CORADMO Update
Constructive Rapid Application Development Model

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Background

RAD (Rapid Application Development)
an application of any of a number of techniques or strategies to reduce software development cycle time

COCOMO II Schedule

• Reflects a waterfall process model
• Duration calculation unreasonable for small projects
• Model does not address RAD strategies

COCOMO II Duration Calculation

\[ \text{Months} \approx 3 \sqrt[3]{\text{Person-Months}} \]
COPSEMO Duration Calculation

(Constructive Phased Schedule and Effort Model)
Progress Since Last Year

• Interned at RAD Affiliate
  – C-bridge
• Obtained RAD data, experience
• Enabled resolution of RAD people effects
  – RCAP (RAD Capability of personnel)
• About to complete Delphi Round 1
  – Added experienced RAD participants much needed
• More data is coming in
  – Marotz
RCAP Cost Driver

Accounts for the effects of personnel capability and experience in RAD projects (includes TEAM effect)
Effect of RCAP on Cost, Schedule

Graph showing the relationship between PM and M for different values of RCAP (XL and XH) and different mathematical functions (3.7*(cube root), 3*(cube root), and square root).
## RCAP Delphi Results to Date

EMR = Effort Multiplier Range = Highest / Lowest  
SMR = Schedule Multiplier Range = Highest / Lowest

### Default Values

<table>
<thead>
<tr>
<th>Phase</th>
<th>EMR</th>
<th>SMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inception</td>
<td>1.2/.8=1.5</td>
<td>1.5/.5=3</td>
</tr>
<tr>
<td>Elaboration</td>
<td>1.2/.8=1.5</td>
<td>1.5/.5=3</td>
</tr>
<tr>
<td>Construction</td>
<td>1.2/.8=1.5</td>
<td>1.5/.5=3</td>
</tr>
</tbody>
</table>

### Delphi Respondents

<table>
<thead>
<tr>
<th>Phase</th>
<th>EMR Mean</th>
<th>EMR Standard Deviation</th>
<th>SMR Mean</th>
<th>SMR Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inception</td>
<td>1.50</td>
<td>0.26</td>
<td>2.51</td>
<td>1.01</td>
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<tr>
<td>Elaboration</td>
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<td>0.13</td>
<td>2.42</td>
<td>0.98</td>
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<tr>
<td>Construction</td>
<td>1.50</td>
<td>0.14</td>
<td>2.42</td>
<td>0.97</td>
</tr>
</tbody>
</table>
Revised CLAB Definition

• Originally: Collaboration Efficiency
  – Including some personnel effects
    o Team Cohension, Personnel Experience

• RCAP now covers personnel effects

• New CLAB definition: Collaboration Support
  – Multisite tool support (SITE) plus special collaboration tools
  – Reduced effect on schedule and effort
Next Steps

• Completed Delphi Round 1

• Complete Delphi Round 2

• Gather Data

• Bayesian Analysis

• Get Ph.D.