HIS in the SDP Chapter 4: Managing Risks

Frank Ritter, with help from Barry Boehm
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Glossary

• ACR architecting commitment review
• COTS commercial off the shelf
• ICM incremental commitment model
• LCA life cycle architecture
• OODA loop by Boyd
Agile Change Processing and Rebaselining

Stabilized Increment-N Development Team

Defer some Increment-N capabilities

Negotiate change disposition

Accept changes

Handle Accepted Increment-N changes

Assess Changes, Propose Handling

Handle in current rebaseline

Formulate, analyze options in context of other changes

Recommend deferrals to future increments

Discuss, resolve deferrals to future increments

Rebaseline future-increment LCA packages

Future Increment Managers

Proposed changes

Recommend no action, provide rationale

Prepare for rebaselined future-increment development

Change Proposers

Propose Changes

Discuss, revise, defer, or drop

Agile Future-Increment Rebaselining Team

Future Increment Development Team
ICM HSI Levels of Activity for Complex Systems

<table>
<thead>
<tr>
<th>Activity category</th>
<th>Levels of activity</th>
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<tbody>
<tr>
<td>System</td>
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<td>Envisioning opportunities</td>
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<td>System scoping</td>
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<td>Understanding needs</td>
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<td>Goals/objectives</td>
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<td>Requirements</td>
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<td>Architecting and designing solutions</td>
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<td>a. system</td>
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<td>b. human</td>
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<td>c. hardware</td>
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<td>d. software</td>
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<td>Life-cycle planning</td>
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<td>Evaluation</td>
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<td>Negotiating commitments</td>
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<td>Development and evolution</td>
<td>OC&lt;sub&gt;1&lt;/sub&gt; OC&lt;sub&gt;2&lt;/sub&gt; OC&lt;sub&gt;3&lt;/sub&gt;</td>
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<tr>
<td>Monitoring and control</td>
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<td>Legacy OC&lt;sub&gt;1&lt;/sub&gt; OC&lt;sub&gt;2&lt;/sub&gt;</td>
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<td>Organizational capability improvement</td>
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Managing Risks

• One of five principles of ICM
• Risk: determination of event likelihood (subjective or objective)
  – Stats on grad admissions - perhaps objective (60% come)
  – Likelihood of terrorism attack - probably subjective (might happen)
• And the impact if realized
• Risk is probability X consequences
• Opportunity is the inverse, and should be kept in mind through this process
• To focus on areas where risk handling can have the greatest impact
The Risk Management Process

- Good practices for program management
  - Assumes a stakeholder analysis (e.g., business offer, proposal, specification)
  - Including HSI in this process
  - A program organization
  - Culture of openness

Human-system Integration is an integral thread throughout process management & execution
The Risk Management Process: Identification

- Risk identification not formalized, but
- Involve all stakeholders (e.g., users! Developers, HIS, trainers)
- Iterate risk identification until program completed
- Use nonadvocate technical experts to assist with risk identification
- Encourage identification and recording
- Set up process to afford consistent documentation
The Risk Management Process: Identification

Example risks:
• Performance does not satisfy user requirements
• Performance does not match other stakeholder requirements
• Mismatch of system to context (sand in tools)
• Ability to incorporate HSI to reduce risks including Wrong types of developers and HIS professionals

• Also see Booher and Minniger for long lists of risks that were realised, CMU tech report in Boehm and Hansen, and London ambulance disaster from Set Phasers on stun
• People see what they are trained to see
The Risk Management Process: Analyse

Comments:
• Communication of risks matters (see Rosling talk!)
The Risk Management Process: Handling Options

Comments:
• Dealing with large risks
• HSI has a set of tools for these options, more for avoid (know user and task), Assume (monitor), Mitigate (understand, modify)

1. Undertake for significant risks only
2. Consider the following options in descending order:
   - Avoid the risk (e.g., delete a requirement)
   - Transfer the risk (e.g., reallocate a requirement)
   - Assume the risk (e.g., monitor & reassess)
   - Mitigate the risk (e.g., risk mitigation plan with fallback options)
The Risk Management Process: Execute Handling

Comments:
• These risks may interact
• Need to be monitored
• New ones will arise
• Need to be part of formal process, else, problems can occur
• Ritter’s impression is that in normal progress, risk sizes decrease over time

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