Reprise of USC-CSE SEDA Experiences
(Software Engineering Decision Assistant)

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Outline

- General SEDA Concept
- Critical Success Factor Analysis
- Issues for Workshop Discussion
General SEDA Concept

- Develop normative software product, process, property, and success models
  - MBASE: initially in digital library domain
- Develop agents to detect, suggest potential model clashes and violations
- Experimentally apply, refine, and generalize agents

Software Status & Plans

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<th>Decision</th>
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Software Evolution

Revised Plans

Critical Success Factors

- Critical Success Factors
- Revised Plans
- OUSCCSE
- Version Control System
- User Interface Design
- Software Engineering Processes
- Project Management
- Quality Assurance
- Task Allocation and Distribution
- Software Design
- Software Testing
- Software Configuration Management
- Software Documentation
- Software Maintenance
- Software Specification

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Core Decision Driver Abstractions

- Positive
  - Expert COCOMO: Required Reliability, Schedule Constraint, Applications Experience, etc.

- Negative
  - Design Review Preparation: No coverage of key decisions
    - Artifact size, complexity; Review objectives, criteria
  - Both: User Interface Design Assistant (UIDA)
    - Negative: Reason from source code
    - Positive: Reason from Dev. Guide GIL files

Unambiguous Mapping to Abstractions

- Positive
  - Expert COCOMO, UIDA
  - Software Technology Risk Advisor
    - User queried for desired abstractions: need for security, fault-tolerance, AI, etc.

- Negative
  - Process Reengineering: analyze Unix session scripts
    - Mix of tool invocations, Is, finger, mail, etc.
Critical Mass Option Representation

- Positive
  - Expert COCOMO, UIDA, STRA

- Negative
  - Architecture Balance Diagnosis: only simple static analyses (e.g., load balancing)
  - Reuse Assistant: subset of Booch / Grace components

Issues for Discussion

- Applications satisfying critical success factors
- Knowledge structuring for different classes of service
  - Diagnosis; advice; rationale capture
- Knowledge structuring for processes vs. products
- Handling knowledge-base evolution
  - COTS advice; rationale capture half-life
- Integrating individual agent services
  - Product-critic assessments into process advice
  - Quality-conflict assessments into negotiation advice