



24/02 2009

**LUND**  
UNIVERSITY

Department of Technology and society

## **Evaluation of ITS applications**

A PhD course in the Swedish national research school for ITS  
7.5 ETSC credits

Course start: 26/02 2009 (kick-off seminar)

End date: Mid June 2009 (final seminar)

### ***Aim***

The aim of the course is to teach participants a scientific approach to how ITS applications and their effects can be evaluated with respect to functionality, user related criteria, traffic effects and transport policy goals.

### ***Learning outcomes:***

#### *Knowledge and understanding*

For a passing grade the student shall comprehend the various evaluation criteria of ITS applications, as well as what scientific methods can be used for their assessment and evaluation.

#### *Competences and ability*

For a passing grade the student shall be able to independently compose evaluation schemes and apply scientific methods to analyse the need for, technology used for and the effects of ITS applications.

### ***Content***

#### **Technology assessment**

Technology tests and “validation”, Simulation, “Software in the Loop”, “Hardware in the Loop” tests.

#### **User-related assessments and evaluation**

Methods to identify the needs of the various types of actors and user groups with regard to ITS applications (HMI issues, Actor analysis, Goal trees, Interviews, Focus groups, Surveys) as well as methods applicable to evaluate ITS applications with regard to user reactions, behaviour and acceptance.

#### **Impact assessment**

Prospective and retrospective assessments

Evaluation steps, building of hypotheses on expected effects and possible negative effects as a result of undesired behavioural adaptations,

Study design and methodology,

Effect evaluation in simulator and in-field experiments,

Impact assessment by network simulation (safety, efficiency, environmental effects),  
Short-term and long-term effects),  
Socio-economic impact assessment.

## **Disposition**

The course is mainly run as a distance course with four meetings.

1. At the first meeting the topics of the course will be presented and discussed.  
Then, each participant will be assigned an evaluation handbook/guidelines for ITS.  
*The task: Analyse the handbook/guidelines critically: What aspects of evaluation they are aiming at? How do they fulfill the goals for evaluation? Do they cover all the aspects they should cover? What evaluation methods are proposed? Are these methods relevant, appropriate and validated?*
2. At the second meeting, each participant will present and discuss the intentions of the handbook/guidelines.  
Then, each participant will be assigned a (completed) ITS development project/case to analyse it from the evaluation point of view.  
*The task: Analyse the project you are assigned critically: was it evaluated in all aspects along the ITS development steps, was the evaluation properly planned and carried out? Were any formalized guidelines considered?*
3. At the third meeting, each participant will present and discuss her/his case.  
Then, each participant will be assigned a new ITS application for which she/he will compose an evaluation plan and write an individual report.  
*The task: Make a detailed evaluation plan for each development stage of the ITS application, you are assigned, including technology “validation”, hypotheses, observational variables, measurement methods (Hermeneutic or Positivistic), study design, number of observations, etc. Consider the time perspective, as well as various possible effects, such as expected, side- or secondary effects.*
4. At the final meeting, each participant will present the evaluation plan to the other course participants.

Peer-reviewing by fellow course participant will be practiced, which means that the report is read by a fellow student, the “reviewer”, who at the final seminar gives his/her opinion and comments on the report.

The participant’s work will be supported by expert lecturers in connection to the seminar meetings.

### **Topics for lectures:**

Evaluation studies (András Várhelyi, LU, S)

Technology tests, software, hardware, HMI issues (Mark Fowkes, MIRA, UK)

Stake-holder analysis – goal trees, interviews, focus group, questionnaires (Mark Fowkes)

Socio-economic impact assessment (Gunnar Lind, Movea, S)

Prospective assessment (Ellen Jagtman, Delft, NL)

**Evaluation Handbooks/Manuals/Guidelines:**

ADVISORS (Methodology to assess ADAS impact on safety, network efficiency, environment),  
AIDE (Evaluation methodology with ADAS end users),  
CONVERGE (Guidebook for user needs, impact assessments, socio-economic assessment),  
eIMPACT (Socio-economic impact assessment),  
FESTA (Field Operational Tests),  
FITS (Finnish) Guidelines for the evaluation of ITS projects),  
Handledning för planering av utvärdering vid införande av väginformatik (Vägverket, 1999),  
RESPONSE (Code of practice for design and evaluation of ADAS),  
TEMPO (Guidelines for the evaluation of ITS projects).

**Assessment**

The participants will be assessed due to their performance on their presentation, report writing and reviewer activity. The grading in each part is “passed”/”not passed”. To get approved on the course all parts must be “passed”.

**Literature**

Literature references will be provided in connection with the lectures.

**Course manager**

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