Open Decision Maker

An open support program for a decision making process using the Analytic Hierarchy Process (AHP) method

User Manual

Open Decision Maker An open support program for a decision making process using the Analytic Hierarchy Process (AHP)

Authors: Bender, Blocherer, Rossmehl, Rotter

Index

I. Goal of the Open Decision Maker

The Open Decision Maker (ODM) is designed to support a user in a decision making process.
For this process ODM uses the Analytic Hierarchy Process (AHP) method.
This method is similar to the value benefit method, but it also compares the rating quality for all comparisons and shows the consistency of the decisions which have been made.

In a value benefit analysis this decision could be made without any warning:

Car 1 is better than Car 2
Car 2 is better than Car 3
Car 3 is better than Car 1

With the AHP method it is also possible to rate alternatives with an inconsistency, but the inconsistency is displayed in the consistency ratio CR. The CR can be seen as the quality of the weightings. A high CR is a sign of random/very inconsistent ratings.
With this additional information the quality of decisions can be improved.

ODM will guide the user from start to finish through the decision making process step by step with a user friendly graphical interface .

II. The Open Decision Maker Program

I. The use of ODM:

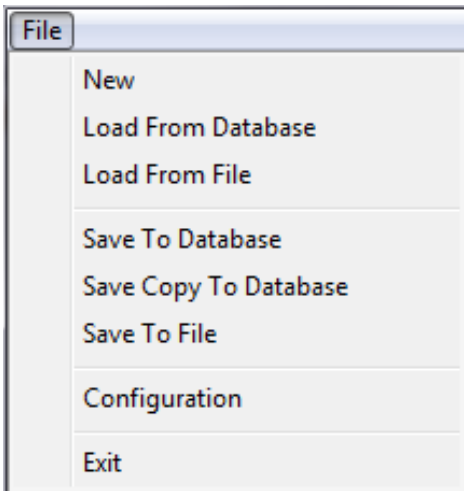
ODM is designed to evaluate a decision step by step. The user has to go through 5 steps to get the results of a decision, first a goal has to be defined, than alternatives and criteria. After that the criteria and alternatives have to be rated pair wise. Finally the result will be presented as a summery in the program or can be seen with all details in a pdf-file which can be created.

Generally there are two possibilities to navigate through ODM.
1. The user can navigate forward and backwards through all Steps with the buttons on the lower right corner.
On the left side to the next button you often find a question mark for information of this tab. If the buttons are not selectable the question mark explains why it is not possible to go to the next step.

2. The user can click on all Tabs/Step to get to the selected Tab/Step

!We recommend the use of the buttons. Some buttons will only be enabled if all needed data is filled out. If the user clicks on the Steps it might lead to (temporary) wrong results, in extreme cases even to crashes of the program!

II. General Settings



New

Empties all fields of the ODM

Load From Database

opens a selection window where one decision can be loaded from the daStepase

Load From File

loads a ODM Project (*.odm) into the ODM

Save to Database

Saves the Current Project to the database with the goal name as identification.
!If this project already exists in the database, the existing data will be overwritten!

Save Copy To Database

The Project is saved to the database with the saved as a copy to the database. If the project already exists, it will be saved as a copy of it with the same name.

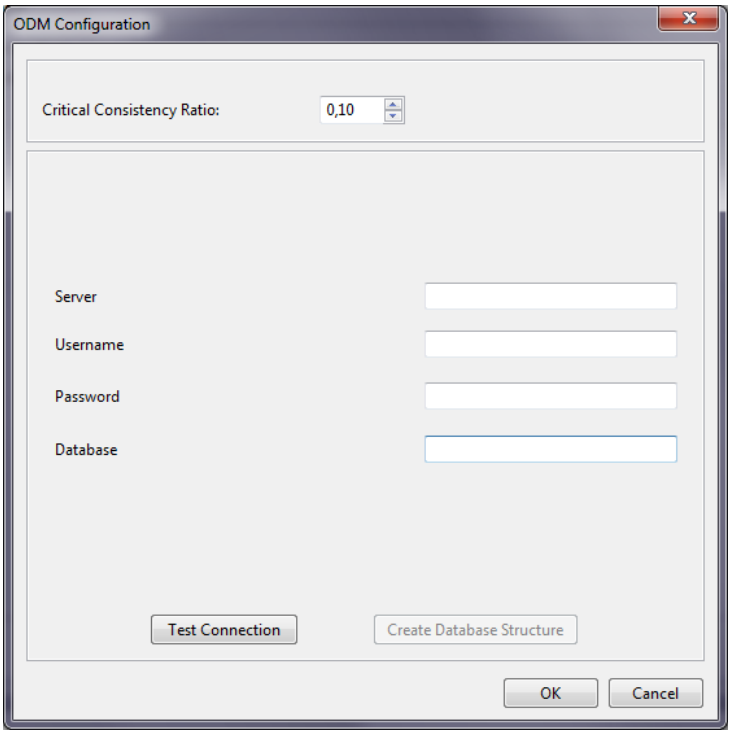
Save to File

Save the current project to a file

Configuration

Opens the configuration window to configure the server settings and the critical consistency ration

III. Configuration Settings



Critical Consistency Ratio:

This value defines the critical value of the Consistency Ratio (CR). If the CR of a result is above this value, it will be displayed red in the result.
The default value is 0,1 which is considered for normal decision as the highest acceptable Consistency Ratio.

Server:

The Server path of the database server
! At the moment the ODM can use only MySQL database servers

Username:

MySQL-Server user name

! if the user wants to use all features of ODM, he needs read and write rights on the selected database

Password:

MySQL -Server password

Database:

The name of the database on the MySQL-Server

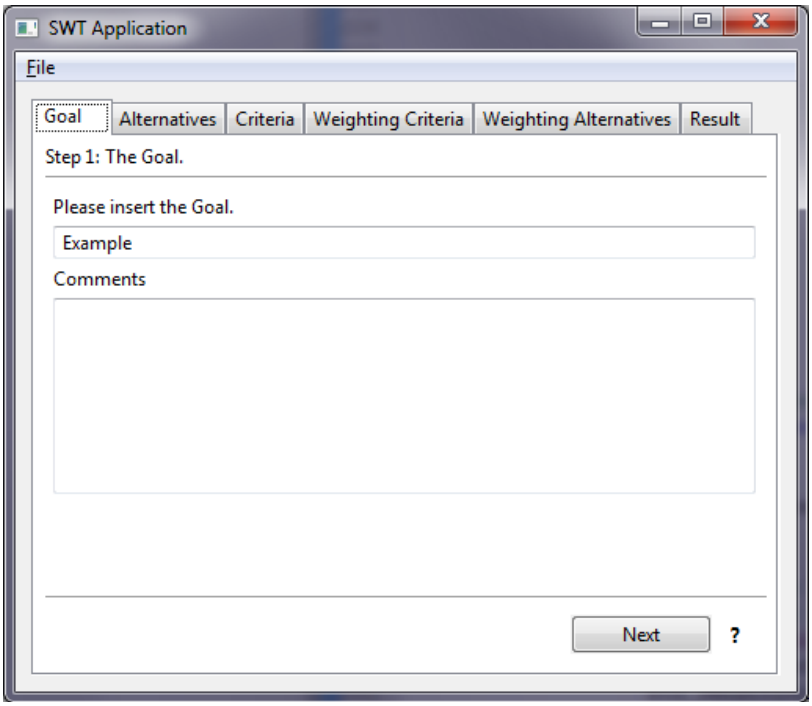
Test Connection:

Test if it is possible to connect to the entered database

Create Database Structure:

If the connection to the database is working , but no database for the ODM is found, all needed tables can be created.

IV. Tab 1: Goal



Goal:

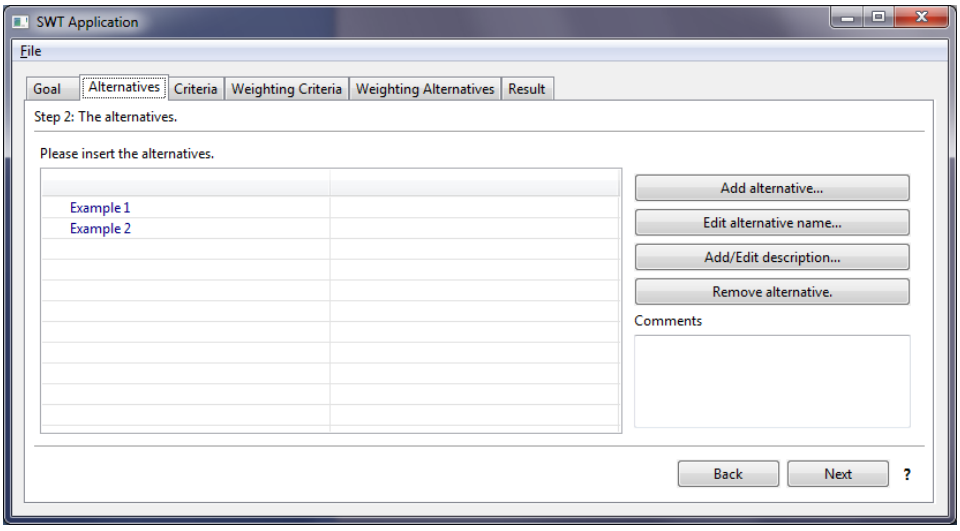
insert a name for the decision which should be evaluated.

Comment:

Insert a description of the goal

!We recommend a speaking name of the goal name as this name will be displayed when it will be saved to a file or to the database.

V. Tab 2: Alternatives



Alternatives are the objects you want to compare to each other

Add alternative:

Adds a new Alternative to the ODM Project

Edit alternative Name

edits the name of the selected alternative

Add/edit description

Adds or edits the description of an alternative in the column behind the alternative name

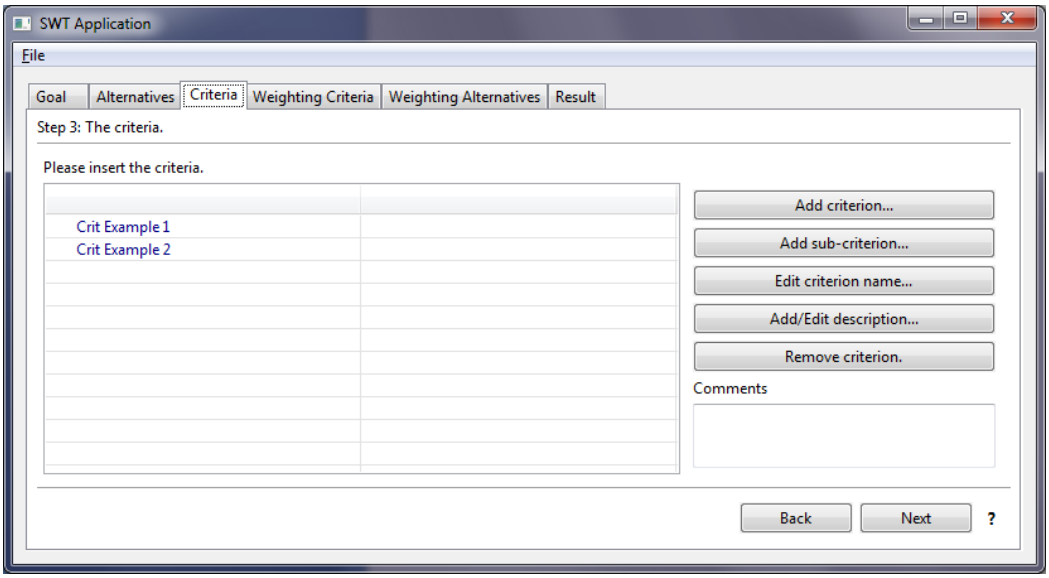
Remove alternative

Removes the selected alternative from the decision making process

Comments

A section for general comments which are valid for all alternatives

VI. Tab 3: Criteria



Criteria are the factors which are used to rate the alternatives.

Add criterion

Adds a criterion to the ODM project

Add sub criterion

Adds a sub criterion to the selected criterion

!A criterion must have at least 2 sub criteria, otherwise sub criteria are not needed and should be added as another criterion. If only 1 sub criterion exists the next button will be disabled.

Edit criterion name

Edits the name of the selected criterion

Add/Edit description

Adds a description to the selected criterion

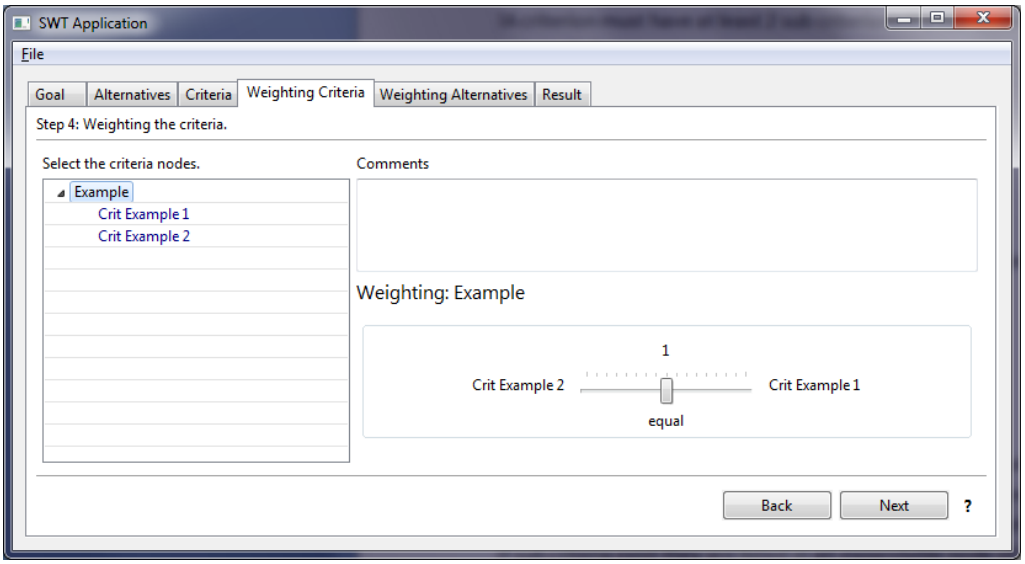
Remove criterion

Removes the selected criterion from the current ODM project.

Comments

General comment filed for all criteria

VII. Tab 4: Weighting Criteria



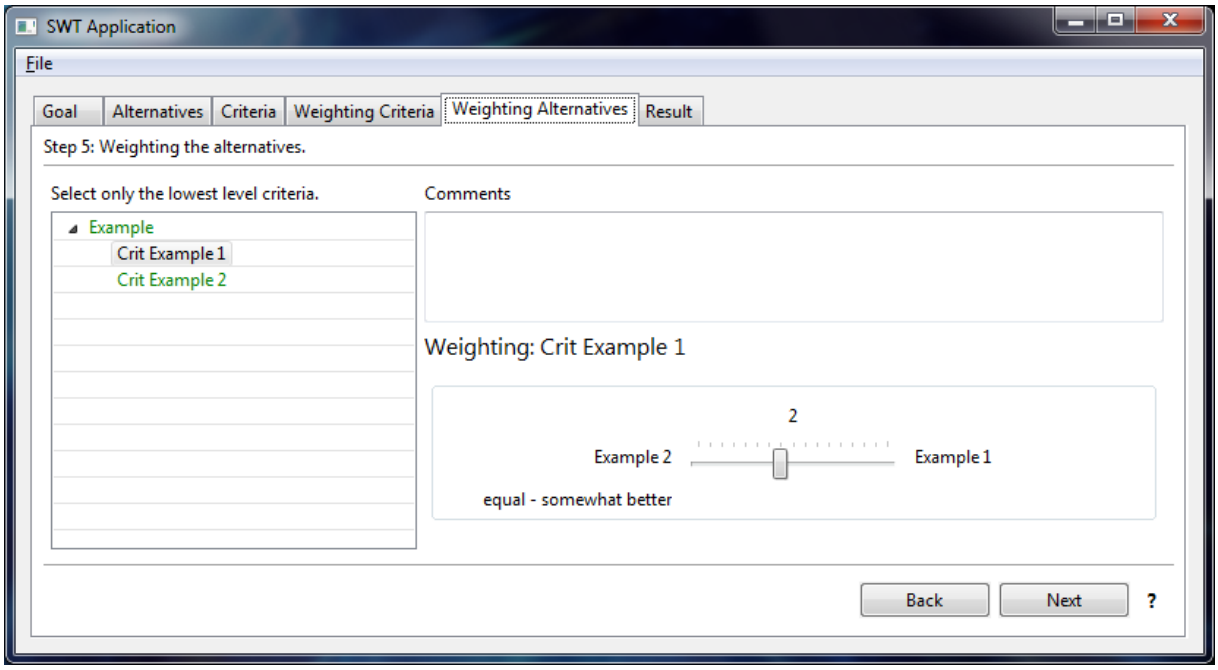
In the Weighting alternative step the user has to compare all criterion by pairs and has to decide which criteria is more (or equal) important. All criteria are listed in a tree structure on the left-hand side. If the goal, which is listed on top of the tree is not green additional user input is needed.
If sub criteria exist they are listed in an expandable node of the tree on the left-hand side.

The ranking of the criteria is done by moving the control in the wanted direction. It is possible to choose between 9 different weightings (the Saaty Rating Scale):

Value	Meaning	
9	extremely better	the highest possible difference
8*	much more/extremely better	compromise
7	much more better	Experience and judgment very strongly favor one criteria over the other. Its importance is demonstrated in practice.
6*	definitely/ much more better	compromise
5	definitely better	Experience and judgment strongly favor one over the other
4*	somewhat/ definitely better	compromise
3	somewhat better	One criteria is slightly more important than the other
2*	equal / somewhat better	compromise
1	equal	Two criteria are equally important

! The tree structure of the weighting tab is only needed if there are criteria with sub criteria, otherwise all ratings can be done without selecting a single criterion.

VIII. Tab 5: Weighting Alternative

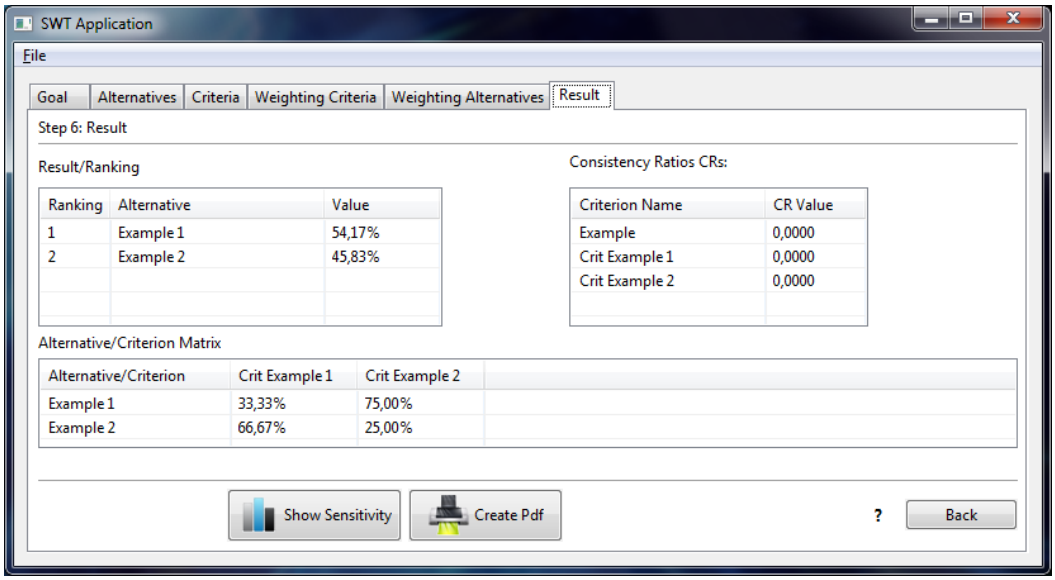


In this step all alternatives have to be compared pair wise for decision criterion. The used scale is also the Saaty scale from 1 (equal importance) to 9 (extremely better)

Value	Meaning	
9	extremely better	the highest possible difference
8*	much more/extremely better	compromise
7	much more better	Experience and judgment very strongly favor one criteria over the other. Its importance is demonstrated in practice.
6*	definitely/ much more better	compromise
5	definitely better	Experience and judgment strongly favor one over the other
4*	somewhat/ definitely better	compromise
3	somewhat better	One criteria is slightly more important than the other
2*	equal / somewhat better	compromise
1	equal	Two criteria are equally important

If all alternatives are weighted the top node will be green.

IX. Tab 6: Result



In this tab all results are listed as a summary. In the Result/Ranking table the final ranking is displayed. The alternative with the highest value is the alternative which should be chosen.

In the Consistency Ratio table the consistency of all criterion , sub criterion and of the goal is displayed. A high consistency ratio is an indication of random/not logical ratings of the criterion weightings

Alternative/Criterion Matrix

In the alternative criterion matrix it is displayed how the alternatives scored considering the top level criteria.

Create PDF

A full report with all details of the current ODM project will be generated and opened.

Show Sensitivity

A simulation of the stability of the result will be opened. In this window the user has the possibility to see how stable changes of the importance of top level criteria will affect the result of the ODM project.