



Software Estimation and Measurement

Course: Function Points, COSMIC and Cost Models



Software Estimation and Measurement Course: Function Points, COSMIC and Cost Models

Introduction:

Software estimation and measurement with function points, COSMIC and cost models is a 5-day course for buyers, estimators and vendor bid teams who price software work, ending with a Software Sizing, Estimation and Size-Based Pricing Plan for a case organisation. Fixed-price software deals fail when scope is counted in pages or guesses, so bids cannot be compared, change requests are argued case by case and vendors absorb or pass on hidden risk. Nominees already prepare tenders, estimates or bids, and learn by building counting sheets and parametric models. CoreConcept Training Center delivers this software estimation and measurement course.

Course Objectives:

- Count the functional size of a software requirement set with IFPUG function point analysis and COSMIC data movements
- Calibrate team story points against functional size so that agile backlogs can be compared and priced
- Build a parametric effort and schedule estimate with COCOMO II scale factors and effort multipliers
- Benchmark estimated productivity and defect density against repository data such as ISBSG project delivery rates
- Write size-based pricing clauses, unit rates per function point and change-request rules into software tenders and contracts
- Produce a Software Sizing, Estimation and Size-Based Pricing Plan for a case organisation

Target Audience:

- Staff responsible for specifying, tendering and evaluating software development and enhancement contracts in public bodies
 - Staff responsible for estimation standards, sizing reviews and portfolio forecasts in project management offices
 - Staff responsible for preparing fixed-price software bids, effort estimates and commercial offers at software vendors
 - Staff responsible for approving change requests and variations on software contracts already in delivery
 - Staff responsible for software measurement programmes, productivity baselines and supplier performance data
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Course Outline:

Day 1: Software Size, Estimation Failures and Measurement Context

- Cone of Uncertainty and Estimate Accuracy by Lifecycle Stage
- Lines of Code Versus Functional Size as Software Measures
- ISO/IEC 14143 Functional Size Measurement Concepts and Method Family
- Fixed-Price, Time and Materials and Unit-Rate Contract Models Compared
- Estimation Maturity Baseline of Current Tender and Bid Practice

Day 2: IFPUG Function Points, COSMIC and Other Sizing Methods

- IFPUG Counting Boundary, Scope and User View Identification
- Internal Logical Files and External Interface Files Complexity Rating
- External Inputs, Outputs and Inquiries Transactional Function Counting
- COSMIC Functional Processes With Entry, Exit, Read and Write
- Nesma Indicative Count and FISMA Methods for Early Sizing

Day 3: Story-Point Calibration, COCOMO II and Benchmark Data

- Story-Point to Function Point Calibration From Completed Sprints
- COCOMO II Scale Factors and Effort Multipliers Rating Exercise
- Function Point to Effort Conversion Using Delivery Rate Curves
- ISBSG Repository Filters for Comparable Project Selection
- Defect Density and Productivity Benchmarks per Functional Size Unit

Day 4: Size-Based Pricing, Contract Risk and Estimate Challenge

- Unit Price per Function Point Schedule and Volume Bands
- Requirements Volatility Allowance and Scope Creep Measurement Rules
- Enhancement Project Counting for Added, Changed and Deleted Functions
- Bid Evaluation Matrix Normalising Vendor Offers by Functional Size
- Independent Count Audit and Sizing Dispute Resolution Procedure

Day 5: Modelling Build and Software Sizing and Pricing Plan

- Case Requirements Set Function Point and COSMIC Count Build
 - Case Backlog Story-Point Calibration and Size Reconciliation
 - Case COCOMO II Effort and Schedule Model With Sensitivity Ranges
 - Case Tender Pricing Schedule and Change-Request Rate Table
 - Software Sizing, Estimation and Size-Based Pricing Plan Completion
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Skills You Will Gain:

- Function Point Counting
- COSMIC Data Movement Analysis
- Story-Point Calibration
- Parametric Effort Modelling
- Productivity Benchmarking
- Size-Based Pricing Design
- Vendor Bid Normalisation
- Sizing Audit and Review

Why Attend This Course:

- Hand a Software Sizing, Estimation and Size-Based Pricing Plan to the procurement lead, PMO head or bid director for the next fixed-price software tender
- Decide whether a vendor offer or internal estimate is realistic by comparing its effort per function point with benchmark ranges
- Avoid disputed change requests and underpriced bids by agreeing counting rules and unit rates before the contract is signed
- Coach estimators and contract staff on counting, calibration and model rating using the course worksheets

Conclusion:

Once back at work, the participant gives the procurement lead, PMO head or bid director a Software Sizing, Estimation and Size-Based Pricing Plan built for a real or case portfolio. Buyers use it to set unit rates per function point and to compare tenders on equal terms; vendor teams use it to price fixed-price bids and change requests from counted size rather than opinion. After the first tender or bid priced with the plan, the unit should compare counted size, estimated effort and actual effort, then recalibrate delivery rates and model ratings.

Frequently Asked Questions FAQ:

What should participants know before the software estimation and measurement course?

Participants should already prepare software requirements, estimates, tenders or bids and be able to read a requirements document or product backlog. No prior function point counting is needed. Bringing an anonymised requirements set, backlog or past bid helps them apply the counting and modelling work to their own context.

How does software estimation and measurement training differ from a general IT project management or cost control course?

This course measures what software does and turns that size into effort, schedule and price. General IT project management courses cover lifecycles, delivery and release, and cost control courses track spending against progress; neither teaches function point or COSMIC counting, model calibration or size-based pricing.

Why use function points instead of story points for software estimation and measurement in contracts?

Function points follow a published counting standard, so two independent counters reach similar totals and buyers can compare vendors. Story points are relative to one team and change over time. Calibrating story points against function points lets agile teams keep their practice while contracts rely on a stable measure.

What do participants take back from the software estimation and measurement course?

Participants take back a Software Sizing, Estimation and Size-Based Pricing Plan with counting sheets, a story-point calibration table, a COCOMO II effort model with sensitivity ranges, benchmark comparisons and a unit-rate pricing schedule ready to adapt to their next tender or bid.
