Executive Overview

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USC Center for Software Engineering
Annual Research Review
Feb. 8, 2000

COCOTS Status:

Briefing Outline

• COCOTS: What does it do?
• Calibration Status
• Tools & Aids Availability
• Future Refinement
Briefing Outline

- COCOTS: What does it do?
- Calibration Status
- Tools & Aids Availability
- Future Refinement
Current Database

- 20 Industrial projects
- Data collection continuing
  - (COCOMO 81 debuted with 63 calibration data points)

Project Domains

(project sources: Army, Navy, FAA, CSE Affiliates)

- Air Traffic Management 8
- Business (including databases) 3
- Communication, Navigation, & Surveillance 4
- Logistics 1
- Mission Planning 1
- Operations 2
- Web-based Maps 1
Classes of COTS Products Represented

- configuration mgmt/build tools
- databases
- data conversion packages
- disk arrays
- compilers
- communication protocols/packages
- emulators
- engineering tools (reqs mgmt, design)
- software process tools
- GUIs/GUI builders
- graphic information systems
- middleware
- operating systems
- network managers
- device drivers
- problem mgmt
- report generators
- back office retail
- telecommunication & infrastructure
- telemetry analysis
- telemetry processing
- word processors

Average Effort & Schedule Across Submodels

A representative COTS product class: GUIs
(4 to 7 datapoints)

<table>
<thead>
<tr>
<th></th>
<th>Assessment</th>
<th>Tailoring</th>
<th>Glue Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average Effort</strong></td>
<td>3.2</td>
<td>53.75</td>
<td>40.75</td>
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<tr>
<td>(pers-months)</td>
<td></td>
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<tr>
<td>range</td>
<td>1 to 6</td>
<td>1 to 186</td>
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<td><strong>Schedule</strong></td>
<td>3.6</td>
<td>16.5</td>
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<td>(months)</td>
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<td>6 to 66</td>
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### Glue Code Cost Drivers Productivity Ranges

<table>
<thead>
<tr>
<th>Personnel capability (ACIPC)</th>
<th>Personnel continuity (APCON)</th>
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<tbody>
<tr>
<td>Personnel experience (ACPX)</td>
<td>App. interface complexity (ACIC)</td>
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<tr>
<td>Reliability constraints (ACREL)</td>
<td>Product experience (ACPPS)</td>
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<tr>
<td>Integration experience (ACIPX)</td>
<td>Training &amp; documentation (ACPTD)</td>
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<tr>
<td>Extension willingness (ACSEW)</td>
<td>Performance constraints (ACPER)</td>
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</tbody>
</table>

#### Current Predictive Results:
**Glue Code Effort**

At 13 pts, COCOTS glue code model within:
- 50% of actuals 62% of the time
- 33% of actuals 38% of the time
  (with 1 parameter calibrated)

At 83 pts, USC COCOMO II.1997 within:
- 30% of actuals 52% of the time
  (with 21 parameters calibrated)
Current Predictive Results:
Glue Code Schedule

At 13 pts, COCOTS glue code model within:
31% of actuals 54% of the time
(with 1 parameter calibrated)

At 83 pts, USC COCOMO II.1997 within:
30% of actuals 61% of the time
(with 2 parameters calibrated)

Briefing Outline

• COCOTS: What does it do?
• Calibration Status
• Tools & Aids Availability
• Future Refinement
### Tools & Estimation Aids

- **COTS Assessment Profiles**
  - full set (~9/1/00)
- **COCOMO II-COCOTS spreadsheet tool**
  - full implementation (~5/1/00)
- **USC COCOMO II-COCOTS software**
  - partial prototype available now/full implementation (?)

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### Assessment Submodel

* [Insert Assessment Profile for Product Class: GUIs]
### Briefing Outline

- COCOTS: What does it do?
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- Future Refinement
Further Data Collection & Calibration

- Expand survey to address maintenance-total life cycle
- 20 points in hand, goal of 20 more data points through the end of the year to raise total to 40
- 7 to 14 good data prospects already identified

*Can you help provide anymore???*
# COTS Assessment Profile

**Product Class:** GUI

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<th>p-wk</th>
<th>p-mt</th>
<th>3 p-mts</th>
<th>N</th>
<th>p-yrs</th>
<th>weighted effort</th>
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<tr>
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<td>U</td>
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<td>VL</td>
<td>L</td>
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<td>H</td>
<td>VH</td>
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## COTS Assessment Profile

**Product Class: GUI**

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<td>VH</td>
<td>EH</td>
<td>.00 - .03pm</td>
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**Other**

| U: unknown | L: 1 p-hr e < 1 p-day | VH: 1 p-mic e < 3 p-mt |
| CL: 0 effort (e) | H: 1 p-day e < 7 p-wk |
| VL: 3 e < 1 per | EH: 3 p-mic e < N p-yrs (N = ) |

**Total weighted effort:** 2.66 - 8.30pm

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