

# WiseChoice

## Generic Web-based Decision Support System Framework

"The average man's judgment is so poor, he runs a risk every time he uses it."

--- Edgar W. Howe

Most real world problems involve uncertain information. Although uncertainty can be often reduced, it can be seldom eliminated and whether we are dealing with scientific, engineering, or personal problems, we are often forced to make decision comparing alternatives using very different criteria.

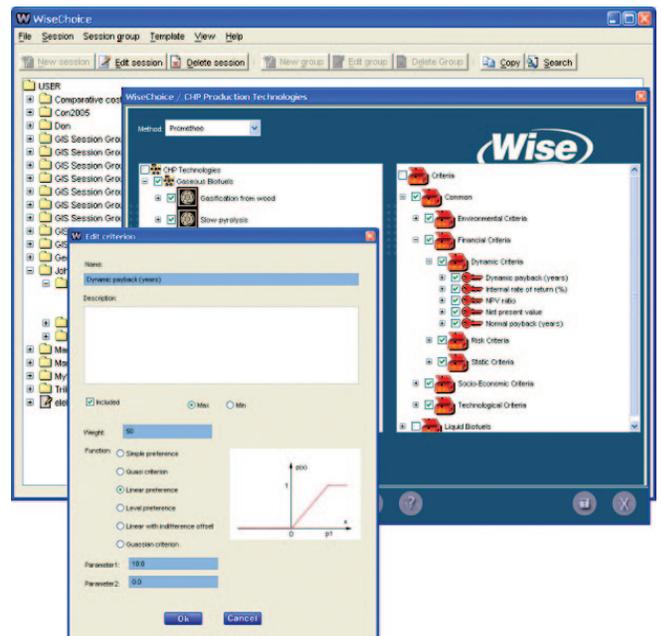
WiseChoice is an Internet/Intranet application aimed at helping decision-makers to make a desirable choice among many alternatives using multiple criteria. It is a generic application that can be used to provide decision support in various fields using the PROMETHEE and ELECTRE algorithms as its basis. PROMETHEE II algorithm provides a total preorder on the set of possible decisions and the result of ELECTRE III is a partial preorder of alternatives.

ELECTRE algorithm uses the concept of an 'outranking relationship'. This method consists of a pair wise comparison of alternatives based on the degree to which evaluations of the alternatives and the preference weights confirm or contradict the pair wise dominance relationship between alternatives. It examines both the degree to which the preference weights are in agreement with pair wise dominance relationships and the degree to which weighted evaluations differ from each other.

Numerous practical applications of the PROMETHEE algorithm have shown that it is very easily accepted and understood by the practitioners, being the easiest approach for solving a multicriteria problem by considering simultaneously extended criteria and outranking relations. These extended criteria can be easily defined by the decision-maker, because they represent the natural notion of intensity of preference.

The application is used to perform Multi-Criteria Analysis having a set of chosen alternatives and a set of chosen criteria. For each decision-making problem a template with all alternatives and criteria should be defined.

The alternatives and criteria are hierarchically represented using a tree. Based on the template a decision-maker can create a session for particular multi-criteria problem, where the actual alternatives and criteria of interest can be chosen and Multi-Criteria Analysis for the selected alternatives and criteria can be performed. These sessions are organized in folders called session groups.



The input data and the results of Multi-Criteria Analysis of each user's session can be exported to MS Excel and stored.

In WiseChoice application there are four user categories with different user rights tuned to provide the optimal use of the application.

### Technical information

WiseChoice is a Java application based on Java 2 Platform, Enterprise Edition (J2EE) and three-tier architecture. For the development and implementation of this application, the Open Source database, Integrated Development Environment (IDE) and Application Server are used.

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