SEAMS 2020 - Call for Papers
The 15th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), Seoul, South Korea, May 25-26, 2020
https://conf.researchr.org/home/seams-2020
Co-located with the 42nd International Conference on Software Engineering (ICSE 2020)

**IMPORTANT DATES**
* Abstract submission: Friday 10 January 2020
* Paper submission: Friday 17 January 2020
* Notification: Monday 2 March 2020
* Camera-ready submission: Monday 16 March 2020

**Scope**

Modern and emerging software systems, such as industrial Internet of Things, Cyber-Physical Systems, cloud and edge computing, robotics, and smart environments have to operate without interruption. Self-adaptation and self-management enable these systems to adapt themselves at runtime to preserve and optimize their operation in the presence of uncertain changes in their operating environment, resource variability, new user needs, attacks, intrusions, and faults.

Approaches to augment software and software-controlled systems with self-managing and self-adaptive capabilities are an important area of research and development, offering solutions that leverage advances in fields such as software architecture, fault-tolerant computing, programming languages, run-time program analysis and verification, among others. Additionally, research in this field is informed by related areas such as control systems, machine learning, artificial intelligence, agent-based systems, and biologically inspired computing. The SEAMS symposium focuses on applying software engineering to these approaches, including methods, techniques, processes and tools that can be used to support self-* properties like self-protection, self-healing, self-optimization, and self-configuration.

The objective of SEAMS is to bring together researchers and practitioners from academia, industry and government, to investigate, discuss, examine and advance the fundamental principles, the state of the art, and the solutions addressing critical challenges of engineering self-adaptive and self-managing systems.

**Topics of Interest**

All topics related to engineering self-adaptive and self-managing systems, including:

**Foundational Concepts**
* Self-* properties
* Understanding and taming uncertainty
* Runtime models and variability
* Consistent change of systems in operation
* Mixed-initiative and human-in-the-loop systems
* Situational awareness
* Ethical challenges of self-adaptive systems

Engineering Strategies
* Architecture and model-driven approaches
* Control theory
* Online analysis and planning
* Decentralized control
* Automatic synthesis techniques
* AI techniques (machine learning, game theory, etc.)
* Search-based techniques and learning
* Simulation
* Mechanisms to ensure security and privacy in self-adaptive loops

Engineering Activities
* Domain/environment analysis techniques
* Requirements elicitation techniques
* Architecture and design techniques
* Verification and validation activities & frameworks
* Systematic reuse (patterns, viewpoints, reference architectures, code, etc.)
  * Instrumentation of legacy systems (probing and effecting)
* Processes and methodologies
* Impact of DevOps on self-* systems

Languages
* Formal notations for modeling and analyzing self-* properties
* Domain-specific language support for self-adaptation
* Programming language support for self-adaptation

Application Areas
* Industrial Internet of Things
* Cyber-physical systems
* Cloud, fog and edge computing
* Bioengineering
* Robotics
* Smart environments
* Smart user interfaces
* Privacy and security

Artifacts & Evaluation
* Model problems and exemplars
* Resources including data sets, metrics, and software useful to compare self-adaptive approaches
* Real-world demonstrators
* Controlled experiments, case studies, replication studies, surveys
Types of Paper

SEAMS 2020 solicits the following types of papers:

* Technical papers (10 pages main text, inclusive of figures, tables, appendices, etc.; plus references up to two additional pages). Technical papers should:
  (1) clearly describe innovative and original research, or
  (2) report a survey on a research topic in the field.

* New Ideas and Emergent Results (NIER) papers (6 pages + 1 page references). NIER papers should describe novel and promising ideas and/or techniques that are in an early stage of development. To that end, NIER papers will be reviewed with dedicated review guidelines.

* Experience papers (6 pages + 1 page references). An experience paper should describe the experiences gained from applying/evaluating software engineering research results in practice. It is encouraged that the partners from both practice and research join the effort as co-authors and that the paper reflects the perspective of both sides. The papers should emphasize the value of the experience for the community - in particular the lessons learned due to the transfer of research results to practice.

* Artifact papers (6 pages + 1 page references). Artifacts describe model problems, exemplars, or useful sets of resources for the broader SEAMS community. This year we solicit artifacts in two modalities: associated with a research paper and standalone. In the research paper modality, the artifact complements a long research paper and does not require a separate paper submission, the authors need to complete the self-assessment and attach their paper to the submission. The standalone modality requires the submission of an artifact paper (6 pages + 1 page references) in addition to a self-assessment form. The authors of accepted artifacts will have an ACM Artifact badge attached to their paper. All artifact papers will be presented at SEAMS.

* Demo papers (6 pages + 1 page references). Demo papers should demonstrate the use of self-adaptive software in a proof-of-concept, prototype or real-world application. Unlike artifact papers, these software systems may not be at a stage of development where they can be released to the broader SEAMS community for other researchers and practitioners to use them in their own work, or may not be suitable for release as artifacts. However, demo papers can also be accompanied by an artifact. In this case, the artifact will be evaluated together with the paper and, if accepted, will receive an ACM Artifact badge.

* Doctoral project papers (4 pages + 1 page references). A doctoral project paper should describe the dissertation research of a PhD student in the field of self-adaptive and self-managing systems. This paper has to be authored by the student only. A suggestion for structuring the paper is as follows:
  - The problem to be solved in your thesis (justify why this problem is...
important and make clear that previous research has not yet solved that problem).
- Your research hypothesis (claim).
- The expected contributions of your dissertation research.
- How you plan to evaluate your results and to present credible evidence
  Of your results to the community.
- A description of the results achieved so far and a planned timeline
  for completion.

Students of accepted papers will present their research during SEAMS and receive personalized and specific feedback on their research plan. Students will also have the opportunity to further engage with the audience during a poster session. Instructions for formatting posters will be provided after the notification. We encourage submissions from PhD students at any stage of their research.

* Special session papers on ethical concerns of self-adaptive systems
  (2 pages including references). SEAMS 2020 will organise a panel session
devoted to ethical concerns associated with self-adaptive systems.
Interested authors are invited to submit an extended abstract in which they identify, analyse and sketch potential solutions to the ethical challenges surrounding self-adaptive systems.

Paper Submission Details and Review Process

All submitted papers and artifacts will be reviewed by at least three members
of the program committee. Papers must not have been previously published or
concurrently submitted elsewhere. Papers must conform to the IEEE Conference
Proceedings Formatting Guidelines (title in 24pt font and full text in 10pt
type, \LaTeX\ users must use \texttt{\documentclass[10pt,conference]{IEEEtran}} without
including the \texttt{compsoctoc or compsocconf} option), and submitted via EasyChair.
Accepted papers will appear in the symposium proceedings that will be
published in the ACM and IEEE digital libraries. The official publication
date of an accepted paper will be the date the proceedings are made available
in the ACM Digital Library. This date may be up to two weeks prior to the
first day of ICSE 2020. The official publication date affects the deadline
for any patent filings related to published work. Purchases of additional
pages in the proceedings is not possible.

Submission Site

All papers should be submitted at \url{https://easychair.org/conferences/?conf=seams2020}.

* For Research, NIER, Experience, Demo, Doctoral Project, and Special Session papers:
  select “SEAMS 2020 Main Track”
* For Artifact papers: select “SEAMS 2020 Artifact Track”