

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

## **Chapter 2**

# **Process: A Generic View**

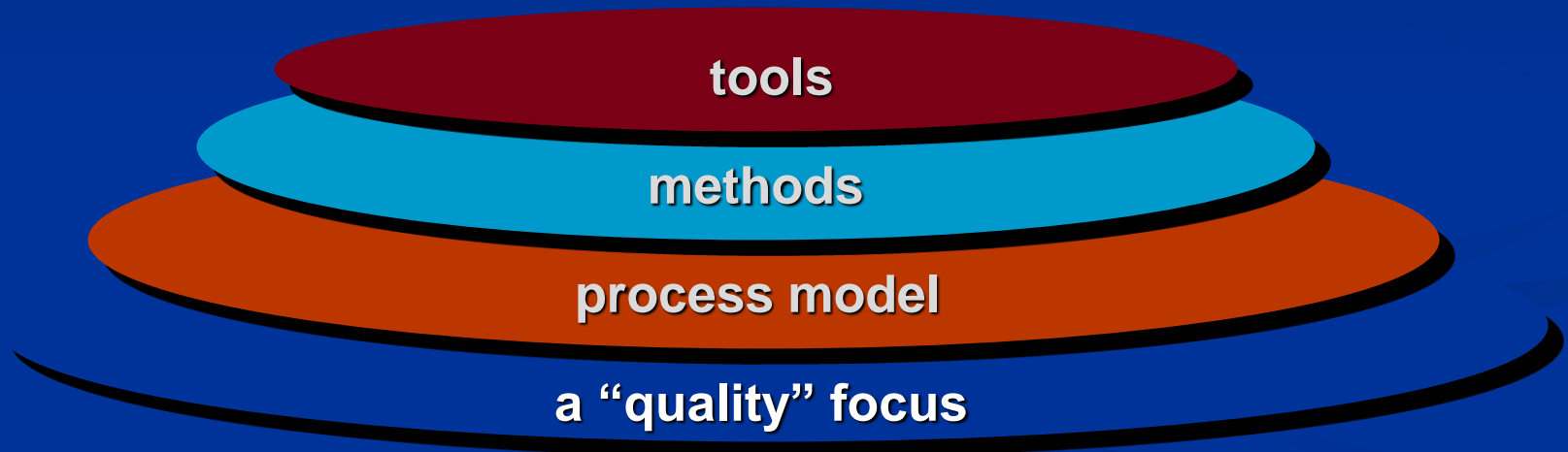
copyright © 1996, 2001, 2005  
R.S. Pressman & Associates, Inc.

### **For University Use Only**

May be reproduced ONLY for student use at the university level  
when used in conjunction with *Software Engineering: A Practitioner's Approach*.  
Any other reproduction or use is expressly prohibited.

# 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

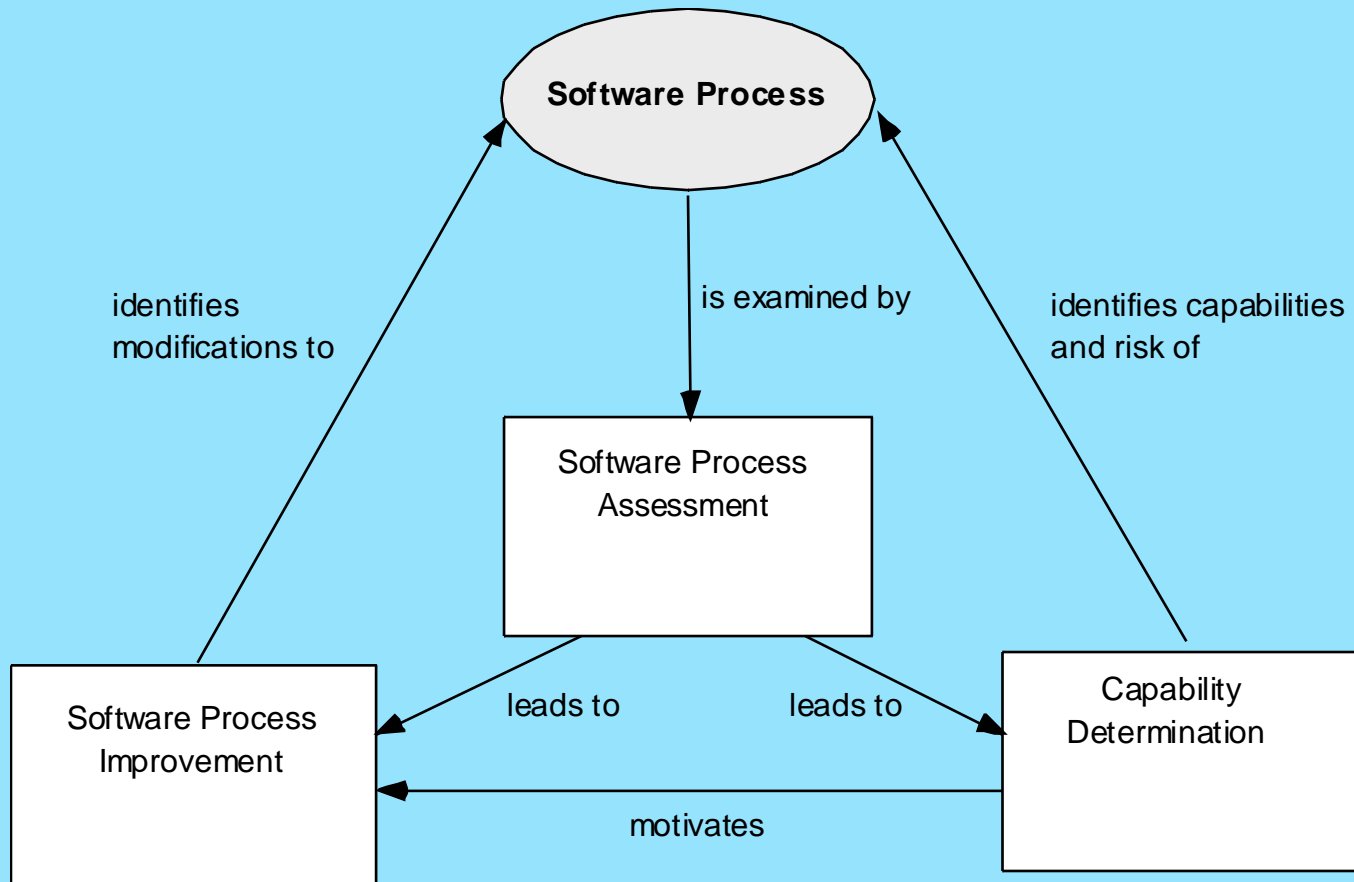
- Process patterns define a set of activities, actions, work tasks, work products and/or related behaviors
- A template is used to define a pattern
- Typical examples:
  - Customer communication (a process activity)
  - Analysis (an action)
  - Requirements gathering (a process task)
  - Reviewing a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