

MESOA 2009

3rd International Workshop on Maintenance and Evolution of Service-Oriented Systems

Organizers:

Ned Chapin
Kostas Kontogiannis
Grace A. Lewis
Dennis B. Smith

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Software Maintenance (ICSM 2009)

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Software Engineering Institute

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Welcome

Dennis B. Smith
Software Engineering Institute, USA



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Agenda

| | |
|---------------|--|
| 09:00 – 10:30 | Workshop Introduction <ul style="list-style-type: none">• Welcome, <i>Dennis Smith</i>• A Research Agenda for Service-Oriented Architecture: Challenges of Maintenance and Evolution of Service-Oriented Systems, <i>Grace Lewis</i>• Research on Maintenance Characteristics of SOA Systems, <i>Ned Chapin</i> |
| 10:30 – 11:00 | Coffee Break |
| 11:00 – 11:30 | Session 1: Tools for Migration to SOA Environments <ul style="list-style-type: none">• ASMEM: A Method for Automating Model Evolution of Service-Oriented Systems, <i>Pooyan Jamshidi</i> |
| 11:30 – 12:00 | Session 2: Case Studies in Systems Migration to SOA Environments <ul style="list-style-type: none">• A Funny Thing Happened on the Way to SOA: Insights from a Three-Year Experience with a Telecom Company, <i>Paulo Rupino</i> |
| 12:00 – 13:30 | Lunch |
| 13:30 – 14:00 | Session 2: Case Studies in Systems Migration to SOA Environments (Continued ...) <ul style="list-style-type: none">• Towards a Design Approach for an Effective System Evolution of a Large Electronic Archive Information System, <i>Quyên Nguyen</i> |
| 14:00 – 14:30 | Session 3: SOA Governance and Service-Oriented Systems Evolution <ul style="list-style-type: none">• SOA Governance Optimizes the Business and Evolution of Service-Oriented Systems, <i>Hausi Müller</i> |
| 14:30 – 15:30 | Session 4: Longer-Term Research Topics in Maintenance and Evolution of Service-Oriented Systems <ul style="list-style-type: none">• Cutting-Edge Research Topics in Maintenance and Evolution of Service-Oriented Systems, <i>Kostas Kontogiannis</i> |
| 15:30 – 16:00 | Coffee Break |
| 16:00 – 17:00 | Session 5: Panel—Challenges for Maintenance and Evolution of Deployed Service-Oriented Systems Panelists: <i>Kostas Kontogiannis, Hausi Müller and Scott Tilley</i> |
| 17:00 – 17:30 | Workshop Review and Next Steps, <i>Grace Lewis</i> |



SOA Research Agenda

Research framework based on an ideal lifecycle for service-oriented systems

Taxonomy of research issues required to support short-term and long-term strategic SOA adoption

- Rationale
- Current Efforts
- Challenges and Gaps

Annotated bibliography



Research Challenges and Opportunities Identified at MESOA 2007 ₁



- Balance of maintenance types in service-oriented systems
- Characterization of the preparation phase for SOA adoption
- Effects of governance and compliance on maintenance and evolution of service-oriented systems
- Effects of process maturity on service-oriented systems maintenance
- Implications of autonomic computing and monitoring for maintenance and evolution of service-oriented systems
- Models for ROI of SOA adoption and evolution
- Retirement of services
- Runtime validation of compliance to evolving business processes
- Service identification from legacy code
- Software reusability effects on SOA maintenance
- Testing of services and service-oriented systems
- Trust, certification and verification of services



Research Challenges and Opportunities Identified at MESOA 2008 ₁



Testing in SOA environments

- Exception-oriented testing
- Effects of SOA 2.0 and event-driven architecture on testing
- Effects of dynamic service composition on testing
- Test automation that generates large volumes of relevant test cases
- Service granularity appropriate for testing
- Rules for web service interface definition
- Metrics for measuring web service interface definition quality—static and runtime



Research Challenges and Opportunities Identified at MESOA 2008 ₂



Legacy System Migration to SOA Environments

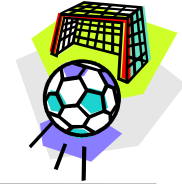
- When is new development a better option than legacy system migration or simple web migration?
- Is it possible to define cost-effective SOA migration strategies for non-decomposable legacy systems?
- Metrics for system decomposability
- Mapping of business objectives to migration strategies

Runtime Monitoring of Service-Oriented Systems

- Construction of models for indicators
- Managing and leveraging uncertainty
- Making control loops explicit
- Maintainability concerns for self-adaptive SOA systems compared to static, non-adaptive SOA systems



Focus of MESOA 2009



Continue sharing current efforts in the maintenance and evolution of service-oriented systems and identify areas of future work to address existing gaps and problems

Present a set of longer-term research challenges in maintenance and evolution of service-oriented systems

Understand the maintenance and evolution challenges of deployed service-oriented systems



Session Logistics



Session Format

1. Introduction
2. Invited Talks or Panel
3. DISCUSSION

Other Notes

- We expect a highly interactive session
- We will be taking notes throughout the day and present a summary at the end
- Talks and summary will be available in PDF format on the MESOA web site (<http://www.sei.cmu.edu/workshops/mesoa/2009/>)



Introductions



Briefly state your name, organization, and workshop expectations.



Presentation: Research on Maintenance Characteristics of SOA Systems

Ned Chapin
InfoSci Inc., USA



Software Engineering Institute

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Discussion on Challenges for Maintenance and Evolution of Service-Oriented Systems

Facilitator: Dennis Smith
Software Engineering Institute, USA



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Question to Trigger Discussion

Are there specific topics that should be addressed in the maintenance and evolution of service-oriented systems in the short term that have not been addressed yet by academia or industry?





Session 1: Tools for Migration to SOA Environments

Facilitator: Grace Lewis
Software Engineering Institute, USA



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Introduction

Variety of tools to support migration to SOA environments, mainly in Web Services environments

- Modeling tools
- Code generation tools for Web Service environments
- Complete IDEs for deployment of Web Services
- Testing tools

Growing availability of tools and research to support model-based migration to SOA environments (business model to service model).

- Next presentation is an example





Presentation: ASMEM: A Method for Automating Model Evolution of Service-Oriented Systems

Pooyan Jamshidi
Shahid Beheshti University, Iran



Question to Trigger Discussion

What are areas of migration to SOA environments that tools have not yet addressed?



Session 2: Case Studies in Systems Migration to SOA Environments

Facilitator: Ned Chapin
InfoSci Inc., USA



Introduction

Many case studies about migration to SOA environments in many domains.

- Many sponsored by vendors to showcase tools and methodologies
- Many successes and no failures
- Lots of “research in the small” with no clear indication whether the particular situation or experiment would scale

The next two talks are examples of un-biased, real case studies

- Portuguese telecom company
- National Archive and Records Administration





Presentation: A Funny Thing Happened on the Way to SOA: Insights from a Three- Year Experience with a Telecom Company


Paulo Rupino
University of Coimbra, Portugal



Question to Trigger Discussion

What are lessons learned from this case study that should be codified as best practices for migration to SOA environments?





Presentation: Towards a Design Approach for an Effective System Evolution of a Large Electronic Archive Information System

Quyen Nguyen
National Archives and Records Administration



Question to Trigger Discussion

What are lessons learned from this case study that should be codified as best practices for migration to SOA environments?





Session 3: SOA Governance and Service-Oriented Systems Evolution

Facilitator: Dennis Smith
Software Engineering Institute, USA



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Introduction

IBM defines SOA governance as the *process of establishing the chain of responsibilities and communications, policies, measurements, and control mechanisms that allow people to carry out their responsibilities in SOA projects.*

B. Woolf, "Introduction to SOA Governance," June 13, 2006.

eBizQ states that *SOA governance provides organizations with the processes, policies, and solutions/technologies that can help to manage increasingly complex SOA deployments in an effective and efficient manner.*

"Increasing the Effectiveness and Efficiency of SOA Through Governance, 2008 SOA Governance Survey Report," Oracle, 2008.

In general:

SOA governance is the set of policies, rules, and enforcement mechanisms for developing, using, and evolving service-oriented systems, and for analysis of the business value of those systems.



Types of SOA Governance

Design-time governance applies to early activities such as planning, architecture, design, and development

- includes elements such as rules for strategic identification, reuse, development, and deployment of services
- enforces consistency in use of standards, SOA infrastructure, reference architectures and processes

Runtime governance applies to deployment and management of service-oriented systems

- develops and enforces rules to ensure that services are executed according to policy and that important runtime data is logged

Change-time governance applies to maintenance and evolution of service-oriented systems

- develops and enforces rules for maintenance and evolution as well as communication of changes to stakeholders



Examples of Change-Time Governance Concerns

How are service changes and upgrades decided and communicated?

Who pays for maintenance and development of shared services?

How do governance processes support rapid re-verification of functional capability and system qualities in the event of a new version?


What happens when a service changes?

What types of changes lead to complete revalidation?

What changes do not?

The next presentation looks at SOA governance and its relationship to the business and evolution of service-oriented systems.





Presentation: SOA Governance Optimizes the Business and Evolution of Service-Oriented Systems

Hausi Müller
University of Victoria, Canada




Questions to Trigger Discussion

In what other ways could SOA governance help the evolution of service-oriented systems?


Is it possible that SOA governance (or too much of it) could hinder evolution of service-oriented systems?





Session 4: Longer-Term Research Topics in Maintenance and Evolution of Service-Oriented Systems





Presentation: Cutting-Edge Research Topics in Maintenance and Evolution of Service-Oriented Systems


Kostas Kontogiannis
National Technical University of Athens,
Greece



Question to Trigger Discussion

What additional long-term research challenges for maintenance and evolution of service-oriented systems can you think of?





Session 5: Panel—Challenges for Maintenance and Evolution of Deployed Service-Oriented Systems

Moderator: Dennis Smith
Software Engineering Institute, USA



Panelists

Kostas Kontogiannis (National Technical University of Athens, Greece)



Hausi Müller (University of Victoria, Canada)



Scott Tilley (Florida Institute of Technology, USA)



Carl Worms (Credit Suisse, Switzerland)



Thoughts from Dr. Liam O'Brien (NICTA)

Service Version Management

“An organization that I was involved with had about 12 - 15 deployed services and they said that they could at any time release and maintain up to 10 versions of each of those services. This becomes a nightmare with a possibility of 120 - 150 services available.”

Service Testing

“Another challenge is testing of services especially doing performance and scalability assessments. How do you do this in production environments when others users could be using the services?”

SLA Management

“If one changes services what impact will that have on SLAs for that service? Does one have to notify all users of changes in SLAs? If for example one added additional functionality to a service and the response time of a service is increased from 4 seconds to 5 seconds what will the impact be on users of that service? What if certain users really wanted the 4 second response time?”



Panel Logistics

Each panelist has 10 minutes to present what they believe are the challenges for maintenance and evolution of deployed service-oriented systems.

The questions for the audience—experts in maintenance and evolution of deployed service-oriented systems—for discussion at the end of their presentations:

Are they right?

What did they miss?

What new research ideas come to mind?



Workshop Summary and Next Steps

Grace A. Lewis
Software Engineering Institute, USA

