

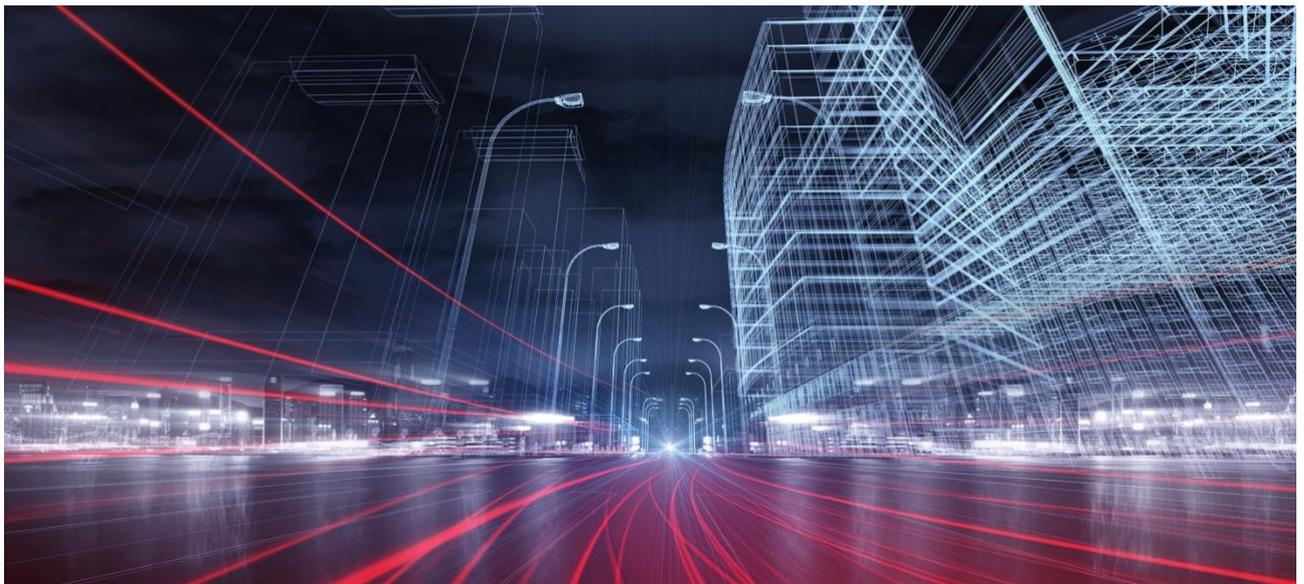


# DIGITAL CITIES CHALLENGE

## Digital Transformation Strategy for the city of Derry~Londonderry

### *Building our Smart City Future*

July 2019



# Digital Cities Challenge

Digital Transformation Strategy for the city of  
Derry~Londonderry: Building our Smart City  
Future

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## **Executive Summary: Derry~Londonderry's digital transformation**

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### **Derry is a central node in the Digital Cities Challenge network**

The Digital Cities Challenge, an initiative of the European Commission, aims to help achieve sustainable economic growth in Derry through the integration of advanced technologies. The initiative fosters complementarities and synergies between existing policies involving digital priorities (e.g. economic development, smart specialisation, smart city, advanced manufacturing, health and life science research, digital skills, etc.) and the newly planned policy actions supporting digital transformation.

The ambition is that Derry will act as a model for other UK, Irish and European cities. By developing and testing new policy levers in a collaborative environment with other cities in the role of peers, the city will demonstrate how to reap the benefits offered by the transformative power of digitisation. It will showcase how to fill the gaps that are currently hindering Derry's advancement and its ability to profit from digital transformation.

### **The implementation of the digital transformation trajectory in the city of Derry**

In Derry~Londonderry, the Digital Cities Challenge was officially launched in July 2018 with the announcement that the city was selected as a “fellow” challenge city. In parallel, the city reached out to city stakeholders to complete the Digital Cities Self-Assessment, leading to the collection of 58 contributions on behalf of the local community of stakeholders. On the basis of this information, the city team (i.e. city representatives supported by an external expert) developed the current digital transformation strategy. The process was conducted interactively, as the team organised local stakeholder workshops aimed at validating findings and collectively building the strategy and identifying key priorities. In addition to this, city representatives participated in four Digital City Challenge academy seminars, which brought together representatives from all other participating cities, with the goal of sharing experiences and exchanging thoughts on the results of the Challenge.

### **The digital transformation strategy for Building our Smart City Future**

Derry City and Strabane District Council and its partners are seeking to position the city and region as a smart data driven city where data propels changes in citizens' behaviour through a range of smart city specialisations and new technologies. The aim is to place

Derry~Londonderry city and region at the leading edge of urban innovation supporting the development, deployment and commercialisation of smart specialisations and new technologies across a range of sectors and through public service delivery.

Our starting point was to align the Digital Cities Challenge with the city's existing Inclusive Strategic Growth Plan; the goal being to incorporate DCC as a means to evolve and achieve the aims of the plan rather than creating a new plan through the challenge. We also approached the challenge with the unique position of Derry~Londonderry firmly in mind. We are a city~region bisected by an international border that could potentially become an EU/non-EU frontier in the near future, we are situated on the periphery of the country and of Europe itself. Rather than focusing on the challenges associated with these circumstances, we plan to build on the city~region's strengths of a youthful population, a city centre of sufficient scale to provide an experimental testbed and a coalition of companies and public sector partners committed to working together to deliver a step change in economic growth that will have a significant positive impact on the lives of citizens. Citizen engagement has been a key focus through the entire process, before and during all steps of the DCC programme. A very large contingent of people living and working in the city, and representing all smart specialisation and priority sectors, have participated from the beginning and provided their input at successful workshops.

On this basis, the city of Derry has defined the following mission:

**Derry's mission is to create** *“An open innovation eco-system - reflective of our values of community, inclusiveness and creativity - focused on sustainable digital transformation and productivity improvement of target economic sectors, by developing key research strengths and the digital skills of all our citizens.”*

In order to reach this goal, it will pursue the following ambitions:

- Ambition statement 1 – Skills: An evolving digital skills environment, delivering the talent pipeline needed by employers through multiple education and training pathways, and generating a creative, innovative, entrepreneurial workforce
- Ambition statement 2 – Research: A 4.0 expert city, producing and applying Industry 4.0 digital research and innovation in our key sectors
- Ambition statement 3 - Infrastructure: An infrastructure that supports visualisation technologies, artificial intelligence and analytics, research, testing and innovation in creative and non-creative digital companies

- Ambition statement 4 - Innovation: A dynamic innovative ecosystem, with the technology, digital skills and support structure needed to drive indigenous business growth while attracting visitors, talent and new FDI to the city~region
- Ambition statement 5 – Smart City: An inclusive, transparent and sustainable service-driven smart city environment, using technology and data to support and improve the lives of citizens and businesses

The roll-out of this strategy will be guided by the implementation of 5 operational objectives:

- **Skills**  
Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors
- **Research**  
Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors
- **Infrastructure**  
Focus digital infrastructure investment in the areas and technologies needed to support smart city, testbed and innovation hub actions.
- **Innovation**  
Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches
- **Smart City**  
Adopt smart city approaches as the basis for innovation in key economic sectors and improved public service provision

### **The strategy roadmap for the city of Derry**

The city has identified the list of activities to be implemented in the short, medium and long terms, in order to make its strategic mission and ambition a tangible reality. As such, a total of 26 specific activities have been identified, under the different operational objectives of the strategy. Examples of key activities to be implemented as part of the strategy include the promotion of high-speed broadband uptake among SMEs, increase industry-facing research and a high intensity approach to addressing digital skills needs.

The Smart Energy Grid Pilot Project and the Business Innovation and Growth (BIG) Programme have been identified by the local working group as pilot activities for immediate implementation, in order to launch the implementation phase of the digital transformation strategy and start generating immediate results.

The outlines of the governance of the digital transformation strategy have also been defined:

- Strategy ownership: the ownership group consists of the City Leadership Team that was established at the outset of the Digital Cities Challenge programme and includes CEO- and senior-management representatives from council, educational institutions, industry organisations and regional financial organisations.
- Strategy steering and oversight: Steering and oversight will be provided by the existing “Outcome Delivery Partnerships” that were established to support the city’s Inclusive Strategic Growth Plan objectives, thus providing continuity and avoiding duplication of effort and dilution of direction. These Skills, Tourism & Culture and Economic Partnerships are made up of representatives from council, educational institutions and all the strategic priority sectors. They will oversee and provide direction to the operational level of project activity.
- Strategy implementing agents: day-to-day management of the implementation of actions will be provided by Derry City and Strabane District Council representatives.

Last but not least, a performance framework for the strategy has also been designed with a view to conducting regular monitoring and appraisal of strategy implementation.

# 1. Introduction to the Digital Cities Challenge

According to recent data, 72% of the EU's population lives in cities, towns and suburbs, making them the engines of the continent's economy. Cities generate 85% of Europe's GDP, they also face multiple, interconnected challenges, including energy and climate change, employment, migration, social inequality, and water, air and soil pollution.

However, through advanced digital technologies, Europe has the opportunity to re-invent the way we manage our cities' development and respond to the big societal challenges, such as efficient health management, cleaner environment, green mobility, and offering great-value jobs. Due to their high density, cities are put in a very good position to create innovative ecosystems made up of a wide array of different stakeholders from government, industry, finance, academia, communitarian organisations, social partners, etc. Cities have the capacity to make policies become reality.

In this context arises the **Digital Cities Challenge**, an initiative of the European Commission with the main purpose to support the cities in their path to digital transformation. DCC offers policy advice and support to 15 cities in Europe, namely **Alcoy**, **Algeciras** and **Granada** in Spain, **Arad** and **Iasi** in Romania, **L'Aquila** in Italy, **Kavala**, **Patras** and **Thessaloniki** in Greece, **Sofia** in Bulgaria, **Ventspils** in Latvia, **Grand-Orly Seine Bièvre** in France, **Pori** in Finland, **Rijeka** in Croatia, and **Guimarães** in Portugal. The support offered will speed up the digital transformation and the industrial modernisation of cities in order for them to take full advantage of the 4th industrial revolution.



This initiative draws inspiration on the recommendations set out in the "Blueprint for cities as launch pads for digital transformation". In addition, it reinforces networking among model cities,

facilitates their participation in on-going European initiatives in similar policy fields, strengthens stakeholder collaboration and cross-regional partnerships and stimulates investment.

The selected Digital Cities received support in the form of field advisory services provided by a group of high-level experts and peer reviewers and offered the possibility for city representatives to participate in a series of capacity building and networking seminars. These activities took place in four Academy seminars during which cities shared practices, took advantage of peer to peer learning and worked together and in thematic groups on the steps of their digital transformation trajectory.

The commitment of Mayors is key to the success of fostering economic growth, increasing prosperity and well-being across European cities. The engagement of political leadership will be of much value to achieving digital transformation in European cities, providing strategic orientations and ensuring that the process of developing and operationalising the strategy supporting digital transformation is translated into a portfolio of relevant actions supporting each other towards achieving a common goal and tailored to the local context. Such efforts need coordination to ensure that effort and dedication undertaken by the city administration is directed to best effect.

As a result of this, the Digital Cities Challenge directly engaged with the Mayors of the participating cities. In December 2018, the Mayors' Conference was organised in Brussels to reflect upon the ongoing work and co-design the technological transformation trajectory of European cities and was attended by Mayor John Boyle on behalf of Derry City.

The digital transformation strategy presented in this document has been developed in the framework of the advisory services delivered to Derry~Londonderry. It represents the main output linked to the city's participation in the Digital Cities Challenge. This strategy will be the main guiding document for the city to embark on its journey to unleash the power of digital transformation for growth and competitiveness.

## 2. Overview of the digital maturity assessment for Derry

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Based on the assessment phase of the project, the overall digital maturity level of the city of Derry is **on the path of becoming digitally mature** (level 2) and, while the feedback from workshops and interviews supported that, there were varying individual perceptions and experiences among the city's stakeholders that provided additional context to discussions on the city's ambitions.

The technological digital infrastructure is broadly in place, but many businesses, especially traditional SMEs, do not currently have the technical knowledge nor the financial capacity to avail of it. There is an excellent university in the city and many educational opportunities in the area of digital skills, but many of the youngest and brightest are leaving the city for opportunities elsewhere. It is relatively easy to set up a business these days, and the cluster infrastructure is there to help, but finance is an issue and there is not as much tech company collaboration as there could or should be. The general consensus is that there are opportunities, there is ambition, there are skilled people, but there are gaps that need to be filled in order for the city to transform.

Some of the main digital strengths of Derry are related to the fact that the city not only has a clear executive responsible for digital development in the council, but that it has also set up a digital policy and a monitoring framework for its implementation. The high response levels to the self-assessment questionnaire and turnout at the workshops underscore DCSDC's excellent role as a coordinator and its ability to mobilise its stakeholder network quickly and effectively.

Derry has a vibrant digital and tech community with some excellent examples of tech start-up companies in the city, many of which are located in the ICT clusters and hubs. Some sectors of the economy have been very successful in pursuing digital transformation strategies. There is very high potential in the many small businesses, including a lot of independent retail businesses, within the city. Tourism is another area that has a very high potential for digital transformation. There are many reasons people are attracted to the city, not least of all being the people of the city themselves, and increased use of technology to capture and use data to

enhance the visitor experience will increase the numbers of visitors and the growth of tourism and culture-related businesses.

Advanced manufacturing is an area of huge potential. There is work underway to accelerate clustering and adoption of Industry 4.0 principles and intense digitisation in the city's significant engineering sector, which will lead to improved competitiveness, growth in innovation and jobs in the sector. However, more focused research capacity is needed, along with the ability to perform scaled testing.

Some key barriers in terms of awareness, skills and finance are keeping the private sector from making a more intensive use of digital solutions in Derry. Many small and medium companies, which make up the vast majority of businesses in the city, are not aware of how digitalisation could transform their business. Many also do not have the skills or the financial capacity to invest in the technology, the training or the people required to digitalise their businesses.

Derry has a diverse tech community, which is particularly active among those sharing coworking spaces in the clusters, although feedback in the vision workshop indicated that there could be much more collaboration – both formal and informal. DCSDC initiatives including Business Boost and the Business Innovation and Growth Programme (BIG) will aid companies by creating a portfolio approach to business support and inspiring partnerships with other organisations.

The base digital infrastructure – including broadband and public Wi-Fi – is in place, but uptake is not as high as expected for high-speed broadband, mostly likely because of the cost and a lack of knowledge of how to use high-speed access to improve business. Furthermore, the council is not currently using ICT to provide public services. However, digital solutions are being considered for adoption by the council to promote the creation of a friendlier business environment centred around Smart City ideas. Promotion of existing open dataset awareness is needed, along with the identification, capture, analysis and open availability of new datasets that could be used by existing and new businesses to create growth.

Stakeholders unanimously agreed that Derry was digitally mature or in the more advanced stages of its digital transformation in terms of “innovation labs and accelerators”. However, there is room for growth here too. The success of existing innovation clusters could likely be replicated multiple times when the incentives outlined in this strategy are used to increase the number of businesses attracted into the city and incentivise of the creation of homegrown start-ups.

Derry has many school-based IT initiatives, groups providing STEM training and stimulating tech interest, “earn as you learn” programmes, bursary programmes and internships; so digital educational opportunities are available. However, these opportunities are not available across the board or for all potential students, and stakeholders were unanimous in saying that Derry does not score well for the attraction or retention of IT talent. While there are excellent digital courses available in the university, there are IT education courses available at some schools and there are organisations offering digital skills classes, overall, these are not reaching enough of the population to ensure that everyone will be able to participate in the city’s digital future.

There is also an underlying issue of young people either getting their education in the city and leaving it for opportunities elsewhere or leaving to get their education at universities in bigger cities and not returning to Derry. This leads to unfortunately high levels of “brain drain”, especially in terms of “young wealth creators” who are the well-educated, entrepreneurial young people who should be staying in or returning to the city so they can create new companies and employ the city’s graduates of the future. An area of focus for Derry is therefore to design better opportunities in order to connect its pool of digital students to its employer sector.

A separate, more complete, digital maturity assessment report has been produced for the city of Derry, as part of the Digital Cities Challenge.

### 3. Mission and Ambition statements

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The following mission and ambition statements were generated by the city stakeholders who participated in the Vision and Ambition Workshop.

#### **Mission statement**

*“An open innovation eco-system - reflective of our values of community, inclusiveness and creativity - focused on sustainable digital transformation and productivity improvement of target economic sectors by developing key research strengths and the digital skills of all our citizens.”*

#### **Ambition statements:**

1. Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors:
  - There are many well-educated young people in Derry, but many leave either to get their education elsewhere or to work elsewhere after receiving their education. The educational environment needs to be changed in order to spark interest in digital subjects in primary and secondary school and to continue to offer opportunities for digital learning that lead directly to jobs within the city.
  - Digital skills need to be fully incorporated as part of the essential skills taught in school. To address the current deficiency in digital education, learning opportunities also need to be made available to school leavers, graduates from other sectors, the unemployed and underemployed.
  - Emphasis needs to be placed on providing digital training for employees in existing businesses to allow them to participate in digital transformation and to prepare themselves for the jobs of the future. Businesses in the city need to be given incentives to provide digital training to their employees; improving the digital future of the company itself while also addressing the digital divide.
  - Emotional intelligence and soft-skills need to be incorporated into the teaching of digital skills.
  - Apprenticeships need to be incorporated as a way to allow those not on the university degree path to get the skills they need to participate in the digital economy of the future.

- Additional digital learning opportunities need to be made available at the university level which, when combined with close industry ties, will ensure that graduates – the future IT talent and entrepreneurs - remain in the city and generate growth.
2. A 4.0 expert city, producing and applying Industry 4.0 digital research and innovation in our key sectors:
- Derry has the potential to become the “come and see” 4.0 expert city. The relatively small size of the city, the emerging tech companies and the engineering and manufacturing core make it a perfect test bed and proving ground for research-based industry.
  - We have research capacity and educated citizens; we need to increase that capacity, focus on the right education needs, use the data that is already available, create an industrial creation test bed and incorporate 4.0 principles in all sectors.
  - Research needs to feed directly into what organisations and businesses need; taking results from the university or foundation to the shop floor or business.
3. An infrastructure that supports visualisation technologies, artificial intelligence and analytics, research, testing and innovation in creative and non-creative digital companies:
- The infrastructure investment needed to form the base of the city’s digital transformation must be focused on the areas and technologies that are going to support smart city, test-bed and innovations activities.
  - Derry has a strong supporting technical structure, which, when combined with the creative and sociable nature of the people, could generate a digital hub that would not only attract businesses and help retain IT talent, it would also generate new business opportunities through the use of robotics, Artificial Intelligence, Virtual Reality and Augmented Reality.
  - Derry has a strong creative culture but there is a gap in skills that needs to be met through multiple different pathways. Alternative learning opportunities within a creative hub will generate more skills and job opportunities.
4. A dynamic innovative ecosystem, with the technology, digital skills and support structure needed to drive indigenous business growth while attracting visitors, talent and new FDI to the city region:

- The people of Derry are its biggest asset; using the digital skills and technology that are currently being developed, this asset can be used to attract more people to live, work and travel in the region.
  - Increased access to city-based open data would allow tourism-related businesses within the city to better plan and target visitors and would give visitors information that would entice them to spend more time in the region. An open data plan would also act as an idea generator and business creator within the city.
  - The support structure needs to be reinforced to ensure that graduates and “future wealth creators”, as well as established multi-national corporations, see Derry as a viable and attractive location for investment in their future.
5. An inclusive, transparent and sustainable service-driven smart city environment, using technology and data to support and improve the lives of citizens and businesses:
- Derry City and Strabane District Council is committed to digitally transforming the city and building the internal and external services needed to support skills development, employment activity, social inclusion and entrepreneurial activity. Smart City technologies will help drive that goal.
  - A huge strength for Derry is the sense of community that is, in part, driven by the collective understanding of the problems of being a peripheral region, e.g. infrastructure and support, skills development, talent retention and attraction. Digital services will build on this strength, increasing the inclusion of all and using it to address the digital/social divide.
  - Data availability and resistance to sharing data are challenges that can be overcome through proof of concept. Given the relatively small size of the city population, it should be relatively easy for the city, possibly in conjunction with private enterprise, to identify a small service-driven need that would impact the citizens of the city economically, socially and/or culturally. They could then use existing and/or newly-identified data to address that need and thereby prove the efficacy of sharing data while resolving a problem for citizens. This effort would also generate goodwill in terms of accountability, transparency and sustainability on the part of the council.
  - Many of the sources of data needed to build in smart city technologies already exist and can be added to, enhanced and made interoperable, in order to improve energy use, traffic and parking management, city planning, tourism, recycling, etc.

## 4. Building our Smart City Future: The Digital Transformation Strategy for the city of Derry

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### 4.1. Strategy orientation

The digital transformation strategy for Derry~Londonderry is a key component of the city's ambition to work with the businesses and people of the city to create a thriving, prosperous and sustainable city and district with equality of opportunity for all.

The city's Inclusive Strategic Growth Plan for the city~region recognised that digital technology is a key driver of economic productivity and innovation, job creation and internationalisation while supporting inclusive growth that is broad-based across individuals and cities, regions and rural areas. Ensuring that everyone can benefit from the digital world, through supporting digitally skilled and resilient citizens, tackling barriers to digital inclusion and ensuring world class digital connectivity across the city region is central to delivering on the benefits that a rapidly changing digital world can bring, while also enhancing the region's capacity to create and grow high value "smart economy" enterprises and deliver high quality, responsive and citizen-centric smart public services.

*The Strategic Growth Plan set the framework for Derry's digital growth needs. The digital transformation strategy provides a platform for identifying the innovation, skills, environment and digital infrastructure that will underpin that growth.*

This strategy seeks to position Derry as a smart data driven city, where new technology and opportunities will improve citizens' lives and create economic growth. The city centre will become an experimental site that supports validation of new smart technologies in a secure and controlled environment, enabling innovators in all key sectors (advanced manufacturing, tourism, life & health science, digital & creative media) to deploy new technologies and innovations at scale in a whole city ecosystem. This will be supported by the creation of an *Open City Data Repository*, with a *Smart Hub* as the accessible focal point for innovation testing and delivering smart public services. The repository will be a resource for government departments, council, the university, research programmes, potential new start-ups and innovating businesses.

The goal is to transform the digital status of the city and region while also adding value to and addressing gaps in existing government initiatives to ensure that all citizens and businesses have access to next generation digital connectivity. The strategy will focus on areas of connectivity including *Internet of Things network coverage, Gigabit Fast Fibre Broadband Services, LTE and Wi-Fi extension, 5G ready network densification, extended Rural Broadband access and a High-Performance Computing Facility* to support innovation and research proposals. The overall aim is to provide the digital infrastructure capabilities needed for the city's smart city initiatives, to increase inclusivity for homes and businesses in rural areas, to promote entrepreneurship and ultimately, to generate new jobs and sustainable growth.

Capitalising on the city's strong track record in research and ensuring that the innovation generated by it has the intended impact on existing and future businesses is a major focus of the city's digital strategy. The *Transformation for Healthcare Innovation and Value Based Ecosystem (T-HIVE)* programme is a research-led, industry-facing research facility that will respond to the strategic needs of the health and life science industry, including a *Primary Care Facility*, which will facilitate contact with the general population and improve the content and accuracy of community healthcare data projects; a *Research and Innovation in Quality Improvement Institute*, which will focus on developing, testing and adoption of innovative digital solutions in healthcare provision; and a *Medical Procedure Human Interface Technology Laboratory*, which will innovate in the training of healthcare professionals and in the safe development and implementation of new interventional medical procedures and devices.

The *Centre for Industry, Digitalisation, Robotics and Automation (CIDRA)* is a research and test-bed facility supporting industry in their adoption of digital technologies, robotics and automation intended to be the focal point for Industry 4.0 development for the whole of Northern Ireland. The *Cognitive Analytics Research Laboratory (CARL)* is a cutting edge applied research centre bringing together businesses, government and advanced applied research expertise with a strong focus on economic and societal impact. CARL focuses on world-leading research and innovation rooted in Artificial Intelligence (AI) and aims to leverage existing bio-inspired AI/Machine Learning/Data Analytics and apply them to real world application areas. The strategy includes plans to expand and refocus both these research programmes.

The strategy looks to expand the partnership between Ulster University and North West Regional College (NWRC), building on both institutions' existing strengths in research, innovation, creative industries and business support by creating an *Innovation Enabler Centre*

that will extend their reach into the business community. The centre will include a *Technology Innovation Centre* open to entrepreneurs and businesses exploring new ideas and innovations in methods of production. With a co-located *Business Support Centre*, entrepreneurs and businesses will be able to engage directly with users, technical staff and other supply chain businesses while availing of mentoring, technology and business development support in one location.

Digital engagement with the city council and other entities involved in public service will reinforce skills, increase trust and allow the city to promote itself as a potential home for new digital business. Research projects, the technology that will support them, and the potential technologies or advances that will result from them, will engage citizens and decrease the digital divide while simultaneously driving economic growth and job creation in the region.

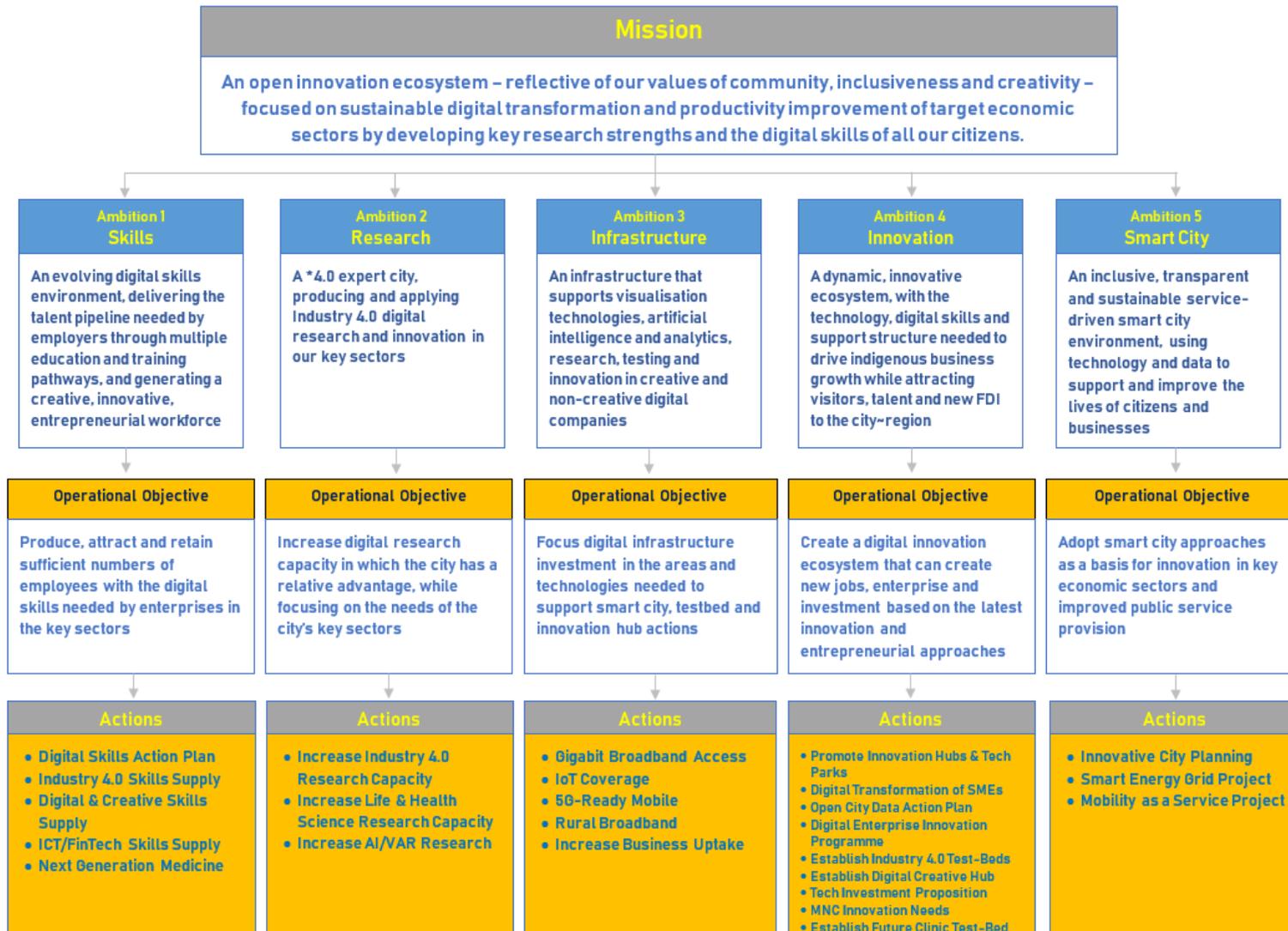
A key goal of the digital infrastructure programme is to accelerate economic growth across the city~region by assisting SMEs to get connected and improve their current broadband connection. However, connectivity is not the end goal; individuals and businesses need focused knowledge and skills to benefit from the digital world that opens up with the availability of fast reliable broadband access. Opportunities for gaining skills and for reskilling and upskilling need to be provided; SMEs need to have access to, and funding for training and retraining their employees if they are to survive, thrive and create new jobs and opportunities. These varying educational needs and approaches form an important part of the city's strategy to allow all its citizens to participate fully in and benefit from the city's digital transformation.

Physical and technological infrastructure improvements, along with a skilled talent pool, will attract new businesses to the city and region, while also providing an entrepreneurial platform for new start-ups. Improvements will include transformative cultural and wellbeing interventions which will not only increase research-based, creative and non-creative digital business opportunities, but will also create an environment that will improve service to tourists, encouraging them to visit, to return and to spread the word that Derry is a vibrant, modern and welcoming city. *Our Future Foyle* is planned to deliver a range of creative and non-creative industry-driven projects that will engage citizens and visitors in a reimagined riverside environment. The project will include lighted digital sculptures, portable digital pods providing information and interactive animation, immersive content intended to increase use of the space, all of which will attract visitors and target improved wellbeing of the people of the city while generating business for the creative and non-creative digital industry.

The following figure provides an overview of the full digital transformation strategy for the city of Derry. The individual components are described in further detail in the following sections and sub-sections.

## DIGITAL CITIES CHALLENGE – Digital Transformation Strategy

Figure 1 Overview of the Digital Transformation Strategy for the City of Derry



## **4.2. Operational objectives**

Operational objectives are the means through which the city of Derry will achieve its ambition statements. They represent the ‘how’ behind the high-level strategic vision which has been developed by the local working group. As demonstrated in the following figure, operational objectives are linked to one or several ambition statements. The city of Derry has identified 5 operational objectives for its digital transformation strategy.

It was decided to limit the number of operational objectives to match the number of ambition statements in order to focus our attentions on identifying actions and projects that would directly impact the goals set by stakeholders at the outset of the challenge.

The following table provides a more detailed presentation of each of the operational objectives.

## DIGITAL CITIES CHALLENGE – Digital Transformation Strategy

Table 1 Presentation of the operational objectives of the Digital Transformation Strategy for the city of Derry

Operational objectives	Link to ambition statements	Rationale
Operational objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors	Linked to ambition statement 1: An evolving digital skills environment, delivering the talent pipeline needed by employers through multiple education and training pathways, and generating a creative, innovative, entrepreneurial workforce	Digital learning at all stages is vital to ensure that children are exposed to learning that will allow them to be immersed in technology from an early age and so that young people (and girls in particular) are encouraged to consider various technology-based careers that ensure they will help generate economic growth and jobs in the future. Throughout the digital maturity assessment and workshop phases, digital skills were raised as among the most critical factors and important challenges facing the city in its digital transformation. Without a population educated in the necessary skills, the opportunities and rewards of digital transformation in the city will be beyond the reach of many and will not have the intended jobs growth results.
Operational objective 2.1: Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors	Linked to Ambition statement 2: A 4.0 expert city, producing and applying Industry 4.0 digital research and innovation in our key sectors.	The relatively small size of the city makes it a perfect test bed and proving ground for research-based industry. Rather than seeing the size and peripherality of the city as negatives; these factors will be capitalised on by attracting both large-scale automation companies who need a manageable “whole city” proving ground, and small start-ups with the next big idea that need to validate and scale up.
Operational objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, test-bed and innovation hub actions.	Linked to Ambition statement 3: An infrastructure that supports visualisation technologies, artificial intelligence and analytics, research, testing and innovation in creative and non-creative digital companies.	In line with the city's Inclusive Strategic Growth Plan, improving and future-proofing the physical and technological infrastructure of the city and region is vital to its economic future, given its peripheral nature. Creating a vibrant, modern, future-focused city will attract foreign investment, inspire entrepreneurship and encourage students to stay in the area for their education and careers.

Operational objectives	Link to ambition statements	Rationale
<p>Operational objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches</p>	<p>Linked to Ambition statement 4: A dynamic innovative ecosystem, with the technology, digital skills and support structure needed to drive indigenous business growth while attracting visitors, talent and new FDI to the city region.</p>	<p>The city has the opportunity to capitalise on its existing innovation hubs by promoting their services and the development of an innovation community. There is also the capacity to stimulate growth by expanding existing and creating new hubs and zones. Promoting and supporting digitalisation of traditional small businesses, encouraging Industry 4.0 initiatives in manufacturing businesses, investing in the well-established creative sector, and increasing the use of technology to advance tourism-related businesses will increase innovation and entrepreneurship levels in the city.</p>
<p>Operational objective 5.1: Adopt smart city approaches as the basis for innovation in key economic sectors and improved public service provision</p>	<p>Linked to Ambition statement 5: An inclusive, transparent and sustainable service-driven smart city environment, using technology and data to support and improve the lives of citizens and businesses.</p>	<p>Derry’s council is committed to digitally transforming the city and to building internal and external services needed to support skills development, employment activity, social inclusion and entrepreneurial activity, which can all be driven using smart city technologies.</p>

## 5. Digital strategy roadmap and planned activities

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The roadmap is the component of the digital transformation strategy that describes the practical implementation of the strategy, including priority activities and governance. Priority activities refer to the specific actions through which the strategy will be implemented. An activity can be described as a tangible and concrete action, which has a beginning and an end, accompanied by a specific objective and resources for its implementation. The results of activities (**i.e. outputs**) are meant to contribute to reaching the operational objectives identified in the previous section.

### 5.1. Overview of proposed activities

The digital transformation strategy for the city of Derry will be implemented through a group of activities, identified in the framework of the Digital Cities Challenge. Activities are meant to contribute to reaching the operational objectives defined in the framework of the strategy, which in turn will contribute to the city's ambition and mission. The list of priority activities may be expanded with time. For now the city has decided to implement 26 activities, as described in the following table.

A detailed presentation of each activity is presented in Appendix I.

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

Activity name	Link to Operational Objectives	Main implementing partner	Brief description and goals
Activity 1.1.1: Digital Skills Action Plan	Linked to Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises	Derry City and Strabane District Council (DCSDC)	<p>Ensure the city is producing, attracting and retaining appropriately educated workers with the digital skills necessary to meet the needs of enterprises in the target sectors.</p> <p>Collaboration between city council, enterprises and digital skills education providers to:</p> <ul style="list-style-type: none"> <li>(a) Monitor future and evolving needs;</li> <li>(b) Implement the various Key Sector skills actions;</li> <li>(c) Engage with Government to lobby for identified changes needed in 1st and 2nd level to introduce STEAM and promote entrepreneurship;</li> <li>(d) Promote involvement of females in IT;</li> <li>(e) Promote projects that encourage flexible pathways, access to digital skills for all, public/private funding, etc.</li> </ul>
Activity 1.1.2: Industry 4.0 Skills Supply	Linked to Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises	Derry City and Strabane District Council (DCSDC)	<p>Improve the supply of the digital skills needed by the Advanced Manufacturing &amp; Engineering Sector.</p> <p>Work with manufacturing industry to introduce new Factory/Industry 4.0 degree courses in Ulster University and apprenticeships in North West Regional College</p>
Activity 1.1.3: Digital & Creative Sector Skills Supply	Linked to Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises	Derry City and Strabane District Council (DCSDC)	<p>Improve the supply of skills needed by the Creative Digital Sector.</p> <p>Collaboration between the creative digital sector in the city, Council, 3rd level and the training community to develop and implement a skills supply action. This should provide a range of flexible and complementary routes including degrees and apprenticeships and provide for long-term unemployed and vulnerable groups. It should also</p>

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

Activity name	Link to Operational Objectives	Main implementing partner	Brief description and goals
			encourage life-long learning and learning access modes (classroom, online).
Activity 1.1.4: ICT/FinTech Sector Skills Supply	Linked to Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises	Derry City and Strabane District Council (DCSDC)	Improve the supply of skills needed by the city's stock of larger ICT enterprises (mainly in FinTech and business services). Collaborative approach between the ICT enterprises, 3rd level, city council to fund new skills courses based on the principles of multiple pathways, flexible learning, public/private funding, mixed delivery, etc.
Activity 1.1.5: Next Generation Medicine	Linked to Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises	Ulster University	Establish a General Practitioner (GP) Graduate Entry Medical School in the Ulster University Magee campus in the city, emphasising the use of digital technology in personalised patient care and training in the latest medical technologies.
Activity 2.1.1: Increase Industry 4.0 Research Capacity	Linked to Operational Objective 2.1: Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors	Ulster University	Increase the level of local industry-relevant research in advanced manufacturing (Industry 4.0) in the city and supply of PhD opportunities in CIDRA (Centre for Industry Digitalisation, Robotics and Automation).
Activity 2.1.2: Increase Life and Health Science Research Capacity	Linked to Operational Objective 2.1: Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors	Ulster University	Increase the number and quality of research projects in life science areas of personalised, stratified and translational medicine, genome sequencing and imaging, emerging life science areas of in the city and district.

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

Activity name	Link to Operational Objectives	Main implementing partner	Brief description and goals
			Establish a research sub-group in Ulster University and increase the supply of PhD opportunities in UU (and CARL).
Activity 2.1.3: Increase AI/VAR and Tourism Research Capacity	Linked to Operational Objective 2.1: Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors	Ulster University	Increase the level and quantity of research projects in the application of Artificial Intelligence and visualisation technologies to the tourism and culture sector, particularly in relation to needs and challenges in the sector. Establish a research sub-group in UU and increase the supply of PhD opportunities in Ulster University (and CARL).
Activity 3.1.1: Gigabit Broadband Access	Linked to Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, test-bed and innovation hub actions.	Derry City and Strabane District Council (DCSDC)	Address gaps in highspeed broadband across the city and region, stimulate commercial investment in networks, make sustainable commercial deployments available. Run Local Full Fibre Network (LFFN) fibre to all public buildings and to business and enterprise parks in areas with no public buildings; this fibre can then be used to provide network capability to businesses and individuals around those areas.
Activity 3.1.2: IoT Network Coverage	Linked to Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, test-bed and innovation hub actions.	Derry City and Strabane District Council (DCSDC)	Deploy NB-LTE/Sigfox/LORA networks throughout the city.

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

<b>Activity name</b>	<b>Link to Operational Objectives</b>	<b>Main implementing partner</b>	<b>Brief description and goals</b>
Activity 3.1.3: 5G-Ready Mobile Deployment	Linked to Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, test-bed and innovation hub actions.	Derry City and Strabane District Council (DCSDC)	Early deployment of 5G mobile networks in priority test bed locations in the city; using LTE and Wi-Fi to support location aware service innovation and support the innovation proposals; allowing for the installation of 5G nodes on public buildings across the city~region
Activity 3.1.4: Rural Broadband	Linked to Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, test-bed and innovation hub actions.	Derry City and Strabane District Council (DCSDC)	Provide High Speed Broadband (HSB) coverage in rural areas surrounding the city
Activity 3.1.5: Increase Small Business Uptake	Linked to Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, test-bed and innovation hub actions.	Derry City and Strabane District Council (DCSDC)	Increase the percentage of small businesses installing fibre to the premises by promoting the Digital Connectivity Fund/National Gigabit Voucher schemes
Activity 4.1.1: Promote Innovation Hubs and Tech Parks	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Derry City and Strabane District Council (DCSDC)	Design and implement a communications campaign, including an integrated online directory of all innovation services, target users, how to access them, etc.; promoting development of an interactive innovation community

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

<b>Activity name</b>	<b>Link to Operational Objectives</b>	<b>Main implementing partner</b>	<b>Brief description and goals</b>
Activity 4.1.2: Digital Transformation of SMEs	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Derry City and Strabane District Council (DCSDC)	Stimulate adoption of digital transformation approaches by the traditional business sector. Implement the Business Innovation and Growth (BIG) Programme, including promotion and communication of the existing range of supports available for enterprises (training, consultancy, audits, innovation vouchers, signposting, gateway to services, etc.)
Activity 4.1.3: Open City Data Action Plan	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Derry City and Strabane District Council (DCSDC)	Develop and implement a comprehensive open data action plan encompassing data protection and security, collection, quality, access, use, innovation and entrepreneurship. Unlock open data as a new resource that can stimulate innovation, cost savings and improved service delivery in the public sector and job and enterprise creation in the private sector.
Activity 4.1.4: Digital Enterprise Innovation Programme	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Derry City and Strabane District Council (DCSDC)	Design and implement a structured innovation programme, targeted at the digital sector, based on clustering, technology transfer from the city's digital research groups and demand development in the city's key sectors in order to create more jobs, start-ups and new ventures by and in the non-creative digital enterprise sector.
Activity 4.1.5: Establish Industry 4.0 Test-Beds	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Ulster University	Increase the number of local manufacturing companies piloting Factory/Industry 4.0 processes Equip and refocus CIDRA to work with local manufacturing businesses to create relevant Factory 4.0 demonstration test-beds (living labs) that are usable by local manufacturing companies.

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

Activity name	Link to Operational Objectives	Main implementing partner	Brief description and goals
Activity 4.1.6: Establish Digital Creative Hub	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	North West Regional College (NWRC)	Establish a creative digital hub that will incubate creative start-ups and projects, transfer technology from Ulster University's digital research groups and provide a living lab environment. This will grow the number of jobs, companies and start-ups in the sector based on developing new processes, products and services that use new visualisation technologies in broadcasting, digital publishing, music, games development and animation/film companies.
Activity 4.1.7: Tech Investment Proposition	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Derry City and Strabane District Council (DCSDC)	Update, design and implement a technology-based inward investment marketing plan that will increase the number of tech companies, tech jobs and higher value opportunities attracted to the city
Activity 4.1.8: Multi-national Innovation Needs	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Derry City and Strabane District Council (DCSDC)	Respond to the changing workplace organisation patterns and research, innovation and entrepreneurship needs of large ICT companies through a structured time-limited programme of engagement with the large ICT sector in the city.
Activity 4.1.9: Establish Future Clinic Test-bed	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	Ulster University	Develop a future-clinic test bed for start-ups, inward investors, clinicians and researchers to collaborate in the development of key clinical digital technologies that combine genomics, personalised medicine and health analytics to increase the number of spin-outs and life science companies in the city.

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

<b>Activity name</b>	<b>Link to Operational Objectives</b>	<b>Main implementing partner</b>	<b>Brief description and goals</b>
Activity 4.1.10: Establish Visitor Attraction Test-bed	Linked to Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	North West Regional College (NWRC)	Establish an enterprise research team in the NWRC/UU Innovation Enabler Centre to develop a competitive advantage for the tourism sector by creating new augmented visitor attractions and festival experiences that leverage the city's rich history and built environment.
Activity 5.1.1: Innovative City Planning	Linked to Operational Objective 5.1: Adopt smart city approaches as a basis for innovation in key economic sectors and improved public service provision	Derry City and Strabane District Council (DCSDC)	Develop, incorporate and implement new planning policies, standards and visualisation systems that promote the incorporation of smart building precepts into new developments and zones; accelerating Derry's transition to a smart city undergoing digital transformation.
Activity 5.1.2: Smart Energy Grid Pilot Project	Linked to Operational Objective 5.1: Adopt smart city approaches as a basis for innovation in key economic sectors and improved public service provision	Derry City and Strabane District Council (DCSDC)	Build on the city's experience in using ICT to improve energy efficiency, non-carbon sources and smart grid pilots to deploy a smart energy demonstration pilot in the city, combining IoT, AI, etc. and accelerating the transition to a carbon neutral city.
Activity 5.1.3: Mobility as a Service Pilot Project	Linked to Operational Objective 5.1: Adopt smart city approaches as a basis for innovation in key economic sectors and improved public service provision	Derry City and Strabane District Council (DCSDC)	Develop a Mobility as a Service pilot project that can attract further public and private sector investment in reducing vehicle traffic, congestion and carbon levels while improving transport experience for citizens.

## **5.2. The pilot activities**

### **Smart Energy Grid Pilot**

In order to begin the implementation of the strategy, the city of Derry has decided to carry out as its first pilot activity the Smart Energy Grid Project.

Derry City & Strabane District Council will develop a smart energy grid pilot that integrates renewable energy, battery storage and smart energy management in the form of sensors and smart meters to monitor consumption and learn from user behaviour. The Smart Grid will consist of an electricity and heating network to power and heat a number of public buildings within a specific geographic boundary. Artificial Intelligence technology will record consumption data in conjunction with external weather conditions, energy performance of equipment, and learned user profile, to maximise energy efficiency and optimise the consumption of renewable energy produced.

- This activity was chosen as a pilot to kick start the transformation initiative with an activity that combines public service, IoT, renewable energy, and artificial intelligence in a project that will accelerate the city's transition to carbon-neutral status. The other decision-making factor was the recent approval of the Interreg NPA SMARCTIC project, in which DCSDC is participating.
- The pilot is expected to identify consumption conditions, gather sensor and monitor-based data for multiple uses, act as a test case for future smart energy plans and promote the provision of user-based data for the purposes of public service improvement.
- The council will be in charge of implementing and monitoring the project.
- The project is expected to run for 3 years beginning in May 2019.
- The SMARCTIC project, approved by Interreg NPA, will provide funding to initiate the Smart Energy Grid pilot.
- This pilot will contribute to the broader implementation of the strategy by initiating very visible and promotion-worthy efforts in terms of public service, Internet of Things, renewable energy and artificial intelligence.

### **Business Innovation and Growth Programme**

The second pilot project is the Business Innovation and Growth (BIG) Programme; Derry City and Strabane District Council's initiative to drive innovation and productivity of SMEs. The

programme will target digital and non-digital small and medium enterprises with tailored strategy and leadership support. SMEs will be mentored through creating a Digital Transformation Action Plan, increasing their digital engagement with customers and establishing collaborative partners, etc.

Mentors will provide one-to-one support; help drive open partnerships and increase digital promotion and customer engagement. The target outputs of the programme include over 340 participating businesses being mentored through the creation and implementation of a digital transformation action plan and over 1000 days of mentoring support provided by 2022.

### **5.3. Timetable for implementation**

It is foreseen the strategy will be implemented for the next 5 years. Activities will be gradually implemented, on the basis of the following indicative timetable.

**DIGITAL CITIES CHALLENGE – Digital Transformation Strategy**

Table 2 Timetable for the implementation of the digital transformation strategy for the city of Derry

Action	Activity	May-June 2019	Jul-Dec 2019	Jan-Jun 2020	Jul-Dec 2020	Jan-Jun 2021	Jul-Dec 2021	Jan-Dec 2022	Jan-Dec 2023
5.1.2	Pilot 1 Smart Energy Grid								
4.1.2	Pilot 2 Business Innovation and Growth Programme								
1.1.1	Digital Skills Action Plan								
1.1.2	Skills Supply for Industry 4.0								
1.1.3	Skills Supply for Digital creative sector								
1.1.4	Skills Supply for ICT/ FInTech Sector								
1.1.5	Next Generation Medicine								
2.1.1	Increase Industry 4.0 Research Capacity								
2.1.2	Increase Life & Health Science Research Capacity								
2.1.3	Increase Tourism Related AI/VAR Research Capacity								
3.1.1	Complete the Gigabit Fast Fibre Network								
3.1.2	IoT Network coverage								

*DIGITAL CITIES CHALLENGE – Digital Transformation Strategy*

Action	Activity	May-June 2019	Jul-Dec 2019	Jan-Jun 2020	Jul-Dec 2020	Jan-Jun 2021	Jul-Dec 2021	Jan-Dec 2022	Jan-Dec 2023
3.1.3	5G Mobile Network Deployment								
3.1.4	Rural Broadband								
3.1.5	Increase SME Uptake of High-Speed Broadband								
4.1.1	Promote Innovation Hub Services								
4.1.3	Open City Data Action Plan								
4.1.4	Digital Enterprise Innovation Programme								
4.1.5	Establish Industry 4.0 Test-Beds								
4.1.6	Establish Creative Digital Hub								
4.1.7	Promote ICT/FinTech Inward Investment								
4.1.8	Address MNC Innovation Needs								
4.1.9	Establish Future Clinic test-bed								
4.1.10	Establish Visitor Attraction test-bed								
5.1.1	Innovative City Planning								
5.1.3	Mobility-as-a-Service Pilot Project								

## 6. Strategy governance

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The governance structure for the implementation and monitoring of the city's strategy is a three-tiered system that will ensure sanctioning from those involved at a high level from the beginning of Derry's digital ambitions and oversight from city officials, education and community representatives and businesses directly impacted by the roadmap actions.

- **Strategy ownership:** the ownership group consists of the City Leadership Team established at the outset of the Digital Cities Challenge programme and includes CEO and senior management representatives from council, educational institutions, industry organisations and regional financial organisations.
- **Strategy steering and oversight:** Steering and oversight will be provided by the existing "Outcome Delivery Partnerships" that were established to support the city's Inclusive Strategic Growth Plan objectives, thus providing continuity and avoiding duplication of effort and dilution of direction. These Skills, Tourism & Culture and Economic Partnerships are made up of representatives from council, educational institutions and all the strategic priority sectors. They will oversee and provide direction to the operational level of project activity.
- **Strategy implementing agents:** day-to-day management of the implementation of actions will be provided by Derry City and Strabane District Council representatives, who will perform the project manager role, monitoring progress, risks and results, reporting to the steering committee, managing financial resources, etc.

## 7. Monitoring and evaluation of the Digital Transformation Strategy

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In order to monitor and assess progress achieved as part of the digital transformation strategy, a performance assessment framework has been developed by the city team. In addition, the team has outlined preliminary evaluation plans and resources as part of an early evaluation plan.

### 7.1. Performance assessment framework

Strategy implementation and results monitoring will be conducted by ERNACT on the basis of the performance assessment framework presented in Appendix II. Three levels of monitoring indicators and targets have been defined:

- **Outcome indicators** have been established at the level of the Ambition Statements
- **Intermediate outcome** indicators have been established at the level of operational objectives
- **Output indicators** have been established at the level of activities

ERNACT will be in charge of collecting data on all strategy monitoring indicators. However, it is expected that activity implementing partners will also play a key role in generating, collecting and sharing performance data. This information will be used for internal monitoring and reporting purposes. As such it will be communicated to the Outcome Delivery Partnership teams on a regular basis.

The performance assessment framework will evolve as the city enters the full strategy implementation phase. The regularity and depth of monitoring will also be further specified by the steering bodies.

### 7.2. Strategy evaluation plan

In addition to monitoring the progress of strategy implementation, the Digital Transformation Strategy for Derry will undergo an evaluation within the next 2 years. The objective of the evaluation will mainly be to verify the extent to which expected strategy results have been achieved, review the relevance of selected strategy priorities and objectives, and review the efficiency of strategy implementation and governance schemes. The evaluation questions

guiding the evaluation will be defined by ERNACT with the support of the Outcome Delivery Partnership teams. Continuous evaluation of activities will provide the most effective method of determining whether the activities are having the intended effect, rather than evaluating value after the project has closed. With this in mind, regular impact-defining evaluations will be conducted on a timeframe contingent on the overall timelines of the activity, e.g. a 2-year activity will be evaluated bi-monthly.

An additional impact evaluation may be conducted after 6 years of strategy implementation. The impact evaluation will be mainly focused on assessing strategy outcomes and likelihood of impact.

When relevant, individual activity managers will be encouraged to conduct activity-specific evaluations and assessments. The information drawn from activity evaluations and assessment will feed into the general strategy evaluations.

## 8. Results achieved and next steps

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Participation in the Digital Cities Challenge has given Derry~Londonderry a framework to help accomplish its goal of a digital transformation that will drive the city's economic future and create real job growth. It has provided the city and its stakeholders with a format, process, timeline and method to identify, validate and prioritise the efforts needed to accelerate the city's digital transformation.

While the Inclusive Strategic Growth Plan set an overall agenda for Derry's digital growth, the Digital Cities Challenge has provided the structure needed to allow it to be accomplished.

In terms of strengthening local leadership and governance, Derry City and Strabane District Council had already established itself as the clear executive responsible for digital development. The high response levels to the self-assessment questionnaire and the excellent turnout at the workshops underscore DCSDC's established role as a coordinator and its ability to mobilise the city's stakeholders quickly and effectively. Producing real outcomes tied to the input provided by stakeholders through this challenge will reinforce the council's lead role in Derry's digital future.

Community engagement in the Challenge again highlighted DCSDC's well-established position but also confirmed that Derry's business community understands the importance of accelerating the city and region toward digital transformation and their role in ensuring the success of the city's digital strategy. Derry had among the highest response levels for the self-assessment (58) and had very high turnout of 46 highly engaged participants in the Vision Workshop. Stakeholders from all sectors came to the workshops prepared to provide input and engage in open discussion, but also determined to leave with clearly defined outputs that they will continue to follow and monitor throughout the implementation.

The process of conducting the self-assessment of the city's digital maturity firstly allowed for a large city stakeholder group to be established and also provided some unexpected results and input for excellent discussion at the workshops. Stakeholders from all strategic priority sectors, including ICT/FinTech, digital and creative industries, life and health sciences, advanced manufacturing, tourism and culture collaborated directly with representatives from education, community, finance and the council. They provided self-assessment and KPI input, and attended the workshops, where lively and productive discussions were based on the results of

the assessment, personal and professional experiences, contributions from all sectors and additional smart city-focused input. The goal of identifying the efforts needed to generate economic growth and create new jobs were accomplished and a new collaborative set of city stakeholders was established.

Participation in the Digital Cities Challenge also gave Derry the opportunity to present the city to the cohort of participating cities at the academy seminars, to learn from other cities' experiences and good practices, and to establish partnerships with other cities in potential new collaborative projects. We have submitted three project collaboration ideas to the Digital Cities Challenge team and have started participating in meetings to kick off one of those projects, and Open Data Collaboration effort. We have also provided some initial input to the Key Enabling Technologies/Industrial Modernisation project. Efforts are continuing to generate new partnerships and Derry will continue to very actively pursue and participate in any relevant European projects and initiatives.

Overall, participation in the Digital Cities Challenge has allowed the city to accelerate its progress toward digital transformation, and to focus attention where it is most needed in terms of focused digital skills required by employers, addressing the digital divide, tackling the need for more digital education for traditional businesses and highlighting the ever-improving infrastructure and research platform, with a view to increasing investment in the city and its people.

Our next steps include further formalising the governance structure that will monitor the activities as they are rolled out. As explained above, Derry had already established "Outcome Delivery Partnerships" based on its digital policy outlined in the Inclusive Strategic Growth Plan. These partnerships are comprised of members of the key economic sectors, council and education. They will now also take on the strategy steering and oversight role for the activities that will help accomplish the city's mission. A formal plan for presenting, reviewing and reporting on activity progress will be established, along with a timeline for keeping the City Leadership Team apprised of overall progress.

The programmes, initiatives, collaborations, projects and activities that have been identified by the city's stakeholders as priorities through the Digital Cities Challenge process will be rolled out per the timelines identified; they will be reviewed and adjusted as necessary, and, over time, will contribute very significantly to Derry's economic future.

Derry also looks forward to participating in and contributing to the Intelligent Cities Challenge expected to be announced later in the year.

## Appendix I: Detailed presentation of activities

Activity 1.1.1: Digital Skills Action Plan		
<b>Link to operational objective</b>	Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors	
<b>Description</b>	Ensure the city is producing, attracting and retaining appropriately educated workers with the digital skills necessary to meet the needs of the target sectors. Collaboration between city council, enterprises and digital skills education providers to: (a) Monitor future and evolving needs; (b) Implement the various Key Sector skills actions; (c) Lobby government for changes needed in 1st & 2nd level to introduce STEAM and promote entrepreneurship; (d) Promote involvement of females in IT; (e) Promote projects that encourage flexible pathways, access to digital skills for all, public/private funding, etc.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>Implementation Duration: 36 months</li> <li>Estimated start date of implementation: 2019</li> </ul>	
<b>Indicators to be achieved</b>	<ul style="list-style-type: none"> <li>Future Skills group established</li> <li>Future Skills Needs report published</li> <li>1st/2nd level STEAM programmes developed</li> </ul>	<ul style="list-style-type: none"> <li>Female-focused programme established</li> <li>Flexible pathway report published</li> </ul>
<b>Estimated cost and source of funding</b>	Cost Estimate:40,000	Potential Funding Source: Council
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 1.1.2: Industry 4.0 Skills Supply</b>			
<b>Link to operational objective</b>	Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors		
<b>Description</b>	Improve the supply of the DT skills needed by the Advanced Manufacturing & Engineering Sector. Work with manufacturing industry to introduce new Factory/Industry 4.0 degree courses in Ulster University and apprenticeships in NorthWest Regional College.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>		
<b>Indicators to be achieved</b>	New Industry 4.0-related courses/apprenticeships announced in Ulster University and North West Regional College		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Cost Estimate:</td> <td style="width: 50%;">Potential Funding Source: Council</td> </tr> </table>	Cost Estimate:	Potential Funding Source: Council
Cost Estimate:	Potential Funding Source: Council		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 1.1.3: Digital &amp; Creative Sector Skills Supply</b>			
<b>Link to operational objective</b>	Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors		
<b>Description</b>	Improve the supply of skills needed by the Creative Digital Sector; Collaboration between the creative digital sector in the city, Council, 3rd level and the training community to develop and implement a skills supply action. This should provide a range of flexible and complementary routes including degrees and apprenticeships and provide for long-term unemployed and vulnerable groups. It should also encourage life-long learning and learning access modes (classroom, online).		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>		
<b>Indicators to be achieved</b>	Action Plan identifying courses, apprenticeships and pathways needed to supply digital creative sector		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate: 250,000</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: Regional (NI) Government</td> </tr> </table>	Cost Estimate: 250,000	Potential Funding Source: Regional (NI) Government
Cost Estimate: 250,000	Potential Funding Source: Regional (NI) Government		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 1.1.4: ICT/Fintech Sector Skills Supply</b>			
<b>Link to operational objective</b>	Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors		
<b>Description</b>	Improve the supply of skills needed by the city's stock of larger ICT enterprises (mainly in the FinTech and business services); Collaborative approach between the ICT enterprises, 3rd level, city council to fund new skills courses based on the principles of multiple pathways, flexible learning, public/private funding, mixed delivery, etc.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>		
<b>Indicators to be achieved</b>	New courses, apprenticeships and pathways announced to supply ICT/FinTech sector		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate: 1,000,000</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: Regional (NI) Government</td> </tr> </table>	Cost Estimate: 1,000,000	Potential Funding Source: Regional (NI) Government
Cost Estimate: 1,000,000	Potential Funding Source: Regional (NI) Government		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 1.1.5: Next Generation Medicine</b>			
<b>Link to operational objective</b>	Operational Objective 1.1: Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors		
<b>Description</b>	Develop a lead in training General Practice doctors, skilled in using DT tools, that can exploit the next generation approach to “personalised patient care”. Establish a GP Graduate Entry Medical School in the Ulster University Magee campus, emphasising the use of digital technology, including artificial intelligence and cognitive analytics in personalised patient care.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2021</li> </ul>		
<b>Indicators to be achieved</b>	Establishment of NIGEMS (Northern Ireland Graduate Entry Medical School) in Ulster University Magee Campus in Derry		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate: 2,000,000</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: Regional (NI) Government</td> </tr> </table>	Cost Estimate: 2,000,000	Potential Funding Source: Regional (NI) Government
Cost Estimate: 2,000,000	Potential Funding Source: Regional (NI) Government		
<b>Organisation in charge of delivery</b>	Ulster University		

Activity 2.1.1: Increase Industry 4.0 Research Capacity		
<b>Link to operational objective</b>	Operational Objective 2.1: Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors	
<b>Description</b>	Increase the level of local industry-relevant research in advanced manufacturing (Industry/Factory 4.0) topics in the city. Increase the supply of PhD opportunities in CIDRA (Centre for Industry Digitalisation, Robotics and Automation).	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2021</li> </ul>	
<b>Indicators to be achieved</b>	PhD programmes announced	
<b>Estimated cost and source of funding</b>	Cost Estimate 2,000,000	Potential Funding Source: National Government
<b>Organisation in charge of delivery</b>	Ulster University	

<b>Activity 2.1.2: Increase Life And Health Science Research Capacity</b>			
<b>Link to operational objective</b>	Operational Objective 2.1: Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors		
<b>Description</b>	Increase the number and quality of research projects in life science areas of personalised, stratified and translational medicine, genome sequencing and imaging and emerging life science areas in the city and district. Increase the supply of PhD opportunities in Ulster University (and T-HIVE: Transformation – Healthcare Innovation Value Based Ecosystem)		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2021</li> </ul>		
<b>Indicators to be achieved</b>	PhD programmes announced		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate 2,000,000</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: National Government</td> </tr> </table>	Cost Estimate 2,000,000	Potential Funding Source: National Government
Cost Estimate 2,000,000	Potential Funding Source: National Government		
<b>Organisation in charge of delivery</b>	Ulster University		

<b>Activity 2.1.3: Increase Ai/Var Tourism Research Capacity</b>		
<b>Link to operational objective</b>	Operational Objective 2.1: Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors	
<b>Description</b>	Increase the level and quantity of research projects in the application of Artificial Intelligence and visualisation technologies to address the needs and challenges of the tourism and culture sector. Establish a research sub-group in UU and increase the supply of PhD opportunities in Ulster University (and CARL (Cognitive Analytics Research Laboratory) in the city	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>	
<b>Indicators to be achieved</b>	<ul style="list-style-type: none"> <li>• Tourism-related projects announced</li> <li>• Potential spinouts identified</li> </ul>	
<b>Estimated cost and source of funding</b>	Cost Estimate 2,000,000	Potential Funding Source: National Government
<b>Organisation in charge of delivery</b>	Ulster University	

<b>Activity 3.1.1: Complete The Gigabit Fast Network For Enterprises</b>			
<b>Link to operational objective</b>	Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, testbed and innovation hub actions.		
<b>Description</b>	Address gaps in highspeed broadband across the city and region, stimulate commercial investment in networks, make sustainable commercial deployments available; Run Local Full Fibre Network (LFFN) fibre to all public buildings and to business and enterprise parks in areas with no public buildings; this fibre can then be used to provide network capability to businesses and individuals around those areas		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>		
<b>Indicators to be achieved</b>	LFFN fibre run to identified public businesses and enterprise parks		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate:</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: National Government</td> </tr> </table>	Cost Estimate:	Potential Funding Source: National Government
Cost Estimate:	Potential Funding Source: National Government		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 3.1.2: IoT Network Coverage</b>			
<b>Link to operational objective</b>	Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, testbed and innovation hub actions.		
<b>Description</b>	Deploy NB-LTE/Sigfox/LORA networks throughout the city, targeting service transformation and providing critical support to innovation proposals (T-HIVE, CIDRA, CARL, etc.)		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>		
<b>Indicators to be achieved</b>	IoT network established throughout the city~region		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Cost Estimate: 1,000,000</td> <td style="width: 50%;">Potential Funding Source: National Government</td> </tr> </table>	Cost Estimate: 1,000,000	Potential Funding Source: National Government
Cost Estimate: 1,000,000	Potential Funding Source: National Government		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 3.1.3: 5g Ready Mobile Network Deployment</b>		
<b>Link to operational objective</b>	Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, testbed and innovation hub actions.	
<b>Description</b>	Early deployment of 5G mobile networks in priority test bed locations in the city; using LTE and Wi-Fi to support location aware service innovation and support the innovation proposals; allowing for the installation of 5G nodes on public buildings across the city~region	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 12 months</li> <li>• Estimated start date of implementation: 2021</li> </ul>	
<b>Indicators to be achieved</b>	5G ready network established in priority test bed locations in the city~region	
<b>Estimated cost and source of funding</b>	Cost Estimate: 1,000,000	Potential Funding Source: National Government
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 3.1.4: Rural Broadband</b>			
<b>Link to operational objective</b>	Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, testbed and innovation hub actions.		
<b>Description</b>	Provide digital connectivity for more rural areas of the city~region; using the LFFN network and allowing telcos to run their own fibre; extending network to locations without public buildings and potentially deploying fibre to a single location in a small townland or village and using alternative connectivity such as wireless to bring connectivity to individual premises.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>		
<b>Indicators to be achieved</b>	High-Speed access network established in 3 rural locations		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate:</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: National Government</td> </tr> </table>	Cost Estimate:	Potential Funding Source: National Government
Cost Estimate:	Potential Funding Source: National Government		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 3.1.5: Increase Small Business Uptake Of High-Speed Broadband</b>			
<b>Link to operational objective</b>	Operational Objective 3.1: Focus digital infrastructure investment in the areas and technologies needed to support smart city, testbed and innovation hub actions.		
<b>Description</b>	Increase the percentage of small businesses installing fibre to the premises; Promote the Digital Connectivity Fund, which helps rural businesses connect the last few miles to the LFFN network, and the National Gigabit Voucher scheme, which helps with the cost of getting a gigabit connection.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>		
<b>Indicators to be achieved</b>	50 businesses installing fibre-to-the-premises		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate: 250,000</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: National Government</td> </tr> </table>	Cost Estimate: 250,000	Potential Funding Source: National Government
Cost Estimate: 250,000	Potential Funding Source: National Government		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 4.1.1: Promote Innovation Hub And Tech Park Services</b>		
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Promote the city's network of existing innovation hubs and tech parks and increase their digital transformation capacity Review and update the digital transformation service offerings of all hubs and parks. Design and carry out a communications campaign, including an integrated directory of all innovation services, their target users, how to access them, etc.; promote development of innovation community	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>	
<b>Indicators to be achieved</b>	<ul style="list-style-type: none"> <li>• Communications Plan designed and implemented</li> <li>• Potential new hubs identified</li> </ul>	
<b>Estimated cost and source of funding</b>	Cost Estimate 10,000	Potential Funding Source: Council
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 4.1.2: Digital Transformation Of Small Businesses (Big Pilot)</b>		
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Stimulate adoption of digital transformation approaches by the traditional business sector. Implement the Business Innovation and Growth (BIG) Programme, including promotion and communication of the existing range of supports available for enterprises (training, consultancy, audits, innovation vouchers, signposting, gateway to services, etc.)	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>	
<b>Indicators to be achieved</b>	<ul style="list-style-type: none"> <li>• 340 businesses recruited</li> <li>• 340 Digital Transformation Plans created</li> <li>• 1190 mentoring days</li> </ul>	
<b>Estimated cost and source of funding</b>	Cost Estimate 500,000	Potential Funding Source: Council
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 4.1.3: Open City Data Action Plan</b>		
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Unlock open data as a new resource to stimulate innovation, cost savings and improved service delivery in the public sector, and job and enterprise creation in the private sector. Develop and implement a comprehensive open data action plan encompassing data protection and security, collection, quality, access, use, innovation and entrepreneurship.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>	
<b>Indicators to be achieved</b>	<ul style="list-style-type: none"> <li>• Open Data Action Plan published</li> <li>• Number of open datasets used</li> </ul>	
<b>Estimated cost and source of funding</b>	Cost Estimate 1,000,000	Potential Funding Source: Council
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 4.1.4: Digital Enterprise Innovation Programme</b>		
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Design and implement a structured innovation programme, targeted at the digital sector, based on clustering, technology transfer from the city's digital research groups and demand development in the city's sectors in order to create more jobs, start-ups and new ventures by and in the non-creative digital enterprise sector.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>	
<b>Indicators to be achieved</b>	Innovation Programme established and promoted	
<b>Estimated cost and source of funding</b>	Cost Estimate 100,000	Potential Funding Source: INTERREG Europe
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 4.1.5: Establish Industry 4.0 Test-Beds</b>			
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches		
<b>Description</b>	Increase the number of local manufacturing companies piloting Industry/Factory 4.0 processes. Equip and refocus CIDRA to work with local manufacturing businesses to create relevant Factory 4.0 demonstration test beds (living labs) that are usable by local manufacturing companies.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>		
<b>Indicators to be achieved</b>	Local businesses : CIDRA partnerships established		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Cost Estimate 1,000,000</td> <td style="width: 50%;">Potential Funding Source: Regional (NI) Government</td> </tr> </table>	Cost Estimate 1,000,000	Potential Funding Source: Regional (NI) Government
Cost Estimate 1,000,000	Potential Funding Source: Regional (NI) Government		
<b>Organisation in charge of delivery</b>	Ulster University		

<b>Activity 4.1.6: Digital Creative Hub</b>		
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Establish a creative digital hub that will incubate creative start-ups and projects, transfer technology from Ulster University's digital research groups and provide a living lab environment. This will grow the number of jobs, companies and start-ups in the sector based on developing new processes, products and services that use new visualisation technologies in broadcasting, digital publishing, music, games development and animation/film companies.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>	
<b>Indicators to be achieved</b>	<ul style="list-style-type: none"> <li>• Digital Creative Hub created</li> <li>• Number of start-ups/projects established</li> </ul>	
<b>Estimated cost and source of funding</b>	Cost Estimate 2,000,000	Potential Funding Source: National Government
<b>Organisation in charge of delivery</b>	North West Regional College	

<b>Activity 4.1.7: Tech Investment Proposition</b>		
<b>Link to operational objective</b>	Operational Objective 4: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Design and implement a tech inward investment marketing plan that will increase the number of tech companies, tech jobs and higher value opportunities attracted to the city.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>	
<b>Indicators to be achieved</b>	Updated Inward Tech Investment Plan designed, published and implemented	
<b>Estimated cost and source of funding</b>	Cost Estimate 50,000	Potential Funding Source: Council
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 4.1.8: Multi-National Innovation Needs</b>		
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Respond to the changing workplace organisation patterns and research, innovation and entrepreneurship needs of large ICT companies through a structured time-limited programme of engagement with the large ICT sector in the city.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 12 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>	
<b>Indicators to be achieved</b>	Report on Changing Workplace and Workforce needs published with recommendations	
<b>Estimated cost and source of funding</b>	Cost Estimate 30,000	Potential Funding Source: Council
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

<b>Activity 4.1.9: Establish Future Clinic Test-Bed</b>			
<b>Link to operational objective</b>	Operational Objective 4.1: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches		
<b>Description</b>	Develop a future-clinic test bed for start-ups, inward investors, clinicians and researchers to collaborate in the development of key clinical digital technologies that combine genomics, personalised medicine and health analytics to increase the number of spinouts and life science companies in the city.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>		
<b>Indicators to be achieved</b>	<ul style="list-style-type: none"> <li>• Number of spin-out companies created</li> <li>• Number of additional commercial projects attracted to the city</li> </ul>		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate 1,000,000</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: Regional (NI) Government</td> </tr> </table>	Cost Estimate 1,000,000	Potential Funding Source: Regional (NI) Government
Cost Estimate 1,000,000	Potential Funding Source: Regional (NI) Government		
<b>Organisation in charge of delivery</b>	Ulster University		

<b>Activity 4.1.10: Establish Visitor Attraction Test-Bed</b>		
<b>Link to operational objective</b>	Operational Objective 4: Create a digital innovation ecosystem that can generate new jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches	
<b>Description</b>	Establish an enterprise research team in the NWRC/UU Innovation Enabler Centre to develop a competitive advantage for the tourism sector by developing new augmented visitor attractions and festival experiences that leverage the city's rich history and built environment.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>	
<b>Indicators to be achieved</b>	Number of new visitor attractions identified/planned/initiated	
<b>Estimated cost and source of funding</b>	Cost Estimate 1,500,000	Potential Funding Source: Regional (NI) Government
<b>Organisation in charge of delivery</b>	North West Regional College (NWRC)	

<b>Activity 5.1.1: Innovative City Planning</b>			
<b>Link to operational objective</b>	Operational Objective 5.1: Adopt smart city approaches as the basis for innovation in key economic sectors and improved public service provision		
<b>Description</b>	Develop, incorporate and implement new planning policies, standards, and visualisation systems (e.g. BIM and GIS) that promote the incorporation of smart building precepts into new developments and zones; accelerating Derry’s transition to a smart city undergoing digital transformation.		
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 24 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>		
<b>Indicators to be achieved</b>	BIM/GIS incorporated in city planning		
<b>Estimated cost and source of funding</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Cost Estimate 500,000</td> <td style="width: 50%; padding: 5px;">Potential Funding Source: National Government</td> </tr> </table>	Cost Estimate 500,000	Potential Funding Source: National Government
Cost Estimate 500,000	Potential Funding Source: National Government		
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)		

<b>Activity 5.1.2: Smart Energy Grid Pilot</b>		
<b>Link to operational objective</b>	Operational Objective 5: Adopt smart city approaches as the basis for innovation in key economic sectors and improved public service provision	
<b>Description</b>	Build on the city's experience in using ICT to improve energy efficiency, non-carbon sources and smart grid pilots to deploy a smart energy demonstration pilot in the city combining IoT, AI, etc. and accelerating the transition to a carbon-neutral city.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 36 months</li> <li>• Estimated start date of implementation: 2019</li> </ul>	
<b>Indicators to be achieved</b>	Smart Energy Grid Pilot	
<b>Estimated cost and source of funding</b>	Cost Estimate 1,250,000	Potential Funding Source: INTERREG NPA and Regional (NI) Government
<b>Organisation in charge of delivery</b>	Derry City and Strabane District Council (DCSDC)	

Activity 5.1.3: Mobility As A Service Pilot		
<b>Link to operational objective</b>	Operational Objective 5: Adopt a smart city approach, including smart urban planning and smart energy, as a key platform for future public service	
<b>Description</b>	Develop a Mobility as a Service pilot project that can attract further public and private sector investment in reducing vehicle traffic, congestion and carbon levels while improving transport experience for citizens.	
<b>Timeframe</b>	<ul style="list-style-type: none"> <li>• Implementation Duration: 18 months</li> <li>• Estimated start date of implementation: 2020</li> </ul>	
<b>Indicators to be achieved</b>	Mobility-as-a-Service Pilot created, and partnerships established	
<b>Estimated cost and source of funding</b>	Cost Estimate 1,500,000	Potential Funding Source: Regional (NI) Government
<b>Organisation in charge of delivery</b>	Council	

## Appendix II: Performance assessment framework

### 1. Strategy outcomes

	Expected result	Monitoring indicator	Baseline	Target	Timeframe	Means of verification
<b>Ambition statement 1</b>	An evolving digital skills environment, delivering the talent pipeline needed by employers through multiple education and training pathways, and generating a creative, innovative, entrepreneurial workforce	<b>Monitoring indicator 1:</b> Increase in number of citizens working in digital or technology roles	<b>Baseline:</b> Number of employees in digital companies [1885]	<b>Target:</b> Increase by 25%	<b>Timeframe:</b> 5 years	<b>Verification:</b> Northern Ireland Statistics and Research Agency (NISRA)
<b>Ambition statement 2</b>	A *4.0 expert city, producing and applying Industry 4.0 digital research and innovation in our key sectors	<b>Monitoring indicator 2:</b> Number of spin-out companies or industry projects resulting from research efforts	<b>Baseline:</b> Spin-outs resulting from research projects	10 spin-outs	<b>Timeframe:</b> 5 years	<b>Verification:</b> Ulster University and North West Regional College
<b>Ambition statement 3</b>	An infrastructure that supports visualisation technologies, artificial intelligence and analytics, research, testing and innovation in	<b>Monitoring indicator 3:</b> Increased use of VAR, AI, cognitive	<b>Baseline:</b> Need to survey companies for current use of	<b>Target:</b> Increase by 10%	<b>Timeframe:</b> 5 years	<b>Verification:</b> Survey of companies by DCSDC

DIGITAL CITIES CHALLENGE – Digital Transformation Strategy

	Expected result	Monitoring indicator	Baseline	Target	Timeframe	Means of verification
	creative and non-creative digital companies	analytics in existing and newly created creative and non-creative companies	visualisation technologies			
<b>Ambition statement 4</b>	A dynamic innovative ecosystem, with the technology, digital skills and support structure needed to drive indigenous business growth while attracting visitors, talent and new FDI to the city~region	Monitoring indicator 4: Increased numbers of digital (creative and non-creative) companies in the city	<b>Baseline:</b> Number of digital companies [85]	<b>Target:</b> Increase by 20%	<b>Timeframe:</b> 5 years	<b>Verification:</b> Northern Ireland Statistics and Research Agency (NISRA)
<b>Ambition statement 5</b>	An inclusive, transparent and sustainable service-driven smart city environment, using technology and data to support and improve the lives of citizens and businesses	Monitoring indicator 5: Smart city tools or initiatives active in the city	<b>Baseline:</b> Smart city initiatives [0]	<b>Target:</b> Establish 3 smart city initiatives	<b>Timeframe:</b> 5 years	<b>Verification:</b> Derry City and Strabane District Council (DCSDC)

## 2. Strategy intermediate outcomes

	Expected result	Monitoring indicator	Baseline	Target	Timeframe	Means of verification
<b>Operational objective 1.1</b>	Produce, attract and retain sufficient numbers of employees with the digital skills needed by enterprises in the key sectors	Monitoring indicator 1.1.1: Number of city-based ICT graduates employed in the city [5870 graduates over last 5 years; # employed in city not available]	<b>Baseline:</b> Establish number of ICT graduates from UU/NWRC per year and initiate project to track graduates	<b>Target:</b> Increase by 20%	<b>Timeframe:</b> 4 years	<b>Verification:</b> Ulster University and North West Regional College
<b>Operational objective 2.1</b>	Increase digital research capacity in which the city has a relative advantage, while focusing on the needs of the city's key sectors	Monitoring indicator 2.1.1: Number of PhD programme places across key research sectors	<b>Baseline:</b> Number of PhD candidates	<b>Target:</b> Increase by 10%	<b>Timeframe:</b> 3 years	<b>Verification:</b> Ulster University, C-TRIC, CIDRA, CARL
<b>Operational objective 3.1</b>	Focus digital infrastructure investment in the areas and technologies needed to support smart city, test-bed and innovation hub actions.	Monitoring indicator 3.1.1: Increased uptake of highspeed broadband by SMEs	<b>Baseline:</b> Number of small businesses with fibre-to-the-premises (need data from telcos – or survey businesses)	<b>Target:</b> Increase by 25%	<b>Timeframe:</b> 3 years	<b>Verification:</b> Telcos or survey conducted by DCSDC
<b>Operational objective 4.1</b>	Create a digital innovation ecosystem that can generate new	Monitoring indicator 4.1.1: Number of digital companies in the city	<b>Baseline:</b> Number of digital	<b>Target:</b> Increase by 25%	<b>Timeframe:</b> 5 years	<b>Verification:</b> Northern Ireland Statistics and

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	Expected result	Monitoring indicator	Baseline	Target	Timeframe	Means of verification
	jobs, enterprise and investment based on the latest innovation and entrepreneurial approaches		companies in the city [85]			Research Agency (NISRA)
<b>Operational objective 5.1</b>	Adopt smart city approaches as the basis for innovation in key economic sectors and improved public service provision	Monitoring indicator 5.1.1: Smart city public services in place and actively used by citizens	<b>Baseline:</b> Citizens using internet to interact with public authority [55% Northern Ireland average]	<b>Target:</b> 75%	<b>Timeframe:</b> 5 years	<b>Verification:</b> DCSDC monitoring of online interactions with citizens

### 3. Strategy outputs

	Expected result	Monitoring indicator	Target	Timeframe	Means of verification
<b>Activity 1.1.1: Digital Skills Action Plan</b>	Collaboration between council, business and IT education providers to: (a) Monitor future skills needs; (b) Implement Key Sector skills actions; (c) Lobby for changes needed in 1st & 2nd level re. STEAM & promoting entrepreneurship; (d) Promote involvement of females in IT; (e) Promote projects encouraging flexible pathways, access to digital skills for all...	Monitoring indicator: 1.1.1.1	Future Skills Group established	December 2019	DCSDC reporting
		Monitoring indicator: 1.1.1.2	Future Skills Needs Report	March 2020	DCSDC reporting
		Monitoring indicator: 1.1.1.3	STEAM Programme developed	January 2021	DCSDC reporting
		Monitoring indicator: 1.1.1.4	Female-focused IT Programme created	July 2022	DCSDC reporting
		Monitoring indicator: 1.1.1.5	Flexible Pathway to IT Skills Report	December 2022	DCSDC reporting
<b>Activity 1.1.2: Industry 4.0 Skills Supply</b>	Improve the supply of the digital skills needed by the Advanced Manufacturing & Engineering Sector.	Monitoring indicator: 1.1.2.1	Industry 4.0 Course and Apprenticeship announcements	July 2021	Ulster University and North West Regional College
<b>Activity 1.1.3: Digital and Creative Sector Skills Supply</b>	Collaboration between the creative digital sector in the city, Council, 3rd level and the training community to	Monitoring indicator: 1.1.3.1	Creative Sector Digital Skills Supply Action Plan	July 2020	DCSDC reporting

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
	develop and implement a skills supply action.				
<b>Activity 1.1.4: ICT/FinTech Sector Skills Supply</b>	Collaborative approach between the ICT enterprises, 3rd level, city council to fund new skills courses based on the principles of multiple pathways, flexible learning, public/private funding, mixed delivery, etc.	Monitoring indicator: 1.1.4.1	ICT/FinTech courses funded	September 2022	Ulster University, North West Regional College, DCSDC reporting
<b>Activity 1.1.5: Next Generation Medicine</b>	Establish a General Practitioner (GP) Graduate Entry Medical School in the Ulster University Magee campus in the city, emphasising the use of digital technology in personalised patient care and training in the latest medical technologies.	Monitoring indicator: 1.1.5.1	Medical School announcement	September 2023	Ulster University
<b>Activity 2.1.1: Increase Industry 4.0 Research Capacity</b>	Increase the level of local industry-relevant research in advanced manufacturing (Industry 4.0) in the city and supply of PhD opportunities in CIDRA (Centre for Industry	Monitoring indicator: 2.1.1.1	PhD programmes announced	September 2023	Ulster University

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
	Digitalisation, Robotics and Automation).				
<b>Activity 2.1.2: Increase Life and Health Science Research Capacity</b>	Increase the number and quality of research projects in life science areas of personalised, stratified and translational medicine, genome sequencing, imaging, etc.	Monitoring indicator: 2.1.2.1	PhD programmes announced	September 2023	Ulster University
<b>Activity 2.1.3: Increase AI/VAR and Tourism Research Capacity</b>	Increase the level of research projects in the application of Artificial Intelligence and visualisation technologies to the tourism and culture sector, particularly in relation to the sector's needs and challenges.	Monitoring indicator: 2.1.3.1	Tourism-related projects initiated	September 2023	Ulster University and CARL
<b>Activity 3.1.1: Gigabit Broadband Access</b>	Address gaps in highspeed broadband across the city and region, stimulate commercial investment in networks, make sustainable commercial deployments available.	Monitoring indicator: 3.1.1.1	Fibre run to identified public buildings and enterprise park	December 2021	DCSDC

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
<b>Activity 3.1.2: IoT Network Coverage</b>	Deploy NB-LTE/Sigfox/LORA networks throughout the city.	Monitoring indicator: 3.1.2.1	Network deployed within defined radius of city centre	June 2021	DCSDC
<b>Activity 3.1.3: 5G-Ready Mobile Deployment</b>	Early deployment of 5G mobile networks in priority test bed locations in the city; using LTE and Wi-Fi to support location aware service innovation and support innovation proposals	Monitoring indicator: 3.1.3.1	5G Mobile available in identified test-bed locations	December 2021	DCSDC
<b>Activity 3.1.4: Rural Broadband</b>	Provide High Speed Broadband (HSB) coverage in rural areas surrounding the city	Monitoring indicator: 3.1.4.1	Highspeed broadband accessible in identified rural locations	June 2021	DCSDC
<b>Activity 3.1.5: Increase Small Business Uptake</b>	Increase the percentage of small businesses installing fibre to the premises by promoting the Digital Connectivity Fund/National Gigabit Voucher schemes	Monitoring indicator: 3.1.5.1	50 small businesses with fibre-to-the-premises installed	June 2021	DCSDC
<b>Activity 4.1.1: Promote Innovation Hubs and Tech Parks</b>	Design and implement a communications campaign, including an integrated online directory of all innovation services, target users, how to	Monitoring indicator: 4.1.1.1	Communications Plan implemented	December 2020	DCSDC

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
	access them, etc.; promoting development of an interactive innovation community				
<b>Activity 4.1.2: Digital Transformation of SMEs (BIG Pilot Project)</b>	Implement the Business Innovation and Growth (BIG) Programme, including promotion and communication of the existing supports available for enterprises (training, consultancy, audits, innovation vouchers, signposting, gateway to services, etc.)	Monitoring indicator: 4.1.2.1	BIG Programme implemented	December 2022	DCSDC
		Monitoring indicator: 4.1.2.2	Recruit 340 businesses to participate	September 2022	DCSDC
		Monitoring indicator: 4.1.2.3	Produce 340 Digital Transformation Action Plans for SMEs	September 2022	DCSDC
		Monitoring indicator: 4.1.2.3	Deliver 1190 mentoring days to 340 businesses	September 2022	DCSDC
<b>Activity 4.1.3: Open City Data Action Plan</b>	Develop and implement a comprehensive open data action plan encompassing data protection and security, collection, quality, access, use, innovation and entrepreneurship.	Monitoring indicator: 4.1.3.1	Open City Data Plan published	December 2020	DCSDC
		Monitoring indicator: 4.1.3.2	Open City Datasets in use	June 2021	DCSDC

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
<b>Activity 4.1.4: Digital Enterprise Innovation Programme</b>	Design and implement a structured innovation programme based on clustering, technology transfer from the city's digital research groups and demand development in the city's key sectors in order to create more jobs and new ventures	Monitoring indicator: 4.1.4.1	Innovation Programme established	June 2021	DCSDC
<b>Activity 4.1.5: Establish Industry 4.0 Test-Beds</b>	Equip and refocus CIDRA to work with local manufacturing businesses to create relevant Factory 4.0 demonstration test-beds (living labs) that are usable by local manufacturing companies.	Monitoring indicator: 4.1.5.1	Local business : CIDRA partnerships established	December 2022	DCSDC
<b>Activity 4.1.6: Establish Digital Creative Hub</b>	Establish a creative digital hub that will incubate creative start-ups and projects, transfer technology from Ulster University's digital research groups and provide a living lab environment.	Monitoring indicator: 4.1.6.1	Creative Digital Hub established	December 2022	DCSDC
<b>Activity 4.1.7: Tech Investment Proposition</b>	Update, design and implement a technology-based inward investment marketing plan that will	Monitoring indicator: 4.1.7.1	Updated Tech Investment Plan	June 2021	DCSDC

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
	increase the number of tech companies, tech jobs and higher value opportunities attracted to the city.				
<b>Activity 4.1.8: Multi-national Innovation Needs</b>	Respond to the changing workplace organisation patterns and research, innovation and entrepreneurship needs of large ICT companies through a structured time-limited programme of engagement with the large ICT sector	Monitoring indicator: 4.1.8.1	Changing Workplace/ Workforce Needs Report	December 2020	DCSDC
<b>Activity 4.1.9: Establish Future Clinic Test-Bed</b>	Develop a future-clinic test bed for start-ups, inward investors, clinicians and researchers to collaborate in the development of key clinical digital technologies to increase the number of spin-outs and life science companies in the city.	Monitoring indicator: 4.1.9.1	Spin-out businesses generated	December 2023	DCSDC
		Monitoring indicator: 4.1.9.2	Additional commercial projects attracted to the city	December 2023	DCSDC
<b>Activity 4.1.10: Establish Visitor Attraction Test-Bed</b>	Establish enterprise research team in the NWRC/UU Innovation Enabler Centre to develop a competitive advantage for the tourism	Monitoring indicator: 4.1.10.1	New visitor attractions planned and executed	December 2023	DCSDC

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
	sector by creating new augmented visitor attractions and festival experiences that leverage the city's rich history and built environment.				
<b>Activity 5.1.1: Innovative City Planning</b>	Develop, incorporate and implement new planning policies, standards and visualisation systems that promote the incorporation of smart building precepts into new developments and zones; accelerating Derry's transition to a smart city undergoing digital transformation.	Monitoring indicator: 5.1.1.1	BIM/GIS (or equivalent) incorporated into city planning	June 2021	DCSDC
<b>Activity 5.1.2: Smart Energy Grid Pilot Project</b>	Build on the city's experience in using ICT to improve energy efficiency, non-carbon sources and smart grid pilots to deploy a smart energy demonstration pilot in the city, combining IoT, AI, etc. and accelerating the transition to a carbon neutral city.	Monitoring indicator: 5.1.2.1	Smart Energy Grid Pilot project completed	December 2022	DCSDC

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	<b>Expected result</b>	<b>Monitoring indicator</b>	<b>Target</b>	<b>Timeframe</b>	<b>Means of verification</b>
<b>Activity 5.1.3: Mobility as a Service Pilot Project</b>	Develop a Mobility as a Service pilot project that can attract further public and private sector investment in reducing vehicle traffic, congestion and carbon levels while improving transport experience for citizens.	Monitoring indicator: 5.1.3.1	Mobility as a Service Pilot Action Plan created, and partnerships established	December 2022	DCSDC

## Appendix III: Bibliography

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