

Software Engineering: A Practitioner's Approach, 6/e

Chapter 2

Process: A Generic View

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A Layered Technology

Software Engineering



A Process Framework

Process framework

Framework activities

work tasks

work products

milestones & deliverables

QA checkpoints

Umbrella Activities

Framework Activities

- Communication
- Planning
- Modeling
 - Analysis of requirements
 - Design
- Construction
 - Code generation
 - Testing
- Deployment

Umbrella Activities

- Software project management
- Formal technical reviews
- Software quality assurance
- Software configuration management
- Work product preparation and production
- Reusability management
- Measurement
- Risk management

The Process Model: Adaptability

- the framework activities will always be applied on every project ... BUT
- the tasks (and degree of rigor) for each activity will vary based on:
 - the type of project
 - characteristics of the project
 - common sense judgment; concurrence of the project team

The CMMI

- The CMMI defines each process area in terms of “specific goals” and the “specific practices” required to achieve these goals.
- *Specific goals* establish the characteristics that must exist if the activities implied by a process area are to be effective.
- *Specific practices* refine a goal into a set of process-related activities.

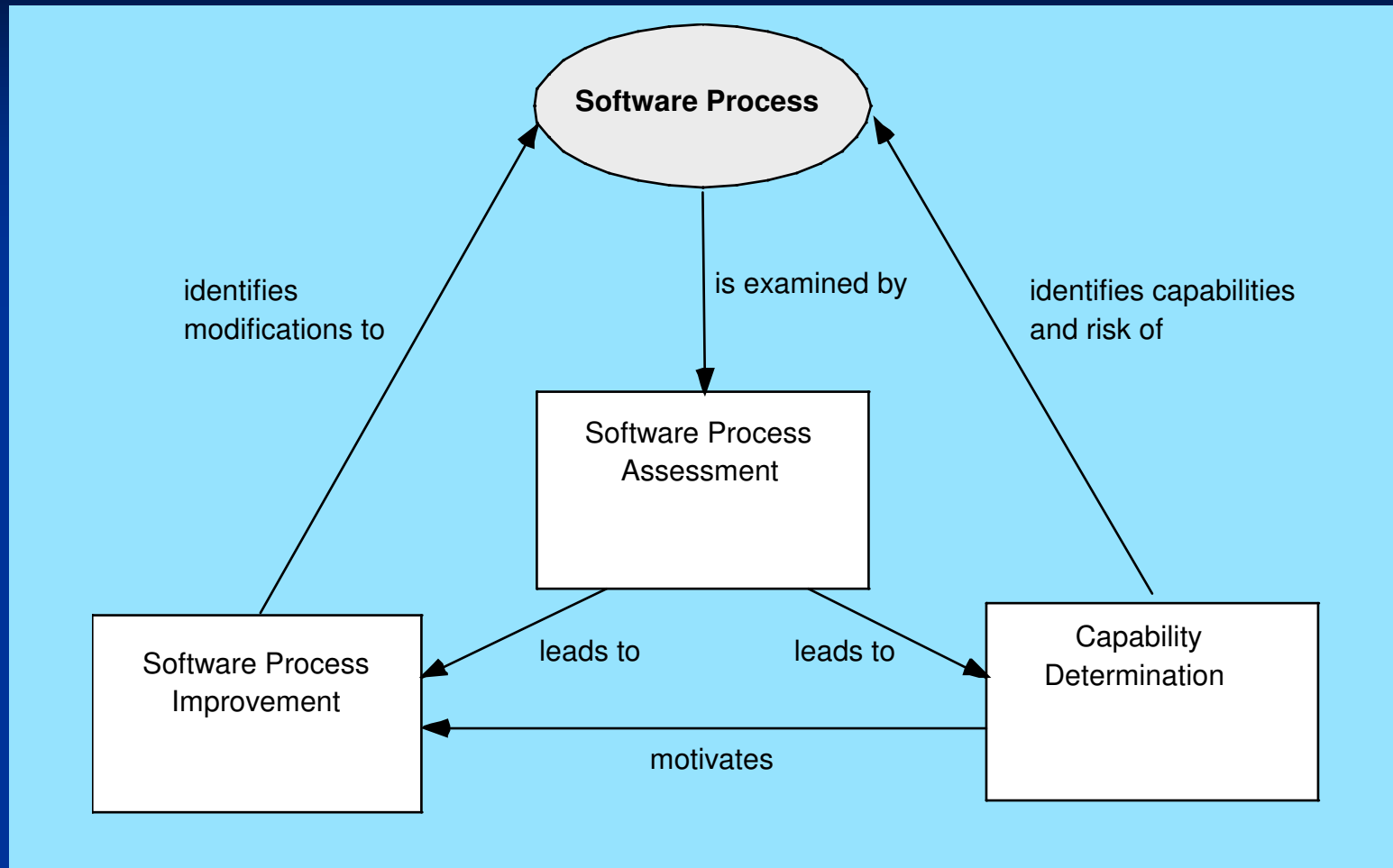
Process Patterns

- Process patterns define a set of activities, actions, work tasks, work products and/or related behaviors
- A template is used to define a pattern
- Typical examples:
 - Customer communication (a process activity)
 - Analysis (an action)
 - Requirements gathering (a process task)
 - Reviewing a work product (a process task)
 - Design model (a work product)

Process Assessment

- The process should be assessed to ensure that it meets a set of basic process criteria that have been shown to be essential for a successful software engineering.
- Many different assessment options are available:
 - SCAMPI
 - CBA IPI
 - SPICE
 - ISO 9001:2000

Assessment and Improvement



Personal Software Process (PSP)

- Recommends five framework activities:
 - Planning
 - High-level design
 - High-level design review
 - Development
 - Postmortem
- stresses the need for each software engineer to identify errors early and as important, to understand the types of errors

Team Software Process (TSP)

- Each project is “launched” using a “script” that defines the tasks to be accomplished
- Teams are self-directed
- Measurement is encouraged
- Measures are analyzed with the intent of improving the team process

The Primary Goal of Any Software Process: *High Quality*

Remember:

High quality = project timeliness

Why?

Less rework!