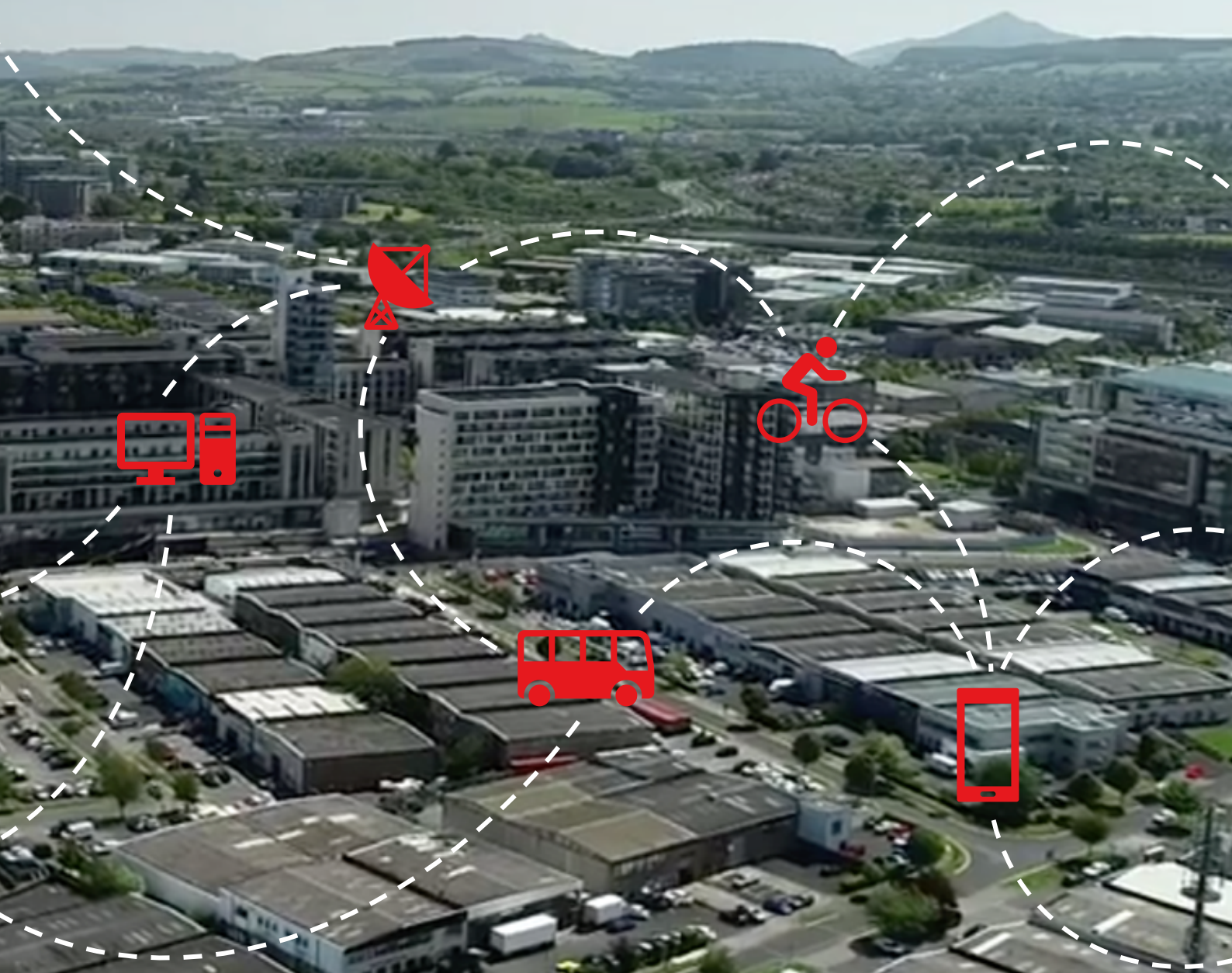


SMART SANDYFORD REVIEW

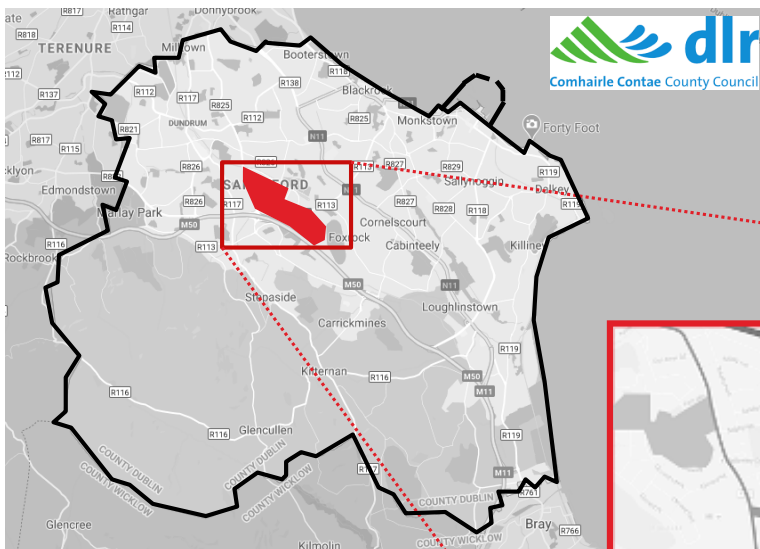
2020



SMART
SANDYFORD
A Smart Dublin District

Contents

INTRODUCTION	3
ABOUT	4
COVID-19	5
MOBILITY PROJECTS	6
RESEARCH DRIVEN	8
SUPPORTING SANDYFORD	10
OUR PARTNERS	13
GET INVOLVED	14



Smart Sandyford District Boundary

Introduction

Welcome to the first edition of the Smart Sandyford annual review, keeping you up to date with the latest activities, events and outputs of the Smart Sandyford smart city research programme. Following our official launch in Microsoft's Sandyford HQ last February, significant highlights from our first year include: the success of our EU Horizon 2020 research submissions **SCORE** and **PRECINCT** (pg9); the announcement of our **cycling infrastructure project** (pg7) with DLR and Enable; and our **accessibility report** (pg6). We are also hopeful of a successful result for a new **Smart Park** in Sandyford being funded following our submission to the Urban Regeneration Development Fund.



While the Smart Sandyford programme is only just coming to the end of its first year, a further two new Smart Districts, 'Smart Balbriggan' and 'Smart D8', have recently been established in Dublin. Where Sandyford primarily focuses on establishing projects related to mobility, Balbriggan and D8 focus on community and health respectively. As these new districts along with Smart

Docklands and Smart DCU continue to grow, we will work together to position Dublin as a more competitive smart region.

We would like to thank all of our collaborators, ENABLE and CONNECT hosted by Trinity College Dublin, Dún Laoghaire-Rathdown County Council (DLR), Smart Dublin, and Sandyford Business Improvement District (BID) for their continued support. We are looking forward to an even busier second year, progressing our research projects and developing smart solutions for Sandyford, Dún Laoghaire-Rathdown, and Dublin in 2021. Looking forward to working with everyone in person at some point this year too!



About

Over 4 billion people live in cities worldwide, a number projected to reach 9.7 billion or 75% of the global population in the next 30 years. Municipal governments, researchers and private-sector businesses are designing 'smart cities' using new technology to improve liveability in urban centres. Smart city programmes can play a vital role in tackling key city challenges such as mass-urbanisation, climate resilience and mobility.

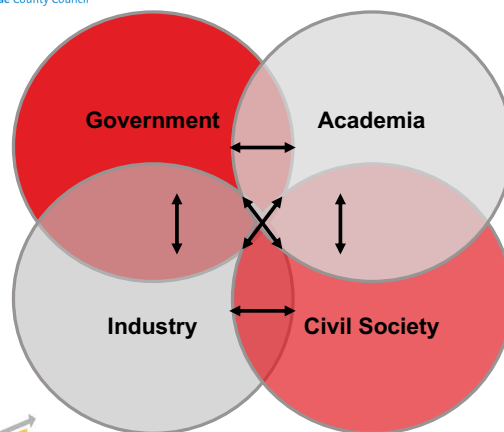
As smart cities develop, the digitalisation of public services at all levels of government has led to the need to test and validate new technologies. Smart Dublin, an initiative of the four Dublin Local Authorities, seeks to address this need by trialling new technology solutions that improve services and quality of life for citizens. This is achieved through the establishment of 'smart districts' - strategically selected locations where innovation projects are fast-tracked. Smart Sandyford has been developed as one of these districts to develop new research initiatives and to trial technology enhanced projects to benefit Sandyford, Dún Laoghaire-Rathdown, and the wider Dublin region.

The Smart Sandyford research programme is a 50:50 funded partnership between Dún Laoghaire-Rathdown County Council and ENABLE hosted by the CONNECT research centre Trinity College Dublin. Our collaborators include local tech businesses through the Sandyford BID and Smart Dublin.

Smart Sandyford is a smart city research programme designed, using the 'quadruple helix' smart district model, to enhance

Sandyford as a 'smart business district' test bed. The programme aims to prioritise the needs of the business community and local residents going beyond simple testing of devices (Technology Readiness Level 6 or 7), to advanced projects that make a real impact including pre-commercial tests, before the Dublin wide deployment of technologies.

Despite the impact of Covid-19, recent workshops highlighted mobility as the primary challenge facing the district along with the need for improved placemaking and addressing climate resilience.



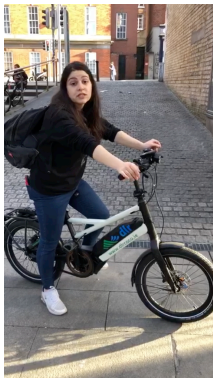
Quadruple Helix Engagement



Covid-19

Smart Sandyford was launched on the 27th of February 2020, with the first case of Covid-19 recorded in Ireland the following day. A number of planned projects were postponed including public a district shuttle bus, stakeholder engagements, an e-bike trial, workshops and smart city networking events. Priorities for the programme were reviewed and activities immediately shifted towards helping with the pandemic response in any way possible.

E-bikes for Frontline Staff



The Sandyford e-bike trial, with mobility company Moby had been planned to launch last Spring. Following the outbreak, the trial was postponed. With public transport restrictions enforced, we worked

with Moby and Bleeper (another bike share company) to deliver their fleets to frontline health workers. Smart

Sandyford worked with Dún Laoghaire Rathdown to include the Council's own bikes and e-bikes in the scheme, and we also worked with Moby and Bleeper to facilitate bike deployment to local hospital and nursing home staff.

Covid-19 Research Network

A global network of researchers led by Professor Louise Comfort, Pittsburgh, USA and Professor Mary Lee Rhodes, Trinity College Dublin, was established to monitor the development of the pandemic in Brazil, Canada, China, Hungary, Ireland, Italy, Japan, Mexico, South Korea, and USA. Comparative case studies for each county demonstrated the spread of the virus across the world and the various response strategies and technologies used. Smart Sandyford hosted online workshops for the network, which allowed for knowledge sharing and research collaboration. As part of our Irish case study interviews were carried out with key decision makers in Dublin to see how local and national decisions were made and how drivers changed over time. Our research will be published in a book as part of a collection of comparative case studies in 2021.



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

PPE shortage



We also collaborated with engineers in the I-Scape research centre based in UCD to deliver much needed PPE to frontline staff during the initial country wide shortage. Here the UCD engineering department reconfigured their 3D printers to produce PPE. Smart Sandyford played a facilitating role to coordinate the delivery of the PPE from UCD to supply chain managers in local hospitals including the Beacon in Sandyford.

Mobility

In the months leading up to the Smart Sandyford launch, consultations were held with stakeholder groups from across the district to identify local challenges to inform our project priorities. While climate change and the need for improved liveability and placemaking were identified as being important challenges, mobility was identified as the key priority for locals. As such, mobility is the primary focus area for our research.

Bus Connects Submission



Working with Dún Laoghaire-Rathdown and Sandyford BID we developed a submission for the second round of public Bus Connects consultations to the NTA. With a growing number of employees and residents in the district, it is critical that transport options are able to meet demand. Our submission made suggestions for enhanced bus routes from Sandyford to the city centre as well as for routes traversing the Dart, N11 and green line Luas transport corridors.

Accessible Parking Analysis Report

We partnered with Access Earth to prototype their ground-breaking, satellite classifier tool to map accessible assets within Sandyford. Following this trial the classifier can now be used to analyse accessible parking for any area in Ireland within minutes of deployment. It is noted that Sandyford and the wider Dublin region is well placed to adopt key aspects of accessibility integration and a path towards improved public accessibility parking. Access Earth is a partner of Smart Dublin and we have identified where the classifier and their other accessibility tools can provide information and insights as needed to help deliver improved accessibility for Dublin and Ireland.

- For more see:
<https://smartdublin.ie/accessible-parking-analysis/>



DLR Cycling Infrastructure Project



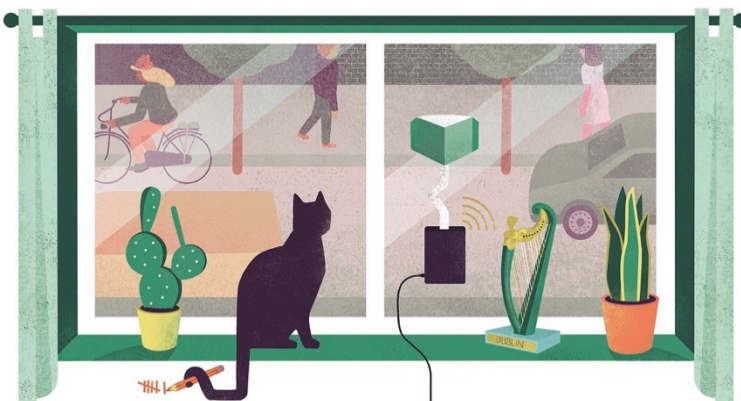
In order to promote active travel, safe infrastructure must first be provided to support citizens in choosing alternative sustainable transport modes. With the recent surge in bike sales and the success of the cycle to work scheme, cyclists need safe and secure bicycle infrastructure to ensure that cycling is supported across the County. The DLR Cycling Infrastructure Research project sets out a programme of research that will analyse existing challenges in DLR and to suggest and test potential solutions using a trial research approach.

LoRa Pilot Testing

Sandyford-based, telecom infrastructure provider, Cellnex have deployed a LoRa based Internet of Things (IoT) network in Sandyford for the trialling of new technologies with Smart Sandyford. To date, we have deployed air quality, and traffic monitoring sensors. In addition, we plan to deploy manhole sensors to analyse the access to fibre connectivity in the district. This network will also allow for companies already trialling their products in the Pervasive Nation test bed to expand their trials to an industrial context.



Traffic Sensors



In collaboration with ENABLE researcher Professor Francesco Pilla and the 'WeCount' project, we are working to analyse mobility patterns using a novel citizen science approach. WeCount aims to empower citizens to take a leading role in collecting data, evidence and knowledge of local mobility patterns. This project aims to

quantify local road transport, produce scientific knowledge in the field of mobility and environmental pollution, and devise informed solutions to tackle various road transport challenges.

To enhance local knowledge of traffic and travel patterns across Dún Laoghaire-Rathdown, local companies and residents in Sandyford are invited to participate in this pan-European and Horizon 2020 project. Participants receive a free sensor they can deploy in the window of their building and help quantify traffic in the locality. Contact Conor for more information: conor.dowling@smartsandyford.ie



Research Driven

This year Smart Sandyford has developed research projects focused on mobility, engagement, sustainability and resilience.

Engagement Research

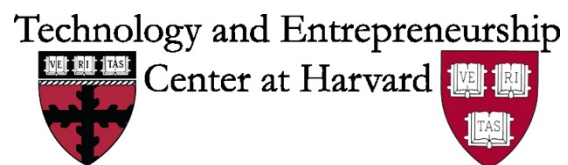


Recognising the importance of engagement in creating smart and sustainable places, Enable researchers Prof. Anna Davies and Dr. Hannah Devine Wright in the Geography Department in Trinity College Dublin are focusing on how engagement is understood and practised

within Smart' urban projects using a novel tool called 'Pattern-IT'. In 2021, they will work with us to invite Smart Sandyford stakeholders and residents to participate in facilitated 'Pattern-IT' workshops and interviews to explore this important issue. Insights from these workshops and interviews will be used to identify and evaluate engagement practices with the goal of supporting effective and meaningful engagement strategies for smart and sustainable places, both in Sandyford, Dublin and beyond.

Harvard Network & Training

In January last year the Smart Dublin district managers attended the CIO Summit and city innovation training course in Harvard bringing insight from leading US city programmes and applying these in the Irish context. Growing from this, the City Innovation Network has been hugely beneficial for sharing insight during Covid-19 and encouraging collaboration with other cities. For more you can listen to our collaboration with one of the network members GovLaunch in this podcast on Spotify:



- 'Dublin's leadership in communication and supporting a culture of innovation'
https://open.spotify.com/episode/7loWLIBqhkXZEArKEPioZF?si=bnSqCYLPSuCb_nEllxVhCA

Muma Case Studies



Matt Mullarkey PhD was a visiting Fulbright Scholar with Smart Dublin last year and worked with the team to publish a Smart Sandyford case study as part of the 'Smart Dublin - Smart City series', you can read these

on the University of South Florida, Muma Business School website.

- For more see: <http://www.mumabusinessreview.org/>

EU Research Proposals

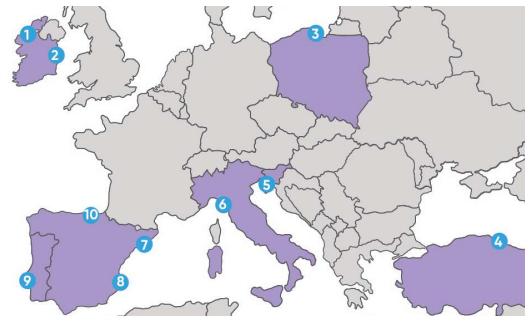
In order to bring best in class cutting edge research from across Europe to Dublin, we have worked with UCD and our international partners to win European Commission Horizon 2020 funding for research projects. With stiff competition, we were fortunate to be awarded funding for two of our EU projects submissions. These multi-million euro projects will see research investment valued at over €220,000 brought to DLR.



In both projects DLR will act as a smart city test bed (living lab) where new technologies will be tested. Research projects ensure novel technologies and approaches are developed and applied in the living labs. DLR, through Smart Sandyford, will be able to share and learn from others to the benefit of all of their stakeholders and citizens.

SCORE

'Smart Control of the Climate Resilience in European Coastal Cities'. The research project offers new frameworks and approaches to managing the County and improving the resilience of the living lab. The ecosystem-based approach, adopted in SCORE will ensure sustainable management, conservation, and restoration of ecosystems that can generate social, economic and social benefits. The project will provide the Council access to cutting edge technologies, including digital twin and flood sensor technologies.



PRECINCT

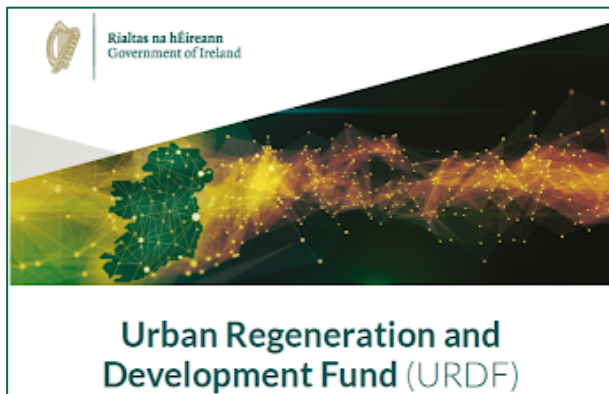
'Preparedness and Resilience Enforcement for Critical Infrastructure Cascading Cyber-Physical Threats'. This project aims to connect private and public infrastructure stakeholders, in this case transport, in Dublin to a common cyber-physical security management approach that will yield a protected territory for citizens and infrastructures. This 'PRECINCT' can then be replicated efficiently in other cities for a safer Europe.

The goal is to supervise and control complex interdependent networks and Cyber Physical Systems of Systems (CPSoS) with distributed ownership and management structures. Such CPSoS include several collaborative computational entities such as sensors and actuators, typically communicating with each other (and with humans) over the Internet of Things (IoT) and security protection technologies.

Supporting Sandyford

An important aspect of each smart district is that the local area benefits from the testing of new technologies and from the research outputs. The Smart Sandyford programme has delivered a number of impactful projects for the Sandyford district.

Smart Park



The Urban Regeneration and Development Fund (URDF) aims to support more compact and sustainable development. Working with DLR we submitted a park proposal for Sandyford; this would see the existing car park on Bracken Road being redeveloped as a new 'smart park' where technologies can be tested in a park setting. This would ensure Sandyford becomes a more attractive and vibrant place in which people

choose to live and work. We are hopeful of receiving proposal results in the coming weeks.

Mobility Research & Planning

In normal times 30,000 employees travel to and work in Sandyford each day creating an environment and opportunity to trial mobility options that require a high density of people and buildings. This makes Sandyford an ideal Smart City test bed. Mobility options for Sandyford are reviewed on an ongoing basis throughout the year with the potential of e-bike, e-scooter, district shuttle bus and private bike scheme options all assessed with input from local stakeholders and shared mobility providers.

Following these extensive reviews the recommended project plans have been shared with local stakeholders. As employees return to work in the office these options can be re-evaluated with the aim of trialling and deploying new services in Sandyford in 2021. Data from our traffic monitoring and air quality sensors will continue to feed into and shape this decision making process.



Innovation Week

The public sector (DLR and Smart Dublin), and Sandyford BID each held innovation week events in October 2020. Presentations were given on the smart district approach as well as the wider smart city activities already underway in Sandyford and across Dublin. Links to these talks are available on the respective partner websites.



- *Smart Districts Innovation Webinar:*
<https://smartdublin.ie/register-now-smart-districts-fast-tracking-innovation-webinar/>
- *Sandyford BID Innovation Week – Smart Sandyford Talk:*
<https://www.sandyford.ie/news-events/event/innovation-week>

Placemaking Plan



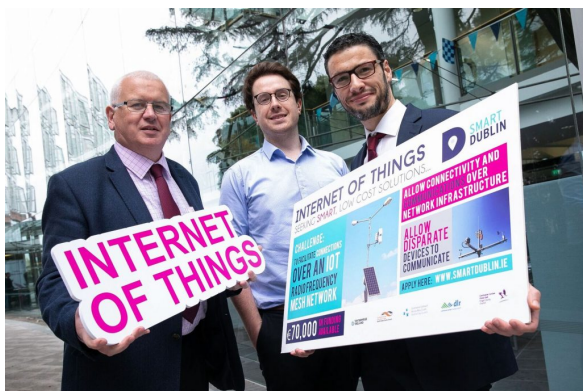
Working with the Sandyford BID on their placemaking development plan, we held workshops with local business stakeholders to identify areas of potential for placemaking activities, infrastructure improvements and community events in the District. Using online interactive mapping through the Miro platform we were able to identify challenges and solutions while working remotely. We also focused on existing challenge areas that should be addressed to enhance the district for residents, employees and other stakeholders.

Dublin Canvas

We were delighted to be involved with the Dublin Canvas team to support local artists 'colour in the city' working with Sandyford BID and Dún Laoghaire-Rathdown. Over the summer five traffic boxes in Sandyford were painted. While not strictly a 'smart' project, these wonderful pieces bring great colour to the District!



IoT SBIR



The Small Business Innovation Research (SBIR) project in DLR aimed to test the IoT network, using a novel 'crack analysis' tool, successfully completed its first phase this year. Following a review of phase one of the project by Smart Sandyford, DLR, Enterprise Ireland and Smart Dublin, two companies, MSemicom and Convex Lens progressed to phase two. The companies are now working on the development and deployment of solutions to test the IoT network in real world use cases in the district.

Economic Monitor

Mastercard moving into One South County and creating 1500 jobs was the biggest good news story in Sandyford this year! Mastercard also work with Smart Dublin to produce the Dublin Economic Monitor which provides detailed quarterly analysis of spending trends across the Dublin region.



<https://www.dublineconomy.ie/>

Webinar Series

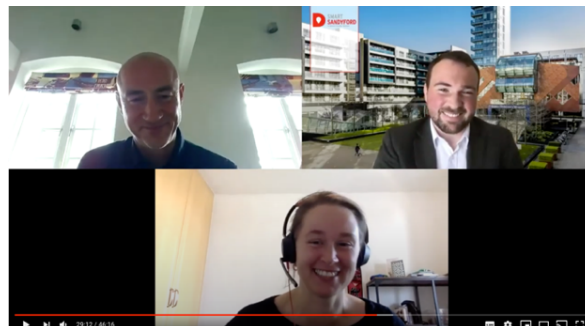
The Smart Sandyford webinar series ran over the summer with talks from industry, government, and research leaders discussing technology and innovation approaches for Smart Cities. The series was a great hit building to our final episode being oversubscribed reaching our max capacity on zoom!



Episodes:

- **Council Response to Covid-19** with Ronan Herron, DLR (May)
- **What are Smart Cities?** With Alan Murphy, Smart Dublin and Ismael Pacheco, Cellnex (June)
- **Accessible Mobility.** With Prof Ivana Dusparic, ENABLE and Matt McCann, Access Earth (July)
- **What does IoT mean for business?** With Will Ferguson, VT IoT and Diarmuid Connolly, CONNECT (August)
- **Sustainable Transport.** With Cllr. Una Power, DLR and Robert Burns, DLR (September)

We would like to thank all of our panellists who contributed their time and expertise to deliver valuable, informed discussions. Links to each of these webinars have been posted on the Smart Dublin website: smartdublin.ie



Our Partners

Smart Sandyford is a partnership between ENABLE through CONNECT Research Centre Trinity College Dublin, Dún-Laoghaire Rathdown County Council, in collaboration with Smart Dublin and the Sandyford Business Improvement District.

Professor Siobhán Clarke, Principal Investigator 
ENABLE, CONNECT, Trinity College Dublin connecting • communities

“Enable researchers are working with DLR to investigate ways to leverage sensor data and communications technologies to address emerging sustainability challenges, while also exploring strategies for engaging citizens.”



Ronan Herron, Digital Strategy Officer 
Dún Laoghaire Rathdown County Council Comhairle Contae County Council

“COVID-19, sustainability challenges, resource constraints and continued urban growth are making a new case for digital investment. It has never been more crucial to make Dublin smarter, more efficient, and sustainable for our citizens.”



Alan Murphy, Regional Manager 
Smart Dublin

“Smart Districts are strategically selected locations across Dublin where technology based innovation projects are fast-tracked. As shown in this review, Smart Sandyford is now helping to build a better, more resilient Dublin.”



Sharron Scally, Chair Person 
Sandyford Business Improvement District

“Expanding digital services in Sandyford is making the district a more attractive place for residents to live and promotes a connected experience for companies and their employees.”



Get Involved

We are looking to expand our network of researchers and companies to research and trial new smart city products and services this year. Innovative technology-enabled solutions and services are sought in particular to address our primary challenge areas of mobility, placemaking, and climate resilience. If you would like to get involved please contact Conor:



Conor Dowling PhD
Smart Sandyford Programme Manager
conor.dowling@smartsandyford.ie



For more on our projects see the Smart Sandyford District page on the newly developed Smart Dublin website: **smartsandyford.ie**

The Smart Dublin Trello board shows all of the ongoing projects from Smart Sandyford and the other Smart Districts across Dublin including Docklands, DCU, Balbriggan and D8: **<https://trello.com/b/188O9azF/smart-dublin-project-board>**

For regular updates follow us on twitter: **[@smartsandyford](https://twitter.com/smartsandyford)**



