1. Background

Service-Oriented Architecture (SOA) is a way of designing, developing, deploying, and managing enterprise systems where business needs and technical solutions are closely aligned. SOA offers a number of potential benefits, such as cost-efficiency and agility. However, adopting SOA is not without considerable challenges. For example, the most common way to implement a SOA-based system is with Web services, but the standards that define Web services are evolving rapidly and many of the Web services tools are still somewhat immature. There is also the question of how to leverage existing legacy assets within a SOA context. Perhaps most importantly, there are serious challenges related to the testing of SOA-based systems that must be addressed before the SOA paradigm will enjoy broad-based success.

The nature of SOA-based applications calls for testing strategies and toolsets that include different approaches to testing. Traditional testing strategies that were used before may not be adequate to test these SOA-based systems. Even though they may not be sufficient, there are some open source and commercial tools to aid some part of testing SOA-based applications. However, there are no evaluation criteria in place to assess these tools and ascertain if they provide the facilities needed to fully test SOA-based applications.

2. Goals

This workshop will explore issues related to the testing of SOA-based applications. It will build upon recent work initiated by CMU/SEI on migrating legacy systems to a SOA environment using the Service-Oriented Migration and Reuse Technique (SMART). Of particular interest for SOAT is to discuss the changes needed in all aspects of testing for SOA. For example:

- Test case management
- Testing tool requirements and evaluation criteria
- Testing the underlying implementation (e.g., Web services)
- Testing quality attributes (e.g., the topic of security testing in a SOA context is exceptionally timely)
- Evaluating the applicability of traditional testing techniques to new problems (e.g., governance) in this new application domain

This workshop is meant to stimulate discussion among all participants related to research directions in SOA testing. In particular, an outcome of the workshop should be a prioritized list of topics that, if addressed, would have a measurable positive impact on the practice of SOA testing (and all its related activities) in the next five years or so.

The list of topics should be suitable for personal investigation or larger projects involving multiple investigators and/or institutions. Certainly topics that would be suitable for theses or dissertations, or for submission to funding agencies, would also be welcome.

The overall goal of the workshop is to create a first draft of a broad research agenda for SOA testing. This research agenda is a “deep dive” expansion of the work from CMU/SEI on a general research agenda for SOA (as shown in Figure 1) into the testing domain. The intent is for the SOAT 2009 workshop will produce an initial roadmap to advance the state of software engineering research and practice for testing in the SOA world, and will help develop a community of interest in this emergent field.
3. Structure

SOAT 2009 is a half-day workshop. The first part will be structured around a handful of invited presentations from recognized experts in the field. Following the brief presentations, the speakers will engage in structured discussion with the rest of the workshop participants.

The second part of SOAT 2009 will truly be a “working session.” All participants will be divided into small teams. Each team will self-select a member to lead the discussion and provide a brief report back to the other participants at the end of the session. Each team is asked to address the same question: What are the top five research directions that the SOA testing community should address to make a measurable impact?

Organizers

Scott Tilley is Professor & Director of Software Engineering in the Department of Computer Sciences at the Florida Institute of Technology. He also holds a cross-appointment in the College of Business as a Professor of Management Information Systems. He is a Visiting Scientist at Carnegie Mellon University’s Software Engineering Institute, working in the area of Service-Oriented Architecture (SOA). He is Chair of the Steering Committee for the IEEE Web Systems Evolution (WSE) series of events, and the immediate Past Chair of the ACM’s Special Interest Group on Design of Communication (SIGDOC). He was General Chair for the 24th IEEE International Conference on Software Maintenance (ICSM 2008), which took place in Beijing, China.

Xiaoying Bai is an Associate Professor in the Department of Computer Science and Technology at Tsinghua University (China). Her research interests include service-oriented architecture and software testing. She is leading a project funded by the Chinese National Science Foundation on “Online and Collaborative Testing Techniques of Service-Oriented Software.” She was Program Chair of IEEE 2005 International Workshop on Service-Oriented System Engineering (SOSE 2005) in Beijing. She was one of the organizers of the session on SOA-Based Software Engineering at the SEKE 2009 conference in Boston.

Grace Lewis is a Senior Member of Technical Staff in the Software Engineering Institute (SEI) at Carnegie Mellon University (CMU). She is currently the lead for the System of Systems (SoS) Engineering team within ISIS. A current focus of the team is the “Migration of Legacy Systems to Service-Oriented Architecture (SOA) Environments” project. Her recent research in service-oriented architecture, technologies for interoperability, modernization of legacy systems, and characterization of software development life cycle activities in SoS environments. She is a member of the technical faculty for the MSE program at CMU. Grace holds a B.Sc. in Systems Engineering and an Executive MBA from Icesi University in Colombia, and an MSE from CMU. She has organized multiple workshops at ICSE, ICSM, CSMR, CASCON, and the SEI.