SWEBOK KA #3: Software Construction

The Software Engineering Body of Knowledge (SWEBOK) features 11 knowledge areas (KAs). The third KA is Software Construction. The Software Construction KA is focused on creation of software through coding, verification, unit testing, integration testing, and debugging. It includes three topics, as shown in Figure 1. These topics are Software Construction Fundamentals, Managing Construction, and Practical Considerations.

The Software Construction Fundamentals topic introduces concepts that act as the basis of software construction. Minimizing complexity is important to creating maintainable, verifiable software. Anticipating change is important as most software changes over time. Constructing for verification ensures errors can be discovered readily. Many standards are involved in construction.

The Managing Construction topic discusses methods of managing software construction. There are many construction models, such as waterfall and Scrum. Construction planning includes the method, approach, and order of construction. Construction measurement is used to ensure quality and improve the construction process.

The Practical Considerations topic involves the real-world constraints of software construction. Construction design handles the details of design activity at the construction level. Construction languages include the forms of communication used to specify instructions to a computer. Coding has many considerations, such as handling of error conditions, documentation, and organization. Construction testing includes the two types of testing, unit testing and integration testing. Reuse is another important consideration when writing code. Construction quality includes things like testing, technical reviews, and static analysis. Finally, integration entails the combination of separately constructed routines, classes, and components, as well as the consolidation of software with external components.

Figure 1. Breakdown of Topics for the Software Construction Knowledge Area

