus on sectors where it has world-leading potential.
- 2.6 As noted above, local partners have been keen to explore opportunities for investment from other national funds alongside the IA programme funding. A further project from those submitted to Innovate in relation to skills and business support has therefore been selected for potential support from the Shared Prosperity Fund. If this is recommended for such funding then it will be the subject of a Council committee report in due course.

3. Next steps

- 3.1 Innovate UK is currently finalising a process of due diligence with projects across the three city-regions, with most of them having confirmed a start date for project activities on 1 April for a two year delivery period. The primary relationship for the projects in terms of funding and monitoring will therefore be with Innovate and GCR will participate closely in a monitoring and evaluation group with Innovate over this time. This will also continue to include consideration of the programmes which have been assembled by the other two city-regions and their own development. The aim is to ensure that lessons are captured from the programme, a sense of progress provided at both individual project and portfolio level, and opportunities to connect with the wider innovation policy agenda for the city-regions and national government harnessed.

- 3.2 One of the key aims for GCR from this work has been to inform and add momentum to the development of a wider regional innovation action plan. Indeed, the IA programme has helped to draw partners together for this purpose and to give a stronger sense of the potential for collaborative project development and securing investment. The plan is currently being created by regional partners in collaboration with Innovate UK. A programme of roundtables will take place over the coming months in order to gather qualitative data and to engage more closely with local innovation actors. They will be led by the city-region's established partnership for this agenda, Glasgow City of Science and Innovation, and will be a key means of informing the plan's recommendations.
- 3.3 Mapping clusters where the city-region has both strengths and competitive advantage is also a key area of work, which is drawing on data and analysis provided by the GCR Intelligence Hub. This will help to enhance the GCR investment case and support discussions with the Department for Business and Trade, for instance, as part of a wider UK Government policy offer which has been made alongside the Innovation Accelerator funding. In this light, a showcase event in London for the 11 projects is being planned in order to focus investor attention on them and build further discussion on potential routes to market for their work.
- 3.4 Partners have received a consistent set of messages from employers in the engineering and associated sectors in GCR around their concerns for the provision of a skilled workforce across all occupational levels. Addressing this issue will help to remove a major barrier to further innovation and business growth as well as offer significant opportunities to local people for well-paid jobs in an area of the economy where career progression is a feature of such work. The broader offer which the city-region can make to employers and investors as a place where innovation and talent are key assets will benefit from growing a skilled workforce and supporting its engineering heritage, re-cast for a contemporary digital, data-driven and advanced technology sector. There is clearly a strong role for further education partners in this agenda around both skills for local people and their own work on the innovation agenda.
- 3.5 The current aim from partners is to launch the regional plan in the summer with Innovate UK and the key areas which have emerged for the new plan are around:
- Actions to strengthen the GCR innovation eco-system
 - Developing a programme to attract talent, investment and creativity to GCR to ensure a firm foundation to support cluster growth and grow the regional economy
 - Developing an equitable and inclusive approach to regional growth and innovation as a driver of shared economic growth
 - Cultivating a vibrant, connected innovation ecosystem
 - Building a supporting infrastructure, including contributing to the GCR net zero ambitions
 - Enhancing investment and internationalization.
- 3.6 Engagement in the IA work has helped to galvanise both connections between parts of the innovation eco-system and awareness of the local strengths within it. As a result, further opportunities to work with local partners in bidding for innovation funding are being explored. This includes, for instance, support from

GCR for current bids from the universities for national funding from Place Based Impact Acceleration Accounts, which draw upon some of the key sectors identified in the IA work. In that sense, participation in the IA programme is already delivering legacy momentum to work across the city-region on the innovation agenda.

- 3.7 Members will also wish to note that a Scottish Government national innovation strategy has been drafted, with a formal publication date to be announced. The work to develop the regional action plan will look to ensure that it connects with national policy at both Scottish and UK level and that it readies the city-region for any further funding opportunities arising from them.

4. Recommendations

- 4.1 The Cabinet is asked to:

- a) note the project portfolio which has been finalised for the GCR Innovation Accelerator programme;
- b) agree to receive a further report on a draft regional innovation action plan.

Appendix: summary details of the city-region's selected projects

Fusing a future from Glasgow's Proud Heritage: Schedule Guaranteed High-Integrity Structures for a Secure, Safe and Resilient Transition to Net Zero

This project will accelerate the adoption of automated in-process ultrasonic inspection during welding and additive manufacturing to deliver high-integrity structures right, first time, every time. It will develop three large-scale, reconfigurable, manufacturing test-beds for multiple GCR based industrial collaborators across various business sectors. In parallel, an educational and STEM outreach offering will recruit and train the next-generation of sensor-enabled automation engineers, addressing the significant current skills gap affecting these industries. Regional partners include Babcock International Group, Altrad Babcock, BAE Systems and Malin Group and wider supply chain partners include PEAK NDT and KUKA Robotics.

ReMake Glasgow: creating the leading circular manufacturing hub

The ReMake Glasgow project is led by the University of Strathclyde operated National Manufacturing Institute Scotland (NMIS) and will create a pipeline of highly skilled green jobs and reduce waste and carbon emissions. A first-of-its-kind national ReMake hub will be based within the Digital Factory at the new NMIS headquarters, which is due to open later this year. It will support manufacturers to embrace the circular economy and extend the life of their products and systems through value retention approaches including remanufacturing, refurbishing, repairing and direct reuse. This will be achieved by using disruptive technology, innovation support, and digital infrastructure that provides traceability of emissions and faster certification routes. Currently only 1.9% of UK manufactured products incorporate any value retention process despite the vast environmental, economic, and social benefits of doing so. The project consortium includes global manufacturing giants Boeing, BA Maintenance Glasgow, SSE renewables, Baker Hughes Howden and ATS Global.

Data-driven design and manufacturing CoLAB (D3M_CoLAB)

The D3M_CoLAB project combines the industry-focused data and design teams at the National Manufacturing Institute Scotland (NMIS) Digital Factory with researchers and students in the University of Strathclyde's Industrial Informatics Cluster (IIC). They will develop a hub to provide manufacturers with advanced data analytics capability to improve their design, decision making, and operational effectiveness, ultimately making them more productive and competitive. It will place Glasgow City Region at the forefront of smart manufacturing by delivering skills and graduate placement programmes, collaborative support from NMIS and IIC experts and innovative technology vendors. The programme will allow companies to safely explore ideas to drive forward data-driven transformation within their businesses by enabling them to replicate their physical and digital infrastructure without impacting daily business operations. Project partners include Babcock, BAE systems, Infor and Anaconda.

Stratellite – Transforming space and photonics manufacturing

Stratellite will develop a flexible space and photonics manufacturing facility in conjunction with the Glasgow site of Thales UK. The project is led by the Lightweight Manufacturing Centre, part of the National Manufacturing Institute Scotland, which is operated by the University of Strathclyde. The partnership will deliver a combined manufacturing engineering and testing facility, fully supported by a collaboration space that helps the workforce of today and tomorrow advance their skills in data-driven manufacturing. Companies in the space and photonics sectors will be further assisted by the development of a business and technical support programme. The project will promote the growth of the regional supply chain in these areas and fund researchers' time to engage and develop capability projects to ensure that suppliers from GCR and Scotland are leading the way in advanced, cost-effective manufacturing.

Industrially led quantum computing accelerator

This project is led by M Squared, which is a globally leading developer of photonics and quantum technologies. It will demonstrate the potential of a commercial quantum computing system to simulate end user problems and demonstrate it as a useful – and usable - system which will have transformative potential for Glasgow and the UK. The computing system, recently revealed by the company as the UK's first commercial neutral atom quantum computing system, has been developed in close collaboration with the University of Strathclyde. Working in partnership, the ultimate goal is to establish an internationally competitive industrial quantum test bed in Glasgow and to make the city a successful international hub for quantum computing.

Next Generation Remote-Sensing Technologies

This project aims to explore the viability of new technologies in uncooled infra-red detectors, novel edge processed high-definition imagers and the latest laser sensing techniques. These early-stage technologies hold the potential of being developed, matured and integrated into a new generation of world class remote sensing equipment. Future products derived from these technologies could become significant disruptors, allowing world class systems to be produced to meet emerging capability requirements identified for military, medical diagnostic, energy monitoring, net-zero, security and surveillance applications. They are estimated to be worth an anticipated £40m in the UK market and £120m from exports over a decade.

Pilot Accelerator for National Institute for Quantum Integration

Huge growth is predicted for the photonics and quantum markets in coming decades. This project aims to build an engineering capability, led by the University of Glasgow's James Watt Nanofabrication Centre (JWNC), that will aid the growth of the Scottish photonics and quantum cluster. It will appoint design, test and manufacturing engineers to build on the embedded expertise and skill of the JWNC and senior University of Glasgow researchers and enable industry to deliver innovative products that open up new markets. Ultimately, it will act as a model for the University's proposed National Institute of Quantum Integration (NiQi). NiQi will act as a front door for global industry to engage with UK quantum expertise and position Glasgow as a world leader in quantum technology, serving as a beacon for further inward investment into the region.

Modular Chemical Robot Farms for Chemistry

Chemify Ltd., a new University of Glasgow spin out company with more than 25 employees, is developing the automated technology of chemputation: universal chemical synthesis controlled by computers. Chemify plans to expand to more than 100 people as it begins research and development to build a prototype of a scalable pilot plant capable of becoming a chemical 'giga factory' for the on-demand discovery and manufacture of trillions of chemicals for use in pharmaceuticals, high value chemical manufacturing, new materials, farming, and green energy solutions.

Risk Stratification Tool for Colorectal Polyp Surveillance

Bowel screening is used to find bowel cancer and pre-cancerous lesions called polyps in patients without symptoms. The aim of screening is both to catch bowel cancers early and to prevent cancers by removing pre-cancerous polyps. This project is part of the INCISE collaboration, which aims to develop a tool which will more accurately predict a patient's risk of developing a future polyp, and therefore the need for a colonoscopy, using the latest advances in artificial intelligence, sequencing, and pathology. This new tool will reduce the number of people needing repeated colonoscopy, reducing unpleasant experiences and complications, improving access to colonoscopy by reducing surveillance lists, and reducing costs to the NHS, while maintaining a safe follow up regime for patients.

The Centre of Innovation for Financial Regulation

This is an initiative from FinTech Scotland in partnership with industry partners, Strathclyde and Glasgow universities. It includes the creation of a new collaborative centre of excellence, focused on innovation in financial regulation. The work will explore new technologies to accelerate regulatory efficiencies, revolutionise risk management and shape future financial regulatory developments.

Museums in the Metaverse

The Museums in the Metaverse project will create a ground-breaking two-sided Extended Reality (XR) Culture and Heritage platform. It will empower online visitors to explore vast cultural assets in engaging new ways; enable novice and expert curators to create new content; and explore models of use to support sustainable economic and cultural growth. The project will harness the University of Glasgow's global reputation for research in digital cultural heritage and XR to develop an innovative solution to the physical and geographical constraints that can limit concrete exhibitions to less than 10% of the objects held in collections, and limit audience reach by cost, distance, and accessibility. One side of the proposed platform is for visitors to gain access to a rich array of museums, sites, objects, and novel and dynamic experiences. The other is for virtual curators, where experts and novices alike can build enriching and entertaining narratives using objects and virtual environments that have never before been placed together in the real world. Partners are Edify, Historic Environment Scotland, National Museums Scotland, University of Glasgow.