Smart, low cost innovative solutions to tackle challenges in the four Dublin Local Authorities
Small Business Innovation Research (SBIR) Ireland is the national innovation pre-commercial procurement initiative administered by Enterprise Ireland. SBIR Ireland’s aim is to drive innovation across all sections of the Irish Public Sector via robust engagement with technology rich companies and organisations, through competitive challenges.

What is SBIR

Small Business Innovation Research (SBIR) is a mechanism which enables public sector bodies to connect with innovative ideas and technology businesses, to provide innovative solutions for specific public sector challenges and needs. SBIR falls under the category of pre-commercial procurement (PCP). PCP as defined by the European Union, involves the purchase of research by a Government entity, which is undertaken with the objective of stimulating innovation that the contracting authority or some other party may benefit from at a later stage, when goods or services are not currently available or developed from the outcomes of the research.

Through SBIR potential suppliers or companies can:

• Compete for each demand driven project in a transparent manner;
• Demonstrate a route to market for their solution (SBIR is particularly suited to small and medium-sized business, as contracts are of relatively low value and operate in short timescales);
• Focus on specific identified needs, increasing the chance of exploitation as developments are 100% funded – it is not a government grant;
• Retain the intellectual property generated from the project (with certain rights of use retained by the contracting department).

Through SBIR, the Public sector is able to:

• Identify innovative solutions by reaching out to organisations from different sectors including small and emerging businesses
• Create new technical solutions through accelerated technology development, whilst risk is reduced through a phased development programme.
• Provide applicants with a transparent, competitive and reliable source of early-stage funding.

SBIR is a competitive programme channelled through an open call to industry prepared and published by Public sector organisations. It is a two-phased development approach commencing with initial feasibility and followed by a final, detailed, product development stage.
The challenges launched last May generated almost 200 expressions of interest and 40 proposals. Of those, 16 have been awarded phase 1 funding of circa 12,500k alongside supports from Smart Dublin to research and demonstrate the viability of their solution. Following this, a number of phase 2 contracts worth 25k-50k each will be awarded to prototype the solutions in the city.

**Dumping**

**CHALLENGE: REDUCE URBAN & RURAL ILLEGAL DUMPING IN THE DUBLIN REGION**

As the capital of Ireland, the Dublin Region is home to over 1.3 million people (City and Suburbs, 2016 Census). While local authorities no longer participate in domestic waste collection; they continue to provide waste and litter management services to the region.

The cost of illegal dumping across the Dublin region is in excess of €1.5million euro each year.

**Flooding**

**CHALLENGE: REDUCING FLOOD RISK**

The aim is to use technology to maximise the use of limited resources by monitoring gullies, especially in high risk areas. Implementing a system that provides real time information during a flood event to provide the local authority an opportunity to deploy resources to the areas that need it most.

**Wayfinding**

**CHALLENGE: GETTING ABOUT IN DUBLIN**

Smart Dublin and the Grangegorman Development Agency are seeking solutions that can:

- Improve wayfinding in a manner that can transition seamlessly between indoor and outdoor environments and allow users to arrive to their destination or appointment on time.
- Enhance the experience of visitors.
- Reduce challenges for the users.
MJB Innovation Ltd.

HorusIOT are developing ‘Sprites’ - intelligent synthetic sensor platforms designed to monitor the flow of rain water through curb-side gullies. The Sprites live underground, dangling from gratings, listening to and feeling the water as it passes by them. Deciding if water is flowing through the gully, if the flow is light or heavy or somewhere in-between. Checking if the water levels inside the gully are rising and if there are unexpected changes over time.

A wireless network of Sigfox-enabled water sensors will relay flood event data in real-time to Carra’s Hubeleon management & monitoring system. Hubeleon will determine and notify the closest, rostered Drainage personnel to attend to specific events, while allowing Operations Centre personnel to have a real-time overview of the response effort and the progress of works. Feeds from Met Eireann and other online meteorological sources will help produce data-rich analysis of flooding events and the response.

Voguetek

Voguetek and Vodafone understand the need for smarter cleaning of gullies to predict and aim to prevent flooding incidents. Combining existing and new proven techniques into a robust solution that will provide key current information to the relevant people. Voguetek is experienced in multiple municipal water related projects of this size providing a simplistic but robust solution.

Blenheim Systems were the first company to introduce Real Time Reporting for Fleet operators using low cost GPRS technology. We apply the same “Real Time” Technology to monitor the condition of Gully’s on Busy motorway sites in England reporting on silt levels, water levels and flood conditions. We are developing a new type of Gully monitor for Dublin City Council simple to install and able to accommodate the frequent cleaning of high risk gullies.

M Semicon designs, develops and supplies customised engineering products, generally including electronic and mechanical subassemblies. Specialising in IoT, lighting, motion control, agritech, RF, audio, sensor, medical device, environmental and renewable energy technologies. mSemicon has developed a small low power electronic device which can be fitted into gullies, and which can detect a rise in water level consistent with imminent flooding. If and when this device detects such a rise, it can send an emergency message out, via radio signals, to city engineers warning them of where it has occurred.

Secure, accurate and timely retrieval of gully water levels is an assured means for any City and Public authority to ensure that it can, in a directed manner, protect citizen’s property and public infrastructure for the common good. Project Gully-Spy delivers an innovative means of integrating low cost water presence and silt level sensors, with the latest Internet of Things connectivity solutions and data analysis platforms to provide the insights at individual gully, street, district and city level so that City Operations can provide the most optimised response to the threat of pluvial or fluvial events.
Illegal Dumping

Analytics Engines

Analytics Engines is designing a new software tool to help tackle illegal dumping in the Dublin region, a problem which costs over €1.5 million each year. Using our data platform, Analytics Engines XDP, we are going to provide the Dublin councils with real-time monitoring information from across the four council areas. Then using inbuilt advanced analytics capabilities, we are applying machine learning and predictive models to aid in tackling this problem, with the aim of highlighting areas that are at risk from illegal dumping. The final part of the solution is to use prescriptive analytics to measure the effectiveness of any action taken to determine its value in preventing this growing problem. Our goal is to enable the Councils to take proactive data driven decisions to enable targeted allocation of resources to help tackle this complex issue.

skytango

Skytango’s daily mapping flights identify and track new dumping sites while a network of sensors around problem areas launches tethered drones, providing Gardai with live video links to aid prosecution. Top that with a media campaign letting the public know the days of illegal dumping are over!

TEC Security

For over 20 years TEC Security have provided turnkey monitoring solutions to Councils throughout Ireland, to combat the effects of illegal dumping. Our leading edge technologies have helped secured over 75,000 direct fines and prosecutions for illegal dumping activities on behalf of our client. We adapt and create new technologies to outsmart the dumper.

CERTIFICATION EUROPE

Certification Europe’s project aims to determine if the establishment of a cloud based, networked CCTV Neighbourhood Watch Scheme can impact the level of illegal dumping in areas that participate in the scheme. The network will utilise both public and private CCTV cameras.

SparroWatch

SparroWatch is developing monitoring and image analysis software to reduce fly-tipping and illegal dumping. Using camera systems integrated with these intelligent algorithms, we will deliver a smart, low cost monitoring system to easily capture, report and prevent illegal activity.

EXCAM

Excuse me, did you drop something? Our automated device reduces opportunistic littering by playing an audio warning when it sees a bag dropped. Utilising advances in low power video analytics, the camera is battery powered for up to 30 days meaning it is low cost, easy to deploy and effective without the costly exercise of prosecution.

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Wayfinding

PerSav looks like a universally designed app but will act as an accessibility layer and wayfinder for all existing popular mapping apps. It will be made available free to users. It accesses available Open Data from the NTA to enable safe optimised transit and may utilise additional functionality and take advantage of emerging technologies like augmented reality and beacons.

Our solution is NFC tag’s embedded in wayfinding signage. When a user taps the sign, their phone will automatically bring them to one of the following as examples:

- The desired location on a map (google maps, apple maps, etc. etc.)
- Bring the user to a web page describing various attractions etc in the area all marked on a map.
- Read directions out loud. EG – “The bathroom is 12 steps and on the left”
- Bring the user to timetables, updates etc. etc.
- Anything delivered via a web browser incl videos.

Route4U is a GPS navigation for wheelchair users on the pedestrian network. Our scalable and automatic technology and crowdsourced data makes surveying cost effective and fast. Route4U offers its solution to cities, universities, airports and property managers in order to serve better their citizens, clients and visitors. Route4U navigation is free for end-users and completely customised to the users own abilities.

The system we’re designing is focused on assisting in the challenges of wayfinding for users of all abilities through automatic mapping of indoor and outdoor spaces, and the ability to recognise positions in a building using photographic data without the requirement for GPS.
Smart Cycle Challenge 2016 Winners

We are excited by the solutions and progress of the 2016 Smart Cycle Challenge winners.

**Smartcharge** introduces smart signage system for creating a safer journey for cyclists and also creating a data harvesting system.  
[smartcharge.ie](http://smartcharge.ie)

**Fluidedge** introducing the Liberty Bell, a bicycle bell that allows cyclists to record actual or perceived obstacles to aid safe cycling in Dublin.

They have recently won a new contract in Boulder, Colorado to pilot their solution in the USA.  
[fluidedge.ie](http://fluidedge.ie)

**BikeLook** monitors bicycle usage and deters and detects bicycle theft. A low cost sensor that attaches to your bike frame and send alerts to your phone. Complemented by an online register of your bike details to aid reporting and recovery.

Bikelook are just back from the Zurich Accelerator programme which hosted Europe’s most promising startups as part of their Swiss Challenge programme.  
[bikelook.eu](http://bikelook.eu)

**See.Sense** offers the ICON intelligent and connected bicycle light which as well as keeping cyclists safer with daylight visible brightness, allows cyclists to collect anonymised, crowd-sourced data that includes the identification of road surface conditions, collisions and near-miss hotspot areas.

Dublin is now the testbed for one of the worlds largest smart connected bike light trial with 500 participants trialing the new technology.  
[seesense.cc](http://seesense.cc)
GET INVOLVED

Check out SmartDublin.ie

SMART DUBLIN

We believe that collaboration is the best approach to find innovative solutions to Dublin’s challenges. If you are working on a smart city solution and would like to test it in Dublin, we would like to hear from you.

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