



An Roinn Iompair
Department of Transport

ITS Report

September 2020



Directive 2010/40/EU Progress Report 2020

Ireland

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Directive 2010/40/EU Progress Report 2020

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1 Introduction

1.1 General overview of the national activities and projects

This report sets out the activities and projects in Ireland regarding the priority areas under Directive 2010/40/EU on the framework for the deployment of Intelligent Transport Systems (ITS) in the field of road transport and for interfaces with other modes of transport, covering:

- I. Optimal use of road, traffic and travel data;
- II. Continuity of traffic and freight management ITS services;
- III. ITS road safety and security applications;
- IV. Linking the vehicle with the transport infrastructure.

The report has been prepared by the Department of Transport, with input from Transport Infrastructure Ireland (TII), the National Transport Authority (NTA) and local authorities. It covers the period from 2017 to the present, in line with Article 17.3 of the ITS Directive.

The Department of Transport has responsibility for overall policy, strategy and funding in relation to the national roads programme and national roads network in Ireland. The operation and management of the public road network in Ireland is the responsibility of a number of state organisations that comprises TII and the 31 local authorities. TII operates, develops and manages the national primary and secondary road network which accounts for 5,300 km approximately, of which circa 900km is motorways. This national roads network represents circa 6% of Ireland's total public road network (the remaining being regional and local roads), and carries approximately 45% of the country's total road traffic. Almost all of Ireland's freight is distributed by road.

A draft ITS strategy is currently nearing completion by TII. It will look to set out the principles of its approach, the strategic themes, and recommendations and tactical focus for successful implementation. The strategy looks to address how 'Key Enablers' are identified, covering both physical and digital elements associated with ITS; and the introduction of a 'Service Level' approach to the delivery of ITS, that links technology deployments to the outcomes achievable for both TII and the travelling public alike.

ITS stakeholders in Ireland leverage the non-profit national organisation ITS Ireland to act as a focus for the promotion of the use of technology in the transportation and mobility sector. ITS Ireland, which is celebrating its 10-year anniversary in 2020, acts as a conduit for the dissemination of ITS-related data across the Governmental, local authority, private and academic sectors. Having a collective and collaborative focus, it provides a suitable platform for the development of intelligent, multi-modal transportation, mobility and technology advances, and digital smart solutions in Ireland.

The MapRoad Pavement Management and Roadworks Licensing Systems are single-source centrally hosted systems for all roads in the country. They are national systems of regional and local road schedule information as well as road opening licence management. These systems are structured in a way that other road data can be linked at a future point; collision data (Road Safety Authority data can currently be imported to the system and referenced spatially to road segments), traffic count data, and traffic control measures.

Cork City Council, with the support of the NTA in particular, has continued to invest in the deployment and use of ITS Systems. Investment has been progressed within the framework of Strategic Corridor Studies

and the City Centre Movement Strategy and the associated Cork City Public Transport Initiative. The recent publication of the Cork Metropolitan Area Transport Strategy (CMATS) 2040 document outlines a direction for the future transportation network in Cork City. The ambitious plan outlines a strategy to place Cork City as a counterbalance to the expansion of Dublin and therefore provides an ideal opportunity to review the current infrastructure and plan for the future. To this end, Cork City Council has submitted a request for funding support to the NTA to allow the development of an ITS Strategy document. This seeks to define the future ITS requirements over the next 10 years, in correlation with CMATS.

In the Dublin Region, South Dublin County Council has continued to expand and enhance its ITS deployment. An additional 5,000mtrs of fibre optic cable has been added to interconnect additional traffic infrastructure. The dedicated traffic management centre has been redesigned and rebuilt, updating the video management software and ITS traffic control software.

Dublin City Council (DCC) Sydney Coordinated Adaptive Traffic System (SCATS) traffic control system has been expanded and enhanced and DCC continues to provide ITS services for a number of other local authorities across the region and country. DCC has integrated the Tram Line (referred to as 'Luas') in Dublin to the SCATS system utilising IP networks and dedicated fibre optic communications along with automatic cellular communications fail-over, to ensure constant communications for tram priority. DCC has continued to enhance its bus priority system which now has dedicated resources to manage it and has invested in Business Intelligence software to allow for better and more accurate reporting. The HGV permit management system was opened up to allow for a public app to be developed to allow citizens to check the status of large trucks in the city centre. An app and back office has now been developed to allow the public to provide qualitative data on Dublin's public transport services, while also allowing them to see status of their services.

Work is underway nationally in relation to Co-operative, Connected and Automated/Autonomous Mobility. At a policy level, the Department of Transport has begun preparatory work on a national roadmap and strategy, which will set out the steps needed over the coming years to allow for the introduction and deployment of connected and autonomous mobility in Ireland. The roadmap and strategy will take a whole-of-Government approach. A draft Connected and Autonomous Vehicles Strategy is also in development by TII.

Legislative amendment is required to allow for the testing of autonomous vehicles on the Irish public road network. The Government approved making changes to road traffic legislation to allow for such testing in December 2019, and a review of the legislation with the objective of proposing the most suitable legislative change is currently underway.

Future Mobility Campus Ireland (FMCI)¹ has been established with the purpose of creating and delivering future mobility testbed facilities for stimulating research, development and innovation in the area of Autonomous Connected Electric Shared Vehicles, including Connected and Autonomous Vehicles (CAV) in Ireland. The testbed will be located in the Limerick-Shannon metropolitan area at Shannon Free Zone, Shannon, County Clare. FMCI aims to deliver a test facility located in real-world settings, providing technology companies and researchers with the ability to test and enhance their innovations. The testbed will be equipped with multiple sensors, located throughout the site, along with high accuracy location systems, a data management and control centre and two sensor equipped test vehicles. This setup will provide the facilities and expertise to harness valuable sensor data, simulate environments and trial new technologies. In 2020, FMCI received €4.7m in Regional Enterprise Development Funding from Enterprise Ireland - the Government organisation responsible for the development and growth of Irish enterprises in world markets.

¹ <https://futuremobilityireland.ie/>

1.2 General progress since 2017

EU EIP – EU ITS Platform

Ireland has been a participant in the EU ITS Platform (EU EIP²) since 2014. EU EIP is the place where national ministries, road authorities, road operators and partners from the private and public sectors of almost all EU Member States and neighbouring countries cooperate in order to optimise ITS deployments in Europe in a harmonised way. The 5 ITS Corridors involved in the EU ITS Platform are: Arc Atlantique, Crocodile, Next-ITS, Med-TIS, Ursa Major.

EU EIP serves as a knowledge management centre by developing, providing, promoting and maintaining harmonisation tools and processes with substantial value to national road authorities and road operators, to private actors as partners in the ITS value chain and network, to the European Commission in implementing and advancing ITS policy and regulation as well as to relevant stakeholders and multi-stakeholder collaborations in the ITS community.

Key achievements of EU EIP comprise the European Reference Handbook for harmonised ITS Core Service Deployment in Europe, an improved mechanism for Cross Corridor Cooperation, KPIs for ITS deployment and benefits, the ITS toolkit and the evaluation library, the community building on National Access Points, innovation timelines and deployment roadmaps, information services quality frameworks and assessment methods, physical and digital infrastructure attributes for automated driving, good practices for how to automate road operators' own ITS and integrating C-ITS into road operators' day-to-day business. The entire EU EIP results address all of the ITS Priority Areas I-IV and contribute also to the knowledge on KPIs related to ITS Corridors.

Ireland participates in several activities within the ITS Platform, e.g.: “Activity 3 – Feasibility study East-West Corridor (EWC) and first pilot implementation” and “Activity 4.6 – National Access Points”. Associated to this participation in the EU ITS Platform, an “Intermodal Route planner for freight”³ was developed in 2019 by Ireland as an important deliverable for all the East-West Corridor partners.

It is also worth mentioning that under “Activity 2 – Monitoring and Dissemination” different inventories were made and are available through an online GIS tool. This includes the results of the East-West Corridor study, the dissemination of ITS projects and maps, the Traffic Management Centres and Cross-Border Management plans.

Arc Atlantique

TII has participated in Arc Atlantique since 2014. The main objective of the project is to improve interoperability on the main road routes that interconnect the various European countries (Ireland, UK, Netherlands, Belgium, France, Spain and Portugal) along the Arc Atlantique Corridor. Such improvements are focussed on the deployment of ITS systems that both deliver an enhanced service and share data/information with relevant stakeholders.

There have been three planned phases for Arc Atlantique. Ireland has contributed in the following manner:

- Arc Atlantique I (2014-2015) – the deployment of a network of Bluetooth Readers on the N7 corridor to calculate and deliver a travel time information service for network monitoring by the Motorway Traffic Control Centre. It is planned to disseminate the travel time data through Variable Message Signs (VMS) and web services in the future.

² www.its-platform.eu

³ <https://eastwestcorridor.eu/Planner>

- Arc Atlantique II (2015-2017) – the deployment of:
 - a) 8 x VMS on the Major Inter Urban network – M7 and M17/M6 at strategic locations - to be completed;
 - b) 6 x VMS in Dún Laoghaire Rathdown County (N11, N31 etc) - for provision of safety related and incident information as part of the urban/inter-urban interface; 1 x Lane Control Sign on the N7 approach to the M50 at Newlands Cross.

- Arc Atlantique III (2017-2020) – the deployment of 3 projects with a total investment of €7.5 million (EU estimated contribution of €1.5 million):
 - a) M50 Mandatory Variable Speed Limits (MVSL) Deployment – the deployment of 4 overhead lane control/speed signs at 40 gantry locations, with a view to operation by the end of 2021;
 - b) Construction of a dedicated building to house the new Motorway Operations Centre – Motorway Traffic Control Centre (finished in 2019, €3.5 Million approximately);
 - c) The development or upgrade of the Advanced Traffic Management Systems (ATMS) to control the MVSL and all other systems (currently in procurement phase).

Arc Atlantique has provided an important programme to not only offer funding opportunities for ITS projects in Ireland, but also facilitate dialogue and learning opportunities with other Member States.

TN-ITS Project – Provision of updates of ITS Spatial Road Data

Ireland was awarded grant funding for a 4-year period (2018-2021) to participate in the TN-ITS GO project on the updating of static road data. The grant comprised €111,200 Connecting Europe Facility (CEF) funding and €31,300 Department of Transport funding, with an additional €8,300 Department of Transport funding provided in September 2019 to complete the R&D element of the project.

The R&D element of the project was completed by the National Centre for Geocomputation, University of Maynooth. Maynooth University's final report detailing its outputs and findings, including technical and organisational benefits, together with recommendations and a work-plan to roll out an operational service was finalised in Q1 2020.

Building on the work completed by Maynooth University, the Department of Transport is currently working in conjunction with TII in order to implement the TN-ITS GO project, with the aim of having an operational system in place by mid-2021 at the latest.

C-Roads

Ireland upgraded its membership status within the C-Roads Platform in 2019, moving from associate to core membership. Ireland is taking an active role in the implementation of the EU C-ITS strategy, where different technical and organisational issues will be piloted in a trial of Day 1 and Day 1.5 C-ITS use cases among car and freight users (2019-2022). This project of €10 million is funded by the European Union, at a 50% funding rate.

Core members of the C-Roads platform are European States that agree to work together to achieve deployments that enable interoperable and seamless cross-border C-ITS services for European travellers. In the current stage, eighteen European countries have committed to participate with their pilot sites.

The overall aim of the C-Roads Ireland C-ITS pilot is to deploy, trial and evaluate Day-1 and future C-ITS services, using both V2V and V2I communications. The pilot will include development of services to align with Irish priorities, whilst recognising relevant standards and regulation. The pilot will test and evaluate C-ITS services on the Irish Roads Network (5 sections), predominantly on the Irish TEN-T network and a strategic route approaching and within Dublin City. The pilot will consider how the wider Cooperative, Connected and Automated Mobility (CCAM) model supports C-ITS and wider CCAM considerations.

MapRoad Pavement Management and Roadworks Licensing Systems

The Road Management Office develops and provides supports to roads authorities in the development of best practice and supporting ICT tools for road pavement management and road licensing (the MapRoad systems). This may be extended to include other assets management supports for structures and activities such as management of speed limits as well as providing supports for risk and public liability management.

The Road Management Office is a local authority shared service and was established in late 2014 following development of a business case by the Local Authority Sector, its approval by the Public Services Reform Oversight Group, the Minister for Transport, Tourism and Sport and the award of the shared service to a consortium of Donegal, Cork County, Cork City, Kerry and Tipperary Local Authorities.

The MapRoad Pavement Management and Roadworks Licensing Systems are single-source centrally hosted systems for all roads in the country.

The MapRoad Roadworks Licensing system is now operational in 30 of the 31 local authorities. Additional modules of the system include:

- Applicant Manager to manage disparate utilities and 3rd party contractors
- Inspections Module for Defect & Breach Resolution
- Additional Map Tools Interface
- Survey Information
- Linking of Road-Opening Licences

With regard to pavement management, reporting enhancements have been made to the system as well as the inclusion of a mobile app for the recording of bridge inventory and survey information. A new phase of development has commenced to include project data on more detailed works to cover detailed intervention makeup.

NeTEx

The NTA is implementing a project on behalf of the Department of Transport covering the creation of a NeTEx profile for Ireland and the development of a NeTEx export interface. Further detail is provided in Section 2.1.3 of the report.

1.3 Contact information:

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2 Projects, activities and initiatives

2.1 Priority area I. *Optimal use of road, traffic and travel data*

2.1.1 Description of the national activities and projects

Transport Infrastructure Ireland

| Project/Activities | Description |
|--|--|
| DATEX II roll out | <p>Partners: Department of Transport, TII, NTA</p> <p>Following the initial rollout of DATEX II (the European traffic data exchange protocol) as a national standard for the provision and exchange of traffic data between third parties, this has continued to be applied as the data transfer protocol to new projects.</p> <p>Status: Completed, operational for existing data transfer operations, ongoing for new data exchanges with third parties</p> |
| Real-Time Journey Information | <p>Partners: TII, Local Authorities</p> <p>TII continues to plan and deploy different Real-Time Journey Information technology on the network. These include upgrading the existing deployments, such as on the M50, renewal and upgrade of existing devices, such as on the M1, and new dense deployments, such as the N40 in Cork.</p> <p>Several other deployments are planned for the Major Inter Urban Routes as part of the TII ITS Implementation plan, to supplement the existing Real-Time Journey Information devices and provide greater granularity in the data that is provided to traveling public.</p> <p>Status: in planning</p> |
| Improvements to Light Rail (Luas) Real-Time Passenger Information | <p>Partners: TII Site: m.luas.ie/live-info</p> <p>The Luas Travel Alert Module is part of the Luas Forecast System which manages the RTPi data for the Luas websites and applications. This Module facilitates and automates communications in case of a Luas services disruption. The Luas Travel Alert Module which controls the messages issued via the Application and Website streams of RTPi was upgraded in 2016. This upgrade allows Luas to issue platform specific messages in case of service disruptions. This brings the information available on the websites and applications up to the level of the lineside passenger information displays.</p> <p>The Luas Travel Alert Module allows Luas personnel to:</p> <ul style="list-style-type: none"> - Change the Line Status Messages; |

| | |
|----------------------------------|---|
| | <ul style="list-style-type: none"> - Change the Platform Status Messages; - Turn On / Off the Platform RTPI Data; - Change the Website Travel Update Page; and - Tweet up to date information from @Luas. <p>When services are operating normally, all these channels send out a positive message i.e. Red Line services are operating normally/Green Line services are operating normally. When there is a service disruption, these channels are updated to send out an information message for the affected platforms and line. These messages are specific to the unique situation of the service disruption. 95% of forecasts across all channels are within 1 minute of each other, which is within the design specification.</p> <p>This system has worked well since early bugs were resolved. The distributed smartphone software was upgraded in 2019 and 2020 to continue consistent performance with new versions of Android and Apple operating systems.</p> <p>Status: Complete, Operational</p> |
| <p>N40 ITS Deployment</p> | <p>Partners: TII</p> <p>The deployment of ITS on the N40 will increase the efficiency and optimisation of the road’s operation. The project aims to implement an ITS scheme that will support an effective and real-time monitored road, while ensuring the protection of its strategic core function.</p> <p>The project also aims to support the management and the mitigation of the safety and reliability impacts that result from the current congested conditions, which are currently threatening the strategic function of the N40. Moreover, managing the capacity in a physically constrained road such as the N40 will be fundamental to tackling Cork’s forecasted population growth in the coming years and its consequent future traffic demand.</p> <p>The deployment of ITS on the N40 is focused on the three following priorities:</p> <ul style="list-style-type: none"> • Allow the traffic management and strategic management of the N40 road infrastructure; • Implement a robust network of Incident Detection on the N40 that will improve road safety, lower response times and shock-wave impacts on the road infrastructure; • Allow the provision of real-time information, that allows the management of diversions and permits informed decisions by users when facing congestion, incidents, weather adversities, road closures and other situations. <p>Status: being deployed and ongoing</p> |

Cork City Council

The activities and projects for Cork City Council fall under the following main areas:

1. Boundary Expansion: The expansion of the Cork City boundary doubled the road network under the management of the ITS Section to 919.5km;
2. ITS Fibre Optic Communications, UTC, SCOOT and CCTV;
3. Information dissemination.

Dublin City Council (DCC)

DCC has designed and overseen the design, development and deployment of a centralised Bus priority system which integrates real-time data from the Dublin Bus fleet with the SCATS traffic control system in Dublin. The objective has been a reduction in travel times, sophisticated analysis of bus speeds and areas of congestion as well as the visualisation of the data citywide. This project has been established with a DCC project team, budget for interventions (all funded by the NTA) and weekly liaison with Dublin Bus and the NTA. The project continues to successfully manage Bus journey times in Dublin at a network level. In addition, this has allowed the use of a more data-driven decision-making focus, where the journey time data along with unscheduled stops data allows for interventions to be targeted and continuously evaluated.

This project allows DCC to evaluate all road segments in Dublin for bus journey times, delays congestion, time at stops etc. However, it also allows that once areas of delay and congestion for the bus network have been identified, that remedial measures including traffic signal changes, new infrastructure, new road markings etc. can be implemented.

New software has been developed for the SCATS system which will automatically put all traffic flow data generated into a common database with at present also axle count data from around the city as well as static data counts. This has been visualised using visualisation software utilised for the bus network project. This project is funded by DCC – resources are 1 person and status is in progress.

The EU funded projects Insight and Vavel aimed to make enhanced use of data sources for better citywide alerting and decision-making. Insight made use of real-time SCATS and Bus data as well as Twitter and the DCC traffic radio station SMS and tweets from listeners and fused the data sources onto one map with a user app also. The Vavel project has now successfully concluded.

DCC have undertaken projects to detect and assist cyclists at junctions. Various means of detection have been evaluated and Smart Micros are now being used at numerous junctions to reliably detect cyclists and to extend all red times for cyclists to ensure they can cross big junctions in safety. These units are now being integrated to the main visualisation data base.

Kildare County Council (KCC)

KCC has continued to implement a remote monitoring Traffic Management Centre for signalised junctions in both urban and rural environments along with:

- CCTV cameras for traffic management purposes;
- All Remote Junctions/Pedestrian Crossings are monitored in the Traffic Management Centre
- Red light monitoring cameras at shuttle working over/under railway lines; and
- Provision of Driver Speed Information Feedback Signs.

Limerick City & County Council (LC&CC)

Adaptive Urban Traffic Control

Limerick City and County Council has been operating an Adaptive Urban Traffic Control system since 2003. This system includes both SCOOT traffic control and MOVA controlled junctions covering a large portion of the metropolitan road network. The system components also include UTC, Fault Management, Remote Management and bus priority. These systems are managed from a dedicated Traffic Management Centre. There are approximately 70 traffic signal controllers connected to the LC&CC urban traffic control system (for control, monitoring or both). Each of these sites gathers data in relation to traffic volumes and can provide congestion and incident detection capabilities.

Additionally, there are 20 MOVA controlled traffic signal junctions on the metropolitan network. These sites also gather data from the road network including traffic volumes, congestion and incident detection.

The Adaptive Urban Traffic Control system relies on a communication network to provide control centre-to-site and site-to-site communications. This network has been upgraded to a digital system. LC&CC has undertaken a programme to upgrade the communications network to fibre optic cable where possible and is this is currently now completed.

CCTV

LC&CC's metropolitan area CCTV system is linked to the Adaptive Urban Traffic Control system. There are approximately 32 ITS-related CCTV cameras deployed on the metropolitan network. Access to this CCTV is also available to An Garda Síochána. This CCTV is used to monitor the traffic network and to monitor bus stop and bus lane usage for obstruction.

Parking Guidance System and Variable Message Signage

A parking guidance system within the Limerick city centre was developed and installed in 2012. This comprises static, semi-static and fully variable message signs (VMS). There are approximately 26 no. semi-static parking guidance signs currently deployed. There are also approximately 15 VMS deployed on the network. These are primarily located on the approaches to the city centre.

E-Parking

The Limerick City e-Parking initiative currently has approximately 38,000 customers. The system permits parking to be purchased over the phone or through a mobile application. All on-street parking spaces within the metropolitan area are payable via e-parking which equates to approximately 3,500 spaces. Currently, approximately 51% of LC&CC parking transactions are performed through an e-parking phone application.

In addition to this, approximately 2,500 (private) off-street parking spaces are also within the system. A pre-booking facility is also available for motorists to book and pay for parking in advance. It is expected that the number of off-street parking facilities served by this system will extend over the coming years.

Journey Time Monitoring

A pilot journey time data collection system was deployed by LC&CC in 2014 and funding continues to date. This system covers two routes in the City Centre. Data has not yet been published to the public in a real-time environment.

2.1.2 Progress since 2017

TII

As described in 2.1.1.

Cork City Council

Boundary Expansion

The expansion of the Cork City boundary doubled the road network under the management of the ITS Section to 919.5km. The transfer of assets from the County Council to the City Council included ITS-related assets, which brings the inventory under the ITS section to:

- 362 Traffic signal sites
- 25 VMS
- 49 School Warning signs
- 13 Variable speed signs
- 30 Speed warning signs
- 25,000 public lighting
- 51 CCTV sites
- 6 Ped Counters
- 46 RTPi signs
- 7 Automatic bollard sites
- 57km of communications cabling

ITS Fibre Optic Communications, UTC, SCOOT and CCTV

Since 2017, significant progress has been achieved on the deployment and operation of the ITS fibre optic communications system being used to replace twisted pair copper for UTC, SCOOT optimisation and CCTV. Measures being funded by the NTA on various schemes to cater for improved bus operations and cycling facilities on the network incorporate these ITS measures to enhance and support more sustainable travel. Traffic Signal Control Network Improvements includes the replacement of obsolete traffic signal controllers. This has been undertaken as an integral part of the maintenance programme by Cork City Council which caters for renewal and replacement in the annual budget in addition to NTA and TII funding.

Information Dissemination

Cork City Council continues to support access to real-time data on the availability of parking in the multi-storey car parks and the Black Ash P+R. The data can be accessed via www.corkparking.ie on the Cork Smart Gateway at data.corkcity.ie/dataset/parking in addition to data for a variety of other sectors.

In addition, localised temperature readings are now intermittently displayed on VMS signs between traffic information in relation to network disruptions, severe weather warning, sustainable transport promotion and car park data.

A pedestrian trending system has been installed at 6 strategic sites to benchmark modal shift as NTA sustainable transport schemes are rolled out.

Cork City Council continues to facilitate the deployment of RTPi comprising the installation of 46 displays at bus stops by the NTA by undertaking the enabling works and provision of electrical supplies. The ITS Section maintains the network via MOU with the NTA.

Regional Public Bike Scheme

Cork City Council facilitated the deployment of the Regional Public Bike Scheme comprising the installation of 31 Bike Stations by the NTA by undertaking the enabling works and provision of electrical supplies. The Public Bike Scheme scheme has been in operation since early 2015 and is managed and maintained by the NTA.

Dún Laoghaire-Rathdown County Council

Dún Laoghaire-Rathdown County Council (DLRCC) uses ITS to optimise the operation of the traffic signals in the County, uses CCTV to monitor traffic, and uses variable message signs (both permanent and temporary) to inform the travelling public. DLRCC has continued to expand the roll out of ITS services on its

road network since 2017. This expansion has included the upgrade of additional signalised junctions to the SCATS traffic management system, additional traffic CCTVs to monitor the traffic network, and improvements to the fibre communication network within the authority to improve its resilience. DLRCC has upgraded traffic junctions to the SCATS traffic management system and have reached a point where 100% of signalised junctions are now connected to SCATS. DLRCC has 84 CCTVs, 291 signalised junctions and signalised pedestrian crossings and 34 Speed Alert Signs.

DLRCC have accommodated TII in the provision of Variable Message Signs (VMS), in particular on the M50, M11 and N31, and the NTA in the provision of Real-Time Passenger Information at bus stops throughout the county. The Council regularly uses mobile VMS for road closures and road works.

It should be noted that there are three major changes since 2017 which have changed the focus of the Council's ITS strategy.

- Ferry services to Dún Laoghaire have stopped. Consequently, the volume of HGVs has reduced and, in particular, the time critical journeys to a scheduled ferry departure no longer exist.
- Transport for Ireland (TFI) and TII have provided on-line portals for real-time travel information, and
- the vastly expanded use of smart phones and internet services by trip makers has reduced the need to provide real-time journey information at the roadside.

As a result of these changes, the focus of the Traffic and Road Safety Section of DLRCC has been on improving the optimisation of the operation of the traffic signals in the county.

Kildare County Council (KCC)

Increase in infrastructure as follows:

- Monitored Signalised Junctions extended from 79 to 87 sites;
- Monitored Signalised Pedestrian Crossings extended from 89 to 101 sites;
- Network extended from 60 to 73 CCTV monitoring sites with upgrading of software and wireless communication network; and
- Driver Feedback Signs extended from 10 to 31 Sites.

Limerick City & County Council (LC&CC)

Adaptive Urban Traffic Control

Ten additional MOVA controlled traffic signal junctions were installed on the regional road network and metropolitan area. This expansion follows developments at two shopping centres and improves performance of the road network and traffic flows in the vicinity. In addition to the installation of controllers and civil works, fibre optic services were expanded into the area as part of the works.

There is an ongoing UTC upgrade across the entire system which includes traffic signal controller upgrades and revalidation of individual sites and cells.

The communications network is also undergoing a long term upgrade. All analogue communication network equipment has been replaced with digital systems. As works allow, extension of the fibre optic network is ongoing and almost 90% completed in the City Centre in the C.B.D area.

Annual maintenance, upgrade and replacement of traffic Signal Control and its equipment comprises a significant amount of the maintenance works. The number of traffic controlled sites within the metropolitan area requires continued maintenance and preventative maintenance.

LC&CC have also provided traffic signal equipment replacement at a number of sites. As deployed equipment reaches its end of life state, replacement equipment is provided as necessary.

Bus detection is currently linked to the UTC system using loops. Limerick City & County Council's traffic department commences to rebuild the bus detection system at selected locations of the Metropolitan Area. It is also intended that real-time bus data will be put online and mapped by Limerick City & County Council as part of ongoing infrastructure projects, as the bus priority network is improved and expanded.

Table 1 - AUTC Spending by LC&CC 2017-2019

| ITS Activity – Adaptive Urban Traffic Control | Annual Spending | | |
|---|-----------------|----------|----------|
| | 2017 | 2018 | 2019 |
| - New Mova Sites | €54,000 | €65,000 | €40,000 |
| - UTC Upgrade | €100,000 | €100,000 | €100,000 |
| - Communications Network | €40,000 | €20,000 | €30,000 |
| - Traffic Signal Maintenance | €130,000 | €130,000 | €130,000 |
| - New Traffic Signal Equipment | €70,000 | €100,000 | €90,000 |

Variable Message Signs (VMS) and Parking Guidance Signs (PGS)

3 additional VMS (or PGS) were installed between 2017 and 2020.

Data Collection

3 mobile, battery-powered speed, volume and vehicle classification traffic counters were purchased in 2018, which incurred a cost of €10,000 in those years only. These have been deployed across the network on a project by project basis.

Limerick is a Smarter Travel Pilot City and therefore part of the ITS infrastructure involves non-vehicular users of the street. Pedestrian counters have been deployed in Limerick City Centre since 2006 and are in permanent use. Seven counters for pedestrians and bicycles were installed between 2014 and 2015, with a total of €35,000 paid for these by Limerick City & County Council.

Table 2 - Data Counter Spending by LC&CC 2017-2020

| ITS Activity – Data Counters | Annual Spending | | |
|-----------------------------------|-----------------|---------|------|
| | 2017 | 2018 | 2019 |
| - Mobile traffic counters | - | €10,000 | - |
| - Pedestrian and Cyclist Counters | - | €10,000 | - |

Journey Time Monitoring

A pilot journey time information scheme has been launched on sections of the R463 between Corbally and the City Centre, and on the R445 from Clare Street to the City Centre. This Bliptrack scheme began in 2014 as a trial system, and therefore had no initial start-up cost. It incurs an annual maintenance cost of €10,000. The information from this pilot scheme is currently not published, however the intention is to develop a full team in the control room to run and maintain the system, and then publish the data on an ongoing basis.

Table 3 - Journey Time Monitoring Spending by LC&CC 2017-2019

| ITS Activity – Journey Time Monitoring | Annual Spending | | |
|--|-----------------|--------|--------|
| | 2017 | 2018 | 2019 |
| Blip Track Journey Time Monitoring | €5,000 | €5,000 | €5,000 |

E-Parking

E-parking is currently in use for 3,500 on-street parking spaces in Limerick Metropolitan Area, as well as spaces in five of the 12 off-street car parks in the city. Four additional car parks are due to be integrated into the e-parking system soon. Approximately 51% of parking transactions are currently carried out via e-parking.

LC&CC have engaged two service providers of the e-Parking system (back-end system and transaction and court service processing). An additional cost is incurred per annum for operations and maintenance of e-parking systems, including the upgrade of handheld and radio systems.

Table 4 - E-Parking Spending by LC&CC 2017-2019

| ITS Activity – e-parking | Annual Spending | | |
|--|-----------------|---------|----------|
| | 2017 | 2018 | 2019 |
| - Operation and Transaction | €80,000 | €90,000 | €100,000 |
| - CIT system | €20,000 | €20,000 | €20,000 |
| - Ops, maintenance and upgrade of Handheld and radio systems | €25,000 | €25,000 | €25,000 |

Driver Feedback Signage

Driver feedback signs have been deployed by LC&CC in 2018 and 2019 across an additional 20 locations within the metropolitan area. These signs record vehicular speed and display a message to the driver of the vehicle indicating their speed or compliance with speed limits. These signs also record the speeds of each vehicle detected.

Table 5 - Driver Feedback Signage Spending by LC&CC 2017-2019

| ITS Activity | Annual Spending | | |
|-------------------------|-----------------|---------|---------|
| | 2017 | 2018 | 2019 |
| Driver Feedback Signage | - | €30,000 | €15,000 |

Noise and particulates are monitored by Limerick City & County Council's Environmental Department. A Noise Action Plan is operational. Additional noise monitors were installed in 2019 and are currently mounted on traffic infrastructure in the city centre. Data is being published as part of the Noise Action Plan.

The Coca-Cola bike share scheme launched in 2014 continues to operate. As this is part of a nationwide project which is operated by the NTA, the cost was not borne by Limerick City & County Council.

2.1.3 Delegated Regulation (EU) 2017/1926 on the provision of EU-wide multimodal travel information services (priority action a)

Measures undertaken, if any, to set up a national access point and on the modalities of its functioning: (including information on the weblink to the NAP and discovery services available to users)

The National Access Point (NAP) has been continuously updated through Ireland's Open Data Portal. This can be found at <https://data.gov.ie/>. Of direct relevance to ITS is data from TII, the NTA and local authorities.

The Department of Transport entered into a Grant Agreement with the European Commission in December 2017 for NeTEx implementation and integration of NeTEx with the National Access Point (NAP). This project was to cover the creation of a NeTEx profile for Ireland and the development of a NeTEx

export interface.

The NTA is overseeing the implementation of this project on behalf of the Department of Transport from a technical perspective and substantial progress has been made with the project tasks to date. A range of public transport data is currently available and ongoing efforts are being made to improve the associated metadata. In addition, development of the NeTEx profile has begun. A draft profile is now available which contains a limited number of transport modes, though this draft is not yet suitable for public dissemination.

Information on the progress made since 1 December 2019:

Progress with the NeTEx development task has been delayed by a number of factors but mainly due to the availability of internal and external resources. An external consultant has now been engaged to progress the NeTEx development. Development of the NeTEx profile is now due to be completed in late Q3 2020 and export interface for schedule data in NeTEx format will be available by Q1 2021.

The NTA is also currently engaged in the closing stages of a procurement process to secure a supplier for Travel Information Systems and Services (TISS). One of the requirements of this contract will be to export functionality for NeTEx data.

Additional information (e.g. which data types are being provided? Have metadata catalogues been implemented?)

As per Article 3.2, Ireland has decided to use its existing National Access Point set up to comply with the other delegated acts adopted under Directive 2010/40/EU to fulfil the requirements of Delegated Regulation 2017/1926.

The Open Data Portal hosted by the Irish Department of Public Expenditure and Reform – www.data.gov.ie – serves as the National Access Point. This National Access Point serves each of the Delegated Regulations.

The modalities of functioning of the National Access Point can be found in the Open Data Technical Framework which underpins the publication of open datasets on www.data.gov.ie. The technical framework can be found at <https://data.gov.ie/pages/opendatatechnicalframework>.

2.1.4 Reporting obligation under Delegated Regulation (EU) 2015/962 on the provision of EU-wide real-time traffic information services (priority action b)

(see guidance provided in Member States experts follow up meetings)

Measures undertaken, if any, to set up a national access point and on the modalities of its functioning:

The Open Data Portal hosted by the Irish Department of Public Expenditure and Reform – www.data.gov.ie – serves as the National Access Point. This National Access Point serves each of the Delegated Regulations.

Modalities of Functioning of National Access Point

The technical framework which underpins the publication of open datasets can be found at <https://data.gov.ie/pages/opendatatechnicalframework>

Real-Time Traffic Information

The open data portal is arranged thematically. The transport theme has 409 datasets, of which some examples are provided below. All of the data referred to below can be accessed at www.data.gov.ie.

NTA

65 datasets including:

- Irish Rail
- Luas tram/light rail Dublin city
- Dublin Bus
- Private Bus timetables for Ireland
- Rural transport routes
- Real-time Passenger Information (RTPI) for Dublin Bus, Bus Éireann, Luas and Irish Rail

The NTA produces the Transport for Ireland National Journey Planner which is a real-time app for travellers wishing to access all modes of public transport. It also includes options for cycling and walking. It can be found at: https://www.journeyplanner.transportforireland.ie/nta/XSLT_TRIP_REQUEST2?language=en

TII

21 datasets including:

- National Road Vehicle Detection Systems
- National Road Variable Messaging Signs
- National Roads Weather Station Data
- National Roads Travel Times
- Traffic on National Roads
- National Road Traffic Counts
- Marker Plates - location referencing system on the national network
- National Road Network Sinuosity Index
- Skid Resistance on National Roads

Dublin City Council

38 datasets including:

- Dublin Bikes real-time and static data
- Dublin City Public Cycle Parking Stands
- On Street Disabled Parking Bay in Dublin City Council area
- Parking meters location tariffs and zones in Dublin City
- Dublin City Strategic Cycle Network
- Dublin Bus GPS sample data from Dublin City Council (Insight project)
- Multi Storey Car Parking Space Availability
- Street Lighting Dublin City
- Suspension of on-street Parking Bays to facilitate events, road works, skips, construction works

Dún Laoghaire-Rathdown County Council

14 datasets including:

- DLR Parking Tag Information
- Parking Areas and Tag Meters in DLRC
- DLR Commercial Parking Locations, Numbers and Charges
- DLR County Council Parking Meters

Local authorities continue to make improvements in this area. By way of example, South Dublin County Council ANPR Journey Time Management System moved to cloud based Traffic Control environment and journey time data is now available via DATEX II traffic schemas.

Where relevant, the list of motorways not included in the comprehensive trans-European road network and identified priority zones:

The motorways not included in the comprehensive trans-European road network and identified priority zones:

- M2 – circa 13.5 km between Cherryhound and Rath roundabout north of Ashbourne

- M3 – circa 51 km between Clonee and Kells

Additional information (e.g. which data types are being provided? Have metadata catalogues been implemented? Are quality requirements being checked?):

Agreement in principle has been reached with the National Standards Authority of Ireland (NSAI) to fulfil the requirements of Article 11 of Regulation 2015/962 relating to designation of a national body competent to assess the requirements of Articles 3 to 10 of the same Regulation. The NSAI meets the criteria of being an independent and impartial national body which is competent to assess compliance with the requirements of Regulation 2015/962.

2.1.5 Reporting obligation under Delegated Regulation (EU) No 886/2013 on data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users (priority action c)

(see guidance provided in Member States experts follow up meetings)

Progress made in implementing the information service, including the criteria used to define its level of quality and the means used to monitor its quality:

TII

Universal traffic information gathered by TII is made available to the National Access Point hosted, hosted at data.gov.ie. Quality, at a basic level, is automatically monitored by the system which generates the information. No formal structured user-level monitoring exists other than journalistic feedback from TII staff and consultants.

2.2 Priority area II. Continuity of traffic and freight management ITS services

2.2.1 Description of the national activities and projects

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

TII

| Project/Activities | Description |
|--|--|
| Interoperable System for Electronic Tolling (Interoperability Management Services Provider) | <p>Partners: TII</p> <p>The Interoperability Management Service (IMSP) continues to facilitate tolling interoperability in Ireland. Its function has been extended during this period and has been a key component in the delivery of 2 new Irish initiatives such as the 'Low Emission's Vehicle Toll Incentive' (LEVTI) and the 'Disability Toll Exemption Scheme (DTES) (referenced under "Other initiatives"). These initiatives would not have been possible without the interoperability technical and contractual frameworks that are currently in place.</p> <p>Other works that have been undertaken is the creation of an IMSP Data lake, which pseudo anonymises toll interoperability data for ongoing archiving and is then made available for various research and analytics initiatives that are currently underway.</p> |

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| | <p>The existing IMSP service contract is due to expire in June 2022, and in preparation both strategy and procurement preparation works have been underway for the last 18 months; with the tender competition due to start in July 2020 and conclude in March of 2021. A Migration and Transition Project will then be under way to transition between the new and old services in advance of June 2022.</p> <p>The new Interoperability Service will look to bring the service in to compliance with the EETS Directive technical standards and optimising for the possibility of feasibility other mobility initiatives where feasible.</p> <p>Status: Complete, Operational</p> |
| <p>Toll System Renewals and Upgrades</p> | <p>Partners: TII, DCC</p> <p>There continues to be 11 toll chargers and 4 toll service providers in Ireland, with a new toll service provider possibly being added in the next 12 months. The various road operators continue to manage and operate their own roads and operations according to their own contract restraints / requirements.</p> <p>TII is responsible for the M50 and Dublin Tunnel toll systems, with a new M50 / Eflow toll operator due to be in place in Q2 of 2021, with a significant Migration and Transition project currently underway in the lead up to this date.</p> <p>TII is also in the process of planning a significant upgrade / replacement of the Dublin Tunnel toll systems, with the planning ongoing and technical specifications currently under development. This upgrade is likely to be complete within the next 18 months.</p> <p>Separate to the TII related systems, various PPP companies have upgraded their back office systems and some Roadside Equipment in accordance with their own maintenance plans.</p> <p>TII is currently in the process of undertaking a study in relation to EETS readiness, which will outline what are the steps to be taken, and key considerations and constraints around the rollout of the latest EETS Directive. In parallel, the Department of Transport is currently in the process of reviewing the EETS Directive and commencing the process towards the transposition of the Directive. Similarly, planning has commenced with regards to the use of EUCARIS for the purpose of sharing enforcement information, as allowed for in the latest update of the EETS Directive.</p> <p>Status: Complete, Operational</p> |

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| CCTV Cameras | <p>Partners: TII, Local Authorities</p> <p>A number of projects have provided the expansion of CCTV coverage of the transport networks including the installation of CCTV camera at key locations and linkage to Traffic Management Control Centres, with 17 new CCTV cameras deployed between 2017-2019.</p> <p>The CCTV is used to monitor the traffic network, manage incidents and in certain authorities to monitor bus stop and bus lane usage for enforcement purposes.</p> <p>The upgrade of the CCTV control system has been undertaken.</p> <p>Status: Complete, Operational, and being developed</p> |
|---------------------|---|

Dún Laoghaire-Rathdown County Council (DLRCC)

The Council has 34 Speed Alert Signs (which inform road users of their actual speed using a colour digital display). The signs are normally located in residential areas where there is a concern with excessive speed. The data is used to quantify the speeds and the data is used to determine if the concerns are real or perceived. The signs are solar powered, and can therefore be moved without the cost of providing a cabled power supply.

2.2.2 Progress since 2017

Description of the progress in the area since 2017:

As described in 2.2.1

2.3 Priority area III. ITS road safety and security applications

2.3.1 Description of the national activities and projects

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

TII

| Project/Activities | Description |
|-------------------------------|---|
| Variable Message Signs | <p>Partners: TII, Local Authorities</p> <p>Variable Message Signs are provided on the road network to allow for relevant, accurate and timely communication of information on the status of the network and to highlight road safety issues. TII were active in the period of 2011 to 2014 in the deployment of VMS in the Greater Dublin Area and on the Major Inter-Urban (MIU) routes but their plans to expand on these deployments were hampered in the 2014-2017 period due to scarce capital investment.</p> <p>During the period of 2017-2019, 14 new VMS were deployed in the National Road Network (M7; M18; N11; N31; R118). In addition to these deployed VMS, TII also commenced the design of additional deployments including M50 eMOS (65), N40 (14), and 2020 MIU ITS Deployment (16). During this period TII further investigated the use of</p> |

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| | <p>existing Advanced Directional Signage infrastructure for the mounting of customised Tactical VMS.</p> <p>The ITS Strategy looks to define the requirements for both tactical and strategic VMS signs to be located on the network. This will align to the Level of Service provision defined within the ITS Strategy.</p> <p>Status: Complete, operational and being developed</p> |
| <p>VMS Message Policy</p> | <p>Partners: TII and Road Operators</p> <p>In 2019 TII established and continues to coordinate a “VMS Message Policy User Group” with internal stakeholders and road operators.</p> <p>This aims to develop a comprehensive message sign policy for National Roads in order to provide harmonised and consistent messaging across the national VMS network.</p> <p>The main influencers of the policy are operational experience, reference from other EU countries, the EasyWay guidelines and the Traffic Signs Manual.</p> <p>Status: Ongoing and meeting occasionally</p> |
| <p>M17/ M18 weather information VMS project</p> | <p>Partners: TII</p> <p>Following the opening of the M18, TII has monitored weather events affecting the road, in particular hail events that impact on road safety. Further to these observations TII has enhanced the density of the previously built VMS structures with "Strategic VMS", plus some supplementary "Tactical VMS" on the M6 (the intersecting motorway) to allow for advanced notification of weather events to road users. This project is being developed in accordance with the TII ITS Strategy and Implementation Plan</p> <p>Status: Planning Phase, Ongoing</p> |
| <p>Dynamic Warning and Speed Activated Speed Signs</p> | <p>Partners: Department of Transport, TII, NTA, Local Authorities</p> <p>To better control traffic in sensitive areas and areas with an accident history, a number of schemes have been rolled out to provide Dynamic Warning (DWS) (including School Warning Signs) and Speed Activated signs.</p> <p>While the vast majority of the dynamic warning sign network was deployed by 2016, work has been ongoing since 2017 to supplement and complete the network. 6% of the network was deployed between 2017 and 2019.</p> <p>These signs monitor vehicular speed and display a message to the driver of the vehicle indicating their speed or compliance with speed limits. Many of the Speed Activated signs now facilitate the recording of vehicle numbers and speeds. This data is communicated wirelessly to the</p> |

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| | <p>appropriate authority.</p> <p>Since 2019, TII is developing Standardisation Specifications for future designs of DWS that will be part of the DWS deployment process binding TII and Local authorities. The development of these “standardisation specifications” aim at: providing a consistency of design, facilitating faster deployments and providing cost certainty, while at the same time enhancing maintenance efficiency with the standardisation of parts.</p> <p>Status: Complete, operational and being developed</p> |
| <p>Mobile applications for the vision impaired</p> | <p>Partners: TII</p> <p>This project was initiated to make the Luas light rail RTPi application available to vision-impaired users. Luas had previously provided apps for Apple iOS and Android smartphones providing RTPi and Luas Customer Information.</p> <p>The Luas App for the Vision Impaired (VI) differs from the general applications in that it is designed to use the accessibility functionality of the smartphone; in particular the Voiceover functionality.</p> <p>The Luas iOS VI Application has been downloaded by 2,900 users. Given the amount of Luas users likely to have a vision impairment (circa 1% or 900 people), this number of users for the VI application represents a significant user base.</p> <p>Status: Complete, operational</p> |
| <p>Upgrade internal CCTV on Luas light rail</p> | <p>Partners: TII</p> <p>To improve security and incident management of the light rail fleet the internal CCTV was upgraded and enables real-time remote viewing of CCTV images from the internal cameras.</p> <p>The original project successfully upgraded the on-board CCTV system on the Red Line fleet. The Green Line fleet is now partially upgraded to a similar digital CCTV system as part of the Vehicle Extension Contract, and the whole fleet is scheduled to be upgraded by Q1 2021. Additionally, new trams purchased since 2018 have come with the modern CCTV system installed.</p> <p>A trial for remote viewing of on-board CCTV was successfully completed, and a project to roll out this solution to Red Line trams is being considered.</p> <p>Status: Complete, Operational, and being developed</p> |
| <p>Upgrade of Luas stop CCTV</p> | <p>Partners: TII</p> <p>Following the successful upgrading of an analogue camera to internet protocol (IP) on a pilot project, all new cameras provided as part of the</p> |

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| | <p>LCC(Luas Cross City) extension project are IP-based, using the same software platform.</p> <p>LCC CCTV cameras (Bosch Silverlight) were successfully installed (during the period of 2017-2019) and are offering superior performance to the older analogue models. Analog cameras will be replaced by digital versions as part of asset renewals, although at present the analogue devices are operating well.</p> <p>Status: Complete, operational, and being developed</p> |
| <p>Red light camera project</p> | <p>Partners: TII, Garda Síochána (National Police force)</p> <p>The aim of the Red-Light Camera Project is to reduce the number of road traffic collisions which were caused by motorists breaking red lights at signalised junctions. The objectives of the Red-Light Camera Project were to bring these cameras into operation and issue Fixed Charge Penalty Notices (FCNs). The red-light camera was successfully commissioned and began issuing Fixed Charge Penalty Notices via the Garda computer system for accepted detections.</p> <p>This original pilot scheme ran for a period at Queen Street junction but has not been functioning since 2018. A wider scheme, to include 10 junctions, is being developed cooperatively by TII and the NTA. Legal changes to support this system, as well as Garda support for the operation of the system, have been progressed.</p> <p>TII is currently working on an updated Scope of Services in relation to this, which will be put out for tender by the NTA.</p> <p>Status: Complete, operational, and being developed</p> |
| <p>Red traffic signal monitoring equipment</p> | <p>Partners: TII</p> <p>TII engaged a specialist Video Content Analytics company to develop a portable stand-alone CCTV camera system able to record red light infringements and monitor motorists' behaviour at Luas junctions. After the successful conclusion of the trial, the system was acquired in 2016. The camera incorporates intelligent video analytics primed to recognise vehicles violating a red-light signal aspect. Any violations are recorded for later analysis. The installation is portable, and battery driven and does not require to be connected to a road traffic controller, road loops or power supply. This CCTV camera is being used to gather data which will identify high risk junctions and support the assessment of junctions for possible future mitigation measures, including future red-light camera installations.</p> <p>The system worked well and has been in operation by the TII Safety department since 2017. A GDPR assessment was carried out in the system in 2018 and a methodology for works compliant with GDPR was developed.</p> <p>Status: Completed. Operational</p> |

Dún Laoghaire-Rathdown County Council (DLRCC)

DLRCC traffic signals maintenance contractor provides 2 additional Speed Alert Signs per year. Since 2017, the Council has started using sockets for the signs, so they can be installed at a particular location, moved to another location and reinstalled at the original location at little cost.

2.3.2 Progress since 2017

Description of the progress in the area since 2017:

As described in 2.3.1.

2.3.3 112 eCall (priority action d)

Information on any changes regarding the national eCall PSAPs Infrastructure and the authorities that are competent for assessing the conformity of the operations of the eCall PSAPs:

As requested in Article 1 of the Decision No 585/2014/EC Ireland has deployed an eCall infrastructure on its territory.

To assess the conformity of the eCall implementation in Ireland the national competent authority, the Department of Communications, Climate Action & Environment, asked the accredited test laboratory NavCert, Braunschweig, Germany (Accreditation No. D-PI-17052-01-00) to assist as a technical service in undertaking the conformity assessment of Ireland's PSAP according to Delegated Regulation (EU) No. 305/2013.

The conformity assessment was executed in two parts:

- Component assessment (22 January 2018)
- Suitability of use (20&21 February 2018)

Details of this assessment are reported in the following documents:

- Test plan [PPP80029C] for Conformity Assessment for PSAP - No.:NC-BRA-1218-3421
- Test report for Conformity Assessment for PSAP according to DELEGATED REGULATION (EU) No. 305/2013 - Ireland created by Oliver Schneider, NavCert, 23 March 2018

The Department of Communications, Climate Action and Environment confirms that the conformity assessment of Ireland's eCall infrastructure was executed successfully by an accredited laboratory and that the eCall infrastructure conforms to the specification laid down in Delegated Regulation (EU) No 305/2013.

2.3.4 Reporting obligation under Delegated Regulation (EU) No 885/2013 on the provision of information services for safe and secure parking places for trucks and commercial vehicles (priority action e)

TII

Number of different parking places and parking spaces on their territory:

No developments in this area have been made yet, but a Pilot is being considered by TII for 2021.

Percentage of parking places registered in the information service:

0%

Percentage of parking places providing dynamic information on the availability of parking spaces and the priority zones:

0%

Additional information: (e.g. has a national access point been set up to provide truck parking data? Does it include dynamic data? What is the source of data (public / private)? Is data published on the European Access Point for Truck Parking hosted by DG MOVE? If not, is there any intention to do it in the future?)

Ireland has not designated any areas on the trans-European road network which require safe and secure parking for trucks and commercial vehicles, as in accordance with the Regulation no traffic and security conditions warranting such designation currently exist in Ireland. Therefore information services on safe and secure parking for trucks and commercial vehicles will not be implemented at this time. As a result of this, no priority zones are defined.

If there is a requirement for the provisions of Article 3 to be implemented at a later date in relation to truck and commercial vehicle parking, Ireland will already have developed a National Access Point and designated a Competence Assessment Body for Commission Delegated Regulation 886/2013 on road safety related traffic information. These same bodies will be used to fulfil the requirements of Regulation 885/2013.

2.4 Priority area IV. *Linking the vehicle with the transport infrastructure*

2.4.1 Description of the national activities and projects

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status: in particular, provide information on the C-ITS deployment initiatives and their technical specifications.

TII

| Project/Activities | Description |
|------------------------------------|--|
| Auto-routing of Light Rail | <p>Partners: TII</p> <p>Auto-routing of Luas light rail at two depots was commissioned during 2015 and 2016. This system sets the tram destination automatically, leaving the driver free to concentrate on other duties. The auto-routing at the two depots is conditional, meaning that the route for the tram is only set when the driver is ready to move and has pressed the Ready to Start (RTS) button in the cab. The LCC Luas extension also included auto-routing at a number of key locations along the route.</p> <p>This project was completed successfully and remains in use without issue.</p> <p>Status: Complete and operational</p> |
| C-ITS C-Roads Ireland Pilot | <p>Partners: TII, EU C-Roads Platform, Department of Transport, Dublin City Council (DCC), Road Safety Authority (RSA), Enterprise Ireland (EI), Industrial Development Authority (IDA), Mobile Network Operators, Car Manufacturers and Road Operators</p> <p>The overall aim of the C-Roads Ireland C-ITS pilot is to deploy, trial and evaluate Day-1 and future C-ITS services. The pilot will include</p> |

development of services to align with Irish priorities, whilst recognising relevant standards and regulation. The pilot will test and evaluate C-ITS services on the Irish Roads Network (5 sections), predominantly on the Irish TEN-T network and a strategic route approaching (motorways: M1, M50, M7, M8, M18) and within Dublin City. The pilot will consider how the wider Cooperative, Connected and Automated Mobility (CCAM) model supports C-ITS and wider CCAM considerations.

The objectives of the Irish C-Roads national pilot are as follows:

- Deploy a national C-ITS pilot and understand the issues associated with developing, delivering and operating C-ITS services;
- Understand how C-ITS infrastructure and service provision may be scaled to include all Day 1 and Day 1+ services;
- Test, validate and evaluate the impact of the piloted C-ITS services to understand how this may affect the network and operations and when scaled to higher levels of penetration;
- Evaluate the impact of C-ITS from a technological, safety, efficiency and compliance perspective and using established guidance from the C-Roads Working Groups, wider European guidance and agreed national approaches;
- Develop an understanding of the opportunities and limitations of system interoperability, and network operations considering the policy, regulations and standards requirements for C-ITS;
- Enable Ireland's road operators and industry partners to improve their knowledge of future disruptive technologies, and provide a meaningful contribution to the EU knowledge management group/s;
- Support and drive industry involvement which will accelerate C-ITS service development and deployment and support the development of a hybrid network which is fit for the future; and
- Deliver test & evaluation data and information that can be used to develop a business case for permanent and wider deployment and inform the operating model for C-ITS Services. This data would be considered with the evaluation of data from other C-Roads trials.

Having an approved procurement strategy enabled work to commence on the preparation of a C-ITS specification, where the scope of works included the site design, supply, installation, testing and commissioning of ITS-G5 roadside units (RSUs) on the M50 and M1 motorways.

A C-ITS service specification has been prepared that defines both physical and system related infrastructure dependencies (to inform the C-ITS equipment specification outlined above and the central station specification outlined below). The service specification defined the operational requirements of each service, e.g. transmission, triggers and data requirements - the output from this analysis has informed the development an operational plan.

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| | <p>In parallel with the above, work has been undertaken to define minimum functional requirements for the C-ITS central station (C-ITS-S). These requirements have captured a broader specification for a new traffic management system that TII is committed to procure.</p> <p>Status: Started May 2019 and ongoing (planning and procurement phase), €5 million of EU funding has been awarded to this project.</p> |
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Cork City Council

It is envisaged the aforementioned Cork City ITS Strategy document currently under review by the NTA would consider the C-ITS deployment initiatives and their technical specifications requirements for Cork City.

Dublin City Council (DCC)

The use of a centralised bus priority system using a centralised data feed which provides information on the status of each bus and its location continues to be the only Vehicle to infrastructure deployment to date.

Dún Laoghaire-Rathdown County Council (DLRCC)

All traffic signals in the County are now under SCATS control (versus 85% in 2017).

2.4.2 Progress since 2017

Description of the progress in the area since 2017:

As described in 2.4.1

2.5 Other initiatives / highlights

2.5.1 Description of other national initiatives / highlights and projects not covered in priority areas 1-4:

Description of the relevant initiatives, their objective, timescale, milestones, resources, lead stakeholder(s) and status:

TII

| Project/Activities | Description |
|--|---|
| Communications Infrastructure for ITS | <p>Partners: TII</p> <p>TII is engaged in the development of their ITS Communications Infrastructure under a number of headings:</p> <ul style="list-style-type: none"> • Infrastructure Improvement– TII is engaged in a programme of upgrade of telecommunications ducting in the road verge to bring them up to a standard that is appropriate for the installation of fibre optic cable. This involves infilling of gaps of the ducting on the network and testing and repair of existing ducting. • Fibre Optic Roll Out – TII continues to roll out fibre optic cable for dense ITS deployments, such as the N40 Project, and developing |

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| | <p>their current fibre deployment, such as the M50 and M1. TII, as part of their 5 year ITS Implementation Plan, are also planning the deployment of fibre optic cable on the Major Inter Urban routes for both ITS and C-ITS deployments.</p> <ul style="list-style-type: none"> • Wireless Deployments – Where appropriate TII is continuing to roll out wireless and cellular technology to reach last mile and remote devices, such as CCTV, Traffic Monitoring Units, ANPR, VMS, etc <p>Status: being developed and ongoing</p> |
| <p>Electric Vehicle Infrastructure</p> | <p>Partners: Various</p> <p>In developing a national network of public charging points ESB have overseen the completion of national electric vehicle (EV) charge point network of ~800 AC 22kW charge points and 80 fast 50kW DC charge. There are around 1,100 ESB charging points in Ireland today. Some are AC (22kW) and some are DC (up to 50kW).</p> <p>ESB is planning a high-power network (up to 150 kW) for 2020. ESB is planning an upgrade in the next 3-4 years to renew the network investing around €20 million to replace standard charging stations for 50 fast charging ones.</p> <p>Since November 2019, ESB has two ways for customers to pay for EV charging on its website: 1) Pay per use: 0.33 cent per kW/h; 2) a 5€ monthly fee for a reduced 0.29 cent per kW/h.</p> <p>In relation to other partners, it is possible to report the following:</p> <ul style="list-style-type: none"> • Tesco has a partnership with ESB to install eV charging at 52 stores across 18 counties (22kW dual chargers). This will commence in early 2020 and will be ready in Autumn 2020, • Tesla has 4 supercharger stations (120 kW) and 6 more coming soon. In addition, Tesla has 49 charging connections up to 22 kW across Ireland, • EasyGo has over 400 charge points nationwide. <p>Status: Complete, operational and being developed</p> |
| <p>M50 Motorway - Demand Management Programme</p> | <p>Partners: TII</p> <p>TII has embarked on a project to deploy an integrated package of measures involving the construction of a new Motorway Operations Control Centre, significant deployment of ITS equipment on the M50 Dublin Ring Road and the implementation of a new Network Intelligence and Management System to control all ITS equipment deployed on the national road network. The objectives of these works are:</p> <ul style="list-style-type: none"> • Reduce the adverse impact of future traffic growth on the level of service provided by the M50 Dublin Ring Road which forms part of the core TEN-T network. • Ensure that the operation and management of M50 traffic is undertaken in line with international best practice to reduce |

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| | <p>the impact of congestion and the level of disruption resulting from incidents on the M50 while enhancing journey time reliability.</p> <ul style="list-style-type: none"> • Maintain the safety record for road users and those who work on the M50 and the wider motorway and high-speed dual carriageway network as traffic volumes continue to grow. • Enable TII and emergency responders to implement an integrated and co-ordinated response to traffic conditions. • Improve the dissemination of information to road users to provide enhanced awareness of incidents, events and road works. • Implement appropriate technological solutions to support the operation of Ireland’s high-speed road network. <p>Procurement of circa 440 Advanced Matrix Indicator signs, 65 Variable Message Signs, 50 CCTV cameras and other ancillary equipment is underway. A separate procurement for the Network Intelligence and Management System has been similarly advanced in parallel.</p> <p>Status: Complete and being developed</p> |
| <p>National ITS Architecture</p> | <p>Partners: Department of Transport, TII, NTA</p> <p>TII is currently developing its overall data strategy and architecture which will incorporate their ITS data. This will define how data/information is retrieved, stored, secured, shared and disseminated, such as through the Open Data Portal. (LINK: https://data.tii.ie/)</p> <p>Status: Ongoing</p> |
| <p>Major Inter-Urban ITS projects</p> | <p>Partners: TII</p> <p>TII is developing its 5 year ITS Strategy and accompanying ITS Implementation Plan. The primary focus is on the Major Inter Urban Routes, to tie in with the Dublin and Cork regional deployments. The strategy aims to deliver varying service levels across the network, based on defined criteria (e.g. Weather Events, AADT, Accidents, etc). These service levels focus on Monitoring, Provision of Information, and Control. To facilitate these service levels requires different device deployments, including:</p> <ul style="list-style-type: none"> • Deployment of road VMS approaching interchanges, incidents of frequent weather events, areas of high AADT. • CCTV at key interchanges and high AADT • ANPR journey time across the MIU network • Supplementing the existing Traffic Monitoring Units • Weather detection devices • Fibre optic and wireless communications <p>Status: In development</p> |
| <p>Upgrade and Coordination of Traffic Management Centres</p> | <p>Partners: Department of Transport, TII, Local Authorities</p> <p>All Traffic Management Centres in Ireland undergo continuous upgrade, be it to facilities, systems or interconnectivity. These updates/upgrades</p> |

| | |
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| | <p>are undertaken to provide better traffic management and provision for dealing with emergency operations, ensure speedier and better response to any incidents or emergencies that arise and enhancing service provisions to other authorities across the regions and country.</p> <p>TII built a new Motorway Traffic Control Centre in 2019 as part of an extension to the existing Dublin Tunnel Control Building. This addition allows for increasing levels of functionality and number of services that will be required of motorway operations control presently and in the coming years. The operator is mobilising staff and upgrading IT systems to accept new services. A separate procurement to upgrade control software underway with planned completion in 2021.</p> <p>Status: Ongoing</p> |
| <p>Disability Toll Exemption Scheme (DTS)</p> | <p>Partners: TII, Disability Driver Association of Ireland, Irish Wheelchair Association</p> <p>The Disability Toll Exemption Scheme (DTES) is a centralised national scheme in Ireland, enabling efficient management of toll exemption for specially adapted vehicles, for people with disabilities. It started in 2018 and following significant stakeholder engagement over a period of 18 months, the scheme launched in February 2020, rectifying a longstanding issue for toll users and toll chargers.</p> <p>With this project, TII introduced a national card operator whom manages toll exemption cards for drivers with disabilities. This project required the management of multiple stakeholders including: all the national toll road operators, Disability Driver Association of Ireland, Irish Wheelchair Association, TII, the Interoperability Management Service Provider (IMSP) and TII’s legal representatives.</p> <p>Link: https://dtes.ie/</p> <p>Status: Completed and ongoing</p> |
| <p>Low Emission Vehicle Toll Incentive (LEVTI) scheme</p> | <p>Partners: TII, toll road operators and service providers, Department of Transport, SEAI</p> <p>The EVTI scheme was launched in July 2018, to incentivise the use of Electric Vehicles. The scheme provides toll discounts/rebates for battery electric and plug-in hybrid vehicle. The Scheme refunds vary depending on the toll collection location, the toll transaction time and day, the eligible vehicle type (e.g. BEV, PHEV, FCEV) and class (i.e. private, light goods vehicle, SPSV and HDV).</p> <p>This project required the management of multiple stakeholders including: all the national toll road operators, all national toll service providers (i.e. toll tag providers), the Department of Transport, SEAI, TII, the Interoperability Management Service Provider (IMSP) and TII’s legal representatives.</p> <p>Under the 2020 Budget, the Department of Transport secured funding to support a reduced tolling scheme for LEVs, broadening the previous Electric Vehicle Toll Incentive Scheme. This LEV Scheme will be funded</p> |

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| | <p>under the Carbon Reduction Programme, with the objective of reducing transport emissions and building a climate resilient low carbon transport sector by 2050. The tolling Scheme will be administrated by TII on behalf of the Department of Transport. The upgraded scheme will run until December 31st, 2022 (or up to a maximum of c. 50,000 LEVs.).</p> <p>Link: https://etoll.ie/low-emissions-vehicle-toll-incentive/</p> <p>Status: Completed and ongoing</p> |
| <p>Intermodal Route planner – Freight and Ports (EU EIP)</p> | <p>Partners: TII, Irish Exporters Association</p> <p>In 2018 it was developed within EU EIP Activity 3 (East West Corridor Feasibility Study) a dedicated Intermodal Route Planner for freight moving in Lo-Lo (Lift on-Lift off) containers, demonstrating seamless, continuous and harmonised ITS services on the East West Corridor.</p> <p>The developed planner is shipper focused and is available free of charge and includes all viable routings for traffic moving within the east-west corridor from point of origin to final delivery points which may use any combination of road, rail, short sea and inland waterways.</p> <p>Link: https://eastwestcorridor.eu</p> <p>Status: Complete and ongoing</p> |

Cork City Council

Electromobility and promotion of Electric Vehicles

Cork City Council has deployed Electric Vehicles and Pedelecs on its own fleet. The recent award of Cork City Council’s new Fleet provision and management contract has resulted in the replacement of 76 ICEs with Electric vehicles. Cork City Council’s decision to go electric is a key plank of the City’s Climate Action Plan, which followed widespread public engagement in 2019. It is also central to the Government’s National Climate Action Plan.

The local authority is facilitating the installation of EV Charge Points at selected sites including Depots, City Hall, multi-story car parks and Black Ash P&R.

Cork City Council Bye-laws were introduced in July 2016 to cater for the control of parking by EVs at on-street Charge Points, in line with National legislation. New street signs have been designed in 2017 with time-plates to limit EV parking to a maximum of 4 Hours and only while charging. Drivers are advised on the information panel to move the EV from the Charge Point once charging has been completed.

In addition, an Electric Vehicle Charging Infrastructure for New Developments in Cork - A Guide for Developers, 2017 has been drafted and issued. This document is will now be reviewed in line with national strategy objectives and goals and resissued as part of the ITS strategy review.

Limerick City & County Council (LC&CC)

A “car-to-go” car sharing scheme is currently operating by private contract. LC&CC run a ‘Limerick Life-Saver’ project which has benefited 55,000 children in Limerick County. This 2-day programme, which is aimed at Transition Year students, includes simulating road accidents in order to inform young people to the dangers associated with road transport.

LC&CC utilise ITS solutions at all major road works in the metropolitan area. Mobile VMS are deployed in order to disseminate information and manage traffic. The LC&CC website is also utilised to inform the public of all upcoming works and potential restrictions.

LC&CC monitor on-street e-vehicle charging spaces. Twelve new e-vehicle charge stations were engaged in since 2018.

ESB eCars

At date ESB ecars had completed a network of 1,100 EV charge points to enable Electric Vehicle (EV) drivers to travel across the island of Ireland. This built out a nationwide network of charge points ahead of demand for EVs. The deployment included publicly accessible AC charge points in towns and cities along with installations of fast DC charge points on key transit routes including motorway service areas.

The network is fully interoperable between the networks in both Republic of Ireland and Northern Ireland and is operated and maintained by ESB ecars. Usage on the network is increasing on monthly basis and new projects to enhance and expand the network are being undertaken in the coming years. The team is made up of ~20 staff and additional contractors and call centre operatives/support suppliers.

The networks serves ~20,000 EVs (BEV and PHEV) in Republic of Ireland.

Information on the network is available via the ESB charge point map: (<https://www.esb.ie/ecars/charge-point-map>) and via the ecars website (www.esb.ie/ecars)

2.5.2 Progress since 2017

Description of the progress in the area since 2017:

As described in 2.5.1

3 Key Performance Indicators (KPIs)

Note: The EC document on "ITS KPIs for the EU" is to be used for comprehensive definitions of the KPIs and further guidance. The EU EIP Activity 5 report on "ITS Deployment and Benefit KPIs definitions" is a complementary document providing in particular estimation methods.

KPI will be reported separately by type of road network / priority zone / transport network and nodes (when appropriate).

For the calculation of the KPIs, the following total lengths of road networks in Ireland is to be used:

| National Roads (responsibility of TII) | |
|--|------|
| Main North Sea-Mediterranean Corridor (M1/M50/M7/M8) (This forms part of the Core TEN-T Network) | 347 |
| Core TEN-T Network | 499 |
| Comprehensive TEN-T Network | 1701 |
| Motorways (Not Part of TEN-T) | 65 |
| Other Sections | 3032 |
| Total | 5297 |



Figure 1 - Main North Sea – Mediterranean Corridor (rail + road)



Figure 2 - Ireland Core Network



Figure 3 - Ireland Comprehensive Network

3.1 Deployment Key Performance Indicators (KPIs)

3.1.1 Information gathering infrastructures / equipment (road KPI)

Relating to this category, TII gathers two types of information: Weather and Environmental Conditions, and Traffic Conditions.

All the figures below refer to fixed equipment; mobile equipment is not used.

| Figures to be provided | Road Network | KPI |
|---|--|--|
| Figures to be provided by type of network/zone. KPI to be calculated by type of network/zone (when relevant). Figures to distinguish fixed and mobile equipment. - not distinguished in Ireland | Length of road network type/road sections (in km) equipped with information gathering infrastructures Total length of this same road network type (in km) | KPI = (kilometres of road network type equipped with information gathering infrastructures / total kilometres of same road network type) x 100 |
| Network/Part of Network | Information Gathering Infrastructures | |
| Main Corridor | 347 / 347 | 100 |
| Core TEN-T | 499 / 499 | 100 |
| Comprehensive TEN-T | 1701 / 1701 | 100 |
| Motorways | 65 / 65 | 100 |
| Other Sections | 3032 / 3032 | 100 |

3.1.2 Incident detection (road KPI)

| Figures to be provided | Road Network | KPI |
|--|---|---|
| Figures to be provided by type of network/zone. KPI to be calculated by type of network/zone (when relevant). <i>Figures to distinguish fixed and mobile equipment. - not distinguished in Ireland</i> | Length of road network type/road sections (in km) equipped with ITS to detect Incident Total length of this same road network type (in km) | KPI = (kilometres of road network type equipped with ITS to detect Incident / total kilometres of same road network type) x 100 |
| Network/Part of Network | Incident Detection | |
| | National Roads | |
| Main Corridor | 204 / 347 | 59 |
| Core TEN-T | 204 / 499 | 41 |
| Comprehensive TEN-T | 60 / 1701 | 4 |
| Motorways | 50 / 65 | 77 |
| Other Sections | 0 / 3032 | 0 |

| Respondents outside of National Roads | | |
|---------------------------------------|-------------|------|
| Dún Laoghaire-Rathdown County Council | 50 /135 | 37 |
| South Dublin County Council | 50 / 950 | 5.2 |
| Limerick City and County Council | 33.1 / 93.8 | 35.3 |

3.1.3 Traffic management and traffic control measures (road KPI)

| Figures to be provided | Road Network | KPI |
|--|---|---|
| Figures to be provided by type of network/zone. | Length of road network type/road sections (in km) covered by traffic management and traffic control measures Total length of this same road network type (in km) | KPI = (kilometres of road network type covered by traffic management and traffic control measures / total kilometres of same road network type) x 100 |
| KPI to be calculated by type of network/zone (when relevant). | | |
| <i>Figures to distinguish fixed and mobile equipment. - not distinguished in Ireland</i> | | |
| Network/Part of Network | Incident Detection | |
| National Roads | | |
| Main Corridor | 5 / 347 | 1 |
| Core TEN-T | 5 / 499 | 1 |
| Comprehensive TEN-T | 1.5 / 1701 | 0 |
| Motorways | 0 / 65 | 0 |
| Other Sections | 2.5 / 3032 | 0 |
| Key Respondents outside of National Roads | | |
| Dún Laoghaire-Rathdown County Council | 14.1 /135 | 10.4 |
| South Dublin County Council | 450 / 950 | 47 |
| Limerick City and County Council | 34.2 / 93.8 | 35.6 |
| Kildare County Council | 25 / 240 | 10.42 |

3.1.4 Cooperative-ITS services and applications (road KPI)

| Key Respondents outside of National Roads | | |
|---|--------|----------|
| Dún Laoghaire-Rathdown County Council | 3 /135 | 2.2 |
| Cork City Council | 850 | 21 Sites |

3.1.5 Real-time traffic information (road KPI)

| Figures to be provided | Road Network | KPI |
|---|--|--|
| <p>Figures to be provided by type of network/zone.</p> <p>KPI to be calculated by type of network/zone (when relevant).</p> <p><i>Figures to distinguish fixed and mobile equipment. - not distinguished in Ireland</i></p> | <p>Length of road network type/road sections (in km) equipped with the provision of real-time traffic information (in km)</p> <p>Total length of this same road network type (in km)</p> | <p>KPI = (kilometres of road network type equipped with the provision of real-time traffic information (in km) / total kilometres of same road network type) x 100</p> |
| Network/Part of Network | Incident Detection | |
| National Roads | | |
| Main Corridor | 272 / 347 | 78 |
| Core TEN-T | 372 / 499 | 75 |
| Comprehensive TEN-T | 243 / 1701 | 14 |
| Motorways | 50 / 65 | 77 |
| Other Sections | 0 / 3032 | 0 |
| Key Respondents outside of National Roads | | |
| Limerick City and County Council | 10.7 / 93.8 | 11.4 |

3.1.6 Dynamic travel information (multimodal KPI)

| Figures to be provided | Road Network | KPI |
|---|--|---|
| <p>Figures to be provided by type of network / zone / node.</p> <p>KPI to be calculated by type of network / zone / node (when relevant), and if relevant indicate the proportion of services accessible to passengers with reduced mobility, orientation and/or communication.</p> | <p>Length of transport network type (in km) with provision of dynamic travel information services (in km)</p> <p>Total length of this same road network type (in km)</p> | <p>KPI = (kilometres of transport network type with provision of dynamic travel information services / total kilometres of same transport network type) x 100</p> |
| Network/Part of Network | Real-time Traffic Information (per network km) | |
| ROAD | | |
| Limerick City and County Council | 3.7 / 93.8 | 4 |
| RAIL | | |
| Luas Light Rail Network (excl. Luas Cross City) | 42.5 / 42.5 | 100 |
| Iarnród Éireann Rail Network | 2400/2400 | 100 |

| | Number of transport nodes (e.g. rail or bus stations) covered by dynamic travel information services Total number of the same transport nodes | KPI = (number of transport nodes with provision of dynamic travel information services / total number of same transport nodes) x 100 |
|---|--|--|
| Network/Part of Network | Real-time Traffic Information (per transport node) | |
| ROAD | | |
| Bus stops Greater Dublin Area, regional and rural cities (Cork, Limerick, Galway) | 734 / ca. 12000 | 6.06 |
| RAIL | | |
| Luas (excl. Luas Cross City) | 67 / 67 | 100 |
| Railway Stations | 236/236 | 100 |

National Intermodal Journey Planner

Door to door public transport journey planning service provided through the internet and mobile services. The National Intermodal Journey Planner has all-island coverage and features information on journeys on buses, trams, trains, walking, taxis, ferries to the islands. The planner includes information on all licensed / contracted surface public transport services operating on the island of Ireland. This planner integrates with the existing Real-Time Passenger Information service for real-time journey planning where appropriate.

Coverage

- Dublin Commuter Rail System: 100% coverage
- Cork Suburban Rail System: 100% coverage
- National Inter-city Rail System: 100% coverage
- Dublin Light Rail System: 100% coverage
- Cork Metropolitan Area Bus System: 100% coverage
- Limerick Metropolitan Bus System: 100% coverage
- Galway Metropolitan Bus System: 100% coverage

Cycle Journey Planner

Door to door cycle journey planning service provided through the internet and mobile devices. The Cycle Journey Planner has coverage of the Greater Dublin Area as well as the cities of Cork, Limerick, Galway and Waterford and includes features such as user preferences around gradient, directness and traffic regime.

This project integrates with the existing Real-Time Passenger Information service for real-time journey planning where appropriate, as well as integrating with public hire systems in all the cities (except Waterford, where no bike share scheme exists at present).

Coverage

- Dublin Metropolitan Area: 100%
- Cork City: 100%

- Galway City: 100%
- Limerick City: 100%
- Waterford City: 100%

3.1.7 Freight information (multimodal if possible or road KPI)

3.1.8 112 eCalls (road KPI)

N.a. – will be provided through the COCOM 112 questionnaire

3.2 Benefits KPIs

3.2.1 Change in travel time (road KPI)

The change in travel time before and after the implementation of ITS is not captured.

Changes in travel time are difficult to determine reliably. ITS is mainly implemented in places with rising traffic volumes which lead to increased journey times, so that the impact of ITS is not exactly measurable or comparable over time.

3.2.2 Change in road accident resulting in death or injuries numbers (road KPI)

The Road Safety Authority (RSA) captures statistics in relation to all road traffic collisions. This information is available via data.gov.ie and through the RSA homepage (www.rsa.ie). A sample infographic, published by the Road Safety Authority, is included in Appendix 1. However, the impact of ITS systems on the change in number of death or injuries from road traffic collisions is not captured and it is not possible to disaggregate using the information currently captured.

3.2.3 Change in traffic-CO2 emissions (road KPI)

Not collected.

3.3 Financial KPIs

ITS includes any types of systems and services altogether.

The calculation of financial ITS KPIs includes any types of systems and services altogether.

Annual investment in road ITS (as a % of total transport infrastructure investments):

| Annual investment in road ITS (as % of total infrastructure investment) | 2017 | 2018 | 2019 |
|---|-------------|-------------|-------------|
| TII – National Roads | 2,671,720 € | 3,174,240 € | 3,239,535 € |

TII, responsible for the National Road Network, only provides figures for absolute annual investment in road ITS, not as a percentage of total infrastructure investment.

TII's Annual Investment in ITS is based on annual programmes so it fluctuates year-on-year. TII capital investment in total expenditure represented consistently 56% for the period of 2017-2019.

Annual operating & maintenance costs of road ITS (in euros per kilometre of network covered):

| Annual Operating and Maintenance costs of road ITS (€/km of network covered) | 2017 | 2018 | 2019 |
|---|-------------|-------------|-------------|
| TII – National Roads | | | |
| Total O&M costs | 1,212,202 € | 1,355,537 € | 1,436,448 € |
| O&M Costs for Main/Core/Comprehensive TEN-T Network (2200 km) | 551 €/ km | 616 €/ km | 652 €/ km |
| O&M Costs for total road network (5296 km) | 229 €/km | 256 €/km | 271 €/km |

In relation to operational and maintenance costs, maintenance costs represent the highest share with an average of 80% for the period of 2017-2019. Considering the Operating and Maintenance costs throughout the analysis period it is possible to verify a slight increasing trend (a percentage rise between 10% and 5% annually).

Cork City Council

| Annual investment in road ITS (as % of total infrastructure investment) | 2020 |
|--|-------------|
| Cork City Council (1.2%) | €652,000 |

| Annual Operating and Maintenance costs of road ITS (€/km of network covered) | 2020 |
|---|--------------|
| Cork City Council | |
| Total O&M costs | 1,638,700 € |
| O&M Costs for total road network (919.5km) | 1782.16 €/km |

Limerick City & County Council (LC&CC)

| Annual investment in road ITS (as % of total infrastructure investment) | 2017 | 2018 | 2019 |
|--|-------------|-------------|-------------|
| Limerick City & County Council | 570,000 | 641,000 | 601,000 |

| Annual Operating and Maintenance costs of road ITS (€/km of network covered) | 2017 | 2018 | 2019 |
|---|-------------|-------------|-------------|
| Limerick City & County Council | | | |
| O&M Costs for total road network | 5150 €/km | 5760€/km | 5409€/km |

Kildare County Council (KCC)

| Annual investment in road ITS (as % of total infrastructure investment) | 2020 |
|--|-------------|
| Kildare County Council (0.3%) | €100,000 |

| Annual Operating and Maintenance costs of road ITS (€/km of network covered) | 2020 |
|---|-------------|
| Kildare County Council | |
| Total O&M costs | 500,000 € |
| O&M Costs for total road network 2400km) | 208.33 €/km |

Dún Laoghaire-Rathdown County Council (DLRCC)

| Annual Operating and Maintenance costs of road ITS (€/km of network covered) | 2019 |
|---|-------------|
| Dún Laoghaire-Rathdown County Council | |
| Total O&M costs | 958.000 € |
| O&M Costs for total road network | 7096 €/km |

Glossary

| | |
|----------------------------|---|
| Bluetooth Readers | Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices and building personal area networks. In a traffic environment Bluetooth readers are used to identify particular devices, and that information can be used to track a device across the network. |
| Datasets | A data set (or dataset) is a collection of data. Most commonly a data set corresponds to the contents of a single database table, or a single statistical data matrix, where every column of the table represents a particular variable, and each row corresponds to a given member of the data set in question. |
| DATEX II | The European traffic data exchange protocol |
| Dynamic Travel Information | Travel information that is amended in reaction to changes in the network conditions. |
| Dynamic Warning Signs | Warning signs fitted with detection devices that will display appropriate, preprogrammed, messages based on observed network conditions. |
| Embedded inductive loops | A metal coil buried in the road service that detects the presence of vehicles by currents induced in the cable. |
| Greater Dublin Area | The geographic area comprising the four Dublin local authorities and portions of the adjacent counties including Kildare, Meath, Wicklow and Louth. |
| Journey Planners | A system that allows a user to input start and end points for a particular journey, the system then calculates appropriate routes for that journey. Journey Planners can be multimodal, allowing them to provide comparisons on different routes and modes. |
| Luas Light Rail | The Luas is the Dublin Light Rail system comprising of two lines (Red and Green) and an interconnecting service. |
| M50 | The main orbital motorway around Dublin, connecting to the M1, M11 and Dublin Port. |
| Open Data | Open data is the idea that some data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control. The goals of the open data movement are similar to those of other "open" movements such as open source, open hardware, open content, open government, open access, and open science. Paradoxically, the growth of the open data movement is paralleled by a rise in intellectual property rights. |
| Red Light Monitoring | A system that monitors vehicles that progress into a junction across a stop line that has an associated red traffic signal aspect displayed. |

| | |
|-----------------------|---|
| Smart Cities | <p>These systems will utilise CCTV connected to the traffic signal controller.</p> <p>A smart city is an urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently.[1] This includes data collected from citizens, devices, and assets that is processed and analysed to monitor and manage traffic and transportation systems, power plants, water supply networks, waste management, law enforcement, information systems, schools, libraries, hospitals, and other community services. The smart city concept integrates information and communication technology (ICT), and various physical devices connected to the network (the Internet of things or IoT) to optimise the efficiency of city operations and services and connect to citizens. Smart city technology allows city officials to interact directly with both community and city infrastructure and to monitor what is happening in the city and how the city is evolving.</p> |
| Speed Activated signs | <p>Dynamic Warning Signs that will display the speed of an approaching vehicle, in a manner that can be observed by the driver.</p> |
| Speed Monitoring | <p>A system that monitors the speed of vehicles at a single point or over a specific section of road. These systems can utilise multiple detection technologies including Radar, CCTV and ANPR.</p> |
| Web-Application | <p>In computing, a web application or web app is a client–server computer program in which the client (including the user interface and client-side logic) runs in a web browser. Common web applications include webmail, online retail sales, online auctions, wikis, instant messaging services and many other functions.</p> |

Abbreviations

| | |
|---------|--|
| ANPR | Automatic Number Plate Recognition |
| AVLS | Automatic Vehicle Locating System |
| CAV | Connected and Autonomous Vehicles |
| CCC | Cork City Council |
| CCTV | Closed Circuit Television |
| C-ITS | Cooperative Intelligent Transport Systems |
| CSO | Central Statistics Office |
| DCC | Dublin City Council |
| DCCAE | Department of Communications, Climate Action and Environment |
| DLRCC | Dún Laoghaire-Rathdown County Council |
| DOT | Department of Transport |
| DWS | Dynamic Warning Signs |
| EETS | European Electronic Toll Service. |
| EIP | European ITS Platform |
| eMOS | Enhancing Motorway Operation Services |
| ESB | Electricity Supply Board |
| ETC | Electronic Toll Collection |
| FCC | Fingal County Council |
| FCN | Fixed Charge Notices |
| GCC | Galway City Council |
| GIS | Geographic Information System |
| IP | Internet Protocol |
| ITS | Intelligent Transport Systems |
| KCC | Kildare County Council |
| LA | Local Authorities |
| LC&CC | Limerick City & County Council |
| LCC | Luas Cross City |
| LCS | Lane Control Sign |
| LED | Light Emitting Diode |
| LGMA | Local Government Management Agency |
| MIU | Major Inter Urban |
| MOVA | Microprocessor Optimised Vehicle Actuation |
| MTCC | Motorway Traffic Control Centre |
| NAP | National Access Point |
| NRA | National Roads Authority |
| NSAI | National Standards Authority of Ireland |
| NTA | National Transport Authority |
| OSI | Ordnance Survey Ireland |
| P2PE | Point- To- Point Encryption |
| PCI-DSS | Payment Card Industry Data Security Standard |
| PMS | Pavement Management System |
| RMO | Road Management Office |
| RMS | Remote Monitoring Systems |

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| RSA | Road Safety Authority |
| RTPI | Real- Time Passenger Information |
| RTS | Ready to Start |
| SCATS | Sydney Coordinated Adaptive Traffic System |
| SCOOT | Split Cycle Offset Optimisation Technique |
| SDCC | South Dublin County Council |
| SPAD | Signals Passed at Danger Detection |
| STMP | Strategic Traffic Management Plan |
| TII | Transport Infrastructure Ireland |
| TVM | Ticket Vending Machine |
| UTC | Urban Traffic Control |
| VMS | Variable Message Sign |

