Second Workshop on Scenarios and State Machines: Models, Algorithms, and Tools

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1. Introduction

Following the success of the "First Workshop on Scenarios and State Machines: Models, Algorithms, and Tools" held at ICSE 2002 in Orlando [1], this workshop aims at bringing together researchers and practitioners to build a shared understanding on the relation between scenarios and state machines and to gain insight into techniques and tools that may leverage the combination of these approaches to enhance our means for behavior modeling.

2. Background and Motivation

Behavior modeling plays an important role in the engineering of software-based systems; it is the basis for systematic approaches to requirements capture, specification, design, simulation, code generation, testing, and verification. A range of notations, techniques and tools supporting behavior modeling for these development tasks exists.

Two complementary approaches for modeling behavior have proven useful in practice: state- and scenario-based modeling. UML [3] statechart diagrams have become popular as a description technique for the intended behavior of class instances in object-oriented systems. State-based formalisms are also widely used for modeling distributed and real-time systems; the corresponding models can be rigorously analyzed using model checking techniques – this is a particular advantage of state-based modeling.

Practitioners also use scenario-based notations and tools extensively; here, the focus of concern shifts from the complete behavior specification for individual components or objects to the (partial) specification of component collaboration. Use cases, interaction and sequence diagrams play an important role in scenario-based requirements elicitation. The International Telecommunication Union's Message Sequence Chart Standard [2] defines a scenario-notation for detailed specification of telecommunication system behavior.

The use of state machines and scenarios, however, is not limited to capturing intended system behavior; reverse engineering techniques use them extensively to capture the behavior of existing sub-systems.

Although there has been much research on both scenarios and state machines the relation between them has yet to be fully understood and, more importantly, exploited. The complementary nature of scenarios and state-machines suggests several avenues for combining the strengths of both modeling approaches. Scenarios can, for instance, be viewed as partial descriptions that are generalized through state machine specifications. Alternatively, scenarios can be thought to provide collaboration views while state machines stress local/component views. Finally, scenarios can be seen as use case realizations that aid in recognizing the operations and associations of classes and in specifying the behavior of objects as state machines. Scenarios can also be viewed as the source of test cases, used to validate an implementation.

3. Topics of Interest

In this second workshop on this topic we aim at discussing areas of research and tools that exploit the benefits of scenario- and state-machine-based techniques. Areas of interest include, but are not limited to:

- Models and notations (requirements for different application areas, shortcomings in current notations, new suggestions for models or notations, categorizations).
- Algorithms (e.g., synthesis, verification, simulations).

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- Tools (tool support for the issues above, different application areas).

4. Workshop Organization

A call for papers was widely distributed and made available at http://www.doc.ic.ac.uk/~su2/SCESM/CS/. Prospective participants were requested to submit a position paper of up to five pages. In order to focus contributions and provide a common basis for discussion, we encouraged participants to make use of the case study material provided by NASA Ames, available at http://www.doc.ic.ac.uk/~su2/SCESM/CS/. The material has been used in earlier studies and reported in the First Workshop on Scenarios and State Machines: Models, Algorithms, and Tools [4]. However, the use of the case study was not mandatory. Authors were allowed to use their own examples or focus on specific or related aspects of the case study.

The program committee reviewed submissions. Each submission was reviewed by at least three different program committee members. The program committee selected the position papers based on relevance, soundness and novelty.

The workshop is open and will have a maximum number of 30 participants; however, priority registration shall be given to those with accepted papers.

The workshop will be divided into sessions. The opening session will include a keynote by Prof. David Harel. Topics of the working sessions will be determined based on the distribution of accepted position papers. Each session will cluster three short presentations (10 min.) where authors will have an opportunity to present the main ideas of their position papers. The presentations shall serve as an opening statement of the session, after which there will be at least half an hour reserved for in-depth discussion of the presentations, related issues, and the implications for future research.

5. Workshop Organisers

Francis Bordeleau, University of Carleton, Canada.
Alexander Egyed, Teknowledge Corporation, USA.
Martin Glinz, University of Zurich, Switzerland.
Jeff Kramer, Imperial College London, UK.
Ingolf Krüger, UC San Diego, USA.
Axel van Lamsweerde, University of Louvain, Belgium.
Stefan Leue, University of Freiburg, Germany.
Wilhelm Schäfer, University of Paderborn, Germany.
Tarja Systä, Tampere University of Technology, Finland.
Sebastian Uchitel, Imperial College London, UK.
Jon Whittle, NASA Ames, USA.
Albert Zündorf, University of Braunschweig, Germany.

6. Reviewers

In addition to the workshop organizers, the following people participated in the reviewing process: Jean-Pierre Corriveau, Ira Diethelm, Leif Geiger, Thomas Maier, Toby McClean, Silvio Meier, Christian Seybold, and Yong Xia.

7. References

[1] *First ICSE Workshop on Scenarios and State Machines: model, algorithms and tools (SCESM'02)*, http://www.cs.tut.fi/~tsysta/ICSE/Main.html, 2002.

[2] ITU-TS, *Message Sequence Charts*, Recommendation Z.120, Geneva, 1996.

[3] OMG, *The Unified Modeling Language*, http://www.omg.org, 2003.

[4] J. Whittle and J. Schumann, "Statechart Synthesis from Scenarios: an Air Traffic Control Case Study" *in proceedings of the ICSE 2002 Workshop on Scenarios and State Machines: Models, Algorithms and Tools*, Orlando, 2002.