Agile COCOMOII

CSE Annual Research Review

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Gunjan Sharman, gsharman@usc.edu

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

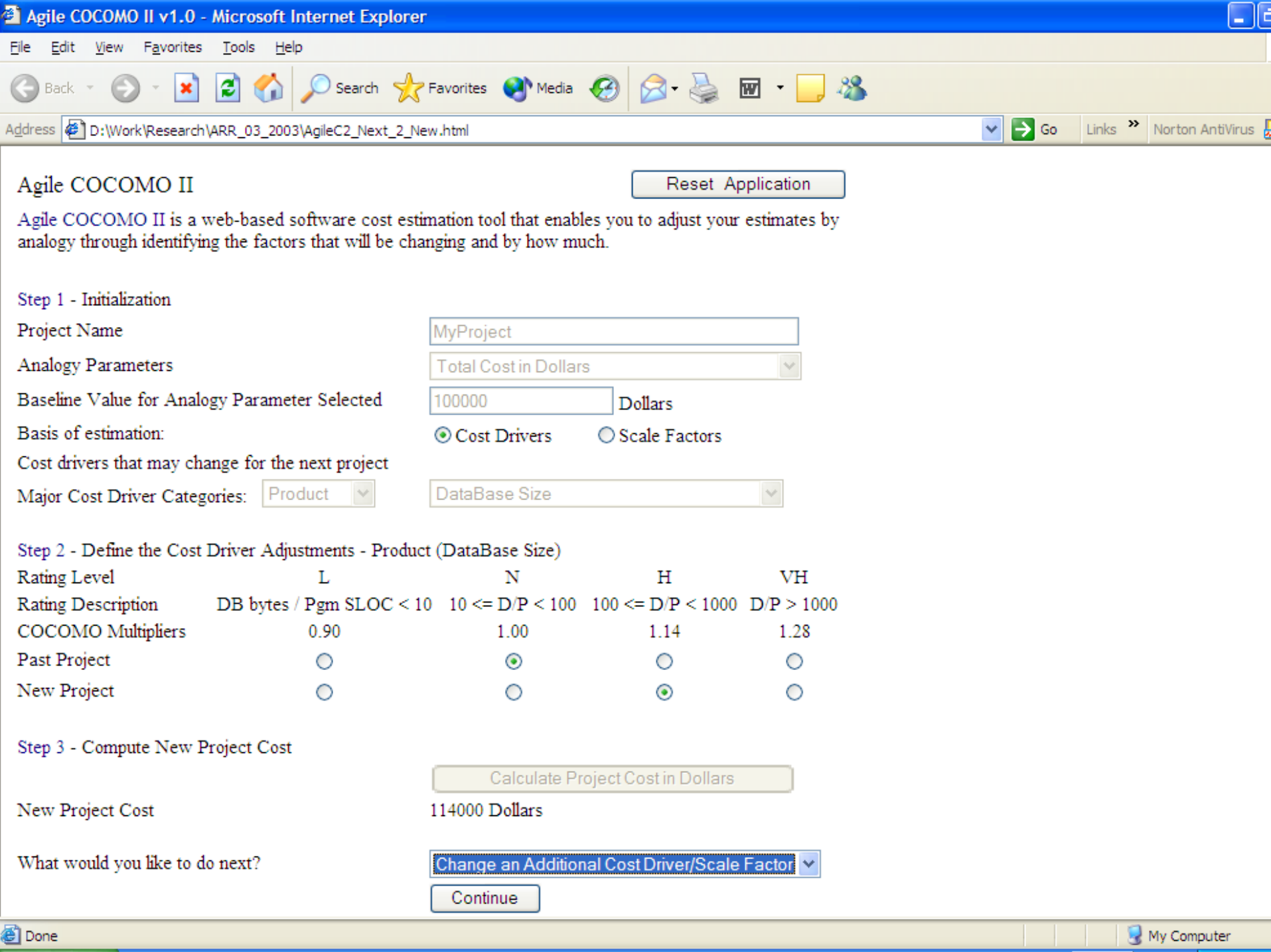
- Analogy parameter: The basis of similarity between a previous project and a new project.
  e.g. Productivity in FP/person-month, Total effort in person-months, Total cost in Dollars.
- Baseline value: The value of a specific analogy parameter for the old project
  eg: 5 FP/person-month, 40 person-months, $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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Agile COCOMO II
Reset Application
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
Scale Factors
Cost drivers that may change for the next project
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
Calculate Project Cost in Dollars
New Project Cost
114000 Dollars
What would you like to do next?
Change an Additional Cost Driver/Scale Factor
Continue
Done
My Computer

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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

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

Basis of estimation: (•) Cost Drivers ( ) Scale Factors

Cost drivers that may change for the next project

Major Cost Driver Categories: Product — Developed for Reusability

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

Rating Level	L	N	H	VH	XH
Rating Description	None	Across project	Across program	Across product line	Across multiple product lines
COCOMO Multipliers	0.95	1.00	1.07	1.15	1.24
Past Project	( )	(•)	( )	( )	( )
New Project	( )	( )	( )	(•)	( )

Step 3 - Compute New Project Cost

Calculate Project Cost in Dollars

New Project Cost: 131100 Dollars

What would you like to do next? Change an Additional Cost Driver/Scale Factor

Continue

Done My Computer

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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
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	Precedentedness

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

Rating Level	VL	L	N	H	VH	XH
Level of Precedentedness	Thoroughly unprecendented	Largely unprecendented	Somewhat unprecendented	Generally familiar	Largely familiar	Thoroughly familiar
Scale factor multipliers	6.20	4.96	3.72	2.48	1.24	0.00
Last project values	○	○	○	○	◉	○
Current project values	○	○	◉	○	○	○

Step 3 - Compute New Project Cost

Calculate Project Cost in Dollars

New Project Cost 138804.23 Dollars

What would you like to do next? View Report

My Computer

Agile COCOMO II Report - Microsoft Internet Explorer
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Back Search Favorites Media
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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

Done My Computer