

Scotland's seven cities working as one to sire a smart eighth

Program using data and digital tech to accelerate and transform the delivery of services and make Smart Cities more attractive, livable and resilient

By **Laura Hall**

AROUND THE WORLD, cities are undergoing a transformation to become “Smart Cities”, but in Scotland, the nation’s seven cities are on that journey together, working as one. There is international agreement that cities which adopt a Smart City approach make public services more effective and efficient and the cities themselves become more attractive to investors – something all cities across the globe are seeking to do.

Through the Scottish Cities Alliance – a collaboration of the seven cities and the Scottish Government, working together to effectively compete on a global stage – the cities have been developing an ambitious series of projects that focus on the themes of data and digital technology via the “Scotland’s 8th City – The Smart City” European Regional Development Fund (ERDF) program.

With an investment of almost \$80 million (£60m) – of which \$33m (£25m) is provided via an ERDF grant – the vision and ambition is to build an agglomeration around and between Scotland’s seven cities – Aberdeen, Dundee, Edinburgh, Glasgow, Inverness, Perth and Stirling – and their infrastructure and talent, creating Scotland’s 8th City – The Smart City, so that these can collectively compete against bigger global centers.

Councillor John Alexander, chairman of the Scottish Cities Alliance, said: “Collaboration is at the heart of everything we do and that collaborative spirit, along with co-production, are key values underpinning the 8th City program, with all seven cities progressing projects that are open, interoperable, scalable and replicable.

“Indeed, the Phase 2 program is looking to scale projects already progressed by certain cities in Phase 1 across other cities. The cities are also committed to knowledge exchange, sharing of experiences and learning, mutual support and sharing of assets.

“We want to put people at the heart of this digital transformation and build the new digital infrastructure around their evolving needs and lifestyles, to make our cities as resilient and future-proofed as they can be.

“More broadly across the Alliance, we have been working with global partners such as Arup and Arcadis

in order to take that message of collaboration and innovation to as wide an audience as we can.”

The 8th City Program, with almost 50 different projects, seeks to enhance Smart City activity by using data and digital technologies to accelerate and transform the delivery of city services and make the cities more attractive, livable and resilient.

Projects are being developed in the following areas:

- Open Data and Data Analytics
- Smart Communities – Mobile Working
- Smart Services – Energy
- Smart Services – Mobility
- Smart Services – Waste
- Smart Services – Public Safety
- Smart Infrastructure – Innovation Labs
- Smart Infrastructure – Intelligent Street Lighting
- Smart Infrastructure – Water Management
- Intelligent Infrastructure/IoT

Michael Matheson, Scottish Government Cabinet Secretary for Transport, Infrastructure and Connectivity, said: “I am proud of the collaborative efforts of Scotland’s cities to deliver ‘Scotland’s 8th City – The Smart City’ program. Through this \$80m investment, Scotland’s seven cities are working collectively to become more attractive, livable and resilient through data and digital technology.

“This forward-thinking approach not only improves the quality of life for our citizens, but ultimately makes our cities more appealing to potential investors, who are increasingly looking at sustainability as a key draw.

“The program supports the Scottish Government’s principal aims for Scotland to remain open, connected and make a positive contribution internationally, and have a globally competitive, entrepreneurial, inclusive and sustainable economy.

“Scotland remains a great place to do business and, with the program delivering smarter, greener and more integrated public services for our citizens, we are building the foundations to support investment in our economy.”

Councillor Alexander believes Smart Cities will improve all aspects of city life. He continued: “It makes sense, at a time when we are experiencing the impact of climate



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change, to ensure our cities are sustainable through more efficient travel and use of energy, cutting waste and in doing so improving the quality of life and cutting emissions, which are essential if we are to remain attractive to the talent and investment we need to continue to thrive. To help achieve this ambition, the Alliance has created one of the only country-wide Smart Cities programs in the world.

“Our program has enabled our seven cities to benefit from having open data platforms to help develop new services efficiently and effectively; sensor-enabled Smart Waste bins to help cities become more resource efficient, improving waste collection strategies and delivering cleaner streets; and intelligent street lighting that will reduce electricity consumption and create connected networks. Working together, the cities are places that will benefit everyone who lives, works and invests in them.

“Creating this smart infrastructure demonstrates our commitment to making the cities more sustainable and we want to see much more sustainable investments.

“Scotland’s cities are also looking

at hydrogen as a fuel, with Aberdeen and Dundee receiving European funding to bring in hydrogen cell-powered buses as Scotland leads the way with the most ambitious carbon reduction targets in the UK.

“And if you take a look at our investment prospectus, www.scottishcities.org.uk/pitchbook, you will see that we are actively seeking investment in green infrastructure including hydrogen refuelling.

“We’re seeing more and more that big investment banks are promoting the fact that sustainable investment can deliver returns with less risk to your money, and it is believed this trend will become the norm globally.

“By harnessing Scotland’s great track record on innovation, we will rise to the challenge to create the most sustainable cities we possibly can, thus creating the grounds for the sustainable investment that we are actively seeking.”

PROJECTS UNDERWAY

● Open Data platforms in Aberdeen, Dundee, Inverness, Perth and Stirling, complementing those already developed by Edinburgh and Glasgow – there is real value in all seven cities

having platforms in place to make data available for use in developing new products and services.

● Glasgow has delivered a Data Analytics project for Phase 1 of the 8th City program (and will extend and enhance this work during Phase 2). This helps to address city challenges by improving the efficiency and effectiveness of service delivery and delivering better outcomes.

● Intelligent Street Lighting (ISL) systems in Aberdeen, Glasgow, and Perth are combining LED lamps with a Central Management System (CMS) supported by wireless communication networks. This ISL infrastructure is significantly reducing electricity consumption and wasted energy (with efficiency savings of 70%) and is creating connected networks – providing consumption data and opportunities for linked assets to support an Internet of Things (IoT) system. The migration of street lighting infrastructure to ISL marks a paradigm shift in city infrastructure. It has potential to transform street lighting columns from being single-purpose nodes that are used to light

streets, to multifunctional connected nodes within a city-wide network that provides a range of digital services.

● Smart Infrastructure – Water Management, scheduled to complete in July 2019, this Glasgow project is pioneering a new digital surface water drainage system to create Europe’s first Smart Canal.

● Smart Communities – Mobile Working: Glasgow and Perth are delivering Phase 1 projects on Mobile Working (with Dundee and Glasgow progressing this as Phase 2 activity). Mobile Working projects aim to maximize the efficiency of staff working in the field by:

- Making better use of technology to create a flexible workforce.
 - Providing the information they need direct to them in the field.
 - Providing real-time information back to the back office system.
- The Glasgow Mobile Working project has delivered eight apps to support environmental and/or social care services (including Core Bulk Uplift, Streetscene Observations, Data Collector apps, Devices for Smart Bins, Transport and Support Services,

and Homecare Overtime), with a further seven apps in development. Outcomes to date include:

- Improved service delivery: Reduced staff travel time; higher productivity, with more capacity to stay working out in the field; increased employee and customer satisfaction; and reduction in customer complaints.
- Improved response times: 90% of Bulk Uplift requests completed within 10 days rather than 28 days; also, the number of requests outstanding has been reduced by 90%, resulting in a 60% reduction in complaints.
- Release Capacity And Resource management: The transport app has released capacity by approximately 20%, providing opportunities to reallocate resources.
- Reduced administration: Reduction in the need to produce and process printed material has led to reduced administrative costs and reduced carbon emission.
- Data accessibility: Data captured via the apps provides service visibility for review, management information, and identification of service improvements.

- Lone worker safety: Improved communications and the ability to identify staff locations (and issue alerts when planned communication is not received) has made 2,700 home carers safer.
- Both Glasgow and Perth have shared information on their approaches to Mobile Working, including hosting show and tell events for wider stakeholders. Glasgow has also produced a Business Engagement Toolkit providing a detailed overview of project processes and development.

- Smart Mobility projects are currently being delivered across a number of Scottish cities, with installation of the Stirling Movement Information Platform completed at the end of 2018. This involves enhancement of Stirling’s journey time monitoring system and expansion of cyclist monitoring, with the addition of pedestrian counters. Inverness is also investing in a range of urban transport monitoring projects, and Dundee is exploring new opportunities for increased use of shared vehicles and low-carbon travel options.

The Dundee ShareMORE project uses digital technology and data to create new Mobility-as-a-Service (MaaS) business models.

MaaS encourages the sharing of mobility assets such as cars, bikes and public transport operations in both a community and corporate fleet setting.

Dundee’s use of a “Living Laboratory” process has informed the procurement of innovative companies, with service designs ready to test in a live environment, as well as the deployment of technology for city parking infrastructure and data to support MaaS sharing operations.

● Smart Waste projects in Dundee, Edinburgh, Glasgow, Inverness, Perth and Stirling are helping cities become more resource efficient, improve waste collection strategies, reduce transport costs (and carbon emissions) via sensor-enabled bins to inform routing and scheduling, and deliver cleaner streets.

See www.scottishcities.org.uk/workstreams/smart-cities for more information about the 8th City program and the Alliance’s wider Smart Cities Scotland workstream.

Glasgow’s story of innovation staying strong in 21st Century

By **Councillor Susan Aitken, Leader of Glasgow City Council**



Across the centuries, Glasgow was known for its pioneering industry and invention. In the 21st Century, our story is again one of innovation. We have become a leader in new economies within digital, science and technology, with a rejuvenated skills and knowledge base unrivalled on these islands and gaining a global reputation.

The 8th City strategic intervention is an ambitious program of collaborative innovation across Scotland’s cities of Aberdeen, Dundee, Edinburgh, Glasgow, Inverness, Perth and Stirling. By working together the seven cities have bought into a vision to make cities more attractive, livable and resilient through data and digital technology.

Glasgow City Council is lead partner for the Scotland’s 8th City – The Smart City program – one of a number of European Regional Development Fund strategic interventions with a focus on innovation and investment in growth and jobs.

We have worked with the other cities to create a wide-ranging and ambitious program of Smart City activity, which includes almost 50 different projects, with a focus on both investment and infrastructure.

The Smart Cities agenda has provided a crucial platform to attract investment, becoming a tool with which to make Scotland more competitive. Glasgow and our partner cities have positioned ourselves at the forefront of the digital revolution, embracing opportunities and confronting challenges.

Earlier in the decade, we launched the Future City Glasgow program, investigating the role that technology, data and connected assets can play in making life in the city smarter, safer and more sustainable. As a result, digital moved off the desk and into everyday, real-time life. Data was no longer limited to telling us about the past and present, but anticipated the future.

Early demonstrations involving intelligent lighting and smart bins helped make our streets safer and cleaner. Data’s move into frontline services such as social care has allowed it to become more preventative, efficient and effective.

A smart economy attracts investment and makes us competitive. Yet remaining so depends upon having safe and healthy towns and cities, places where inclusive growth is prioritized.

Our digital strategy is positioned within the broad context of threat and opportunity, a building block for the Fourth Industrial Revolution. The Smart Cities agenda is pivotal in keeping Glasgow and its partner cities at the forefront of the digital revolution, allowing us to embrace the opportunities and face the challenges.