Decision support systems (DSS) are widely applied to assist decision-makers with the difficult task of identifying the best solution to a given problem. The most common methodology applied so far to the evaluation of transport systems has been conventional cost-benefit analysis (CBA), which supported by traffic- and impact model calculations provides the decision-makers with a monetary assessment of the project’s feasibility. Internationally seen there has been a growing awareness over the recent years that besides the social costs and benefits associated with transport other impacts that are more difficult to monetise should also have influence on the decision making process. This is in many developed countries realised in the transport planning, which takes into account a wide range of impacts of also a strategic character. It is commonly agreed that the final decision making concerning transport infrastructure projects in many cases will depend on other aspects besides the monetary ones assessed in a socio-economic analysis.

A coherent, well-structured, flexible, straightforward evaluation method, taking into account all the requirements of a transport infrastructure project is for this reason required. An appropriate ex-ante evaluation method for such projects can be based on multi-criteria decision analysis (MCDA). The use of MCDA in a decision process usually provides some of the following features:
• Improvement of the satisfaction with the decision process
• Improvement of the quality of the decision itself
• Increased productivity of the decision-makers
MCDA can in this respect be seen as a tool for appraisal of different alternatives, when several points of view and priorities are taken into account to produce a common output. Hence, it is very useful for the formulation of a DSS designed to deal with complex issues. The literature on MCDA is extensive, providing a sound basis for the methodologies employed and the mathematics involved. Moreover, there are numerous systems covering several disciplines, policy contexts and users’ needs for specific application environments.

This compendium examines the Expert Choice DSS based on the well-known MCDA technique: the analytic hierarchy process (AHP). More specifically, the possibilities for using the Expert Choice software in decision situations involving groups are examined with focus on the graphical presentations of the DSS.