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ABSTRACT: This presentation introduces the brand new approach of integrating risk simulation and scenario foresight within transport project appraisal (SIMSIGHT). The approach is based upon quantitative risk analysis and Monte Carlo simulation and conventional cost-benefit analysis converting deterministic benefit-cost ratios (BCRs) into stochastic interval results. Recent research has proven that particularly input based impacts such as construction cost and travel time savings often are respectively underestimated and overestimated creating so-called Optimism Bias. Decision-makers and stakeholders are, hereby, often basing their decisions on inadequate material. The UNITE Modelling System introduces an integrated approach by allowing decision-makers and stakeholders to participate in the project appraisal scheme at an early stage by attending a preliminary decision conference (DC) in order to provide input variables to the decision support model. The participants (i.e. stakeholders, project owners, decision-makers, etc.) will during a 1 or 2 day seminar be brought together with the purpose of discussing and agreeing upon respectively an absolute MIN and MAX value with respect to the construction cost estimates and travel time savings. Correspondingly, a set of extreme values are collected in terms of reference classes (RC) depicting Optimism Bias within transport projects where investment costs have a tendency to be underestimated and demand forecasts, that lays the foundation for travel time savings, to be overestimated. Combining respectively the DC and RC input in a common framework model provides information with respect to the resulting SIMSIGHT transport appraisal system. Herein, the extreme MIN and MAX values from the RC database are combined with the absolute MIN and MAX values from the DC in order to derive a general probability distribution function denoted the SIMSIGHT distribution for transport appraisal. The SIMSIGHT approach will be tested and further explored upon a case example depicting a new fixed link between Elsinore (Denmark) and Helsingborg (Sweden). Finally, a conclusion and perspectives of the further work will be presented.

Presenters:

KIM BANG SALLING is currently employed as an Assistant Professor at the Department of Transport at the Technical University of Denmark. He defended his PhD thesis entitled: *Assessment of Transport Projects: Risk Analysis and Decision Support*, in November 2008. The latter concerned a decision support model for assessing transport infrastructure projects. By use of the developed CBA-DK software model a new risk-oriented methodology for feasibility risk assessment was developed. He furthermore holds a Master's degree within transport planning and assessment with special emphasis on cost-benefit analyses and risk analyses. Currently he is co-managing a research project for the Danish Strategic Research council entitled: *Uncertainties in Transport Project Evaluation* (UNITE) that among others contain collaboration with Aalborg University, Oxford University and Princeton University. Recently, he has been co-managing the development of a methodology to prioritise initiatives and projects to promote biking (CPP) and the implementation and use of ITS systems in the Danish road sector for the Danish Road Directorate. Additionally, he has been managing the development of decision-oriented project ranking for the Danish railway asset management system for Rail Net Denmark and involved in the construction of a new transport decision support tool for the Home Rule in Greenland. Finally, he is responsible in an advanced Master and Phd course in Decision Support and Risk Analysis as well as an introductory diploma course in Project Appraisal on Bachelor/Master level.

Michael Bruhn Barfod is currently employed as an Research Assistant and PhD post candidate at the Department of Transport at the Technical University of Denmark. He has recently finished his PhD study entitled: *Optimising Transport Decision Making using Customised Decision Models and Decision Conferences*. The study concerned the identification of appropriate techniques for Multi-Criteria Decision Analysis (MCDA) and the set-up of decision processes. Furthermore, he holds a Master's degree within Civil Engineering. His research has mainly been concerned with methods and techniques for MCDA and composite modelling assessments where different methods are combined into an overall assessment methodology. Examples of such are AHP, REMBRANDT and SMART. Moreover, processes of group decision making is a central issue in his research. He has been involved in several projects concerning the development of decision support systems. Recently he has been involved in two projects, one regarding bikes and one regarding ITS systems, for the Danish Road Directorate assessing projects with very limited data using MCDA. Finally, he is responsible for an advanced Master course in Appraisal Methodology.