

Software Composition Technologies

Helping People Gain Control of Software Development

Software Estimation – 25 Years and Still Guessing

Raymond Boehm

Voice: 732.906.3671 Fax: 732.906.5728

www.softcomptech.com

Introduction

- *25 Years of Estimating Tools*
- *Software Development Trends*
- *Perplexing Management Choices*
- *Agile Estimating & Planning*
- *Today's Project Estimating Tools*
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25 Years of Estimating Tools

- *Estimating with Function Points*
- *Dr. Barry Boehm's COCOMO*
- *Dr. Howard Rubin's Estimacs*
- *T. Capers Jones and SPR*
- *Lawrence Putnam's SLIM*
- *Other Estimating Tools/Techniques*
- *Which Tool is Best?*

Estimating with Function Points

- *1979 – Introduced to GUIDE/SHARE*
- *1983 – IEEE Transactions*
 - *A.J. Albrecht and J.E. Gaffney compare predictive power of FPs vs SLOCs*
 - *C.A. Behrens used FPs to measure productivity in software development*
- *2004 – 25 Years and Still Counting!*

Dr. Barry Boehm's COCOMO

- *1981 Version Makes No Significant Mention of Function Points*
- *1993-4 – NASA's COSTMODELER Marries Function Points and COCOMO*
- *2000 – COCOMO II Uses Unadjusted Function Points as a Size Driver*
- *COCOMO Made Estimating Tools a Cottage Industry for Anyone with \$50!*

Dr. Howard Rubin's Estimacs

- *Actually a Family of Estimation Models*
- *Main Model Used "Macro" Function Points*
- *Small Projects Used Function Points*
- *DOS Version Still Available from Computer Associates*

T. Capers Jones and SPR

- *SPQR/20 Was First Commercial Tool to Use Function Points as a Driver*
- *CheckPoint Improved SPQR/20*
- *1997 – SPR/KnowledgePLAN Wins Software Development Magazine Jolt Award*
- *KnowledgePLAN is Coming to the Web*

Lawrence Putnam's SLIM

- *First Appeared in 1978*
- *Based on Rayleigh Curve*
- *Uses Linear Programming and Statistical Simulation*
- *Supports the Use of Function Points*
- *Still Supported by QSM*

Other Estimating Tools/Techniques

- *1982 – Tom DeMarco’s Bang*
- *David Garmus & Herron’s Predictor*
- *1994 – Lorenz & Kidd’s OO Metrics*
- *Steve McConnell*
 - *Construx Estimate*
 - *Estimate Professional*
- *And Many More*

Which Tool is Best?

- *A Beauty Contest Where Nobody Wins!*
 - *Hypothetical Studies Result in Order of Magnitude Differences.*
 - *Actual Studies are Suspect.*
 - *Few Will Say “x% Accurate y% of the Time”*
 - *2004 – 25 Years and Still Guessing!*
- *Why go on? At the Grand Prix, It's the Driver, Not the Car!*

Software Development Trends

- *End-User Programming*
- *Intermediate Sectors*
 - *Application Generators & Composition Aids*
 - *Application Composition*
 - *System Integration*
- *Infrastructure*

Perplexing Management Choices

■ *Plan-Driven Methods*

- *Traditionally – Waterfall*
- *Now – Incremental and Evolutionary*

■ *Agile Methods*

- *Chaordic = chaos + order*
- *Balance Between Business & Development*

■ *Boehm & Turner. Balancing Agility and Discipline: A Guide for the Perplexed*

Agile Estimating & Planning

■ *The XP Planning Game*

- *Maximize Value of Developed Software*
- *Played by Business and Development*
- *Stories are Estimated and Velocity Set*

■ *XP Iteration Planning*

- *All Developers Are Involved*
- *Each One Estimates Their Tasks and Chooses Their Load Factor*

Project Estimating Today

- *Function Points – Obviously!*
- *COCOMO*
 - *COCOMO II is the Latest Model*
 - *The COCOMO Suite Contains Other Items*
- *International Software Benchmarking Standards Group (ISBSG) Has Estimating Tool and Data on Thousands of Projects*

Resources for Additional Information

- <http://www.ifpug.org> for *Function Points*
- <http://sunset.usc.edu/research/cocomosuite/index.html> for *COCOMO Suite*
- <http://www.isbsg.org> for *ISBSG*
- <http://www.agilealliance.org> for *Information on All Things Agile*
- <http://www.softcomptech.com> for *Updates on This Material*