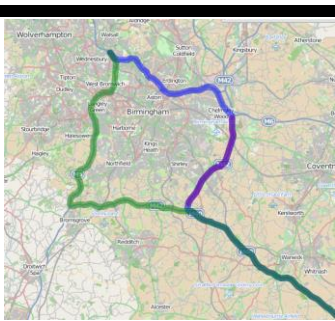# CHARM PCP in Phase 2

8 Prototypes are under way

The eight proposals are now coming to life. Phase 2 of the CHARM PCP (Pre-Commercial Procurement) project has begun. The participants are now developing their prototypes. What do Highways England and Rijkswaterstaat expect and look forward to?

Module 1 Right on track

AVANCED NETWORKMANAGEMENT

Guiding vehicles on the network by providing them with their most optimal route.
Mott MacDonald Ltd, and partner Fileradar B.V. are developing a module that combines algorithms, models and a rules engine: a practical combination to tackle network problems.
The module will provide advice to drivers through in-car systems - advice that can be used throughout the whole road network. Ultimately, this will improve total travel time, emissions and safety targets, as drivers use the best advice to reduce wasted time and emissions, and also avoid hazards.

Module 2 Inspiration in mining

AVANCED NETWORKMANAGEMENT

Mining company **PSI Mines & Roads GmbH** will improve traffic management by using its expertise in logistics. This entrant to the traffic management market helps traffic controllers to choose the most optimal service for drivers, for every traffic situation at any moment.

Challenging the business market to innovate

The aim of the CHARM Pre-Commercial Procurement project (CHARM PCP) is traffic management innovation by creating new functions for Road Traffic Management Centres.

It is a project in 3 phases and involves the co-operation of Dutch, Flemish and English partners (public sector): Vlaamse Departement voor Mobiliteit en Openbare Werken, Rijksdienst voor Ondernemend Nederland and Innovate UK.

Innovation by well-known suppliers and challengers entering the private sector for advanced traffic management, for:
● Advanced Network Management
● Detection and prediction of incidents
● In-car systems

The Modules should be able to integrate into the Advanced Traffic Management System, procured by Rijkswaterstaat (RWS) and Highways England under the CHARM ATMS project.

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PCP

Pre-Commercial Procurement

An approach which enables required solutions for governmental organisations to be developed by the market.

This lightens the workload of traffic controllers and helps improve traffic safety. It also decreases environmental pollution. The decision support system Qualicision® informs drivers and traffic controllers based on current traffic information and environment data. It is an intelligent self learning model for traffic management which uses known solutions from other markets.

The power of teamwork

Ian Chalmers, project manager CHARM PCP Highways England:

"One of the aspects of PCP that we had to set out from the beginning was to attract some experience from outside traffic management and from small and medium sized organisations. We have achieved that. We have got a company that comes from mining, who have never been involved with traffic management. But it has really good products and great ideas about the way they could help us with our traffic management process.

I have got the feeling that we are going to make a change. We have definitely strengthened our position with the marketplace by joining partners with Rijkswaterstaat. To say we are buying for 14 traffic management centers has really caught the markets attention and made them listen and respond to us."

Module 3 Autopilot

AVANCED NETWORKMANAGEMENT

The name says it all: **Technolution B.V.** is developing an automatic pilot for traffic controllers. This module will automate repeatable and predictable elements of traffic management. This will create more time for traffic controllers for tactical and strategic direction and operations. It enables integrated network management on a large-scale (nationwide) road network, thereby reducing operator stress, improving the accuracy and reliability of decisions and speeding up responses to incidents and events.
The improved speed and accuracy of decision-making will have a positive impact on the quality of performance of the road network and consequent effects on the levels of unnecessary delays and on the emissions and economic disruption caused by delays.
The Autopilot can be installed in new and existing national, regional, urban and rural traffic management centres.

Module 4 Advanced Data Patrolling

DETECTION AND PREDICTION OF INCIDENTS

What is the most accurate and optimal information on the traffic situation and circumstances on the network?
Fileradar B.V., in cooperation with Be-Mobile, is developing the ADAPT (Advanced Data Patrolling) module which automatically identifies, classifies and predicts traffic related events throughout the road network. Traffic controllers can easily monitor, prioritise and anticipate on incidents throughout the road network, on motorways, as well as on urban roads, all via a standard web browser.
The module contains a series of advanced algorithms that fuse together a large number of data sources, including floating car data, CCTV, Twitter, apps, rainfall radars and emergency services reports, resulting in superior quality data.

Module 5 *Learning algorithms*

Goudappel Coffeng and partner Mott McDonald
are developing a system that will detect and predict all types
of incidents: a learning algorithm system that combines loop
detector data, floating car data (TomTom) and Can bus data
(if available). The system predicts and detects congestion and
incidents such as car breakdowns and accidents.
For the validation of the module, the developer will use
incident logging data as available in the traffic management
centres. By using data fusion, the reliance on loop detector
data will be minimalized. The module will be demonstrated
on real traffic data from highways in the West Midlands
(i.e. around Birmingham).

Module 6 *Connected cars*

IN-CAR SYSTEMS

Beijer Automotive B.V. is connecting cars for autonomous
traffic flow management. Their module combines in-car
sensor data (such as speed, use of brakes, use of lights,
use of wipers, steering wheel position and headway to the
next vehicle). This produces valuable information about
traffic situations, especially if the information of individual
vehicles can be combined and analysed as a basis for
tailored advice to drivers.
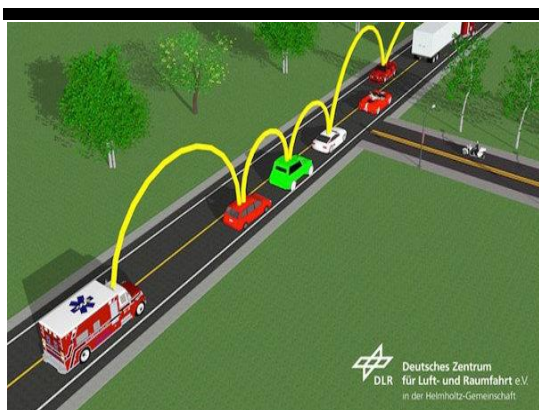
This in-car module
allows wireless
communication from
vehicle to vehicle.
Traffic management
centres may receive
event data or send
traffic guidance
information to the
vehicle displays.
This offers a scalable
and independent
transmissible solution
by using a
combination of proven
in-car technologies,
independent from road-side systems, traffic management
centres or vehicle brand. The cooperative network of vehicles
will offer drivers personalised advice aimed at improved traffic
control, a lower impact of incidents, improved road safety,
lower emissions and less investments in road (-side)
infrastructure.

Creating the future

*Maarten de Mos, project manager
CHARM PCP RWS:*

"In CHARM, innovation in the
PCP project is linked to the new
software (the ATMS) to be
purchased and implemented. This
makes our project stand out to the
European Commission.

If the PCP R&D succeeds, we
will seriously consider purchasing
these modules. They are being
developed to work with the
advanced traffic management
system (ATMS) to be procured by
Highways England and RWS via
the CHARM ATMS project.

Traffic management develops
rapidly, as in in-car systems. It
affects our role as traffic
managers. By using PCP, we
challenge the market to develop
new functions in traffic
management; modules that will
empower our traffic management
centres.

The CHARM PCP and CHARM
ATMS projects show the market
the way in which we want to
operate. We wish for an open
modular package, providing a
future proof traffic management
system. A system that is
compatible with modules of other
contractors. We want to challenge
the market, now and in the
future."

Module 7 In-car App

IN-CAR SYSTEMS

The module of **Cubic Transportation Systems (ITMS) Ltd** will implement a cost effective intelligent interface between the traffic management centres and drivers through in-vehicle equipment and a Smart Phone mobile application. The module provides classification and aggregation of individual vehicle data and notification of vehicle event data. It allows the road user to receive high quality, targeted information that can be tailored to specific journeys.

Module 8 Cooperative data

IN-CAR SYSTEMS

The Charm Cooperative Systems (ChaCoSy) of **Imtech Traffic & Infra UK Ltd** is the missing link between Traffic Management Centres and cooperative vehicles. By providing in-vehicle information , traffic controllers can inform road users about traffic and road conditions and incidents quickly and accurately.

Traffic Management Centre — ChaCoSy — Roadside ITS-Station — Vehicle ITS-Station — Cooperative Services
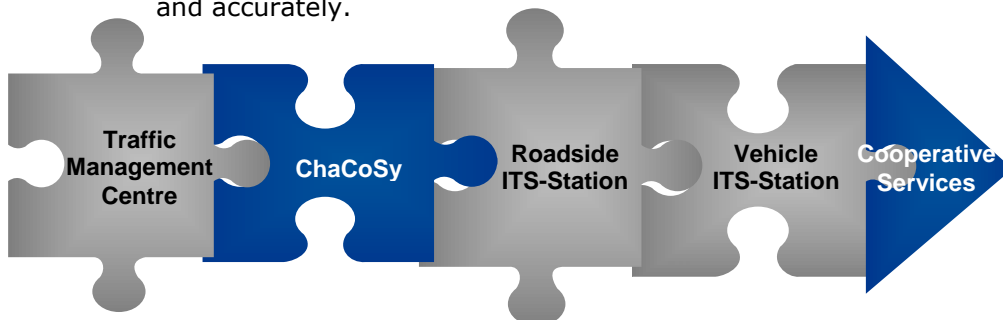
This module provides a wireless information exchange of in-car CAN-sensor-data between a co-operative network of vehicles. Drivers will receive personalised advice aimed at improved traffic control, a lower impact of incidents, improved road safety, lower emissions and less investments in road (-side) infrastructure.

Phases CHARM PCP Project

Phase 1 Challenge solution design *(July 2013- July 2014)*

Phase 2 Prototype development
- *October 2014:	Tender phase 2*
- *March 2015:	Start execution phase 2*
- *February 2016:	Completion phase*

Phase 3 Pre-production testing
- *April 2016:	Tender phase 3*
- *August 2016:	Start execution phase 3*
- *July 2017:	 Completion phase*

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Promising

Jozef Cannaerts, Vlaamse Departement voor Mobiliteit en Openbare Werken, PCP Partner:

"CHARM, between two giants with a lot of cultural differences and a high level of ambition.
Us, Flanders, as a small partner, eagerly following progress.

What will this project bring? Step by step, hurdles are taken, results are growing.

Today I see a project which excites Europe and which has a lot of expectations and a promising future."