

# SLIM-Estimate Training Course Syllabus

## Session 1 (3 hours)

- SLIM Project Lifecycle Management – SLIM-Suite tools support all phases of the project/portfolio lifecycle:
  - Estimate/plan projects (SLIM-Estimate)
  - Track progress and forecast most likely completion date (SLIM-Control)
  - Collect and manage completed project data (SLIM-DataManager)
  - Analyze and benchmark completed projects, create custom trends (SLIM-Metrics)
  - Complex estimation and aggregated portfolio modelling (SLIM-MasterPlan).
- The Challenge of Estimation:
  - Why estimates are performed
  - Estimates vs. targets, goals, constraints, plans
  - Knowledge vs. Uncertainty Over Time
  - Top Down vs. Bottom Up Estimation
  - Pros and Cons of Various Estimation Methods
  - Characteristics of Effective Estimation
- How SLIM-Estimate Works
  - Five Core Metrics (size, time, effort, defects, productivity)
  - Four High Level Phases
  - High Level vs. Detailed Project View
  - Mapping Lifecycle Activities to Phases (traditional)
  - Mapping Lifecycle Activities to Phases (Agile)
  - Configuring Lifecycle Phases
- Empirically Tuning the Model
  - QSM Industry Database
  - Industry and Custom Trends, Statistics
  - Five Core Metrics scale non-linearly with project size

**Exercise 1: Create a defensible industry based estimate to support a bid, using inputs available at the proposal stage.**

- Productivity and the Software Equation
  - What is Productivity?
  - Manufacturing form (output/input)
  - Ratio-based software productivity metrics (SLOC or FP/month or effort unit)
  - QSM's PI reflects nonlinear relationships between size, schedule, effort
  - Why Software Development is unlike Manufacturing

- QSM Software Production Equation
  - Rearranging the Software Equation
  - Using Solution Wizards to Solve for Unknowns
  - Bid Evaluation Wizard

**Exercise 2: Reconstruct a proposed bid, evaluate it using industry trends and industry-based solution from Exercise 1.**

- Collecting and Using History
  - SLIM-DataManager Basic Info tab
  - Overview – DataManager core metric set
  - Using Historical Data with SLIM Tools
  - Comparing Estimates to Completed Projects

**Exercise 3: Load completed projects from SLIM-DataManager into SLIM-Estimate workbook. Use historical data to assess how well QSM trend “fits” an organization’s completed projects. Quantify range of project sizes from similar completed projects, use to validate and adjust size estimate.**

## Session 2 (3 hours)

- Estimating Size
  - Defining “Size”
  - Two Ways to Capture Software Size
  - Early (Functional) Size Measures/Methods
  - Detailed (Technical) Sizing Methods
  - Mapping Size Components to Lifecycle Stage
  - Total vs. Effective Size
  - Converting Different Size Measures to Normalized Format
  - Size Settings in SLIM-Estimate
- Uncertainty, Risk, and Contingency
  - Variable Inputs Produce Variable Outputs
  - Translating Uncertainty on the Inputs to Uncertainty on the Outputs
  - Uncertainty Is a Key Input to the Estimate
  - Using Constraints to Calculate Required Risk Buffer and Contingency
  - The Automatic Solution Generator
  - Expected vs. High Assurance (Risk Buffered) Solutions

**Exercise 4: Revise Initial Size Estimate. Create a detailed size estimate that averages three size techniques, update size estimate, assess impact on schedule, cost, and quality. Explore a range of planning alternatives using Size Calculator, Constraints, and Automatic Solution Generator.**

- Customizing the Lifecycle
  - Predicting Metric Values Over Time
  - Modeling Work and Staff Arrival
  - Constructing a Staffing Curve
  - Tuning Lifecycle Phases
  - Calibrating Phase Tuning to External Data
- Predicting Software Quality
  - Anatomy of a Defect Estimate
  - Tuning Defect Predictions to Your History
  - Rayleigh Defect Prediction
  - Use Small Teams to Promote Higher Quality

**Exercise 5: Adjust existing phase time/effort/overlap to match completed Agile projects. Assess how much contingency is required to meet constraints with desired risk protection. Compare quality estimates for logged solutions.**

### Session 3 (3 hours)

- Customizing and Using Templates
  - Project vs. Solution Level Settings
  - Customizing Global Options/Project Environment
  - Skill Allocation and WBS (Work Breakdown Structure) Settings
  - Solution Assumptions
  - History Settings
  - PI Calculator Adjustment Questions
  - Views, Chart/Report Outline and Color Schemes
- Resource Demand Planning
  - Producing detailed monthly Cost/Effort/Staff estimates by skill
  - Skill Categories and Time Slices
  - Skill Allocation Schema
  - Staffing by Skill by Month Charts and Reports
- Complex Estimates and Project Portfolios
  - Aggregate Project Sub-Systems
  - SLIM-MasterPlan
  - Program/Portfolio Resource Demand Management

**Exercise 6 – Complex Package Implementation (COTS). Students prepare two estimates to support a ‘make or buy’ decision. The first estimate includes buying and customizing a COTS product to replace a legacy supply chain management system. This estimate will include both software and non-software items that can be aggregated in SLIM-MasterPlan.**