Software Process Framework

- Software process is defined as a framework for the activities, actions, and tasks that are required to build high-quality software.

- A software process defines the approach that is taken as software is engineered.

- Each of these activities, actions, and tasks resides within a framework or model that defines their relationship with the process and with one another.

- Each framework activity is populated by a set of software engineering actions.

- Each software engineering action is defined by a task set that identifies the work tasks that are to be completed, the work products that will be produced, the quality assurance points that will be required, and the milestones that will be used to indicate progress.

A software process framework

Software process

Process framework

Umbrella activities

framework activity # 1

software engineering action #1.1

Task sets
- work tasks
- work products
- quality assurance points
- project milestones

⋮

software engineering action #1.k

Task sets
- work tasks
- work products
- quality assurance points
- project milestones

⋮

framework activity # n

software engineering action #n.1

Task sets
- work tasks
- work products
- quality assurance points
- project milestones

⋮

software engineering action #n.m

Task sets
- work tasks
- work products
- quality assurance points
- project milestones

Process Flow:

- Process flow —describes how the framework activities and the actions and tasks that occur within each framework activity are organized with respect to sequence and time.

- **Linear Process Flow:**

- A linear process fl ow executes each of the five framework activities in sequence, beginning with communication and culminating with deployment

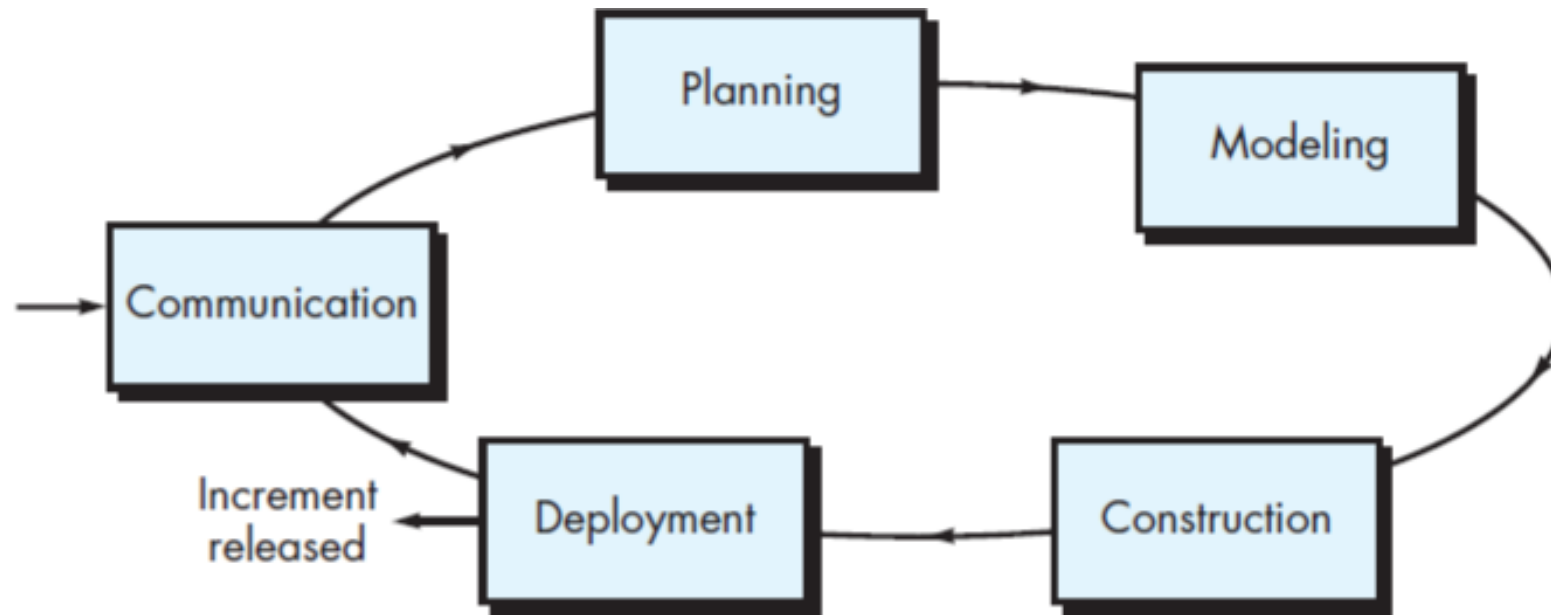Communication → Planning → Modeling → Construction → Deployment
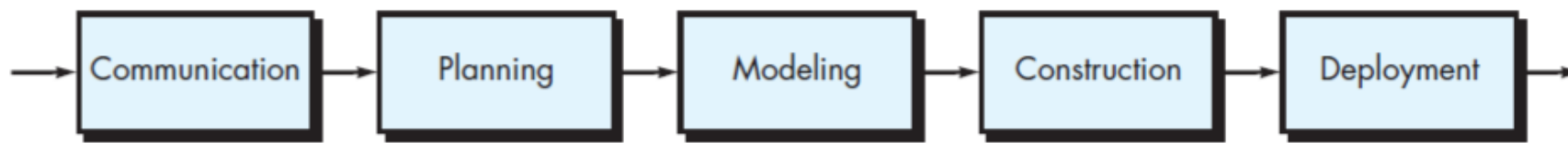
(a) Linear process flow

- **Iterative Process Flow:**

- An iterative process flow repeats one or more of the activities before proceeding to the next.


(b) Iterative process flow
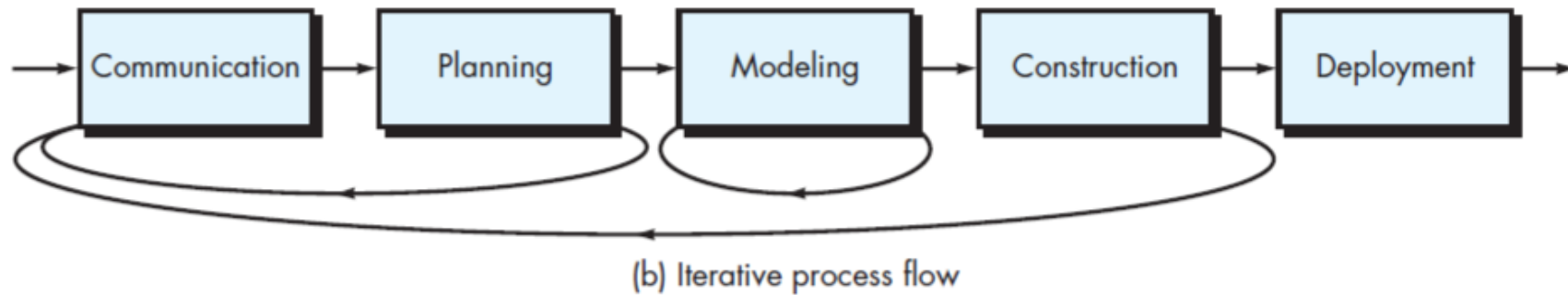
- **Evolutionary Process Flow:**

- An evolutionary process flow executes the activities in a "circular" manner.

(c) Evolutionary process flow

- **Parallel Process Flow:**

- A parallel process flow executes one or more activities in parallel with other activities (e.g., modeling for one aspect of the software might be executed in parallel with construction of another aspect of the software).
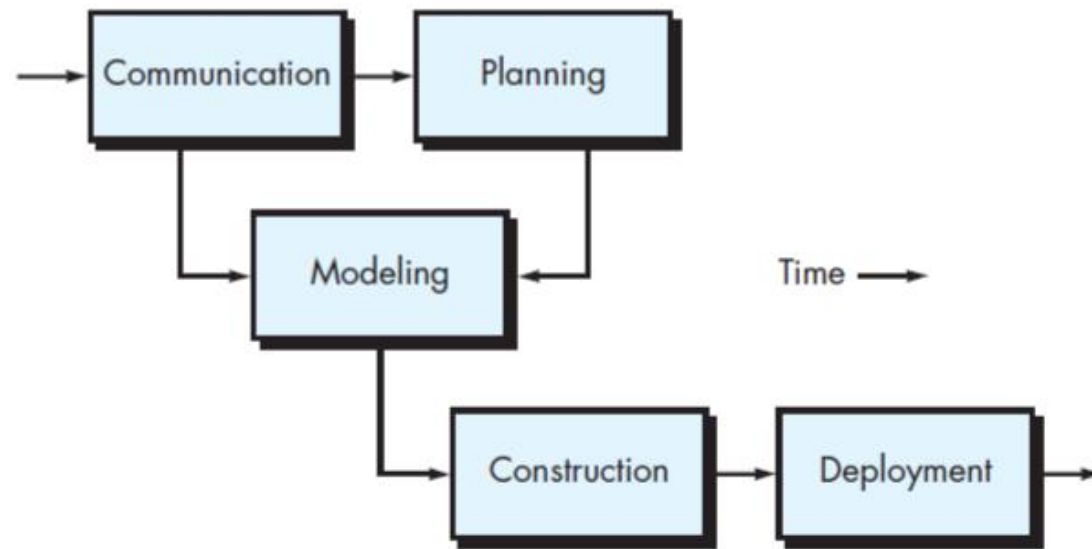
(d) Parallel process flow

Example:

- For a small software project requested by one person (at a remote location) with simple, straightforward requirements, the communication activity might encompass little more than a phone call or email with the appropriate stakeholder.

- Therefore, the only necessary action is phone conversation, and the work tasks (the task set) that this action encompasses are:

1. Make contact with stakeholder via telephone.

2. Discuss requirements and develop notes.

3. Organize notes into a brief written statement of requirements.

4. Email to stakeholder for review and approval.