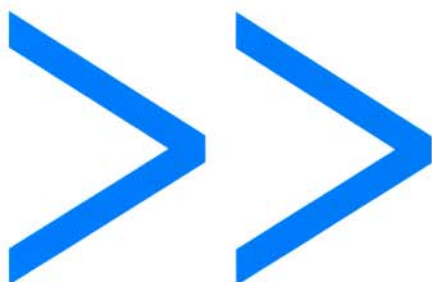


# COOPERATIVE VEHICLE INFRASTRUCTURE SYSTEMS: CONNECT AND GO!



The future of telematics depends on close cooperation between vehicles and infrastructure. European Union funded project CVIS (Cooperative Vehicle-Infrastructure Systems) sets standards for such a system.

The city of Bologna is exploring what role public transport can play here. Indeed, the future of cooperative systems may well lie in public transport applications.

## The future of telematics - vehicles and infrastructure communicate... and cooperate

Over the past few years, cooperative systems have skyrocketed to the top of the priority lists of ITS professionals. Imagine a system that connects a vehicle to roadside data monitoring services. The vehicle sends data on its position, speed and heading. Extra information on the trip can be delivered from the vehicle's sensors. The cooperative monitoring centre processes this, together with data from the thousands of other vehicles on the road, and uses real-time traffic data to provide routing advice to its service customers.

This kind of system delivers important benefits. Incident management and dynamic routing services save time and energy. The system offers a safety bonus, too. Emergency vehicles have a guaranteed right of way. Road space, parking and kerbsides are managed via an integrated approach. The system offers opportunities for integration with enforcement and pricing policies. Tracking and tracing of goods (carried by trucks and vans) are also facilitated.

## Cooperative systems - the EU invests, CVIS investigates

To maximise the benefits of cooperative systems, the European Union has earmarked over €50 million of R&D funding into a group of large-scale projects aimed at establishing Europe as the global technology leader in this domain. One of these projects is CVIS (Cooperative Vehicle-Infrastructure Systems). CVIS aims to design, develop and test the new technologies needed to enable vehicles to communicate with immediate roadside infrastructure.

CVIS is developing standards and software for interoperability between different makes of vehicle; and between vehicles and different types of roadside systems. It is building on the latest global communication standards to develop a standardised networking terminal. This is capable of connecting - continuously and seamlessly - using a wide range of media, including mobile phones and wireless local area networks (WLAN), short-range microwave (DSRC) or infra-red.

ERTICO coordinates CVIS, whose 50 partners, which include seven local and regional authorities, play an active role in its extensive test schemes. CVIS is testing several cooperative applications, covering inter-urban, freight-and-fleet as well as urban aspects of traffic management.

## Local authorities - key players in urban and public transport cooperative systems

Local road network operators have always been the first to buy new generations of traffic management systems. The same is expected for cooperative systems. So these systems must be designed to meet the needs and specifications of local transport authorities. To achieve this, Polis - the group of European cities and regions networking for innovative transport solutions - is hosting a CVIS interest group of local authorities. CVIS will test its urban applications in Rotterdam (NL), Antwerp (B), Dortmund (G), Torino and Bologna (IT). The latter test site will host demonstrations of the only public transport application in the CVIS project.

Bologna will set the scene for dynamic bus lane management. To increase road infrastructure capacity, a dedicated bus lane, for "licensed" and CVIS-equipped vehicles travelling in the same direction, allows them to use the lane when and where it doesn't hinder public transport or compromise speed and punctuality and remains cost-effective. And the dynamic bus lane scheme could also be used to "push" traffic out of lanes, which in turn can serve additionally and temporarily as (extra) bus lanes.

“ INCIDENT MANAGEMENT AND DYNAMIC ROUTING SERVICES SAVE TIME AND ENERGY ”



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“ LOCAL ROAD NETWORK OPERATORS HAVE ALWAYS BEEN THE FIRST TO BUY NEW GENERATIONS OF TRAFFIC MANAGEMENT SYSTEMS. THE SAME IS EXPECTED FOR COOPERATIVE SYSTEMS ”

### Cooperative systems for public transport - telematics for the near future?

The fact that the dynamic bus lanes are the only CVIS public transport application is quite surprising. The public transport world may be the first to embrace cooperative systems. In a way, urban public transport systems themselves are the best test beds for advanced ITS.

Public transport offers captive fleets that are in many cases already equipped with communication devices. The extra costs of adding additional vehicle technology, compared to paying for a new vehicle, are marginal. Public transport is deployed along fixed lines and uses corridors that can easily be equipped with specific roadside equipment. Drivers can be trained to use the system. In many cases, public transport dispatching centres can be further automated and virtualised through cooperative systems. Focusing on cooperative public transport applications will facilitate market take-up of cooperative systems in general.

### Challenges ahead

As mentioned above, cooperative systems have clear advantages. On the other hand, this kind of paradigm shift also puts heavy challenges on the shoulders of system designers and network operators. It seems cooperative systems will need massive market take-up before showing visible effects on

traffic patterns on a local level. In principle, this technology is neutral, and it will be up to local authorities to set boundaries and use the system as an enabler for their local transport policies and strategies.

CVIS is putting a lot of effort into producing guidelines for deploying cooperative systems and answering questions such as how the new systems will relate to existing services and equipment. CVIS is carrying out in-depth risk analysis for its products and services.

Over the next decade, cooperative systems will create a major shift in the way people and goods travel locally and globally. Suddenly, a huge amount of real-time information will become available, offering greater choices and interesting services. CVIS is probably just touching the surface of what is possible. An easy way to compare is to take a look at the Internet today and picture what was available ten years ago. CVIS has the same potential. Cooperative Vehicle-Infrastructure Systems will totally change the way we travel and transport goods •

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