Round Trip Review Process Improvement

Said Belhadj Software System Engineer, MM-MIS, MBA
Huntsville AL

Round Trip Review Process Improvement from the Discipline (Enterprise View) to the Activity (Project View)
A Gap in the Review: Root Cause of accidents

• AECL ‘s Therac 25 Radiation Machine involved in six radiation overdose accidents.

• First Root Cause cited : AECL did not have the software code independently reviewed. https://en.wikipedia.org/wiki/Therac-25

• “Fatal Defect” book cites the UI Code was in one man’s head

https://medium.com/swlh/software-architecture-therac-25-the-killer-radiation-machine-8a05e0705d5b
Software Industry relies heavily on Reviews

• Google, Facebook and Microsoft adopt reviews, at Microsoft developers actively practice code reviews (Process Aspects and Social Dynamics of Contemporary code Review IEEE)

• 50,000 Microsoft developers actively practice code reviews

• How much can the software safety critical learn from the software business critical?
Review is a lower cost quality provider

• Reviews are lower-cost quality providers: “Code Review would have saved half the cost of fixing bugs” (Best Kept Secrets of Peer Code Review, J Cohen 2006)

• With small effort (i.e 10%) used in defect prevention activities (i.e. design and code reviews) almost one third of all defects could be removed --- The time required for testing was cut by 50% (IEEE The Personal Software Process: Experiences from Denmark)
Improving, Reviewing, Evaluating The Review

• The Review activity/process needs to be reviewed as any other activity/process in the project life cycles and across projects

• The review process in the firma as any other is subjected to changes in workforce, in management and in technology?

• I believe that the Review Process become an Enterprise Discipline in its own right i.e. a concern and a focus at the programmatic/mid management level.

• I believe that the Review Process as any benefits from recent studies in Design Thinking or Artificial Intelligence and even Neurology

• This presentation will focus on the Review as a Discipline and Activity to benefit the whole Enterprise
Reviews As Project Quality Gates

- RQT
- DES
- CODE
- TEST
Inspired from “single loop learning and double loop learning, developed by Chris Argyris and Donald Schön”
A project outside of the Review Space

Individual Limits and Group Limits driving the work flow
Boxes with disconnects

https://www.shutterstock.com/es/search/rope+broken?image_type=photo
Single Loops, Double Loops, Outer Loops

Review Process from enterprise View

Projects 1, 2, 3

DR: Discipline Review
IR,SR: Inter-Discipline Review, System Review
Reviewing The Reviewing Process

Projects 1, 2, 3

DR: Discipline Review
IR,SR: Inter-Discipline Review, System Review

Single Loops, Double Loops, Outer Loops
Reviews The Other Multi-Spaces

Human Factors, Trust, Social, Ego, Empathy

Multi-disciplinary knowledge

Specialized knowledge/Expertise

Discipline Knowledge Space

System Knowledge Space

Social-Psychological Space

Project Space
Solutions: 1 The Chief Review Officer

• Actually: The review wisdom distributor rather than CRO
• CRO as Teacher: Teaches Review Process to all new employees
• CRO as Facilitator: introducing new bees to the hive (reviews)
• CRO as Optimizer: optimizes Review Flow and Review docs-formats
• CRO as Observer: travels to the projects and behaves more observer and not controller to rebuild wisdom in process
• Review part of Gemba(1): Review process not idle in documents or standards

• Gemba: in Japanese, Hot Place ie where the work takes place
Review As The Center of Work Flow

Integrate Workers to IT, Project, Work, tools
Display, automate, customize, control, archive, ready-to-connect-with Future
Solutions 2: The Review Tool

• All Review data from roles, Deltas, files, history at the finger tips
• No worthy review material in embedded emails
• A flexible tool that can change with business needs and other project tools changes
• Customized Review checklists
• No “individual limits” flowing through the system to the edge of the system
Other Results From The Review: Multi-Capital Builder

• From Isolationists to Collaborators
• Review builds social capital: get to know people
• Review builds emotional capital: get to understand people
• Review builds knowledge capital: get to learn from others: Microsoft sees Knowledge Sharing as primary purpose of Code Review
• Can develop mentor/mentee relationships