What Makes a Good Software Architect?

2019 Edition
“T” Model for Skills and Knowledge
Lightweight Evaluation and Prototyping for Big Data (LEAP4BD)

Aims

• Risk reduction
• Rapid, streamlined selection/acquisition

Steps

1. Assess the system context and landscape
2. Identify the architecturally-significant requirements and decision criteria
3. Evaluate candidate technologies against quality attribute decision criteria
4. Validate architecture decisions and technology selections through focused prototyping
Architect’s Success Depends on Team and Organization
How do successful architects spend their time?

SATURN 2019

15th Annual SEI Architecture Technology User Network Conference

MAY 6-9, 2019 | PITTSBURGH, PA

http://sei.cmu.edu/saturn

SATURN is the leading international conference for software architecture practitioners who look beyond the details of today’s technologies to the underlying trends, techniques, and principles that underpin lasting success in our fast-moving field.

SATURN attracts attendees from many industrial domains with interest in both research and practice. This unique mix makes it the best place to learn, exchange ideas, and find collaborators at the leading edge of modern software architecture practice.

Join us and become part of the SATURN community!

WHETHER YOU’RE JUST STARTING OUT IN ARCHITECTURE or have many years of experience, SATURN 2019 offers something for everyone. You will leave with dozens of new ideas and solutions to apply in your organization.

The conference fee includes three full days of presentations and events. The SEI also offers one-day courses on microservice architecture, DevOps practices with architecture, and managing technical debt.

Visit us at sei.cmu.edu/saturn
Additional Resources

Technology concerns in big data system architectures
• https://resources.sei.cmu.edu/library/asset-view.cfm?assetID=90909

Lightweight Evaluation and Prototyping for Big Data (LEAP4BD)
• https://resources.sei.cmu.edu/library/asset-view.cfm?assetID=447346

SEI’s Architecture Competence Framework
• https://resources.sei.cmu.edu/library/asset-view.cfm?assetid=509513

Using the Analytic Hierarchy Process for modernization decisions
• https://resources.sei.cmu.edu/library/asset-view.cfm?assetID=502340
Most Technical Debt is Architectural
Architectural Technical Debt Examples

- Microservices directive without guidance results in latency and complexity
- Lack of service API for the business apps result in suboptimal and costly solutions
- External service call injecting integer overflow resulting in recurring crashes
- Lack of common integration schema causing rework across projects
- Heterogeneous services causing unintended duplication
Tracking Enterprise Technical Debt

- Coding convention
- Investigate complex SQL statements in validation
- Reduce branching complexity in WorkUnitDetailMgr.java
- Pass the AppContext as a parameter to a validator constructor
- No common integration schema is used between applications
- Integration mechanism is a mix of ETL/trigger/database access connecting to physical integration schema
- Connecting to the extranet which would require you to cross the intranet/extranet boundary, which has its own security

Filter Results: TD Indicators

| Components | Code Quality | Design Risk | TD Tier | TCOO | T
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Carnegie Mellon University
Software Engineering Institute

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Managing Technical Debt: Reducing Friction in Software Development
Additional Resources

SEI’s Architectural Technical Debt library
•  https://resources.sei.cmu.edu/library/asset-view.cfm?assetID=509492

Managing Technical Debt Course offered both online and onsite
•  https://www.sei.cmu.edu/education-outreach/courses/course.cfm?courseCode=P127

Join researchers, practitioners and tool vendors to share experiences and practices managing technical debt
•  https://techdebtconf.org

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