MAPPING DESIGN FOR INNOVATION IN WALES & SCOTLAND

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CONTENTS

1. Executive summary 03
2. Context 06
3. Method 13
4. Results 18
5. Discussion 32
6. Conclusions 38
7. Acknowledgements 40
8. Appendices 42
Design is increasingly being recognised by governments across Europe as a factor for innovation in small to medium-sized enterprises, the public sector and society. In 2014, 15 of the 28 European Member States had design included in national innovation policy and explicit design strategies were in operation in Denmark, Estonia, Finland, France and Latvia. The European Commission has also developed an Action Plan for Design-driven Innovation stating that:

‘A more systematic use of design as a tool for user-centred and market-driven innovation in all sectors of the economy, complementary to R&D, would improve European competitiveness.’

This exploratory research, led by PDR at Cardiff Metropolitan University and funded by the Arts and Humanities Research Council, aims to understand how best to use design as a method for policy development and provide input for design policy actions jointly developed with design stakeholders. Design is an approach to problem-solving that can be used across the private and public sectors to drive innovation in products, services, society and even policy-making by integrating user needs. The European Commission’s action plan aims to accelerate the uptake of design in innovation policies at national, regional and local levels across Europe.

While design is steadily gathering momentum as a driver of innovation in national policy, there is a gap at regional and local policy levels. There are currently only a few regions with design integrated into innovation policy including, among others, Central Finland, Rhone-Alps in France and Silesia in Poland. Since design already features in some Welsh Government and Scottish Enterprise business support programmes, it could be argued that there is a real opportunity in Wales and Scotland to build on these strengths and weaknesses and co-developed a set of policy proposals for enhancing the performance of each system. This research used design-led methods to engage a variety of stakeholders – policy-makers, designers, academics, SMEs and support organisations – in jointly developing policy proposals.

However, the policy has yet to be translated into an action plan. In Scotland, design is not formally part of policy; however, both Scottish Enterprise and the Scottish Government are using design as a route to innovation. Scottish Enterprise focuses on economic growth and business development and design is implicit within this, through the innovation strategy, rather than explicit. Design features as part of innovation support programmes in both Wales and Scotland; however, stakeholders felt that more could be done to support the use of design in enterprises and the public sector. This raises the fundamental question of how to develop better policies for design. Innovation policy is based on an analysis of the Innovation Ecosystem – the various actors, assets and initiatives supporting innovation in a country – so this research seeks to present the concept of Design Innovation Ecosystems and how their analysis can inform design policy development.

PDR has teamed up with the Welsh Government, Scottish Enterprise, Dundee University, Lancaster University and Rose-Innes Design to explore the Design Innovation Ecosystems in Wales and Scotland. Through four Design Policy Workshops and surveys of designers and SMEs, this research has mapped the Design Innovation Ecosystems in Wales and Scotland, analysed their strengths and weaknesses and co-developed a set of policy proposals for enhancing the performance of each system. This research used design-led methods to engage a variety of stakeholders – policy-makers, designers, academics, SMEs and support organisations – in jointly developing policy proposals.

Despite the unique and diverse actors and initiatives in place in Scotland and Wales, there are remarkable synergies between the strengths and weaknesses of the Design Innovation Ecosystems and the policy proposals. For example, respondents in both the Scottish and Welsh workshops identified that additional training for innovation experts in Scottish Enterprise and Welsh Government would be an effective approach to reaching SMEs. Both the Welsh Government and Scottish Enterprise have a team of innovation specialists who interface directly with companies and provide a broad range of support from funding to intellectual property as well as design. Further, participants identified that conducting research and collecting statistics on how companies use design could provide a more evidence-based approach to policy action and that collating case studies on design in Wales and Scotland and feeding back to the programme decision-makers and Ministers could improve understanding in government. Nevertheless, some proposals were unique to each nation, i.e. including design being a mandatory component of all Welsh Government innovation programmes, appointing design representatives to Welsh Government industry committees, appointing a design manager within the Welsh Government and setting up a Design and Development Grant to encourage start-ups. Unique proposals for Scotland included the recommendation to conduct a journey mapping exercise to understand how businesses access design support across the different programmes, integrating design into the Smart Exporter programme, promoting design to the public sector through the Scottish Leaders Forum, hosting design workshops for children through the V&A Dundee and developing an industry-led design strategy for Scotland. The purpose of the exercise was not to assess which Design Innovation System is stronger but to identify the research that reflects a snapshot in time of the knowledge of a small group of expert participants and therefore may not necessarily represent the entire design landscape in Wales and Scotland. Furthermore, we anticipated from the outset that the findings of the workshops would be biased towards the types of participants contributing (including a higher ratio of academics to SMEs and designers).

To counter this, and to validate the workshop findings, a survey was disseminated to Welsh and Scottish Design Professionals. The survey among Welsh respondents (n53), revealed that over half – 58% - were not aware of the Welsh Government funded Design Advisory Service – the main design support programme in Wales. Furthermore, 57% were not aware that Welsh Government innovation credits could be spent on design. As such, 44% of participants asserted that the Welsh Government does not have a strategy to increase demand for design. A similar sentiment emerged among Scottish survey respondents (n78), with 39% of respondents believing that design is not explicitly promoted within innovation support programmes (compared with 10% who believe that it is) while 38% of participants believed that there is duplication of efforts from different support programmes. In addition, 32% of participants stated that the Scottish Government does not have a strategy to increase demand for design (compared 11% who responded that it does).

The Welsh Government is currently exploring the feasibility of a Design and Development Grant to encourage start-ups to use design as well as the proposal of having a design manager in the Innovation Unit. For Phil Allen, Head of Knowledge Transfer at the Welsh Government:

“Design is a recognised factor for innovation in Wales and this research by PDR has enabled us to identify ways in which design can play a more effective role in Welsh Government innovation programmes.”

Similarly, Scottish Enterprise have already started to improve the understanding of opportunities that design can offer businesses through the work of their Innovation Specialists. They are also investigating the option of providing a grant to businesses to assist them to invest in design. Colin Meaeger, Innovation and Enterprise Lead at Scottish Enterprise highlighted the value in the methodology:

‘We found the methodology for the research a really useful way of gaining insight from different stakeholders and we will explore how to take some of the proposals forward.’

PDR will continue to work with the Welsh Government and Scottish Enterprise to support them in implementing some of the recommendations. The workshops were also video recorded and the film is available from the PDR website.
In the knowledge-based economy, the understanding and application of innovation is expanding from being technology-focused and R&D-driven to include non-technological innovation and a broader set of drivers including design (European Commission, 2010). Policy-makers, business managers and academicians are embracing this paradigm shift in innovation, and thus design has become more relevant to the innovation debate because both design and innovation are converging on a common factor – the user (von Hippel, 2005). Design can act as the bridge between technological, service, public sector and social innovation because at its core design is a people-centred process. Companies and public officials are recognising that for products and services to be competitive, they have to correspond to real user needs. Design is an increasingly accessible tool for innovation and this is recognised at EU and UK policy levels.

‘The growth of the UK economy depends on the extent to which businesses in all industries and services invest in adapting technologies and developing their own complementary non-technical innovations. This increasingly encompasses investing in intangible assets, from skilled human resources to new business models, design and branding. We will nurture innovation in all its forms.’

It is the European Commission’s vision that by 2020, design should be a ‘fully acknowledged, well-known, well-recognised element of innovation policy across Europe, at European level, national level and regional level’. Through the EU Action Plan for Design-driven Innovation in Europe, the Commission is seeking to accelerate the take-up of design for innovation at multiple levels of governance across Europe.

The UK is in a unique position to lead on this agenda since according to Nesta (2009), UK companies spend more on design than on traditional R&D. Nevertheless, Wales and Scotland have been slower to embrace design as a factor for innovation at policy level. Design does not formally feature in Scottish policy although design is referenced within the Welsh innovation policy:

‘The economic and social value of other forms of innovation such as design, for example, or marketing needs to be more widely identified and celebrated.’

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'Design can be transformative for companies, through leading or supporting product and process innovation, for managing the innovation process itself, for the commercialisation of science, and the delivery of public services. Design thinking can play a key role to problem-solving that can be used across the private and public sectors to drive innovation in products, services, society and even policy-making by putting people first. By re-positioning design as a tool for business and the public sector, design has attracted the attention of policy-makers and is included in the UK innovation policy.'

Similarly, from a Design Council (2012) survey, there are over 11,000 designers operating in Scotland, which constitutes a 50% increase from 2003. If design has been integrated into EU and UK innovation policy and Wales and Scotland have design assets, what evidence do Scottish and Welsh policy-makers require in order to further embrace design as driver of innovation policy? Both the Welsh Government and Scottish Enterprise are making efforts to be design aware, but from discussions in the steering committee meetings of design, businesses can expect over £20 in increased revenue on data from 249 companies involved in the Design Leadership Programmes across Europe. Policy-makers require an economic rationale to justify policy intervention in favour of design and its integration into innovation policy. Since the 1980s, political theorists such as Freeman (1982) and Lundvall (1985) have instigated a shift in the justification for innovation policy away from the neo-classical market failure theory to embrace a broader systems failure theory. Innovation system theory refers to the framework conditions, actors and initiatives that contribute to innovation in a country. Innovation policy is based on an analysis of the innovation system and a number of academics are proposing that systems failure theory could provide the economic rationale for design policy (Love, 2007; Moultina 2008; Raulik-Murphy and Cawood, 2009; Sun, 2010; Swarn, 2010; Whicker and Cawood, 2012; Hobday et al., 2012; Finnish Ministry of Employment and the Economy, 2013; and Chissim et al., 2013). Moultina (2008) poses a question that strikes at the heart of this research: ‘The concept of a National Innovation System is well established, but can this concept be of use when considering design?’

An innovation system is a theoretical construct used by academics and policy-makers to examine the interplay between actors in a network and how this can inform targeted policy action to enhance the performance of the system. Ironically, design was a consideration in Freeman’s first address on National Innovation Systems presented to the OECD’s in 1982.

‘Sometimes, the term ‘creativity’ is reserved for those abilities which are characteristic of the engineer in the work of invention and design and of the entrepreneur.’


Here Freeman highlights the growing importance of design and creativity in the innovation process. Although design and creativity made their debut appearance in this very early conception of innovation systems, among innovation circles it has largely been overlooked due to the difficulties in measuring the impact of design activities. Nevertheless, as academic and policy interest in design as a driver of innovation began to grow in the late 2000s, design researchers adapted innovation system theory to provide an economic rationale to integrate design into innovation policy. According to Raulik-Murphy (2010):

‘By applying theory from National Innovation Systems, the notion of National Design Systems transfers established theory to the design domain and advocates that it could enable researchers to better inform policy-making by identifying insufficient interaction between stakeholders, which may be contributing to the limited use of design resources in national economies’.22

The terminology has evolved from ‘Design Infrastructures’ (Love, 2007) to ‘National Design Systems’ (Moultrie 2008, Raulik-Murphy and Cawood, 2009; Sun, 2010; Swan, 2010; Hobday et al., 2012; Whicher et al., 2012), to ‘Design Ecosystems’ (Finnish Ministry of Employment and the Economy, 2013; Chisolm et al., 2013) to what this research is calling a design-driven innovation ecosystem or ‘Design Innovation Ecosystem’. This hinges on the rationale that the design system should not operate in isolation from the broader innovation system in the country or region.

It should be holistically integrated like biological ecosystems. In the policy arena, Finland was the first country to adopt the concept of a National Innovation System to inform innovation policy in 199223 (Sharif, 2006) and it was also the first country to adopt the concept of a ‘Design Ecosystem’ to inform national design policy in 2013 (Finnish Ministry of Employment and the Economy, 2013). The term ecosystem implies a more organic network of interactions. Design is already a component within the UK innovation ecosystem.

‘The UK innovation ecosystem contains deep and varied capabilities in science and technology, creativity and design, intellectual property and metrology.’24

Academic theory on innovation systems is well established for informing innovation policy. Therefore, the question arises: can design-driven innovation ecosystems – or Design Innovation Ecosystems – be a useful concept for design-driven innovation policy? And if so, what components are included in a Design Innovation Ecosystem? Table 1 deconstructs the components of the design system models proposed by Love, Moultrie, Raulik-Murphy and Cawood, Sun, Whicher and Cawood and the Finnish Ministry of Economy and Employment in order to test a framework in this research.

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Table 1: Components of a Design System

<table>
<thead>
<tr>
<th>Model</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Love (2007)</td>
<td>1) Design businesses, 2) design centres, 3) design education services, 4) design promotion organisations, 5) design research investment, 6) design researchers, 7) design support technologies, 8) design support technology suppliers, 9) design teams, 10) designers, 11) design-focused investment, 12) distribution services, 13) drive to improvement in society, 14) government policy organisations to support design and design research, 15) manufacturing, 16) marketplace for designed ideas and services, 17) organisations commissioning and funding design research, 18) organisations educating design researchers, 19) organisations representing design research, 20) organisations undertaking design research, 21) prototyping services, 22) research in other fields, 23) design certification, 24) cultural support for innovation</td>
</tr>
<tr>
<td>Moultrie (2008)</td>
<td>1) Firms, 2) education, 3) design agencies, 4) government bodies, 5) academia</td>
</tr>
<tr>
<td>Raulik-Murphy and Cawood (2009)</td>
<td>1) Funding source, 2) design policy, 3) design education, 4) design support, 5) design promotion, 6) research and development, 7) professional associations</td>
</tr>
<tr>
<td>Sun (2010)</td>
<td>1) Designers, 2) public sector, 3) private sector, 4) trade associations, 5) government, 6) higher education institutions, 7) design promotion</td>
</tr>
<tr>
<td>Whicher and Cawood (2012)</td>
<td>1) Design users (public and private), 2) design support, 3) design promotion, 4) design actors (design centres, associations, networks and clusters), 5) the professional design sector, 6) design education, 7) research and knowledge exchange, 8) Design policy, governance and regulation, 9) design funding</td>
</tr>
<tr>
<td>Finnish Ministry of Economy and Employment (2013)</td>
<td>1) Design policy, 2) funding, 3) public sector, 4) design centres, 5) businesses, 6) citizens, 7) research and education, 8) design promoters</td>
</tr>
</tbody>
</table>

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To model a national design system, Love (2007) lists 24 subsystem elements of ‘national design infrastructures’, Moultrie (2008) depicts five agents within a simplified ‘national design system’, Raulik-Murphy and Cawood (2009) offer a comprehensive model with seven drivers, Sun (2010) also identifies seven components – some overlapping. There is a high degree of commonality between components of the different systems – each model identifies education, research, promotion and government as core elements of the system. Raulik-Murphy and Cawood as well as Sun offer the most comprehensive models of a national design system. However, both overlook components identified by other models.

For example, the Raulik-Murphy and Cawood model excludes the professional design sector itself as well as design users, which arguably are core components and included by Sun. Alternatively Sun, excludes funding sources and design support that are integral to the Raulik-Murphy and Cawood model. Therefore this research combines models to create a framework that will be tested within this project called the Design Innovation Ecosystem (see figure 1). The implications being that by modelling design systems, investigating the interactions between components of the systems, researchers and policy-makers can assess the performance of a design system and propose policy actions.

Figure 1: Design Innovation Ecosystem

Innovation Ecosystems research is a recognised academic field and is well advanced for informing policy, but the theory of design-driven innovation ecosystems is still nascent and has not yet been subject to academic validation. This research seeks to test, refine and validate a framework for Design Innovation Ecosystems to advance the understanding of innovation research regarding how design can contribute to innovation policy. Through validating design innovation ecosystems theory, this research is looking to generate academic evidence to make a more compelling case for the integration of design into innovation policy.

The aim of this research is to create a framework for policy-makers and academics across the UK and Europe to map and analyse their Design Innovation Ecosystems to provide input for evidence-based policy-making. This will be achieved through: 1) testing, refining and validating the Design Innovation Ecosystems framework; 2) mapping the Design Innovation Ecosystems in Wales and Scotland to provide input for evidence-based policy-making; and 3) positioning Design Innovation Ecosystems theory within mainstream Innovation Ecosystems research. Design is increasingly being recognised by governments as a key factor for innovation and there is an opportunity for research to influence the innovation policy process. To test the framework, this research will map and analyse the Design Innovation Ecosystem in Wales and Scotland with a view to supporting the Welsh Government and Scottish Enterprise to integrate design more holistically within existing innovation programmes and policies. Wales and Scotland have unique initiatives and infrastructures to support design and there is already political will to enhance the use of design as a tool for competitiveness. By mapping and analysing how these innovation ecosystems integrate design, insight will be generated to support other countries and regions in analysing the strengths and weaknesses of their Design Innovation Ecosystems to provide evidence-based input for policy-making.
PDR is an applied design research institution based at Cardiff Metropolitan University that is interested, inter alia, in understanding how the effective use of design can be encouraged by local, regional and national governments. This interest is based on a body of knowledge that indicates that the effective use of design is an efficient driver of innovation and thus contributes to competitiveness and economic prosperity. PDR houses a Design Policy research group that has worked on a number of large European funded projects that have sought to understand which European governments are actively supporting design, how that support is enacted, and, when and how design support is effective. The results of such investigations led to the creation of a conceptual model for understanding the Design Innovation Ecosystems. The AHRC project that is reported here uses PDR’s conceptual model as a departure point to begin to explore the development of design policies that are applicable to the socio-economic context of the regions in which they will be implemented. The project is exploratory and investigated how the use of the tool in two regions (Wales and Scotland) can lead to appropriate policy recommendations for the relevant governments.

In order to achieve this aim it was necessary to engage with the organisations and people that will potentially be affected by any resultant policies. Due to the solution driven nature of the project, and the necessity to empathise with the needs of stakeholders, a Design Research approach was identified as appropriate. In summary, this approach consisted of:

- Examining the components of the Design Innovation Ecosystem;
- Conducting stakeholder identification and representative stakeholder selection;
- Facilitating stakeholder engagement in four Design Policy Workshops to:
  - Test and refine the conceptual model;
  - Identify the wider actors and initiatives within the Design Innovation Ecosystems;
  - Identify the positive and negative aspects of the regional ecosystems;
  - Co-develop policy recommendations.
- Analysing the results from the Design Policy Workshops;
- Validating stakeholder research results with wider stakeholder population through surveys;
- Analysing the results from the surveys in Wales and Scotland;
- Reviewing the effectiveness of the conceptual model as well as the research method in preparation for larger-scale research.

Conducting stakeholder identification and representative stakeholder selection

The steering committee considered the previously identified nine components of the conceptual Design Innovation Ecosystem model as a starting point for the identification of a wider stakeholder group that would likely be affected through the creation of new design policies. The process of stakeholder identification was based firstly around identification of roles, and secondly around the identification of individuals that met those roles. To ensure a robust candidate selection criteria for the workshops, an initial stakeholder mapping was conducted with the steering committee members to ensure representation by policy-makers, designers, SMEs, academics and support organisations. Given the range of expertise within the steering group it was possible to create an appropriate list of individuals from personal contacts. The following table presents the breakdown of stakeholders that participated in the workshops and the domains they represented.

<table>
<thead>
<tr>
<th></th>
<th>Policy-makers</th>
<th>Designers</th>
<th>SMEs</th>
<th>Academics</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangor 22.04.14</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Cardiff 19.05.14</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Glasgow 21.05.14</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Dundee 23.05.14</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>7</td>
<td>6</td>
<td>30</td>
<td>5</td>
<td>64</td>
</tr>
</tbody>
</table>

Participants in the Welsh workshops included, among others, representatives of the Welsh Government, Enterprise Consulting, Creative and Cultural Skills, Nesta, Business Wales, the Design Wales Forum and Rose-Innes Design. Participants in the Scottish workshops included, among others, representatives of Scottish Enterprise, the Scottish Government, Creative Scotland, V&A Dundee, Skills Development Scotland, the Lighthouse, MAKlab, Taylor Haig and DPT Urban Design.

Examining the components of the Design Innovation Ecosystem

The project was guided by a steering committee that consisted of primary stakeholders relevant to the project aims, that is: policy-making representatives from the Welsh Government and Scottish Enterprise (policy-makers with responsibilities for innovation policies and programmes); representatives from the design industry (a practicing designer and the leader of a design industry forum); and interested external academics from Dundee and Lancaster (researchers active in the field of design and innovation). Without prior knowledge of PDR’s conceptual model of a Design Innovation Ecosystem, the steering group members were asked to identify what components might form part of a Design Innovation Ecosystem to inform policy. There was significant synergy between the components identified by the steering group and those identified by the investigators. All the components in the Design Innovation Ecosystem conceptual model were identified by at least one of the steering committee members. The conceptual Design Innovation Ecosystem model was then presented to the committee. The nine components in the model are:

- Design users
- Design support
- Design promotion
- Design actors
- Design education
- Design research
- Design sector
- Design funding
- Design policy

The experts were then asked to rank the components identified by PDR in the literature review in order of importance. This was the first step in the consensus-building exercise to consolidate the Design Innovation Ecosystem construct.

The expert panel also advised on the format of the exploratory workshops, academic rigor, relevance to policy-making, identifying stakeholders for the stakeholder mapping exercise and recommended participants for the workshops.

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Facilitating stakeholder engagement in four Design Policy Workshops

The research seeks to synthesise the positions of a broad range of stakeholders and therefore has used creative techniques to engage participants in active discussion. The engagement took place through two phases of activity: 1) Design Policy Workshops and 2) Survey of Design Supply and Demand.

Design policy workshops took place in Bangor, Cardiff, Glasgow and Dundee. The purpose of these workshops was to examine the proposed Design Innovation Ecosystem components and map stakeholders and initiatives against these, to identify the strengths and weaknesses of the ecosystems; and, to co-develop policy proposals to capitalise on the strengths and tackle the weaknesses. The workshops were composed of three exercises:
1) Mapping stakeholders and initiatives; 2) Identifying the strengths and weaknesses of the Design Innovation Ecosystem and 3) Co-developing policy proposals. The workshops employed design-led techniques to engage participants in constructive dialogue using A1 posters. The workshops began with an overview of design at the European policy level as well as an overview of design and innovation policy in the region provided by the Welsh and Scottish policy-makers. These presentations provided context for the session. The icebreaker exercise was a brainstorming exercise to give the participants an opportunity to circulate. The workshops took four hours each. 64 individuals participated in the four Design Policy Workshops including 16 policy-makers, 7 designers, 6 SMEs, 30 academics and 5 individuals classified as ‘others’.

The workshops continued with a SWOT analysis of the Design Innovation Ecosystem. This first exercise mapped the stakeholders and initiatives in the ‘Design Innovation Ecosystem’ according to the nine components. The SWOT analysis of the Design Innovation Ecosystem identified a minimum of one strength and one weakness for each component of the Design Innovation Ecosystem. This exercise built on the previous one and enabled delegates to assess the level of systemic interaction between stakeholders and initiatives. As such, a survey was also developed to validate the workshop findings. While the workshop captured the depth, the survey was intended to ensure breadth of consultation.

Mapping Design Stakeholders

In both Wales and Scotland a multitude of design activities already exist ranging from government design support programmes, to sector-led promotion initiatives, a strong professional design sector through to design networks, knowledge transfer into industry and design-led businesses. This first exercise mapped the stakeholders and initiatives in the ‘Design Innovation Ecosystem’ according to the nine components. This provided insight into the state of the art or stock-taking of current initiatives to enable participants to build on existing design infrastructure. The delegates were divided into groups of three to five people mixing delegates from different backgrounds to cover the various perspectives. Participants had one hour for this exercise including presenting the posters to the group.

Exploring the Design Innovation Ecosystem

In the same groups and using the same poster tool, the participants identified a minimum of one strength and one weakness for each component of the Design Innovation Ecosystem. This exercise built on the previous one and enabled delegates to assess the level of systemic interaction between stakeholders and initiatives in the system to identify gaps and opportunities. This SWOT analysis of the Design Innovation Ecosystem would form the basis of the third exercise. Participants had one and a half hours for this including presenting their assessment to the other groups.

Co-developing policy proposals

Following the initial brainstorm, the proposals were clustered thematically and refined. This co-development process engaged delegates in a constructive and inclusive debate and resulted in a consolidated list of concrete policy proposals. To capture the data from the workshop, the posters were photographed, transcribed and processed using content analysis.

Validating stakeholder research results with wider stakeholder population through surveys

To validate the workshop conclusions two surveys were developed for designers and SMEs in Wales and Scotland. The survey focused on validating the outcomes from exercises two and three. In Wales, the survey was disseminated through the Design Wales Forum and South Wales Chamber of Commerce and in Scotland, through Scottish Enterprise and the Design in Action network. The survey results are listed in annex 2 of this report.

In Wales, there were 53 respondents, including 25 categorising themselves as designers and 27 as enterprises and 1 as ‘other’. This represents 2.8% of the members of the Design Wales Forum (889) and 2.3% of the South Wales Chamber of Commerce (1,200) equivalent to a response rate of 2.5%.

In Scotland, there were 78 respondents, including 39 categorising themselves as designers and 39 as enterprises. This represents 13% of the companies (301) and 26% of the designers (152) in the Design in Action network equivalent to a response rate of 17.1%.

Therefore a total of 202 stakeholders (64 in the workshops, 131 in the surveys and 7 in the steering committee) were involved in this research.
PDR facilitated four Design Policy Workshops two in Wales (on 22 April 2014 in Bangor and on 19 May in Cardiff) and two in Scotland (on 21 May in Glasgow and on 23 May in Dundee). A film of the workshops is available on the PDR website. The workshops engaged 64 people including 16 policy-makers, 7 designers, 6 SMEs, 30 academics and 5 third sector organisations. The three workshop exercises focused on 1) mapping the stakeholders and initiatives in the Design Innovation Ecosystems in Wales and Scotland, 2) identifying the strengths and weaknesses and 3) co-developing policy proposal to tackle the systemic gaps and capitalise on the strengths. This section presents the outcomes from the workshops, which are then analysed in the discussion section. The workshop results were validated through a survey disseminated through design and business networks in Wales and Scotland. This section also provides an overview of the survey results (full survey results are listed in the appendix).

Mapping the stakeholders in the Design Innovation Ecosystem

To map the existing design initiatives and infrastructure, the workshop participants identified actors and initiatives across the nine components of the Design Innovation Ecosystem: 1) design users, 2) design support, 3) design promotion, 4) design actors, 5) the professional design sector, 6) design education, 7) research and knowledge exchange, 8) policy, governance and regulation and 9) funding. The purpose of the exercise was not to assess which Design Innovation Ecosystem is stronger but to identify opportunities for shared learning and the transfer of good practices between Wales and Scotland. For example, does Wales have a particularly effective support mechanism for the professional design sector or does Scotland have an effective design support programme to enable SMEs to use design? The findings from this exercise created a map or stock-taking of the players and programmes in the Design Innovation Ecosystem in order to form the basis of the second exercise, the SWOT analysis.

Performing the SWOT analysis of the Design Innovation Ecosystem

An effective design policy could look to mobilise the actors identified in the stakeholder mapping exercise and ensure synergy and collaboration. There are a number of top-down and grassroots-led design initiatives happening across Wales and Scotland including business support programmes, peer-to-peer learning initiatives and internationally renowned education programmes. By performing a SWOT analysis of the Design Innovation Ecosystem, policy-makers and stakeholders can identify insufficient interaction between components of the system. For example, education should feed the professional design sector and design centres and promotion activities should stimulate demand for design expertise in the private and public sectors. Based on the SWOT analysis policy-makers can jointly develop policy actions with stakeholders to ensure joint ownership and responsibility for implementation.

Co-developing Policy Proposals

Based on the stakeholder mapping exercises as well as the SWOT analysis, the workshop participants then jointly developed policy proposals with the representatives of the Welsh Government and Scottish Enterprise. Initially the groups brainstormed a longer list of policy actions to bridge the weaknesses and capitalise on the strengths for each component of the Design Innovation Ecosystem. The proposals were then clustered thematically and refined and consolidated into a shorter list that reflected both the ambitions of the design representatives as well as the realities of the policy environment. PDR then worked with representatives of the Welsh Government and Scottish Enterprise to identify which policy proposals could be taken forward in the short time and which proposals could be explored in the longer term.
DESIGN INNOVATION ECOSYSTEM FOR SCOTLAND*

SCOTTISH FUNDING
- Lottery Funding: Better by Design
- Scottish Funding Council (SFC)
- Creative Scotland
- Creative Capital
- Creative Spark
- Scottish Enterprise
- Innovation support grant
- Design mentors

UK FUNDING
- Technology Strategy Board (TSB)
- Research Councils
- Heritage Lottery Fund (HLF)
- Nesta

EU FUNDING
- European Regional Development Fund (ERDF)
- Horizon 2020
- Euro Research Councils

GOVERNANCE
- Scottish Creative Industries Partnership (SCIP)
- Scottish Government
- Local Governments/Councils
- Scottish Enterprise
- Highlands & Islands Enterprise

EUROPEAN FUNDING
- Knowledge Transfer Partnerships
- Design in Action
- Better by Design
- Scottish Institute for Enterprise (SIE)

CONTRIBUTORS
- Interface
- Digital Health Institute (DHI)
- British Council
- Nesta
- Open Innovation - Cultural Enterprise Office (CEO)

RESEARCH
- Scottish Funding Council (SFC)
- Design in Action
- Institute of Design Innovation – Glasgow School of Art

PROJECTS
- Knowledge Exchange Partnerships
- Design in Action
- Better by Design
- Scottish Institute for Enterprise (SIE)

CONFERENCES
- Interface
- British Council
- Nesta
- Open Innovation - Cultural Enterprise Office (CEO)

ARTS & CULTURE
- Design in Action
- Better by Design
- Scottish Institute for Enterprise (SIE)

POLICY
- No overarching innovation policy
- Scottish Government Economic Strategy (2011)
- Internal Scottish Enterprise Innovation Policy

REGULATION
- Intellectual Property Office (IPO)

DEVELOPMENT
- Medicine
- Engineering
- Architecture
- Design

EDUCATION PROVIDERS
- Further Education Colleges
- HEI
- Aberdeen University (King’s School of Art)
- Dundee University (Duncan of Jordanstone College of Art & Design)
- Edinburgh Napier University
- Glasgow School of Art
- Museums, galleries, cultural institutions
- Massive Open Online Courses (MOOCs)

EDUCATION BENEFICIARIES
- School pupils
- Undergraduate & postgraduate design students
- Designers (CPD)
- Teachers

THIRD SECTOR
- Scottish Enterprise
- Design Enterprise Support
- Business Scotland
- Innovation Support Grant
- Business Mentoring Scotland
- Business Gateway
- Highlands & Islands Enterprise

PRIVATE SECTOR
- Start-ups/Innovators
- SMEs
- Multi-nationals

PUBLIC SECTOR
- Scottish Government
- Scottish Enterprise
- Local government
- Creative Scotland

DESIGNER SUPPORT
- Cultural Enterprise Office
- BFI
- Scottish Fashion
- Creative Scotland
- Creative Enterprise Fund

HEI SUPPORT
- Design in Action
- Scottish Institute for Enterprise (SIE)
- Innovation Portal

FESTIVALS & EVENTS
- Tech Mums
- Fringe Knows
- Social Innovation Camp
- Culture Hack Scotland
- Social Media Week
- Global Service Jam
- Design exhibitions – Lighthouse, Dundee Contemporary Arts (DCA), National Museum Scotland (NMS), VA Dundee
- Degree shows
- Design Summit (DIA)
- Go North
- Glasgow Art Fair
- Ted Glasgow
- Edinburgh International Fashion Festival

PROMOTION BODIES
- V&A Museum of Design Dundee
- Architecture and Design Scotland (A&DS)
- Lighthouse
- Scottish Government
- Cultural Enterprise Office
- Design in Action
- Royal Incorporation of Architects in Scotland (RIAS)

PROMOTION INITIATIVES
- Export/Trade missions
- Scotland Re:Design
- 2014 - Year of Innovation, Architecture and Design
- Design Thinking and Innovation Group – industry-led support from Creative Scotland

GOVERNMENT ACTORS
- Scottish Government
- Highlands and Islands Enterprise (HIE)
- Scottish Enterprise
- Scottish Institute for Enterprise (SIE)
- Creative Scotland
- Creative Clyde
- Creative Stirling
- Creative Edinburgh
- Creative Dundee
- Creative Dumbries
- Borders Creative
- Lighthouse
- Cultural Enterprise Office
- Councils
- Politicians
- Business Club Scotland

MEMBERSHIP & PRIVATE ACTORS
- Arts & Business Scotland
- Federation of Small Businesses
- Royal Incorporation of Architects in Scotland (RIAS)
- Dundee Contemporary Arts (DCA)
- Chamber of Commerce
- Institute of Directors (IOD)

EDUCATION
- Curriculum for Excellence ( CfE)

TRAINING & LIFELONG LEARNING
- Prince’s Scottish Youth Business Trust (PSYBT)
- Science Centre
- Peer to peer mentoring
- MsdLab
- Scottish Funding Council (SFC)
- Digital Design Studio (DDS)
- Cultural Enterprise Office (CEO)
- Skills Development Scotland

THIRD SECTOR ACTORS
- V&A Dundee
- Nesta
- Museums and galleries
- Design Council
- Dundee Contemporary Arts (DCA)
- Insulators (MxLab) etc.
- Digital Health Institute (DHI)

HEI ACTORS
- Design in Action

GRASSROOT ACTORS
- Collectives (e.g. Vanillas Ink, Fleet)
- Design Alliance Scotland

* Active players and initiatives in the Design Innovation Ecosystem in Scotland according to the stakeholders present in the two Design Policy Workshops held in Scotland
EXAMINING THE STRENGTHS AND WEAKNESSES OF THE DESIGN INNOVATION ECOSYSTEM IN WALES

**STRENGTHS**

- Increasing demand for design in the private sector in Wales.
- Increasing demand for design in the public sector in Wales.
- Huge potential to use design in different sectors in Wales. Design Directory Wales enables clients to find designers.
- There are a range of support mechanisms for design under the programme Business Innovation. Wales has the Design Advisory Service (similar to Business Innovation).
- Promotional mechanisms do exist such as the Cardiff Design Festival and award schemes.
- Innovation Wales demonstrates awareness of design within WG.
- Opportunities to use design thinking to reinvigorate design promotion.

**WEAKNESSES**

- Welsh businesses do not understand the value of design for the bottom line.
- Understanding of design among Welsh businesses is limited to branding. Procurement is a barrier to using design in both the private and public sectors.
- Businesses struggle to write design briefs.
- Limited insight into how Welsh businesses use and invest in design.
- Design support is not explicitly promoted within broader innovation support programmes.
- Lack of awareness of programmes, few innovation credits are spent on design. Due to the EU funding requirement of obtaining three quotes, designers do not refer companies to the Design Advisory Services.
- Quantitative indicators do not provide insight into the scope of impact.
- Lack of feedback of successes from innovation programmes back to the Welsh Government.
- Welsh Government programmes are risk adverse.
- Lack of fiscal incentives from government to invest in design.
- Duplication of efforts from different support programmes.
- Limited support for design in the public sector.

**DESIGN USERS**

- Growing awareness of UK design in the UK and abroad.
- Some excellent case studies of Welsh design.

**DESIGN SUPPORT**

- High quality design services from both industry and education.
- A broad base of expertise across different design disciplines.
- Charters of excellence. The Design Wales Forum supports designers in Wales.

**DESIGN PROMOTION**

- No ONE Welsh design centre to be the voice of the sector.
- There are multiple actors but limited collaboration.
- Design sector does not have critical mass or political capital to communicate effectively with government.

**DESIGN ACTORS**

- Strong and diverse design sector in Wales.
- Strong youth retention meaning the sector is vibrant.
- Welsh design sector can compete on quality and price.
- Opportunities to develop service design in Wales.
- Many HEIs in Wales have some form of design education. WISEC committed to the design agenda.

**PROFESSIONAL DESIGN SECTOR**

- Frictions between the design sector and education institutions.
- Lack of international pipelines.
- Lack of evaluation of projects by designers to ensure companies of the return on investment.
- Not enough highly skilled, cutting edge professional designers in Wales.
- Most agencies are small with narrow focus.
- No critical mass in any design discipline.

**EDUCATION**

- Limited links with industry.
- Graduates lack experience when entering the job market.
- No design apprenticeships.
- Insufficient design research training.
- No design education for business students.
- Insufficient data on design graduates. All levels of design teaching still focused on old design paradigms.
- Design not well taught in primary and secondary schools.

**RESEARCH & KNOWLEDGE EXCHANGE**

- Lack of knowledge exchange between design and other disciplines.
- Lack of awareness of research and knowledge exchange outside HEIs.
- Wales logs behind the rest of the UK in terms of knowledge exchanges between academia and industry.

**POLICY, GOVERNANCE & REGULATION**

- Wales has design funding and innovation funding to support design.
- Dialogue between the design industry and the Welsh Government.
- Design is included in the Innovation policy for Wales.
- Potential unique selling proposition: “Wales: Design- Led Nation”.
- Opportunity to use design to reinvigorate public services in Wales.

**DESIGN FUNDING**

- Funding is still technology-led and not design-led.
- 3 quotes tendering process is a barrier to collaboration with the design sector.
- No funding for using design in the public sector.
- No funding for the design sector within other creative industries sectors.
## Examining the Strengths and Weaknesses of the Design Innovation Ecosystem in Scotland

### Strengths
- **DESIGN USERS**
  - General public endorsement of culture and design.
  - Recognition of the need for new approaches to innovation.
  - Public sector becoming much more aware of design.

- **DESIGN SUPPORT**
  - Design support is available to enterprises through various mechanisms.
  - Multiple actors including the V&A, DCAD promoting design.
  - Vibrant local and media design scene.
  - Scottish Government promoting use of design in business.

- **DESIGN PROMOTION**
  - Mixture of top-down and bottom-up activity.
  - Multiple and diverse design actors.
  - Opportunity for the V&A to be the voice for the design industry.

- **DESIGN ACTORS**
  - Strong and internationally competitive design sector.
  - Strengths in different disciplines within the sector.
  - Collectives of designers.

### Weaknesses
- **DESIGN USERS**
  - Tension between awareness and understanding the value and benefits of design.
  - SMEs don’t understand benefits of design to them.
  - Lack of designing services within government – “Drink the koolaid”
  - Weak conceptual grasp of design by SMEs and larger Scottish companies.
  - Lack of strong case studies of Scottish companies.
  - Lack of data on the use of design in Scotland.

- **DESIGN SUPPORT**
  - No clear journey through the different programmes.
  - Companies passed from programme to programme.
  - Small design firms don’t know where to point their clients.
  - Clients complain that the support process is difficult.
  - Need for case studies of successful businesses using design.

- **DESIGN PROMOTION**
  - Insufficient showcasing of Scottish design in different contexts.
  - Lack of impact and low visibility.
  - Preaching to the choir (Design award for designers by designers!!)
  - Lack of coherent message for SMEs.
  - Lack of SME network focused on design and innovation.

- **DESIGN ACTORS**
  - Lack of advocacy, no national design champion or overarching design and innovation body.
  - Lack of connection between the actors, proliferation of overlapping provision and confusion over remits.

### Policy, Governance & Regulation
- **RESEARCH & KNOWLEDGE EXCHANGE**
  - International reputation and highest level of design graduates outside London.
  - Large public investment in design education.
  - Quality output, GSA and DUCAD proactive in getting students to speak to Scottish Government on collaboration.
  - Opportunity for Curriculum for Excellence.

- **EDUCATION**
  - Strong research and knowledge exchange activities such as Design in Action, V&A, Dundee.
  - Contemporary Arts (DCIA).
  - Significant investment in academic-industry collaboration.
  - Design is being incorporated into multidisciplinary research and K£ projects.

- **PROFESSIONAL DESIGN SECTOR**
  - No design policy or design action plan.
  - Lack of high level political leadership.
  - Lack of business acumen among designers.

### Design Funding
- **DESIGN FUNDING**
  - Innovation funding rarely gets used for design.
  - Design ‘pot’ has gone missing.
  - Tendering process underpins design.
  - Not enough R&D finance for design businesses.

Strengths and weaknesses according to the stakeholders present in the Design Policy Workshops in Scotland.
<table>
<thead>
<tr>
<th>Wales</th>
<th>Scotland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN USERS</strong></td>
<td></td>
</tr>
<tr>
<td>• Collate case studies on design in Wales and feedback to the Welsh Government &amp; Ministers</td>
<td>• Collate case studies on design in Scotland and feedback to Scottish Enterprise, Scottish Government &amp; Ministers</td>
</tr>
<tr>
<td>• Conduct research and collate statistics on how Welsh SMEs use &amp; invest in design</td>
<td>• Conduct research and collate statistics on the understanding of design among Scottish SMEs</td>
</tr>
<tr>
<td><strong>DESIGN SUPPORT</strong></td>
<td></td>
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<tr>
<td>• Provide additional training to Welsh Government Innovation Specialists in the value of design &amp; design thinking</td>
<td>• Provide additional training to the 12 Scottish Enterprise Innovation Specialists in the value of design &amp; design thinking</td>
</tr>
<tr>
<td>• Include design as a mandatory component of innovation programmes &amp; explicitly promote design within all programmes</td>
<td>• Promote design within innovation programmes more explicitly</td>
</tr>
<tr>
<td>• Signpost SMEs to Welsh Government innovation support programmes</td>
<td>• Conduct a journey mapping exercise to understand how businesses access design support across the different programmes</td>
</tr>
<tr>
<td><strong>DESIGN PROMOTION</strong></td>
<td></td>
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<tr>
<td>• Appoint design representatives to Welsh Government industry committees and panels such as the Creative Industries Sector Skills Panel as well as the Innovation Panel</td>
<td>• Promote design to the public sector by hosting an event through the Scottish Leaders Forum</td>
</tr>
<tr>
<td>• Develop a design promotion campaign that taps into business networks and innovation intermediaries</td>
<td>• Identify Scottish design champions to communicate design to industry and government</td>
</tr>
<tr>
<td>• Set up a Welsh Government award for successful design and innovation projects</td>
<td>• Create a design portal with a section for SMEs, designers, academics and policy-makers to share information such as case studies, a directory of designers, funding opportunities, etc</td>
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<tr>
<td><strong>DESIGN ACTORS</strong></td>
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<tr>
<td>• Provide mandates for centres of excellence in design</td>
<td>• Appoint a single body to be the voice of design in Scotland</td>
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<td><strong>DESIGN SECTOR</strong></td>
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<tr>
<td>• Support continuous professional development opportunities in business management and service design for designers</td>
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<td></td>
<td>• Explore collaboration with the Design Wales Forum to conduct a feasibility study for transferring the model to Scotland</td>
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<td></td>
<td>• Develop a design directory of Scottish designers and design agencies</td>
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<td></td>
<td>• Develop a mentoring network</td>
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<td><strong>DESIGN EDUCATION</strong></td>
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<tr>
<td>• Support design apprenticeships</td>
<td>• Encourage multi-disciplinary undergraduate post-graduate courses and competitions</td>
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<td>• Support primary education in design</td>
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<td>• Host design workshops for children through the V&amp;A Dundee</td>
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<tr>
<td><strong>RESEARCH &amp; KNOWLEDGE EXCHANGE</strong></td>
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<tr>
<td>• Continue to fund the Academia for Business (A4B) programme</td>
<td>• Promote the Interface academia-industry collaboration programme more broadly</td>
</tr>
<tr>
<td><strong>POLICY &amp; GOVERNMENT</strong></td>
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<tr>
<td>• Appoint a design manager within the Welsh Government</td>
<td>• Develop an industry and stakeholder-led design manifesto for Scotland</td>
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<tr>
<td>• Train Welsh Government officials in design thinking</td>
<td>• Advocate design to the Scottish Government</td>
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<tr>
<td>• Send Welsh Government officials on a study visit to the Cabinet Office Policy Lab</td>
<td>• Improve design awareness among senior Scottish Enterprise officials</td>
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<tr>
<td>• Pilot a Policy Lab using design methods for policy-making the Welsh Government</td>
<td>• Pilot a design project within five local authorities &amp; evaluate to create case studies</td>
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<tr>
<td>• Develop and implement a Design and Digital Strategy</td>
<td>• Develop an implementation plan for the policy Innovation Wales</td>
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<td>• Tender for a multi-disciplinary team to redesign the procurement process to make it more accessible for SMEs</td>
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<td>• Set up a grant to assist SMEs in investing in design</td>
</tr>
<tr>
<td>• Tender for a multi-disciplinary team to redesign the innovation funding application process to make it more user-friendly</td>
<td>• Fund post-graduate opportunity in design</td>
</tr>
<tr>
<td></td>
<td>• Increase design awareness through innovation funding mechanisms</td>
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Validating the workshop findings through surveys

Survey results for Wales

- 82% of respondents believed that there is an increase in demand for design in the private sector versus only 50% who believe there is an increase in demand for design in the public sector in Wales.
- 76% of respondents felt that Welsh businesses do not understand the value of design for the bottom line.
- 50% of respondents felt that the Design Wales Forum supports designers in Wales with 42% responding ‘don’t know’ and 8% answering ‘no’.
- 47% of participants believed that there is a range of support mechanisms for design available in Wales with 42% responding ‘don’t know’ and 11% selecting ‘no’.
- Over half of survey respondents – 53% - were not aware of the Welsh Government funded Design Advisory Service. Similarly, 57% were not aware that Welsh Government innovation credits could be spent on design. In line with this, 76% of designers have not referred a client to the Design Advisory Service.
- 65% of respondents were aware of Welsh design promotion activities such as the Cardiff Design Festival versus 35% who were not aware. Alternatively 35% responded that Welsh Design promotion activities do not communicate a common message.
- 56% of respondents were aware of the Welsh Government policy ‘Innovation Wales’ and 50% were aware that design is included in the policy. Nevertheless, 43% asserted that the Welsh Government does not have a strategy to increase demand for design.
- 63% of respondents concurred that there should be a single ‘centre’ proving the voice for design in Wales.
- 42% of respondents identified that there is not an effective relationship between design education and the design sector in Wales compared with 32% who believe there is.
- 40% of respondents stated that design education does not reflect the contemporary understanding of design. Equally 48% asserted that design graduates do not have an appropriate level of experience when entering the job market.
- 40% of respondents agreed that Wales does not perform as well as the rest of the UK in terms of knowledge exchange between academia and industry.
- When asked whether Wales has a proportion of designers working at the cutting edge of the practice, 33% respondent ‘yes’, 33% responded ‘no’ and 33% also responded ‘don’t know’.

Survey results Scotland

- 59% of respondents believed that there is a growing awareness of design in the public sector in Scotland.
- 50% of respondents felt that design users do not understand the benefits of design.
- 46% of participants agreed that the Scottish Government recognises the potential of design in improving public services while 34% disagreed.
- 54% of respondents stated that procurement is a barrier to the private and public sectors using design while 20% believed it is not.
- 51% of participants believed that there is a range of support mechanisms for design available in Scotland with 20% disagreeing.
- 39% of respondents believed that design is not explicitly promoted within innovation support programmes (compared with 10% who believe that it is).
- 57% of respondents claimed not to know where to point a client to access design support versus 23% who do.
- 38% of participants believed that there is duplication of efforts from different support programmes (compared with 15% who believe that there is not).
- 40% of respondents answered ‘yes’.
- 57% of respondents were aware of Scottish design promotion activities versus 41% who were not aware. Alternatively 45% responded that Scottish design promotion activities do not communicate a common message.
- 53% of respondents concurred that there should be a single ‘centre’ proving the voice for design in Scotland versus 42% who disagree.
- 42% of representatives stated that the Scottish design industry is unable to communicate the return on investment in design compared with 23% who felt that it could.
- 63% of respondents agreed that Scotland has an international reputation for good design higher education.
- 36% of respondents asserted that there is not enough public investment in design education while 24% stated that the level is appropriate.
- 54% of respondents do not believe that there is enough of a link between design education and industry in Scotland.
- 55% asserted that design graduates do not have an appropriate amount of experience when entering the jobs market.
- 33% of respondents stated that design education reflects the contemporary understanding of design compared with 20% who believed it does not.
- 54% of respondents agreed that Scotland performs as well as the rest of the UK in terms of knowledge exchange between academia and industry compared with only 9% who believed that it does not.
- 32% of participants stated that the Scottish Government does not have strategy to increase demand for design compared with 57% who responded ‘don’t know’ and 11% who responded ‘yes’.
- 51% of participants felt that the Scottish Government does not have an appreciation of the broader capabilities of design.
- 60% of respondents were not aware of public funding to support the use of design versus 33% who stated that they were aware.
- Of the survey respondents, 72% had not accessed design-related funding compared with 28% who had.
CHAPTER 5

DISCUSSION

Design users

According to the survey respondents, 82% believe that there is an increase in demand for design in the private sector in Wales compared with 60% who believe the same for Scotland. Alternatively, 59% of Scottish respondents felt that there is growing demand for design in the public sector compared with 50% in Wales. From the workshops in both Wales and Scotland, respondents reported a lack of clarity of understanding among both the private and public sectors regarding design. The Scottish Government is looking to lead by example in using design thinking to improve public services and policy through the Creativity Team. The Creativity Team collaborates with external partners to develop internal expertise in using design thinking in policy development and implementation. It also supports networking for co-design in the public sector in Scotland and provides specific project support for policy and People Directorate (formerly HR) services. The Welsh Government appears to be slower to embrace design as an approach to public sector innovation. Two Welsh Councils – Cardiff and Monmouth – were highlighted as design users, both testing design as an approach to service development. This highlights a need for more case studies on Welsh and Scottish companies and public authorities using design successfully in order to communicate the value of design to other SMEs and government officials.

Design support

Design support programmes have traditionally focused on enabling SMEs to use design by providing mentoring, assistance in writing briefs for designers, advice on procuring design and guidance on managing the design process. More recently, an array of different design support mechanisms have arisen including tax credit schemes, subsidy and voucher schemes and export promotion programmes. In Wales, the main business support mechanism is the programme Business Innovation (€25 million over five years), which includes a number of sub-programmes including Innovation Vouchers, in which design is an eligible cost as well as the Design Advisory Service operating since 1994. The Design Advisory Service is a three-year contract currently worth £794,000 per year with targets to assist 150 companies per year. However, over half of survey respondents – 53% – were not aware of the Welsh Government funded Design Advisory Service. In line with this, 76% of designers have not referred a client to the Design Advisory Service due to the perceived barrier of the ‘three quotes’ tendering process. Similarly, 57% were not aware that Welsh Government innovation credits could be spent on design. As such, it was proposed that design should be a mandatory component of all innovation funding programmes to encourage companies to find out about design by having to include it in all funding applications.

Additional design support is provided through the Service Design Programme, focused on the traditional manufacturing sector and led by PDR; a design management programme called IDE involving University of Wales, Trinity Saint David and PDR as well as the Enterprise by Design programme delivered by PONTIO at Bangor University.

In Scotland, Scottish Enterprise supports innovation in a variety of ways including: advisor support such as innovation, ICT, organisational development, sustainability, workshops on topics such as new product development, business model generation, developing a culture of innovation and a variety of funding mechanisms such as R&D. Much of this support stimulates increased and improved design within businesses. In addition, Scottish Enterprise provides a number of programmes of support that explicitly mention design, such as a design thinking and design-led approach to new Product and Service Development and Design Mentor Support. In 2010 and 2012, over 40 Scottish SMEs were taken through two prototyping pilots, which included attending awareness raising workshops followed up with two days of 1:2:1 support from a design expert to help identify design opportunities and develop a design brief. A budget of £216,000 was allocated to this.
Design Mentor Support is the current means of delivering design to SMEs and uses SE's Innovation Support Grant light-touch feasibility to appoint a Design Mentor to work with the company for up to five days. Account Manager or Business Gateway pipeline businesses and outcomes include supporting the business to identify the right design project and provide guidance to develop a robust project brief. According to SE, every £1 spent in 2013-14 delivering the SE service could generate a return of between £2 billion and £3 billion of net additional Gross Value Added for the Scottish economy over the next ten years. It is expected that for every £1 spent in 2014-15, the Scottish Enterprise service could generate a return of between £1.9 billion and £2.9 billion of additional Gross Value Added for the Scottish economy over the next ten years.30 Another key Scottish business support mechanism for start-ups is the Business Gateway (£6 million over six years) delivered on behalf of the Scottish Government. In 2013/2014, Business Gateway supported 7,500 businesses and every £1 spent delivering the Business Gateway service generated £7.20 of additional Gross Value Added for the Scottish economy.31 Design is an eligible cost within Business Gateway but data on how companies use design through the programme was not available. Other initiatives include Starter for 6, an investment programme for creative industry entrepreneurs (£600,000 over four years).32 Of the Scottish survey respondents, 57% claimed not to know where to point a client to access design support versus 23% who referred to SE Account Manager or Business Gateway pipeline businesses and outcomes include supporting the business to identify the right design project and provide guidance to develop a robust project brief. According to SE, every £1 spent in 2013-14 delivering the SE service could generate a return of between £2 billion and £3 billion of net additional Gross Value Added for the Scottish economy over the next ten years. 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### Research and knowledge exchange

According to 40% of respondents, Wales does not perform as well as the rest of the UK in terms of knowledge exchange between academia and industry. Alternatively, 54% of respondents agreed that Scotland performs as well as the rest of the UK in terms of knowledge exchange between academia and industry compared with only 10% who believe that it does not. In Wales, the main academia-industry collaboration programme is Academia4Business and in Scotland it is Interface. While both of these initiatives are successful, workshop participants felt that more design-related activities could be conducted through these programmes and a proposal included promoting design more explicitly within these initiatives. In Scotland, the AHRC funded project Design in Action has been effective in creating an active dialogue between academia and industry. In Wales, the ASTUTE project (Advanced Sustainable Manufacturing Technologies) is a partnership across nine Welsh universities, led by Swansea University, to embed advanced technologies into Welsh manufacturing by combining engineering, science, business and design expertise. The £27 million project is part-funded by the European Regional Development Fund operating from 2010 to 2014. While world class research is being generated through these projects, participants questioned whether the insight generated through academia is accessible to companies. Therefore, universities should perhaps be more proactive in embedding research more broadly within industry.

### Policy, governance and regulation

Design already features as part of innovation policy in Wales but not in Scotland. In addition, 56% of respondents were aware of the Welsh Government policy ‘Innovation Wales’ and 55% were aware that design is included in the policy. Nevertheless, 43% asserted that the Welsh Government does not have a strategy to increase demand for design. While the policy represents a vision for design in Wales, the policy has yet to be linked to an action plan. Nevertheless, this research has proposed a series of actions that could form part of such a strategy. These proposals have been presented to the Welsh Government and plans have been made to further examine the feasibility of the proposals to appoint a design manager within the Welsh Government innovation team, train Welsh Government officials in design thinking and appoint a design representative to Welsh Government industry sector panels. These actions form part of a drive to raise awareness of design more generally within the Welsh Government. The Welsh Government already uses design methods to enhance inclusive policy-making and supported the action of piloting design methods within five local authorities to create case studies of design impact in dementia patients. As part of the project, 100 civil servants will attend service design training in 2015.

In Scotland, 32% of participants stated that the Scottish Government does not have strategy to increase demand for design compared with 11% who believe that it does. In addition, 51% of participants felt that the Scottish Government does not have an appreciation of the broader capabilities of design. Although design does not formally feature within Scottish policy, the Lighthouse and Scottish Enterprise are collaborating to advocate design as a strategic tool for innovation to the Scottish Government. Workshop participants proposed to develop a stakeholder-led manifesto for design in Scotland that could feed into a distinct design strategy for Scotland separate from the innovation policy. Workshop participants felt that design could be a driving force for innovation in the public sector in Scotland and supported the action of piloting design methods within five local authorities to create case studies of design impact in public service and policy development. This approach should be combined with a more general design awareness and training exercise among Scottish Enterprise and Scottish Government officials. For example, policy-makers from Wales and Scotland could participate in a study visit to the Cabinet Office Policy Lab and Government Digital Service. The Cabinet Office Policy Lab, launched in April 2014, is piloting design as an approach to public service and policy development in five central government departments over one year. In Scotland, the Creativity Team already uses design methods to enhance inclusive policy-making and in Wales, Nesta is establishing a Public Service Innovation Lab to use design methods to tackle policy and public service issues in Wales. Workshop participants in both Wales and Scotland stated that Policy Labs in government would be an effective way to introduce design thinking and inclusive policy-making to the civil service.

### Funding

The resounding message from workshop participants and survey respondents in Wales and Scotland was the funding landscape for design is complicated. In Scotland, 60% of respondents were not aware of public funding to support the use of design versus 11% who stated that they were aware. In line with this, 72% had not accessed design-related funding compared with 28% who had. Funding mechanisms can act as a means to promote design to companies. For example, the proposal in Wales to set up a Design and Development Grant to encourage start-ups to invest in design is currently under consideration and Scottish Enterprise are also considering a grant to enable SMEs to invest in design. Respondents in both Wales and Scotland proposed to appoint a multi-disciplinary team to re-design the innovation funding application process to make it more user-friendly. However, public procurement rules must comply with EU regulations and therefore cutting red tape for accessing innovation financing is more complex than re-designing the application process. In Scotland, a number of financing mechanisms exist such as the Prototype Funds issued through the Design in Action initiative, Starter for 6, innovation vouchers through Interface and more general financing from Scottish Enterprise. It was proposed that both Scottish Enterprise and the Welsh Government review innovation and design financing mechanisms in order to be able to more effectively signpost potential applicants.

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31 www.astutewales.com/en/

32 www.ahrc.ac.uk/
Many parts of the UK have initiatives to support design but they operate outside the mainstream innovation ecosystem and therefore are not reaching their full potential. To implement effective policies and programmes for design, policy-makers require insight into the design landscape, the active players and the operating conditions of the Design Innovation Ecosystem. Therefore, this research sought to ascertain how design fits into innovation ecosystems theory and how it applies in practice so that policy-makers can develop design-driven innovation infrastructure in an informed way. By mapping the design infrastructure in Wales and Scotland, this research has validated theory on Design Innovation Ecosystems by providing concrete examples of how design can achieve innovation policy priorities. By being directly involved in the process, the framework enabled policy-makers to take a more holistic view of the interaction within the innovation environment and subsequently to develop more targeted policies and support mechanisms. Not only was the Design Innovation Ecosystem framework a useful tool for conceptualising the environment in which design operates, but policy-makers also found the methodology engaging. While co-design methods are familiar to researchers active in the field, methods that visualise complex systems and facilitate constructive dialogue between diverse stakeholders is not common among government officials. The feedback from policy-makers was that both the framework and the method were beneficial in constructing a shared understanding of user needs and policy constraints between stakeholders. This approach resulted in new ideas for and from policy-makers, demonstrating the usefulness of the Design Innovation framework and co-design method. For example, participants in both the Scottish and Welsh workshops proposed additional training in the value of design for innovation specialists within the Welsh Government and Scottish Enterprise to further promote design as an approach to innovation for SMEs. Other recommendations that the Welsh Government will consider is making design a mandatory component of all Welsh Government innovation programmes to encourage the up-take of design by SMEs, appointing design representatives to Welsh Government industry committees, recruiting a design manager within the Welsh Government and setting up a Design and Development Grant to encourage start-ups to invest in design. The workshop participants also proposed that Scottish Enterprise could conduct a journey mapping exercise to understand how businesses access design support across the different programmes, ensure that design is an eligible cost within the Smart Exporter programme, set up grant for SMEs and promote design to the public sector through the Scottish Leaders Forum. This would suggest that while there may be significant synergies between regional Design Innovation Ecosystems in the UK, or indeed in other EU countries, there are also unique operating conditions and therefore, this framework and method could be replicated to support evidence-based policy-making elsewhere.

As with any research, there are limitations. This research has benefited from having design aware policy-makers within the Welsh Government and Scottish Enterprise participating in the process. These government ‘design champions’ have been instrumental in steering the research, contributing to the workshops, and translating workshop outputs into implementable policies. Further research should examine the levels of prior design awareness required within government to facilitate this design approach to policy development (whether that be policy that examines design and innovation or any other aspect of policy development). It is perhaps obvious that the policy beneficiaries – those upon which the policy will impact – should also be well represented during stakeholder engagement activities related to policy development. As such, this exploratory research reflects a snapshot in time of the knowledge of a small, yet expert, group and therefore may not necessarily represent the entire design landscape in Wales and Scotland. Perhaps the policy proposals would have been different with a greater participation of SMEs and designers in the workshops. However, it is understandable that SMEs cannot see the value of attending such workshops given the commercial and resource pressures that they face. For this research, the lower rate participation by SMEs and designers was mitigated by surveys. In further research, potentially more effective means of SME engagement should be explored, which could take the form of incentives for workshop attendance, presenting policy developments at industry events, or a broader set of surveys and industry visits to explore needs in more depth.

This research could open up new opportunities for influencing policy at regional and national level in the UK and across Europe. With design prioritised as a driver of innovation in the European Commission’s policy Innovation Union, governments across Europe are looking to understand how design can achieve innovation policy priorities. This is particularly relevant in the context of the growing emphasis on smart specialisation strategies where the creative industries, and within it, design are being highlighted as a powerhouse for European competitiveness. As such, the UK has the opportunity to lead on this policy agenda. The framework and method could be implemented on a wider scale to influence policy not only in the Department for Business, Innovation and Skills but also other ministries like the Department for Communities and Local Government, Department for Culture, Media and Sport and even the Department for Health. Design, as an approach to problem-solving, is relevant to all these policy domains. There is already growing interest in design within central government with the launch of the Cabinet Office Policy Lab in April 2014. The Policy Lab is one year pilot to examine how design thinking can redefine policy challenges and there are discussions to set up a similar initiative in Wales. Crucially, governments require evidence of how SMEs are using design and how it adds value to a company. For example, by involving designers at the outset of the innovation process, is the return on investment of the product or service greater than if the designer is only involved at the end of the process for styling and packaging? What aspects of design do companies invest in – is it limited to branding and communication or are more companies investing in design as a driver of innovation in services? How is the public sector, from central government through to local authorities, investing in design? To influence policy changes, government requires not only the qualitative insight gained from a co-design method with policy beneficiaries but also the quantitative insight generated from empirical evidence of design investment by both the private and public sectors. From such research it could be identified whether an empirical or co-design approach is more effective for policy development or how to instigate an effective balance of the two. It could be surmised that current quantitative approaches to policy development would be enhanced and become more user-focused if supplemented by a co-design approach to policy formulation. Therefore, this research sought to ascertain how design fits into innovation ecosystems theory and how it applies in practice so that policy-makers can develop design-driven innovation infrastructure in an informed way. By mapping the design infrastructure in Wales and Scotland, this research has validated theory on Design Innovation Ecosystems by providing concrete examples of how design can achieve innovation policy priorities.
ACKNOWLEDGEMENTS

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CHAPTER 8

ECO System Model

DESIGN INNOVATION ECOSYSTEM MODEL

SUPPLY

EDUCATION

DESIGNERS

USERS

SUPPORT

POLICY & GOV

ACTORS

PROMOTION

DEMAND

SUPPLY & DEMAND

SUPPLY

RESEARCH

FUNDING

Innovation
### Survey responses from Wales

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Do you think that there is increasing demand for design from the private sector in Wales?</td>
<td>78,9</td>
<td>9,6</td>
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<td>Do you think that there is increasing demand for design from the public sector in Wales?</td>
<td>50</td>
<td>28,8</td>
<td>21,15</td>
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<td>Do you think that the Design Wales Forum supports designers in Wales?</td>
<td>55,8</td>
<td>9,6</td>
<td>34,6</td>
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<td>Do you think that the DesignDirectoryWales.org is effective in helping clients to find designers?</td>
<td>30,8</td>
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<tr>
<td>Do you think that Welsh businesses understand the value of design to their bottom line?</td>
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<td>80,4</td>
<td>9,8</td>
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<tr>
<td>Is Welsh business understanding of design limited to Branding?</td>
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<td>27,4</td>
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<td>Is there a range of support mechanisms for design available in Wales?</td>
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<td>18,7</td>
<td>39,6</td>
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<td>Are you aware of the Design Advisory Service?</td>
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<td>Is design support explicitly promoted within broader innovation support programmes?</td>
<td>8,3</td>
<td>37,5</td>
<td>54,2</td>
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<td>Are you aware that innovation credits can be spent on design?</td>
<td>31,9</td>
<td>57,5</td>
<td>10,6</td>
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<td>If you are a designer: has your business ever referred a client to the Design Advisory Service?</td>
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<td>77,8</td>
<td>11,1</td>
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<td>Does the Welsh Government provide incentives for investment in design?</td>
<td>22,9</td>
<td>27,1</td>
<td>50,0</td>
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<td>Are you aware of Welsh design promotion activities, e.g. the Cardiff Design Festival?</td>
<td>29,2</td>
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<td>Are you aware of the Welsh Government’s “Innovation Wales”?</td>
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<td>Do Welsh design promotion activities provide a common or coordinated message?</td>
<td>55,6</td>
<td>44,4</td>
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<td>Should there be a single ‘centre’ providing the voice of design in Wales?</td>
<td>11,1</td>
<td>35,6</td>
<td>53,3</td>
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<td>Do design representatives in Wales collaborate effectively?</td>
<td>64,3</td>
<td>26,2</td>
<td>9,5</td>
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<tr>
<td>Do design representatives in Wales communicate effectively with government?</td>
<td>16,7</td>
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<td>Is there an effective relationship between design education and the design industry in Wales?</td>
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<td>28,6</td>
<td>64,3</td>
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<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
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<tbody>
<tr>
<td>Does Wales have an appropriate proportion of designers working at the ‘cutting-edge’ of design practice?</td>
<td>25,0</td>
<td>37,5</td>
<td>37,5</td>
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<td>Is design education considered at primary/secondary level in Wales?</td>
<td>24,4</td>
<td>31,7</td>
<td>43,9</td>
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<td>Does design education in Wales link well enough with industry?</td>
<td>19,5</td>
<td>38,5</td>
<td>22,0</td>
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<tr>
<td>Do design graduates have an appropriate amount of experience when entering the jobs market?</td>
<td>17,5</td>
<td>52,5</td>
<td>30,0</td>
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<tr>
<td>Does the content of design courses reflect the contemporary understanding of design?</td>
<td>17,1</td>
<td>36,6</td>
<td>46,3</td>
</tr>
<tr>
<td>Do you think Wales performs as well as the rest of the UK in terms of knowledge exchange between academia and industry?</td>
<td>26,8</td>
<td>29,3</td>
<td>43,9</td>
</tr>
<tr>
<td>Do you think there is an appropriate level of dialogue between the design industry and the Welsh Government?</td>
<td>12,2</td>
<td>43,9</td>
<td>43,9</td>
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<tr>
<td>Are you aware that Design is included in the Innovation Policy for Wales?</td>
<td>51,2</td>
<td>41,5</td>
<td>7,3</td>
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<tr>
<td>Do you think positioning Wales as a Design-led nation is a realistic ambition?</td>
<td>68,3</td>
<td>19,5</td>
<td>12,2</td>
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<td>Do you think design could have a role in reinvigorating public services in Wales?</td>
<td>87,8</td>
<td>4,9</td>
<td>7,3</td>
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<tr>
<td>Do you think that the Welsh Government have an understanding of design that is core to innovation?</td>
<td>19,5</td>
<td>53,7</td>
<td>26,8</td>
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<tr>
<td>Do you think that the Welsh Government has a strategy to increase demand for design?</td>
<td>12,2</td>
<td>43,9</td>
<td>43,9</td>
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<tr>
<td>Within Welsh Government, do you think that designing for the end user is at the centre of policy making?</td>
<td>2,4</td>
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<td>43,9</td>
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<tr>
<td>Do you think public procurement is overly risk averse?</td>
<td>39,0</td>
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<td>Do you think Welsh Government funding for innovation is typically technology-led?</td>
<td>56,1</td>
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<td>Is the ‘three quotes’ tendering process a barrier to collaboration with the design industry?</td>
<td>39,0</td>
<td>22,0</td>
<td>39,0</td>
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### Survey responses from Scotland

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<th>Question</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Do you think that there is increasing demand for design from the private sector in Scotland?</td>
<td>60.3</td>
<td>32.0</td>
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<tr>
<td>Do you think that users of design in Scotland recognise a need for a new approach to innovation?</td>
<td>50.6</td>
<td>33.8</td>
<td>15.6</td>
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<td>Do you think there is growing awareness of design in the public sector in Scotland?</td>
<td>59.0</td>
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<tr>
<td>Do you think that design users in Scotland understand the benefits of design to them?</td>
<td>50.0</td>
<td>30.3</td>
<td>19.7</td>
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<tr>
<td>Do you think that the Scottish government recognises the potential of design in creating and improving services?</td>
<td>46.1</td>
<td>34.2</td>
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<td>Are you aware of any data that exists on the design use in Scotland?</td>
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<td>Is procurement a barrier to using design in both the private and public sector?</td>
<td>54.0</td>
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<td>Do businesses struggle to write design briefs?</td>
<td>66.2</td>
<td>5.2</td>
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<td>Is there a range of support mechanisms for design available in Scotland?</td>
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<td>Is design support explicitly promoted within broader innovation support programmes?</td>
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<td>39.1</td>
<td>50.7</td>
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<td>If you are a designer: do you know where to point your clients for design support? If you are a non-design SME: has a designer ever referred you to a design support organisation?</td>
<td>23.3</td>
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<td>Can quantitative indicators provide insight into the scope or impact of design?</td>
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<td>Do you feel that the Scottish support programmes take the right approach to risk?</td>
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<td>50.8</td>
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<td>Does Scottish Enterprise provide incentives for investment in design?</td>
<td>16.2</td>
<td>25.0</td>
<td>58.8</td>
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<tr>
<td>Do you think there is duplication of efforts from different support programmes?</td>
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<td>Are you aware of Scottish design promotion activities?</td>
<td>57.4</td>
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<td>Do Scottish design promotion activities provide a common or coordinated message?</td>
<td>11.7</td>
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<td>Should there be a single ‘centre’ providing the voice of design in Scotland?</td>
<td>52.8</td>
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<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
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<tr>
<td>Do you agree that Scotland has an international reputation for good design Higher Education?</td>
<td>63.3</td>
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<td>26.5</td>
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<tr>
<td>Is there appropriate public investment in design education in Scotland?</td>
<td>24.0</td>
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<td>40.0</td>
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<tr>
<td>Is design education considered at primary/secondary level in Scotland?</td>
<td>26.6</td>
<td>36.7</td>
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<td>32.7</td>
<td>20.4</td>
<td>46.9</td>
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<tr>
<td>Do you think there is strong university-business collaboration in design in Scotland?</td>
<td>39.1</td>
<td>37.0</td>
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<td>Do you think Scotland performs as well as the rest of the UK in terms of knowledge exchange between academia and industry?</td>
<td>54.3</td>
<td>8.7</td>
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<td>Do you think that the Scottish Government have an understanding of design that is core to innovation?</td>
<td>9.1</td>
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<td>Do you think that the Scottish Government has a strategy to increase demand for design?</td>
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<td>Are you aware of a Scottish Design Policy or Action Plan?</td>
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<td>Do you think that the Scottish Government has an appreciation of the broader meaning/capabilities of design?</td>
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<td>Are you aware of public funding that can support the use of design?</td>
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<td>Have you ever accessed innovation funding for a design project?</td>
<td>27.9</td>
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