

Chapter 3

■ Software Process Structure

Slide Set to accompany

Software Engineering: A Practitioner's Approach, 8/e

by Roger S. Pressman and Bruce R. Maxim

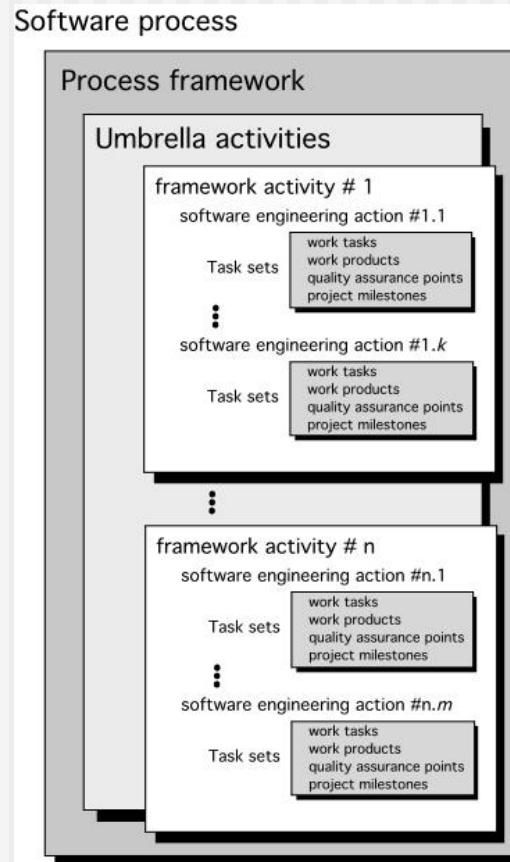
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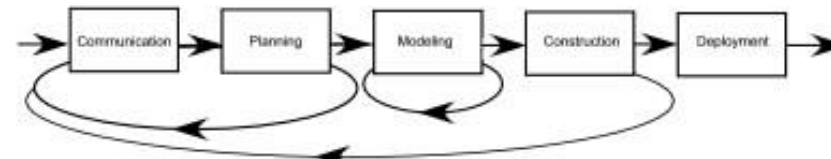
A Generic Process Model



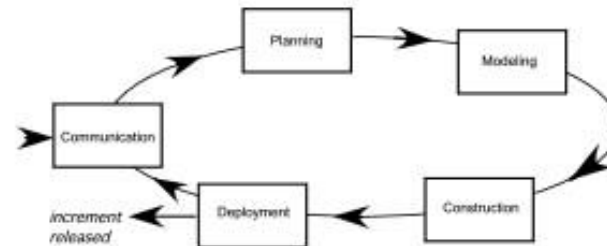
Process Flow



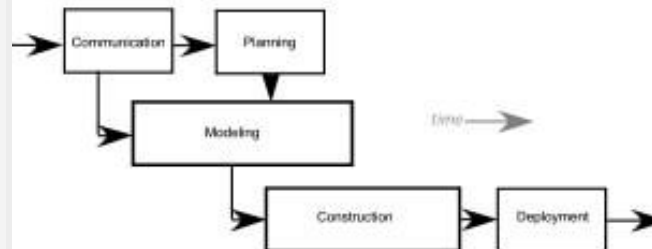
(a) linear process flow



(b) iterative process flow



(c) evolutionary process flow



(d) parallel process flow

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Identifying a Task Set

- A task set defines the actual work to be done to accomplish the objectives of a software engineering action.
 - A list of the task to be accomplished
 - A list of the work products to be produced
 - A list of the quality assurance filters to be applied

Process Patterns

- A *process pattern*
 - describes a process-related problem that is encountered during software engineering work,
 - identifies the environment in which the problem has been encountered, and
 - suggests one or more proven solutions to the problem.
- Stated in more general terms, a process pattern provides you with a *template* [Amb98] — a consistent method for describing problem solutions within the context of the software process.

Process Pattern Types

- *Stage patterns*—defines a problem associated with a framework activity for the process.
- *Task patterns*—defines a problem associated with a software engineering action or work task and relevant to successful software engineering practice
- *Phase patterns*—define the sequence of framework activities that occur with the process, even when the overall flow of activities is iterative in nature.

Process Assessment and Improvement

- **Standard CMMI Assessment Method for Process Improvement (SCAMPI)** — provides a five step process assessment model that incorporates five phases: initiating, diagnosing, establishing, acting and learning.
- **CMM-Based Appraisal for Internal Process Improvement (CBA IPI)** — provides a diagnostic technique for assessing the relative maturity of a software organization; uses the SEI CMM as the basis for the assessment [Dun01]
- **SPICE — The SPICE (ISO/IEC15504)** standard defines a set of requirements for software process assessment. The intent of the standard is to assist organizations in developing an objective evaluation of the efficacy of any defined software process. [ISO08]
- **ISO 9001:2000 for Software** — a generic standard that applies to any organization that wants to improve the overall quality of the products, systems, or services that it provides. Therefore, the standard is directly applicable to software organizations and companies. [Ant06]