 iCars Network	Intelligent Cars Thematic Network
D1.2.3 – Identification of potential cases for PCP in ITS	

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Abstract	This document consists of a report on the consultation for the identification of cases for PCP in ITS and a list of potential cases for PCP in ITS.
Keyword list	iCars Network, Pre-commercial procurement
Nature of deliverable	Report
Dissemination	Public

Project financially supported by	
 <p>cip competitiveness and innovation framework programme 2007-2013</p>	  <p>European Commission Information Society and Media</p>

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1. Introduction

1.1. Intended audience

This document was prepared for the European Commission and iCars contacts database including the group of contact persons on pre-commercial procurement.

1.2. Structure of the document

The document consists:

- of the interview framework for ITS experts on the identification of cases for PCP in the field of ITS;
- of the list of consulted and interviewed experts;
- of the results of the interviews, which are consolidated together with the proceedings of the last roadmap workshop, since they have been analysed and completed during this workshop.
- Of a conclusion with proposed topics for PCP

1.3. Objective of the document

The objective of this document is to provide a proposal of potential cases for PCP in ITS.

2. Documents

The process of identifying potential cases to which pre-commercial procurement could be applied in the field of ITS, has had to take into account the little knowledge about this among the ITS community. It has therefore consisted of a step by step approach, with:

- the definition of a framework for the interview, allowing experts to understand as well as possible the concept of pre-commercial procurement;
- the identification of a pool of experts to be consulted;
- interview from the experts;
- Proceedings from the interviews.

The results of this led to the identification of business cases. These are listed in conclusions of the documents. The work on the design of roadmaps which follows in the work plan of TG1 provides further definitions and developments of the business cases. It is through the development of potential roadmaps for the pre-selected business cases identified here that the most promising can be clearly identified.

2.1. Interview framework

How can pre-commercial procurement steer the development of new products and solutions for intelligent transport systems?

Support document for interviews and consultation of ITS experts

1. Purpose of the interviews and consultation

iCars is a thematic network funded by the European Commission DG Information Society. Its mission is to contribute to the deployment of Intelligent Transport Systems by exchanging knowledge and experience on these technologies among a wide variety of stakeholders on a number of specific topics.

One of the thematic groups of iCars focuses on assessing the potential of pre-commercial procurement for steering the development of new products and solutions for intelligent transport systems with the goal of defining a roadmap for pre-commercial procurement of ITS and constituting a group of procurers.

The members of this thematic group are Polis, ERTICO, FIA, CEDR, Cologne University and Transport Initiative Edinburgh.

To assess the potential of Pre-Commercial Procurement (PCP) for ITS, a limited number of consultation meetings and direct interviews are carried out with selected experts at the forefront of ITS innovation.

The results of these interviews will be made available to the experts who took part to this consultation. **They have been invited to discuss these results at the iCars workshop in Stockholm on the 22nd of September 2009.**

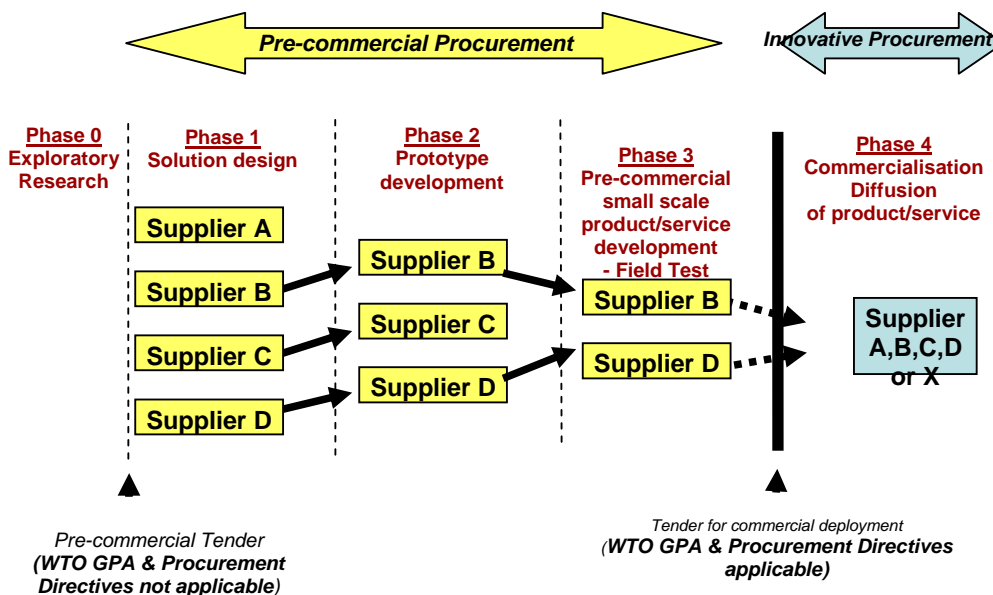
We believe your experience in the field of Intelligent Transport Systems is highly valuable and gives you a unique insight to assess how pre-commercial procurement (PCP) can benefit to the sector of Intelligent Transport Systems.

2. What is pre-commercial procurement ?

Direct interviews and consultation have been chosen as a preferred method to collect expert's opinion because of the lack of common knowledge on PCP.

Pre-commercial procurement of innovation refers to the **procurement of technological innovation** up to and including a first pre-commercial volume batch of products and / or services validated via field tests.

Pre-commercial procurement of innovation involves direct public R&D investment in the first three phases (pre-commercial part) of a typical R&D project life cycle.



Pre-commercial procurement is the procurement of R&D, of innovation services. It is therefore another form of public funding of R&D.

To our knowledge, it has not been applied in Europe for ITS.

PCP can only be applied for non existing technologies, to support the development of products which does not exist yet.

PCP is a tool to help solving problems formulated in an open way.

PCP is particularly interested to stimulate small companies activity on the market;

PCP can lead to leave the intellectual rights with the suppliers.

It has been temptatively defined that there must be 5% to 10% new non existing technology in a product to be able to use PCP. This must be based on the assessment of the outcome of the process.

PCP can be used in two cases:

- to stimulate innovation, in particular through SME's;
- to stimulate research and development on products needed (by public authorities) but not yet available.

Example: SBIR, the Dutch pre-commercial procurement programme and the case of the digital dikes, experience and recommendations from SenterNovem in the Netherlands**1. the usual way to treat a problem:**

1. definition of the problem and related issues, which results in a clear cut problem definition.
2. a research institutes makes an inventory of possible solutions and identify further research needs.
3. traditional companies and research institutes develop a solution.

2. SBIR (PCP) characteristics:

- Tangible solution of a problem within three years time
- Two phase program to reduce risk
 - Phase I feasibility phase, 6 months
 - Phase II r&d phase, 2 year
- Fixed budget
- IPR for the company (under conditions)
- Focus on the problem, not the solution or the product

3. Examples of the dikes

In the Netherlands, 40% of the territory is below sea level. The country counts 17.000 km of dikes, made of clay, sand, peat. Dikes are inspected visually. Alternatives forms of inspection were needed.

Open tender:

“The Ministry of Transport and Water Management invites companies to submit proposals for feasibility studies on new monitoring techniques for dike and dam management and for early warning systems on weak spots, in order to prevent damages to dikes and dams and thus to prevent disasters. The most promising proposals will get a contract to perform a feasibility study.”

Added value of precommercial procurement according to procuring authority:

21 companies responded to the tender, 15 SMEs, 5 start ups and one larger company, some of these companies were from other sectors.

An expert committee ranked the proposals and advised the minister of Water Management 5 companies were contracted to do a feasibility studies (phase 1). The overall cost for that phase was 250,000 euro.

Out of the 5 projects: 3 projects looked very promising, but there was only a budget for the development of the 2 best prototypes (phase 2). The overall cost for that phase was 850,000 euros.

There was the prospect of solving the problem: at least 2 systems are being developed that meet the requirements, and have the potential to enter the market within 3-5 years.

If by that time there are better systems the procuring authority do not have to buy the systems supported. This was not a waste of money since it triggered competition and innovation in a specific area.

However to lower the risks, the development projects were followed closely. Companies were visited 2-3 times a year.

Everything was done with the close participation of the owners of the problem: the dike managers.

Conclusions from the experience of PCP in the Netherlands: precommercial procurement works in the following cases:

1. Government / society has an actual problem (such as dike and dams inspection for instance)
2. The government wants to trigger change (transition to a more energy efficient society for instance) AND there exists no clear solution to satisfy this desire for change.

3 - How can pre-commercial procurement steer the development of new products and solutions for intelligent transport systems?

On the base of the information above, selected experts are invited to answer the following questions and share their views on the potential of PCP to steer the development of new products and solutions for intelligent transport systems.

Questions for ITS experts:

What are the research priorities for achieving a breakthrough in the development or deployment of the systems you are working on, for instance cooperative systems ?

Do you believe that pre-commercial procurement could support efficiently the required research efforts?

Do you believe that pre-commercial procurement would have been useful in steering research and innovation in the area of ITS in the past years ? To what problems do you believe it could have helped to find a better/faster solution?

How do you believe future R&D activities benefit from pre-commercial procurement in the field of intelligent transport systems?

2.2. List of contacted and interviewed experts

First name	Last Name	Organisation/project	Interviewed/answered
Paul	Kompfner	Ertico, coordinator CVIS	X
Samson	Tsegay	Mizar, CVIS	
Axel	Burkert	PTV, CVIS	
Jaap	Vreeswijk	Peek, CVIS	X
Maartje	Stam	Logica, CVIS	X
Trent	Victor	Chalmers University	
Oliver	Carsten	Leeds University, FESTA	X
John	Miles	Ankerbold	X
Risto	Kulmala	VTT, Telefot, eSafety RTD WG	X
Gianfranco	Burzio	Eurofot, Festa, eSafety RTD WG	X
Rämä	Pirkko	VTT, iCars	
Aria	Etemad	Eurofot	
Martin	Boehm	Coopers	X
Roberto	Brignolo	Safespot	
Eric	Kenis	European Commission	X
Gerben	Bootsma	Rijkswaterstaat (RWS), FOTNET	X
Anders	Lie	VV, Swedish Road Administration	X
Alexio	Picco	CAP	X
Zwijnenberg	Han	TNO	X
Hamish	Keith	Transport for London	X
Shelley	Row	US DOT, USA	X
Jane	Lappin	US DOT, USA	X
Martial	Chevreuil	Egis mobilité	X
Alain	Griot	Vice-director of innovation, French ministry	
Gerd	Riegelhuth	Hessisches Landesamt für Straßen- und Verkehrswesen - Verkehrsmanagement, Betrieb und Verkehr	
James	Tromans	Highways agency, procurement division	
Kari	Karessuo	Finnish Road Administration	
Yrjö	Pilli-Sihvola	Finnish Road Administration	X

2.3. Results from the interview process

Results of the interview process:

Below have been included the most significant contributions of the interview process. They are presented in an almost verbatim format.

The questions used by the interview are referred to, even though often answers are not related directly to the questions but more generally to pre-commercial procurement.

These results only include feedbacks and answer of some relevance for pre-commercial procurement.

It should be read together with the proceedings on the roadmap workshops which include further information and input from experts, as well as a selection of business cases resulting from this consultation exercise.

This feedback illustrates well the difficulty of grasping pre-commercial procurement for ITS experts which are not familiar with the concept and the approach.

What are the research priorities for achieving a breakthrough in the development or deployment of the systems you are working on, for instance cooperative systems ?

Experts consulted are active in various areas of ITS, including road safety, speed information, speed alert, variable speed limits, update of digital maps.

Most of them are involved in one way or another in research activities related to cooperative systems, intelligent speed adaptation, updates of digital maps.

They are also traffic managers, system providers (information and fleet management for public transport). For some of them their work involves the monitoring and forecasting of traffic and road conditions. Many of them work for the provision of traffic and travel information and routing of vehicles in relation to traffic management.

- The problem to achieve a breakthrough in the deployment of cooperative systems has mainly to do with the level of equipment needed. There are good chances that the required level of penetration of this equipment will not happen in the near future. Therefore the question is about what can be done for cooperative systems through simple nomadic devices, not necessarily embedded in the car. It could be used to develop digital standards for traffic messages. This can be done on satnav systems, which could be given to motorists by national governments. This would be an answer to overcome the deployment barrier for cooperative systems that we are facing now.
- ISA could also be considered for PCP, as a feature on navigation systems where there are already the maps. It could be used to overcome the barrier for the deployment to ISA which is on the information side.
- At first we can say that it is useful to think new ways to improve the development of new solutions, especially in the area of ITS. It is very rapidly developing area of traffic infrastructure. It is also different from earlier ways to handle with the infra. There is much more immaterial work than in traditional traffic infra. It also makes it more complicated to deal with. R&D on ITS has been made with different ways. Of course the traditional way is used as described in the referred paper but also with bigger tenders of so called “umbrella projects”. Those companies who are interested are free to send R&D proposals to project leaders and the “project committee” choose the projects to be funded. The results will be published and they are free to all. These are like EU framework programs, but national.

R&D projects have been made also straight with companies. Finnra has needs for some new information systems or for instance monitoring equipments. Finnra defines the needs and then the company makes the R&D. Finnra gives the opportunity to organize a pilot project and also pays for it.

Nowadays Finnra likes to buy rather services than products, when we talk about ITS-solutions. So, for instance, we like to develop traveller information service or road weather information service to main roads in Finland. Of course we also need product development e.g. variable speed limit signs, road weather sensors, traffic counting systems and so on. Monitoring of traffic and road condition is one of the key subjects in Finland. We think that if we have good data there will be service providers who make good services for the road users.

I think that there are some problems to tackle with PCP when using it for ITS development.

At first the solutions are quite often global and big companies (like e.g. Nokia) want to make global products. And when there are global markets the companies want to have the advantages of new developments to themselves, not to any one else (commercial interests).

The development on the ITS area is very rapid. If you make long development projects, the inventions made in them, are already old when ready and published.

ITS solutions include quite often a lot of software and so information systems. The immaterial property rights are many times difficult problem to solve. Not impossible but anyway it exists. The idea to go forward step by step in PCP is good but the problem is who owns the immaterial property rights of the invented products after every step.

- Regarding cooperative systems, it would be very useful to work further on how to use them for better traffic management, beyond what is conventionally considered. This is related to questions on cooperative systems such as ‘how to get better traffic data?’, ‘how to use these data which CS will allow to collect?’, ‘how to use this for network management?’.
- The European Commission should trial pre-commercial procurement in the field of cooperative systems, in particular to stimulate SMEs in this sector.

Do you believe that pre-commercial procurement could support efficiently the required research efforts?

- There is a real potential for pre-commercial procurement to support research in ITS and provide solutions which have the best chances for market deployment. It is especially interesting for products and services which can't be completely market driven, where a balance between market incentives and societal needs is required.
- Pre-commercial procurement would be particularly useful for research and deployment on **Intelligent Speed Adaptation systems**.
- It answers the need of a shared responsibility between society and OEMs. Even if some manufacturers have already systems on the market, further developments are needed. There is a need for technological innovation and to further build the business case. More research work on data collection and databases is needed in this area.
- Pre-Commercial procurement should be tried at the European level, possibly by the European Commission. Policy recommendations on this topic would be welcome.
- There is a place for Pre-commercial procurement in ITS. Several different areas would probably benefit most from it.
- **Addressing the issue of alcohol and driving**
There are only very few tools available to solve that problem. Pre-Commercial procurement could work well to develop detection of driving impairment, beyond the alcolock. Systems could look at the whole environment of the driver and use several indicators to detect impairment.
The OEMs are not active on this issue and PCP could be helpful.

- This would be interesting for **wireless consumer market**, for instance for the commercial community. As a public authority we could start from the need for real time information from the consumer products.

We would give a grant to developers, evaluate their proposal, and support the development of some applications. This would be useful to stimulate the emergence of a larger number of applications and to stimulate new ideas.

- The definition of a **national ITS architecture** could also be promoted through pre-commercial procurement. From 3 to 5 teams would be selected and financed to provide ideas. The best ideas will be incorporated in the contract with the winning team which would define the final output.
- Pre-commercial procurement would be interesting for States and local authorities to develop technological solutions to improve **rural road safety**. Efforts have been made in this sense, with ten awards given to sites promoting the best solutions, but none of these are deployed today on the market. May be the approach of pre-commercial procurement would have helped.
- Pre-commercial procurement could also stimulate further developments on **vehicles emissions and fuel economy**. More should be done about this, for instance on the collection of data from the vehicles on the road, and on the use of this data, for traffic information and environmental information.
- Yes PCP can support research efforts in the area of ITS. We have already tried so that we had a call for preliminary study about new type of traffic counting systems. After validation and evaluation project we now have the possibility to arrange a small scale pilot project to test some of the new systems. After that we can decide what to do next.
When we talk about something really new inventions, my opinion is that the manufacturers want to keep their secrets and develop their systems themselves. After that they are free to sell the systems so as they like. (immaterial property rights).
- pre-commercial procurement could also be used for developing solutions **for intelligent truck parking** and **integrated public transport solutions**.

Do you believe that pre-commercial procurement would have been useful in steering research and innovation in the area of ITS in the past years ? To what problems do you believe it could have helped to find a better/faster solution?

- eCall is a good example of an area where pre-commercial procurement could have been useful. It allows sharing risk at the development level. This was needed to complement solutions which come rapidly.
- It also fills gaps when researchers lack knowledge of the market.
- the concept of pre-commercial procurement as such and under this terminology is not known in the area of ITS in the USA.

The old VII work could be assimilated to pre-commercial procurement.

Teledrive has led to proof of concept test in Detroit and California.

- During the preparatory phase, the contractor was paid to prepare road side equipment, software to run systems, and draft SRC standards.
- The state supports the development of chips for commercial purposes, while the automotive industry develops its own equipment.
- Public authorities can pay for the 1st generation and the deployment of equipment.
- it depends of the case, but it has supported developments during last years. In Finland, it would help to develop better automated road section condition forecasts during next years. We defined the problem, we handled it together with different

service providers openly and there will be open tender to built and implement the new system.

- In the Netherland there is the Roads to the future programme which can be assimilated to pre-commercial procurement, as well as in A to Better innovation award. A prize is given to winners to develop an idea and make a prototype.
- Pre-commercial procurement is interested at the national level, but then wouldn't it create a risk of developing isolated solutions, which is especially negative in the area of ITS. That would creates difficulty for standards ad harmonisation. The Easyway experience illustrates this risk.
- Pre-commercial procurement would be more interesting if an EU ITS architecture was defined at the European level, and it would be applied to very specific questions. When it comes to cooperative systems for instance, there is a real need for European coordinated actions. Therefore pre-commercial procurement processes for ITS, and in particular if related to cooperative systems, should be European wide.
- In this case of a European process, incentives for players to take part to phase 1 should be carefully considered, as well the bureaucracy which can be related to this process. There is a risk of a low level of interest for SMEs in phase 1, which would favour calls starting whith a phase 2 approach. It could be considered if SMEs could be brought in phase 2 of the process.

How do you believe future R&D activities benefit from pre-commercial procurement in the field of intelligent transport systems?

There is hardly any talk about such approach in the area of ITS in the USA. This is considered at the margin for the future of research but there are no specific programmes or even plans on something like pre-commercial procurement.

Conclusions

As a result of the interview process and consultation with experts the following cases for pre-commercial procurement of ITS are being considered further in this thematic group:

- Impaired driving (alcohol)
- Road safety in rural areas
- Low cost cooperative devices
- Data collection (cooperative systems)
- Data use (cooperative systems)
- Intelligent speed alert
- Integrated PT ticketing
- Truck parking