



Ireland
ITF Presidency 2021

**International
Transport Forum**

IRELAND – ITF PRESIDENCY 2021

A SHOWCASE OF TRANSPORT
INNOVATION AND SUSTAINABLE
DEVELOPMENT IN IRELAND

gov.ie



Introduction

This booklet showcases Irish Innovation in the Transport Sector both past and present. It provides a summary of how Irish entrepreneurs, companies and agencies have always been, and continue to be, at the forefront of designing and delivering innovative mobility solutions and new transport technologies. From the design of the world's first dedicated passenger railway in 1884 to the opening of the Future Mobility Campus Ireland to test Autonomous Connected Electric Shared Vehicles (ACES) in 2021.

As we begin to emerge from the COVID-19 pandemic and once more increase capacity on our public transport systems and unwind travel restrictions, innovative solutions will play a key role in allowing us to travel, safely and efficiently into the future. One such example was the pedestrianisation trials of the Grafton Street Area conducted by Dublin City Council in 2020, which examined how we might redesign our urban spaces to allow citizens to travel more safely while also promoting active travel modes.

Innovations will also play a crucial role in tackling the climate crisis and in helping us to achieve our national objective of decarbonising the transport sector by 2050. An example of how new green technologies can be deployed to support decarbonisation came from An Post, who in 2020, became the world's first postal service to attain zero carbon emission delivery status in a capital city.

The remainder of this booklet is structured across seven themes these are:

- Aerospace and Aviation
- Sustainable Mobility
- Smart Urban Mobility
- Road and Freight
- Connected Transport
- Maritime Transport
- Research and Manufacturing

Timeline of Irish Transport Innovation



Charles Bianconi, an Italo-Irish entrepreneur creates a horse drawn carriage service which is **Ireland's first public transportation service.**

William Dargan, the "Father of Irish Railways", designs and builds the **world's first dedicated passenger railway** service, the Dublin & Kingstown Railway. The 10 km route still forms an integral part of today's Dublin Area Rapid Transit (DART) rail network today.

John Phillip Holland from Co. Clare designs **first 'modern' submarine** for the US Navy, the USS Holland.

First Transatlantic Flight by John Alcock and Arthur Brown lands in Clifden, Ireland.

Launch of Ireland's national airline, **Aer Lingus Teoranta**, with first flight between Dublin and Bristol on a DH 84 Dragon called 'Iolar' (meaning 'eagle').

1815

1834

1897

1919

1936

Irish Ferries' flagship, **MV Ulysses**, is launched and becomes the world's largest car ferry in terms of car-carrying capacity.

The **Luas light rails system** was launched in Dublin bringing trams back into the city for the first time in 55 years.

Shannon Airport becomes the first airport in Europe to provide **US Customs and Border Protection (CBP)** preclearance facilities for both commercial and private aircraft.

The first European barrier-free tolling, **eFlow** system, was introduced for all vehicle classes on the M50. TII as world leader in deploying state-of-the-art technology.

Low-Emission Bus Trials begin in Dublin and Cork to test four different technology categories - full electric, electric-hybrid, compressed natural gas (CNG)

2001

2004

2010

2014

2018

1945

Shannon Airport has its first transatlantic flight, quickly followed by the world-first introduction of **'duty-free'** shopping in 1947.

1959

Formation of **Shannon Free Airport Company** and establishment of the **Shannon Free Zone**, which helped open Ireland to overseas industrial investment.

1975

Aircraft leasing industry 'takes off' with formation of **Guinness Peat Aviation ("GPA")** by Tony Ryan (who later founded Ryanair). At its height, GPA was the biggest aircraft leasing company in the world.

1984

Ryanair founded. First flights operate between Waterford Airport and London Gatwick.

2019

IAA launch the Aireon **Aircraft Locating and Emergency Response Tracking (ALERT)** space-based air traffic monitoring system, which is the aviation industry's first and only free, global emergency aircraft location service.

2020

In response to the **Covid-19 pandemic** Dublin City Council put in place interventions including pedestrian priority at signal crossings, and Grafton Street Area Pedestrianisation Trials.

2020

An Post become the first postal service in the world to attain **zero carbon emission delivery status** in a capital city.

2021

The **Future Mobility Campus Ireland** is scheduled to be completed in Shannon, it will deliver future mobility testbed facilities for research, development, and innovation in the area of Autonomous Connected Electric Shared Vehicles (ACES) and Mobility as a Service (MaaS).



Aerospace & Aviation

Since those early pioneering days of Alcock and Brown's transatlantic flight landing in a bog in Clifden, Co. Galway in 1919, Ireland's aviation sector has grown over the past 100 years to become recognised as a centre of excellence in the global aviation industry and synonymous with innovation.

As a small island nation, the sector plays a key strategic role in Ireland's economy and is a major contributor to global economic growth and prosperity, facilitating the international movement of both people and goods. While strong growth is predicted in the long term, there is uncertainty about how the sector will develop post Covid and it is expected that new technologies such as the emergence of new drone technology services will also change the urban airspace. Yet in adapting to these changes, we must ensure that we retain the highest standards of safety and sustainability as the sector's foremost objectives.

In the future Ireland looks forward to strengthening our existing relationships and forging closer connections with new partners across the globe. The following examples show a small snapshot of how Irish agencies and companies are working toward achieving these key goals.



Irish Aviation Authority

Responsible for the management of Irish controlled airspace and the safety and security regulation of the Irish civil aviation industry, the Irish Aviation Authority (IAA) strives to deliver a best-in-class air traffic management and navigation service to its airline customers and travelling passengers.



Committed to innovation, the IAA has developed the world's first free satellite-based Aircraft Location and Emergency Response Tracking (ALERT) service in partnership with Aireon LLC at its North Atlantic Communications Centre in Co. Clare. Since its launch on 9 July 2019 Aireon ALERT has been a game changer and caught the imagination of both domestic and international reporters. It continues to be utilised on a regular basis and has become world renowned for providing outstanding accurate data to Search & Rescue operators and is saving lives.

To date, the service has over 400 registered users from 119 countries and has assisted in over 70 Search & Rescue missions. In recognition of the outstanding service provided, the IAA's Aireon ALERT service was recently awarded the CANSO Global ATM Safety Award for 2020.

www.iaa.ie

www.aireonalert.com

daa Group

daa Group is a global airports and travel retail group responsible for the operation of both Dublin and Cork airports, and international management, consultancy, and global retailing services through its daa International and Aer Rianta International (ARI) subsidiaries. daa is a commercial semi-State company that is wholly owned by the Irish State.



With over 80 years of airport ownership and management expertise and operations in 16 countries, daa is committed to applying innovative practices to provide an exceptional passenger experience and to improve all aspects of airport operations for its clients.

Recognising that fostering an effective sustainability programme is key to future growth, daa has implemented dynamic sustainability strategies in both Dublin and Cork airports and is committed to reach net zero emissions by 2050 as part of ACI Europe's collective sustainability pledge.

daa manages its Irish airport assets in the best interests of the State and invests for the long-term in key projects such as the new North Runway for Dublin Airport and the reconstruction of Cork Airport's runway. Advanced customer service, data analytics and IoT and AI technology are also being applied to further drive efficiencies, and the creation of the Future Factory innovation and business development hub provides a creative environment for new developments and the testing of new technologies that will allow daa to continue to act as a leader in the global aviation industry over the coming years.

www.daa.ie

www.corkairport.com

Shannon Group

Unique both in its location and its place in the history of world aviation, Shannon has long been at the forefront of innovation in the aviation sector and has been designated as Ireland's transatlantic gateway since its early days of operation as a seaplane terminal in the 1930s.



Having introduced the world to 'duty-free' shopping and other innovative regulatory and service models, the global aviation leasing industry essentially 'took off' when Tony Ryan launched Guinness Peat Aviation (GPA) from Shannon's Airport House in 1975. At its height, GPA was the largest aircraft leasing company in the world and the companies formed from the various sales, mergers and acquisitions arising out of GPA are worth over \$60 billion combined and manage over a third of the global aircraft fleet.

Ireland and Shannon remain world leaders in the aviation finance, Maintenance, Repair, and Overhaul (MRO) and leasing industries to this day, and are continually looking to disrupt the industry with innovative ideas and new partnerships. Together with the Dublin City University (DCU) Ryan Academy and Journey Partners, the 'Propeller Shannon' start-up hub and International Aviation Services Cluster (IASC) provided a world-class environment for twenty aviation companies to grow and scale.

www.shannongroup.ie

www.propellersnn.com

Skytango

Skytango is an Irish-based company providing innovative drone management and compliance solutions to the global market. Responsible for Ireland's first parcel delivery by drone in 2018 in conjunction with the national postal service An Post, and the world's first Beyond Visual Line of Sight (BVLOS) delivery of insulin in 2019, Skytango is a proven leader in solving the challenges of how drones integrate into our communities.



2021-22 will be pivotal years in the adoption of drones as pan-European rules become fully functional, unmanned traffic systems (UTM) are tested and remote ID technologies begin to appear in the market. Trust is the most important component of the drone delivery industry that needs to be developed before large scale adoption can flourish. Since 2015, Skytango has championed this idea by providing tools to pilots and landowners/managers to engage in a transparent manner that incentivises compliance.

In 2021-22 Skytango will partner with industry leaders, enterprise logistics companies, SMART Dublin and Dublin City Council, and an entire island community to create the world's first open-standard for drone delivery safety and security. The project will work to promote Ireland as the first nation to have a harmonised drone delivery ecosystem where drone operators are fully engaged with the cities and communities they fly over.

www.skytango.com



Sustainable Mobility

Large-scale public transport in Ireland effectively began when Charles Bianconi, an Italo-Irish entrepreneur, founded Ireland's first public transportation network of horse-drawn carriages in Co. Tipperary in 1815. At its peak, his network of "Bianconi coaches" covered more than 6,000 kilometres per day, with services across 123 towns and villages.

Despite the country's small size, time and time again Ireland and Irish-born inventors, engineers and entrepreneurs have been found at the heart of global transport innovation, and have pioneered many new forms of sustainable mobility over the years. With innovations such as the world's first dedicated passenger railway service, the Dublin & Kingston Railway, which was constructed in 1834 and whose 10 km route still forms an integral part of today's DART (Dublin Area Rapid Transit) rail network.

Today, we are entering a period that is as likely to be as exciting as it is challenging. Global and urban populations continue to rise, placing massive demands on public transport systems. Yet these challenges bring genuine opportunity to bring about real change in how we move around our towns and cities.

As part of the Irish Government's long-term infrastructural plan, Project Ireland 2040, Ireland has committed to invest in excess of €8.6 billion in sustainable mobility schemes over the next seven years. Key infrastructural projects that are being planned include Metrolink, BusConnects and an expanded network of electric vehicle charging points, which will help to provide Irish citizens with a modern, dynamic and forward-looking sustainable transport network.

National Transport Authority



As a key state body operating under the aegis of the Department of Transport, the National Transport Authority (NTA) is the transport agency charged with the development and implementation of plans and proposals for investment in transport services and infrastructure to deliver high quality, accessible, sustainable transport infrastructure across Ireland.

Flowing from the strategic investment priorities and fundamental objectives of the Irish Government's 'Project Ireland 2040' long-term investment strategy—key among which are achieving a transition to a competitive, low carbon, climate resilient and environmentally sustainable economy and the enhancement of Ireland's public transport and mobility systems in both urban and rural communities—the NTA is currently focussed on the delivery of an ambitious programme of infrastructural improvements and additional transport services that will be necessary to support the movement of an additional 1 million people that are expected to be living in Ireland by 2040. This investment programme includes some of the largest projects and programmes ever proposed in Ireland, such as BusConnects, DART+ and MetroLink, which are designed to transform the level and extent of urban public transport services and networks.

In addition to the development of a number of signature cycling and walking projects NTA is currently consulting widely on a programme called "Connecting Ireland" that will improve rural connectivity and mobility through increased transport services in rural Ireland. This programme will build on the well-established 'Local Link' network—a combination of scheduled and demand responsive door-to-door transport services.

Understanding that the digitalisation of transport and delivery of smart solutions will also be key to achieving climate targets and the promotion of sustainable transport, the NTA are also working on the roll-out of innovative account-based and contactless ticketing solutions and are accelerating a programme of delivering cloud-based infrastructure to facilitate the acquisition, integration and presentation of transport data in order to further optimise Ireland's urban transport networks through data innovation.

The NTA is also working with transport operators to replace on-board vehicle location equipment and supporting systems to improve the accuracy of real time passenger information predictions and provide comprehensive performance monitoring data.

Working in partnership with EY, the NTA will aim to extract far greater value from its transport data by combining machine learning techniques and robust data modelling to generate new insights into Irish travel patterns and help key decision makers make better informed decisions on how best to optimise existing and future network capacity for Irish citizens.

Under the increasingly ubiquitous "Transport For Ireland (TFI)" brand NTA has developed and promoted improved integration of services and a further enhancement currently in development is a consolidated call centre service which will provide high quality customer support services to almost all public transport operations.

www.nationaltransport.ie

CIE Group



The CIÉ Group of commercial state companies—Dublin Bus, Bus Éireann, CIÉ Tours International and Iarnród Éireann—represent Ireland's leading bus and rail public transport providers and together carried over 280 million passengers per year pre-COVID. Long playing a critical role in Ireland's transport sector, the group marked its 75th anniversary in 2020 of providing sustainable transport solutions to Irish communities across the country.

Connecting communities, enabling social inclusion and delivering accessible transport and environmental solutions are the core threads linking the group's past with the current transformative sustainability programme that is being implemented to support key national policy goals such as Project Ireland 2040—the overarching policy and planning framework for the social, economic and cultural development in Ireland—and the Irish Government's Climate Action Plan, which places transport at the heart of national decarbonisation strategies. Through the pandemic, the Group's bus and rail operations have been to the forefront of ensuring a safe and sanitary travelling environment for essential workers.

Supporting the very ethos of transport-orientated development, CIÉ Group will continue to work not just to provide sustainable transport services, but to enable wider economic and social sustainable development.

www.cie.ie

www.irishrail.ie

www.dublinbus.ie

www.buseireann.ie

Access Earth



Over two thirds of the disabled population cite a lack of reliable accessibility information as a reason not to travel or participate fully in their local communities. This lack of readily available accessibility data creates a series of major challenges for governments, organisations and the wider community as a whole. With 15% of the world's population registered as having a disability and overall life expectancy growing, accessibility is an issue that will affect everyone at some stage in their lifetime, and forms a market that is critically underserved.

Access Earth are building the world's largest database of accessibility information thereby enabling a more inclusive and engaged community and making this information easily available to the people who need it most.

Working in partnership with the European Space Agency (ESA) and Microsoft, Access Earth are pioneering an exclusive parking related offering that will use AI and satellite image data to provide accurate locations for accessible parking spaces, bays and drop-off points.

By highlighting the value of asset mapping for accessibility and the principles of universal design, Access Earth are at the forefront of planning and designing for more inclusive cities and communities.

www.access.earth



Smart Urban Mobility

With the UN projecting that over two thirds of the global population is expected to be living in cities by 2050, the continued rise of urbanisation in the coming years will place already congested city streets under severe strain without urgent action.

Enabling the transition from a car-centric mobility through the use of demand management measures and increased use of active travel modes and multimodal sustainable transport solutions will be fundamental to ensuring that the increased demand for mobility can be accommodated. City authorities, planners and urban development institutions will need to ensure that space on city streets is allocated in a way that prioritises the smart, sustainable movement of people.



Smart Dublin

Smart Dublin brings together technology providers, academia and citizens to transform public services and enhance quality of life.

Founded by the four Dublin Local Authorities, Smart Dublin's goal is to future-proof the Dublin region by trialling and scaling innovative solutions to a wide range of local challenges. From tackling the climate crisis to bridging the digital divide, we believe that through collaboration and innovation we can build a better, more resilient Dublin.

Within the Smart & Sustainable Mobility sphere, Smart Dublin is pursuing a number of projects including developing a Mobility-as-a-Service (MaaS) Roadmap for Ireland, an EV Charging Strategy to plan the deployment of Electric Vehicle charging points in Dublin, a Smart Mobility Hub which will trial apps for workplace mobility hubs where staff can book cars, bikes, e-bikes for work trips and meetings. Smart Dublin also supports cycling through the provision of open data bike-sharing information and crowd-sourced cycling data to help improve city planning. Within the Freight sector, Smart Dublin is supporting the Last Mile Delivery within the city centre to optimise urban freight deliveries, reduce congestion and emissions.

Believing that urban challenges can only be solved through collaboration, Smart Dublin are active partners in the All Ireland Smart Cities Forum and international forums such as the MaaS Alliance, Cities Today and MasterCard Cities Possible, and are committed to promoting open dialogue and the exchange of learned experiences between cities.

www.smartdublin.ie

www.smartcitiesireland.org



CitySwift

Established in Galway, Ireland in 2016, CitySwift is a cloud-native, specialist data engine for modern bus networks. The CitySwift platform augments and seamlessly integrates with existing bus technology systems, providing a deeper understanding of network performance and enhanced network planning with significantly reduced timescales. It uses big data, AI and machine learning technologies to deliver key insights and optimisations through customisable management dashboards which deliver on-time performance and increased passenger satisfaction.

Three proprietary modules drive the CitySwift engine: SwiftMetrics, SwiftSchedule and SwiftConnect. SwiftMetrics delivers bus network analysis at scale; SwiftSchedule rapidly generates optimised bus timetables; and SwiftConnect enables the sharing of accurate bus capacity predictions on a stop-by-stop basis, helping passengers make the right journey choices.

Through data, CitySwift is optimising public transport routes for a greener future, helping networks become more efficient and sustainable. A one-minute bus journey time reduction leads to a 1.3% average increase in passenger demand. This has the potential to accelerate the shift back from private car journeys to bus networks, allowing cities to become less congested and more environmentally friendly.

www.cityswift.com



See.Sense

See.Sense is a Northern-Irish based mobility technology and data company, on a mission to make cycling better - by making it safer, more convenient and even more enjoyable. See.Sense uses patented sensor technology and AI to improve the safety and experience of the rider and empower cities with powerful data insights that lead to actionable outcomes.

Their award-winning intelligent and connected bike lights and GPS bike trackers gather deep data insights that are not possible from using an app alone. These include road surface conditions, swerving and heavy braking patterns, collisions, and journey mapping, to provide never-before-seen insights that help planners design and maintain safe and connected cycling infrastructure. See.Sense also integrate their technology into micro-mobility fleets and work with corporate partners to help incentivise more employees to cycle.

See.Sense partnered with Dublin City Council on two projects in 2017 and 2019, deploying lights to over 700 cyclists to generate never-before-seen cycling data insights for use by the Council's transport planners. See.Sense data insights are now being used by AECOM in the development of the Greater Dublin Authority's Cycling Network Plan, and the company has gone on to work with cities in UK, Europe, US and Australia, who seek to improve the safety and performance of their infrastructure, making it inclusive to all.

www.seesense.cc



Civic Group

Recognised as a leading traffic engineering and maintenance contracting specialist across Europe, Civic deliver a bespoke range of smart Internet of Things (IoT) solutions, custom traffic control products and consultancy, technical and engineering services to the Intelligent Transport and Built Environment sectors.

As the leading supplier of Intelligent Transport Systems (ITS) and other Smart City solutions in Ireland, Civic have played a central role in a number of large-scale projects, including the extension of Dublin's light-rail system and the introduction and pilot of Ireland's 1st autonomous public transport vehicle in the Dublin Docklands. Working in partnership with IBM, Civic have also developed 'Ipsum City', a Smart Asset & Fault Management system that applies machine learning and AI algorithms to help cities and local authorities transform their network and mobility operations.

By collating data from multiple sensors and assets on a single cloud-based platform, the Ipsum City system provides a dynamic, efficient and integrated solution that can be used for real-time city and network monitoring and to generate accurate predictive maintenance schedules, with the capability to autonomously route fault messages to appropriate contractors for action, delivering major improvements for both city managers and contractors in terms of safety, asset availability and cost efficiency.

In the wake of Covid-19, the Ipsum City platform has innovative advantage over other systems including the ability to monitor a network of assets live and generate predictive maintenance schedules, therefore greatly reducing the number of times an engineer needs to physically attend site. This reduces the need for site meetings, decreases journeys and lowers vehicle air pollutants such as carbon monoxide, nitrogen oxides, particulate matter, volatile organic compounds and benzene.

www.civic.ie



Luna Systems

E-scooters are triggering a personal transport revolution across cities globally, but the operators who will succeed will be the ones who have solved rider and pedestrian safety to the satisfaction of the host city. This is particularly relevant given the likely surge in e-scooter usage as people return to work post-Covid, and look to use socially distant transport modes, as opposed to crowded transit solutions.

One of the biggest issues facing e-scooter operators and city managers across the globe is how to keep scooters off footpaths/sidewalks and how to prevent collisions between riders and pedestrians. A recent study by the Insurance Institute of Highway Safety in the U.S. found that approximately 60% of all scooter accidents happened on sidewalks.

Luna's computer vision technology uses a range of smart cameras and 'Edge AI' algorithms to provide contextual information about the location and behaviour of each scooter in real time. Potential uses for this technology include: Lane recognition, Pedestrian detection, Helmet detection, Camera assisted parking and Smart City Insights on the road surface conditions, cycle lane obstructions, traffic congestion etc.

Luna's technology ensures real time response capability if a scooter needs to be slowed down remotely by the operator, due to inappropriate riding on the footpath or in heavily pedestrianised areas for example.

An advantage to Luna's 'Edge AI' approach is that it also promotes a more privacy-centric ethos, due to the fact that the video isn't stored, but rather 'interpreted' at the edge of the network (i.e. on the scooter) allowing decisions to be made without personal information being captured.

Luna has partnered with Europe's two largest e-scooter operators Voi and TIER, to deploy computer vision, with a view toward a global roll out. In addition to this Luna is also working with the Insight SFI Research Centre for Data Analytics (one of Europe's largest such research centres), to explore the various use cases for vision-enabled scooters as a 'mobile sensor network' in Smart Cities.

Luna has already been referenced as a significant safety solution in the ITF's "Safe Micromobility" report in February 2020.

www.luna.systems



BleeperBike

Launched in 2018, BleeperBike was Ireland's first dockless bike sharing scheme, providing a fleet of 500 pedal bikes for public hire across Dublin. With over 350,000 journeys made in 2020, BleeperBike has quickly proven popular with Dublin's users and has transformed the city's shared bike operating model.

In contrast to the existing DublinBikes stationed bike-share scheme that relies on fixed stations with a grid connection that can be expensive to install and maintain, the dockless BleeperBike model has provided city users with greater freedom and choice and enabled a low cost bike-sharing solution to be rolled out by Dublin's local authorities.

A key feature of the Dublin City Council and BleeperBike partnership is that it was the first time in the world that a city authority and operator required users to use a smart lock and tethering cable equipped on the bikes to tether their bikes to public bike stands at the end of their journey. This simple innovation has proven a successful remedy to the high levels of inconsiderate parking and negative social behaviour that have troubled other jurisdictions and is now being duplicated across Europe and the rest of the world.

www.bleeperbike.com

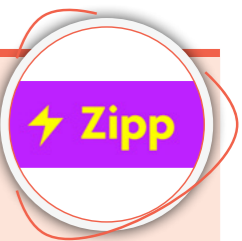


Zipp Mobility

Zipp Mobility are Ireland's leading shared micromobility provider. Zip Mobility work with ambitious cities and towns to design community-centric shared e-scooter and e-bike schemes that respect the needs of all a city's stakeholders and not just the end-users of the service. Zip Mobility's mission is "mobility done right" and that is based on utilising an approach that focuses on delivery of quality shared micromobility schemes with solutions to the industry's greatest problems including sustainability, safety, parking and community engagement.

In response to Covid-19 the UK government moved to legislate for e-scooters and Zip Mobility responded with a solution that has won a leading role in the UK e-scooter sharing market. The "mobility done right" approach resonated with UK local authorities and now Zip Mobility are operating e-scooters in 3 locations (Taunton, Aylesbury and High Wycombe). In order to mitigate against Covid-19 transmission risk, all scooters have been fitted with self-sanitizing handlebar wraps that kill 99.98% of viruses and bacteria. Also, in order to encourage and drive adoption during the pandemic, during periods of relaxed restrictions Zip Mobility have held socially-distanced training sessions for users that were less confident using public transport due to the potential transmission risk but had mobility needs that had to be served. Zip Mobility also engaged in extensive stakeholder engagement to drive community adoption pre-launch to ensure schemes were as impactful as possible.

www.zippmobility.com



Anadue

Transport poverty is a global problem. Simultaneously, many cities are keen to reclaim the streets from traffic, with the introduction of “people friendly” streets. Many of the world’s leading cities are implementing “Low Traffic Neighbourhoods”, “15 minute cities”, etc. Cities are keen to plan safe, clean streets for people, and reduce greenhouse gasses for the planet.



Shared micromobility (e.g. shared bikes and e-scooters schemes) is seen as an important part of the solution to improving mobility in a clean, convenient and Covid safe way. The growth of shared mobility has experienced a few false starts, with many early schemes failing financially, or generating significant resistance from the public due to street clutter, dangerous driving and poor planning.

It is in the interests of all mobility operators to plan and operate mobility schemes that not only generate profits, but that also improve the vitality of the urban environment and improve the lives of residents.

Anadue collects journey data from shared micromobility vehicles and combines this with hyper-local data on the population demographics, land use, points of Interest, the weather and many other sources to solve important challenges for both micromobility operators and cities.

Uses of this data include: optimising the location of micromobility parking, and “right-sizing” the fleet to meet demand, measuring the impact on congestion, pollution and road safety. It can also be used to identify areas most in need of, shared micromobility and demonstrating how shared micromobility revitalizes local retail business and provides new options to communities by giving people access to flexible, affordable transport options.

Anadue’s analytics of micromobility journeys enables this type of data to be presented to cities as dashboards, alerts and in-depth reports. A wide range of metrics can be intuitively viewed on a user friendly map display.

Once the benefits of cleaner air, less congestion and reduced parking problems are clear, in conjunction with enforceable regulations, cities may choose to expand micromobility, even allocating public real estate to micromobility, both cycle paths and dedicated parking.

www.anadue.com





Roads & Freight

With one of the youngest motorway networks in Europe, Ireland's key strategic road network was largely constructed within the last 30 years, and the greater interurban and international connectivity facilitated through its creation was a key enabler of the high levels of economic growth and rapid societal transformation that were experienced in Ireland during the 'Celtic Tiger' and more recent years.

But with a high volume of commercial vehicles now travelling on our roads, which is only likely to increase due to the increasing popularity of e-commerce, and a high proportion of Irish people still living in rural areas, shifting Ireland's reliance on private car travel and decarbonising the freight sector will remain key challenges to be faced in the coming years.

Irish companies and agencies are working to meet ambitious decarbonisation targets set by the Irish Government as part of its Climate Action Plan, which is currently being updated to meet Ireland's ambitious decarbonisation goals for 2030, in line with the targets set out under the Paris Agreement. Alternative fuels, digitalisation, electrification and the use of other connected, cooperative and intelligent transport system (ITS) technologies will all form key steppingstones to the realisation of a fully decarbonised, sustainable, safe and resilient land transport network.

Transport Infrastructure Ireland

As the custodian of Ireland's national road and light-rail network, Transport Infrastructure Ireland (TII)'s role is to serve and benefit the Irish public.

Our organisation exists to provide safe and efficient sustainable transport infrastructure and services that deliver a better quality of life, support economic growth and respect the environment.

The Covid-19 pandemic has caused significant changes to many aspects of transport and society. As Ireland recovers, the country must meet the challenges posed by climate change and social inequality.

Our concerns about environmental quality, social equity and economic vitality inform our approach to development. We recognise the need to rethink, reimagine and redesign our approach to ensure sustainability and innovation are at the heart of everything we do.

Almost a year ago, we embarked on an extensive organisation-wide consultation to develop a Sustainability Implementation Plan – Our Future. Launched in March 2021, this builds on our existing strengths and good practices as we set about embedding sustainability into everything that we do and work collaboratively with stakeholders, partners, and communities.

We have set out an ambitious roadmap of activity that moves TII towards a sustainable future as we encourage our people to play a greater role in leading the change to sustainable mobility and decarbonising transport.

www.tii.ie



emovis

Part of the Abertis group, emovis Ireland are experts in the provision of smart mobility an interoperable motorway solutions, and in collaboration with TII and ARUP, have become global pioneers at the forefront of road infrastructure and e-tolling innovation.

While barrier-free tolling systems are present in many jurisdictions, in 2014, Ireland became the first European country to introduce a system of barrier-free tolling for all vehicle classes when it was introduced on the M50 motorway surrounding Dublin. As a key strategic route serving Ireland's two main international gateways, Dublin Airport and Dublin Port, traffic volumes have undergone a period of massive growth, with in excess of 145,000 vehicles now travelling daily along this 45.5 km orbital route.

By implementing and securing the barrier-free system on Ireland's most heavily used road, emovis have ensured that traffic on the M50 does not experience unnecessary delay, helping to reduce emissions and time travelling, and encouraging greater sustainability.

www.emovisireland.ie



Dublin City Council

As part of the EU's Interreg North-West Europe 'BE-GOOD: Open Data for a Smarter Society' programme, Dublin City Council (DCC) have been part of a pioneering initiative that seeks to unlock value from public sector information and stimulate a sustainable ecosystem for the use and application of open data. Applying this goal to the management of HGVs in urban environments, in 2019 DCC launched an open HGV Permit Checker application and data analytics dashboard as part of the city's HGV management strategy, in an effort to improve the safety and environmental sustainability of the city and the wellbeing of its citizens.

By opening up access to the city's permit data, the new HGV Permit Checker application empowers local authority staff, business owners, An Garda Síochána (Irish law enforcement), and members of the public to efficiently query a HGV's permit status and report possible infringements in real-time, thereby addressing the issue of non-compliance and demonstrating how the use of open data from traffic management systems can be used to add value and benefit to city residents.

The original 'BE-GOOD: Open Data for a Smarter Society' programme officially concluded in September 2020 with the successful delivery of 11 new innovative data driven services, including 2 delivered by Dublin City Council. One of these DCC projects has been selected for an 18-month extension. This project will seek to provide a system which will enable a deeper understanding of road user interaction with the departments Intelligent Transport Systems (ITS) on street infrastructure. This project will target all road users in the city and seeks to expand the platform to areas of interest for transportation and mobility management.

Dublin City Council has also demonstrated a commitment to innovation in its response to the Covid-19 pandemic. DCC put in place a Covid Mobility Team who were tasked with implementing interventions across the City to optimise mobility whilst ensuring social distancing. As part of this Programme, a wide range of interventions have been implemented to-date. Some examples of innovations include: pedestrian priority at signal crossings, new contactless activation pedestrian buttons, Grafton Street Area Pedestrianisation Trials – which involved a series of 6 weekends of pedestrianisation trials in July and August 2020.

Another innovation in response to the pandemic, supported by DCC, has been the roll out of a Schools Mobility Programme to encourage active travel including the setting up of "School Zone" areas to reduce vehicular traffic and vehicle drop off congestion at school gates. This involves the use of innovative child friendly coloured circle road markings and pencil shaped bollards. This is the first time this innovation has been used in Ireland and to-date over 100 schools have applied for a School Zone installation with over 35 installed to-date.

www.dublincity.ie



Reflective Measurement Systems

RMS Ltd is a proven dependable Irish company, providing world class on-site and remote customer service. Government road agencies and local authorities globally are required to maintain road networks including road markings for driver safety but also to achieve the socio and economic benefits. Good quality road markings are recognised worldwide as key factors in reducing crashes, injuries and fatalities on the road network.

RMS Ltd provide the RetroTek technologies to enable road authorities and road asset maintenance managers to improve road safety and reduce their operating and maintenance costs by providing highly efficient and intelligent visibility measurement systems to assess road marking conditions, essential for driver safety and the safe operation of vehicles with Advanced Driver Assisted Systems (ADAS) including Autonomous vehicles.

The RetroTek front or rear mounted vehicle technologies, measure the day & night visibility of all the road markings on a road lane in one pass at all traffic speeds, produces data and results that can be analyzed on a data visualization software platform.

www.reflective-systems.com



AMCS Routing

With over 75% of inland EU freight being transported on the road network, addressing sub-optimal transport planning & route optimisation - and tackling other inefficiencies in freight transport through digitalisation - will be key to decarbonising freight transport.

With a global HQ in Limerick, Ireland and a Centre of Excellence in Copenhagen, Denmark, AMCS Routing create and provide digital transport management and optimisation solutions for industry partners with complex logistics, such as Waste & Recycling, Building Materials distribution, Downstream Fuel distribution, Livestock transport, Chilled Goods/Retail distribution, Home Delivery/Last Mile service providers and several others.

The highly advanced algorithms developed by AMCS to enable connected, fully optimised, dynamic and real-time transport planning and execution, means users can transition to a cleaner, more sustainable operating model, achieving reductions in costs, CO2 emissions, the number of vehicles required and total kilometres driven - while simultaneously improving customer service and visit accuracy, and ensuring that the entire end-to-end supply chain remains optimised, predictable and reliable.

www.amcsrouting.com



FTA Ireland

The Freight Transport Association Ireland (FTA Ireland) is a not-for-profit membership trade association for the Irish freight, passenger and logistics industries. Established in Ireland in 2010, FTA Ireland is wholly owned and governed by its members and represents some of the largest freight and passenger operators in Ireland, with over 25,000 staff employed and 10,000 commercial vehicles in operation across its membership.

Since its foundation, FTA Ireland members have sought to develop and implement industry wide standards that facilitate a path to continuous operational compliance and sustainable operations through efficient fuel management and continuous professional development. Over the past 10 years, FTA Ireland have been working with commercial fleet operators to improve their environmental management through annual 'TruckSafe' and 'VanSafe' audits across road safety, haulage operations, roadworthiness, working time and environmental efficiencies. This process has helped FTA Ireland members to save over 2.5 million litres of diesel fuel, and demonstrates members' commitment to compliance and safety standards and also affords recognition for the companies and teams for the work being done to attain the highest possible compliance standards. In February 2021 FTA Ireland launched the 'TruckSafe Green Standard' to reinforce our members' commitment to reducing greenhouse emissions and improving air quality. Achieving the Green Standard recognition is based on active participation in fuel management programmes, which must be evidenced by quarterly uploads of fuel performance data, as well as an annual action plan signed by a business' CEO. And, while the FTAI TruckSafe Standard has always included environmental measures, the introduction of the Green Certificate as part of the process is timely, as it also recognises compliant and professional commercial fleet operators looking to transition to alternative fuels such as compressed natural gas (CNG), liquified natural gas (LNG) and electric.

In 2018, FTA Ireland also established an 'alternative fuelling technologies' working group comprising manufacturers, haulage operators and alternative energy suppliers such as Gas Networks Ireland, Calor Gas and the ESB to provide dedicated information and guidance to FTA Ireland members on the choices available to them to reduce their carbon footprint.

www.ftai.ie



Dennison Trailers

Dennison Trailers has been building high quality trailers for over 50 years, with a passion for engineering excellence, continuous product development and the highest standards of customer service. At modern factories in Naas in Ireland and Lancaster UK, skeletal, curtainsiders, tippers, platforms, machinery carriers and drawbar trailers are manufactured as well as a range of specialist trailers, including the innovative sliding bogie.

Innovative commercial vehicles such as long trucks make a major contribution to raising efficiency in road freight traffic and the transport chains. This is because they can transport the same quantity of freight with fewer journeys and lower fuel consumption, and therefore lower emissions. Deploying long trucks can bring about fuel savings of around 25 percent (per tonne of goods transported, or per transportation unit, (e.g., a pallet). CO2 emissions fall in proportion to fuel consumption, so the deployment of longer trailers offers the potential for significant CO2 reduction.

www.dennisontrailers.com





Connected Transport

Transport has always played an important role in connecting people in Ireland and across the world. While the Covid-19 pandemic has led to the imposition of temporary capacity constraints and travel restrictions it has also highlighted the importance of innovations to provide new forms of mobility.

The digitalisation of transport has expanded the definition of what 'connected transport' means. New modes of transport and shared mobility, that prioritise interconnectivity and sustainability, have the potential to transform cities by creating greater opportunities for economic growth, changing how people live and work and facilitating greater connectivity at both the personal and vehicle-to-vehicle level than ever before.

Ireland is aiming to be at the cutting edge of the transport revolution and will continue to build on our established history of innovation in the technology and digital services industries to facilitate greater connectivity and sustainable mobility solutions.



Cubic Telecom

Cubic Telecom delivers innovative IoT connected software solutions to Automotive, Agriculture, and Transport manufacturers. Its ecosystem of revenue-generating services combines real-time analytics with global connectivity in 190 countries, always aligned to regional regulatory requirements.

Its global connected software platform PACE is used by leading companies around the world including Audi, Microsoft, Kymeta, Panasonic Automotive, Volkswagen, CNH Industrial, Skoda, e.GO Mobile and Arrival.

Headed by CEO Barry Napier, the company is privately held with over €110 million in funding by Audi Electronics Venture GmbH, Qualcomm, Valid, the European Investment Bank, Enterprise Ireland, and the Ireland Strategic Investment Fund, among others.

www.cubictelecom.com



GTS

GTS—Good Travel Software, is a world leader in the provision of on-demand transportation and station-based vehicle sharing solutions that are scalable, reliable and easy to use.

Offering an all-in-one mobility platform for cars, bikes, buses and other shared mobility vehicles, the GTS platform allows users and clients to book and manage their desired shared transport solution from a single application.

Working with cities, large OEMs and small car sharing services, the SaaS solutions provided by GTS have been used to book over 480 million kilometres of journeys across the globe. Using sophisticated data analytics and machine learning techniques to accurately predict demand, GTS are committed to helping their clients optimise their services to improve efficiency and sustainability and are trusted to make mobility simple.

www.goodtravelsoftware.com



Bumblebee AI

Bumblebee AI help Mobility sector companies that need help with converting visions into scalable MVPs. Bumblebee AI brings people into a connected ecosystem, on a platform customizable to facilitate cross-sectors. Service design is focused on sustainable development in the post-Covid-19 digital era. Bumblebee are motivated by value-based human-centric solutions that protect people and the planet.

Unlike generic SaaS models, with a large customer base, which can be slow to respond to industry needs, Bumblebee AI connects at point-of-source to curated communities. Bumblebee proactively engage and enhance our mobility ecosystem experience with every touchpoint. People can interact with their personalized Autobot on WhatsApp, and will soon be able to connect with Voice AI.

Bumblebee offers services which are easier for everyone to use on a multi-tenant platform, this has been demonstrated by a successful track record of market launches. Bumblebee achieved this by optimizing logistics, automating service delivery, and simplifying payments. Bumblebee AI's vision is to revolutionize emotional intelligence in our Autobot, to grow with users over their lifetime. They aim to do this by continuously evolving co-creative AI in adjacent mobility ecosystems such as health & fitness, online fashion retail delivery, landscape gardening marketplace, and through their flagship IoT usage-based motor insurance.

www.bumblebeeai.io



Future Mobility Campus Ireland

The Future Mobility Campus Ireland (FMCI), which is Ireland's first test bed for future mobility and provides a unique real world setting to research and develop future mobility technologies. FMCI was founded with the sole purpose of creating and delivering future mobility testbed facilities for stimulating research, development, and innovation in the area of Autonomous Connected Electric Shared Vehicles (ACES) and Mobility as a Service (MaaS) in Ireland. This testbed will be in Shannon Free Zone West, Shannon, Co Clare and will be completed in Sept 2021. Partners of FMCI include Ireland's leading automotive and technology organisations across SMEs, MNCs, RPOs and IOTs with support from local authorities and state agencies (including Shannon Commercial Properties).

The Mobility as a Service (MaaS) industry provides a significant growth opportunity for Shannon following the arrival of Jaguar Land Rover and their investment in creating their Software Engineering Centre in the Shannon Free Zone West.

The recent success by Future Mobility Campus Ireland (FMCI) in receiving €4.7m in grant funding from Enterprise Ireland, will create a real-world testbed for the Connected and Autonomous Vehicles (CAV) and the Mobility as a Service (MaaS) industry at Shannon.

The testbed facility, in Shannon Free Zone West, consists of a road network that is retrofitted with interconnected state of the art sensing and telecommunication technologies, that are fully accessible and controlled via a dedicated control centre.

www.futuremobilityireland.ie



FREE NOW

Since 2012, FREE NOW has led the way in the ride-hailing revolution, paving out customer centric innovations that have successfully brought the ride-hailing app to cities and towns across Ireland and positioned us as leaders in the mobility industry.

The logo for FREE NOW, featuring the text "FREE NOW" in a bold, sans-serif font with a checkmark symbol to the right, all enclosed within a circular border.

By consistently improving and building on technology, FREE NOW have created seamless customer journeys and experiences including using smart tech and algorithms for optimal fleet efficiency as well as enhanced payment options, booking options including wheelchair accessible rides and navigation flows.

In unprecedented times when the mobility sector was hit hard by the global pandemic, FREE NOW continued to innovate through 'Project Protect' introducing safety fleet types and industry wide improvements through collaboration with partners and authorities to deliver a common goal to protect the public and our drivers.

FREE NOW continue to enhance and improve through partnership with third parties such as Apple, Google and Paypal along with continuous innovations to our product around ease of use and navigation processes. A key priority for FREE NOW is also the move towards sustainability and embracing carbon friendly technologies including Electric Vehicles. FREE NOW offer grants, guidance and services to Drivers to champion the move towards a sustainable future for Ireland.

As a MaaS platform FREE NOW are committed to continuous innovation and enhancement of products and services as we all move towards a multi-mobile lifestyle in Ireland where we can make our cities smarter, all make more environmentally friendly choices and keep the nation flexible and independent with a range of reliable shared and public transport options.

www.free-now.com



Maritime Transport

Irish ports have been at the forefront of trade in Ireland for centuries and have always played a role as facilitators of innovation in the Irish economy. Today, maritime transport remains the most important means of connecting Ireland to international markets. Having the appropriate infrastructure in place is vital to future economic growth with modern technological innovations and developments in freight logistics increasing efficiencies in our ports.

Ireland's National Ports Policy categorises Dublin Port Company, the Port of Cork Company and Shannon Foynes Port Company as Ports of National Significance (Tier 1), and their continued commercial development is a key strategic objective of Government. The three ports are also recognised as 'core' ports within the new TEN-T regulation at a European Union level and they handle the vast majority of all tonnage at Irish ports in any given year.

With ambitious development Masterplans outlining their future infrastructure development over the next 30 to 40 years, these programmes will enhance national and international maritime transport connectivity for years to come and will provide for future increases in trade and national port capacity requirements by facilitating more vessels, larger vessels and increased tonnage and throughput.

Dublin Port Company

Dublin Port Company is the largest port in the State and is undertaking the largest capital development programme in its 300 year history guided by its Masterplan 2040. The first major project in the masterplan is the Alexandra Basin Redevelopment Project, which has included the construction of two highly innovative sub-projects.

The Ocean Pier Berth project saw the design and construction of 90m of a deepwater combi-quay wall including two linkspan bankseats for a novel linkspan solution interchangeable between two berths programmed and completed in under 174 days. An accompanying 340m quay wall along the berths was subsequently constructed in just 197 days. The second Alexandra Basin Ro-Ro Jetty project, which is future-proofed to cater for the largest in class Ro-Ro vessels in the world, also saw the on-time and within budget completion of a new 273m jetty delivered using highly innovative solutions and bespoke construction techniques.

Dublin Port's Masterplan 2040 will see land utilisation levels double over the next 20 years. This will be accomplished by a combination of stringent land use policies, the development of an inland port 14 km from Dublin Port and by the introduction of digital demand management systems to even out the throughput of cargo on the landside on a 24/7 basis.

www.dublinport.ie



Commissioners of Irish Lights

The mission of Irish Lights is Safe Navigation at Sea, providing critical national marine infrastructure, aids to navigation and next-generation maritime services to its stakeholders in the commercial, fishing, shipping and leisure sectors. Irish Lights - the general lighthouse authority for the island of Ireland, its seas, and adjacent islands - operates at the interface of navigation, technology, engineering and data management.

Playing a crucial role in the facilitation of commerce and marine safety, Irish Lights continues to lead and implement a number of pioneering initiatives to better serve and add value for its stakeholders. An active partner in multiple international research initiatives to advance the safety of maritime navigation, Irish Lights is committed to research and innovation to improve the safety, security and efficiency of all its operations. In delivering its remit, Irish Lights takes a proactive approach to upholding environmental principles and endeavours to drive sustainable practices as part of our operations across the maritime space, local communities and economies where it is active. This remit includes the provision and maintenance of over 340 general aids to navigation, the superintendence of approx. 3,200 local aids to navigation, and marking or removing dangerous wrecks outside harbour areas around Ireland.

Irish Lights also provides a range of navigation and contract commercial services including ship charter, buoyage assembly and deployment and provision of maritime data. It provides value added services to support the development of the broader maritime economy including Met and Coastal Data Services. The Irish Lights tourism and heritage initiative, 'Great Lighthouses of Ireland' was developed in partnership with local communities and offers visitors from home and abroad the chance to visit or stay in a working lighthouse.

www.irishlights.ie



Port of Cork

The Port of Cork also manages Bantry Bay Port and between both ports handles all six shipping modes across multiple facilities around Cork Harbour and Bantry Harbour. They are committed to innovation and to leading the wider port community to minimise environmental impacts and to improve energy consumption through coordinated management, reducing CO2 emissions, conserving natural resources and to adhering to best practice and standards with regard to safety, environment, energy and quality management.

In June 2018, the Port of Cork Company commenced work on their Ringaskiddy project, which will facilitate the transfer of the port activities from the upper to lower harbour area around existing facilities at Ringaskiddy. This state of the art facility is the most significant single investment in marine infrastructure and superstructure in the history of the Port of Cork.

The Company has also recently introduced a new automated gate operating system for its Tivoli container terminal. The new system helps support terminal efficiency and modernises the container collection and delivery process at the busy marine terminal and is the first of its kind to be introduced in Ireland.

www.portofcork.ie



Shannon Foynes Port

With a remit extending to 6 terminals and over 500 Square kilometres of estuary, Shannon Foynes Port Company is the largest bulk port in Ireland and handles over 2000 ship movements annually, up to and including Cape size vessels.



Shannon Foynes port has always been to the forefront of logistics innovation, from its roots as a transatlantic gateway for flying boats, to its positioning as Ireland's premier deep-water port. It has ambitious development plans to cater for Ireland's future energy requirements by positioning itself as the hub for North Atlantic offshore wind requirements.

Offshore wind is focusing heavily on the Atlantic seaboard and with its advantageous location, shelter, and deep water, allied to the consistent low level wind speeds in excess of 14 m/s. Shannon Foynes port is strategically positioned to be a key player in this supply chain. The Shannon Estuary is also due to be a global hub for the production of Hydrogen, Ammonia and other synthetic fuels in the coming years, facilitating international vessel refuelling, aviation refuelling and other route to market solutions for the Atlantic ORE resource.

SFPC is embracing and is strongly promoting technological innovation in all facets of its business. Its cooperation with Nautilus Technologies is a case in point, whereby SFPC has already received planning consent to construct Europe's first floating data centre at Limerick Docks. Nautilus combines proven nautical technology with the latest data centre technology to deliver the most cost effective and sustainable data centre on the market. The Nautilus design provides significantly greater energy efficiency, delivers a much smaller footprint and marks a new era in water conservation by using its patent pending cooling technology to eliminate all water consumption – a dramatic improvement over existing land-based facilities.

Presently, Shannon Foynes Port Company facilitates trade valued at €7.6 billion annually and supports over 4000 jobs. Its growth trajectory is very much enhanced in the renewable sector as it currently imports wind turbines for all significant on shore wind projects in Ireland.

Shannon Foynes Port is also positioning, with its capital investment program, to continue in its role as Ireland's largest break bulk and project cargo port, but also to become an intermodal logistics centre for the Midwest and transatlantic transshipment facility for Europe.

www.sfpc.ie





Research and Manufacturing

Ireland hosts a healthy innovation ecosystem comprising its educational, enterprise, financial, services and research industries that is unique around the world, and which has allowed the country to position itself as a world-leading technology and digital services hub.

With proven capacity to attract and retain the leading global digital technology firms, Ireland's strengths in this sector leave it uniquely positioned to take advantage of the growth in smart mobility solutions and services and the disruptive rise of autonomous systems.

The following research institutions and companies are just some of the bodies working in Ireland's thriving research and manufacturing sectors.



Lero

Lero, the Irish Software Research Centre, is aiming to establish Ireland as a location synonymous with high quality software research and development, to the extent that the phrase 'Irish software' becomes as recognised as 'German automotive' or 'Scandinavian design'.

Working in close collaboration with leading multinationals, SMEs and other Irish research centres, Lero has established a consortium of over 280 researchers, 50 companies and initiated over 80 targeted research projects since January 2015, spanning a wide range of application domains.

In the mobility space, Lero is an important member of the CAV Ireland forum and is leading a €4.2 million Science Foundation Ireland-backed research programme on driverless vehicles. It brings together companies working on a variety of autonomous systems across the automotive, industrial and agricultural sectors, including Jaguar Land Rover, Valeo, Kostal, Liebherr, McHale, Combilift and Greenval Insurances.

From the need to better understand and interpret data coming from cameras, radar and lidar systems to the opportunities to create new business models and better assess insurance risk, projects in this programme are developing world-class solutions that can provide significant scientific, economic and societal impact.

www.dublinport.ie



CeADAR

CeADAR is Ireland's national centre for Applied AI and is a one-stop shop for innovation and applied R&D in artificial intelligence, machine learning and data analytics delivering value, capacity building and competitive advantage for the benefit of companies in Ireland.

As one of only 30 designated AI Digital Innovation Hubs in the EU, the centre acts as a bridge between the worlds of applied research in AI and its commercial deployment. Industry membership of CeADAR has grown significantly in recent years and now totals over 90 industry partners ranging from multinationals to indigenous SMEs spanning every industry vertical.

Some of the examples of CeADAR's work in the transport and mobility space include joint projects with Boeing Aerospace to optimise flight trajectories in real-time to minimise fuel consumption, autonomous robotic inspection of aircraft fuselages, developing a dynamic scheduling and routing solution to optimally schedule technician call-outs for on-site repairs, and deliveries by minimising time and distance travelled and the prediction of maintenance and failures in rotating machinery.

www.ceadar.ie



Ventac

Ventac have been in business since 1972, working with international clients to provide high performance acoustic solutions across the vehicle and industrial noise control sectors. Ventac's portfolio includes manufacturers of commercial vehicles, agricultural machinery, construction equipment, specialist equipments such as truck refrigeration units, and a range of innovative specialist solutions for electric vehicles and e-mobility applications.

Ventac's Acoustic Expertise and Noise Control Solutions are supported by Ireland's largest and only state-of-the-art on site Innovation & Acoustic Laboratories. Ventac's Research Acoustic laboratories are used for acoustic materials development, vehicle noise testing and building materials acoustic analysis. Ventac's acoustic technologies include state-of-the-art acoustic cameras which are used for visualising sound, and for identifying the characteristics of the noise in vehicles.

Ventac's Vehicle Noise Control services include analysis through a vehicle acoustic test programme to custom design, engineer and manufacture a value based and turnkey solution that is delivered directly to the customer. Solutions are tailored to the specific needs of the customer to include thermal insulation, noise and vibration solutions. Our solutions are supported by our acoustic expertise, technical capabilities and innovative problem solving and are created in partnership with the customer to ensure a high performance acoustic solution.

In the wake of COVID-19, with restricted international travel permitted, the Innovation Team at Ventac have developed a noise consultation mobile app for their customers. The app will provide their customers with responsive remote access to Ventac's team of experienced acoustic experts. The app will enable their customers to make good quality acoustic measurements of their vehicles remotely, using the accuracy of a Class II, externally connected microphone. The noise measurement will be shared directly with the Ventac technical team for expert level analysis, and feedback to the customer on appropriate next steps.

Ventac's acoustic solutions are guaranteed to result in a reduction of noise in all applications, and placing innovation is at the heart of all its operations. Ventac strives to continuously create new and improved offerings that fulfil the needs of their customers, which deliver the support, performance and value that they demand on all their projects.

www.ventac.com



Kastus

Kastus is the world's most innovative antimicrobial surface coating technology. Kastus's patented light-powered technology has 44 global patents and has been at the forefront of antibacterial and antiviral surface protection since 2014. Kastus offer the ultimate protection for touchscreens, glass and ceramics, enabling the surface to self-sanitise and protect itself day and night for its lifetime.

In the new normal, consumers and staff are concerned about interacting with shared surfaces for fear of being exposed to harmful surface bacteria and viruses, especially with experts confirming that coronavirus can live on hard surfaces for up to 28 days after transmission.

Kastus's ISO and ASTM validated coating technology has been independently proven to kill >99% of human coronavirus, traditional viruses and harmful surface bacteria. The technology is designed to operate 24/7 for the lifetime of the substrate, resulting in enhanced continuous touch hygiene and safer surfaces.

Kastus offer a range of solutions that can benefit the transport sector, from 24/7 antiviral and antibacterial touchscreen solutions to 24/7 antiviral and antibacterial coating for glass.

Kastus's antimicrobial surface coating technology is sintered into the touchscreen during manufacturing with no impact on performance, providing permanent enhanced screen protection. Kastus also offer screen protectors as an aftermarket solution that can be applied to existing touchscreens. Kastus's antimicrobial tempered touchscreen protectors are easy to install and can be applied to any ticket machines and/or food & beverage vending machines, giving passengers peace of mind during their daily interaction with these shared surfaces.

The Kastus antimicrobial glass coating solution can be permanently built-in to any type of glass with no impact on aesthetics. The technology can be sintered during the manufacturing process of glass doors and windows for buses, trains and trams in the future providing enhanced surface protection. Kastus is proud to offer these unique solutions to give extra confidence to passengers on their daily commute during these unpredictable times.

www.kastus.com



SoundBounce

SoundBounce, by Lios, is an advanced acoustic material which delivers superior noise attenuation without the bulk of traditional acoustic materials. Consumers are demanding smaller, quieter products. SoundBounce provides a cost-effective and space saving way to absorb harmful or unwanted noise, which saves space while protecting people and structures. Using energy absorbing technology never before seen in the acoustics sector, SoundBounce is unrivalled at low frequency noise reduction.

With the market for acoustic materials in the automotive industry valued at over €2 billion, SoundBounce are ready to work with companies to integrate SoundBounce into their products and components to help provide a better passenger experience and facilitate regulatory compliance.

www.sound-bounce.com



SOAR Solutions

Dublin based SOAR is a cloud-driven risk management business encompassing both risk tools and risk intelligence solutions. SOAR has developed a digital inventory, asset appraisal/inspection and logistics control tools that can be operated in any remote environment.

Historically, "in-field" auditors have physically travelled to locations to complete their work. In tandem with organisational efficiencies and augmented risk control, SOAR's transformative "self-audit" is a sustainable methodology. Making "field-based auditing" redundant and significantly reducing auditing's emissions and CO2 footprint.

Beyond these auditing tools, SOAR also understands the power of data. SOAR deploys deep dive behaviour, data analytics in combination with Machine Learning/ AI to deliver invaluable insights to risk from both a client and industry perspective, and offers the ability for predictive modelling.

SOAR brings together decades of expertise and experience in the automotive industry in tandem with asset management, to fill gaps, augment processes and deliver efficiencies across any sector requiring stringent and intelligent asset controls.

The solution has received acknowledgements and plaudits throughout the industry. Most recently, SOAR has been recognised by the prestigious EU Business News (Irish Enterprise Awards), as the Digital Technology Services Provider of the Year 2020 and for Innovation in Risk Management Solutions 2020.

www.soarsol.com



Spire Software

Spire's mission is to improve business performance and customers experience easily and quickly. Established by the founder and former CEO of Ireland's largest VRO, Spire understands the current challenges companies are facing and are committed to providing clients with the peace of mind that comes with knowing back-office processes are under control.

The need to claw back time and control and to do day to day tasks better, faster and with increased accuracy is the very reason Spire was born.

Spire recognises that Incident management, Vehicle recovery, Mobile Fleet Repair, Vehicle Rental and Leasing companies are in on-demand industries which work hard to meet customers' needs and require hands-on management and continuous manual oversight especially in the back office and Call Centre where any mistakes made can greatly impact margin and revenue.

Spire allows clients to gather vital information quickly from customers remotely via App Free communication, digitally capturing time stamped data and images securely. Allowing informed decisions to be made on what service and resource to deploy. The ability to ensure all stakeholders are aware of an Incident or Vehicle loss as soon as it is reported is invaluable to manage body shop booking, mobile triage, vehicle recovery and replacement vehicles to best meet the needs of your customer.

Spire's success is demonstrated by the fact that one of its clients achieved over €700,000 in annualised savings across 75,000 events in 2018-2019. This was achieved through faster job turnaround times, increased job productivity, optimised Call Centre operations, lowering insurance costs and increased average revenue per job.

www.soarsol.com





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