Practical Considerations, Challenges, and Requirements of Tool-Support for Managing Technical Debt

Davide Falessi*, Michele A. Shaw, Forrest Shull
Fraunhofer Center for Experimental Software Engineering, USA

Kathleen Mullen, Mark Stein
Keymind, A Division of Axiom Resource Management, Inc.

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Aim

- A fresh perspective on Technical Debt (TD) from a CMMI Maturity Level 5 company, Keymind.
  - Vision
  - Practical considerations
  - Challenges
  - Requirements of a tool supported approach
Vision

• TD != Software Quality

• Managing TD consists of three main activities:

1. **Identifying** the TD items

2. **Estimating** the economic consequences of removing or not removing each TD item

3. **Analyzing** the different consequences and making tradeoffs
Practical considerations

• Despite CMMI level 5, all projects have some TD as no project is perfect.
  – It is important to monitor TD, not necessarily to eliminate it.

• Customers can be involved and educated about TD concepts.
  – Decisions can be made together with customers, being aware of the consequences.
Challenges

• **Principal**: Single values are inadequate -> ranges and probabilities.

• **Interest**:  
  – Technical decisions are distant from the economic domain.
  – Related to probabilities of events

• Unavailability of historical data. How to estimate?
Requirements of a tool supported approach
R1: Managing principal, interest, and time-to-market.
R2: Translating decisions into economic consequences
R3: Managing uncertainty in a rigorous way
R4: Managing the evolution of economic consequences
R5: Balancing rigor and ease of use via scalability
R6: Completeness and integration
R7: Balancing expert opinions and automated estimates
R8: What-if analysis as interpretation of possible distributions
R9: Sensitivity analysis
R10: Scenario analysis