SWEBOK KA #6: Software Configuration Management

The Software Engineering Body of Knowledge (SWEBOK) features 11 knowledge areas (KAs). The sixth KA is Software Configuration Management. The Software Configuration Management KA is focused on the supporting lifecycle process which maintains the configurations of the system. It includes six topics, as shown in Figure 1. These topics are Management of the SCM Process, Software Configuration Identification, Software Configuration Control, Software Configuration Status Accounting, Software Configuration Auditing, and Software Release Management and Delivery.

The Management of the SCM Process topic covers how SCM facilitates development and change implementation activities. The organizational context for SCM may include management by the development team or by a distinct organizational element. Constraints and guidance for the SCM process come from many sources, including corporate policy and contract requirements. Planning for SCM involves identifying the SCM organization and responsibilities, resources and schedules, tool selection an implementation, vendor/subcontractor control, and interface control. These efforts result in the SCM plan, the reference for the SCM process. Finally, surveillance of SCM ensures that the SCM plan is followed. Surveillance methods include measures and measurement and in-process audits.

The Software Configuration Identification topic discusses how to identify items to be controlled. First, software configurations are identified. Then, software configuration items (SCIs) are selected and their relationships are identified. A strategy for labeling software versions is established. Finally, baselines are established for the SCIs, as well as criteria for incorporating SCIs into the baseline. A software library is maintained which controls the collection of software and documentation.

The Software Configuration Control topic is concerned with managing changes during the software life cycle. Requesting, evaluating, and approving software changes involves the software configuration control board (CCB) and the software change request process. The approved changes are implemented in accordance with the SCM process. Any non-compliances result in requests for deviations and waivers.

The Software Configuration Status Accounting topic involves recording and reporting SCM information. Software configuration status information includes approved configuration identification and status of changes, deviations, and waivers. Software configuration status reporting is used to collect this information.

The Software Configuration Auditing topic describes how conformance with the defined process is evaluated. A software functional configuration audit compares software items to specifications. A software physical configuration audit compares the design to documentation. In-process audits of a software baseline are performed during the development phase.

The Software Release Management and Delivery topic covers distribution of the software outside of development. Software building ensures that the correct versions are combined into an executable program. Software release management handles identification, packaging, and delivery of the product.



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