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beSMART

a software tool to support the
selection of decision software

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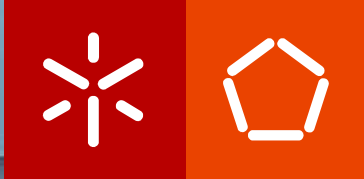


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Content

Speaker: Anabela Tereso





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- beSmart is a tool which goal is aiding the user to choose the best Decision Support Software between a set of Software residing in a database, according to the features desired, and using multicriteria decision methods.
- It allows to save in a file all user data, such as the set of Decision Software Tools under consideration and its features to be used afterwards.

What is beSMART?

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There are three multicriteria methods available:

- Smart method
- AHP method
- ValueFn method

Multicriteria methods

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- Requirement Analysis:
 - Done through meetings with the client;
 - The features of the application were defined.
- Modeling using UML:
 - Performed to obtain a good code organization;
 - [Use Case Diagram](#), [Sequence Diagram](#) and [Class Diagram](#);
- Implementation:

The application architecture is organized in three layers:

 - Data;
 - Business;
 - Interface.
 - The language used was C#.

Application Development

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Is a simple and fast technique to decide the priority of different alternatives. It consists of assigning points to each alternative, where higher scores represent more important alternatives.

SMART METHOD

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beSMART Software

DataBase Software Help

Choose Software Choose Criteria Definition of Weights Definition of Priorities Final Results

SMART AHP

Please give 10 points to the characteristic you consider the least important. To other characteristics give the points according to the first ranked (feature which gave 10 points). Then is calculated the final weights and got a table with normalized values.

	Weights	ID	Name
	10	1	Compatible operating systems
	30	2	Cost
	15	4	Manuals and Tutorials
▶	20	7	Free version

	ID	Weight
▶	1	0.1333333
	2	0.4
	4	0.2
	7	0.2666667

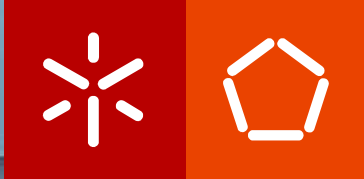
Currently smart method chosen.

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SMART METHOD

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Is a structured technique for dealing with complex decisions. Consists in filling a table, by assigning a degree of importance to each criterion, in relation to another. This method requires the computation of the consistency rate, which is a mathematical value of reference that shows the consistency of the comparison done (according to Saaty (1980), this rate should be lower than 0.10).

AHP METHOD

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Saaty's scale

If x has/is ... that/than y	The preference number to be given is:
The same importance	1
A little more important	3
A much more important	5
A far more important	7
Absolutely more important	9

AHP METHOD

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beSMART Software

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Choose Software Choose Criteria Definition of Weights Definition of Priorities Final Results

SMART AHP

This table pretends to describe the relation between all characteristics chosen.
The main diagonal of the table associates the same two characteristics, so is automatically filled.
Here you have to fill in the part of the table above the main diagonal, and give points to each criterion concerning other.
You may adopt your own scale or consider the scale described in AHP Tutorial.
The part of the table below the main diagonal is automatically filled in with the inverse values previously assigned.
Then is calculate final weights and got a table with normalized values, named final weight matrix. After that, is estimated the consistency rate of this matrix.
If the value of consistency is good (written in green), you can proceed. If the consistency is bad (written in red), you should change the values to get a better result, or proceed anyway.

	Best Software	Compatible operating systems	Cost	Manuals and Tutorials	Free version
Compatible ...	1	0.25	0.5	1	
Cost	4	1	3	3	
Manuals an...	2	0.333333343	1	2	
Free version	1	0.333333343	0.5	1	

	ID	Weight
►	1	0.124573
	2	0.5125777
	4	0.2274068
	7	0.1354426

Consistency Rate
0.0169750147634344

Currently AHP method chosen.

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AHP METHOD

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Corresponds to a function that maps directly to the evaluation of the alternatives. It can be a maximization or a minimization function, depending on the user's intention to maximize or minimize the given attribute.

ValueFn METHOD

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beSMART Software

DataBase Software Help

Choose Software Choose Criteria Definition of Weights Definition of Priorities Final Results

ID	Name
1	Compatible operating systems
2	Cost
4	Manuals and Tutorials
7	Free version

Previous Next

2 - Cost

ValueFn AHP

ID	Name
1	Decision Explorer
2	Criterium Decision Plus
3	Decision Lab

Select the option as you want to maximize or minimize the criterion to get the values of the priorities.

☒ Minimize ☐ Maximize

ID	Priority
1	0.2918033
2	0.1934426
3	0
4	0.2573771
5	0.2573771

Here you have to define the priorities for each characteristic you selected before.
First select the desired criterion from the table. Then, choose between ValueFn and AHP method. You must do this for each characteristic.
When all criteria are classified, you can finish the process pressing the Finish button.
To learn how the methods work, see the tutorials in Help menu.

< Previous Finish!

ValueFn METHOD

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At the end some tables and graphs are presented to the user to show which is the best software and how the features contributed to the result.

An user guide is also available in the appendix of the paper.

Software Results

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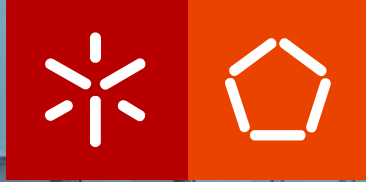
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Software Results

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- [View Software WebPage](#)
- [Compare Software](#)

Demonstration

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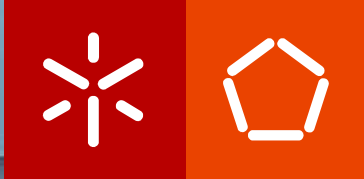


- The decision support model is totally functional, which makes the results provided safe and reliable;
- Although the application is used to compare software, it can be used to perform any kind of comparison;
- In the future, features like sensitivity analysis and an Help Module with a search system, are planned to be implemented.

Conclusions

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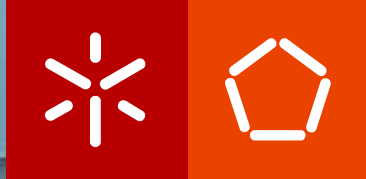


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References

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