

Multicriteria Decision Aid Project

2015/2016

1. Description

The objective is to elaborate a multicriteria decision problem, to model it and to analyze it using the PROMETHEE and GAIA methods. More precisely, you should:

a. Define the problem

You will imagine a multicriteria decision problem (actual or not) including at least eight actions, five criteria and two scenarios.

b. Model preferences

You will define the preference parameters required by the PROMETHEE and GAIA methods: preference functions, thresholds and weights of the criteria. You should justify your choices.

c. Use Visual PROMETHEE to analyze the problem

The PROMETHEE and GAIA method will be used to analyze the problem. The analysis will at least include the GAIA plane analysis and an extensive weight sensitivity analysis on the PROMETHEE rankings. Depending on the type of problem, a scenario analysis (different decision-makers, different contexts, ...) could also be performed.

d. Produce a written report including

- i. Comprehensive problem description: problem definition, decision-maker, list of actions, definition of the criteria and scales of measurement, multicriteria table
- ii. Preference modeling: choice of the preference functions and the weights of the criteria
- iii. GAIA analysis (figures and interpretation)
- iv. Weight sensitivity (and/or scenario) analysis on the PROMETHEE rankings
- v. Conclusion (recommendations, actual decision, ...)

This is a personal (individual or small group depending on the course) project.

2. Visual PROMETHEE software

The Visual PROMETHEE software can be downloaded from the following web address:

<http://visual.promethee-gaia.net>

Be sure to download the (free) Academic Edition and not the Demo Edition.

3. Deliverables

- a. Written report in electronic format (doc, docx or pdf).
- b. Problem data (vpg file).

These documents can be sent by mail to bmaresc@ulb.ac.be

4. Timing

- a. Check your problem proposal with me before starting the analysis (bmaresc@ulb.ac.be).
- b. Send the documents (report and data file) at bmaresc@ulb.ac.be for the date of the written exam.