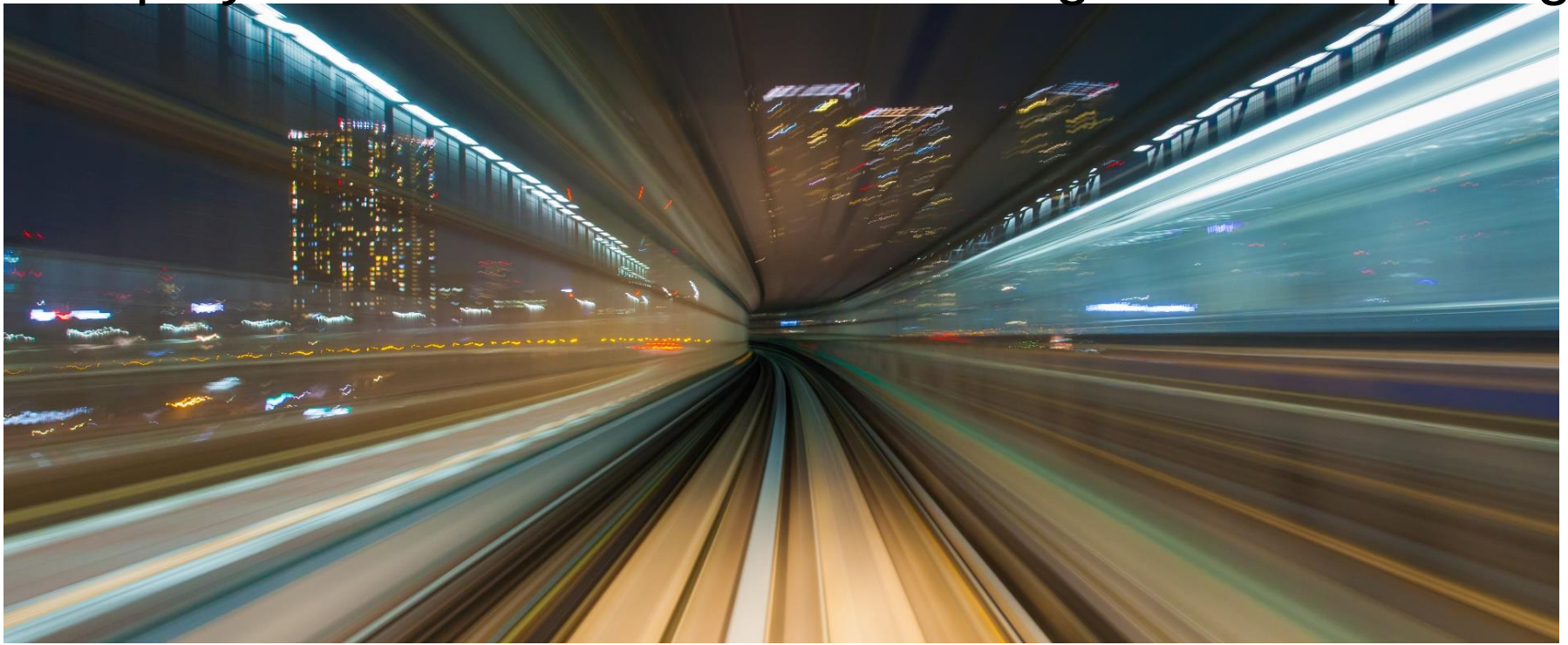
Nordic WAY

Deployment of RoadWorks Warning and road pricing



Co-financed by the European Union
Connecting Europe Facility

The session will cover the Flagship Pilot "Road Works Warning" and geofence pilot Road Pricing. How to use data from entrepreneurs and implement an in-vehicle service for RWW in the pilots and how to bring this into a future service beyond NW 3

14.15 Introduction	Even Myhre / Per Einar Pedersli (Norwegian Public Roads Administration)
14:20 Demonstration ITS Europe Lisboa RWW and distance-based road pricing integrated into standard Polestar vehicles.	Kenneth Sørensen (Norwegian Public Roads Administration)
14:30 Road pricing using geofence technology	Örjan Tveit (Norwegian Public Roads Administration)
14:40 ITS-directive, a motivator for deployment	Gjermund Jakobsen (Norwegian Public Roads Administration)
14:50 Digitalization of Road Works as input to RWW service	Sebastian Anderson (Ramudden)
15:00 Probe data for Mobile Road Works service	Ketil Dahl (Mesta)
15:10 Break	
15:25 How to implement security, need of guidelines	Daniel Malmberg (Swedish Transport Administration) & Benni Matic (Swedish Transport Administration)
15:35 Need for requirements	Andreas Bäckström Svevia
15:45 NPRA plans for RWW service beyond NW 3	Per Einar Pedersli (Norwegian Public Roads Administration)
15:55 Q&A	

Co-financed by the European Union
Connecting Europe Facility

Practical informations

- Recording the session
- Per Einar Pedersli will be the co-Moderator and supporting Q&A
- Question and clarifications if time after every speach
- Q&A at the end of the session, and in the chat that will be answered afterwards
- Keep the short time 10 minutes you have, and be specific to your message and recommendation for the future!
- Short brake, but we start again sharpe at 15:25!

Co-financed by the European Union
Connecting Europe Facility

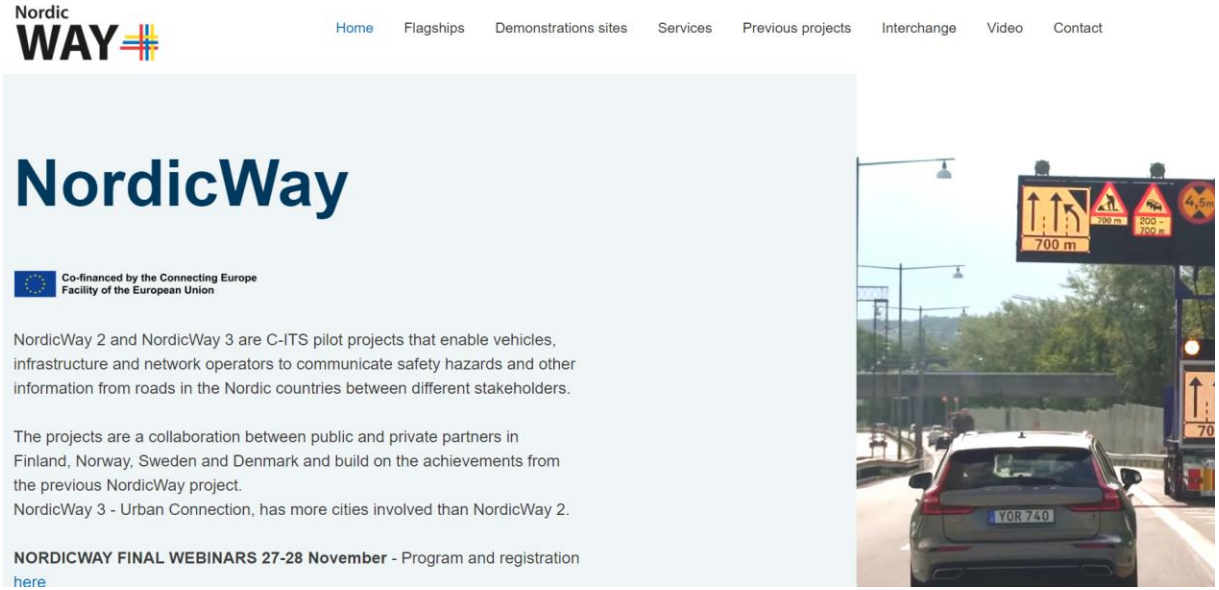
Introduction
Per Einar Pedersli, NPRA

Co-financed by the European Union
Connecting Europe Facility

Introduction

Co-financed by the European Union
Connecting Europe Facility

www.nordicway.net



Co-financed by the European Union
Connecting Europe Facility

NW3-Flagship pilots.

Traffic signal information

Traffic signal priority

Emergency vehicle approaching

Motorway control systems

Road works warning

Road pricing
Geofence pilot

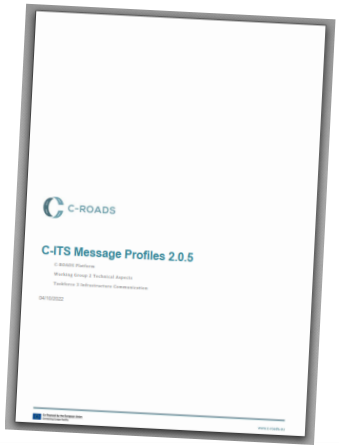
Co-financed by the European Union
Connecting Europe Facility

Take outs

Demo ITS Europe – success

RWW service based on production data

Standards formats works well



Further deployment:

Regulations important:

- EU delegated acts/directives
- C-Roads specifications
- National requirements for data sharing

Authorities must facilitate data, with known quality

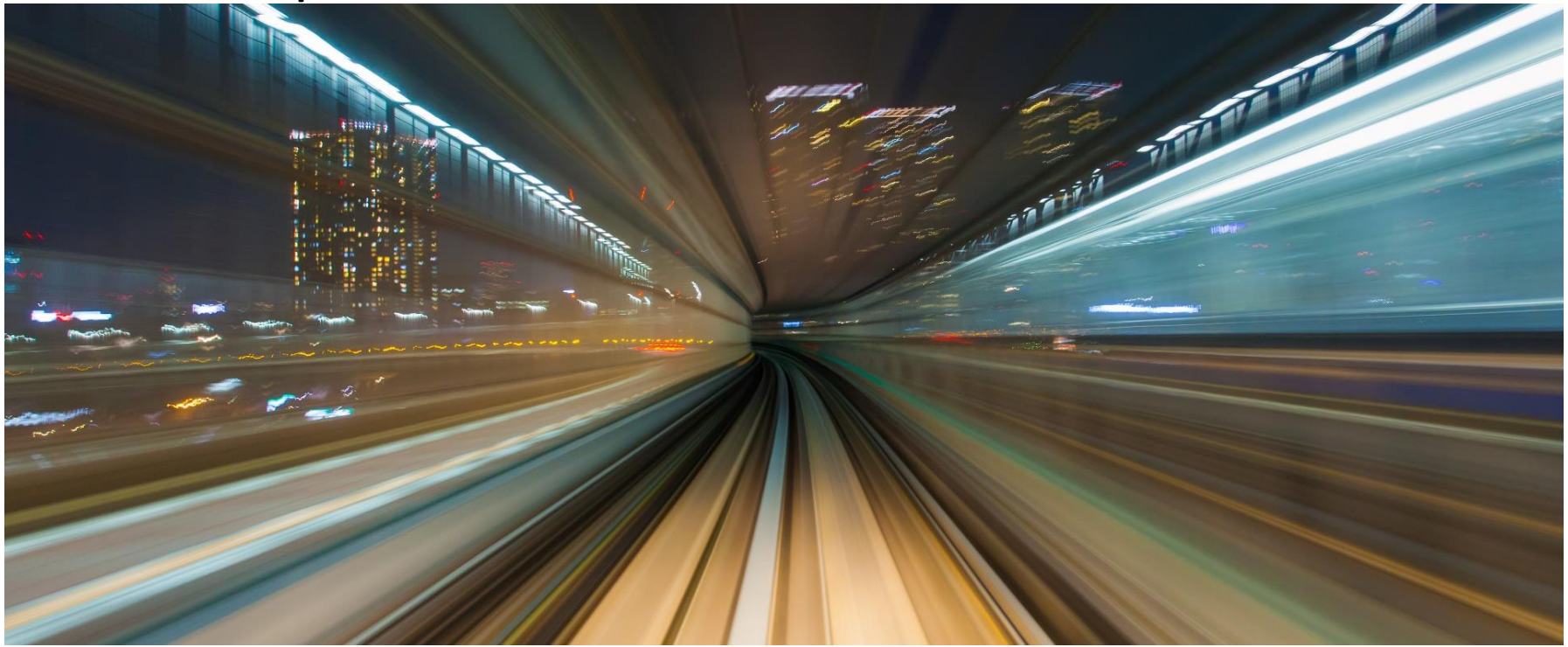
Services must be useful for road users, then service providers will “do their job”.

Co-financed by the European Union
Connecting Europe Facility

ITS Europe Lisbon – demonstrator
Kenneth Sørensen, NPRA

Co-financed by the European Union
Connecting Europe Facility

ITS Europe Lisbon – demonstrator



Co-financed by the European Union
Connecting Europe Facility

Agenda

- What was demonstrated?
- How was this demonstrator built?
- Results

Co-financed by the European Union
Connecting Europe Facility

ITS Europe

- Flagship pilots demonstrated in the live demo area
- 21 – 24th of May 2023
- Showcase results from NordicWay

Co-financed by the European Union
Connecting Europe Facility

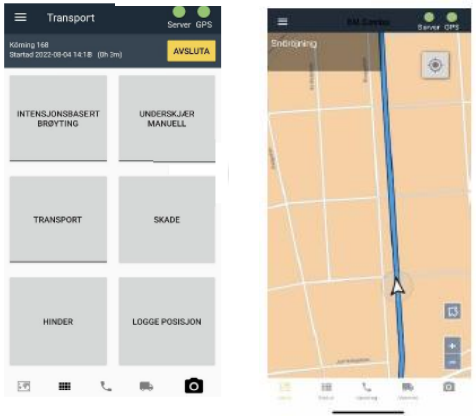
The demonstration

- Production car borrowed from Polestar Lisbon
- Mobile Roadworks Warning
- Stationary Roadwork Warning
- Distance based tolling
- Short route < 1 km
- Unfortunately, unable to demonstrate Green Light Optimization

Co-financed by the European Union
Connecting Europe Facility

The demonstration

mesta



Moving

Route

Ramudden

Stationary

Polestar Lisbon

Co-financed by the European Union
Connecting Europe Facility

Mobile Roadworks Warning

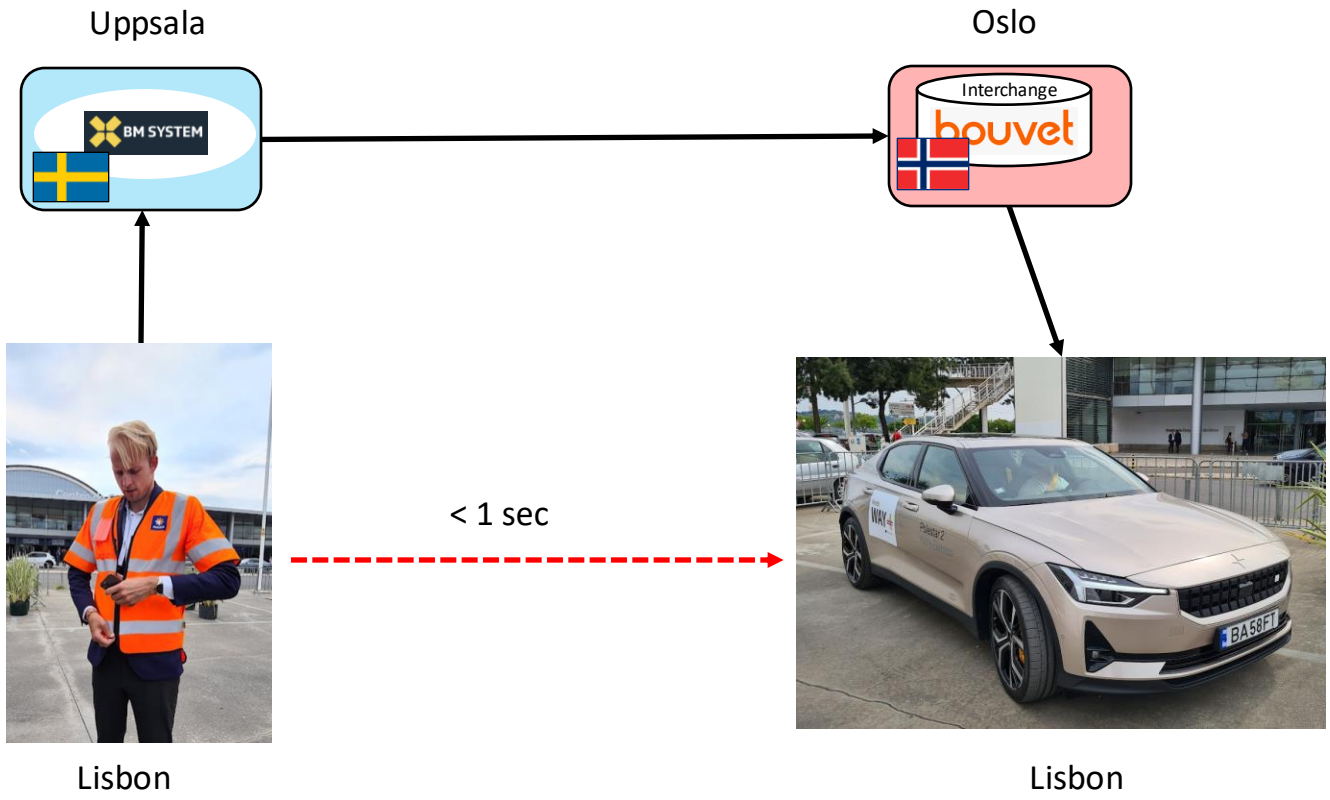
- BM Systems
- Mesta
- Interchange (Bouvet)

Co-financed by the European Union
Connecting Europe Facility

Stationary Roadworks Warning

- Ramudden
- Interchange (Monotch)

Co-financed by the European Union
Connecting Europe Facility



Co-financed by the European Union
Connecting Europe Facility

Distance based tolling (GNSS)

- Developed by Q-Free
- Ported to Android
- Runs in the background
- A full presentation of this later

Co-financed by the European Union
Connecting Europe Facility

Key concepts

- Build using components developed in NordicWay
  - Interchange from Bouvet and Monotch
  - Central ITS-Server
- Data sources production or near production ready
- Utilize activities that contractors are already doing (road works warning)
- No 3rd party devices – everything running on in-vehicle system
- Use the specifications – they work ☺

Co-financed by the European Union
Connecting Europe Facility

Results

- A lot of interest for the demonstrator
- Approximately 100 trips during the demonstration
- Theory and research put into practice
- International attention after the conference
- Mesta is still delivering Road Works Warnings in Østfold

Co-financed by the European Union
Connecting Europe Facility

Nordic WAY

Thank you!

Kenneth.Sorensen@vegvesen.no

Co-financed by the European Union
Connecting Europe Facility

Road pricing using geofence technology
Ørjan Tveit, NPRA

Co-financed by the European Union
Connecting Europe Facility

Nordic WAY

Road pricing using geofence technology

Co-financed by the European Union
Connecting Europe Facility

Nordic WAY

What is a geofence?

A geofence is a virtual and geographically placed zone.

For traffic management it is possible to add rules, requests or information to these zones, communicate them to the vehicles, and control the vehicles or inform the drivers.

The vehicles can also share data back

The only limit is your imagination!
Ban all red cars from the city ?

Co-financed by the European Union
Connecting Europe Facility

Norwegian focus on Road User Charging

The Ministry of Finance and the Ministry of Transport have commissioned the Norwegian Tax Administration and the Norwegian Public Roads Administration to carry out a “concept selection study” regarding the principles on determining and collecting road user charges and tolls.

Fossil cars pay road use tax when they fill up petrol or diesel

Fossil cars pay normal rate in toll rings and toll projects

Zero-emission vehicles do not pay road use tax to the state.

Zero-emission vehicles pay a lower rate in toll rings and toll projects.

Co-financed by the European Union
Connecting Europe Facility

NPRA started in 2018

Three research projects has stepwise investigated geofence technology to developing a new scheme for road user charging. They have demonstrated GNSS distance-based road pricing based on layers of geofence with coherent rules for charging.

- **GeoSUM** – mobile phone payment game to promote electrical driving in city center for hybrid vehicles
- **GeoFlow** – geofence concept for pay as you go based on a C-ITS station
- **Tag4All** geofence concept for pay as you go based on miniatured hardware (AutoPASS tag)

Co-financed by the European Union
Connecting Europe Facility

GeoFlow – RUC pilot

140 vehicles in Trondheim

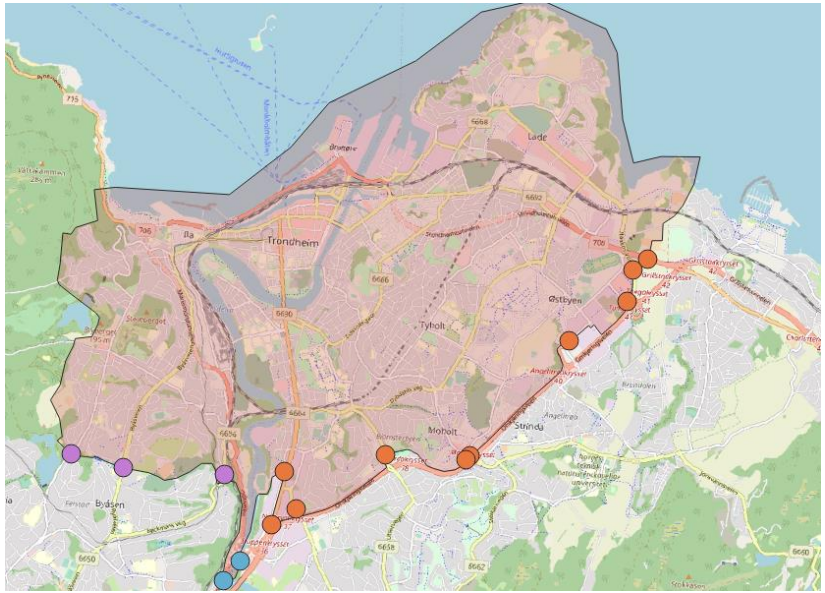
3 month of driving

Technical data – full GNSS trace

Survey data

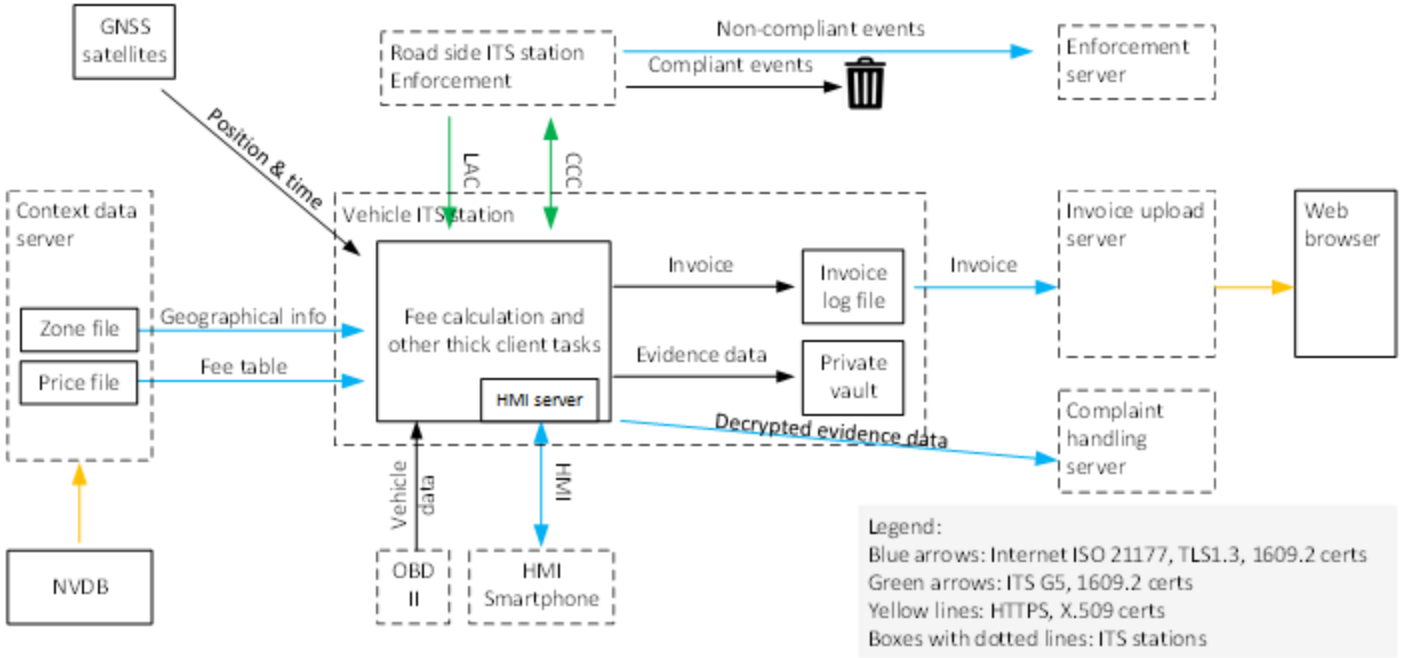
Processing unit in compliance with GDPR

Large push for RUC in Norway



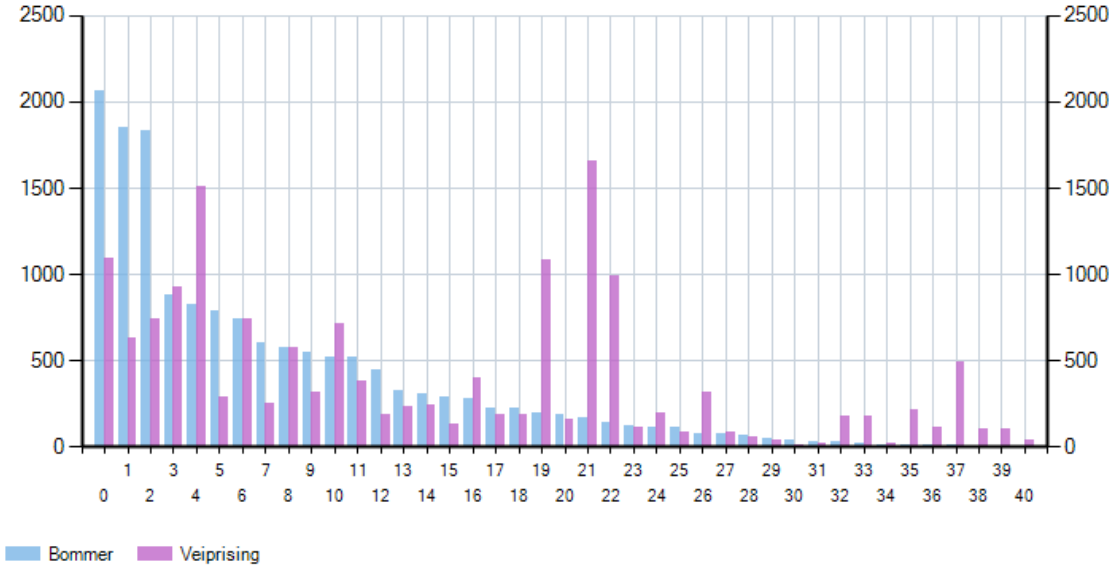
Co-financed by the European Union
Connecting Europe Facility

GeoFlow is based on a thin client



Co-financed by the European Union
Connecting Europe Facility

Differences between tolling and road pricing

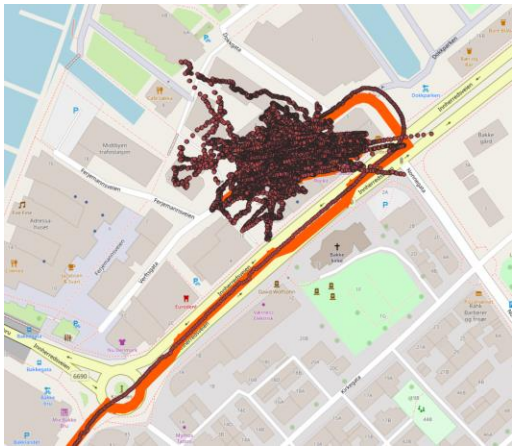


Co-financed by the European Union
Connecting Europe Facility

GNSS is not perfect!

- Getting GNSS-fix (initialization)

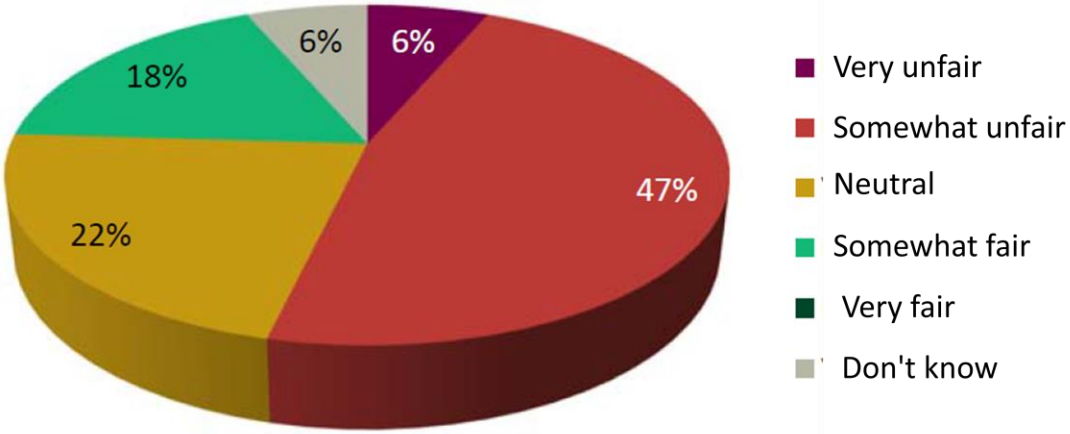
Standing still



Co-financed by the European Union
Connecting Europe Facility

Attitudes toward the current toll system

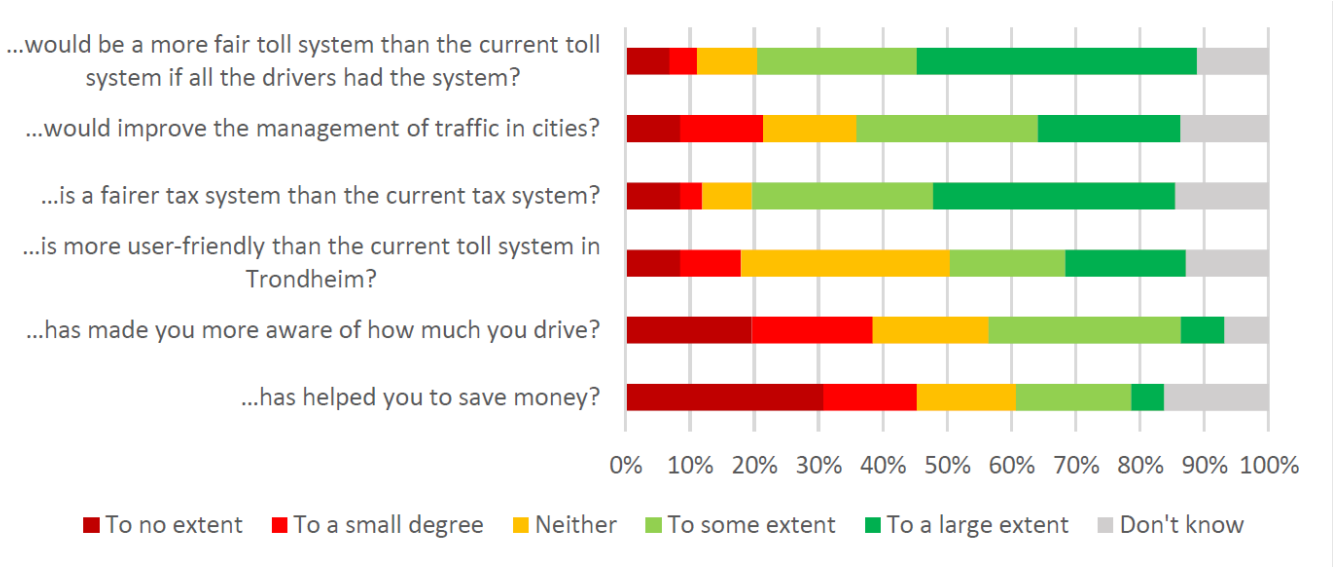
- **Pre-survey findings**
  - How fair do you consider the current toll system in Trondheim?



Co-financed by the European Union
Connecting Europe Facility

Usefulness of road user charging

- **To what extent can you say that road pricing …**



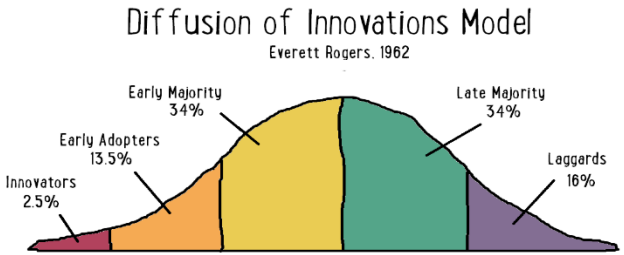
Co-financed by the European Union
Connecting Europe Facility

Takeaway

Trials or piloting studies are often conducted under limited circumstances – such as time or location.

By introducing new functionality as a voluntary test, more drivers will experience learning, and this will over time influence how they experience being regulated automatically by digital traffic laws.

Voluntary use cases are examples of how authorities could move forward in terms of using adaptive policymaking, since voluntary policies are more flexible and easier to adjust over time as experience and knowledge about the use case is brought forward.



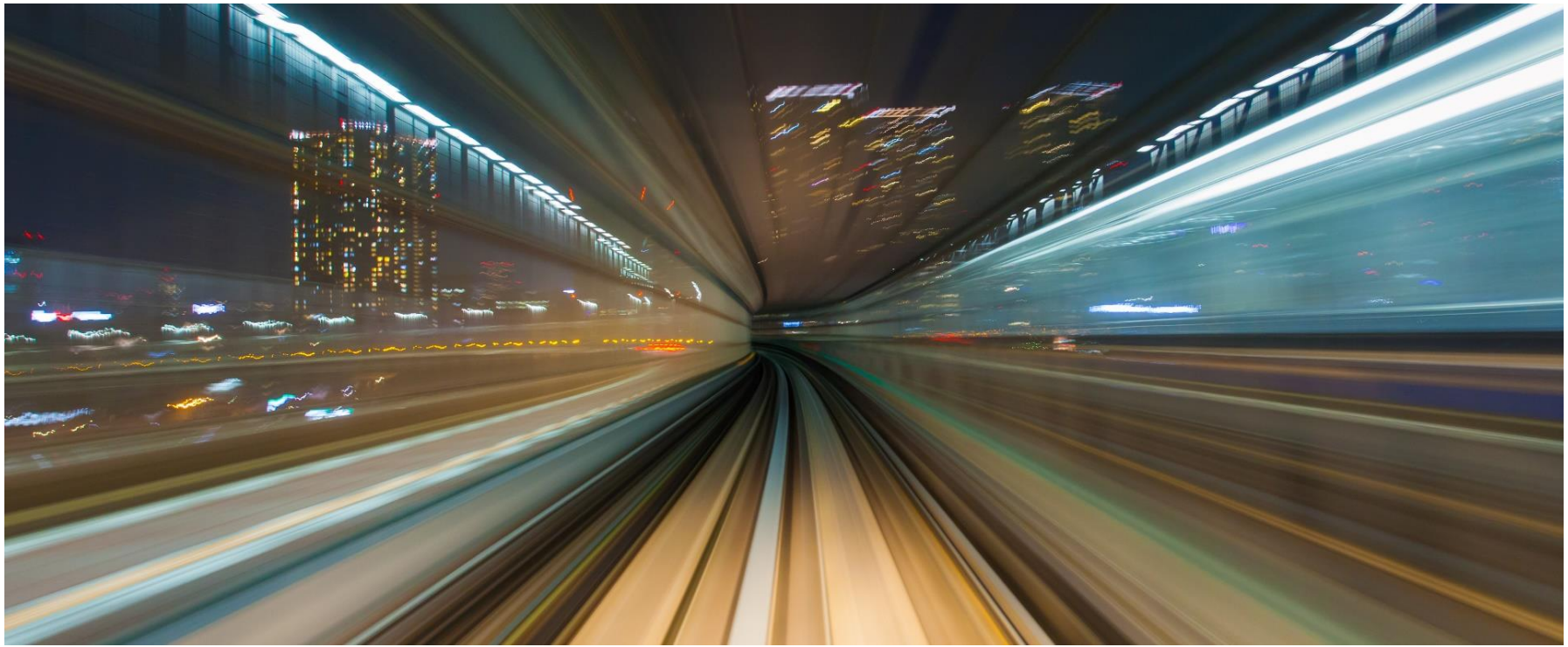
Co-financed by the European Union
Connecting Europe Facility

Co-financed by the European Union
Connecting Europe Facility

ITS-directive, a motivator for deployment
Gjermund Jakobsen, NPRA

Co-financed by the European Union
Connecting Europe Facility

ITS-directive, a motivator for deployment



Co-financed by the European Union
Connecting Europe Facility

What's in it for us? Seen from a public authority's side

Internal need vs external need

- **Internal**
  - Planning
  - Construction
  - Operation
  - Maintenance

- **External**
  - National requirements
  - Regulations
  - Services

Co-financed by the European Union
Connecting Europe Facility

Revised ITS- directive

- **Some keywords describing the objective:**
  - Technological developments
  - Availability
  - Interoperability of digital data
  - Common European mobility data space
- **Setting the target:**
  - Digitization of crucial information
  - Wider coverage and higher accuracy
- **Types of data**:
  - Access conditions for tunnels and bridges, speed limits, traffic circulation plans, permanent access restrictions, road closures, roadworks and temporary traffic management measure

Co-financed by the European Union
Connecting Europe Facility

Nordic WAY

The key is collaboration and common goals across the entire ITS industry to achieve the objective of sustainable, smart, and resilient mobility

Thank you!

Gjermund.jakobsen@vegvesen.no

Co-financed by the European Union
Connecting Europe Facility

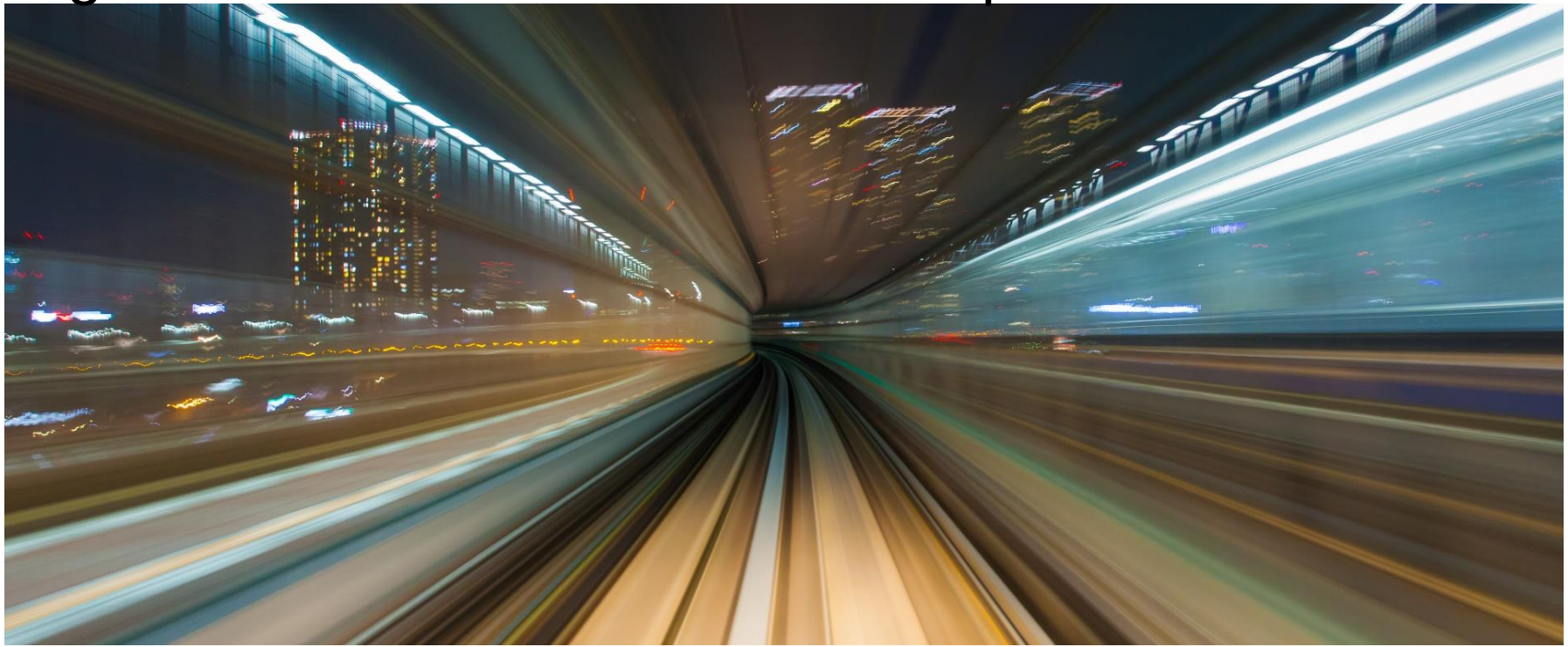
Digitalization of Road Works as input to RWW service

Sebastian Anderson, Ramudden

Co-financed by the European Union
Connecting Europe Facility

Nordic WAY

Digitalization of Road Works as input to RWW service



Co-financed by the European Union
Connecting Europe Facility

Ramudden

Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

Ramudden **Road Works Warning**

- **The background**
  - Ramudden Digital Vision
  - Supervision & Marking of worksites

- **Connected Roadworks in NordicWay3**
  - The tracker + Communication
  - Tests and deployment
  - Whats next?

Co-financed by the European Union
Connecting Europe Facility

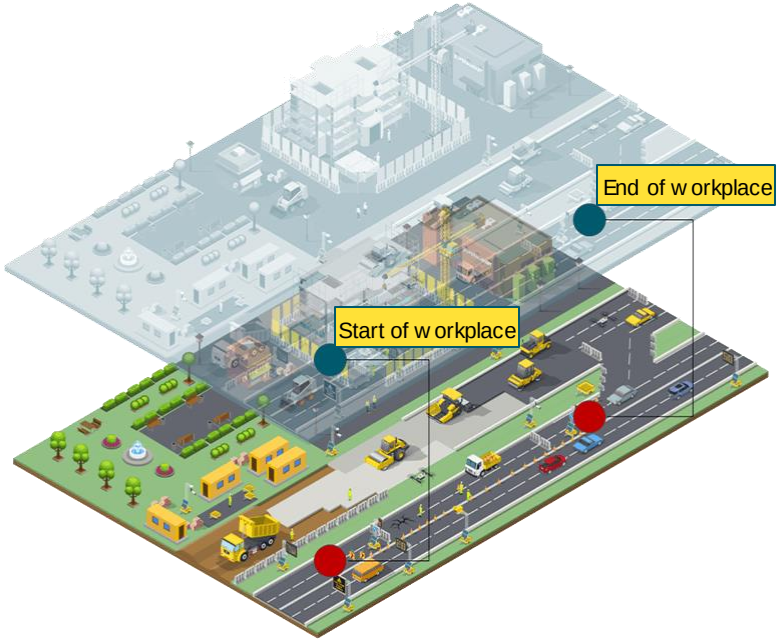
Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

Nordic WAY

Ramudden Digital Vision
Connected Worksites

A connected workplace has several benefits:

- Increased safety
  e.g. **Reduced time in traffic environment**
- Improved service
  e.g. **Live information available**
- Reduced costs
  e.g. **Efficient operation, only action when needed**
- Improved sustainability
  e.g. **Reduced CO2 emissions by less travel to/from site**



Co-financed by the European Union
Connecting Europe Facility

Ramudden

Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

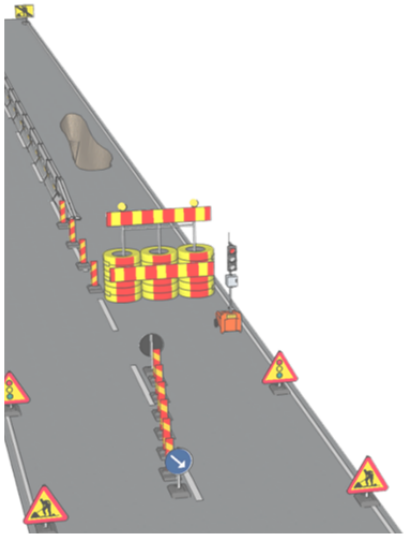
Nordic WAY

Example:
- Digital **Supervision**..
- Digital **Marking**..
..of worksites

Co-financed by the European Union
Connecting Europe Facility

Ramudden
Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

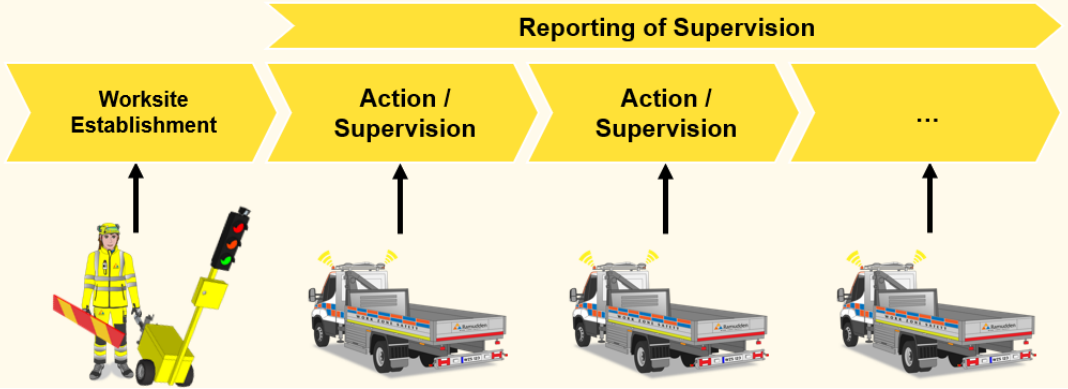
Physical supervision - Current state



Background - Why supervision?

Controls of traffic- and safety equipment at worksites are **required** to ensure adequate safety measures are in place.

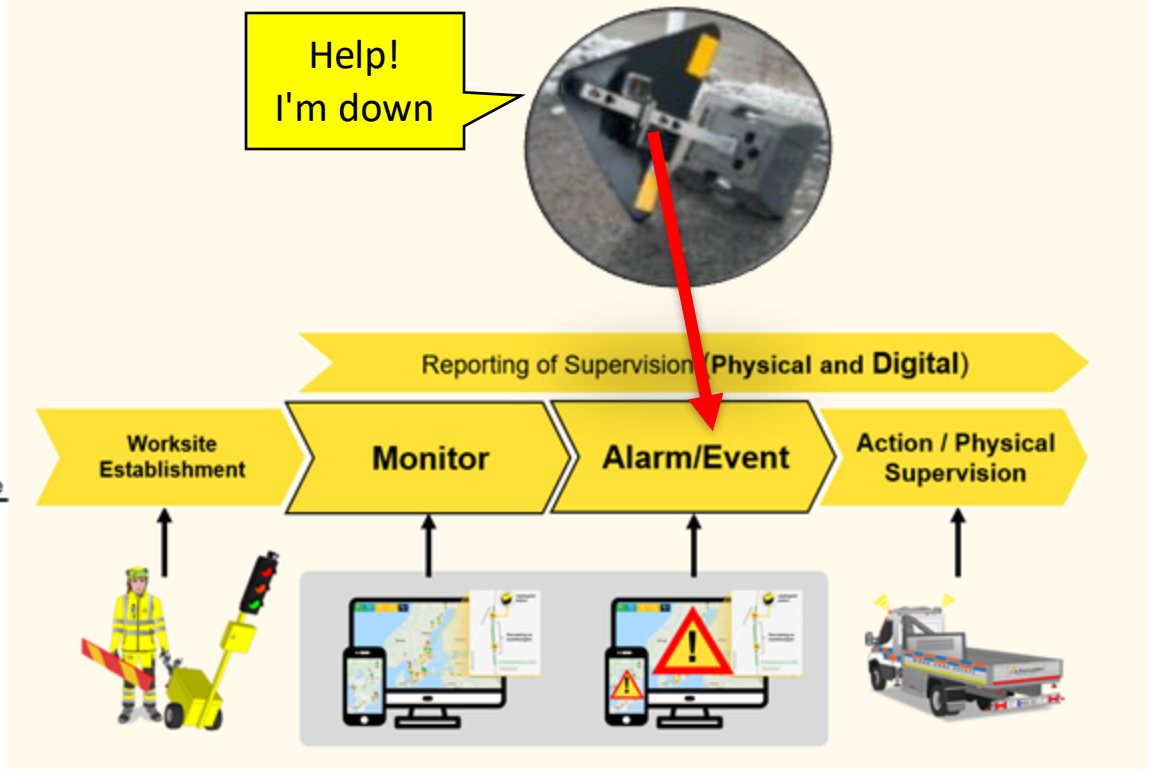
The controls have historically been executed by **pre-scheduled physical supervision**
– personnel driving to/from worksites by car and physically checking that all is in order, **driving cost** and **CO2 pollution**.



Co-financed by the European Union
Connecting Europe Facility

Ramudden
Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

Digital supervision – how does it work?



Co-financed by the European Union
Connecting Europe Facility

Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

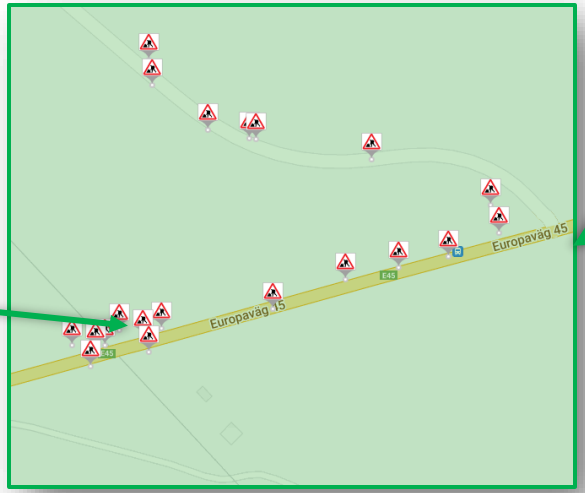
Digital worksites + NordicWay3

Co-financed by the European Union
Connecting Europe Facility

Ramudden
Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

The tracker – **IntelliTag**

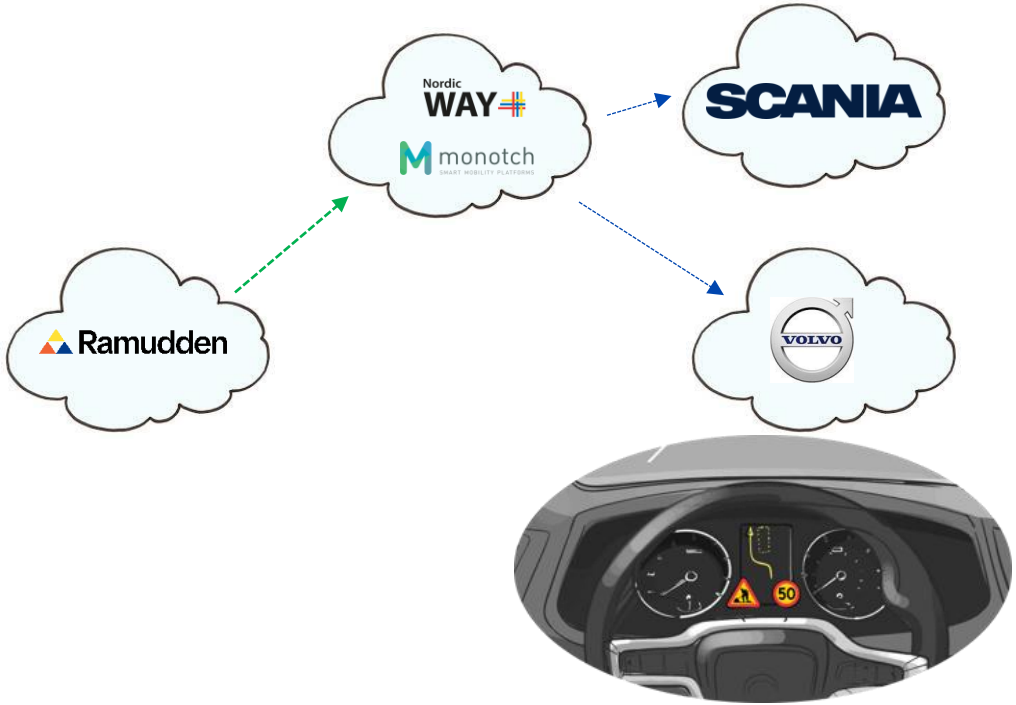
- 1700 **IntelliTags** in Nordics (Q4 -23)
- >4400 connected devices in Europe



Co-financed by the European Union
Connecting Europe Facility

Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

Communication

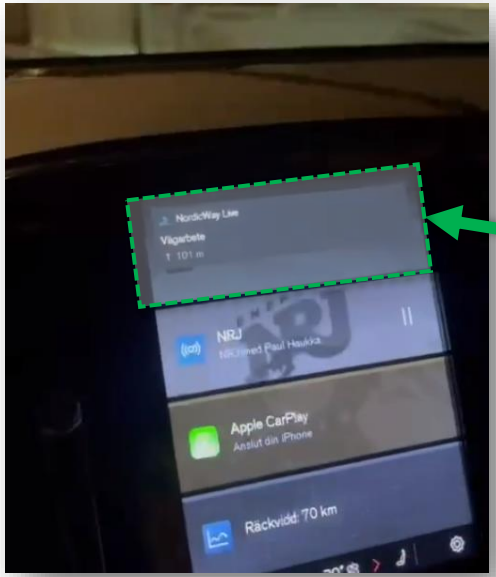


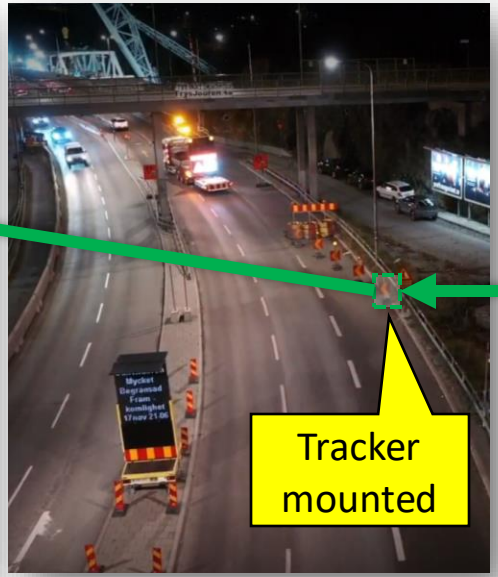
Co-financed by the European Union
Connecting Europe Facility

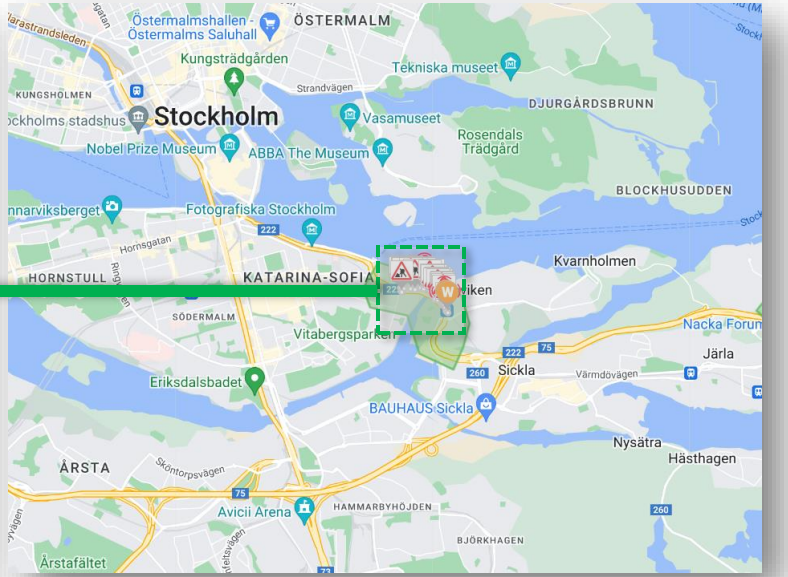
Ramudden
Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

Live testing – **Danviksbron,** Stockholm

KnowIt *app in factory* ***Volvo***





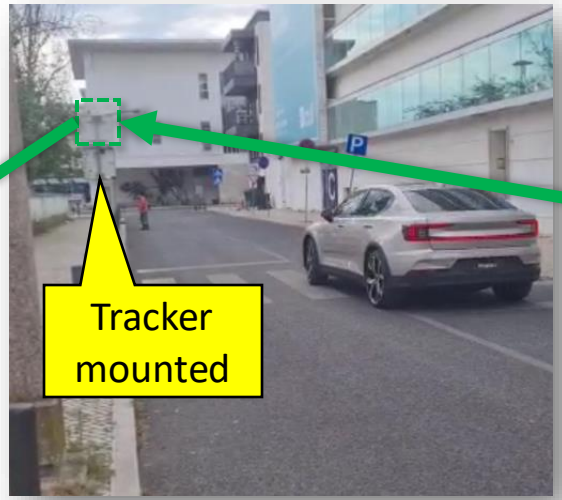


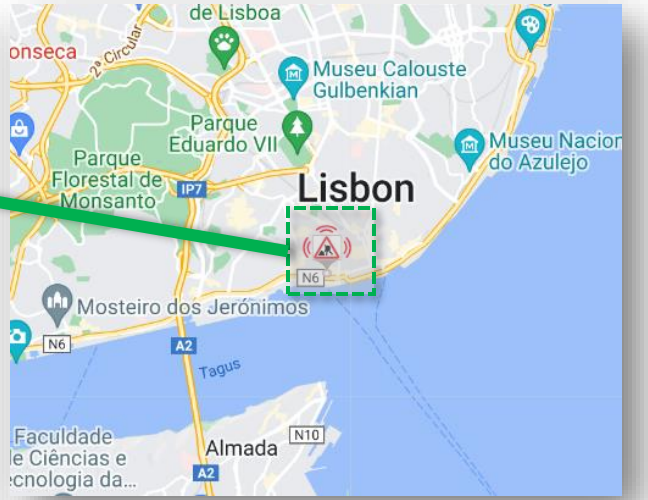
Co-financed by the European Union
Connecting Europe Facility

Ramudden
Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

Live testing – **C-ITS Conference**, Lisbon

*Norwegian app in rental **Polestar***





Whats next?

Continued roll-out of **Digital Marking** and **Digital Supervision** in Nordics
→ Enabling data for Roadworks Warning

Modifications of message content for easier adaption and more information to OEM

Co-financed by the European Union
Connecting Europe Facility

Sebastian Anderson
Business Development Manager
sebastian.anderson@ramudden.se

Probe data for Mobile Road Works service
Ketil Dahl, Mesta

Co-financed by the European Union
Connecting Europe Facility

Mesta – Leading the Way – Going forward

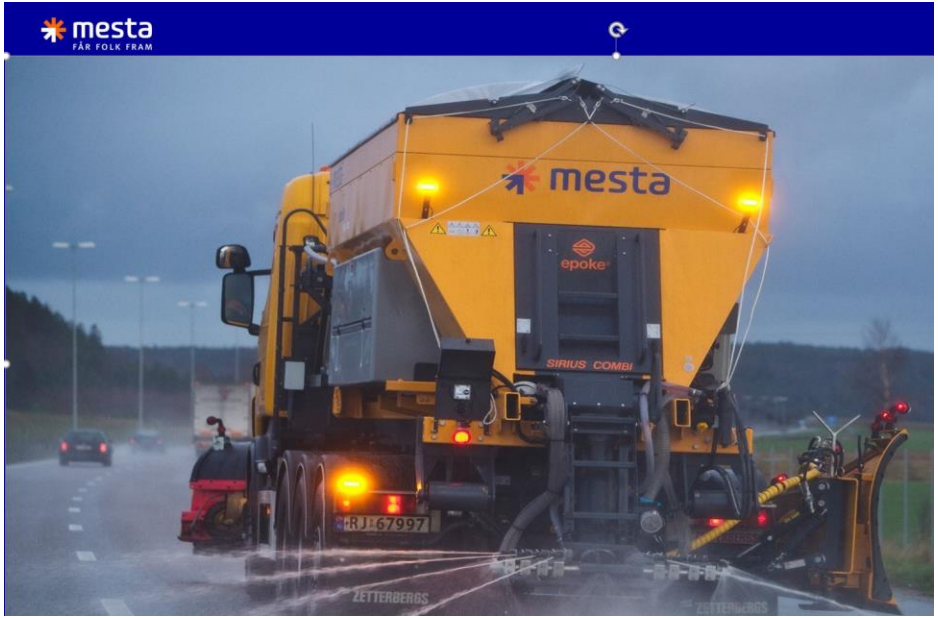
Co-financed by the European Union
Connecting Europe Facility

Mesta and RWW – Next steps

- It works – now it must grow. Mesta is ready to implement RWW-MR in all our O&M operations
- "Safety First" culture in Mesta
  - Digital safety for all our workers and partners out on the roads contributes to our safety goals.
    - By and for connected users of the road
- We will be fully connected out on the roads during 2024!
- Stationary Roadworks are already being digitally logged in real-time – but not shared.

Co-financed by the European Union
Connecting Europe Facility

What makes it attractive for Mesta



- We have several severe incidents yearly and the outcome is much good or bad luck for parties involved.
- Early warning is close to impossible, except the use of warning lights.
- “Smart vehicles” is the new standard, they are connected, and they are rapidly growing in numbers.
- We will be connected in all on road operations by end of 2024, including partners/sub-contractors.
- “No hands involved” for the users out on the roads. The digital safety layer is automatically supporting them.
- Scaling and cost of operating the solution is fairly low – as long as an “interchange” solution exists.

Co-financed by the European Union
Connecting Europe Facility

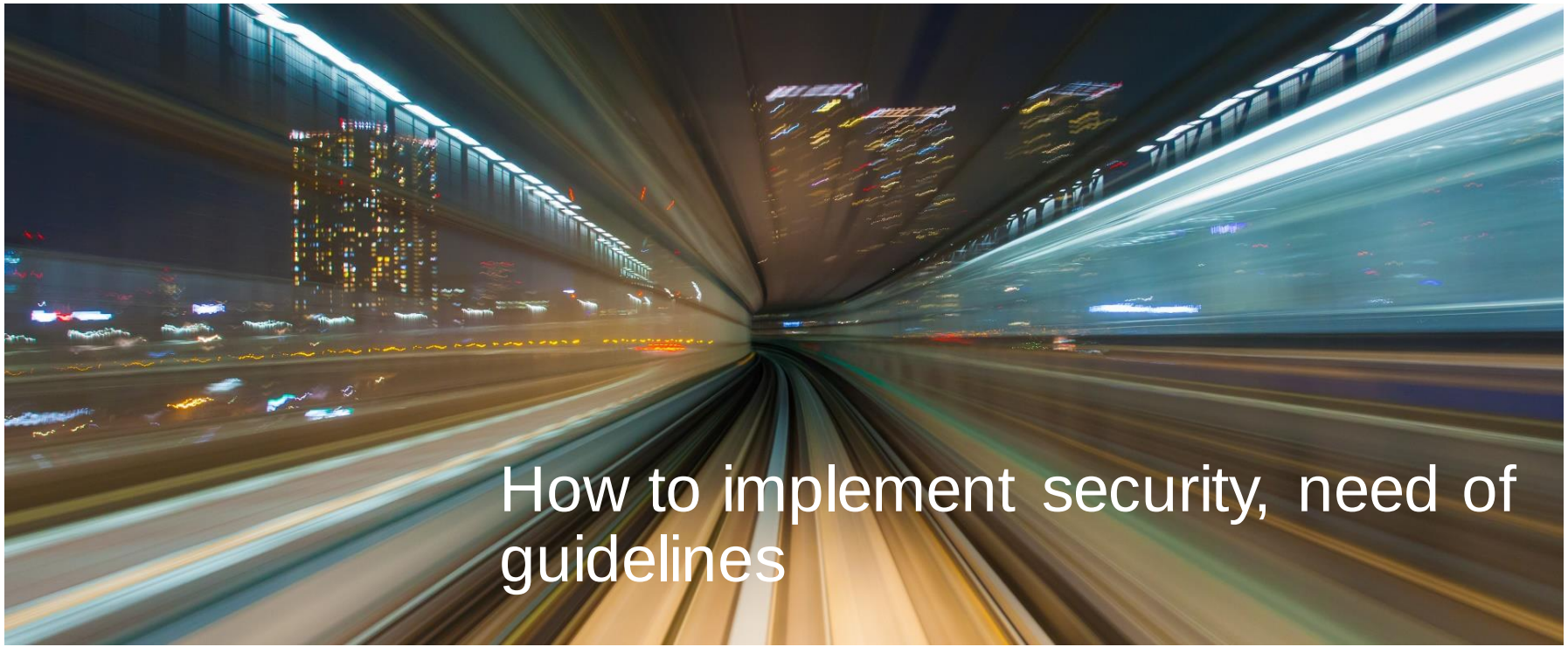
BREAK
Start again 15.25

Co-financed by the European Union
Connecting Europe Facility

How to implement security, need of guidelines

Benni Matic & Daniel Malmberg

Co-financed by the European Union
Connecting Europe Facility

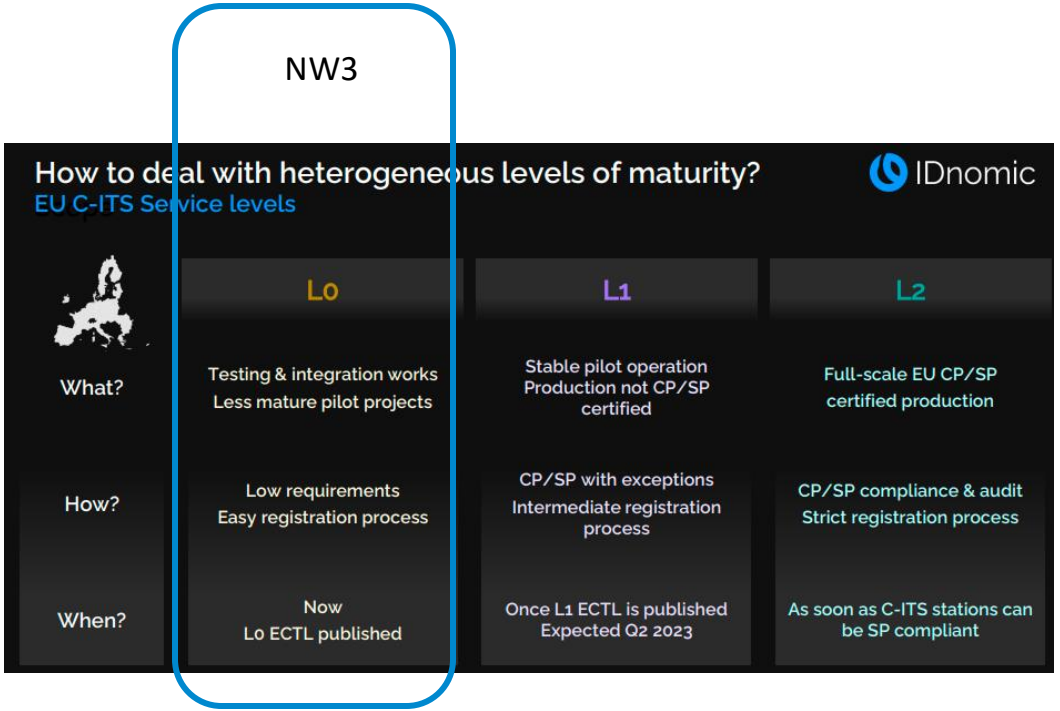


How to implement security, need of guidelines

Co-financed by the European Union
Connecting Europe Facility

NW3 Security PKI/Certificat

- European Union C-ITS Security Credential Management System (**EU CCMS**), which is going to support the deployment of C-ITS systems and technologies in Europe by implementing the trust model and providing the necessary security functions



Co-financed by the European Union
Connecting Europe Facility

Dokumentation: Certificate policy, Security Policy
https://cpoc.jrc.ec.europa.eu/Documentation.html

NW3 PKI – Public Key Infrastructure

- PKI is Digital trust made of 80% organisation and 20% tech
- PKI - EU CCMS (European Union C-ITS Security Credential Management System).
  - This is where the common Security Policy and certificate policy is applied
  - Only handles/take care of Message Security (Signing, Authenticity, integrity)
  - 1609.2 certificates, specific for this arena (C-ITS)
  - Invented to support shortrange (ITS G5) implementations, can still support other scenarios (hybrid)

Co-financed by the European Union
Connecting Europe Facility

RWW results in security

- Two of the RWW pilots managed to sign messages according to ETSI standards using L0 certificates.

Table 1: Status of Nordic Way 3 pilots regarding implemented security measures.

Pilot Name	Organisation running pilot	Implemented security measures according to ETSI TS 103 097
Roadworks Warning (RWW)	Combitech	No
Roadworks Warning (RWW)	Ramudden	Yes, as of May 2023 a contractor signs our messages for us according to ETSI TS 103 097
Roadworks Warning (RWW)	NPRA	Yes.

Co-financed by the European Union
Connecting Europe Facility

NW3 Need of guidelines in security

- C-roads specification provides technical guidelines for security
- ETSI standard provide how the message shall be set up.
- What we have seen under the pilots are that there is missing support in security questions, this is described in the NW3 final report A3, Annex Security.

Co-financed by the European Union
Connecting Europe Facility

NW3 Recommendations security

- Participating countries need to develop a national strategy
  - Any country that wants to take advantages of coming C-ITS deployment should develop a national strategy to determine the division of responsibilities and its effects on participating entities.
- Clear communication channels are needed
  - Stakeholders needs a way to report questions, dilemmas or technical difficulties. This is crucial to further the development of a interoperable environment. This entity should be a state actor in order to be able to influence the continued progress of standards.
- Clarification of legislation
  - The hybrid connection with the ecosystem should be regulated by policies and statements like those described in EU CCMS. Any adjustments should be brought into the C-Roads specifications.

Co-financed by the European Union
Connecting Europe Facility

NW3 Recommendations security

- Central C-ITS Station
  - The current C-Roads specifications places a very high level of responsibility on this unit. Trust mechanisms between the actors publishing the messages and the Central C-ITS station operator should be put in place.
- Keep the momentum
  - Assuming that a national strategy has been created, start a larger national or regional deployment with sight set on a gradual L0 to L2 implementation.

Co-financed by the European Union
Connecting Europe Facility

Need for requirements
Andreas Bäckström, Svevia

Co-financed by the European Union
Connecting Europe Facility

Need for requirements

Co-financed by the European Union
Connecting Europe Facility

Andreas Bäckström
Business developer
andreas.backström@svevia.se

The Swedish Transport Administration's Research and Innovation Plan 2021-2026

Infrastructure Maintenance

- Proactive with collaboration
- Sustainable
- Digitalizing

- Digital transformation!

3.4 Vidmakthålla – Utveckling av ett modernt och hållbart väg- och järnvägssystem samt effektivisering av underhållet

3.4.1 Övergripande syfte

Resultatet av den forskning som drivs i portföljen ska bidra till en mer proaktiv, hållbar och produktiv underhållsverksamhet som säkerställer robusta vägar och järnvägar. Detta innebär att samverkan mellan fordon, infrastruktur, människa och omgivande miljö är viktiga komponenter. Underhållsåtgärder ska bygga på en analysförmåga baserad på kunskap om anläggningarnas tillstånd, vilket innebär att analyser för prediktion, metoder och arbetssätt för tillståndsmätning behöver vidareutvecklas. För detta krävs ökade kunskaper om anläggningsdelars funktion, beteende och nedbrytning. Det är särskilt viktigt att bedöma, beakta och nyttja digitaliseringens möjligheter för analyser och åtgärder utifrån mätningar av infrastrukturens tillstånd, för ett proaktivt anläggningsunderhåll.

Co-financed by the European Union
Connecting Europe Facility

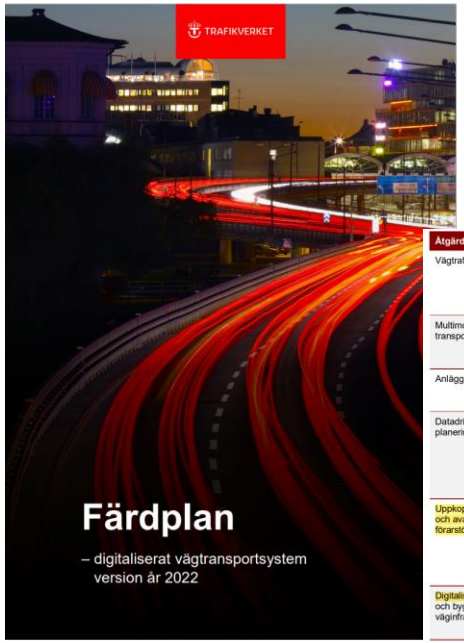
The Swedish Transport Administration's Roadmap - Digitalised road transport system

Proposals for action

- Datadriven
- ADAS*/Geofencing
- Connected roadworks

- Digital transformation!

*Advanced Driver Assistance Systems (ADAS)



Åtgärdskluster	Åtgärdsförslag indelat per kluster
Vägtrafikledning	• Tillhandahållande av data om väginfrastruktur och trafik • Samverkan för tillförlitliga trafikinformationstjänster • Effektiva trafikledningsåtgärder genom förbättrat beslutsstöd • Prioritering av särskilda fordonsgrupper i trafiksignaler • Stöd för flottor av automatiserade fordon
Multimodala resor och transporter	• Multimodal reseinformation • Samordning mellan noder i godstransportsystemet • Datadelning för högre fyllnadsgrader i godstransporter • Kombinerad mobilitet som tjänst
Anläggningens tillstånd	• Effektivt underhåll vintertid med stöd av fordonsdata • Uppkopplade mätningar av vägnätets tillstånd • Drönarinspektioner och automatiserad datahantering
Datadrivet planeringsunderlag	• Datadrivet planeringsstöd för åtgärdsvalsstudier • Utveckling av effektsamband för ny teknik och digitalisering • Datadrivna restidsanalyser • Analysstöd för att stödja trafiksäkerhetsarbetet • Nya datamängder för klimatanpassning • Datavisualisering för luftkvalitetsåtgärder • Mobildata om cykeltrafikflöden
Uppkoppling, geostaket och avancerade förarstödsystem	• Ökad användning av avancerade förarstödsystem • Digitalt stöd för hastighetsanpassning i utsatta trafikmiljöer • Uppkopplade och samverkande trafiksignaler • Varning för ankommande tåg vid oskyddade plankorsningar • Dynamiska restriktioner och villkor för flexibelt vägtransportsystem • Geostaket för att minska tomgångskörning • Digital dispenshantering för breda, tunga och långa fordon
Digitaliserat underhåll och byggande av väginfrastruktur	• Uppkopplade vägarbeten • Uppkopplad drift och underhåll av cykelinfrastruktur • Motorvägsunderhåll med automatiserade arbetsmaskiner • Uppkopplat och automatiserat vägbyggande
Digitala trimningsåtgärder	• Verktygslåda för digitala trimningsåtgärder • Automatiserade nattransporter på statligt vägnät • Digitala åtgärder på gles landsbygd och vid randbebyggelse • Digitala åtgärder för att hantera säsongsberoende trängselproblematik

Co-financed by the European Union
Connecting Europe Facility

DEMO & Implementation Project: RWW & Traffic info

- Motive: Every year, people are injured and killed in the course of their work and in roadworks-related accidents.

- Truck Mounted Attenuator (TMA) are hit every week in Sweden and incidents occurs daily

Co-financed by the European Union
Connecting Europe Facility

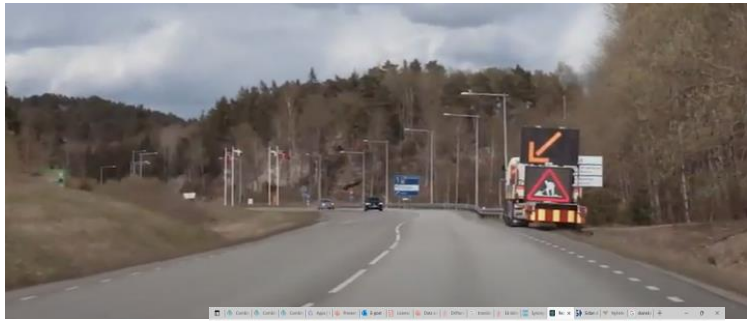
The project

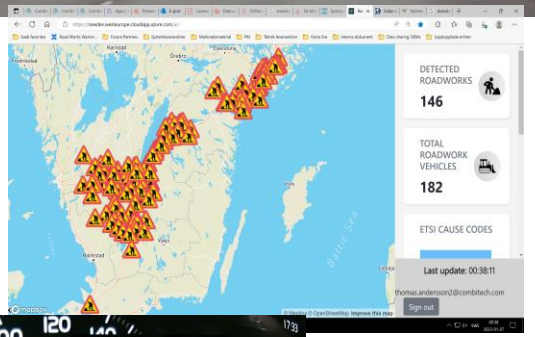
Aims:

- Implementation of connected RWW
- To receive real-time warnings on state roads in Sweden

Effects:

- Fewer near misses and safer roads
- Better Traffic info

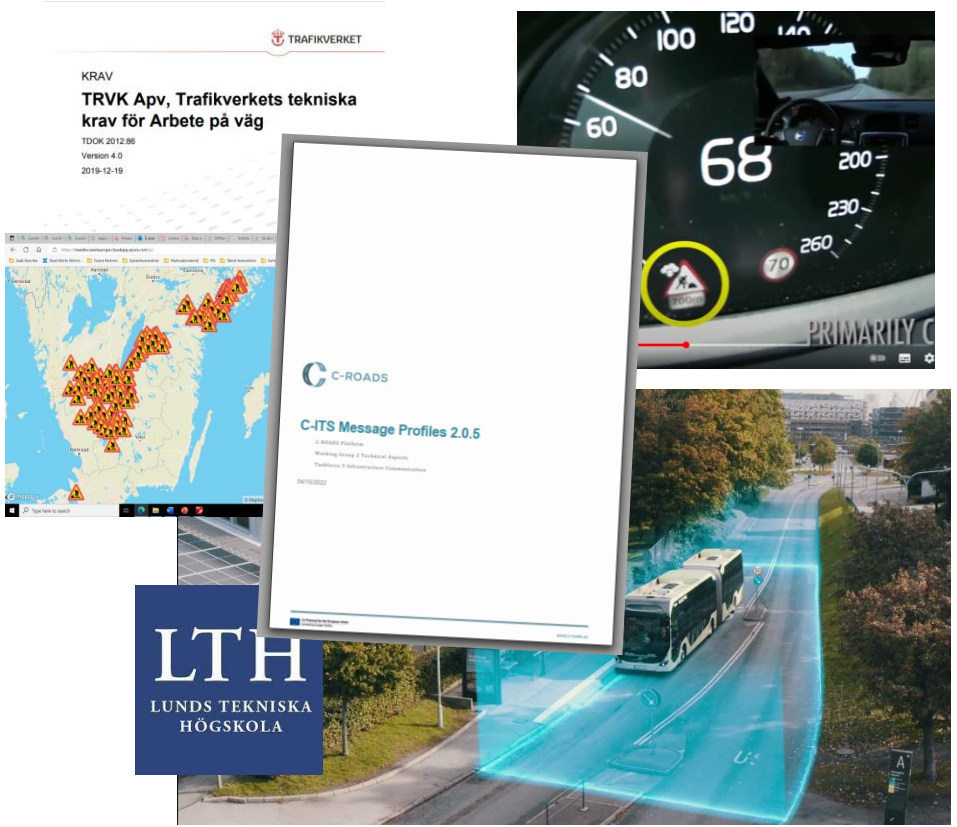




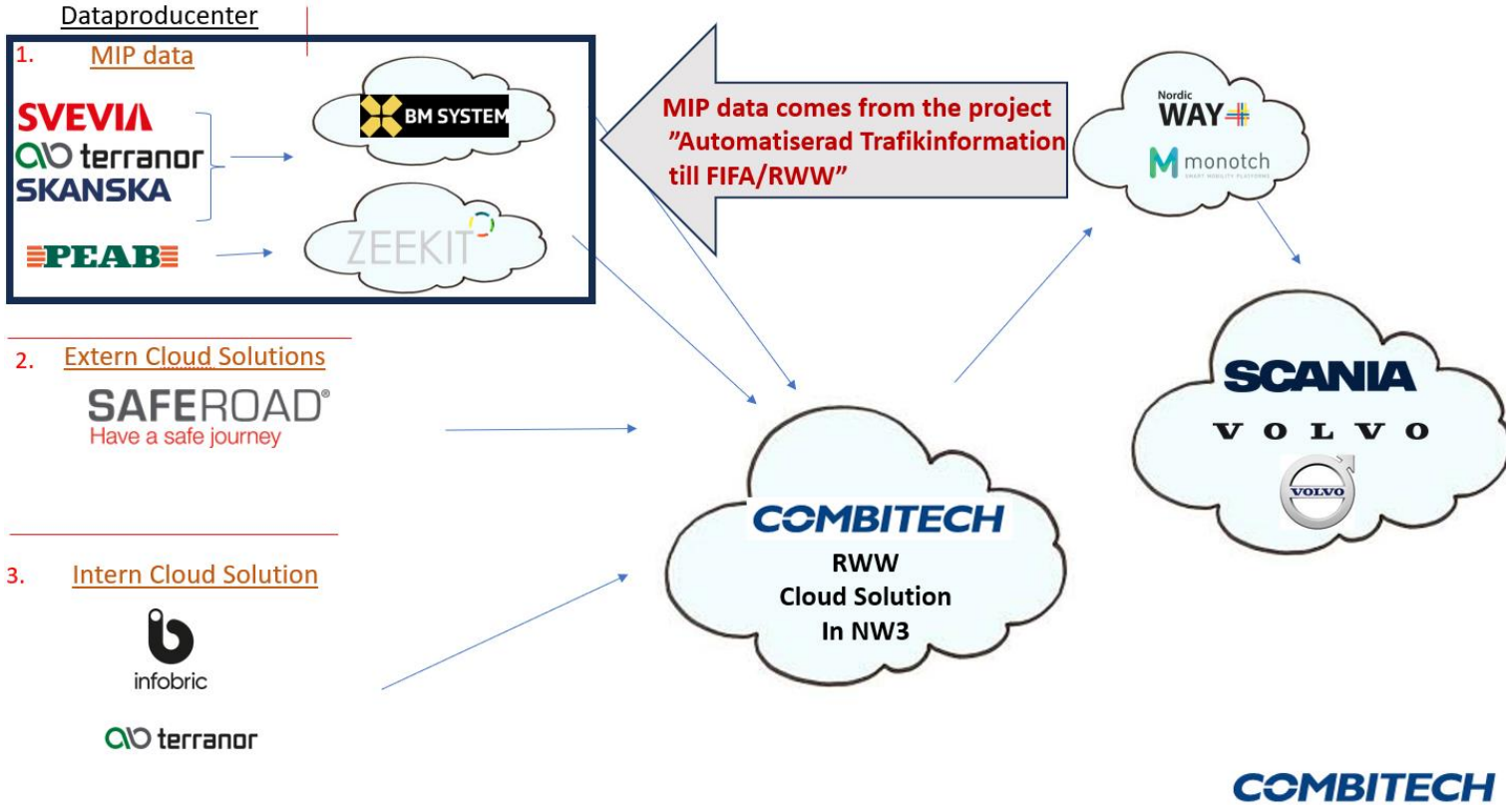
Co-financed by the European Union
Connecting Europe Facility

Work Packages are done in collaboration

- AP1, DEMO RWW, **in vehicles from GPS-connected roadworks.**
- AP2, **LTH analyses** the introduction of **geo-fencing**
- WP3, **Anchored proposal for increased GPS requirements** for implementation of RWW to STA.
- WP4, **Analysis on how FIFA** (The STA's database with time, place and impact of roadworks on the state road network) **can utilise connected roadwork data.**
  - Automation of the status, contact work-sites etc
- WP5, Sharp **Pilot Areas for testing and adjustment of requirements**



Co-financed by the European Union
Connecting Europe Facility



Co-financed by the European Union
Connecting Europe Facility

TRAFIKVERKET

Nordic WAY

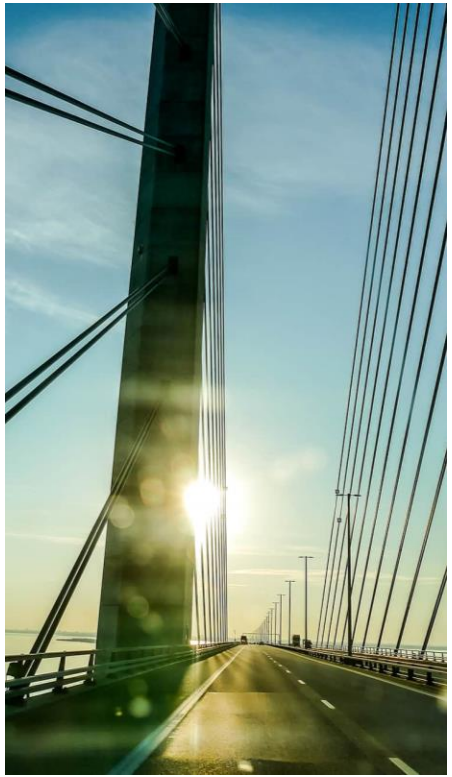
Results

- GPS information can undoubtedly be used as RWW-data
- In addition, it is efficient from a climate and cost point of view due to already existing GPS requriments

What is required for the full impact of the technology is to:

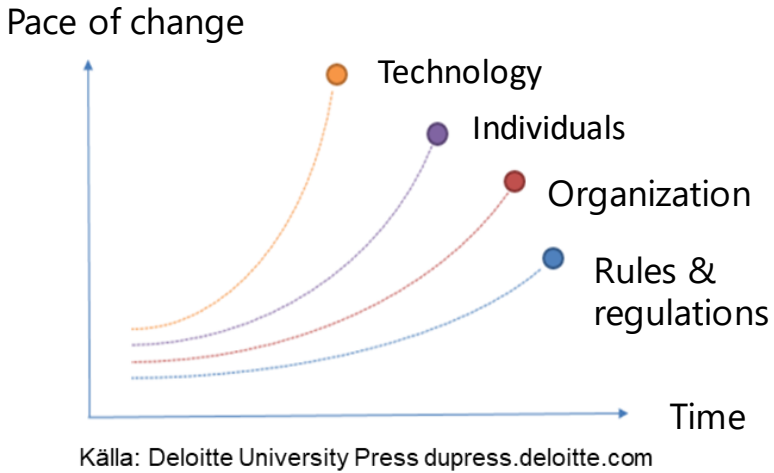
- Road managers require GPS positioning
- Implementation plan in successive parts/areas

Co-financed by the European Union
Connecting Europe Facility



Drivers of RWW

- The entire value chain is represented in the project
- Agile and iterative project management
- Holistic perspective (not just technology focus) with a view to implementation
- Daring to go from Pilot to implementation!



Källa: Deloitte University Press dupress.deloitte.com

What is there to lose if the system is 90% instead of 100% compared to today's 35% and OEM requirements are 60?

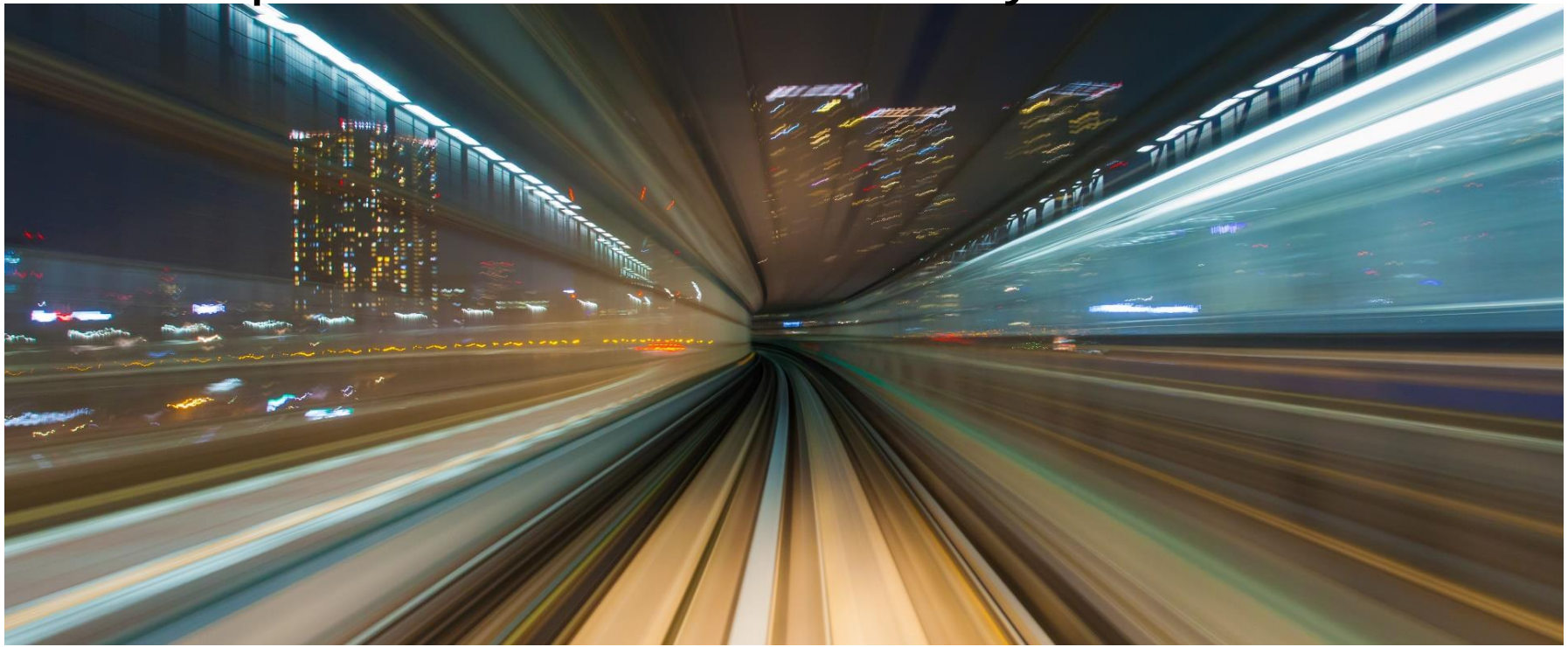
Co-financed by the European Union
Connecting Europe Facility
TRAFIKVERKET
SBUF

NPRA plans for RWW service beyond NW 3

Per Einar Pedersli, NPRA

Co-financed by the European Union
Connecting Europe Facility

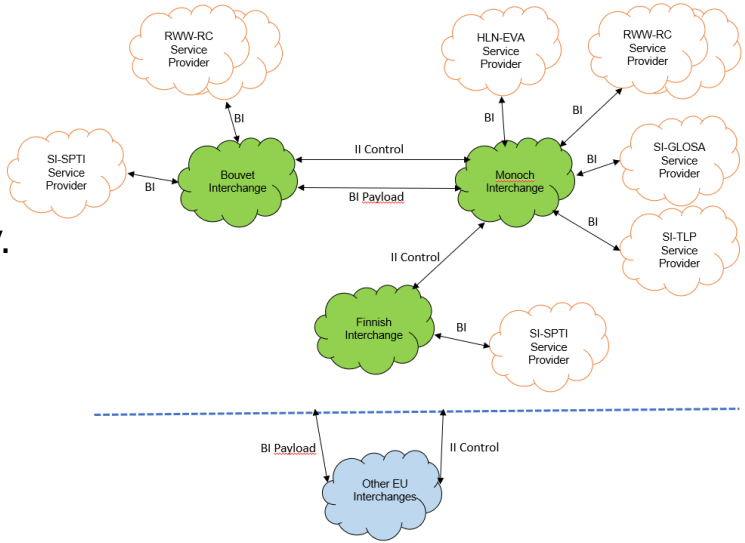
NPRA plans for RWW service beyond NW3



Co-financed by the European Union
Connecting Europe Facility

No Interchange -> No services?

- 2024-2026 Fully operational Interchange in Norway.
- NPRA in front as data producer and focus on data quality.
  - RW data must match on-road set up.
- Focus on RW-data and variable speed limits in 2024.



Co-financed by the European Union
Connecting Europe Facility

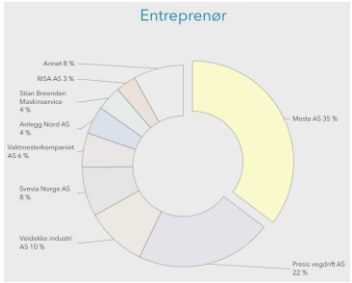
Mesta scaling up

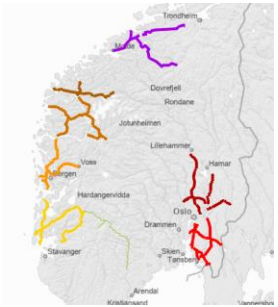
Focus on RoadWorksMobile-service

- Grass cutting
- Snow ploughing

Scale up

- Geographical coverage
- Stress test message production

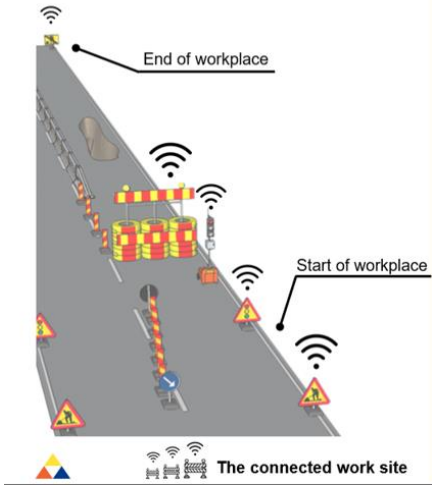




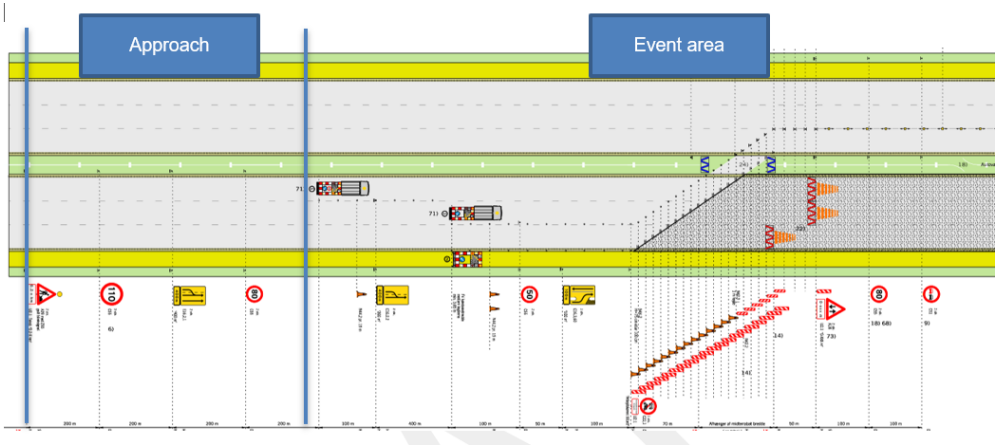
Co-financed by the European Union
Connecting Europe Facility

Ramudden on way to a fully digital work zone

- NPRA look for benefits when more digital information is available from work zones.



C-Roads Handbook for RWW



Co-financed by the European Union
Connecting Europe Facility

International work

- NPRA will continue to participate in international work.

Day 2	
09h00 – 09h30	Welcome Coffee
09h30 – 10h30	Understanding Priority Use Case Data Quality Requirements • Speed Limits • Road Works • Road Closures
10h30 – 12h30	Examples of Priority Use Case Best Practice • Speed Limits • Road Works • Road Closures
12h30 – 13h30	***Lunch***
13h30 – 15h50	Minimum Data Quality Requirements for Speed Limits, Road Works And Road Closures Priority Use Cases – EU RTTI 2022/670

Co-financed by the European Union
Connecting Europe Facility

NPRA internal activities

- Internal processes to improve road works data.
  - Digital plans of work zones, less paper based information.
  - Correct status of road works (routines for activate/deactivate road works).
  - Real time data form work zone, use of standards.

- Contracts with entrepreneurs
  - More digital data, aligned with standards
  - Avoid costly requirements such as need for new hardware and introduce comprehensive processes.
  - Nordic coordination, many entrepreneurs work international.

- OEM's and service providers
  - Continue cooperation with OEM's such as Volvo and Polestar.
  - Motivate service provider's to provide RWW-services.

Co-financed by the European Union
Connecting Europe Facility

NPRA's motivation for their involvement

- Reduce number of serious accidents.
- Safe work zone for entrepreneurs.
- Better trafic flow.
- Reduce material costs caused by accidents.

We are almost there so go for the finish line. ☺

Co-financed by the European Union
Connecting Europe Facility

Q & A

Co-financed by the European Union
Connecting Europe Facility

Nordic WAY

Q&A

Co-financed by the European Union
Connecting Europe Facility