Overview: USC-CSE
Annual Research Review

Barry Boehm, USC
March 12, 1996

Acronyms

AAA - Automated Architect's Assistant
CMM - Capability Maturity Model
COCOMO - Constructive Cost Model
COTS - Commercial-off-the-shelf
CSCI - Computer Software Configuration Item
CSE - Center for Software Engineering
EDES - Evolutionary Design of Complex Systems
FAM - Feasibility Analysis Model
GUI - Graphic User Interface
IOC - Initial Operational Capability
ISE - Industrial and Systems Engineering Dept.
ISI - Information Sciences Institute
ISO - International Standards Organization

LCA - Life Cycle Architecture
LCO - Life Cycle Objectives
MSCS - Master of Science in Computer Science
QARC - Quality Attribute Risk and Conflict Consultant
SAMSA - Simulation Modeling for Software Acquisition
SEE - Software Engineering Environment
SPIN - Software Process Improvement Network
TBD - To Be Determined
VISTA - Virtual Information System Acquisition
WWW - World Wide Web
Outline

- CSE Objectives and Context
- Recent Developments
  - Affiliates
  - Projects
  - People
- Upcoming Activities
- Agenda and Arrangements

USC-CSE Objectives and Context

- Create software engineering technology addressing key future needs
  - Understand current needs
  - Infer future needs
- Transition technology into practice
  - Affiliates program, research contracts
- Grow future software engineering leaders
  - MSCS-SW Engr., PhD programs
Software Engineering Paradigm Shifts: AF/SAB New World Vistas Study

- COTS
- Cyberspace
- Information Warfare
  - Defense and Commercial

USC-CSE Affiliates (29)

- Commercial Industry (9)
  - AT&T, Bellcore, CSC, EDS, Motorola, Rational, Sun, TI, Xerox
- Aerospace Industry (10)
  - E-Systems, Hughes, Litton, Lockheed Martin, Loral, MDAC, Northrop Grumman, Rockwell, SAIC, TRW
- Government (4)
  - AFCAA, DISA, USAF Rome Lab, US Army Research Labs
- FFRDC's and Consortia (6)
  - Aerospace, IDA, JPL, MCC, SEI, SPC
Affiliates Via Mergers

- Sanders, RCA Aero, GE Aero, GD-FW, Loral – Lockheed Martin
- Ford Aero, LTV, IBM-FSD, Unisys DSD – Loral
- Westinghouse Aero – Northrop Grumman
- E-Systems – Raytheon
- Teledyne Aero, PRC – Litton

Recent Developments: Projects

- Win Win: Ready for use
- COCOMO 2.0: Getting ready for beta test
- Life cycle anchor points
- Architecture
  - System architecting update
  - Applications generation
  - Architecture definition languages
  - Architectural style composition
- SAMSA: FAM, VISTA concepts
- Software/System understanding and reengineering
Upcoming Projects

- COTS Integration: Air Force/ESC
  - with SEI: Cost and risk assessment
- Win Win Extensions: ARPA EDCS
  - Design rationale
  - Architecture Integration
  - Further groupware support: Java
  - Domain insertion: with Aerospace, TRW
- SAMSA Followon: Prototyping (with SAIC)
- MCC: Scalable Object-Oriented SEE

USC-CSE Principals

- Bob Balzer, ISI  KBSE, specifications, environments, processes
- Barry Boehm, CS  Processes, environments, architectures, economics
- Prasanta Bose, CS  KBSE, architectures, processes, environments
- Al Dospain, EE  High-performance symbolic computation, architectures
- Ellis Horowitz, CS  Environments, languages, open systems, object bases
- Lewis Johnson, ISI  KBSE requirements, training; evolution transformations
- Eb Rechtin, EE  Systems architecting principles and processes
- Walt Scacchi, BA  KBSE, processes, environments, management
- Chris Westland, BA  Information economics, management, security
- Dave Wile, ISI  Transformations, architectures, environments

- Research Associates
  - Dr. Anne Curzan, CS  Environments, operating systems
  - Dr. Ray Madachy, Litton  Cost and process modeling
PhD Students

- Ahmed Abd-Allah – Formal Architecture Modeling
- Chris Abts (ISE) – COCOMO 2.0 and COTS/Reuse
- Yimin Bao – Tool Composition Frameworks
- Brad Clark (NWC) – COCOMO 2.0 and CMM
- Sunita Devnani – COCOMO 2.0 Quality Model
- Cristina Gacek – Formal Architecture Modeling
- Eul Gyu Im – WinWin Infrastructure
- Hoh In – WinWin Attribute Conflict Advisor
- June Sup Lee – WinWin User Interfaces
- MingJune Lee – WinWin Formal Modeling
- Allen Nikora (JPL) – SW Reliability Modeling

Upcoming Activities

- Conferences and Workshops
- LA SPIN Meetings
- NRC Study: DoD Use of Ada
Conferences and Workshops

- April 17 - California Software Symposium (with UCI)
- June 5-7 - Focused Workshop: Groupware for Software Engineering
- October 9-11 - COCOMO/Software Cost Modeling Forum (with SEI)
- November 6-8 - Focused Workshop: Topic TBD
  - COTS Integration? Process? Architecture?

1996 LA SPIN Meetings (at USC-ISI)

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<td>Johnson, Scacchi</td>
<td>SW Understanding and Reengineering</td>
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<td>Bamford, Horning</td>
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<td>Mar 20</td>
<td>Bill Hefley</td>
<td>Personnel Maturity Model</td>
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<td>Apr 18</td>
<td>Don Reifer</td>
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<td>May 29</td>
<td>Dave Zubrow</td>
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<td>Jun 26</td>
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Agenda Overview

8:30 - 10:00  Architecture Session
10:00 - 10:30  Break
10:30 - 12:10  Process and Cost Modeling
12:10 - 2:00  Lunch and Demos - Salvatori 3rd Floor
2:00 - 3:30  Software and System (Re) Engineering
3:30 - 4:00  Break
4:00 - 5:30  Affiliates' Panel : WWW and SE
5:45 - 8:00  Steering Group Reception, Dinner, Feedback

Arrangements

- CSE Administrator:  Karen Prouten
- Message Number:  213/740-5703
- Fax Number:  213/740-4927
- Email Address:  karenp@sunet.usc.edu
- Handout Highlights
  - Demo Guide
  - CSE Brochure
  - Student Resumes