



SMC-IT - Cost Risk Tutorial



Scoping the Job

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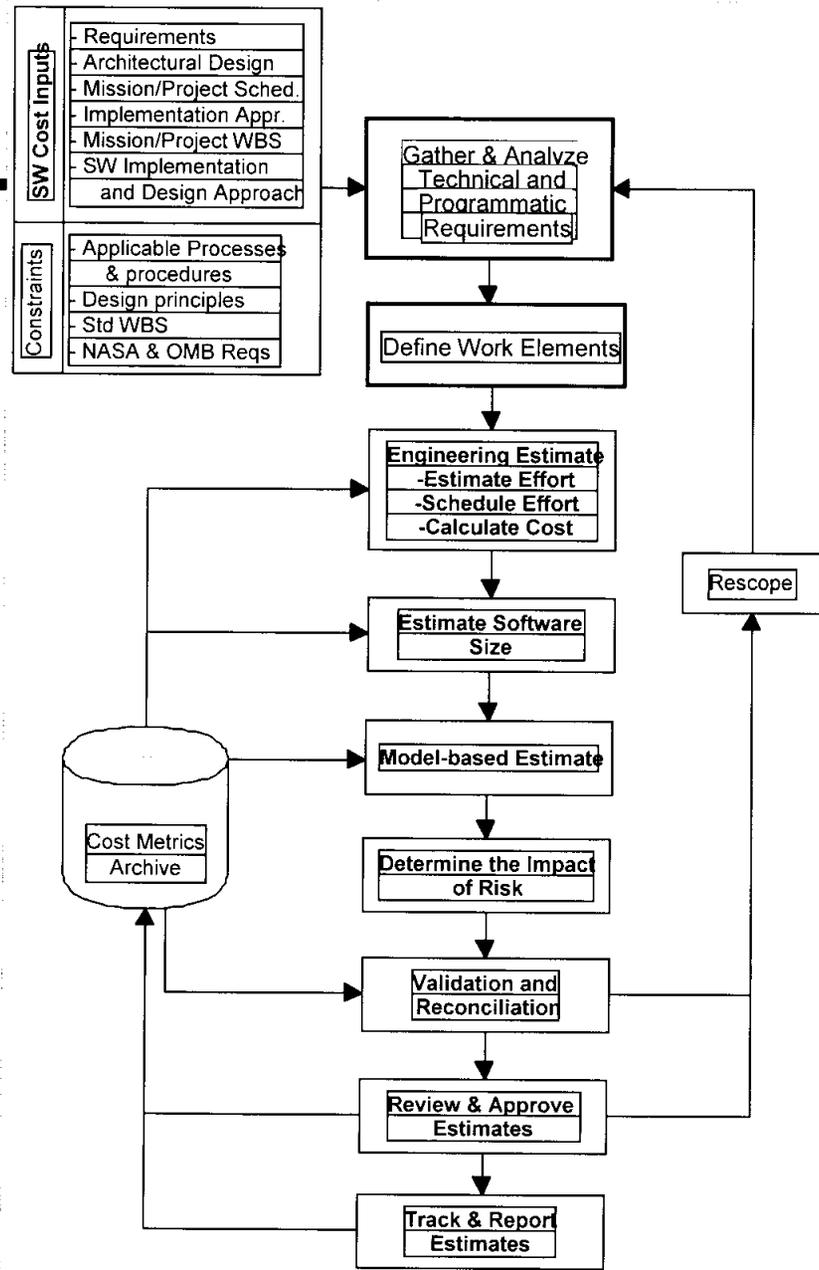
Agenda



- Purpose
- Analyze and refine the requirements
 - Activities and products
- Define the Work Elements and Procurements
 - Activities and Products
- Begin identifying risk drivers
- Common mistakes in scoping



Software Estimation Steps





Define the Work Elements and Procurements



- The purpose of this step is to define the work elements and procurements for the software project that will be included in the software estimate



Definition and Purpose



- Scoping is defined as this early planning activity where we are trying to determine the domain of the software task
 - What the task is, what it covers
 - But sometimes it is useful to address: “what it is not”
- Goal is to identify clearly and in sufficient details the entire set of software activities for the purpose of producing a good cost estimate
 - Producing a complete conceptual design is not the objective
 - It is important to determine the right level of task breakdown
- Scoping is NOT requirements writing. Requirements writing comes after scoping the product, developing the Ops Concept and defining the interfaces
- A more tangible product of scoping is the support for a workforce and lines of code estimate
- A less tangible product of scoping is to assist the estimation process in factoring for software complexity and productivity



Scoping all the “dimensions” of the software task



- The question of scope applies to all aspects of the software task, both products and activities:
 - The internal components of the task
 - The hardware environment
 - The test environment
 - The mission scenarios
 - The interfaces with other project elements
 - The computing resources and margins
 - The life-cycle of the software element. Also, the project life-cycle
 - The project risk and reserve postures
- Familiarity with the above software drivers is a job prerequisite for the cost estimator



A Good Software WBS



- Is a planning and reporting tool which outlines the list of work activities to complete the software job
 - Identifies all the activities required to do the software job
 - The sum of its elements is the entire software job
 - Top-down, with many levels of details
 - Outlined activities need to lend themselves to being costed
- Has the following properties:
 - Manageable – specific in authority and responsibility
 - Independent – few, but well defined interfaces with other elements
 - Tailorable – can be modified for unique system characteristics
 - Measurable – can be costed and progress can be tracked



Use a Product-Oriented Software WBS



- These work elements and procurements will typically fall into the following categories of a project-specific WBS:
 - Software Management
 - Software Systems Engineering
 - Software Functions
 - Fn1
 - Fn 2
 - etc
 - Software Development Test Beds
 - Software Integration and Test
 - Software System-level Test Support
 - Assembly, Test, & Launch Operations (ATLO) Support
 - Software Quality Assurance
 - IV&V



Other Software-related items



- Some of these software related cost items may be found elsewhere in the project WBS
 - Reserves
 - IV&V
 - Payload or instrument software
 - SQA
 - Device Driver software
 - Firmware
 - Training



Begin Identifying Cost Risk Drivers



- Identify the attributes of the work elements that will drive the size and effort estimates in terms of heritage and risk
- Examples are:
 - Anything that is new, such as code, language, or design method
 - High heritage elements
 - Possible reuse or use of COTS products
 - Criticality
 - Use of development tools
 - Concurrent development of hardware
 - Multiple implementing organizations
 - High complexity elements
 - Skill and experience level of team



Common mistakes in scoping



- Scope Creep
- Making bad or wrong assumptions
- Missing important features or cost drivers
- Focusing on features which are not important cost drivers