Requirements Engineering for Global Software Development

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Advantages

- Cost
- Quality
- Flexibility
Stakeholders
Challenges

- Cultural diversity
- Inadequate communication
- Knowledge management
- Time difference

Challenges identified in this field study:
- Differences in customer culture and business
- Appropriate participation from system users and field personnel
- Awareness of local work context and informal communication
- Trusting working relationships
- Manage conflict and have open discussion of interests
- Common understanding of requirements
- Effective meetings
- Delay

RE activities affected by these challenges:
- Elicitation
- Prioritization
- Negotiation
- Validation
- Examining current system
- Managing uncertainty
- Elicitation
- Prioritization
- Negotiation
- Validation
- Examining current system
- Specification
- Analysis
- Prioritization
- Negotiation
- Validation
- Examining current system
- Specification
Diversity in customer culture and business

- Language
- Requirements
Lack of informal communication

- Corridor talk
- Negotiation difficulties
Managing conflict interests

- A lack of open discuss
- Emergent issues
Achieving a common understanding of requirements

- Customers’ requirements vs. Developers’ requirements
- Ambiguous goal and sharing technical knowledge
Task Awareness

Differences in organizational cultures

- Harms the trust relationship between teams
- Slows down the integration process

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<thead>
<tr>
<th>U.S.</th>
<th>Comment and email any changes to colleges</th>
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<tbody>
<tr>
<td>Canada</td>
<td>emailing every intention/commit is overkill</td>
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Task Awareness

Dynamic, Emergent Teams in Software Development

- Different communicate frequency for different teams
- Any awareness system will need to find ways to determine who is relevant for which pieces of information independent of the documented team relationships.
- The team members might change during a development process
Task Awareness

Information Overload and a Lack of Awareness
Business Strategies

- Offshoring
- Onshoring
- Outsourcing
- Insourcing
A Case Study

<table>
<thead>
<tr>
<th>Company</th>
<th>Headquarters</th>
<th>Units Location</th>
<th>DSD Strategies</th>
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<tbody>
<tr>
<td>C1</td>
<td>U.S.</td>
<td>Brazil, India</td>
<td>Offshore Insourcing, Onshore Insourcing</td>
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<td>Brazil, U.S.</td>
<td>Onshore Outsourcing, Offshore Outsourcing</td>
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<td>C3</td>
<td>Canada</td>
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<td>Offshore Outsourcing</td>
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<td>C4</td>
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<td>Canada, India, France, England</td>
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<td>C5</td>
<td>Portugal</td>
<td>Brazil</td>
<td>Offshore Insourcing</td>
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Offshore outsourcing

Challenge

• Software Engineering:
  common process for requirements elicitation (C2)
  common set of development techniques (C3)

• Software quality:
  configuration management (C2,C3)
  common software process among the distributed teams (C3)
# Offshore Insourcing

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## Offshore Insourcing

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<th>C5</th>
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<tbody>
<tr>
<td><strong>Software Engineering</strong></td>
<td>Coding standards</td>
<td>Standard set of tools for analysis and design</td>
<td>Lack of standardization infrastructure and tools</td>
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<td></td>
<td>Software architecture</td>
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<td><strong>Software Quality</strong></td>
<td>Merging different processes</td>
<td>Process integration</td>
<td>Manage many interests at the same time</td>
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<tr>
<td><strong>Project Management</strong></td>
<td>Different language</td>
<td>Lack of standard software configuration policy</td>
<td>Effort, cost estimation, and communication</td>
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<td>Cultural differences</td>
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Suggestions for Insource & Outsource

1. Small project locally
2. Offshore a small project
3. Start a large project offshore
Suggestions for Combination

- Onshore insourcing for small projects
- Outsource small projects onshore
- Larger and more complex projects onshore
- Offshore Insourcing
RCMM
- Requirement Change Management Model

- Changes in customer’s requirements,
- Missing requirements, and
- Change in technology,
- For functional improvement
- Change in managerial strategy
Thank You

Questions?