SEI Software Architecture Workshop for Educators

Software Engineering Institute
Carnegie Mellon University
Pittsburgh, PA  15213

Len Bass, Larry Jones, Judy Stafford
August 2, 2007
Session Objectives

Brainstorm, share and refine ways to include software architecture methods and concepts in college and university courses.

Form working relationships among participants and nurture an educators software architecture “community.”

SEI resource:
http://www.sei.cmu.edu/architecture/comm_resources.html
Agenda

8:30 – 9:00  Introductions and recap of previous workshops
9:00 – 10:00  ArchE presentation
10:00 – 12:00  Experiences teaching architecture topics
   - Each participant updates the group on their experiences
     (approx 10 minutes per presentation)
12:00 – 1:00  Working lunch
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2:00 – 2:45  Next steps and wrap up (with ice cream in the middle!)
   - How to connect in the future
2:45  End of the workshop (hard stop!)
# 2004 Workshop Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Marty Barrett</td>
<td>East Tennessee State University</td>
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<tr>
<td>Len Bass</td>
<td>SEI</td>
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<tr>
<td>Mike Battig</td>
<td>Saint Michael’s College</td>
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<tr>
<td>Steve Chenoweth</td>
<td>Rose-Hulman Institute of Technology.</td>
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<tr>
<td>Janet Hartman</td>
<td>Embry-Riddle Aeronautical University</td>
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<tr>
<td>Larry Jones</td>
<td>SEI</td>
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<tr>
<td>Mike Lutz</td>
<td>Rochester Institute of Technology</td>
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<tr>
<td>Manton Matthews</td>
<td>University of South Carolina</td>
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<tr>
<td>Linda Northrop</td>
<td>Software Engineering Institute</td>
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<tr>
<td>Arturo Sanchez</td>
<td>University of North Florida</td>
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<tr>
<td>Celia Schahczenski</td>
<td>Montana Tech of The University of Montana</td>
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<tr>
<td>Jim Tomayko</td>
<td>Carnegie Mellon University</td>
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<tr>
<td>Robert A. Willis</td>
<td>Hampton University</td>
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<tr>
<td>Rob Wojcik</td>
<td>SEI</td>
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2004 Discussions - 1

Fitting essential concepts into a “small package”
  • one week in a single software engineering course
Threading concepts throughout the curriculum
A single course in software architecture and design (Rose Hulman)
How do you teach synthesis?
Forums for spreading the word
  • OOPSLA (Educator’s workshop, panels, workshops, Design Fest, birds-of-a-feather session)
  • SIGCSE
  • CSEET
2004 Discussions - 2

Forums for spreading the word

- OOPSLA (Educator’s workshop, panels, workshops, Design Fest, birds-of-a-feather session)
- SIGCSE
- CSEET (Conference on Software Engineering Education & Training)
- Frontiers in Education
- ITiCSE (Innovations and Technology in CS Education) sponsored by SIGCSE
- Consortium for Computing Sciences in Colleges

Funding sources

- NSF, Department of Education, Andrew Mellon Foundation, US Labor Department, ACM SIGCSE
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<td>ZIFIT</td>
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<tr>
<td>Roger Champagne</td>
<td>Ecole de technologie superieure</td>
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<tr>
<td>Mario Garcia</td>
<td>Texas A&amp;M University - Corpus Christi</td>
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<tr>
<td>Elsa Golden</td>
<td>Carnegie Mellon University</td>
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<td>Larry Jones</td>
<td>SEI</td>
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<tr>
<td>Roger Lee</td>
<td>Central Michigan University</td>
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<tr>
<td>Bhabani, Misra</td>
<td>University of St. Thomas</td>
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<tr>
<td>Warren Moseley</td>
<td>Southwestern Oklahoma State University</td>
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<tr>
<td>Parviz Partwow-Navid</td>
<td>California State University</td>
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<tr>
<td>Rodney Rambally</td>
<td>University of Trinidad and Tobago</td>
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<tr>
<td>William Sheers</td>
<td>Washington &amp; Jefferson College</td>
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<td>Ludwig Slusky</td>
<td>California State University</td>
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<td>Mei-Huei Tang</td>
<td>Gannon University</td>
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<td>Cui Zhang</td>
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2005 Discussions - 1

How to think architecturally

• What are the skills needed to be an architect?
• What are architects thought processes?

Key ideas to incorporate into software engineering course(s)

• quality attributes
• working in groups
2005 Discussions - 2

Exercises and tool support for exercises

• maintenance exercise as a motivator
• students start their own company
• students present case studies
• take on the role of advocate for a particular quality attribute
• Lego robot project

Forming and expanding the software architecture educator’s community

• influence model curricula
• share contacts and work products
• apply to be an SEI visiting scientist
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<tr>
<td>Mohammad Ayati</td>
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</tr>
<tr>
<td>Mehdi Beheshtian</td>
<td>University of La Verne</td>
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<tr>
<td>Vijay Deokar</td>
<td>Cal State Los Angeles</td>
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<tr>
<td>Ajantha Herath</td>
<td>The Richard Stockton College NJ</td>
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<td>Suvineetha Herath</td>
<td>The Richard Stockton College NJ</td>
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<tr>
<td>Allen Holliday</td>
<td>Cal State Fullerton</td>
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<tr>
<td>Adam Hurang</td>
<td>Cal State Los Angeles</td>
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<tr>
<td>Suradet Jitprapaikulsarn</td>
<td>Naresuan University</td>
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<tr>
<td>C.Luis Fernando Castro</td>
<td>Universidad Autonoma Metropolitana</td>
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<tr>
<td>Eduardo Rodriguez-Flores</td>
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<tr>
<td>Robert Silverman</td>
<td>Cal State Stanislaus</td>
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<tr>
<td>Ming Wang</td>
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<td>George Wang</td>
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ArchE Presentation

See Len’s slides.
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Seed Topics for Discussion

Software Architecture Documentation in Undergraduate Curricula

• What from the course can be used in undergraduate courses?
• What format is best? How would you include the topics?
  – a complete course in software architecture versus embedding software architecture in existing courses
  – weaving software architecture into a curriculum
  – packaging blocks of instruction: what to include and where to include it
• What materials would you need to teach the topics?
  – supporting instructor materials
  – exercises and lab assignments
  – pedagogical examples

Software Architecture Documentation in Graduate Curricula

• Same topics as above

Others?
Group Discussion

Brainstorm topics
Cluster topics
Prioritize topics
Develop time budget
Discuss topics
  • Larry facilitate
  • Len record
  • Judy kibitz
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Contact Information

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