Mastering Open Innovation
The Guiding Principles
The purpose of this publication is to aid the business community to incorporate Open Innovation principles into business practice. The guide highlights factors that help or hinder adoption of Open Innovation and provides tools and techniques to support implementation. Insights, presented by participating organisations, acknowledge the importance of People, Process and Culture.

13 large Scottish organisations from diverse sectors are at the forefront of a bespoke Open Innovation Programme described in this publication. Dedicated leadership and financial investment by Scottish Enterprise underpin the initiative.

Academic facilitation is delivered by Strathclyde Business School, Department of Marketing.

A crucial part of the programme has been quarterly meetings where hands-on activities support the development of Open Innovation capabilities in relation to idea management, challenge definition and collaboration.

Every organisation has different requirements and this guide sets out a process, linking Idea, Challenge and Collaboration to tools and techniques to support each stage of the implementation. Helpful hints and tips based upon experiential learning from companies should be taken on board.

In today’s uncertain business environment organisations acknowledge that they cannot rely solely on their own R&D to bring forward new products and services for their future growth.

Some of the world’s leading companies, such as GE, P&G, GM and NASA, scan the horizon to find and create partnerships with smaller, more agile companies and work together seeking solutions for new products and services. Such collaboration, known as Open Innovation, is building momentum here in Scotland.

This Programme is expected to generate an additional £50 million R&D expenditure in Scotland.
This strategy requires an analysis of an organisation’s internal and external situation and should focus on current and future technological requirements and business environment. A systematic external evaluation will identify opportunities and risks, while an internal analysis determines strengths and weaknesses. This is the starting point for formulating clearly defined problems, which can then be translated into Open Innovation Challenges that fit with the vision and goals. Idea generation traditionally occurs within the R&D department. In contrast, Open Innovation strategies acknowledge that not all the best people are to be found within a single organisation. Ideas are proactively sought, requiring open, collaborative activities with multiple stakeholders internal and external to the organisation. Effectively managing this early stage is one of the most challenging activities for managers. This process of ideation, requires a formal framework. When seeking opportunities within the organisation, employees need to follow clear steps so that they know all ideas are being considered. Similarly, when searching externally, a framework enables the screening and filtering of ideas and speedy responses to potential opportunities.

To build an innovation culture, alignment of organisational goals and innovation strategy must be tied to the organisation’s overall mission and vision. Without a clear strategy, decisions in the idea generation phase will be ineffective and out of line with long and short term goals.

not all the best people are based within a single organisation

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**STRATEGY**
- Fit
- Leadership
- Mindset

**TOOLS**
- Idea Generation
- Design Sprints
- Landscaping
- Want Find Get Manage

**CULTURE**
- What is Open Innovation?
- Open Innovation Values

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Ensure senior management buy-in from the outset
Align Open Innovation strategy with organisational goals
Use an information management system to collect and manage ideas
Provide opportunities and space to think and offer ways for employees to grow their ideas
Recruit an OI champion and identify clear roles and responsibilities within the OI team

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Don’t ask employees to submit ideas and then ignore them; avoid time lag in acknowledging ideas
Don’t expect departmental silos to break down without managerial effort
Don’t start an ideas management programme without dedicated resources and tools
Don’t introduce a complicated idea generation process
Don’t expect participation in employee suggestion programmes without incentives

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The Innovation Challenge statement must clearly explain the need, describe the problem, provide a technical brief, explain the application process, and include timings and deadlines.

Innovation Challenges may be posted through various channels. Organisations need to ensure that they provide a structured platform to manage internal challenges. When seeking solutions externally, the Scottish Enterprise Open Innovation (SEOI) platform, Public Contracts Scotland (PCS) and Enterprise Europe Network (EEN) allow companies to post challenges, reaching large numbers of SME organisations.

For wider external searching, Innovation Intermediaries (II) act as brokers between seekers and solvers. Intermediaries provide wide ranging services and help to simplify complex processes by screening and prioritising for the seeker organisation. Building relationships with intermediaries is important in order to develop networks, facilitate information exchange, undertake landscaping, search for external knowledge and collate potential solutions.

The Challenge brief must be written with precision, so that potential solvers see how their solutions might address the problem, and at the same time broad enough to attract solutions from other industrial sectors.

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The Challenge statement and technical brief must have enough detail and sufficient information to attract solutions from diverse industrial sectors.

Challenge owners should be fully engaged in solution selection and implementation.

Prior to selecting intermediaries, be fully aware of the scope of the service they offer.

To succeed, the context of the problem must be fully understood. Specifications for solving problems need to be articulated clearly.

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Intermediaries provide wide ranging services and help to simplify complex processes by screening and prioritising for the seeker organisation.

Don’t start a challenge without a structured internal process to filter and prioritise solutions.

Don’t publish a challenge without a clearly defined problem.

Don’t develop a challenge without the challenge owner’s input.

Don’t take too long to respond to solvers.

Don’t ignore internal solvers.

Don’t forget to provide feedback to the unsuccessful solution providers.

Tools
- Challenge Identification, Definition and Framing
- Digital Strategy

Culture
- Seek Best Practice
- Create a Challenge Culture

The Challenge
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The Innovation Challenge is a problem solving tool, which is only successful if the context of the problem is fully understood. Specifications for solving problems need to be articulated clearly.

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Collaboration is critical for successful innovation and requires effective communication and knowledge-sharing in the organisation and with external partners. Internal knowledge-sharing should encourage the sharing of information by individuals and teams, while communication with external partners must be equally open.

Internal knowledge-sharing is important and is encouraged by regular workshops and newsletters. Collaborative platforms promote employee engagement and motivation to work together, share practices, participate in challenge contests and spread success stories. Senior executive buy-in is essential to support collaborative behaviour. Although senior leadership is critical, middle managers must also be empowered to motivate individuals and teams at all levels in order to effect culture change and build capability. Reconsidering traditional roles and asking employees to work differently requires the provision of training and development opportunities, to build skills. Creating collaborative cultures is not easy and to ensure that Open Innovation becomes the norm, Open Innovation must be embedded in work practices. This can be helped by setting ambitious Open Innovation targets and driving change by rewarding performance. Collaboration with trusted partners should allow free flow of information within and between organisational boundaries. Building external networks and portfolios of relationships is an essential feature of open organisations that engage in collaborative activities. When solutions have been identified, flexible partnership agreements allow a potential business partner to prototype and test in collaboration with the organisation. This is important as it offers a degree of experimentation and learning. Killing weak ideas early promotes increased agility and efficiency that helps facilitate reallocation of the resources to projects with higher potential. These early discussions with suppliers can be undertaken prior to intellectual property and formal contract negotiations. Following supplier selection, formal partnership agreements are needed to steer and sustain innovation. Involving procurement and legal departments early is key to a successful partnership. The agreement must be based on comprehensive governance that clearly outlines rules and responsibilities, intellectual property ownership, expectations, KPI’s and communication pathways. As well as addressing business issues, governance helps to promote a creative and entrepreneurial mind-set that encourages learning and culture change.

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Having followed the structured ideation, challenge definition and agreed collaborative partnerships, projects move to the development phase; this requires integrating suppliers and portfolio management.

Integrating suppliers into development accelerates innovation by leveraging supplier know-how and encourages knowledge transfer between partners. Organisations that adopt Open Innovation expect to share risk with supply chain members and networks.

Key requirements in the development phase include: strong leadership, clear roles and responsibilities, risk assessment and innovation metrics.

Innovation portfolio management is a pivotal tool that translates strategic objectives and priorities into project-based innovation activities. Portfolio management provides a framework to convert ideas into real investment opportunities, based on their risk profile, technological and resource requirements. This is fundamental in order to align project goals with strategic direction. Considerations include: project prioritisation, resource allocation, funding, technology readiness and evaluation against strategic business objectives.

An open approach will promote speed to market, reduce innovation costs, mitigate risks and garner knowledge from external business partners. For this to happen it is essential to align the Open Innovation process with other key activities.

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**TOOLS**
- Portfolio Management
- Lessons Learned
Innovation and rapid change can bring discomfort. Key insights that can support Open Innovation adoption are related to People, Process and Culture.

1. Nothing happens without people. You need managerial buy-in from the very start and dedicated Open Innovation champions to drive change, facilitate learning and provide tools. Most importantly, you need to allow for failure. When people are not afraid to fail, they challenge the status quo and build innovation activities, both internally and externally.

2. Managed processes provide clarity and direction. Open Innovation relies on an organisation's ability to take the leap of faith and admit that external knowledge-flows are required, which means working in partnerships. Structured and managed processes enable repetition to ensure that Open Innovation becomes routine. Building structured Open Innovation processes into existing innovation activities ensures alignment within business units and buy-in.

3. Open Innovation requires cultural change. Only if people understand the potential of Open Innovation and are encouraged to search outside organisational boundaries, will new ideas emerge. Employees need to be empowered in order to be creative, have time to experiment and work in an environment that does not punish failure, acknowledging that failing fast accelerates change. An Open Innovation culture encourages collaboration, builds knowledge through shared clarity of purpose, increases speed to market and supports game changing innovation.

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Transformation to an Open Innovation culture is a process that takes time. Changing an organisation’s culture is a major undertaking, especially when employees are satisfied with the status quo and may not understand the need for change.

Culture encapsulates the organisation’s identity. It is based on beliefs and norms that have been built upon shared experiences and is manifested in the corporate strategy and vision. In large, well-established organisations, resistance to change makes adapting entrenched cultures very difficult. To overcome this, senior executive commitment is essential to steer employees in the right direction.

Fundamental to Open Innovation implementation, is engaging in external relationships to search for new ideas and knowledge. One of the major barriers to implementing Open Innovation is the ‘not invented here’ syndrome, where there is resistance to ideas generated from outside the organisation. This is often a result of past experiences of difficult relationships, where trading partnerships have broken down.

To overcome this resistance, Open Innovation adoption must be supported with appropriate structures, processes, incentives and communication activities that deliver the strategy. In this way, everyone in the organisation is accountable and a culture of collaboration is nurtured. To accomplish Open Innovation, leaders need to allay job-related fears and encourage employee buy-in across the organisation.

Transforming culture means embedding values that support Open Innovation and this requires setting bold targets, measuring collaborative behaviours and driving change by reward and performance measurement. Key factors include: senior management commitment, strategic alignment with Open Innovation goals, communicating value by demonstrating quick wins, creating inspirational innovation champions and building internal capability through training and empowerment.

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Changing an organisation’s culture is a major undertaking.

Twelve years from now you will be more disappointed by the things you didn’t do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbour. Catch the trade winds in your sails.

Explore. Dream. Discover. Mark Twain

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Twenty years from now you will be more disappointed by the things you didn’t do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbour. Catch the trade winds in your sails.

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Early in the journey, the Open Innovation team acknowledged that Stena did not have the Open Innovation knowledge and capability to meet their innovation targets. The team followed the first principle of Open Innovation by searching for expertise from outside. Open Innovation experts working with Stena shared their experience to help define the process for moving Open Innovation forward. Open Innovation tools and methodologies were introduced allowing the Open Innovation team to develop new skills outside of their comfort zone. Learning was rapid and after only 18 months, the team had mastered a number of Open Innovation techniques.

A committed senior executive provided proactive support for the initiative. This also meant the introduction of a new role, the Challenge Owner, who proposes a new challenge and supports it until implementation.

Open Innovation is a new structured way of working where we can define challenges that we don’t have the capability to solve internally and have a process to find solutions externally.

Alan Gordon, Innovation Director, Stena Line

To ensure that Open Innovation is embedded within Stena beyond 2019, the focus is on three factors for successful Open Innovation implementation—process, people and culture.

Stena Line’s Open Innovation team, comprises two people and they plan to deliver by 2019:

- 100 new innovation challenges
- 15 challenges to run as pilots
- Train 100 Open Innovation ambassadors

Hosting quarterly problem definition workshops and using Creative Problem Solving and Landscaping tools has helped Stena accurately define problems in a structured way, with full visibility within the business. To grow the open capability, the Stena team also developed a set of learning tools, including e-learning modules, collaboration workshops and a dedicated website and is building a knowledge management repository.

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Alan Gordon, Innovation Director, Stena Line
To find solutions to your challenges, use the tools you already have available...

Today, almost everyone has access to social platforms such as LinkedIn or Twitter. These can be used to post challenges, interact in real time with potential partners or solution providers and help to find what you need.

Devro has used social media to publicise challenges to their expanding networks at a local and global level. From this activity, Devro has found potential solutions to challenges, both from within Scotland and across the world, that it otherwise would have no knowledge of!

Many companies, who have an active Open Innovation program, have a dedicated Open Innovation portal as part of their website (e.g. P&G Connect and Develop or Statoil Innovate). Devro has created an area on their website, both to host challenges and as a simple route for potential solution providers to share ideas, technologies or services.

Share your story of Open Innovation through networking and make time to attend events, both relevant to your business and those which are not; some of the best innovations come from the sharing of knowledge from seemingly disparate sectors. Network and build relationships with other businesses, Scottish Enterprise, Interface and the Scottish Innovation Centres, who can help to find collaborative partners and advise of potential funding mechanisms for your next innovation project.

By being more net-worked and visible, ideas generated by other people and organisations have more chance of finding, or bumping into you.

Remember there is no “one size fits all” approach to Open Innovation; you must find what works for you and your business.

Make use of the tools you have; social media, networking and your own website can all be great launch pads for your Open Innovation program.

Dr Katrina Davidson, Open Innovation Co-ordinator, Devro

Our developing approach to Open Innovation represents a key component of our product and service diversification activities providing new insight and opportunity in response to rapid change within our traditional markets.

Dr David Fitzgerald, Principal Engineer, Doosan Service Group

Doosan Babcock embarked on the Scottish Enterprise Open Innovation (OI) project in September 2015. The motivation for joining the project was that, as with many organisations, we are facing a rapidly changing market with many external influences.

Built on more than a century of innovation, Doosan Babcock is a specialist in asset support, maintenance, repair, modernisation and upgrade services. We provide mechanical, engineering and technology expertise in Original Equipment Manufacturer (OEM) and non-OEM plant to our customers across a range of sectors, including:

- Thermal power plant
- Nuclear power plant
- Oil, gas and petrochemical
- Pharmaceutical and process industries

These sectors are all facing challenges, arising from the important move towards a low carbon economy, including renewable energy sources (RES), distributed power generation, energy storage, fuel switching, electrification of transport and decarbonisation of domestic heating, transport and industrial processes. New products are required to serve the changing needs of our traditional and emerging markets sectors and significant innovation and product diversification are required if Doosan Babcock is to serve these evolving markets successfully.

Doosan Babcock has recognised the potential benefits of OI as an extension of its existing internal and Government-supported R&D activities. During the development of its OI process, it has trialled and implemented a best practice innovation management software platform that provides a single source of information for all R&D and innovation activities.

New staff have been recruited and a number of challenges have been issued that have resulted in the development of project proposals for the application of virtual reality technologies in engineering and construction, early stage collaboration in Big Data Analytics and the development of wireless sensors. Further proposals are in development for continued involvement in Innovate UK, European Union (Horizon 2020 and Research Fund for Coal and Steel) and US Department of Energy funding programmes.
A collaboration between Albyn Housing Society, Carbon Dynamic and NHS Highland led to the assisted living challenge for the development of Fit Homes. Newly developed housing will integrate sensors designed to capture data and associated predictive health analytics in order to support better care for a vulnerable segment of the population.

Developed through co-design with partners, tenants and health and care professionals, this innovative approach will help prevent episodes or events leading to ill health, as well as enabling the NHS to support more people in their homes, reduce hospital admissions and allow earlier hospital discharge.

Professor Angus Watson, director of research, development and innovation at NHS Highland and a member of the NHS Scotland Open Innovation Collaboration team, said: “Integrating homes with health is key to this project. Using our population to ‘crowd source’ the design of the homes is highly novel and puts tenants at the centre of this program.”

Lucy Fraser, head of Innovation at Albyn Housing Society, said: “The central concept of these high-quality, sustainable homes is that they will include ambient, physiological and building sensors to collect data that can be monitored and responded to by a variety of agencies – potentially transforming the way health and social care is delivered as populations across the globe continue to grow older.”

“Matt Stevenson, managing director at Carbon Dynamic, added: “The project also delivers exceptional social and environmental impact. Fit Homes are low energy, built from sustainable and natural materials and highly adaptable to the changing needs of their residents.”

Underpinning this approach, is the Centre for Civic Innovation, based in Tontine, Glasgow’s Business Accelerator hub for SMEs. This modern physical space allows representatives from all sectors of business to collaborate and co-design solutions to civic challenges.

Based on the key principles behind the Centre for Civic Innovation and participation with the Open Innovation cohort, a work programme to address specific civic challenges has been developed. Building on the reasoning behind design thinking, Five Day Design Sprints have emerged as a key tool for developing solutions to challenges. Design Sprints are used to explore answers to critical business questions, by evaluating, prototyping and testing ideas with customers over a five day period. The function of the Sprint is to act as a focus to ensure appropriate problems are being considered.

Glasgow has introduced this method with two demonstration projects to date. The first looks at ways to make the existing childcare model in Glasgow more flexible and affordable. The output from the Sprint has seen the formation of 3 pilot projects in Glasgow where childcare providers across all sectors are working towards forming a Public Social Partnership.

The second is looking at enabling some of Glasgow’s most vulnerable citizens to live independently within their own home. Glasgow City Council is in the process of engaging with Scottish SME’s to look at designing the final solution developed from the Sprint.

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Thus, reworking procurement to support and deploy innovation is imperative, previous procurement practice displayed the following features:

• Contractual R&D only with no further implementation. The “pilot” ceased
• Grant funding was required to enable the pilot to continue and avoid procurement. This was a form of ‘closed’ innovation with no open transparent process to foster economic development of innovative goods and services. While the Scottish Government Reform Act Guidance points public sector procurement to various legislative elements, there has been little experience in practice of deliberately setting out to deliver goods and services in an innovative open and transparent way.

To improve previous practice, the City of Edinburgh Council trialled a process and score card, to award contracts derived from Open Innovation challenges. The Scottish Government has developed the Innovation Partnership process, which encourages innovation in the procurement environment. The Council will be one of the first organisations to test this innovation partnership process. All contracts awarded as a result of an Open Innovation Challenge must take possible future legislation into consideration. Criteria for successful adoption is always compliant with internal policies and procedures and external laws such as the new General Data Protection Regulations. This was demonstrated in a recent Open Innovation Challenge, which sought a digital solution that captured, managed and reported on sustainable and community benefits. It required the ICT team and the ICT provider to work closely together, ensuring that the stringent policies around adoption of software or web based solutions are adhered to.

Procurement identifies the right partners who can handle complex issues, mitigate risk and avoid penalties which would result from a breach of regulation. Through the adoption of Open Innovation practices, The City of Edinburgh Council has demonstrated an ability to explore solutions for difficult social problems and build a reputation as a forward thinking Public Sector Organisation.

SP Energy Networks (SPEN) has already awarded over £355,000 to Scottish SMEs for collaborative projects looking to solve key operational challenges. SPEN continues to invest in innovative collaboration projects with the wider business community as a result of participation in the Open Innovation Programme.

The key to success has been a dedicated project delivery team that focused its efforts on creating a scalable process for identifying challenges within SPEN.

"Hatch a Challenge" includes nine stages: Challenge request, Publish, Gather, Innovation technology board, Top 3, Launch outside, Review responses, Trial and Business as usual.

This structured approach enables identification and assessment of ideas. Linking the process to an internal reward system motivates employees to participate in the idea generation scheme. In this way internal engagement is maintained and interest generated. The challenges identified matter to SPEN employees, not only for solving them but also for building an internal collaborative culture. Building on the initial success of “Hatch a Challenge” the Open Innovation team hosts events to disseminate learning and expertise and uses digital communication tools to promote both the process and innovation within SPEN.

Given that this initiative has been so successful within a regulated environment indicates that Open Innovation can be adopted widely with the right level of internal engagement and efficient facilitation. SPEN is now looking to expand this program across its network and will be looking at hatchling new innovative challenges in the future.

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Mollie Kerr MCIPS, Commercial Innovation and Engagement Officer, Commercial Procurement Service, City of Edinburgh Council

\[As part of a Future Networks open innovation we can now use ultrasound to accurately show fluid levels with metal switchgear.\]

Eric Brunger, Senior Innovation Analyst, SP Energy Networks
A prolonged market downturn provided the opportunity for Subsea 7 to fundamentally reconsider its business model and how the company leveraged core values of collaboration and innovation. In late 2015, the company established 7INNOVATE, an Open Innovation programme, focused on solving challenges, finding critical insights and solutions from across the world.

Innovation is a central theme to the Weir Group’s success and as such it welcomes opportunities to identify and develop new solutions through collaboration. With this in mind, Weir has spent the past two years, implementing a formalised Open Innovation programme which helps bring together innovative minds from inside and outside the organisation.

In a world of over 7.4 billion people some of the solutions we seek exist outside of our organisation and value chain.

Gavin McClafferty, Open Innovation Lead, Subsea 7

Sustaining Open Innovation in a company like Weir requires the input of everyone in the business from executive level to the shop floor. Without this, OI would not have been anywhere near as successful.

Annie Fraser, Open Innovation Associate, The Weir Group PLC

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Scottish Enterprise

Scottish Enterprise is a non-departmental public body of the Scottish Government and Scotland’s main economic development agency. Our purpose is to deliver services to encourage Investment, Innovation, Internationalisation and Inclusive Growth that will have a lasting effect on the Scottish economy.

We work with partners in the public and private sectors to identify and exploit the best opportunities. Successful innovation drives growth and competitiveness for companies and industries and innovation isn’t only about developing new or better products and services, it’s also about investing in marketing, skills and new technology. Through our approach to Open Innovation, we will continue to encourage larger companies and public sector bodies to foster innovation among small to medium-sized enterprises (SMEs), through procurement and supply chains to help identify and exploit the best opportunities for economic growth. This will support Scottish companies to compete within the global marketplace; help build globally competitive sectors and attract new investment to Scotland.

University of Strathclyde

At Strathclyde, we are committed to redefining universities’ collaboration with industry, business, government and the third sector, working with our partners to support sustainable economic growth and to deliver wider societal benefit by fully exploiting the impact of our research.

Our ‘triple helix’ approach of collaboration between the University, industry and government has been transformational, accelerating the development of technologies, helping companies compete and informing the development of public policy. Strathclyde’s innovation ethos supports the creation of new knowledge, products, know-how and ways of collaborating in commercialising products and services for economic growth. By increasing and extending access to cutting edge innovation and enterprise learning, we provide the skill sets needed to lead and drive innovation and entrepreneurship, through executive development programmes, research project partnerships, and collaborative research centres.

Scottish Enterprise

Our purpose is to deliver services to encourage Investment, Innovation, Internationalisation and Inclusive Growth that will have a lasting effect on the Scottish economy.

We work with partners in the public and private sectors to identify and exploit the best opportunities. Successful innovation drives growth and competitiveness for companies and industries and innovation isn’t only about developing new or better products and services, it’s also about investing in marketing, skills and new technology. Through our approach to Open Innovation, we will continue to encourage larger companies and public sector bodies to foster innovation among small to medium-sized enterprises (SMEs), through procurement and supply chains to help identify and exploit the best opportunities for economic growth. This will support Scottish companies to compete within the global marketplace; help build globally competitive sectors and attract new investment to Scotland.
## Organisations involved in the Open Innovation Programme

![logos of various organisations]

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