Agile COCOMOII

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Need for Agile COCOMOII

• Jeffery survey: 85% of software projects estimate by analogy
  – Size, productivity, velocity
• Most project use ‘Yesterday’s weather’ algorithm
  – Today will be just like yesterday
• If today is different, estimate will be wrong
• COCOMO II has parameters to account for most of the differences
  – But running COCOMOII requires setting over 20 parameters
• Agile COCOMOII provides simple COCOMOII analogy estimates
Goal of Agile COCOMOII

- **Goal**: Provide project managers with a simple mechanism for quick, accurate and reliable cost and effort estimates that:
  - Is self-explanatory
  - Requires minimum inputs
  - Leverages past experience with similar projects while accounting for differences
  - Leverages the accuracy and reliability of the proven COCOMOII model
Agile COCOMOII terminology

- **Analogy parameter**: The basis of similarity between a previous project and a new project. e.g. Productivity in FP/person-month, Total effort in person-months, Total cost in Dollars.

- **Baseline value**: The value of a specific analogy parameter for the old project eg: 5 FP/person-month, 40 person-months, $100,000 Dollars.

- **Cost Driver**: The COCOMO II cost driver that has changed between the old and new projects. More than one cost drivers may have changed between projects.

- **Scale Factor**: The COCOMOII scale factor that has changed between the old and new projects. More than one scale factors may have changed between projects.
Agile COCOMOII emphasizes simplicity

- Web based; self-explanatory tool
- Analogy based; choice of parameters
  - Cost in $,
  - Effort in person-months,
  - Project velocity in ideal-person-weeks/iteration-period,
  - Productivity in $/FP,
  - Productivity in $/person-month,
  - Productivity in FP/person-month
  - Productivity in LOC/person-month
- Values are only requested when necessary
  - Minimize keystroke per estimate
- No file system: print, copy & paste simple reports
- Easy to tailor
Agile COCOMOII tool

• One cycle to vary one cost driver/scale factor

• Four steps per cycle:
  1. Specify analogy parameter and its baseline value
  2. Choose cost driver/scale factor to be changed in this cycle
  3. Provide old and new values for the cost drivers/scale factor
  4. As necessary, specify size to relate productivity to effort

• At end of cycle, choose one action:
  – View report
  – Change a cost driver/scale factor independent of previous
  – Change a cost driver/scale factor in addition to previous
  – Go back to initial estimate
  – Estimate another project
Agile COCOMO II

Agile COCOMO II is a web-based software cost estimation tool that enables you to adjust your estimates by analogy through identifying the factors that will be changing and by how much.

Step 1 - Initialization
Project Name: MyProject
Analogy Parameters: Total Cost in Dollars
Baseline Value for Analogy Parameter Selected: 100000 Dollars
Basis of estimation: Cost Drivers
Cost drivers that may change for the next project: [ ] Cost Drivers, [ ] Scale Factors
Major Cost Driver Categories: Product, DataBase Size

Step 2 - Define the Cost Driver Adjustments - Product (DataBase Size)
Rating Level | L | N | H | VH
---|---|---|---|---
Rating Description | DB bytes / Pgm SLOC < 10 | 10 <= D/P < 100 | 100 <= D/P < 1000 | D/P > 1000
COCOMO Multipliers | 0.90 | 1.00 | 1.14 | 1.28
Past Project: [ ]
New Project: [ ]

Step 3 - Compute New Project Cost
New Project Cost: 114000 Dollars

What would you like to do next? [ ] Change an Additional Cost Driver/Scale Factor, [ ] Continue
Agile COCOMO II is a web-based software cost estimation tool that enables you to adjust your estimates by analogy through identifying the factors that will be changing and by how much.

**Step 1 - Initialization**

**Project Name**
MyProject

**Analogy Parameters**

New (calculated) Baseline Value for Analogy Parameter Selected
114000 Dollars

**Basis of estimation:**

Cost drivers that may change for the next project
- [ ] Cost Drivers
- [ ] Scale Factors

**Major Cost Driver Categories:**
- [ ] Product
- [ ] Developed for Reusability

**Step 2 - Define the Cost Driver Adjustments - Product (Developed for Reusability)**

**Rating Level**

<table>
<thead>
<tr>
<th>Rating Description</th>
<th>L</th>
<th>N</th>
<th>H</th>
<th>VH</th>
<th>XH</th>
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<tr>
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<td>1.07</td>
<td>1.15</td>
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<tr>
<td>COCOMO Multipliers</td>
<td>Past Project</td>
<td>New Project</td>
<td></td>
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</table>

**Step 3 - Compute New Project Cost**

New Project Cost
131100 Dollars

What would you like to do next?
- [ ] Change an Additional Cost Driver/Scale Factor
- [ ] Continue
Agile Cocomo II is a web-based software cost estimation tool that enables you to adjust your estimates by analogy through identifying the factors that will be changing and by how much.

**Step 1 - Initialization**

**Project Name**

MyProject

**Analogy Parameters**

New (calculated) Baseline Value for Analogy Parameter Selected

131100 Dollars

**Basis of estimation:**

Cost Drivers Scale Factors

**Source Lines of Code (in Kilo Lines of Code):**

10

**Scale factor that may change for next project:**

Precededness

**Step 2 - Define old and new scale factor values (for Precededness)**

<table>
<thead>
<tr>
<th>Rating Level</th>
<th>VL</th>
<th>L</th>
<th>H</th>
<th>VH</th>
<th>XH</th>
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</thead>
<tbody>
<tr>
<td>Level of Precededness</td>
<td>Thoroughly unprecedented</td>
<td>Largely unprecedented</td>
<td>Somewhat unprecedented</td>
<td>Generally familiar</td>
<td>Largely familiar</td>
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<tr>
<td>Scale factor multipliers</td>
<td>6.20</td>
<td>4.96</td>
<td>3.72</td>
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</tbody>
</table>

**Last project values**

- ○
- ○
- ○
- ○
- ○
- ○

**Current project values**

- ○
- ○
- ○
- ○
- ○
- ○

**Step 3 - Compute New Project Cost**

**New Project Cost**

138804.23 Dollars

What would you like to do next?

View Report
Agile COCOMO II Report

Project: MyProject
Analogy Parameter: Total Cost in Dollars
Baseline Value: 100000 Dollars   Cost Driver: Product (DataBase Size)
Old Cost Driver Value: 1.00   New Cost Driver Value: 1.14
New Project Cost: 114000 Dollars

New Activity Selection: Change an Additional Cost Driver/Scale factor
Baseline Value: 114000 Dollars   Cost Driver: Product (Developed for Reusability)
Old Cost Driver Value: 1.00   New Cost Driver Value: 1.15
New Project Cost: 131100 Dollars

New Activity Selection: Change an Additional Cost Driver/Scale factor
Baseline Value: 131100 Dollars   Scale Factor: Precedentedness
Old Scale Factor Value: 1.24   New Scale Factor Value: 3.72
Source Lines of Code: 10 KSLOC
New Project Cost: 138804.23 Dollars