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Course 310: Software Project Estimation (2 days)

Course Description...

A key characteristic of successful software engineering is the availability of enough time and resources – budget and skilled personnel – to do the job. Fortunately, a variety of statistical tools and techniques are available to help the project manager make solid estimates of the resources needed, and to update the estimates in a timely fashion as the situation dictates. This course explores the properties and limitations of a broad range of well-understood techniques for software project estimation.

Learning Objectives...

- Characterize a variety of popular estimation techniques, such as function point analysis, analogy, and bottom-up estimation
- Identify criteria for selecting a suitable estimation technique for a given project
- Explore the process for designing, implementing, and sustaining an organizational statistical database to support estimation efforts
- Examine the characteristics of well-established cost estimation tools, such as Boehm's Constructive Cost Model (COCOMO).

Who should attend...

Audience includes project managers at all levels of experience, software quality and metrics specialists, and software practitioners with an interest in elevating their software estimation cost and schedule estimation skills.

Prerequisites...

No specific prerequisites are required.

See next page for a detailed course outline...



Course Outline

Introduction and Overview

Course Objectives

Chapter 1: Introduction to Software Estimation

Chapter Objectives

Estimation Concepts

- The need for estimation
- Definitions
- Estimation products
- Analogy and wideband Delphi
- Using expert judgment
- Using automated tools

Estimation Accuracy

- Accuracy vs. project phase
- Factors affecting accuracy
- Factors affecting productivity
- Project sizing issue
- Effort is not linear

Chapter Summary and Best Practices

Chapter 2: The Estimation Process

Chapter Objectives

Concepts

- Selecting an approach
- Process characteristics

Process Description

- Estimate product size
- Estimate cost and effort
- Estimate schedule
- Assess risk
- Inspect and approve
- Track and report
- Measure and improve process
- Process metrics

Related issues

- Process participants
- Computations at various project phases
- Selecting estimation frequency
- Estimation process maturity
- Using organizational history

Workshop: Estimation Database Structure

Chapter Summary and Best Practices



Chapter 3: Estimation Based on Function Points

Chapter Objectives

Function Point Definition

- External inputs (EI)
- External outputs (EO)
- External inquiries (EQ)
- Internal logical files (ILF)
- External interface files (EIF)

Function Point Counting Process

- Types of count
- Application scope and boundary
- Identifying data
- Identifying transactional functions
- EIF and ILF complexity
- EI, EO, and EQ complexity
- Classifying use case descriptions
- Computing unadjusted function points
- Using value adjustment factors

Workshop: Counting Function Points

Shortcuts

- ISBSG profile
- All average function points
- One-file model
- Estimating based on use cases
- Backfiring

Workshop: Using Function Points

Chapter Summary and Best Practices

Chapter 4: Effort and Duration

Chapter Objectives

Estimating Effort

- Converting size to effort
- PERT sizing
- Using effort ratios

Estimating Duration

- Converting effort to duration

Workshop: Converting function points to effort and duration

Chapter Summary and Best Practices



Chapter 5: Estimation Tools

Chapter Objectives

- Comparing manual and automated methods
- Benefits of automated techniques
- Automated estimation process
- Tool characteristics
- Tool directory

Tool Demonstration

Chapter Summary and Best Practices

Chapter 6: Selecting an Estimation Approach

Chapter Objectives

Best Practices in Expert-Based Estimation

- Reducing situational and human bias
- Provide support to estimation process
- Provide estimation feedback and training opportunities

Best Practices in Model-Based Estimation

- Model characteristics
- Using expert-based and model-based together

Workshop: Selecting an Estimation Approach

Chapter Summary and Best Practices

Chapter 7: The Bottom Line

Course summary

Course highlights from students' perspective

Please contact your ROI representative to discuss course tailoring!!!