

AHPproject

Free Web-Based AHP Decision Support Tool

Tutorial ver. 1.0

Table of contents

1. Account creating and logging in.....	2
1.1. Creating new account	2
1.2. Logging into account.....	2
1.3. If you can not log in.....	2
2. Managing decision problems.....	3
2.1. Creating new decision problem.....	3
2.2. Copying decision problem.....	4
2.3. Deleting decision problem.....	4
2.4. Downloading decision problem from “Decisions Library”	4
2.5. Publish decision problem.....	5
3. Working with decision problem.....	6
3.1. Properties page	6
3.2. Criteria page	6
3.3. Alternatives page.....	7
3.4. Preferences page	8
3.5. Results page.....	10
3.6. Charts.....	11

1. Account creating and logging in

1.1. Creating new account

1. Go to <http://www.ahpproject.com/RegisterNewAccount.aspx>
2. Fill in the register form (Figure 1) and click on “Join now” button,



Fig. 1. Register form

3. An activation link will be sent to the e-mail address you enter,
4. Click on activation link.

1.2. Logging into account

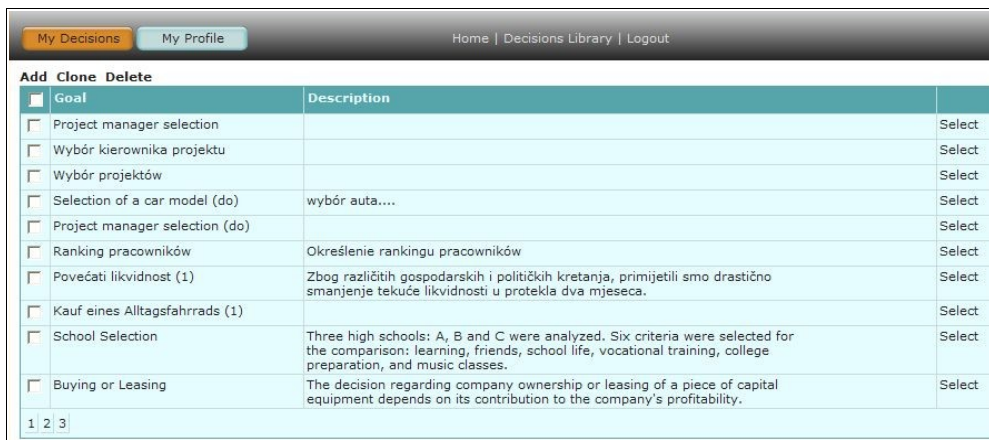
1. Go to <http://www.ahpproject.com/login.aspx>
2. Enter your e-mail and password.

1.3. If you can not log in

1. Ensure that you clicked on activation link. If you didn't get an e-mail with activation link check your spam or junk mail filters. The activation email is automatically generated so may be flagged as spam. If it is not there [click here](#) to resend it,
2. [Contact us](#) if you still can't log in.

2. Managing decision problems

After logging in, you will be redirected to “My decisions” page (Figure 2). Use this page to manage your decision problems.

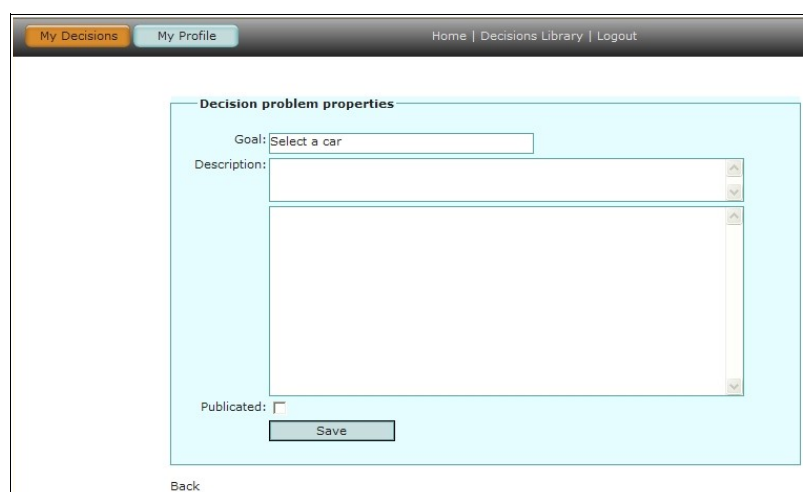


Add Clone Delete			
<input type="checkbox"/>	Goal	Description	
<input type="checkbox"/>	Project manager selection		Select
<input type="checkbox"/>	Wybór kierownika projektu		Select
<input type="checkbox"/>	Wybór projektów		Select
<input type="checkbox"/>	Selection of a car model (do)	wybór auta....	Select
<input type="checkbox"/>	Project manager selection (do)		Select
<input type="checkbox"/>	Ranking pracowników	Określenie rankingu pracowników	Select
<input type="checkbox"/>	Povećati likvidnost (1)	Zbog različitih gospodarskih i političkih kretanja, primijetili smo drastično smanjenje tekuće likvidnosti u protekla dva mjeseca.	Select
<input type="checkbox"/>	Kauf eines Alltagsfahrrads (1)		Select
<input type="checkbox"/>	School Selection	Three high schools: A, B and C were analyzed. Six criteria were selected for the comparison: learning, friends, school life, vocational training, college preparation, and music classes.	Select
<input type="checkbox"/>	Buying or Leasing	The decision regarding company ownership or leasing of a piece of capital equipment depends on its contribution to the company's profitability.	Select

Fig. 2. “My Decisions” – list of your decision problems

2.1. Creating new decision problem

1. Log into your account. You will be redirected to “My Decisions” page (Figure 2).
2. Click on “Add” link, it is situated in the top-left corner of the “My Decisions” list. You will be redirected to “New decision problem” page (Figure 3).
3. Fill in the “Decision problem properties” form:
 - a) “Goal” – required, set your decision's goal.
 - b) “Description” – not required, will be shown in “My Decisions” list.
 - c) “Long description” – not required, additional information about decision problem.
 - d) “Published” – not required, read more in [Publish decision problem](#) section.
4. Click on “Save” button. You will be redirected back to “My Decisions” page. You can find your decision problem on the list.



Decision problem properties

Goal:

Description:

Published:

Back

Fig. 3. Creating new decision problem – ‘New decision problem’ page

2.2. Copying decision problem

1. Go to “My Decisions” page.
2. Select the checkbox(es) on left side of chosen decision problem(s).
3. Click on “Clone” link, it is situated in the top-left corner of “My Decisions” list.

2.3. Deleting decision problem

1. Go to “My Decisions” page.
2. Select the checkbox(es) on left side of chosen decision problem(s).
3. Click on “Delete” link, it is situated in the top-left corner of “My Decisions” list.

2.4. Downloading decision problem from “Decisions Library”

1. Select “Decisions library” from the top menu. You will be redirected to “Decisions Library” page – Figure 4.

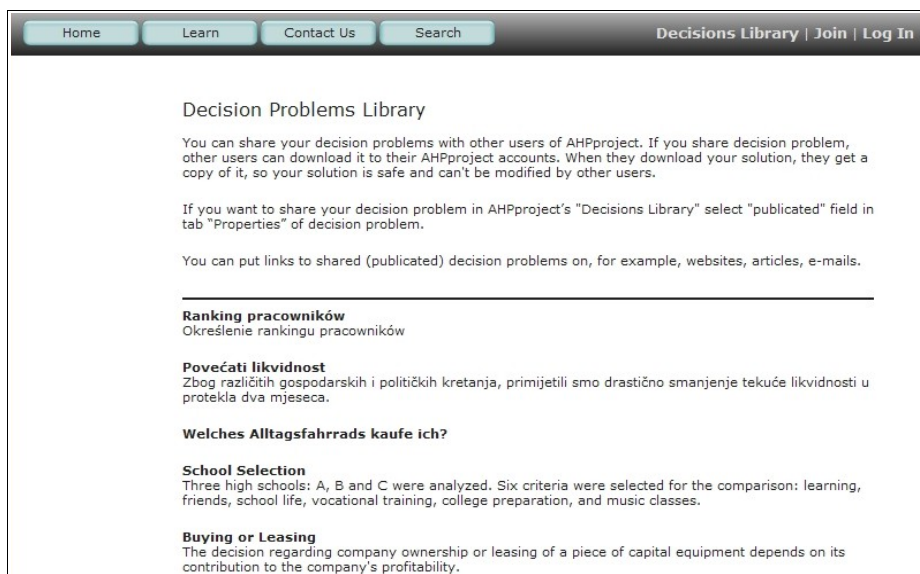


Fig. 4. Decisions library – decision problems list

2. Click on the name of chosen decision problem. You will be redirected to “Decision Problem Details” page – Figure 5.



Fig. 5. Decisions library – decision problem details page

3. You can preview decision structure before downloading it – “Show Diagram” link.
4. Click on “Copy this decision” link. You can find downloaded decision on the “My Decisions” list.

2.5. Publish decision problem

AHPproject lets you share decision problems with other AHPproject community members. You can “publish” decision problem which means letting other users download it to their AHPproject accounts. Published decision problems are available via “Decisions Library” (top menu).

When someone downloads decision problem from “Decisions Library” he (she) gets a full copy of it, including: criteria structure, alternatives, preferences and all descriptions. It's a copy so your decision problem is safe and can't be modified by other users.

To publish decision problem select “Published” field in “Decision problem properties” page (Figure 6).

You can use “Decisions Library” to:

- share decision problems with other community members,
- enhance articles and publications (for e.g. Scientists):
 - write an article related to decision making,
 - use AHPproject for calculations,
 - enrich your article with graphs generated in the AHPproject tool,
 - publish decision problem,
 - put link to published decision problem in your article. Readers will be able to download it and explore it by themselves.

We still work on solutions that enhance Decisions Library e.g. possibility to rate and exchange opinions on the published decision problems.

3. Working with decision problem

Choose decision problem from “My Decisions” list (Figure 1) by pressing “select” on the right side of it's description. You will be redirected to “Decision problem details” page. You will find there 5 sub-pages: Properties, Criteria, Alternatives, Preferences and Results.

3.1. Properties page

Properties page contains the main description and options of decision problem.

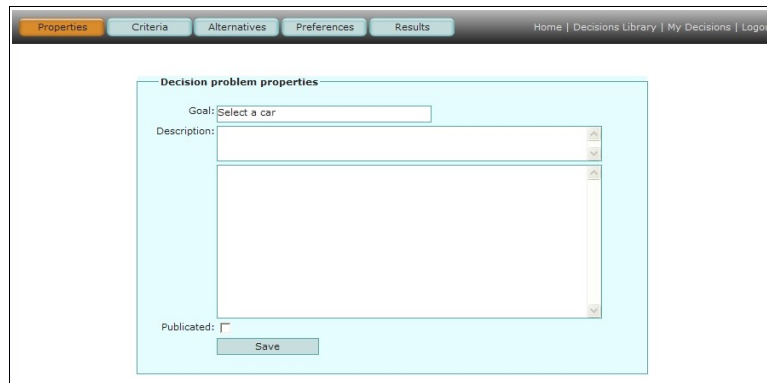


Fig. 6. Decision problem details - properties page

- Goal – the main goal of decision problem,
- Description – short description of decision problem. It is shown in “My Decisions” list (Figure 2) and in Decisions Library (Figure 4) if decision is published,
- Long description – additional information about decision problem; shown in “Decisions Library” as decision problem details (Figure 5),
- Published – if checked decision problem is available for other AHPproject community members (Figure 4). They can download a copy of decision problem to their AHPproject accounts, [read more](#)

3.2. Criteria page

Criteria page lets you manage criteria hierarchy: adding/deleting/structuring/describing criteria

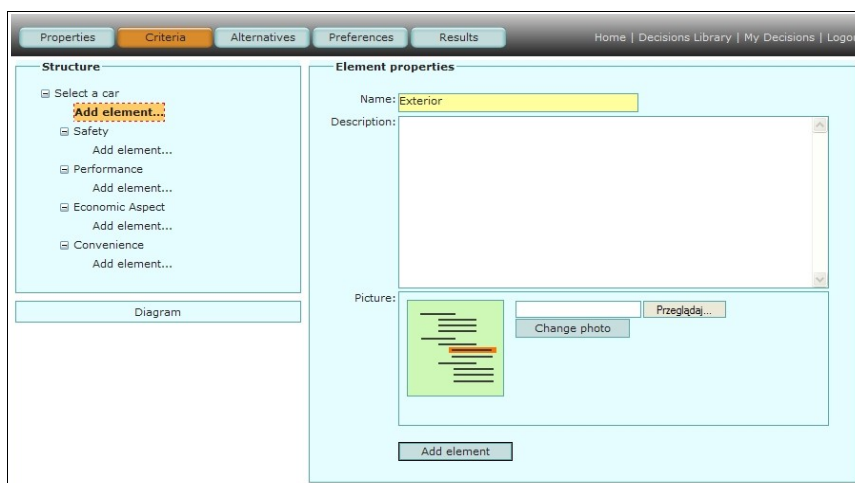


Fig. 7. Building criteria hierarchy

Adding new element

1. Choose parent of new element and press “add element...” link under it,
2. Fill in element's name “Name” field of “Element properties” section. You can also add element's description,
3. Press “Add element” button.

Deleting element

1. Choose element from the structure by clicking on it's name.
2. Click on “Delete element” button.
3. Confirm by clicking “Ok” when dialog window appears.

Structure preview

Press “Diagram” button to preview decision structure.

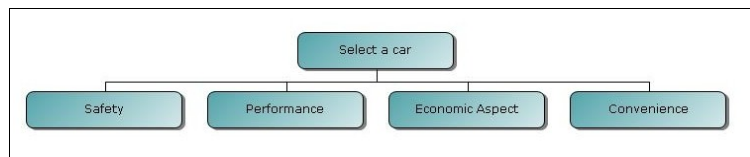


Fig. 8. Example of decision structure preview

Limitations

- you need to add at least 2 criteria (elements) under the goal element,
- every element can have at most 15 sub-elements,
- Adding one sub-element is not correct. If element has sub-elements there have to be at least 2 of them.

3.3. Alternatives page

Use this tab to manage your alternatives. To solve the decision problem you need to have at least 2 alternatives.

Name	Description	Edit
Car 1		Edit
Car 2		Edit

Fig. 9. Alternatives list

Adding alternative

1. Click on “Add alternative” link, you will be redirected to “Alternative's properties” page,
2. Fill in the “Name” field of “Alternative's properties” tab,
3. You can add “description” and “long description” of alternative. “Description” will be shown in alternatives list (Figure 9),
4. Click on “Save alternative” button. You will be redirected back to the alternatives list.

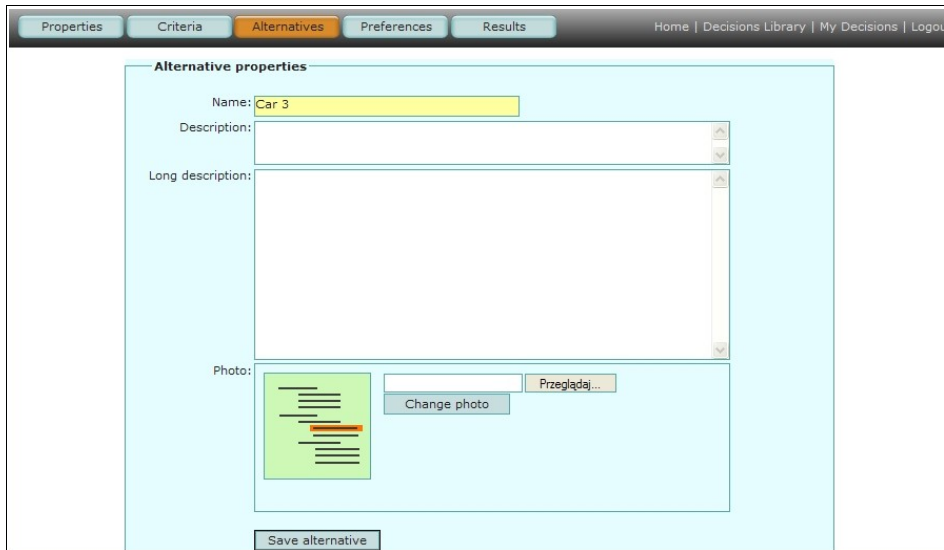


Fig. 10. Alternative's properties

3.4. Preferences page

The main purpose of preferences page is to establish criteria weights and alternatives' scores:

- In context of parent-elements (i.e. Select a car – Figure 8) you need to determine sub-elements' (i.e. Safety, Performance, Economic Aspect, Convenience) weights.
- In context of childless-elements (i.e. Safety, Performance, Economic Aspect, Convenience) you need to determine alternatives' scores.

Independently, for every element in structure, you can choose “Comparisons type” (Figures 11 and 12). Chosen “Comparisons type” will be used for determining sub-elements' weights (parent elements) or alternatives' scores (childless elements).

AHPproject provides 2 ways of weights (scores) determining: Pairwise comparisons and Direct rating.

Direct Rating (Figure 11) – you provide weights (scores) in direct way. Weights (scores) are than normalized such that they sum to 1.



Fig. 11. Preferences - Direct Rating

Pairwise Comparisons (Figure 12) – compare elements in pairs and provide values that represent your preferences. You can do it in 3 ways:

- Use Saaty's verbal scale – click on “...” button, the scale will appear. Choose dominant (more preferred, more important) element. Select 1-9 value accordingly to your priorities (preferences).
- Use slider – the bigger part of slider element takes the more important (preferred) it is.
- Direct value typing – for advanced users, accordingly to Saaty's 1/9-9 scale.

When you compare elements in pairs you may be inconsistent. Every element for which selected “Comparisons type” is “Pairwise Comparisons” has Consistency Ratio (CR) situated next to it's name. The rule of thumb is to keep $CR < 0.1$. If $CR > 0.1$ you should improve consistency of comparisons.



Fig. 12. Preferences - Pairwise Comparisons

Table 1. Icons used in structure section

Icon	Name	Description
	Hierarchy error	You can't run calculations. There is an error in your hierarchy. Click on “Results” link and you will see the message with instruction.
	Comparisons missing	You can't run calculations. Enter comparisons values for sub-elements or save default values.
	Inconsistency	You can run calculations. Your comparisons are inconsistent so results may be not accurate.
	Correct	You can run calculations.

3.5. Results page

You can find 3 tabs on *Results* page: “Summary”, “Criterion details” and “Head 2 Head”.

Summary tab

Summary tab includes main results of calculations presented on 2 charts:

- “Alternatives ranking” (Figure 13) - aggregated scores and scores distribution on main criteria.
- “Criteria priorities” (Figure 14)- main criteria ranking.

Criterion details tab

Criterion details tab - details on chosen criterion presented on 3 charts:

- “Relative scores” (Figure 15) - information about your preferences in context of chosen criterion, i.e. Car 2 is the best one on Economic Aspect while Car 3 is the worst one.
- “Criterion local weight” (Figure 16) - information about criterion weight in comparison with other criteria from the same hierarchy level.
- “Sensitivity analysis” - information on how the alternatives ranking behaves in response to changes in priorities. For example:

Calculated “Economic aspect's” weight is 0.30 (30%) - figure 16. Alternatives ranking is presented on figure 13 (Car 1, Car 3, Car 2). From figure 17 results that when “Economic aspect's” weight changes to 0.35 then Car 2 becomes more preferred then Car 3 and if it changes to 0.55 then Car 2 becomes the most preferred option.

Head 2 Head tab

Head 2 Head tab lets you compare 2 selected alternatives. The comparison's results are presented on radar chart.

3.6. Charts

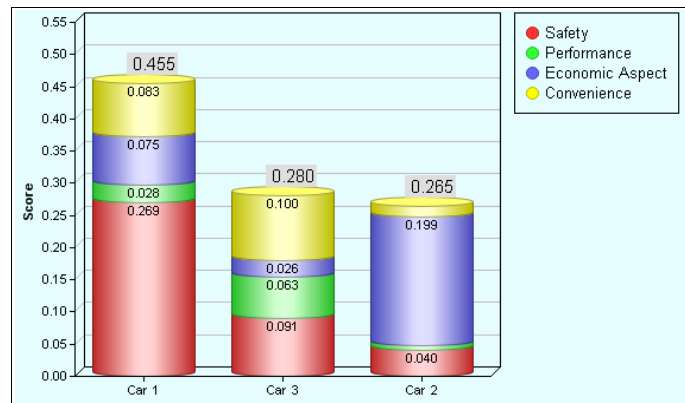


Fig. 13. Alternatives ranking

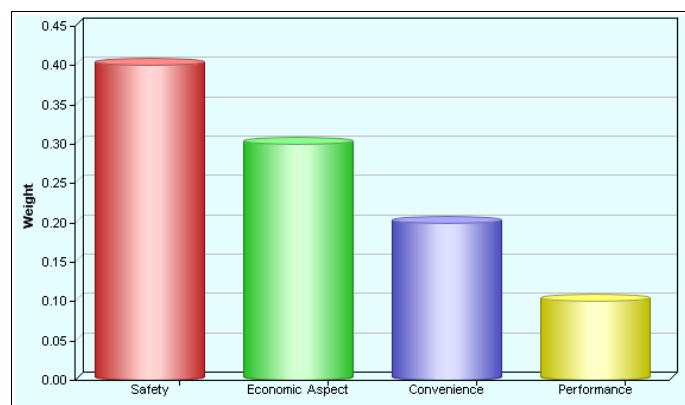


Fig. 14. Criteria ranking

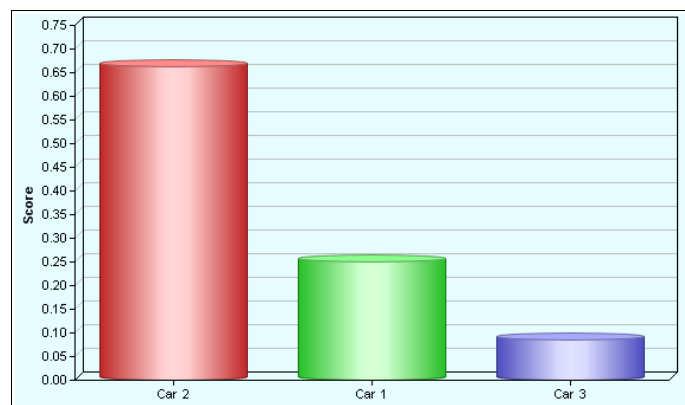


Fig. 15. Relative scores - Economic aspect criterion

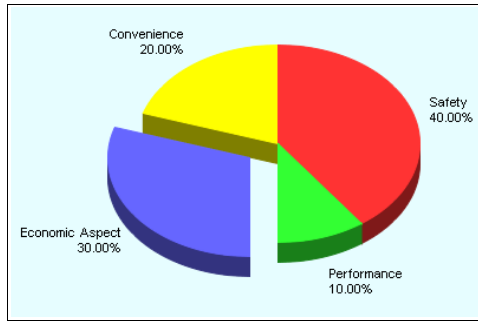


Fig. 16. Criterion local weight - Economic aspect criterion

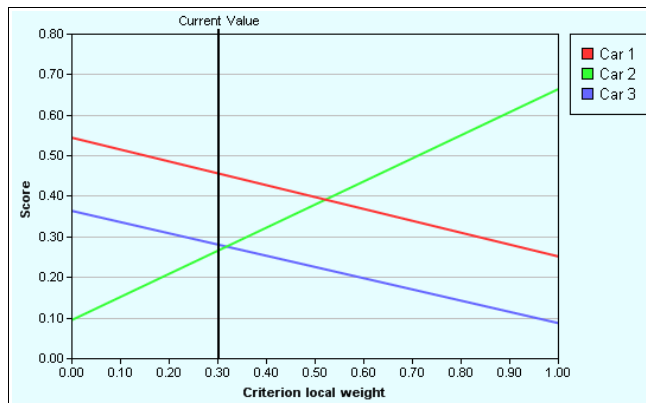


Fig. 17. Sensitivity Analysis - economic aspect criterion

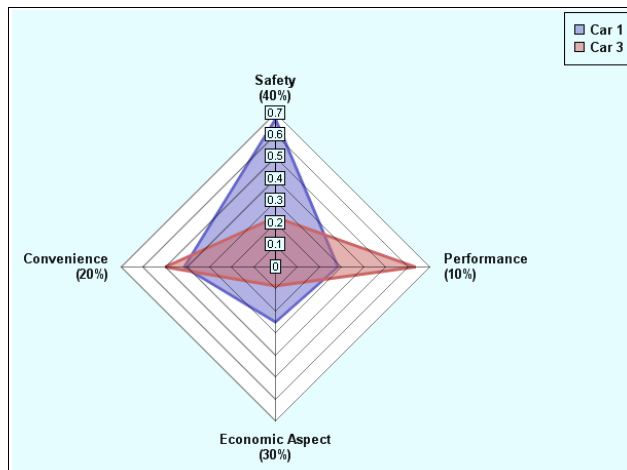


Fig. 18. Head 2 Head - alternatives comparison