

Appendix A

Overview of IEEE/EIA Std. 12207-1997

IEEE adopted the ISO/IEC standard 12207, an international standard that addresses the acquisition and development of software systems. The Department of Defense transitioned to IEEE/EIA Std. 12207 in 1998. As a part of the Navy's Software Process Improvement Initiative, the Navy is using the standard as a basis for software development, planning and acquisition. This standard consists of three volumes:

IEEE/EIA Std. 12207.0 - Standard for Information Technology - Software life cycle processes

IEEE/EIA Std. 12207.1 - Standard for Information Technology - Software life cycle processes - Life cycle data

IEEE/EIA Std. 12207.2 - Standard for Information Technology - Software life cycle processes - Implementation considerations

Definitions

Life Cycle Model: In the context of the development, operation, and maintenance of a software product, a life cycle model is a defined set of processes, activities, and tasks, and their sequencing and interrelationships, spanning the life of the system from its definition to the termination of its use.

Process: A set of interrelated activities designed to accomplish a specified goal. Table 1 lists all 12207 processes and their associated activities. For example *Development* is a process. Within *Development* there are thirteen activities as shown in Table 1. One of these activities is *Software Coding and Testing* which has five tasks.

Activity - A set of actions which, taken as a whole, transform inputs into outputs.

Tasks: Specific actions performed to accomplish an activity. The way that each task is performed, such as testing, is called the *technique* or *method*.

Method/Technique: The approach used to accomplish the task.

Overview

IEEE/EIA Std. 12207 defines a framework within which specific software development life cycles can be defined and provides a standard set of terminology to be used when describing these activities without any specific life cycle.

In this approach, a life cycle model for a specific development effort is the set of processes, activities, and tasks taken as a whole that result in the production of the intended product. A necessary part of this model is the description of the interrelationships between these elements, including when they occur, and how they depend on each other. IEEE/EIA Std. 12207 provides a set of standard processes and associated activities as shown in the Table 1. It also defines the tasks to be performed in the accomplishment of these activities, but it does not define the way tasks are performed.

For example, IEEE/EIA Std. 12207 defines *Development* as a process. Within *Development*, there are thirteen activities as shown in Table 1. One of these activities is *Software Coding and Testing* which has five tasks: develop the code and tests, perform

testing on the unit, update user documentation, update test requirements and schedule, and evaluate the test results and code according to a set of six criteria defined by the standard.

Example

As an example, consider a project to develop software for a weapons control system. Suppose that the offeror proposes to develop the system in a series of builds. The life cycle model for this project would consist of a description of the number of builds, when they will be developed, and the specific processes, activities, and tasks to be performed to create the builds. Figure 1 illustrates what this model may look like.

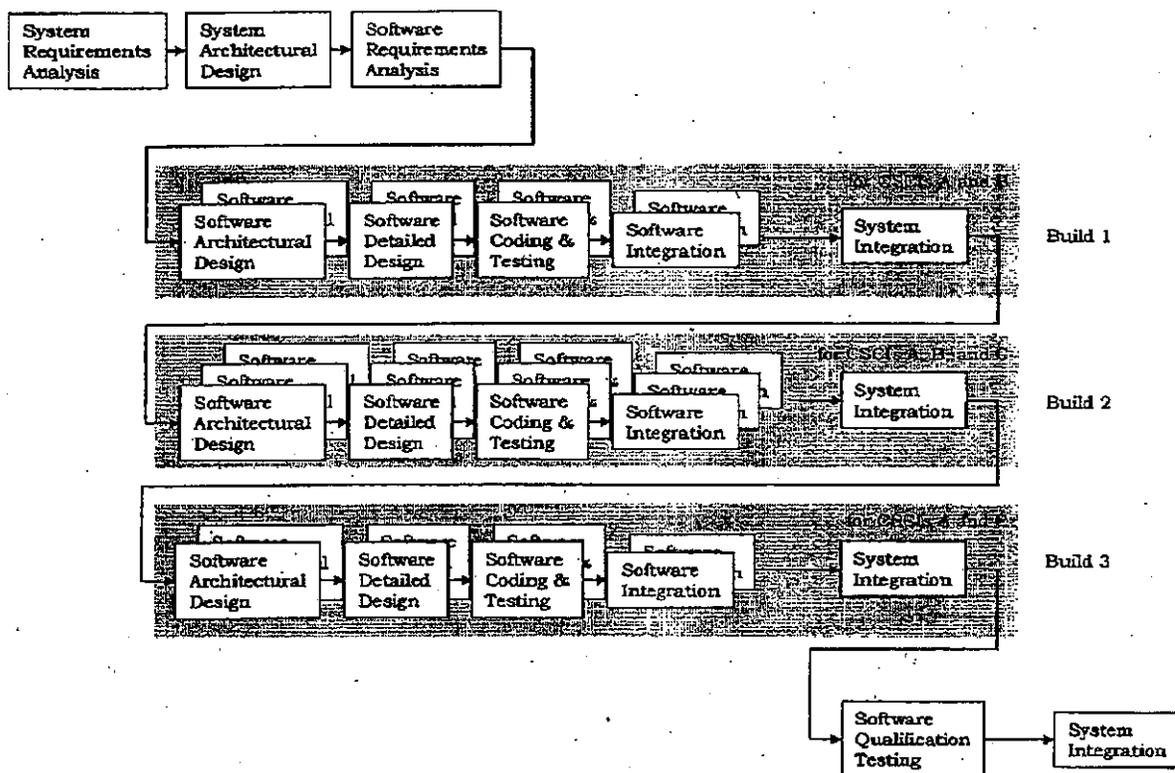


Figure 1. Sample Life Cycle Model

A Software Development Plan (SDP) would consist of a description of the life cycle model chosen, the activities planned, their constituent tasks, and the approach to be used in performing each task. This description would include a schedule for each activity and task to be performed, as well as the criteria to be used to determine whether the task was successful. IEEE/EIA Std. 12207 defines the generic content of such plans, but does not define a specific format.

Table 1. List of IEEE/EIA Std. 12207 Processes and Activities

<i>Process</i>	<i>Activities</i>
Acquisition	Initiation Request-for-proposal [-tender] preparation Contract preparation and update Supplier monitoring Acceptance and completion
Supply	Initiation Preparation of response Contract Planning Execution and control Review and evaluation Delivery and completion
Development	Process implementation System requirements analysis System architectural design Software requirements analysis Software architectural design Software detailed design Software coding and testing Software integration Software qualification testing System integration System qualification testing Software installation Software acceptance support
Operation	Process implementation Operational testing System operation User support
Maintenance	Process implementation Problem and modification analysis Modification implementation Maintenance review/acceptance Migration Software retirement