

## ITS Radar Helpdesk Query: A Review of Guidance on the Implementation of Pilot Projects

Query no:	3	Query initiator:	Robert Stewart
Date:	27 <sup>th</sup> September 2005	Compiled by:	Dan McGuigan – daniel.mcguigan@fabermaunsell.com
Query topic areas:	Guidance on the Implementation of Pilot Projects		
Categories and level of relevance :	Pilots	Very relevant	
	Modelling	Some relevance	
	Standards and Policy	Some relevance	
	Monitoring	Very relevant	
Transferability to Highways Agency :	Meets Policy Objectives	Yes	
	Cost/Benefits Information	N/A	
	Development status	N/A	
	Innovative	N/A	
	UK legal issues	Issues surrounding type approval	
Summary:	<p>There is a wealth of literature available on experimental design and assessment approaches for pilot studies and ITS implementations. This note provides a short summary of some of the key guidance. Critical to all approaches is:</p> <ul style="list-style-type: none"> <li>• identification of user need;</li> <li>• development of functional and then technical requirements;</li> <li>• ex-ante appraisal and experimental design (inc monitoring requirements)</li> <li>• Implementation</li> <li>• ex-post evaluation of the results.</li> </ul> <p>Advice differs dependent on national goals for the assessments. Several levels of assessment should be considered:</p> <ul style="list-style-type: none"> <li>• Technical;</li> <li>• Impact; and</li> <li>• User acceptance.</li> </ul> <p>Under the technical assessment there may be specific requirements for testing prior to any on road trials e.g. Bench tests or off road trials dependent on the nature of the application or technology to be piloted.</p> <p>When developing pilot studies, existing national objectives should be used in the ex ante appraisal if possible, to ensure that the outturn observations of the pilot study can be used for future deployment justification.</p>		

### Introduction

This document is provided in response to the above query regarding what guidance is available on the implementation of pilot projects.

Each of the following sections summarise different published guidance on experimental design and implementation of ITS pilot projects:

## **CONVERGE – Guidebook for Assessment of Transport Telematics Applications: Updated Version - 1998**

This European guidance document describes in detail the seven key stages of an assessment process, it defines these as:

- 1. Definition of User Needs**
- 2. Describing Applications**
- 3. Defining Assessment Objectives**
- 4. Pre-Assessment of Expected Impacts**
- 5. Assessment Methods**
- 6. Data Analysis**
- 7. Reporting Results**

It concentrates on the concepts that are required to ensure that the pilot can be assessed and that any results are reliable and representative.

The primary reason for carrying out a pilot is to assess a particular ITS initiative, therefore by considering all aspects of evaluation and assessment, the prominent factors in designing a pilot must be considered.

This document is a useful resource for ensuring that the assessment needs of the pilot are considered, but supporting documents will be required for guidance on other aspects of implementing pilot studies.

## **MAESTRO - Monitoring Assessment and Evaluation Scheme for Transport Policy Options in Europe - 2000**

This project was carried out by a number of partners led by Transport and Travel Research (TTR) for Community Research and Development Information Service (CORDIS).

The main output of the MAESTRO project was a series of guideline documents that provide information on all aspects of pilot and demonstration projects; including site selection, design and evaluation. The MAESTRO guidelines divide the process of conducting pilot into three parts, these are:

- 1. Before the project begins:** when users define their specific transport problem and decide whether a pilot/demonstration project is the most appropriate way to try to solve the problem;
- 2. During the project:** when users apply the MAESTRO Methodology to address the issues associated with setting up and conducting the project; and,
- 3. After the project:** when users consider how best to use the project results, and whether to proceed to full-scale implementation.

The MAESTRO Methodology is at the core of the guidelines, it is a series of four project stages and three evaluation phases that feed into one another to form a complete evaluation project life cycle.

- 1. Definition of Objectives**
- 2. Site Selection and Pre-Design**
- 3. Expected Impacts (Initial Evaluation)**
- 4. Design Stage**
- 5. Ex Ante (Before) Evaluation**
- 6. Implementation of the Demonstration**
- 7. Ex Post Evaluation**

The purpose of this project was to develop general guidance for pilot and demonstration projects. This is a strong source of guidance on the implementation of pilot projects.

## **TEMPO – Euro-Regional Project Evaluation Guidelines**

These guidelines were written so that the evaluation of all Euro-Regional sub-projects might be standardised; this in turn would allow meaningful comparison between similar ITS initiatives.

These guidelines discuss all aspects of evaluation, starting with the appropriate 'level' of evaluation necessary for ITS applications at the various stages of their development. The document goes on to consider the evaluation approach and highlights the different types of evaluation project available, focussing on pilot studies and demonstration / implementation projects.

This document proposes a six stage approach to evaluating pilot studies which itself is taken from the Highways Agency Toolkit Peer Review Report Guidelines:

1. **Initial specification of the pilot;**
2. **(Further) consideration of the pilot (with assessment of expected impacts);**
3. **Specification of the monitoring requirement;**
4. **Consider how the specification might be met;**
5. **Confirmation of the specification; and,**
6. **Implementation of the monitoring programme.**

The document also discusses the presentation of results from projects such as these, recommending the proforma from the 'TEMPO Guidelines for Reporting Evaluation Results'; an example of how to complete an evaluation proforma is given.

The document provides a series of common recommendations for pilot studies and implementation projects when reporting results.

## **Transport Canada – Requirements for ITS Research and Development**

Transport Canada has an ITS Research and Development Programme. Guidance on the processes to be followed by contractors are noted on their website. These include the following tasks that must be undertaken:

### **Milestone Task #1: Prepare A Comprehensive Work Plan And Methodology Report**

The Project Manager will prepare a detailed draft Work Plan and Methodology Report describing the R&D methods to be employed, performance measures and related variables to be used, the expected outcomes, the range of potential results and how these will be analyzed, the time frame for each phase of the work, as well as the schedule for submission and review of project *Main Deliverables* including hardware and software, protocols, technical reports, and demonstrations as applicable. The draft work plan shall also include proposed dates and locations of all Management Committee review meetings and proposed dates for completion of all Milestone Tasks.

### **Milestone Task #2: Literature Review**

The Project Manager shall submit a literature review on the state-of-the-art with respect to the work to be undertaken under the proposal. Relevant findings resulting from this review shall be used as appropriate during the course of the project and summarized in the final report with appropriate references.

### **Milestone Task # 3: Mid-Point Interim Review**

The Project Manager shall submit a mid-point interim report documenting the work done to date including the design and build to date, bench and field tests performed and results achieved on the *Main Deliverables* as well as an assessment of work remaining to be done on the project and any required revisions to the work plan. Improvements, modifications, or design changes required to meet planned performance targets shall also be presented.

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## **Milestone Task # 4: Final Review and Draft Final Report**

Upon completion of the work on the *Main Deliverables*, the Project Manager shall submit a draft final report documenting all of the work done on the project including the design and build to date, bench and field tests performed and results achieved on the *Main Deliverables* as well as an assessment of the results/outcomes of the work performed by comparison with the original objectives and performance targets of the project's *Main Deliverables*.

## **Milestone Task #5: Final Report and Project Summary**

The Project Manager will incorporate comments on the draft final report resulting from the Management Committee meeting no. 3 and submit it to the Technical Authority for final technical and editorial review. Together with the draft final report, the Project Manager will submit a Project Summary that can stand-alone for information dissemination purposes. Should the final report not suitable for public dissemination for reasons of confidentiality relating to Intellectual Property, the Project Summary would be used for information dissemination purposes.

## **US DoT Federal Highways Administration - Building Quality Intelligent Transportation Systems through Systems Engineering 2002**

The US has strict requirements for ITS projects to adhere to the National ITS Architecture. This architecture includes a requirement that all systems should be designed using a systems engineering approach. This document provides a useful introduction to systems engineering focusing on the software aspects of ITS. It considers a multi stage approach to project design and implementation as follows:

- **Conception**
- **Requirements Analysis**
- **Design**
- **Implementation**
- **Testing**
- **System Acceptance**
- **Operation and Maintenance**

This is supported by a guide on developing functional requirements of ITS, also required to adhere to the National systems architecture.

## **UTMC Research Project 22 – Safety Issues**

This piece of research discusses type approval of equipment and safety issues within intelligent transport systems design. This is of interest with regards to UK pilot study design, and type approval testing issues.

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## References

1. Converge [http://www.cordis.lu/telematics/tap\\_transport/research/projects/converge.html](http://www.cordis.lu/telematics/tap_transport/research/projects/converge.html)
2. Maestro <http://www.cordis.lu/transport/src/maestro.htm>
3. Transport Canada ITS Research and Development - <http://www.its-sti.gc.ca/en/randd/menu.htm>
4. US DoT Developing functional requirements for ITS projects - [http://www.ops.fhwa.dot.gov/its\\_arch\\_imp/docs/functional\\_requirements.doc](http://www.ops.fhwa.dot.gov/its_arch_imp/docs/functional_requirements.doc)
5. US DoT Building Quality Intelligent Transportation Systems Through Systems Engineering - [http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS\\_TE/13620.html](http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/13620.html)
6. **UTMC 22: Safety Issues –**  
<http://www.utmc.gov.uk/utmc22/pdf/utmc22-framework.pdf>

**The Tempo documentation is held online, but is password protected. Please contact the ITS Radar helpdesk if you wish to be sent an e-copy of this documentation.**