COCOMO International Forum 14

Tools Fair
10/27/99

Tool Summaries – 4:00-5:00PM

Marotz CostXpert – Bill Roetzheim
COSTAR – Dan Liggett
GroupSystems WinWin – Paul Gruenbacher
CORADMO – Winsor Brown
COPROMO – Winsor Brown
COCOMO II Spreadsheet Aides – Winsor Brown
Driver Selection Aide & COCOMO-Charts
Rational Dashboard [Already introduced]
COCOMO II.2000 [Already introduced]
with COCOTS Glue Code & MBASE Phase/Activity Dist.
COPSEMO [Already introduced]
Tool Fair – 5:00-7:00PM

COCOMO II.2000 plus – SAL 329
COSTAR – SAL 324
CostXpert – SAL 324

COCOMO II Spreadsheet Aides and Extensions
- COCOMO II.2000 Driver Setting Aide – SAL 324
- COCOMO-Charts.xls – SAL 324
- COPSEMO – SAL 324
- CORADMO – SAL 337
- COPROMO – SAL 324

COCOMO II.2000 CDROM Preview – SAL 324
Splashscreen [contents] & MM Tutorial

Dashboard [Rational] – SAL 337
GroupSystems WinWin – SAL 318

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www.SoftstarSystems.com
Softstar Systems

Founded in 1985
Costar 1.0 delivered in 1986
Specialists -- Costar is our only product
Unlimited, free, technical support
**Factoid**

Over 1,000,000 licensed Costar users

No other cost estimation tool is so widely licensed!
Costar does COCOMO

COCOMO II
Traditional COCOMO 81
Incremental COCOMO
Ada COCOMO
REVIC

Your customized or calibrated version
Version 6 Features

COCOMO II.2000 built in
Improved Component Navigation
Export to DBs and Spreadsheets
32 bit version
User-defined phases
  Traditional waterfall
  MBASE
  REVIC
  Your custom version
Support for Windows 95, 98, NT, and 2000
Calico 6.0 included
Downloads from www.SoftstarSystems.com

Demo of Costar
Calico for COCOMO Calibration
COCOMO II.2000 model for Costar 5.0
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
  Need stronger capability to reason about RAD Opportunity
  Tree strategies/tradeoffs
  - Reuse, Very High Level Languages (VHLL) (RVHL)
  - Development Process Reengineering (DPRS)
  - Collaboration Technology (CLAB)
  - Architecture, Risk Resolution (RESL)
  - Prepositioning Assets (PPOS)
Physical COCOMO II RAD Extension

COCOMO II cost drivers

COCOMO II.1999

COCOMO.xls

RESL, Baseline effort, schedule

Stage Distributions (COPSEMO Extension)

Effort, schedule by stage; No SCED

RAD effort, schedule by stage

COCOMO II COCOMO 11.99 cost drivers

Main.csv & Phase.csv

Baseline Effort & Schedule

% Distributions of Schedule and Effort

An Example of Implementation

COCOMO II RAD Extension

University of Southern California
Center for Software Engineering

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An Example of Implementation (cont.)

1. Apply the product of user selected Schedule Multipliers to each PM, M, and P in each stage.

2. Out courtesy plot of P vs M.

<table>
<thead>
<tr>
<th>Stage</th>
<th>PM</th>
<th>M</th>
<th>P</th>
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<td>1</td>
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<td>2</td>
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<tr>
<td>3</td>
<td></td>
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3. Calculate Eff of P vs M.

4. Elaboration

5. Construction

6. Analysis

7. Evaluation

8. Testing

9. Maintenance

10. Operation

<table>
<thead>
<tr>
<th>Month</th>
<th>Eff</th>
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<td>0</td>
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COPROMO

Constructive Productivity Model

A. Winsor Brown, USC
COCOMO International Forum 14 Tool Fair
October 1999
RESL: Architecture/Risk Resolution

RESL: Architecture/Risk Resolution

CD: Significant gains due to open systems technology, commercial OO architecture technology and DoD emphasis on risk management
KG: Significant additional gains over CD via domain architectures
KD: Significant additional gains over CD via architecture and risk advisor technology
K: Complementary gains from KD and KG
E: Major additional gains over CD via domain architecture, general architecture technology, high assurance technology, and ultimate capture
EK: Complementary gains from E and K

Driver Baseline
RESL default 3.97
RESL new

Major additional gains over CD via domain architecture, general architecture technology, high assurance technology, and ultimate capture

RVHL: Reuse and Very High Level Language

Schedule

Baseline: Relatively low current capability and experience in EHART domain (standard 3GL module reuse)
CD: As indicated under SIZE in the Effort impact analysis, commercial technology and DoD EHART domain initiatives will provide some but not much improvement over standard 3GL module reuse
KG: Some gains over CD via domain oriented reuse asset identification and decision support
KD: Some gains over CD via domain oriented prototype applications generation
K: Complementary gains from KD and KG
E: Significant gains over CD via domain architecture technology and associated prototype applications generation
EK: Some complementary gains from E and K

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## RVHL: Reuse and Very High Level Language (cont.)

<table>
<thead>
<tr>
<th>Schedule</th>
<th>RVHL: Reuse and Very High Level Language</th>
<th>Elaboration</th>
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<td>2033</td>
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<table>
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<th>RVHL Schedule Multipliers: Elaboration</th>
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<tr>
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### RVHL Projection Rationales (Repealed)
- Baseline: Relatively low current capability and experience in EHART domain (standard 3GL module reuse)
- CD: Some gains over CD via domain oriented prototype applications generation
- KG: Some gains over CD via domain oriented prototype applications generation
- K: Some gains over CD via domain oriented prototype applications generation
- E: Significant gains over CD via domain oriented prototype applications generation
- EK: Some complement any gains from E and K

**Note:** RVHL-Construction schedule multipliers are all 1.0

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### Impact of Technologies on Software Effort or Cost

**Effort**

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## COCOMO II.2000 Spreadsheet

### Part Architecture Model

<table>
<thead>
<tr>
<th>Scale Factor (SF) Section</th>
<th>Action Applicable</th>
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<th>Low</th>
<th>Nominal</th>
<th>High</th>
<th>Very High</th>
<th>Extra High</th>
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\[ SF = 28.50 \]

\[ B = 0.91 + 0.01 \times (PREC+FLEX+RESL+TEAM+PMAT) \]

\[ B = 1.195 \]

### EM Section : Product Factors

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<th>Nominal</th>
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### System Factors

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PREC Driver Value Selection

**Precededness (PREC)**

If the product is similar to several that have been developed before then the precededness is high.

**Features to evaluate PREC**

<table>
<thead>
<tr>
<th>Organizational understanding of product objectives</th>
<th>Selected rating indicated by &quot;xxx&quot;</th>
<th>Value overivable in colored field</th>
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<tbody>
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<td>Through</td>
<td>Extra High</td>
</tr>
<tr>
<td>Through</td>
<td>Extra High</td>
<td>Through</td>
</tr>
</tbody>
</table>

**Experience in working with related sw systems**

| Very Low                                      | Moderate                        | Considerable                    |
| Low                                           | Norm                            | Considerable                    |
| High                                          | Extra High                      | Extra High                      |
| Extra High                                    | Through                         | Extra High                      |
| Through                                       | Extra High                      | Through                          |

**Current development of associated new law and operational procedures**

| Very Low                                      | Moderate                        | Considerable                    |
| Low                                           | Norm                            | Considerable                    |
| High                                          | Extra High                      | Extra High                      |
| Extra High                                    | Through                         | Extra High                      |
| Through                                       | Extra High                      | Through                          |

**Need for innovative data processing architecture, algorithms**

| Very Low                                      | Considerable                    | Some                            |
| Low                                           | Norm                            | Some                            |
| High                                          | Extra High                      | Extra High                      |
| Extra High                                    | Through                         | Extra High                      |
| Through                                       | Extra High                      | Through                          |

**SUM**

6.00

**Suggested rating:** (Input your rating based on the suggested rating scale. Sum → rating)

- 5.33 → VL
- 7.33 → Norm
- 9.33 → VH

**Total Evaluation**

<table>
<thead>
<tr>
<th>Very Low</th>
<th>Low</th>
<th>Norm</th>
<th>High</th>
<th>Extra High</th>
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<td>2.48</td>
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**Your Rating**

6.28

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Driver Selection Aide

COCOMO II 2.0000

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