

Web-site for Multiple Criteria Analysis of Discrete Alternatives

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B/S/D structure:

Browser (the minimum screen resolution is 1024X768):

- Firefox ver. 3
- MS Explorer ver. 6
- Safari

Server (Sun Solaris)

- Container of the MCA (JRE 1.6, Apache Tomcat 6)
- WF(web flow framework by Bartosz Kozlowski)
- Solver (by Marek Makowski)
- User web services (by J.Wojciechowski&H. Ren)
- Bug report & Contact(by J.Wojciechowski&H. Ren)

Database

- Oracle 10g

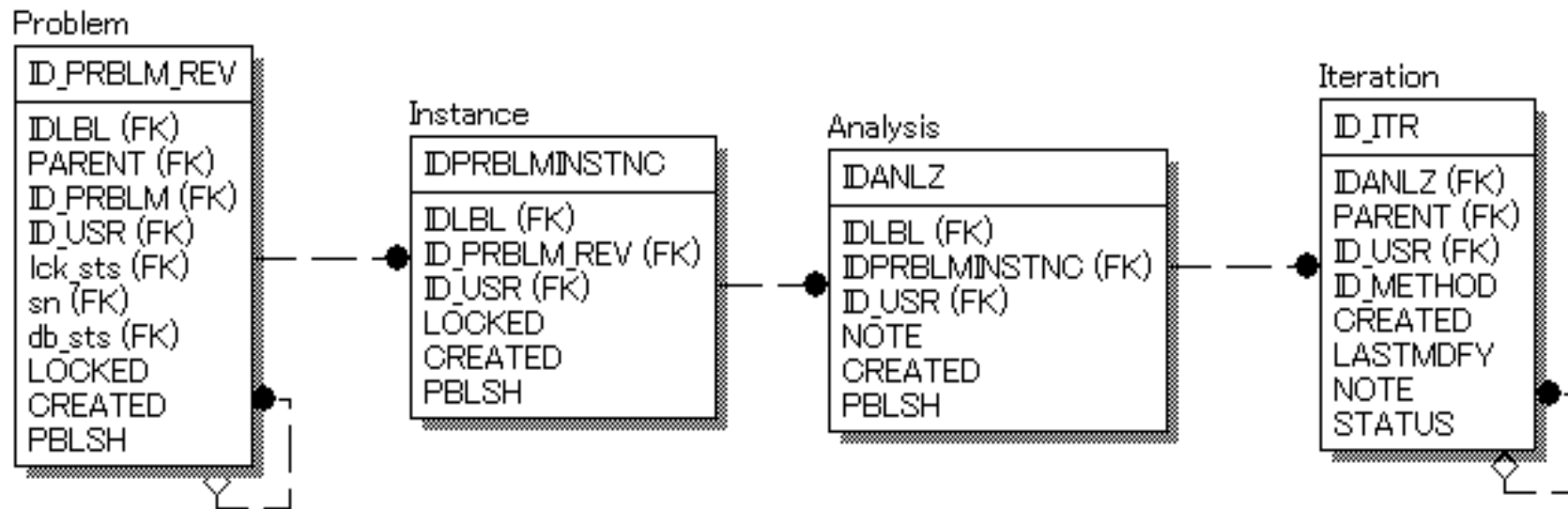
Layers:

- Java persistence layer
- Object-relational mapping abstraction layer
- Data access layer
- Services layer
- Process and integration layer
- Interfaces layer

Modules

- Problem
- Instance
- Analysis

Data Model of the MCA:



Overview of MCA functionality (user point of view):

- Large number of alternatives(>1000 alternatives)
- Large number of attributes(>40 attributes)
- Private data space
- Specification of problem, instance, analysis
- Continuation of the analysis
- The user data are stored on MCA server.

Problem specification:

- Alternatives, indexed by $j = 1, \dots, m$
- Attributes, indexed by $i = 1, \dots, n$
- Attribute values by q_{ij}

The screenshot shows the IIASA MCA web application interface. The top navigation bar includes links for Contact, Documentation, and Logout, along with the user name 'hr_mc_admin'. The main header displays the IIASA MCA logo and the current problem name 'car4'. Below the header, there are three tabs: Problem, Instance, and Analysis. The 'Problem' tab is active, showing a form for problem description and data.

Problem description

Name: Note:


Problem data

Attributes \ Alternatives	Price	Fuel
Toyota	<input type="text" value="22.0"/>	<input type="text" value="8.0"/>
Honda	<input type="text" value="19.0"/>	<input type="text" value="11.0"/>
Volvo	<input type="text" value="24.0"/>	<input type="text" value="7.0"/>

At the bottom of the form, there are five buttons: Add attribute, Add alternative, Save, Cancel, and Commit.

Instance:

- Criteria: an attribute + type (max, min)
- A hierarchy of criteria



Problem: car4>> Instance: All criteria

Contact Documentation Logout

User: hr_mc_admin

Problem
Instance
Analysis

Instance description

Name: Note:

Criteria:

Attribute	Short name	long name	Type
<input checked="" type="checkbox"/> Price [Euro]	<input style="width: 100px;" type="text" value="Price"/>	<input style="width: 250px;" type="text" value="Price"/>	<input checked="" type="radio"/> Min <input type="radio"/> Max
<input checked="" type="checkbox"/> Fuel [l/100km]	<input style="width: 100px;" type="text" value="Fuel"/>	<input style="width: 250px;" type="text" value="Fuel"/>	<input checked="" type="radio"/> Min <input type="radio"/> Max

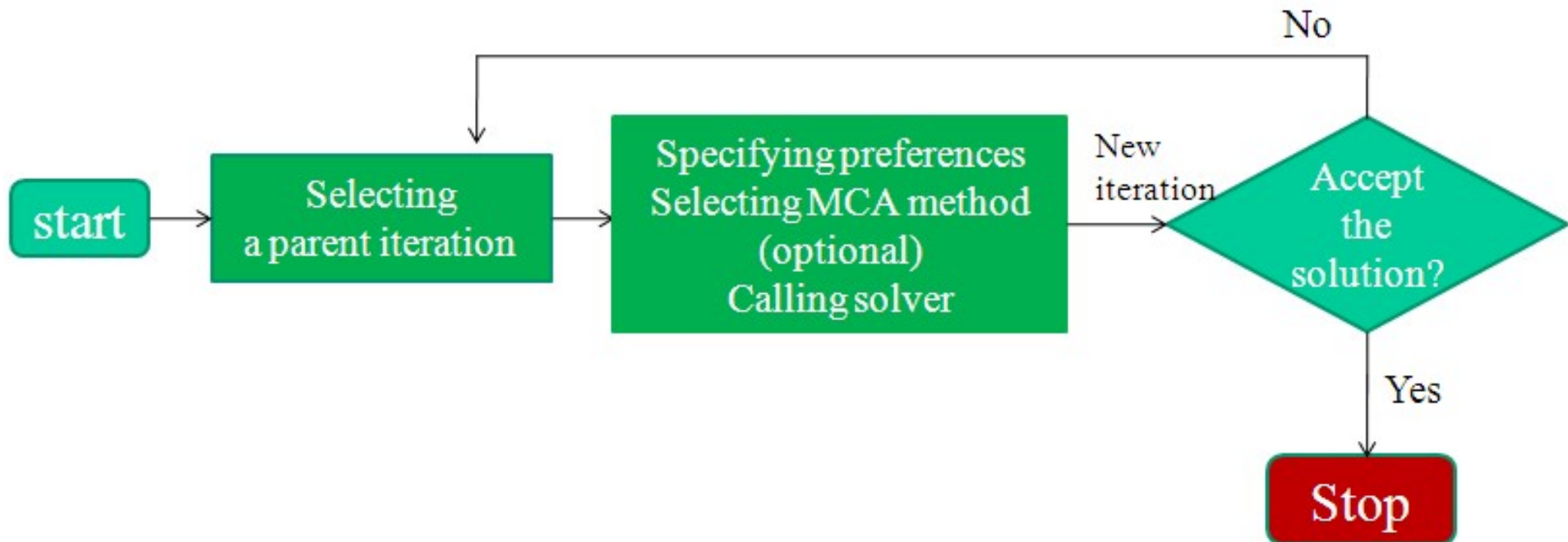
Save
Cancel
Commit

Analysis (Container of iterations):

- Initial iteration (Objective Choice)
- Next iterations: preferences by the user

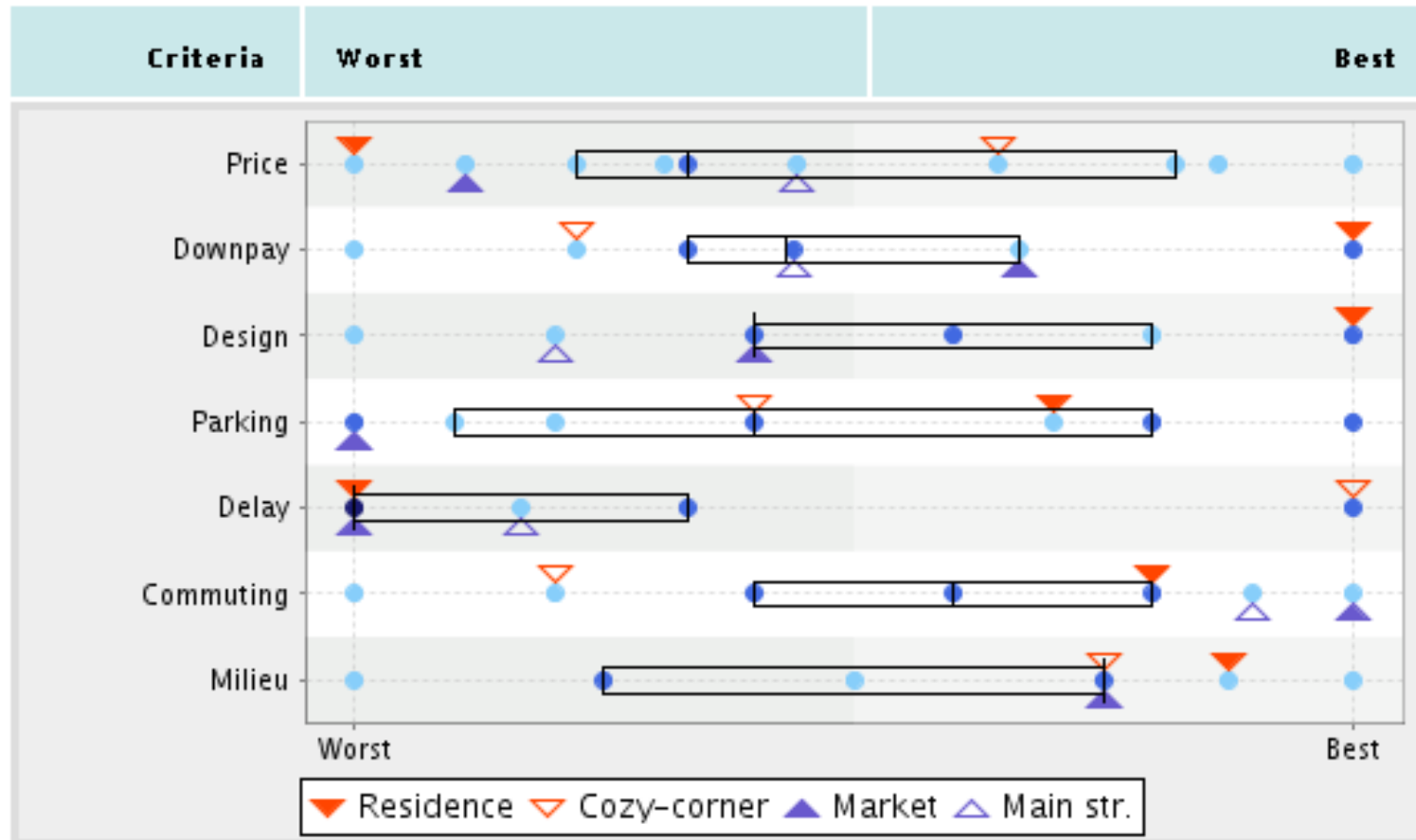
The screenshot shows a web browser window titled "MCA - Multicriteria Analysis". The page header includes the IIASA logo and "MCA" text, along with navigation links for "Contact", "Documentation", and "Logout". The user is identified as "User: hongtao". The breadcrumb trail reads "Problem: home >> instance: Basic >> analysis: ?". Below the header, there are three tabs: "Problem", "Instance", and "Analysis", with "Analysis" being the active tab. The main content area is titled "Analysis description" and contains two input fields: "Name: [?]" and "Note:". At the bottom of the form, there are two buttons: "Save" and "Cancel".

Analysis process:

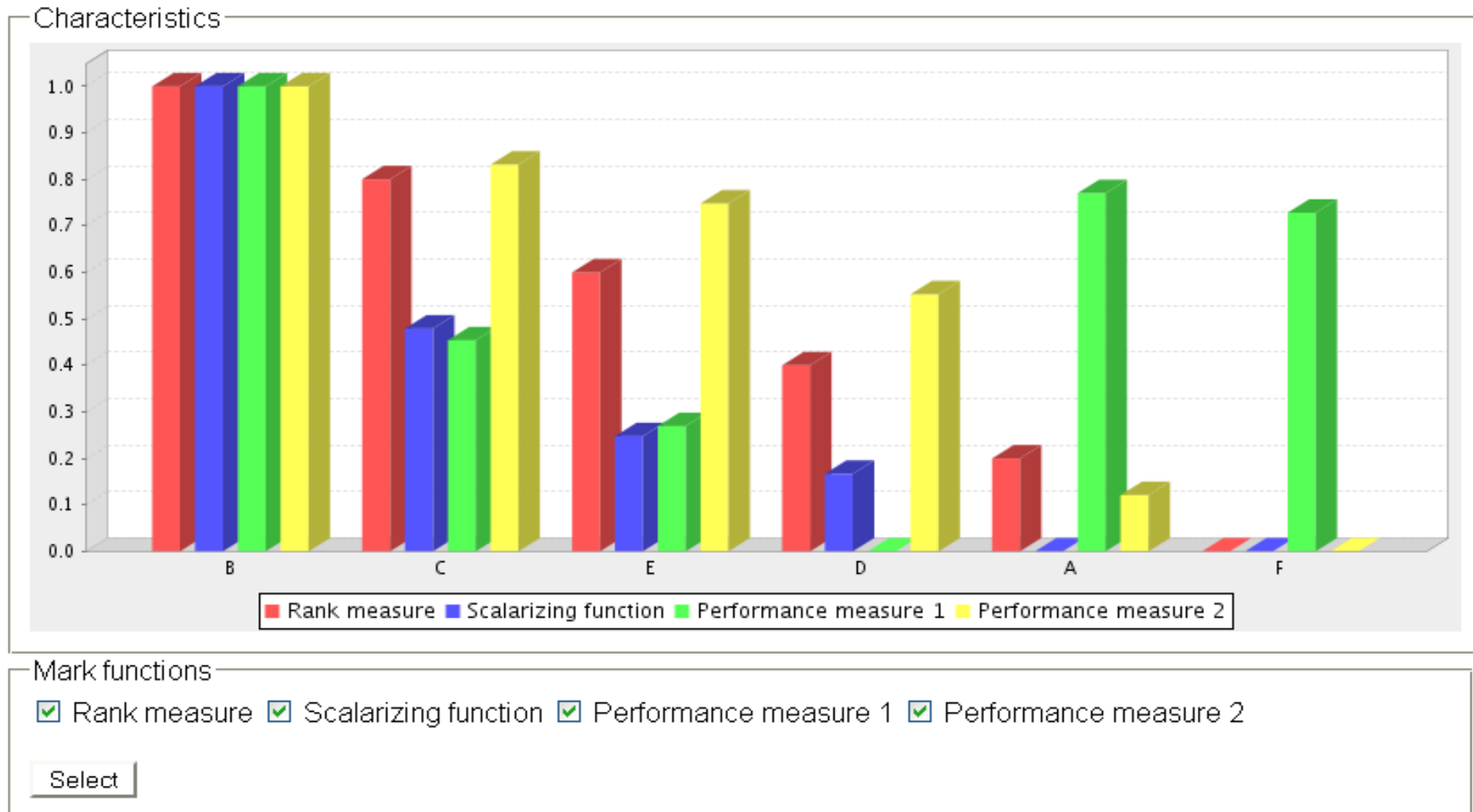


Analysis in the criteria space:

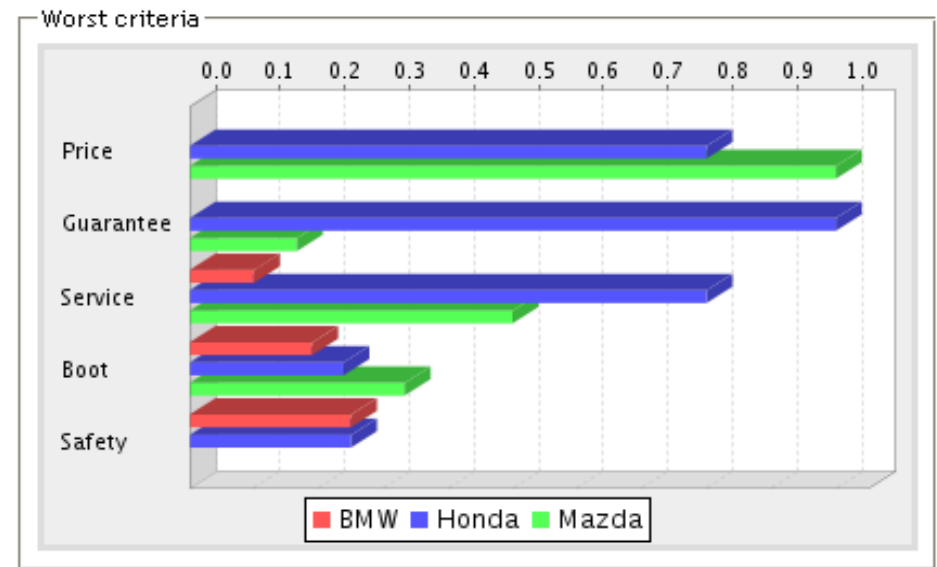
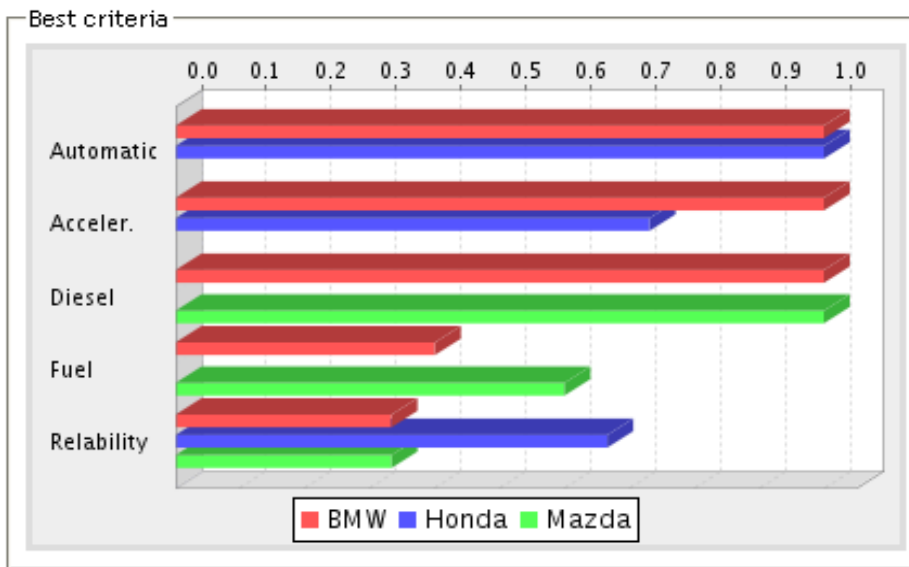
Criteria Chart



Auxiliary analysis in the alternative space (characteristics)



Auxiliary analysis in the alternative space (compare by criteria)



- Alternatives to be displayed

Not selected

- Toyota
- Saab
- Mercedes
- VW
- Volvo

Selected for display

- BMW
- Honda
- Mazda

Specification of preferences

Relative importance:

- ignore,
- vastly less important than average,
- much less important than average,
- less important than average,
- average importance,
- more important than average,
- much more important than average,
- vastly more important than average.

User preferences

Criteria names	Relative importance
Price	
Fuel	
Guarantee	

User preferences

Criteria names	Relative importance	Improvement
Price		
Amenities		
Parking		
Commuting		
Area		
Milieu		

selecting criteria for improvement and compromising:

- relax,
- free,
- stabilize,
- improve.

Real-time demonstration of the MCA

Access to the MCA is available from
<http://www.iiasa.ac.at/~marek>

Conclusions:

- Any-time any-where type of access
- Private data space
- Continuation of analysis
- Free to use for research and education purposes

Future development:

- Target criteria
- Aspiration/Reservation
- MCMA