Tool and Data Interoperability in the SSE System

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Overview

- Industry Problems with Program and Data Interoperability
- SSE System Interoperability Issues
- SSE Solutions to Tool and Data Interoperability
- Attaining Heterogeneous Tool/Data Interoperability
Software Development Methods

- Representations
- Deriving the representations
- Examining the representations
Goals

- Maintain separation of methods from tools supporting the methods
- Point of view of methods and tool users, not tool-builders
- Separate classification from evaluation
- Repository for information
- Determine "gaps" in methods and tools
SPIRAL MODEL OF SOFTWARE PROCESS
# Maturity Level / Key Issues

<table>
<thead>
<tr>
<th>Level</th>
<th>Characteristic</th>
<th>Key Problem Areas</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>Optimizing</td>
<td>Improvement fed back into process</td>
<td>Automation</td>
<td>Productivity &amp; Quality</td>
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<tr>
<td>Managed</td>
<td>(quantitative) Measured process</td>
<td>Changing technology</td>
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<td>Problem analysis</td>
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<td>Problem prevention</td>
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<tr>
<td>Defined</td>
<td>(qualitative) Process independent of individuals</td>
<td>Process measurement</td>
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<td>Process analysis</td>
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<td>Quantitative quality plans</td>
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<tr>
<td>Repeatable</td>
<td>(intuitive) Process dependent on individuals</td>
<td>Training</td>
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<td>Technical practices</td>
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<td>• reviews, testing</td>
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<td></td>
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<td>Process focus</td>
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<td>• standards, process groups</td>
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<tr>
<td>Initial</td>
<td>(ad hoc / chaotic)</td>
<td>Project management</td>
<td>Risk</td>
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<td>Project planning</td>
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<td>Configuration management</td>
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<td>Software quality assurance</td>
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Process Definition

- A sequence of life cycle tasks, which when properly executed produces the desired result.

- An effective process must consider:
  - the relationships of all the required tasks
  - the tools and methods used
  - the skills, training, motivation, and management of the people involved
Strategy

Promote the evolution of software engineering from an ad hoc, labor-intensive activity to a managed, technology-supported discipline.
Implementation of Strategy

- Put process under management control
  - define
  - measure
  - optimize

- Adopt appropriate methods

- Insert technology that provides automated support for the process and methods

- Collect automated tools into an integrated environment

- Educate people
CASE

Components

• Process
• Methods
• Computers
• Tools
• Support environments
• Engineers

Currently the engineers are the essential integrating factors tying all these components together.

The engineers today empower the tools versus the tools empowering the engineers.