Credible Software Cost Estimates

Software Development Cost Estimating Handbook

Systems & Software Technology Conference

21 April 2009
Purpose of Briefing

- Introduce handbook
- Approach, structure, and format
- Brief explanation of four parts, ten sections, and appendices
- Future plans
- How to obtain a copy
Roles and Responsibilities

- **Software Technology Support Center (STSC), Hill AFB, UT**
  - Researching
  - Blueprinting
  - Technical writing
  - Internal reviewing/editing

- **Naval Center for Cost Analysis (NCCA), Arlington, VA**
  - Funding
  - Technical advising
  - Technical reviewing

- **Air Force Cost Analysis Agency (AFCAA), Arlington, VA**
  - Funding
  - Technical advising

- **CrossTalk (STSC), Hill AFB, UT**
  - Editorial reviewing
Timeline of Key Events

- Feb 98: Publication of original Software Handbook
- Mar 05: Coordinated agreement for new volume
- Aug 05: Kick-off of revision efforts
- Mar 07: Redirection on format/style
- Oct 07: Second redirection on format/style
- Feb 08: Handbook status briefed at DoDCAS
- Apr 08: Independent technical review
- Jul 08: CrossTalk editorial reviews
- Aug 08: NCCA technical review
- Sep 08: Completion of final draft revision
- 1st Qtr 09: “Beta Test” of handbook
- Jan 09: Release/posting of final revised handbook

42 Month “Labor of Love”
Handbook Purposes

Basic

Advanced

Reference
Estimating Basics

- Software Development Process
- Estimating process
  - System level
  - Component level
- Details
  - Size
  - Productivity
  - Developer capability
  - Environment
  - Product characteristics
- Reality check
In Depth Information

- Procedural steps
- Case studies
  - System level
  - Component level
- Guidelines
  - Practical
  - Historical, analogous
- Effort allocation
  - Development
  - Maintenance
Resources Provided

- Software development processes
- Software estimating models
- Defense Acquisition Framework
- Data collection
- Acronyms
- Terminology
- References
Handbook Structure

- **Four main parts**
  - Basics
  - Estimating process
  - Estimating details
  - Appendices

- **Format**
  - Textbook style
  - Designed for readability and comprehension
  - Large right margin for notes
Part I - Basics

- **Introduction**
  - Handbook overview
  - Software development and estimating principles
  - Key concepts

- **Software development process**
  - Background information
  - General understanding level
  - Effects of acquisition phase on estimate
  - Software engineering considerations
Part II – Estimating Process

- **Software estimate types**
  - System- and Component-level estimates
  - Controlling factors

- **System-level estimating**
  - Early in acquisition process
  - Details not available or final
  - Productivity constant and effective size

- **Component-level estimating**
  - Detailed product information
  - Defined environment
  - Cost and schedule estimates
Part III – Estimating Details

- **Effective size**
  - Source Lines Of Code (SLOC)
  - Function Points

- **Productivity**
  - Product type
  - Developer characteristics

- **Developer capability**

- **Development environment**

- **Product characteristics**
  - Complexity
  - Constraints
Appendices A - E

- **Appendix A: Acronyms**
- **Appendix B: Terminology**
- **Appendix C: Bibliography (References)**
- **Appendix D: Software Life Cycle Approaches**
  - Traditional
  - Other
- **Appendix E: Software Estimating Models**
  - Analogy
  - Expert Judgment
  - Bottom-up
  - Parametric
  - First, Second, and Third Order

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Appendices F - G

Appendix F/G: System-Level/Component-Level Estimate Case Study

- Detailed examples
- Step-by-step approach
- Baseline size
- Code growth
- Productivity
- Effort (cost) and schedule
- Maintenance
- Nominal and worst case
- Reality check
- Effort allocation
Appendices H - I

- **Appendix H: The Defense Acquisition System**
  - Definitions
  - Defense Acquisition Framework
    - Activities
    - Phases
  - References/Resources
- **Appendix I: Data Collection**
  - Generic collection template
  - Validation
  - Normalization
  - Use in models
Future Revisions

- **Living, growing document**
  - Corrections
  - Updates (notionally every 12-16 months)
  - Research
    - DCARC
    - Auto-Gen code
  - Abridged version

- **Next Phase**
  - Automated Information Systems
  - Enterprise Resource Planning (ERP) programs
Handbook and Survey Locations

- **NCCA online library**

- **STSC website**
  - [http://www.stsc.hill.af.mil](http://www.stsc.hill.af.mil)

- **Handbook Survey**
  - Comments on current version and recommendations for future enhancements
  - Available at SSTC in hard copy or on NCCA and STSC’s web-sites
Questions