



Agile Estimating

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Introduction



- **Agile Development and Its Estimation**
- **Traditional Estimating**
- **All Estimating Lends Itself to an Agile Solution**
- **Can Any Process Be Made Agile**
- **Composing an Agile Estimating Process**
- **ELFE and Elf Poker**
 - **Bottom-Up Studies**
 - **Top-Down Design**
- **Further Research**
- **An Agile Approach to Early Lifecycle Estimating**

Agile Development

<i>Barry Boehm and Richard Turner</i>	Agile	Planned
Application	<i>Changeable</i>	<i>Larger Teams & Projects</i>
Management	<i>Customer Part of Team</i>	<i>Document Plans & Requirements</i>
Technical	<i>Short Increments Many Releases</i>	<i>Voluminous Test Cases and Plans</i>
Personnel	<i>Highly Capable Thrive on Chaos</i>	<i>Specialists who Thrive on Order</i>

Estimating Agile Development



- **Constant Record Keeping And Estimating**
 - **Development Stories Assigned Story Points**
 - **Velocity of Team Calculated at End of Iteration**
 - **Estimate is Remaining Story Points / Velocity**
- **In 2004, Jim Highsmith wrote “Managers are freaking out” over differences between agile development and traditional project management**

Traditional Estimating



- **Estimate Function Points**
 - **FP Lite by David Herron**
 - **NEMA Estimate and Indicative**
 - **Simplified FP Method - Candido and Sanchez**
 - **Early Function Points - Santillo and Meli**
- **Translate FPs to SLOC (Jones)**
- **Use Conventional Model**
 - **COCOMO**
 - **SLIM**
 - **SPQR KnowledgePLAN**

Can Any Process Can Be Made Agile?



- **Work at Pace University (Fred Grossman)**
 - **Robert Zandoli - Outsourcing**
 - **Ray Boehm - Estimating**
 - **Mike Homeyer - Project Management**
- **Applying Agile and Software Development Techniques to Process Development - Nelson Perez, Sierra's Edge, Inc**
- **Presentations by David Garmus and DCG**
- **Accelerating Process Improvement Using Agile Techniques - Deb Jacobs**

Composing an Agile Estimating Process



- **Adhere to Agile Values like Valuing Customer Collaboration Over Contract Negotiation**
- **Recast Agile Principles**
 - **In Development - “Working software is the primary measure of progress.”**
 - **In Estimating - “A complete estimate, even with a margin of uncertainty, is the primary measure of progress.”**
- **Use eXtreme Programming Principles**
 - **The Planning Game**
 - **Refactoring**
 - **Collective Ownership**
 - **Continuous Integration**

ELFE and Elf Poker



o Bottom Up Studies

- **Application Areas are Early Predictors of Size**
- **Keywords in Stories are Predictors of Size**
- **Functional Split Between Data and Transactions**
- **Value Adjustment Factors Still Average 1.00**

o Top Down Design

- **Early Lifecycle Functionality Estimating**
- **Elf Poker**
- **Agile COCOMO II**

Application Areas are Early Predictors of Size



Intermediate	Medium	Large
Banking	Accounting	Inventory
Insurance	Engineering	Logistics
Pension	Financial	Manufacturing
Research	Legal	Personnel
Sales	Network	
	Services	

Small Projects Serve a Single Business Unit – In Most Cases

Keywords in Stories are Predictors of Size



- **Keywords May Be Verbs, Nouns, Modifiers or Ambiguous (like Record)**
- **Like a Tell in Poker, Subtle Differences Are Significant. For example,**
 - **Create a Customer Entry (High EI)**
 - **Create a New Customer Entry (25-50 UFPs)**
- **Lists of Transactions and Components are Found in Dissertation**
- **The Lists Result From Keyword Analysis of 50 Function Point Counts**

Functional Split Between Data and Transactions



<u>Type</u>	<u>Ratio</u>
EI	33%
EO	23%
EQ	16%
ILF	23%
EIF	5%

Value Adjustment Factors Still Average 1.00



- o Value Adjustment Factors Account For System Wide Technical Considerations**
- o They Averaged 1.00 When Function Points Were Invented**
- o For Years, Practitioners Assumed the Average Grew**
- o The Average Value is Still 1.00!**
- o This Allowed VAF Predictions By Platform**
- o This Saves Time in the Estimating Process**

Early Lifecycle Functionality Estimating



- **Draft Scope and Boundary**
- **Analyze Business Areas**
- **Calculate Unadjusted Function Points**
 - **Identify Locations**
 - **Identify Roles**
 - **Identify Transactions**
 - **Identify Data**
 - **Recognize File Maintenance**
 - **Check Functional Ratios**
 - **Refine Complexity**
- **Calculate Value Adjustment Factor**
- **Complete Projection**

Elf Poker



- **Set Up**
 - **Dealer (Estimator)**
 - **2-10 Players (Customers)**
 - **3 or 4 Sessions – Each 1-3 Hours Long**
- **Objective Is to Develop Stories to Estimate, Not Develop the Estimate Itself**
- **Play**
 - **The Initial Rounds – Business Areas, Locations & Roles**
 - **The Story Rounds – Write Estimable Stories**
 - **The Dealer (Estimator) Has Between-Session Tasks**
 - **The VAF Rounds – Establish Value Adjustment Factor**
 - **The Scope Creep Rounds – Lets Customers Evaluate**

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

Estimate Cost: Estimate Effort:

Analogy Parameter: Productivity in Function Points / Person-Months

Project Name:

Baseline Value: (Function Points / Person-Months)

Current Project Function Points

Estimation History:

#	Driver/Factor	Current	New	Estimated Effort (In PM)	Command
0	N/A	N/A	N/A	17.15	(starting)
1	Cost Driver (Product-Required Software Reliability)	H (1.1)	VL (0.82)	12.78	Update Delete

Further Research



- **Extend ELFE for Enhancements**
- **Extend ELFE for Multi-Project Initiatives**
- **Enrich Poker Metaphor to Address Risk**
- **Build Automated Tools for ELFE Poker**
- **Function Point Patterns**

An Agile Approach to Early Lifecycle Estimating



- **Estimating Project Size Early in the Life Cycle (FP-221) - March 2006**
- **Measuring Software Size Without Function Points**
- **Function Point Counting Patterns (Co-author Paper) - March 2006**
- **Agile Project Management - September 2006**
- **NYC SPIN Meeting - October 2006**
- **Agile2007 - Research In Progress**
- **Estimating Project Size Early in the Life Cycle (FP-221) - September 2007**
- **Function Point Keywords - September 2007**