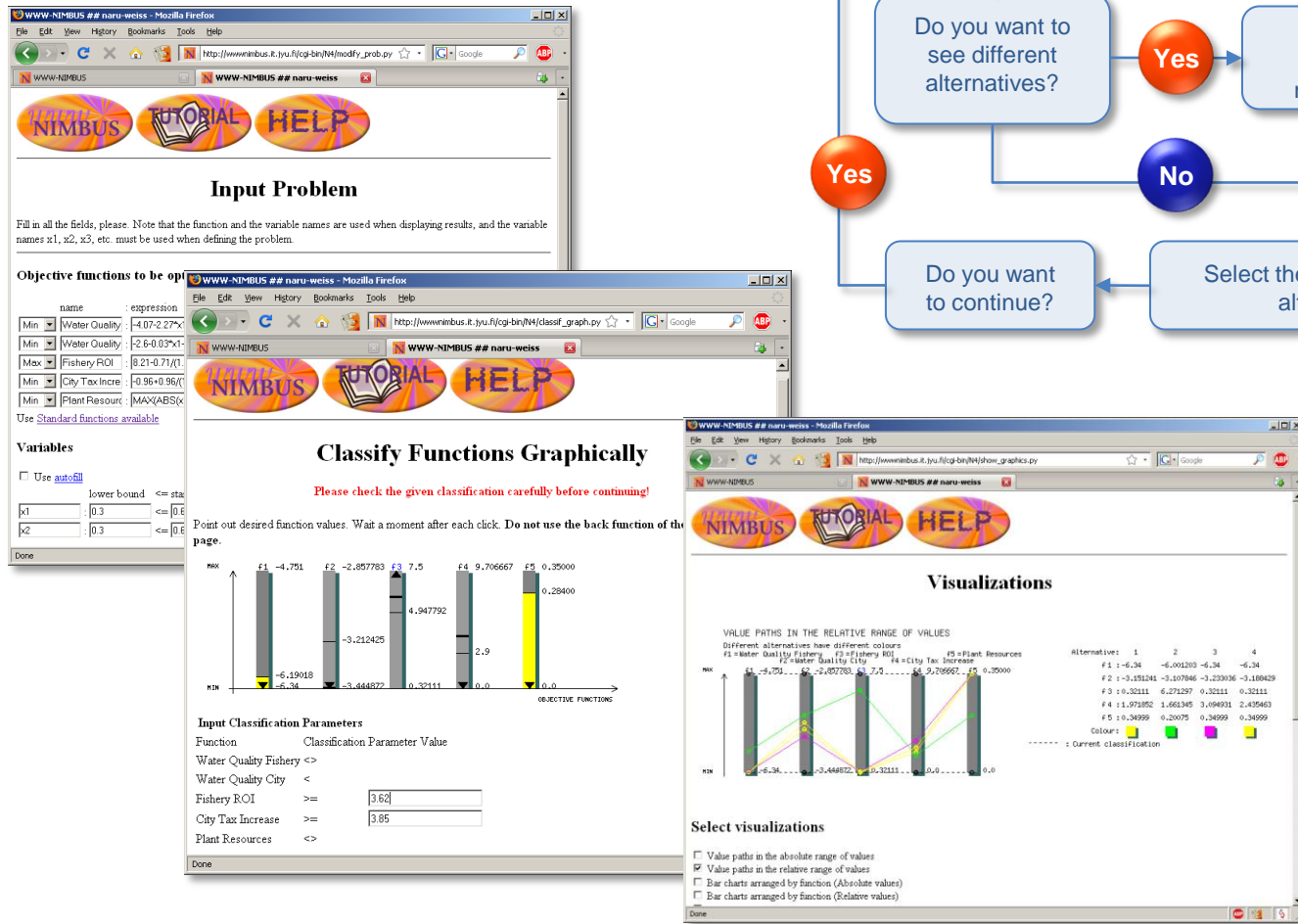


Interactive Multiobjective Optimization

Software Implementations

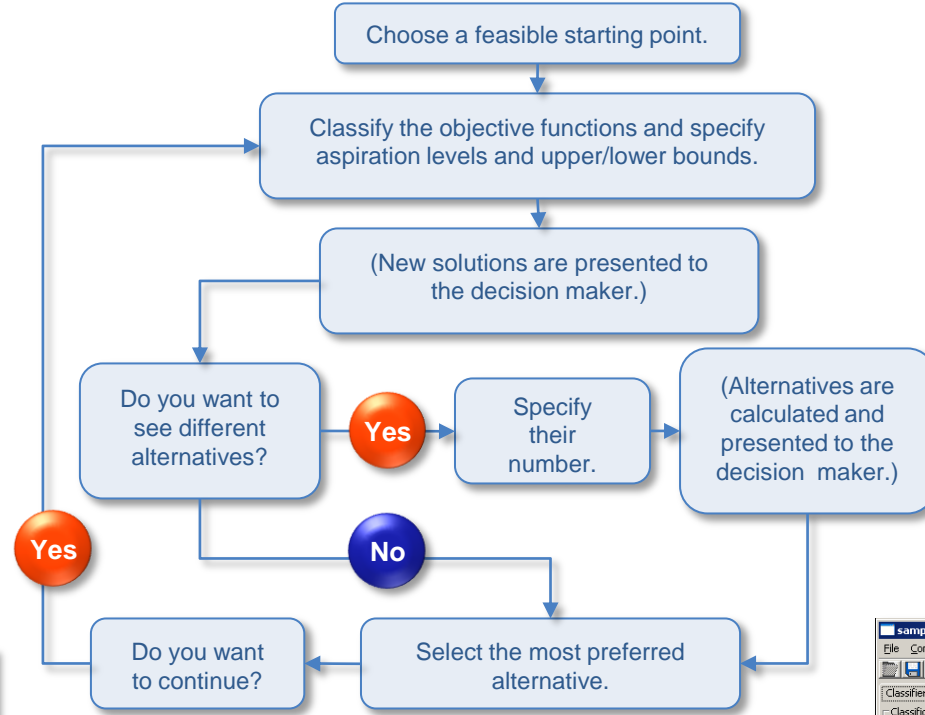
WWW-NIMBUS

- Freely available for academic teaching and research purposes on the Internet at <http://nimbus.mit.jyu.fi>
- Miettinen K., Mäkelä M.M. **Synchronous Approach in Interactive Multiobjective Optimization**, *European Journal of Operational Research*, 170(3), pp. 909-922, 2006.



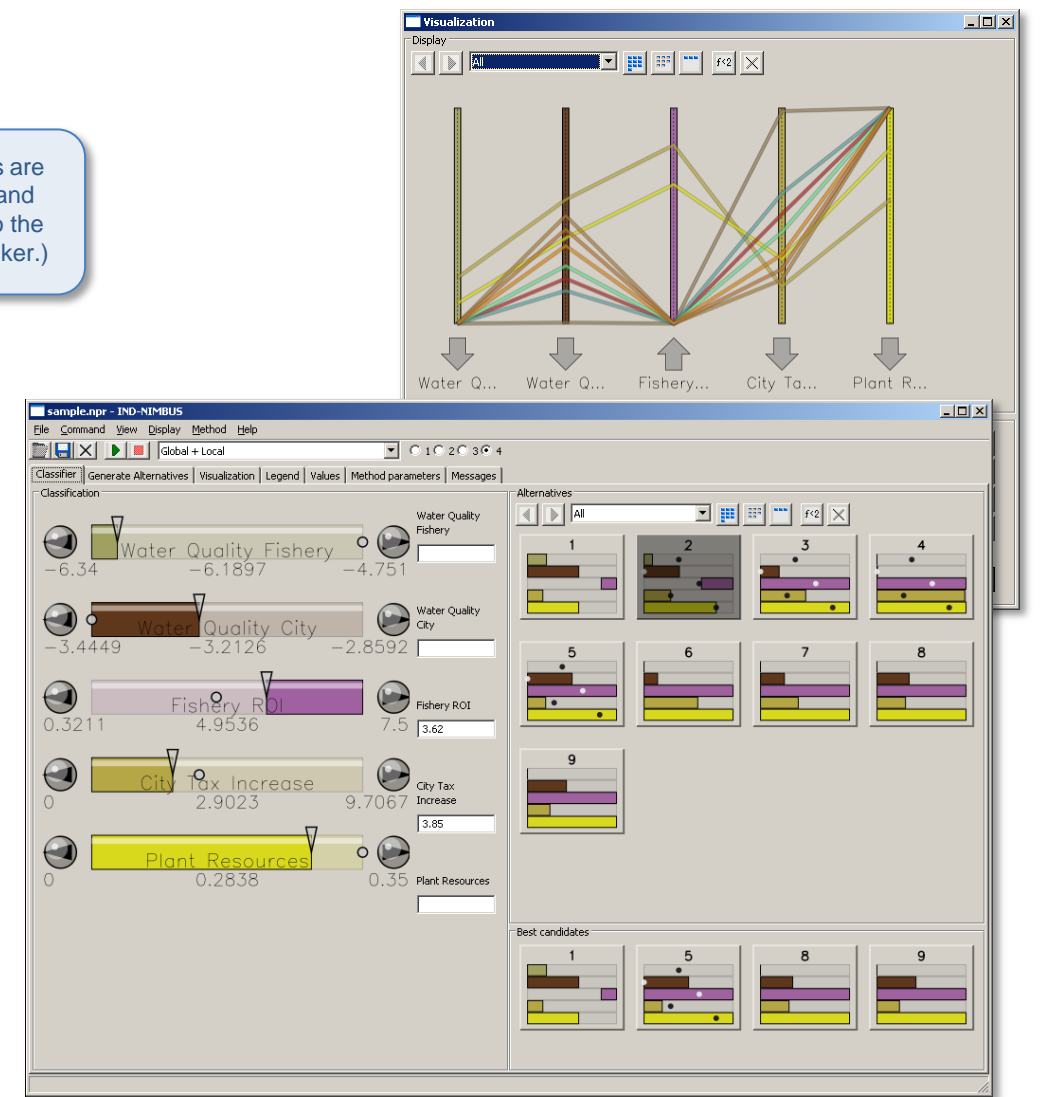
EXISTING SOFTWARES

Implementations of the synchronous NIMBUS method



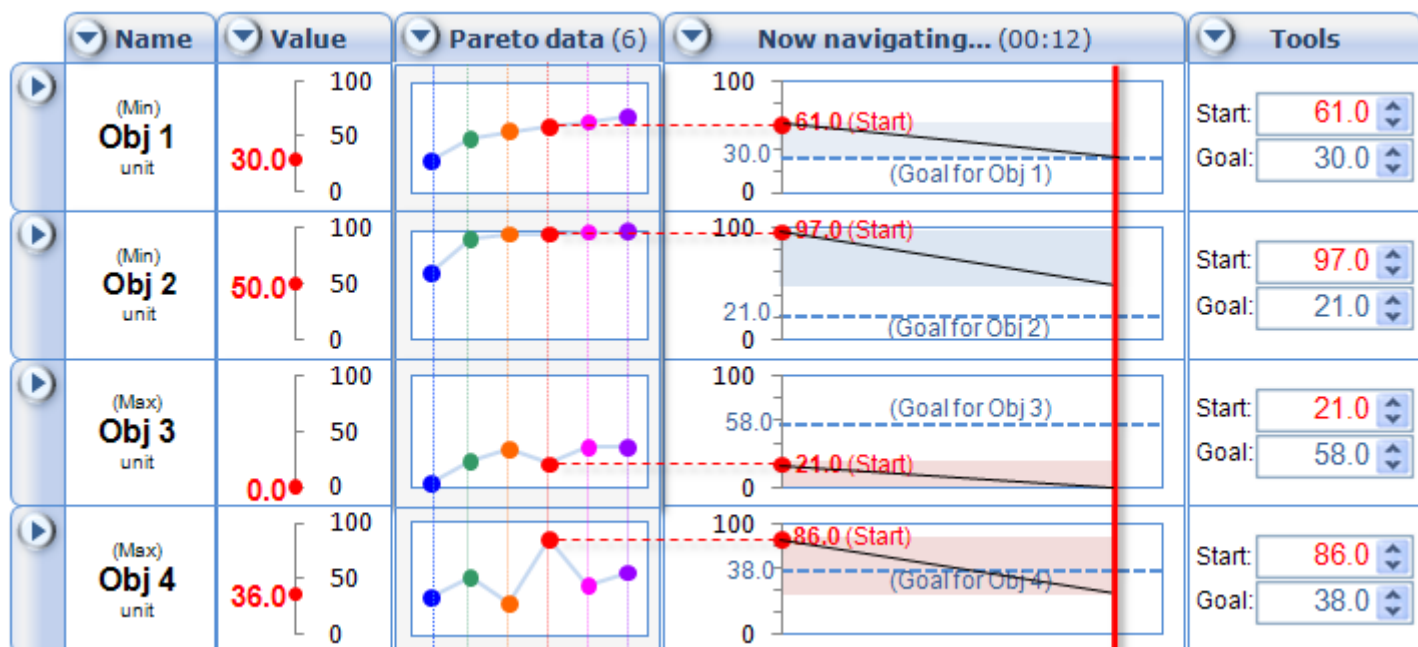
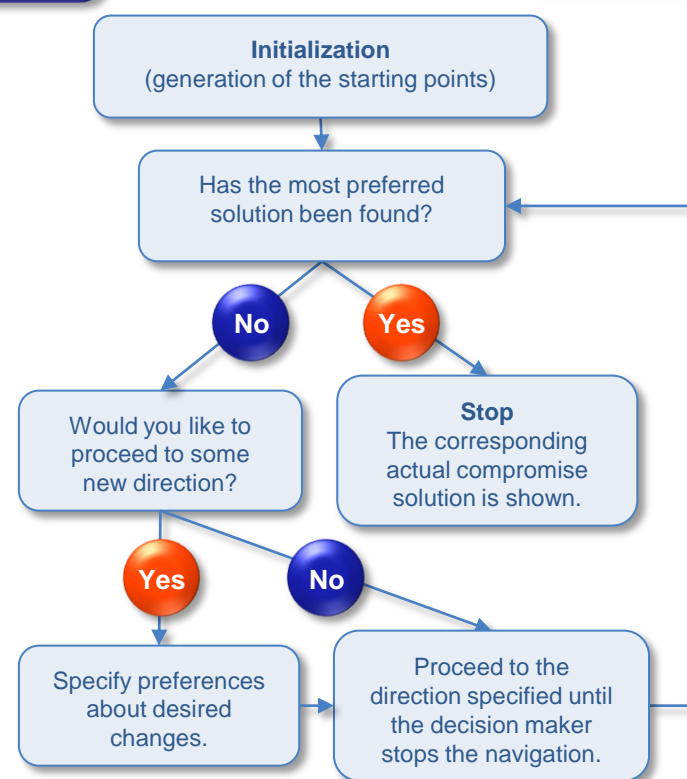
IND-NIMBUS

- For different operating systems
- Used in several industrial problems
- Can be connected with different simulator or modeling tools (e.g. Matlab®, BALAS® and GAMS)
- Demo available at <http://ind-nimbus.it.jyu.fi>



Pareto Navigator

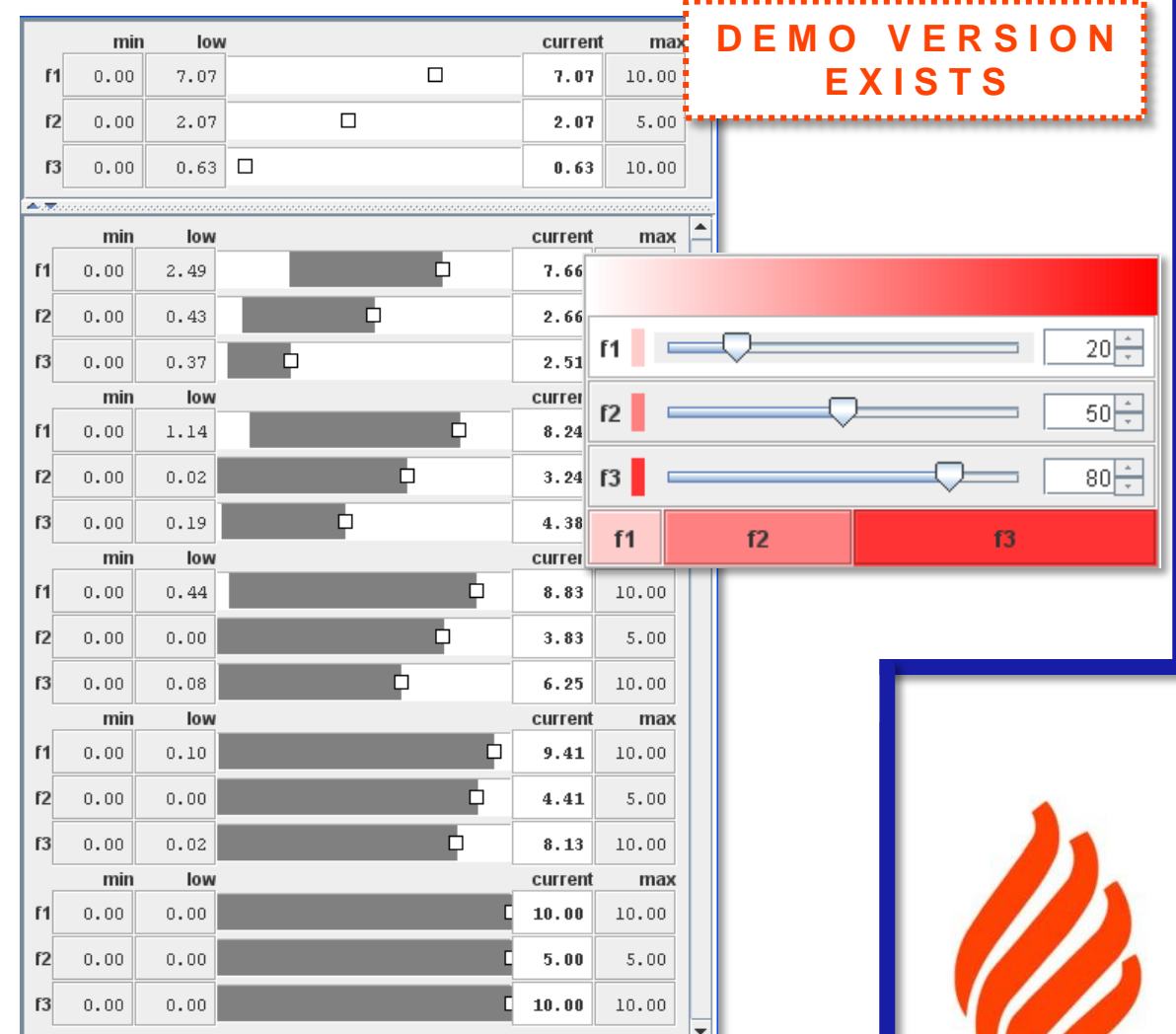
- For computationally demanding problems
- First, an approximation of the Pareto front is formed. Then, the decision maker can navigate around the polyhedral approximation and direct the search for the most promising regions
- The decision maker can learn about the interdependencies between the conflicting objectives
- Component based user interface is under development which will also be adaptable for several other methods and approaches
- Eskelinen, P., Miettinen, K., Klamroth, K., Hakanen, J., **Pareto Navigator for Interactive Nonlinear Multiobjective Optimization**, *OR Spectrum*, 23, 211-227, 2010.



UNDER DEVELOPMENT

Nautilus

- Solution process is started from the worst possible objective values
- The objective values are improved step by step according to the decision maker's preferences
- Only the final solution is Pareto optimal
- Miettinen, K., Eskelinen, P., Ruiz, F., Luque, M., **An Interactive Multiobjective Optimization Method Based on Sequentially Improving Reference Points**, *Reports of the Department of Mathematical Information Technology*, Series B, Scientific Computing, No. B 7/2009, University of Jyväskylä, Jyväskylä, 2009.



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