SWEBOK KA #7: Software Engineering Management

The Software Engineering Body of Knowledge (SWEBOK) features 11 knowledge areas (KAs). The seventh KA is Software Engineering Management. The Software Engineering Management KA is focused on the application of management activities to ensure software engineering is conducted in a systematic, disciplined, and quantified manner. It includes six topics, as shown in Figure 1. These topics are Initiation and Scope Definition, Software Project Planning, Software Project Enactment, Review and Evaluation, Closure, and Software Engineering Management.

The Initiation and Scope Definition topic focuses on the effective determination of software requirements. Determination and negotiation of requirements leads to determination of the project scope, objectives, and constraints. Feasibility analysis occurs to ensure the resources required for the project are available. The process for the review and revision of requirements is established early on to deal with possible changes.

The Software Project Planning topic addresses the activities undertaken to prepare for successful software engineering from a management perspective. Process planning selects the appropriate software life cycle model and processes for the project. Determination of deliverables identifies the products required of the project. Effort, schedule, and cost estimation is done using historical data. Resource allocation identifies the people, equipment, and facilities required for the project. Risk management is used to identify what could go wrong with the project. Quality management thresholds are set according to stakeholder expectations. Plan management must be put in place to address changes.

The Software Project Enactment topic deals with activities that occur during software engineering. Implementation of plans includes utilizing resources and producing deliverables. Supplier contract management addresses agreements with suppliers. Implementation of measurement process ensures that relevant and useful data is collected. The processes are monitored to assure adherence to plans. The control process is utilized for necessary changes. Finally, reporting regarding adherence to the plan occurs to both internal and external stakeholders.

The Review and Evaluation topic deals with assurance that the software is satisfactory. Determining satisfaction of requirements occurs on achievement of major project milestones. Reviewing and evaluating performance provides information about adherence to plans as well as potential challenges.

The Closure topic addresses the post-completion activities of a software engineering project. Determining closure includes all verifying all planned tasks have been completed and planned products have been delivered. Closure activities include archival of project materials, update of measurement database, and a project post mortem.

The Software Engineering Management topic deals with the effective development and implementation of measurement programs. It is important to establish and sustain measurement commitment. Next, the measurement process is planned and performed. Finally, an evaluation of measurement occurs.



Figure 1. Breakdown of Topics for the Software Engineering Management Knowledge Area