



# Belfast

**Wireless underpinning sustainability,  
innovation and regional regeneration**

James Noakes  
Belfast City Council

# About me

## Belfast

- City Innovation Broker
- City Innovation Team
  - Team of 7 – based in Belfast City Council
  - Enable transformation especially towards a ‘smarter’ city
- Formerly:
  - Asst Mayor/Cabinet Member, Liverpool City Council
  - University of Liverpool Eco Innovation team
- Background in:
  - Environment/energy consultancy
  - Environmental impact assessment
  - Sustainable transport consultancy
  - Sustainability and climate change
    - research
    - action/implementation

# A City Transformed

# Belfast

Girdwood Community Hub



Titanic Belfast



Belfast Waterfront



Ulster University



# A City Transformed

# Belfast



# A City Transformed

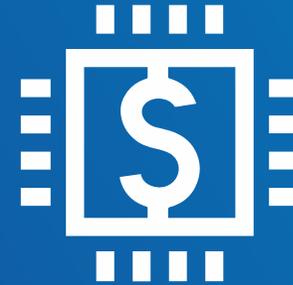
## Belfast



Number one  
city globally for  
financial  
technology  
investment

**CSIT**

Largest centre of  
its kind in UK



Number one city  
globally for  
financial  
technology R&D

**citi**<sup>®</sup>

10% of global  
foreign exchange  
transactions go  
through Citi's  
Belfast operation

# Belfast Agenda

# Belfast

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**66,000**

new residents by  
2035

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**46,000**

more jobs by 2035

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**33%**

reduction in the life  
expectancy gap between  
most and least deprived  
neighbourhoods by 2035

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**100%**

of young people leaving  
school have a destination  
that fulfills their potential

Thank you

# INNOVATION CITY BELFAST



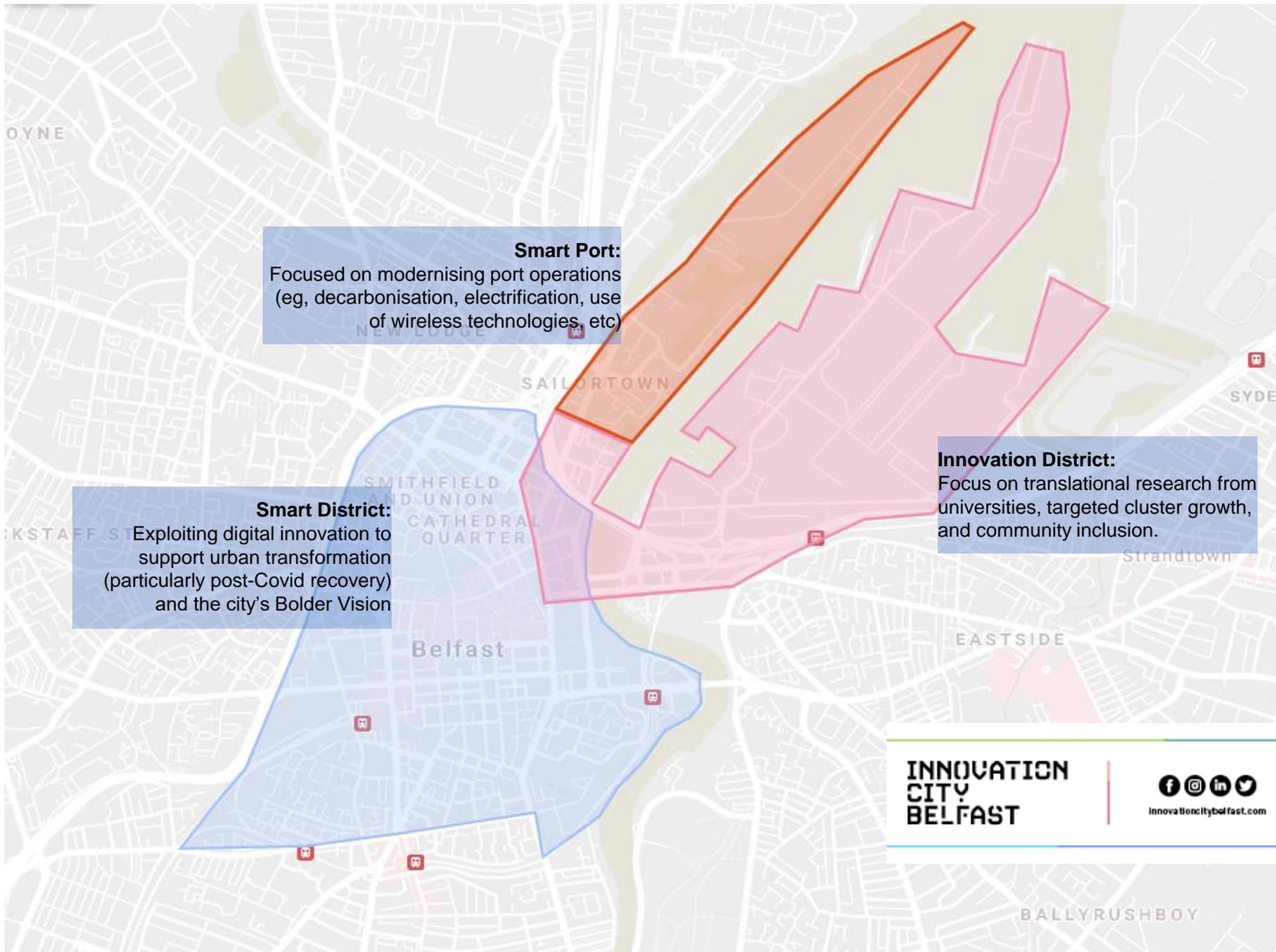
Belfast  
City Council

**Belfast**  
**Harbour**



Invest  
Northern  
Ireland

**Catalyst**



**Smart Port:**  
Focused on modernising port operations  
(eg, decarbonisation, electrification, use  
of wireless technologies, etc)

**Smart District:**  
Exploiting digital innovation to  
support urban transformation  
(particularly post-Covid recovery)  
and the city's Bolder Vision

**Innovation District:**  
Focus on translational research from  
universities, targeted cluster growth,  
and community inclusion.

**INNOVATION  
CITY  
BELFAST**



[innovationcitybelfast.com](http://innovationcitybelfast.com)

# What will be on offer?

**Showcase and red carpet**– All three zones as an international showcase for digitally driven urban innovation. (attracting FDI, talent, funding, projects, etc.)

**Best practice** – Access to national, European and international expertise on urban solutions in energy, mobility, sustainable neighbourhoods, etc.

## **Trialling & Testbed environment**–

Providing an urban environment in which universities and industry can proto-type and trial digital products and services before scaling elsewhere.

**Engaged citizens** – Programme to build understanding & capacity amongst citizens, Members and officers to support co-design of digital solutions.

## Smart District

**Challenge Funding**– Funding to support university, industry and public sector collaboration on city challenges

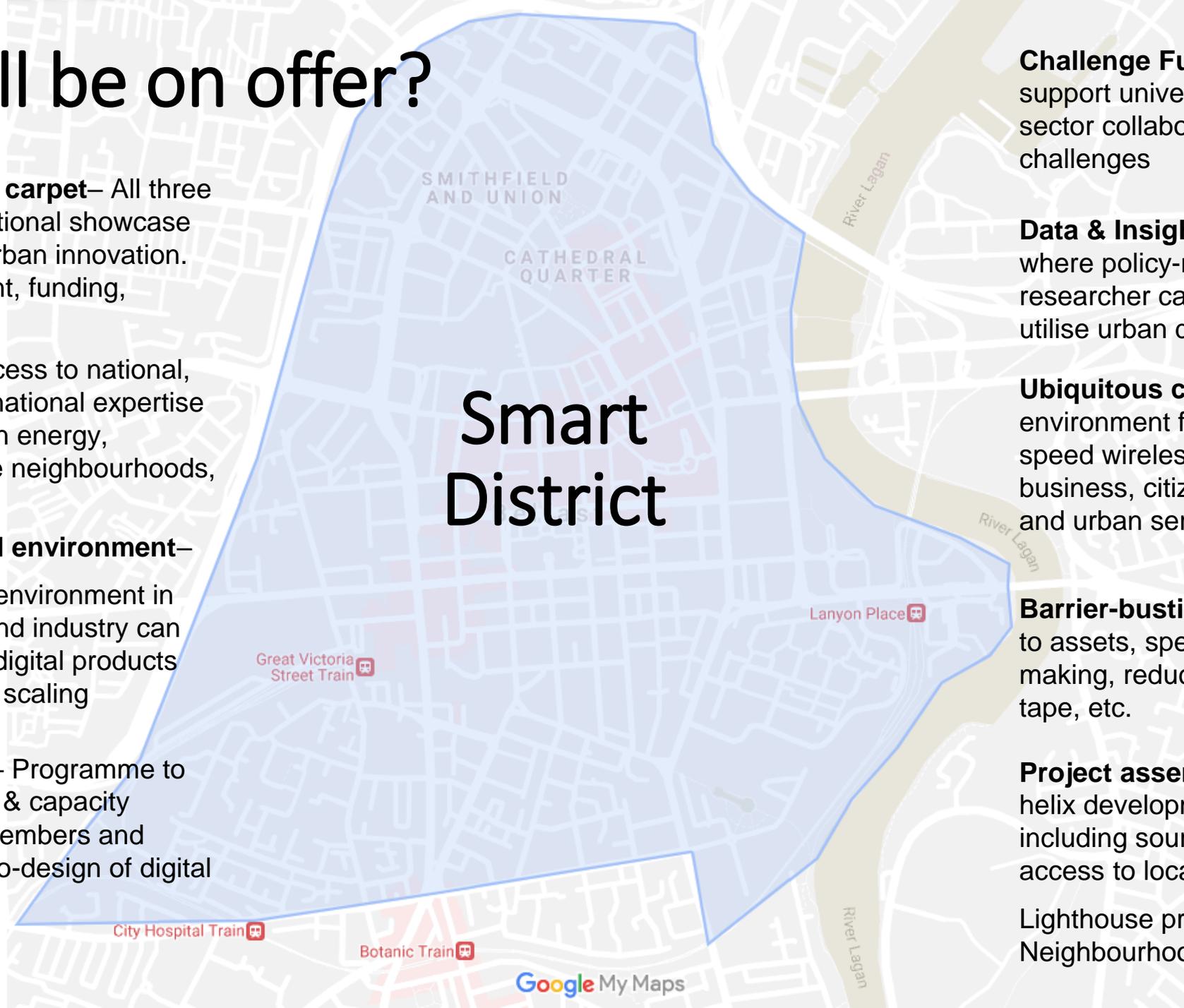
**Data & Insights**– An environment where policy-makers, innovators and researcher can generate, share and utilise urban data.

**Ubiquitous connectivity**– Creating environment for always-on high speed wireless connectivity for business, citizens, research, industry, and urban services.

**Barrier-busting resource** – access to assets, speedy partner decision-making, reduced complexity & red-tape, etc.

**Project assembly**– Supporting triple-helix development of digital projects including sourcing funding, expertise, access to local partners, etc.

Lighthouse projects include; Healthy Neighbourhoods, Net Zero, mobility.



## Innovation roadmap

Five year project portfolio co-designed with industry and public sector on development of the district (with Bable and Fraunhofer FOKUS).

## Hubs of Innovation

£480,000 H2020 project working with communities on the 'maritime mile' to exploit digital innovation opportunities for local entrepreneurship.

## Advanced Wireless infrastructure

Feasibility study to build the case for major investment in wireless in the district.

## Air Quality monitoring

Working with Harbour and European Space Agency to develop new models for air quality monitoring to support transition to zero carbon.

## Luna e-Scooter trial with the Harbour

Developed a joint project with the Harbour to trial e-scooters.

## Smart Healthy Districts

Working with universities, health bodies and developers on connected health environments.

## Access to Finance

€2 million EU project to engage with SME clusters to measure wider impact of public policy programmes. Piloting with Fintech community.

## Belfast Power to X hydrogen

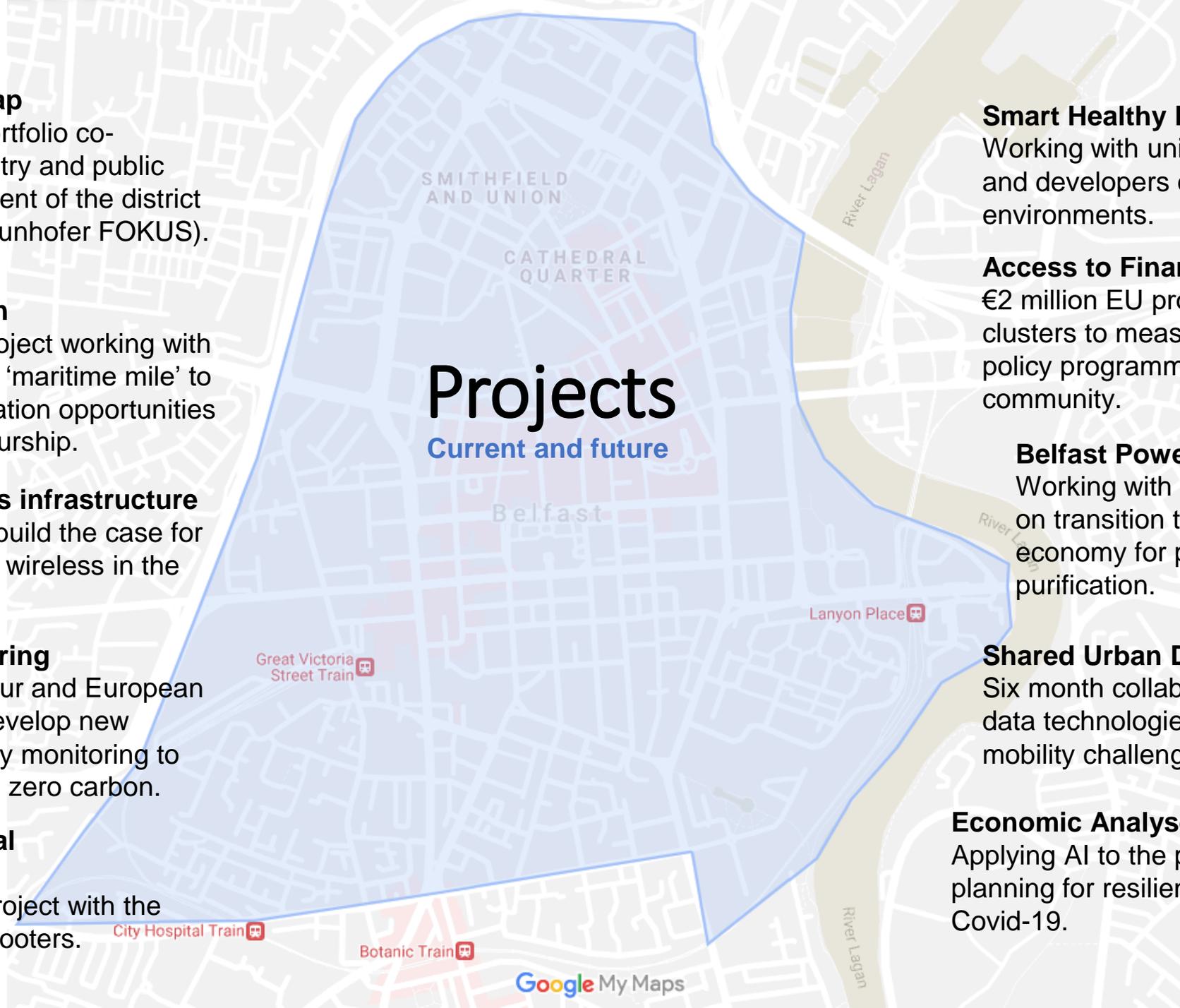
Working with industry, Invest NI, NI Gvt on transition to Hydrogen/solar economy for public transport and water purification.

## Shared Urban Data platform

Six month collaborative with AWS using data technologies to address urban mobility challenges in the city centre.

## Economic Analyser

Applying AI to the problem of local economic planning for resilience and recovery from Covid-19.



# Making it happen

## Key foundational strands of work

### Challenge Funding

Development of a £15 million fund to encourage SME and academia to participate in collaborative innovation to address societal challenges.

### Citizen capacity programme

Adopting 'Living Labs' methodology to build awareness, understanding, and capability to support co-design on digital solutions with residents and stakeholders

### 'Triple helix' environment –

Two years work to shape direction of BDIP (now **Innovation City Belfast**) – as the key leadership group to champion the smart district.

### Advanced Wireless Investment–

£30 million advanced wireless connectivity across the three zones of the district.

### Shared urban data–

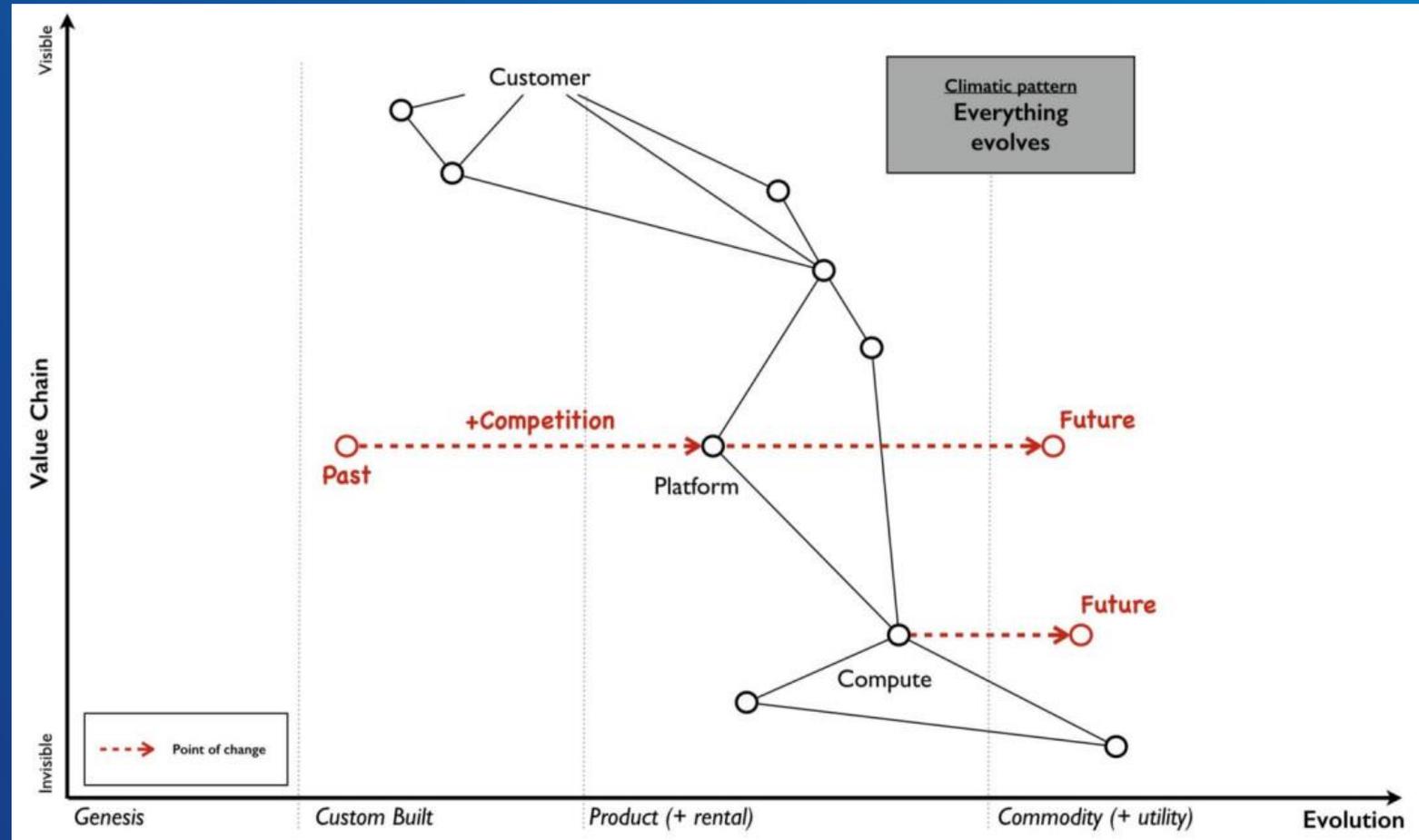
Programme and technologies to support sharing of data on assets, IoT, programmes, sensorisation, etc – to support innovation amongst partners.

Planning a feasibility study for a £5 million shared urban data platform for the city.



# The role of connectivity

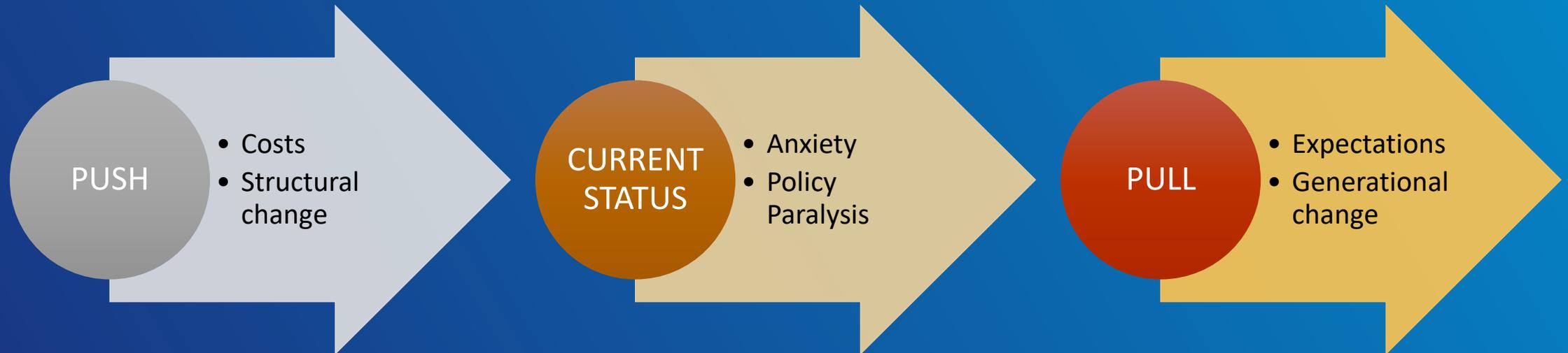
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"Everything evolves" © Simon Wardley

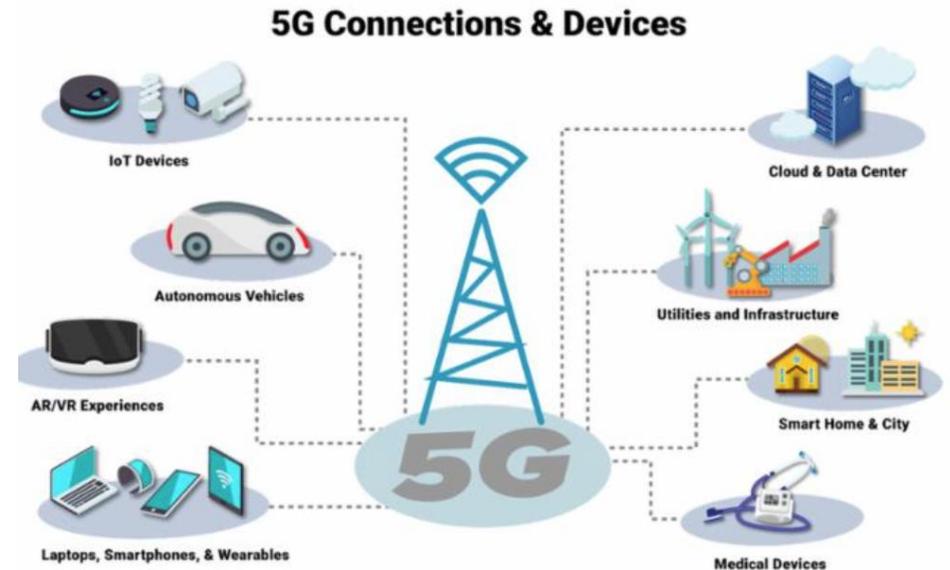
# The push for connectivity

# Belfast



# Creating an advanced wireless environment

- UK Government policy is encouraging cities and regions to innovate on deployment of wireless.
- It is the future strategic infrastructure for the entire city, for industry, and for research institutions
- Belfast's success over the next decade is arguably highly dependent on wireless connectivity.
- Belfast City Council scoping work to:
  - Work with our Planning and Regeneration teams to support planning processes.
  - To determine the ideal NI policy environment to support rapid deployment of advanced wireless.
  - To consider investment models that can place the Belfast region at the cutting edge of wireless innovation and exploitation.
- Next step is a £30 million business case to Belfast Region City Deal.

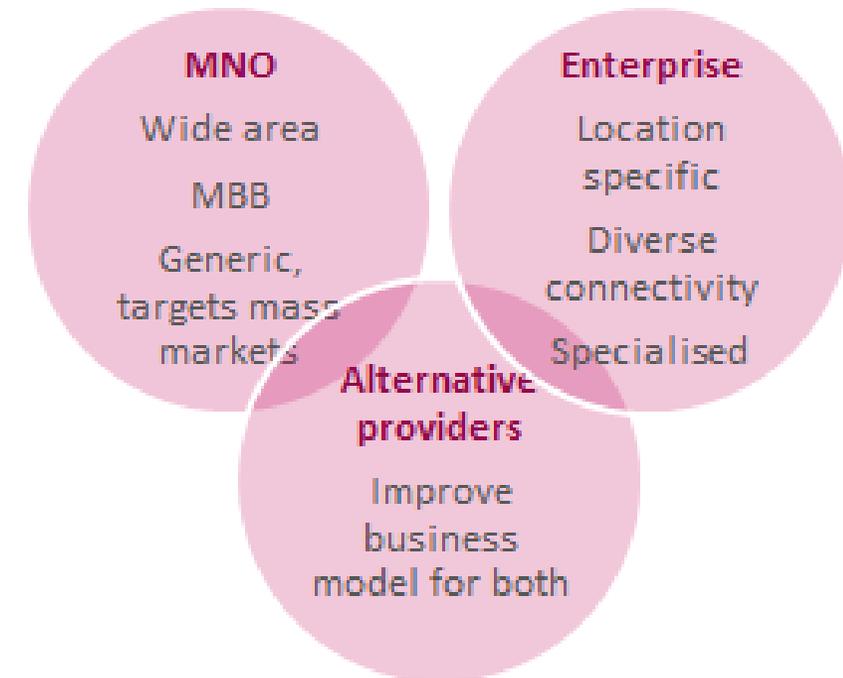
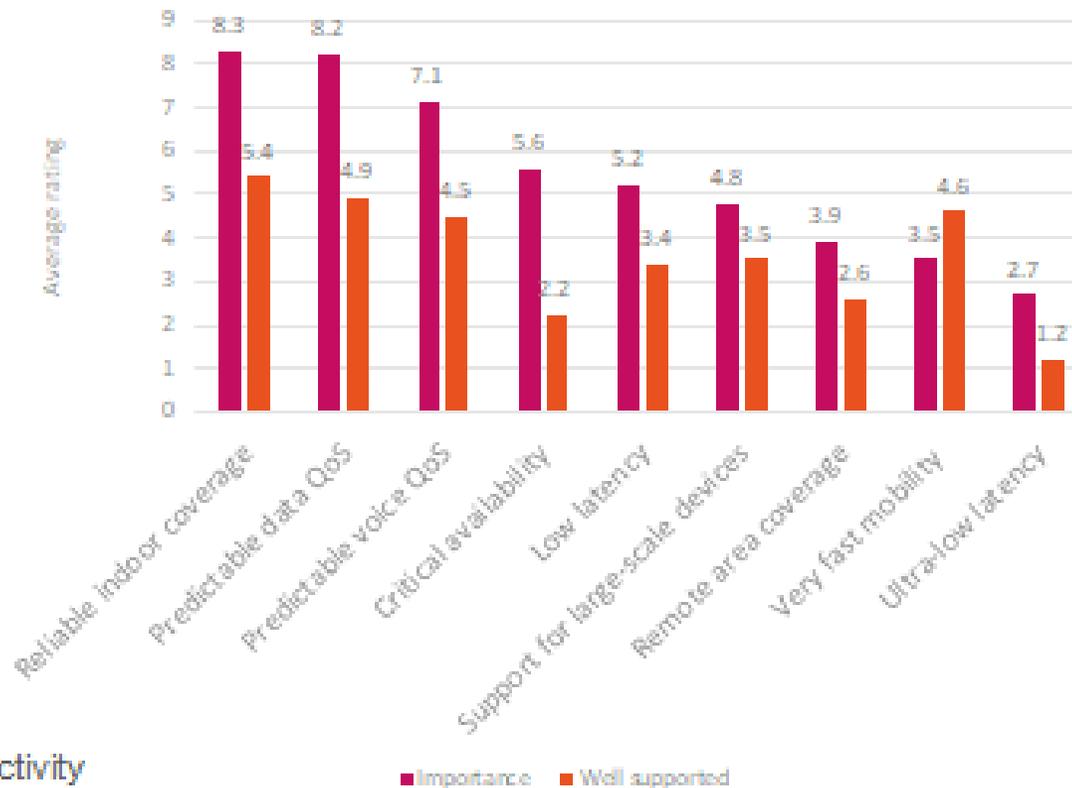


# Businesses acknowledge that connectivity is key but their requirements are not being met

Enterprise levels of satisfaction with current cellular networks are low (*Source: Rethink enterprise survey*)

Top factors when acquiring office space\*:

- Location
- Rent
- **Connectivity**
- Transport
- Amenities
- Relocation costs
- Flexible space
- Environment



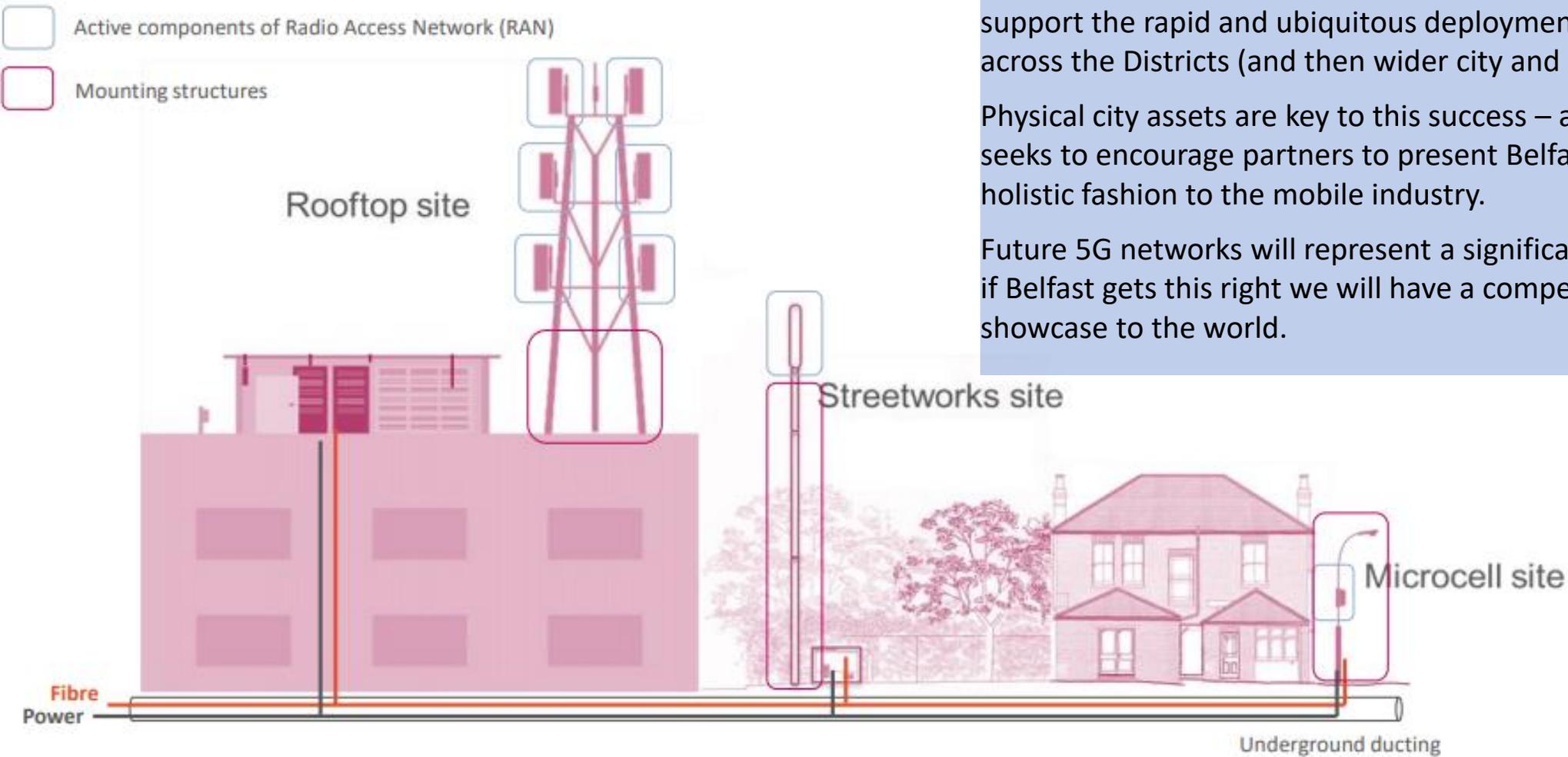
\*Source: Cluttons, "The connectivity commercial impact report", 2019.

# Making it happen

Initial focus is on working with mobile industry, developers, and city partners to create an investment model that can support the rapid and ubiquitous deployment of wireless across the Districts (and then wider city and region).

Physical city assets are key to this success – and our model seeks to encourage partners to present Belfast’s assets in a holistic fashion to the mobile industry.

Future 5G networks will represent a significant challenge – but if Belfast gets this right we will have a competitive offering to showcase to the world.



# Making it happen

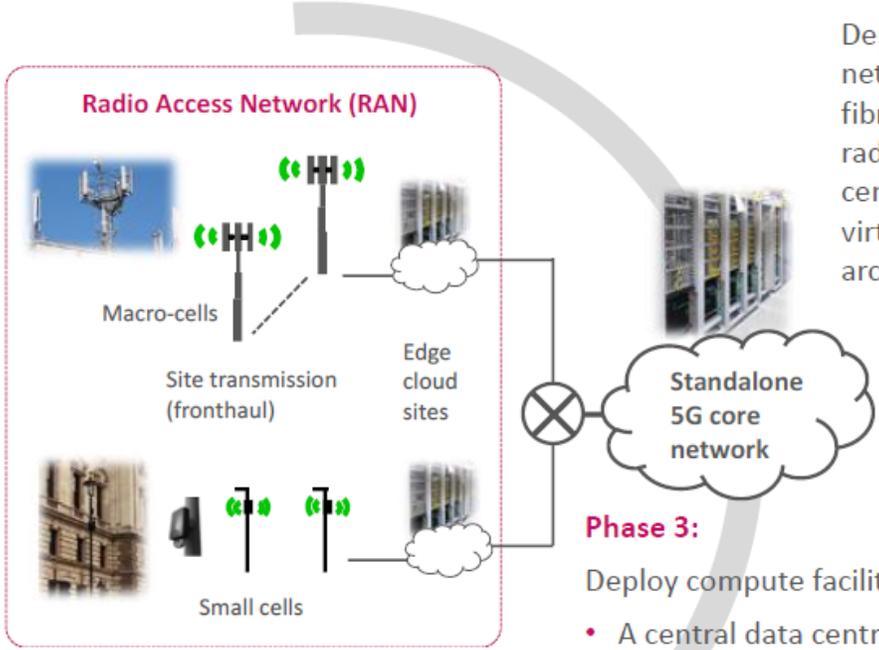
### Phase 1:

Start with "Site-as-a-Service", focusing on existing buildings as rooftop sites:

- Filtering of buildings portfolio, structural assessment and install of basic fixtures,
- Provide power and fibre to all identified rooftop sites.

### Phase 2:

Deploy a transparent, dark fibre, fronthaul network. A transparent and resilient dark fibre network will be needed to connect radio sites via edge cloud sites to a centralised data centre to migrate to a virtualised and flexible 5G network architecture.



### Phase 3:

Deploy compute facilities to virtualise the network:

- A central data centre to facilitate a standalone 5G core network to drive the radio sites. MNOs may connect to their own "off-site" core network but smaller service providers or neutral hosts will likely need this facility.
- Small localized "mobile edge computing (MEC)" facilities for more advanced features of 5G like:
  - Edge computing (low latency)
  - Distributed content.

### Phase 4:

Develop commercial models for and deploy small cell layer, potentially based on "Neutral Host" with small cells supporting multiple MNOs and service provider spectrum.

# Making it happen

# Belfast



# The benefits on the ground

# Belfast

- APPLICATIONS IN:
  - Film industry
  - Gaming
  - Research
  - Cyber Security
  - Fintech
  - Tourism industry
  - Placemaking
  - Social /digital inclusion
  - Service delivery
  - Mobility management
  - Port operations
  - Shipping
  - Health and social care
  - Utility management

...and more!!



# Benefits to the industry

- Addressing the cost of deployment
- Providing equitable access for the industry
- “One stop shop” for infrastructure deployment
- Reducing lead time
- Addressing legislative issues
- Engaging users
- Kickstarting innovative uses

## Belfast



# Belfast



VISIT SMART BELFAST

THANK YOU



JAMES NOAKES DETAILS