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■ EDITORIAL

by Jean-François Argence,
CATS Project Coordinator.

The creation of an innovative transportation system like CRISTAL is a big adventure: action, passion, problems, solutions and sometimes a happy ending.

Even though LOHR Industrie feels as an evidence that the CRISTAL system is necessary to improve the existing transport offer, the obstacles of deployment are numerous: the homologation aspects are hard to solve, the local authorities difficult to motivate, the large public and the end users not easy to be sensitized. In these conditions, CRISTAL needs help to facilitate its birth through FP7 European Project CATS (City Alternative Transportation system). The industrial process is long and technically complex: as innovation is talking about future, technology is often at the heart of the project. This is the case for CATS Project which integrates automation technologies like platooning. Although LOHR Industrie is building future by a realistic step by step process, as any public transportation system, it needs

to meet the end users requirements and expectations. Again, it is the case with CATS Project: LOHR Industrie is developing a virtual and a physical CRISTAL demonstrator to evaluate the end users behavior and reactions, in an iterative process with the pre-industrialization of the vehicles and the stations.

The urban integration aspects are crucial. CATS, by focusing on 3 precise city studies, already at an early stage, allows to work with a multidisciplinary team collaborating with city representatives from the very beginning, increasing the chances for CRISTAL to be operated as soon as it gets out of LOHR Industrie's production lines.

With CRISTAL system, LOHR Industrie is completing the list of its innovative transportation systems of people and goods (Neoval subway, Translohr tramways, Modalohr railway).

Thanks to CATS Project and European Commission's help, LOHR Industrie is proud to reinforce its participation to carbon footprint reduction through CRISTAL project.

Platooning

During the last decades, the major cities are confronted with the problem of increased road traffic, which leads to heavy congestions resulting in air pollution through inefficient use of fuel. One approach for efficiently increasing the throughput of the existing roads is to group automatically controlled vehicles in platoons such that the inter-vehicle distance is very small (1-2m). This leads to a reduction in the amount of space used by a number of vehicles on the road ensuring safety and a very smooth ride.

Platooning refers to organizing automated vehicles in tightly

spaced groups. This capability has been prototyped and demonstrated extensively during the last three decades. The objective is to accelerate the development and implementation of cybernetic transportation systems for people and goods in urban environments. CATS addresses the issue of automated vehicle platooning. It is a very original system due to its platooning capability: indifferently used as a single vehicle or a convoy. Much research has been done in the study of automatic longitudinal control of a platoon of vehicles. Longitudinal control algorithms that guarantee string stability in the platoon include autonomous speed-

dependent spacing with “constant time headway” or “variable time headway” and communication-based algorithms with constant inter-vehicle spacing. Now, the combined lateral and longitudinal control of autonomous vehicle platoons have gained significant attention. In the project CATS, a high technological system of information and communication linked to local operating transport system, immaterial towing offering many configurations of use, are aspects under development and will be experimented in real conditions.

Michel Parent, INRIA

CATS demonstrator in Strasbourg

The city of Strasbourg (urban community) has been involved for many years in the development of sustainable mobility. Beyond the tram network, the bike policy or its support to new mobility alternative services as car sharing, this involvement is reflected by the establishment of European Research & Development projects, such as CATS.

Indeed, Strasbourg wants to become a testing platform in real operating conditions for the new mobility services. This interest for innovation is especially true in the “Parc d’Innovation d’Illkirch” (P2I) that groups together on one site, companies, universities and schools working in innovation and R&D on various issues including mobility. As such, P2I has been identified to



become the place where Strasbourg will confirm its place of European laboratory. What better place could have been more relevant for testing a new concept of transport system as Cristal claims to be?

Furthermore, the area of the city where P2I is located presents accessibility features that make it really interesting

to deploy CATS demonstrator. Indeed, first territorial analysis made by members of the consortium show that this sector has interesting mobility needs regarding to the activities organization (temporal and geographical) and the actual public transport supply. “Campus” tram station is located at the north entry of the park and a single bus line passes through the 80 companies spread around, with an average frequency of about 25 minutes. Analyses will be thorough and will aim to define precisely the operation of CATS demonstrator (operating system, routes and location of the 2 stations). It will also be important to ensure a better link from the heart of the park to the tram network.

Timothé Kolmer, CUS



Survey: aims and expected results

The freedom and flexibility offered by using a single type of vehicle for two different types of uses, both individual (based on a self-service mode) and collective (based on flexible shuttle services) is the major innovation presented by the new generation vehicle CRISTAL being demonstrated through the FP7-funded CATS project.

The development of such an innovative transport system requires an evaluation of its impact on the behaviour of the potential users, in particular with regards to their modal choices and the potential interweaving of CRISTAL within existing trip-chaining behaviour.

In this context, EPFL conducted a quantitative household survey in Strasbourg during the spring of 2010,

in three target sectors of the CRISTAL system's implementation.

A total of 610 responses were collected through telephone interviews, averaging 200 households per sector.

The survey aims to: (a) understand the organization of the daily mobility patterns of potential users of the CRISTAL system; (b) measure the acceptability of the CRISTAL system according to professional and family status and the distribution of daily activities throughout time and space, and (c) measure the potential for modal transfer depending on current transport mode used for short trips.

Some of the expected results include the understanding of the strategies of identified subgroups per sector, regarding their current use of different transport modes, depending

on trip purpose and work location and schedule type, as well as their opinions on the CRISTAL system and how they would use it to perform their daily activities.

The present survey is the first step to infer the impacts of CRISTAL on the behaviour of potential users. It shall be completed at a later stage by an onsite assessment of the actual user behavior during the practical demonstration of the prototype in Strasbourg.

*Susana Limão and
Sonia Lavadinho, EPFL*

::Agenda

:: 8th ITS European Congress.
June 6-9, 2011, Lyon, France.
<http://2011.itsineurope.com>

:: Clean Fuels, Clean Vehicles, Clean City. June 15-16 2011. Donostia - San Sebastián, Spain.
<http://www.cities-for-mobility.net>

:: International UITP Conference. Urban Governance: Getting People on Board! October 6-7, 2011, Gothenburg, Sweden.
<http://www.uitp.org/events/2011>

:: 18th ITS World Congress. October 16-20, 2011, Orlando, Florida. USA.
<http://www.itsa.org/worldcongress.html>

:: CIVITAS Forum Conference 2011. October 17-19, 2011, Funchal, Portugal.
http://www.civitas.eu/forum-conference_2011

Acronym: CATS

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Instrument: Collaborative Project [Small or medium-scale focused research project]

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