Overview of the SCOOP platform, a tool for direct exchange of data between vehicles and road operators

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Information on the document

Document: Overview of the SCOOP platform, a tool for direct exchange of data between vehicles and road operators

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15/02/17	0	G. Autret & E. Broquaire & Jean Marc Tissier	Version sent for validation	Validators SCOOP@F
11/03/17	1	G. Lavenir	Scoop platform fonctionnalities added Benefits redefined	E. Ollinger
12/03/17	2	E. Ollinger	Reviewed	C-Roads Platform

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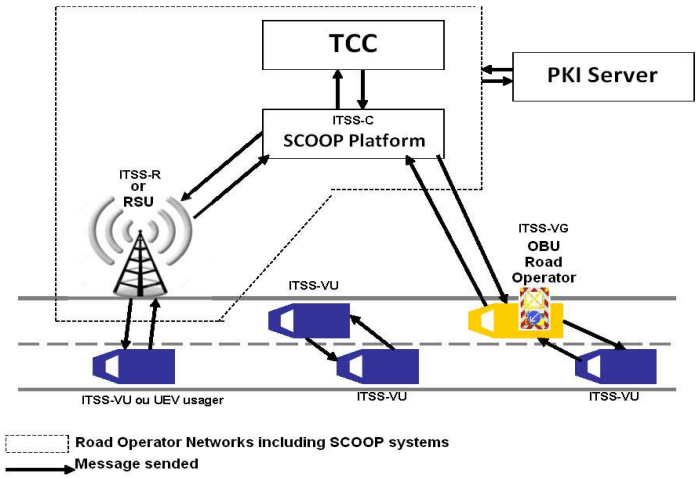
1. Glossary

ITSS-C	Central ITS station or SCOOP Platform in this document	
ITS-S	ITS station	
ITSS-R	Roadside ITS station	or RSU Road Side Unit
ITSS-V	Vehicle ITS Station	or OBU(ro) On Board Unit (road opérator)
TCC	Traffic Control Center	

2. Functionalities of the SCOOP Platform



The Scoop ITSS-C, named Scoop Platform, is an ITSS that can be deployed at any TCC of any road operator. It is used by the 5 pilot sites involved in Scoop, in various environments. It aims at storing, processing and communicating (in real time) data from the TCC the vehicles via RSU and/or road operators' OBU (OBU-ro) and vice versa. Datex II standards are used (CEN TS16 157/1-6).

From the TCC to the vehicles, the Scoop Platform is designed to :

- receive event data in Datex II v2.3 from the TCC (in real time or forecast events, especially road works) ;
- check the contents : date and time, identifier, unicity, etc.and drop them if wrong ;
- process data, for example calculating GPS coordinates, decomposing into simple messages, adding road characteristics, generating traces ;
- store and update data ;
- send them to the involved RSU(s) and/or OBU-ro around the dissemination area for dissemination to the vehicles ;

- check the acknoledgement from RSU and/or OBU-ro.

From the vehicles to the TCC, the Scoop Platform is designed to :

- receive event data and road traffic data in Datex II v2.3 from the vehicles via RSU and OBU-ro ;
- check the contents : date and time, identifier, unicity, etc. and drop them if wrong ;
- process data, for example agregating same events from several messages / users, agregating road traffic data, translating GPS coordinates into road operator's geographical references (road and kilometer point) ;
- check whether or not the event is related to the road operator's network (if not, it is dropped) ;
- store and update data ;
- send them to the TCC if the triggering conditions are reached (event type, length, geographical area, quality).

A HMI shows in real time all data events, road traffic data and RSU / OBU-ro status. It is designed as a webpage with an OSM cartography. Traffic manager at the TCC can thus have an access to the whole information on the road network.

Eventhough Scoop platform is the same for all pilot sites, it is also designed to be configurated by each road operator, taking into consideration its own needs and the local specifities (road network, IT network, local organization, etc.).

3. The benefits of the SCOOP Platform

The use of the Scoop Platform has the following benefits for road operators :

- The Scoop Platform can be provided to any road operator wanting to deploy C-ITS, allowing for direct data exchange with the vehicles passing by, without any intermediate that should be paid for ;
- Along to the use of the free communication technology ITS G5, it provides a free direct link between vehicles and the road operators' systems. It ensures a fast transmission of information. Information is provided to the vehicles and vehicles are also a new source of information for the road operator in addition of the other sources of information (video camera, traffic loop, etc.) ;
- This platform processes event data and road traffic data to return qualified information to the TCC or to the vehicles : it is a useful tool to improve traffic management efficency and end-user information quality ;
- The Scoop Platform is customizable, adapting itself to actual and further pilot sites (road characteristics, local organization, RSU and OBU configurations, etc.) ;
- The Scoop Platform is a modular platform : it can be linked to different kinds of components to be compatible with other systems of the road operators, to avoid additional work load for traffic managers ;

- Most of the software has been designed from open source softwares. Thus it can be easily updated, without intellectual properties and copyright issues ;
- Due to the above exposed design principles, the Scoop platform can be set on an Internet webpage. Thus several road operators can use it simultaneously in a common pilot site, without constaints, to improve traffic management efficiency between local authorities (this aspect is being tested in the West pilot site) ;
- The free OSM cartography used in the HMI allows road operator to always have an overview of the real time traffic conditions and equipment status.