



# **Ch.3 Software Process Structure**





## 3.1 A Generic Process Model

### Software Process – framework

#### Umbrella Activities

Framework activity #1

action 1.1

Task Set

Framework activity #2

action 2.1

action 2.1

Task Set

Framework activity #3

action 2.2

action 3.1

Task Set

Framework activity #n

action 3.2

action n.1

Task Set

.....

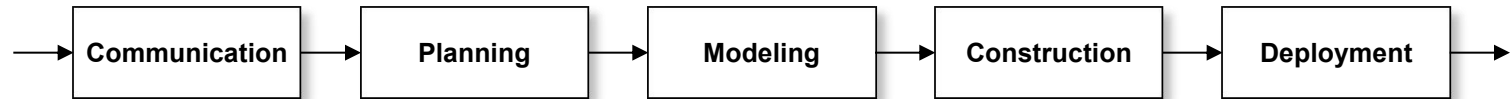
action n.k<sub>n</sub>

Task Set

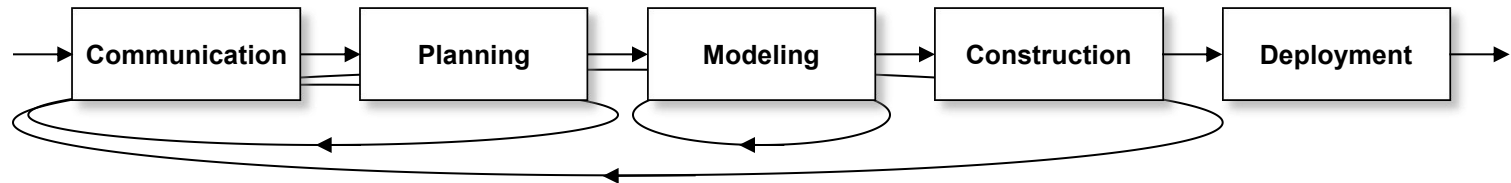


## 3.1 A Generic Process Model

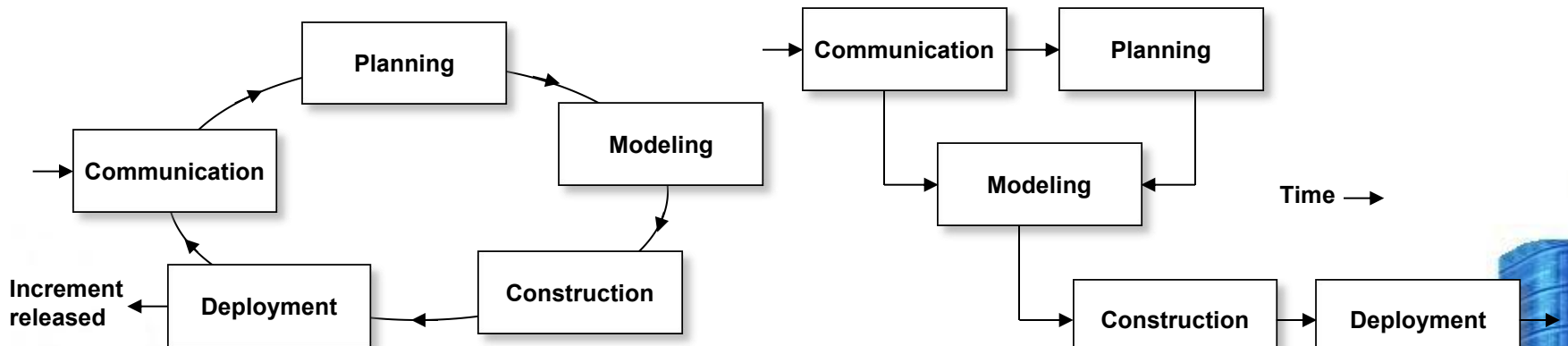
### • Process flow



(a) Linear process flow

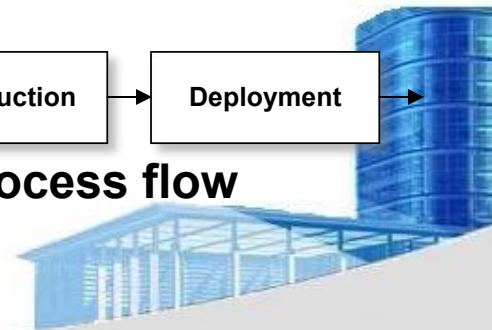
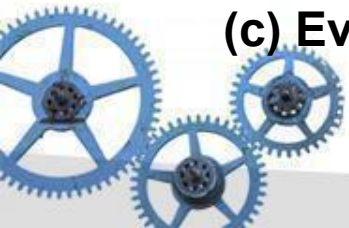


(b) Iterative process flow



(c) Evolutionary process flow

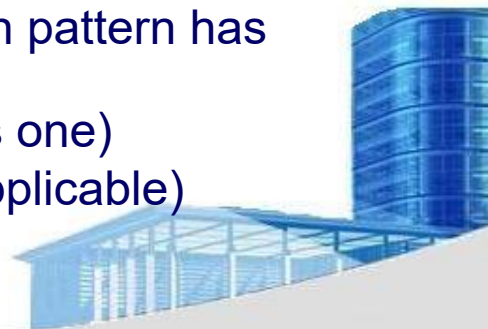
(d) Parallel process flow





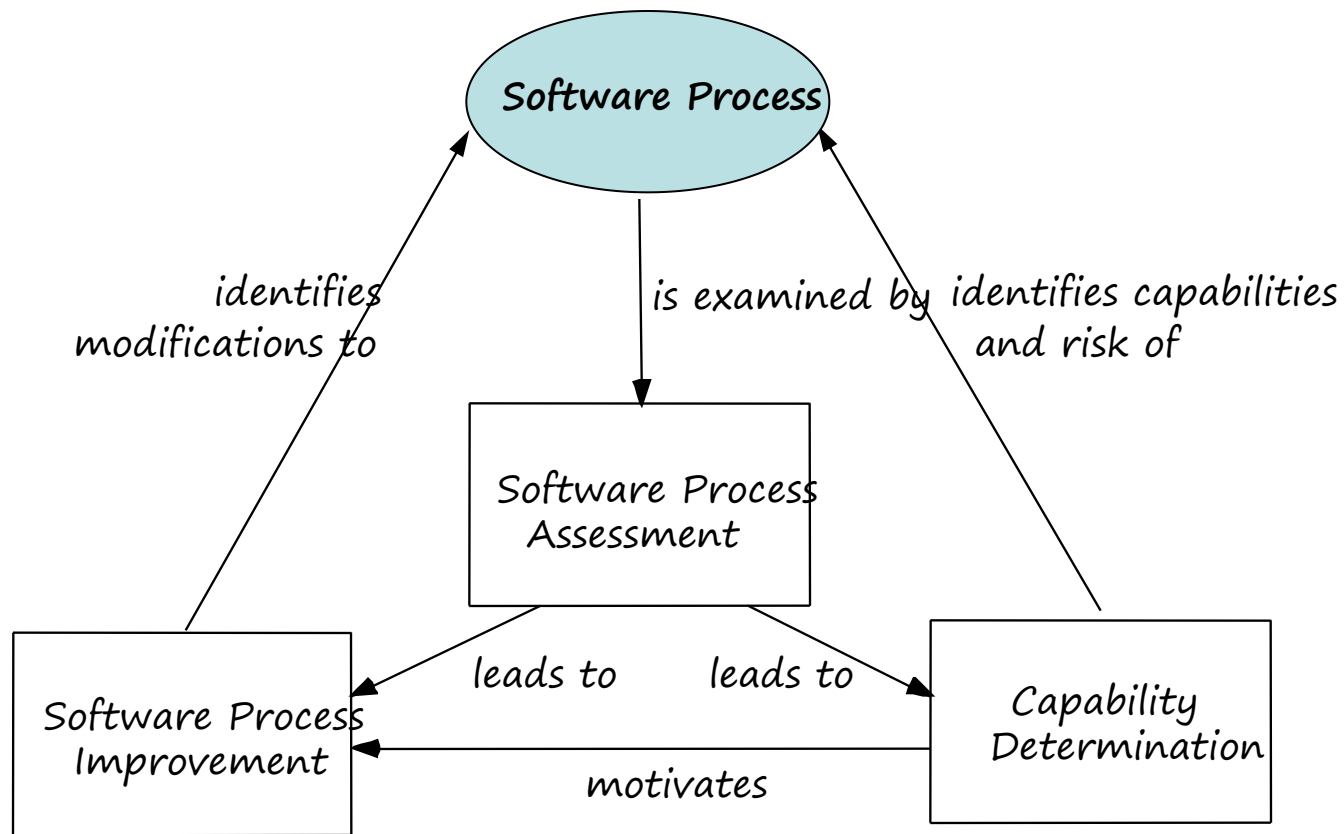
## 3.4 Process Patterns

- **Process patterns** define a set of activities, actions, work tasks, work products and/or related behaviors
- A **template** is used to define a pattern
- **Generic software pattern elements**
  - Meaningful **pattern name**
  - **Intent** (objective of pattern)
  - **Type**
    - Task pattern (defines engineering action or work task)
    - Stage pattern (defines framework activity for the process)
    - Phase pattern (defines sequence or flow of framework activities that occur within process)
  - **Initial context** (describes conditions that must be present prior to using pattern)
  - **Solution** (describes how to implement pattern correctly)
  - **Resulting context** (describes conditions that result when pattern has been implemented successfully)
  - **Related patterns** (links to patterns directly related to this one)
  - **Known uses/examples** (instances in which pattern is applicable)





## 3.5 Process Assessment



 **SCAMPI**

 **CBA IPI**

 **SPICE (ISO/IEC15504)**

 **ISO 9001:2000 for Software**







# The Capability Maturity Model Integration

— by Software Engineering Institute (SEI) of Carnegie Mellon University (CMU)

- **Level 0: Incomplete** (process is not performed or does not achieve all goals defined for this level)
- **Level 1: Performed** (work tasks required to produce **required work products** are being conducted)
- **Level 2: Managed** (people doing work have access to adequate resources to get job done, stakeholders are actively involved, work tasks and products are **monitored, reviewed, and evaluated** for conformance to process description)
- **Level 3: Defined** (management and engineering processes **documented, standardized**, and integrated into **organization-wide** software process)
- **Level 4: Quantitatively Managed** (software process and products are **quantitatively** understood and controlled using detailed measures)
- **Level 5: Optimizing** (continuous process improvement is enabled by quantitative **feedback** from the process and testing innovative ideas)

