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9/15 TRACKING

ITS Connekt – ITS Finland seminar Nodeon cases

NODEON

25.4.2023 | Timo Majala, Nodeon Finland Oy

Activity areas in ITS

- Designing and implementing technology solutions for large road infrastructure projects (tunnels, highways).
- Traffic management and C-ITS.
- Traffic measuring solutions and traffic data platforms.
- Representing devices and systems in domestic markets.



2013
Founded



50
Employees



4M +
Turnover



1000 +
Projects

Case studies

- **TLEX implementation:** C-ITS pilots as part of NordicWay3 project.
- **C-ITS security and new technologies:** Usage of (EU RCA) PKI signing in C-V2X direct short-distance PC5-based communication.
- **ANPR-based traffic analysis and GDPR:** City inbound roads traffic analysis and GDPR case.



City of Tampere and Näsinnen tower.

TLEX implementation

- Nodeon partnering with Monotch and implementing TLEX C-ITS data aggregator as part of NordicWay 3 R&D project.
- NordicWay is a series of joint Nordic R&D C-ITS pilot projects started in 2015. Projects are co-financed by European Union (CEF).
- Project deployment includes 12 intersections connected to TLEX, including Swarco and Italian La Semaforica TLC's. Started in 2022.
- Customers: The city of Tampere and Fintraffic Road Ltd.

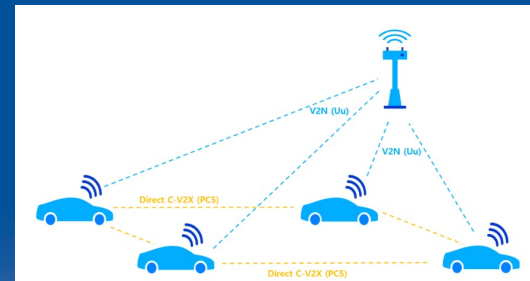
TLEX implementation technically

- Includes implementation of sending SPATem and MAPem messages from TLC's to TLEX.
- Does not include Signalized Intersection C-ITS service implementations for vehicle drivers.
- Main focus is to validate data from different TLC providers and guarantee the same data integrity and quality level (Ramboll).
- Out of the project scope Nodeon is testing its own Asgard products for providing Signalized Intersection Day 1 services (TTG, GLOSA) in Tampere ecosystem.



C-ITS security and new technologies

- Traficom (Finnish Transport and Communication Agency) started pilot project in the beginning of 2023 (also part of NordicWay 3 project). Nodeon together with VTT (state owned research institution) was selected for provider.
- Project aims to pilot new C-ITS technologies which are not largely deployed or tested in European level.
- Three main focuses:
 - (1) Implement short-distance C-ITS deployment using direct C-V2X (PC5) communication method.
 - (2) Use PKI signing in communication (EU Root Certificate Authority)
 - (3) Create parallel long-distance and short-distance C-ITS deployment in the same intersection to get good base for comparing and validating solutions.



C-ITS security and new technologies

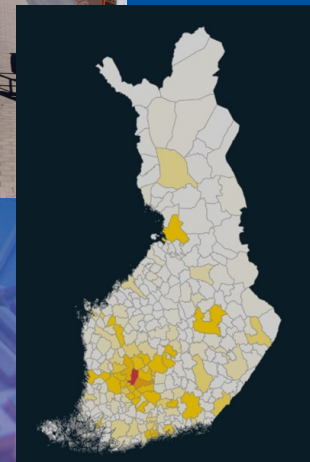
- Deployed services: Time-to-Green (TTG) and Green Light Optimal Speed Advisory (GLOSA).
- Technically project is using TLEX ecosystem for long-distance communication and Commsignia RSU/OBU devices with PC5 support for short-term communication.
- Essential part is testing and validation. Comparing delays with video based evaluation (two C-ITS user interfaces inside vehicle). C-ROADS based testing methods for validating time stamps in both communication methods (packet capturing).



Racelogic VBOX video equipment.

ANPR-based traffic analysis and GDPR

- **Nodeon Asgard traffic analysis:** ANPR-based traffic analysis product using ANPR as base technology and integrating to national central vehicle number plate registration database.
- Providing versatile ready-made analysis for the cities as short-term traffic studies and in long-term measuring systems (f. ex. origins, amount of low emission vehicles, CO2 classes, amount different motive powers like full electric cars and hybrids).
- Tampere have used this technology already for 5 years in all major inbound roads to the city centre. City can follow the progress and long-term changes in all these above mentioned parameters.





Maritime festivals in the city of Kotka.

ANPR-based traffic analysis and GDPR

- Maritime festivals is a summer event held yearly during July in Kotka, seaside town in South-Eastern Finland.
- City wanted to get more information about visitors of the festival (amounts and origins) and asked Nodeon to provide ANPR-based analysis in city inbound roads during week before festival and during festival.
- Private person created request for clarification (of possible GDPR violation) to the Finnish Office of the Data Protection Ombudsman.
- After 2 years of investigation we finally received their decision. In Finland it went like this:
 - Can cities do this? Yes (as a public authority with special responsibilities to develop city environment and traffic system)
 - Data controller: City (data privacy policy document and data privacy protection impact assessment DPIA should be in place)
 - Data processor: Service provider (Nodeon)
 - Informing drivers: 2-level procedure, road-side information sign should be in place (1st level) and instructions to the source for necessary GDPR documents (should be downloadable from the Internet).