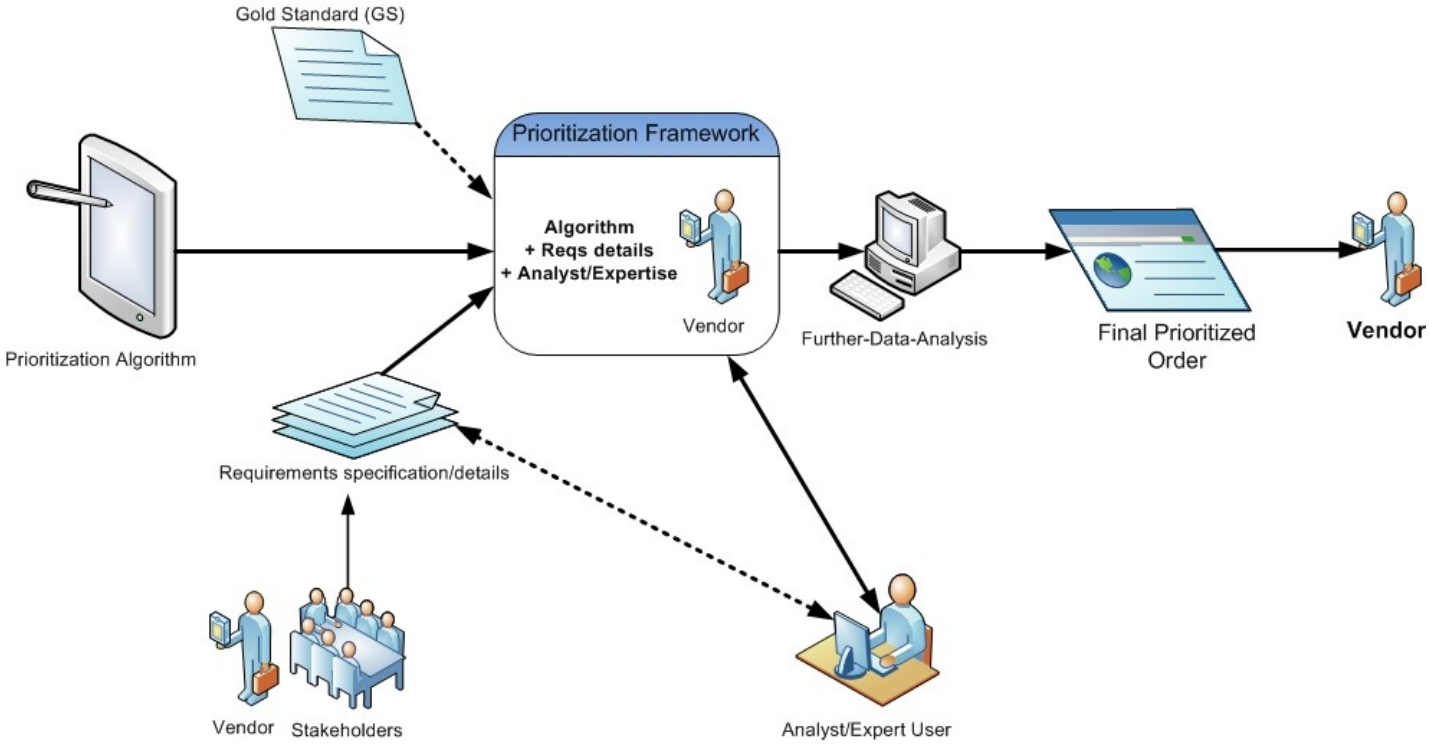
## Interactive Requirements Prioritization:

The overall prioritization framework can be summurazied in the following way, the steps for emp.study.gui.jar are defined hereafter.




Interactive Requirements Prioritization Framework

## Configuring the Configuration Files:

Users have to configure parameters to run the corresponding algorithm.

| Algorithm | Keys | Values | Descriptions |
|---|---|---|---|
| IGA, SMT, IAHP | total_elicit_pair | 10 / 25 / 50 / 100 | Total number of pairs elicited by the analyst/user during prioritization process |
| IGA | generation_number | 100 / 500 / 1000 / 2000 | Number of generations/cycles (applicable for Genetic operators i.e. how many times they will be applied for) |
| IGA | priority_graph_flag | 1 / 0 | Flag that refers the presence of prio graph |
| IGA | dependency_graph_flag | 1 / 0 | Flag that refers the presence of dep graph |
| IGA | weight_priority | 1 | Weight for the prio graph |
| IGA | weight_dependency | 1 | Weight for the dep graph |
| IGA | weight_elicited | 1 | Weight for the eli graph |
| IGA | minimum_disagreement | 0 | Threshold (min) disagreement |
| IGA | percentage_population | 0.20 | Percentage of population considered for checking ties and elicitation |
| IGA | total_run_number | 1 | Total number of run for the algorithm |
| SMT | MAXSIZE (pop size) | 10 / 20 / 30 | Number of ordered candidates with least equal mismatches with constraints. |

**How to run:**

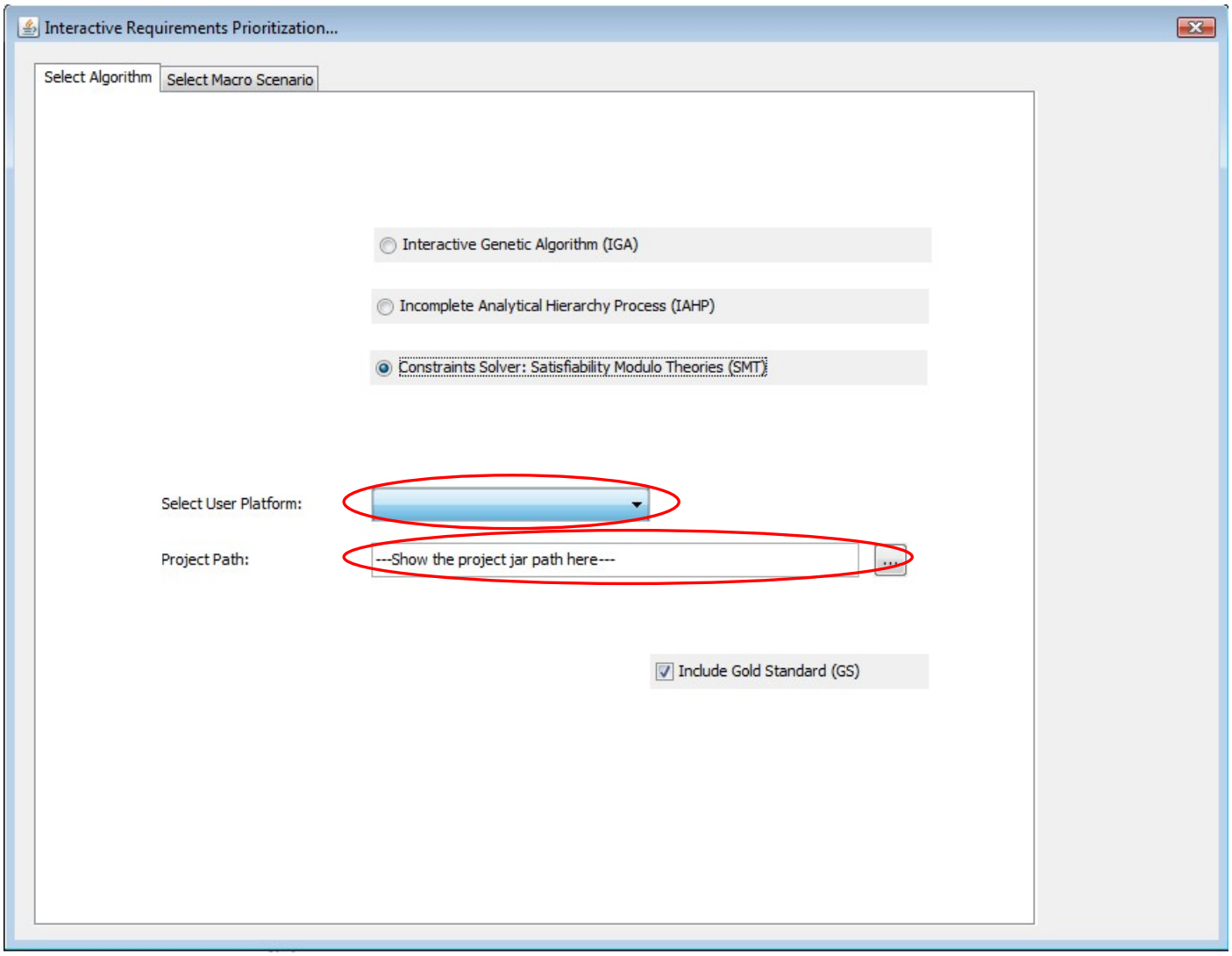
Unzip the Project.zip file to anywhere in the PC.

From the command window for windows or terminal for Linux, run,

java -jar emp.study.gui.jar (use the appropriate **jar path**)

**Step 1:**

- Select the Algorithm to run
- Select the user platform (mandatory for Constraints Solver (SMT))
- Put the full path of the Project JAR file
- Tick the *Include Gold Standard (GS)*, if you want to consider during prioritization process.

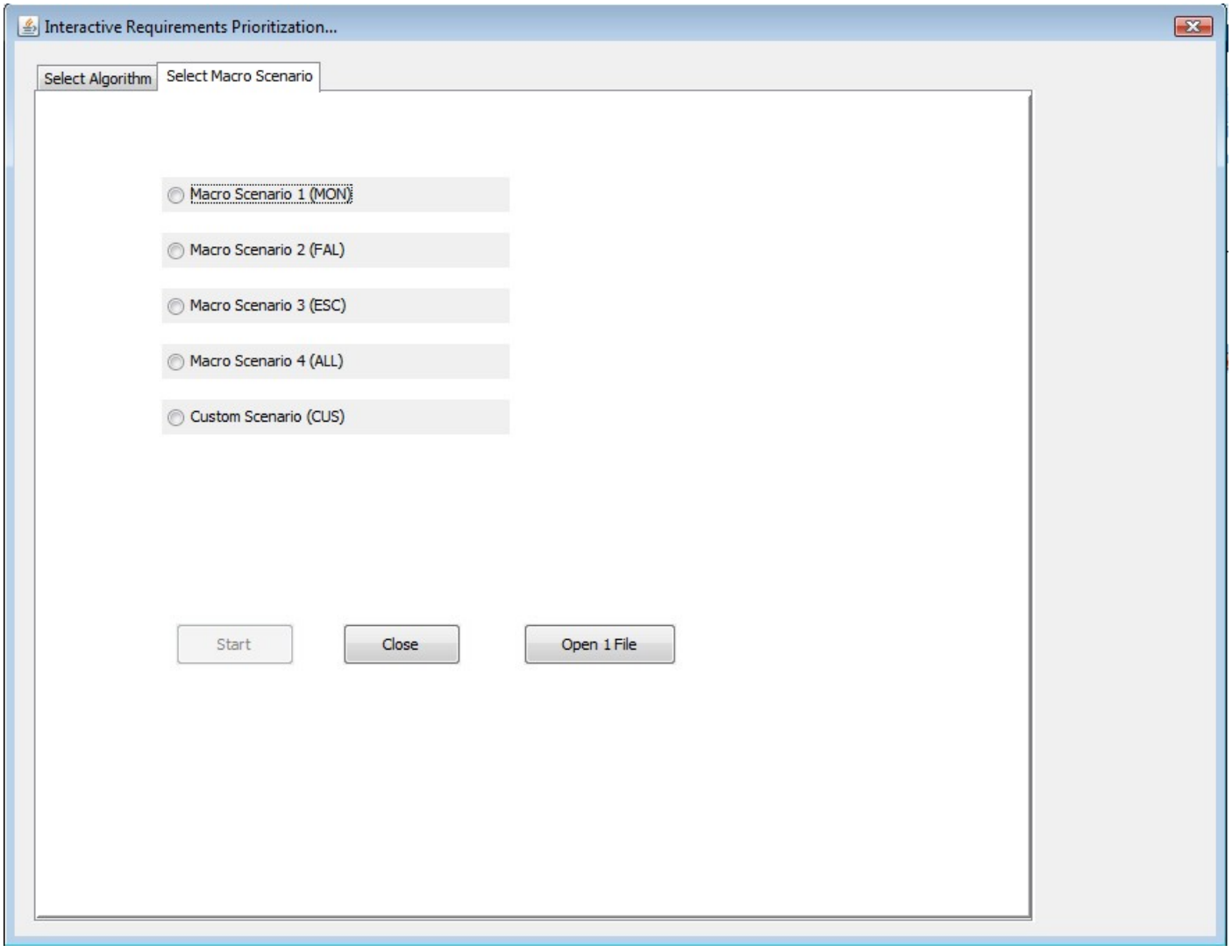


**Step 2:**

- Select a predefined Macro Scenario or any Custom Scenario defined by the user (in this case the input folder should be put in the ***/Project/in/scenario_name*** folder.

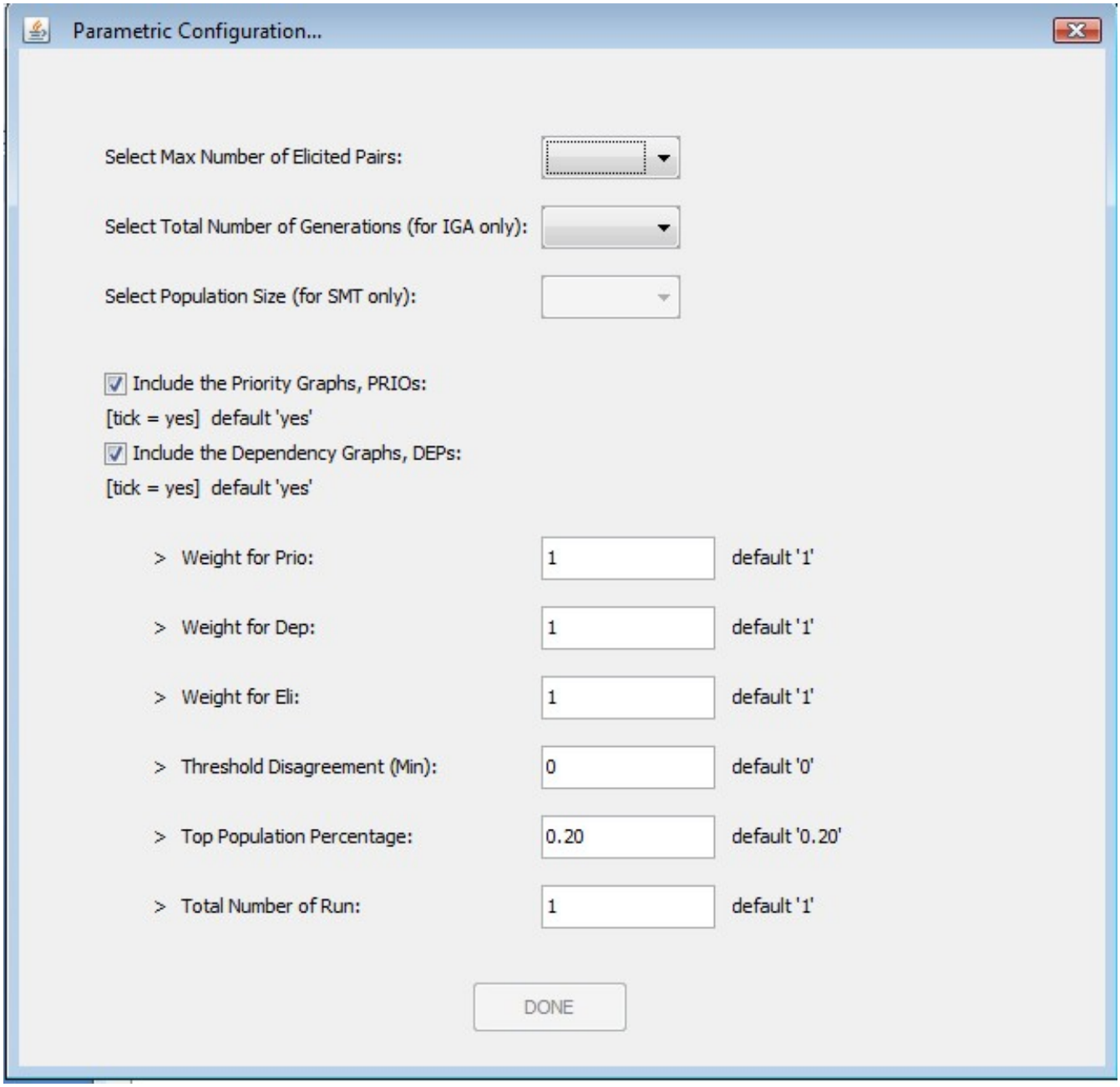
- Click **Start** to begin the prioritization process.

- (Optional) Click **Open 1 File** if you want to open any particular constraint file.



**Step 3:**

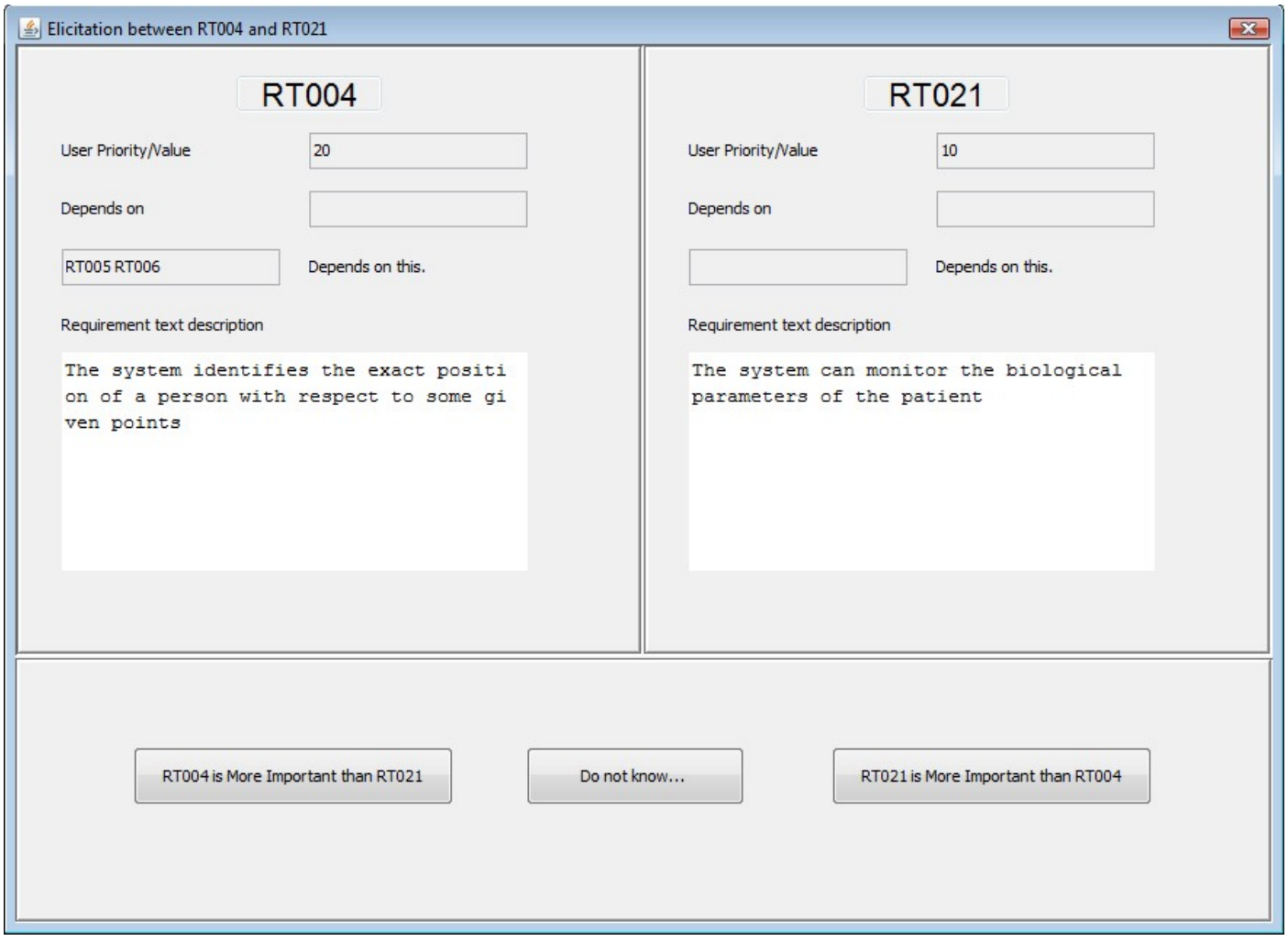
- Configure the selected Algorithm according to the ***Configuration Matrix*** shown in the Page 2.



**Step 4:**

- For IGA, (after several iterations) users may have been asked to elicit pairs (eliciting a pair refers to differentiate between two candidate orderings which have the same disagreements with constraints.)

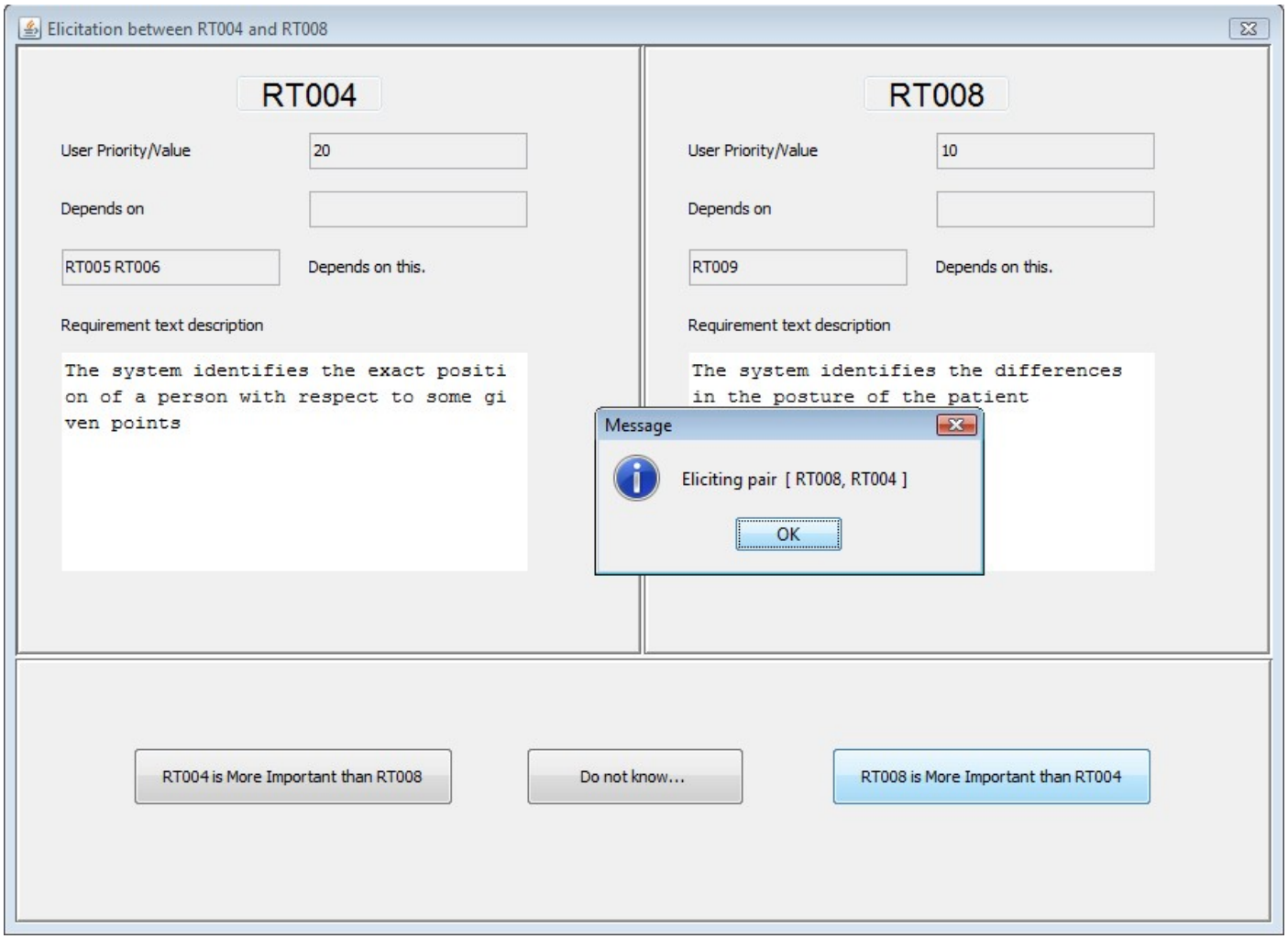
- Users try to have a comparable view between the requirements in that pair to decide for a better understanding of importance.



**Step 4.1:**

- For IGA and SMT Solver,

  The elicitation processes are same; users just have to decide importance of one requirement over the other. i.e. *RT004 is more important than RT008* or vice versa.

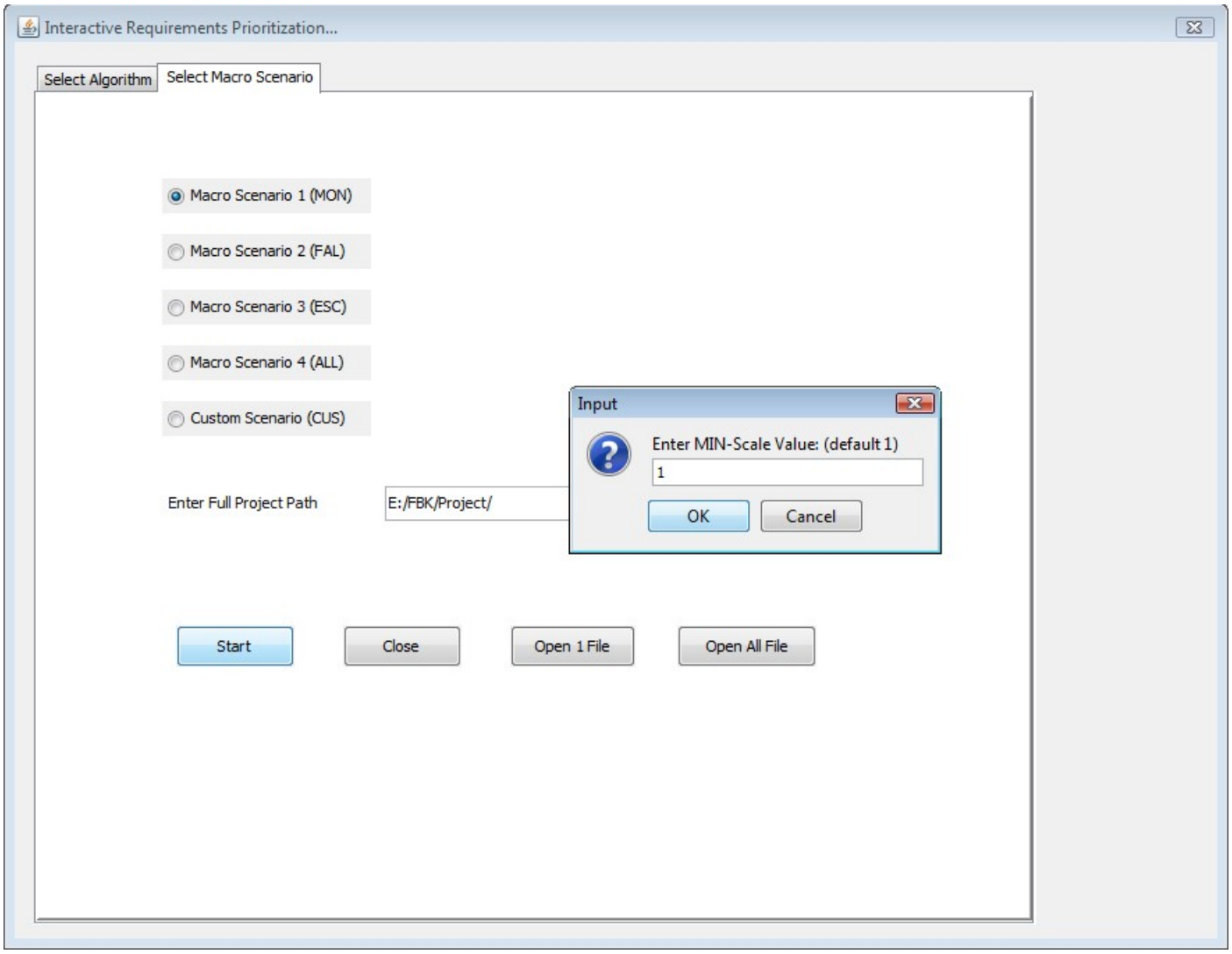


**Step 4.2**

- For IAHP,

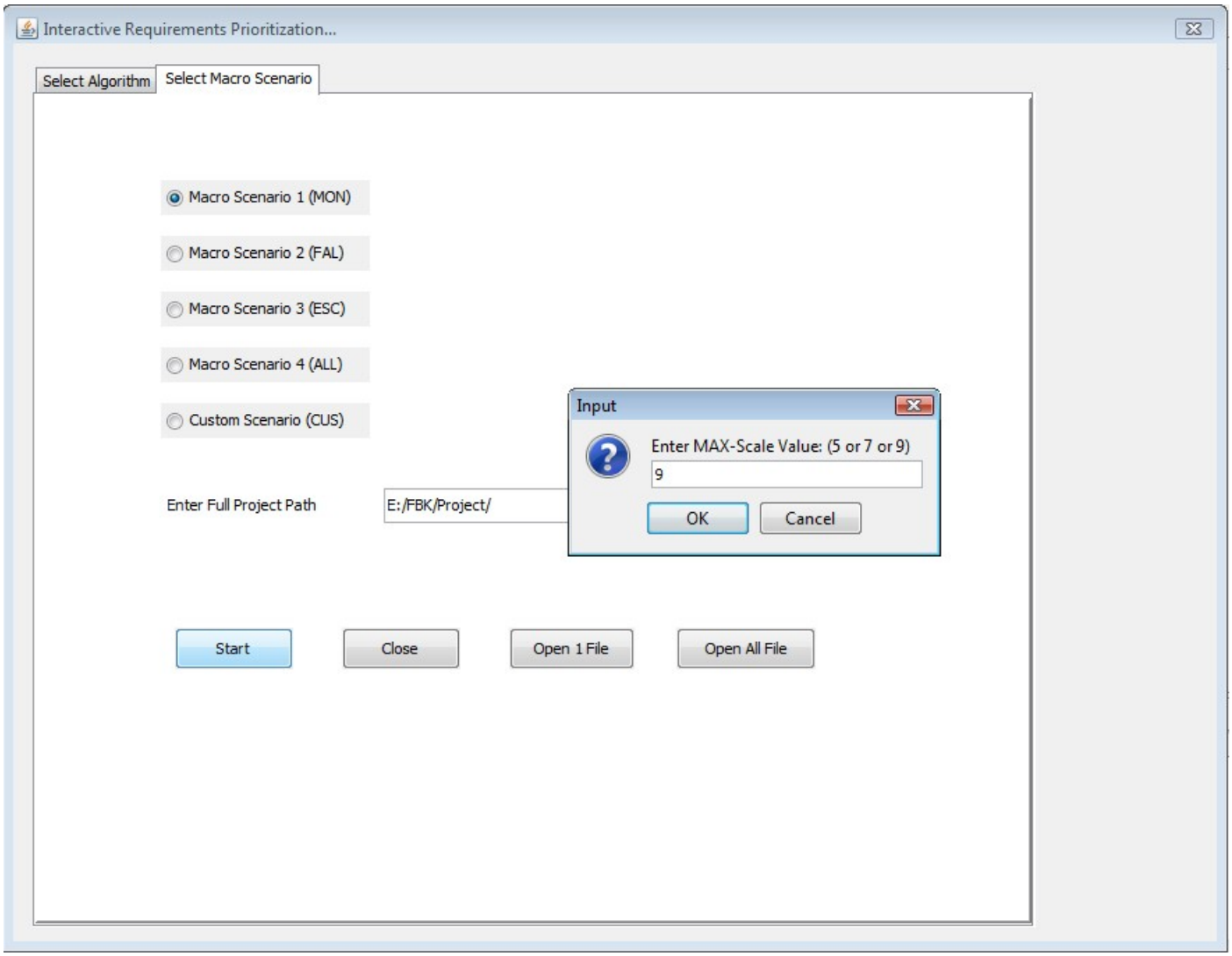
Users not only have to decide the importance of one requirement over the other, but also to what extent. So, the there could be a ratio scale by which importance can be measured.

- Users have to give the min value for the scale (i.e. 1 by default)



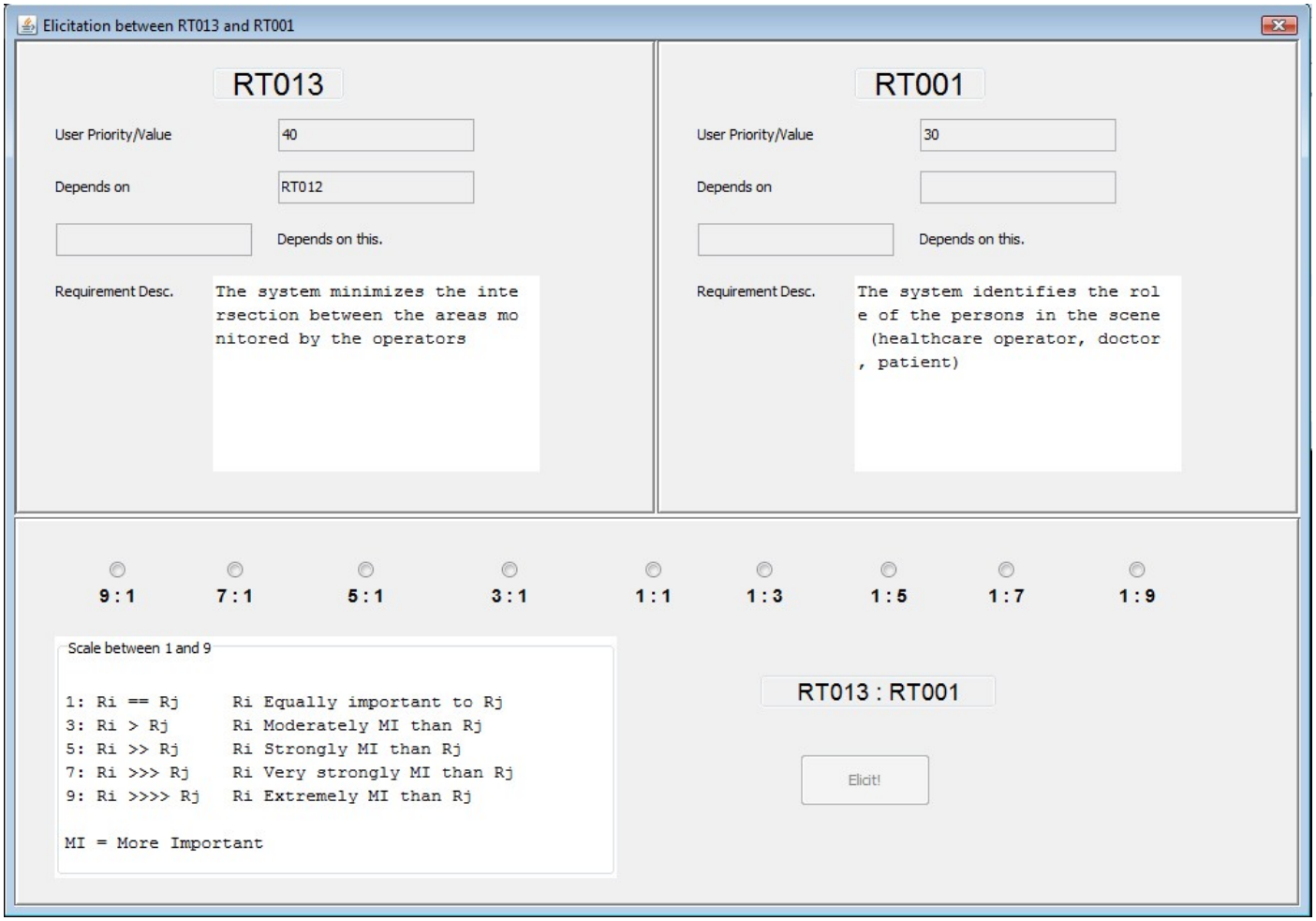
And,

- Users have to give the max value for the scale too (i.e. 5 or 7 or 9 by default)



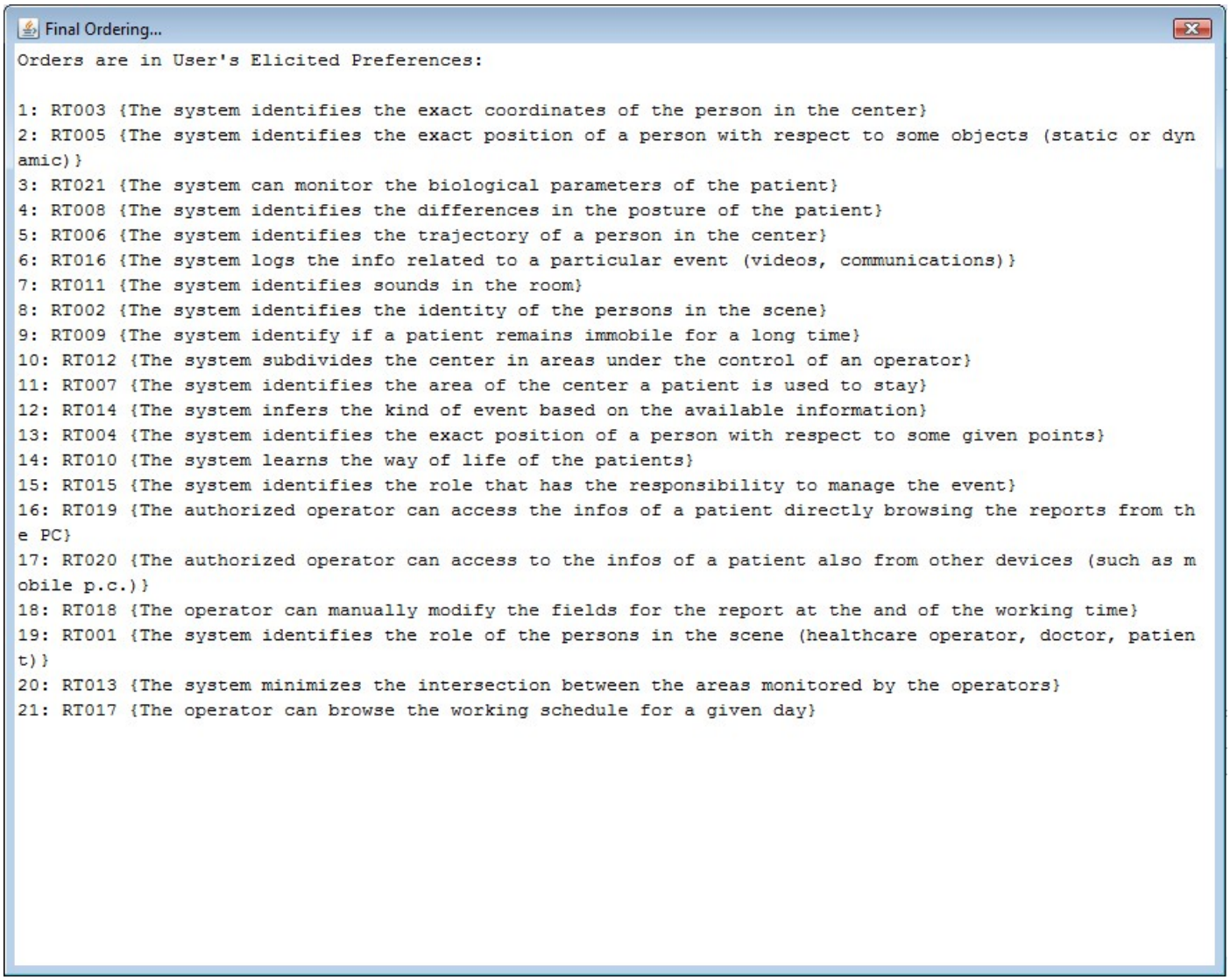
Then,

- during the elicitation process (for IAHP), users have to decide the importance as well as the ration to which one preceeds another. i.e. RT013:RT001 can be either of rationally important by 5:1 or 1:5; which refers that RT013 is 5 times important than RT001 or RT001 is 5 times important than RT013.



**Step 5:**

After eliciting (all) the total number of elicited pairs, specified in the configuration file, the framework will conclude a final requirements ordering with the minimum disagreement (with GS if there exists a GS) or simply a ordering of requirements with no extended information.

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