Suggestions for the Knowledge Engineering Competition

Past, Present and Future of ICKEPS

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Outline

- Motivation
- Past of the ICKEPS
- Competition Issues
- Suggestions for the Future
- Conclusion

Motivation

- Competitions are commonly used to improve a research area;
- ICKEPS is very important for AI P&S research community;
- Real-life problems require a design life cycle (methods, approaches, tools and techniques);
- There is a urgent demand for a synergy academy&practice;
- Opportunity for experience exchange;
- I need to have a reason to work on itSIMPLE ☺!

Past of the ICKEPS

ICKEPS-1 (2005)

- 7 competitor (GIPO, itSIMPLE, ModPlan, ARMS, Hamlet, PlanWorks, Tailor)
- Qualitative aspects evaluated
- High diversity of the participant tools
- Two categories: *general* and *specific* tools

ICKEPS-2 (2007)

- 4 competitor (GIPO IV, itSIMPLE$_{2.0}$, Source Control Server, Mini Zink)
- Qualitative and Quantitative aspects evaluated
- Evaluation through Simulation
- Became a workshop

Competition Issues

Issues and Ideas

- Competition preparation
- Synergy between ICKEPS and IPC
- Qualitative and Quantitative evaluation
- One category with many distinguished awards
- What has been analyzed?
- Real domains
- Inputs and outputs
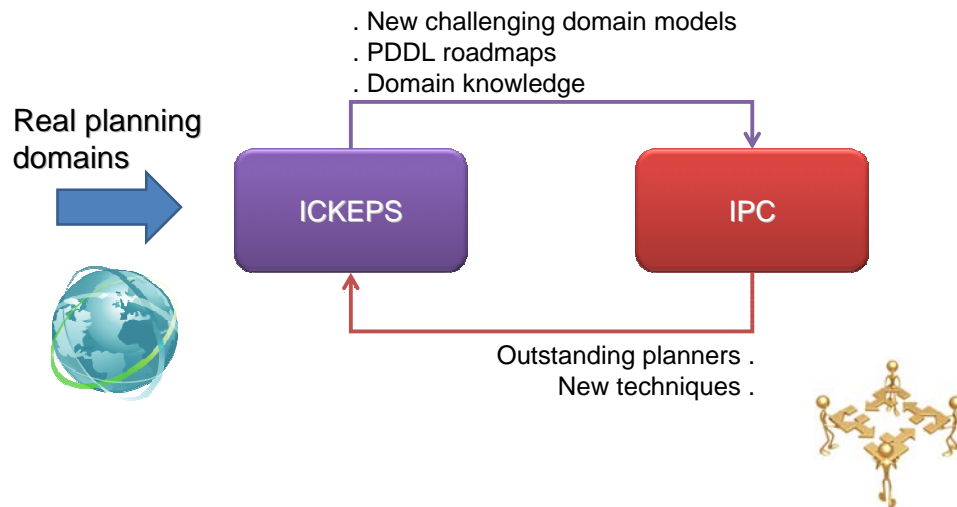- Criteria and Metrics

Competition Issues

Competition preparation

- Domain strategically selected
  - Highlight which feature is being tested in each domain
  - Definition of criteria for selection
  - Domains suitable for IPC
  - Different classes of domains
- Involve companies and institution
- Single tools and complete systems

Competition Issues

Synergy between ICKEPS and IPC

. New challenging domain models
. PDDL roadmaps
. Domain knowledge

Real planning domains → **ICKEPS** → **IPC**

Outstanding planners .
New techniques .

Competition Issues

Qualitative and Quantitative evaluation

- Keep both evaluations (ICKEPS-2)
- Extend quantitative measure (automatically capture)
  - Plan quality evaluation

One category with many distinguished awards

- Design life cycle processes
- Single category
- Distinguished awards for each part of design process

Competition Issues

What has been analyzed?

- Design process evaluation, not only the tool (approaches, methods, techniques, etc.)
  - Acquisition, specification, modeling, analysis, V&V, testing, knowledge extraction, domain refinement, maintenance, and others.

Real domains

- New challenging domains (as ICKEPS-2)
- ICKEPS as the main entrance for real problems

Competition Issues

Inputs and outputs

- Minimum standardization
  - Domain description
  - outputs

Criteria and metrics

- Add evaluation of the entire KE and the design life cycle processes performed
- Measure plan quality (Let's see the impact of different modeling processes)
  - Optimization function, resource usage, plan size, time, etc.

Suggestions for the Future

One suggestion for ICKEPS format

- Preparation (1)
- Paper submission (2)
- Warm-up (3) and Competition (4)
  - naive models
  - partial modeled domains
  - application description
  - complex application description
- Presentation (5)
- Final Report and Results (6)

Awards:
- Gathering & Structuring
- Analysis & Validation;
- Specification;
- Modeling & Solution Evaluation.

Conclusion

- Focus on the design life cycle (general and specific tools);
- There are tools out there for competing;
- Synergy between ICKEPS and IPC (generates expectation);
- Reflection about the suggested format and new ideas.

Expectation
- A clear link between ICKEPS and IPC;
- Challenging domains being analyzed and solved by planners with high quality;
- Roadmaps for representation languages and techniques;
- Refined roadmaps for KE for P&S;
- Improvements on KE tools;
- Benchmarks (industry and institutions);
- A higher number of competitors.