Software Requirements Engineering

Lecture # 04

Process Model

Process Model

Software

The Software is an expression of knowledge.

Initially this knowledge is ***dispersed, hidden, silent and incomplete*** and a software process ***collects, distilled, organized and shapes*** into a ***software product.***

Software Process

Software engineering is actually a ***social learning process*** which is done by making dialogue and interaction between the stakeholders.

For Example:

- *Between Users and Designers*
- *Between Users and Evolving Tools*
- *Between Designers and Evolving Tools*

Software Process

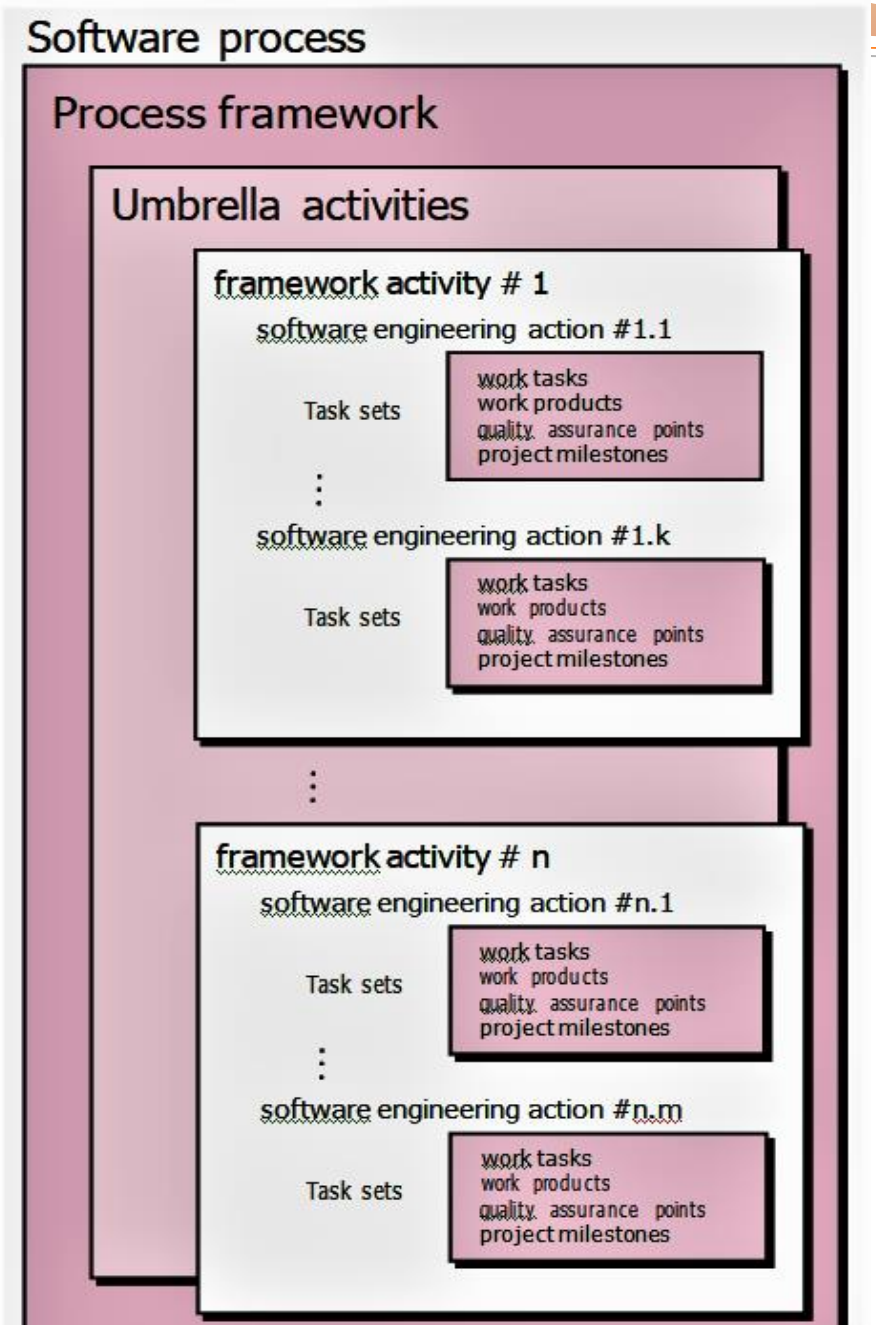
Usually, it is an iterative process in which the evolving tool itself serves as the medium for communication.

With each new round of the dialogue, it elicits more useful knowledge from the people involved (the stakeholders).

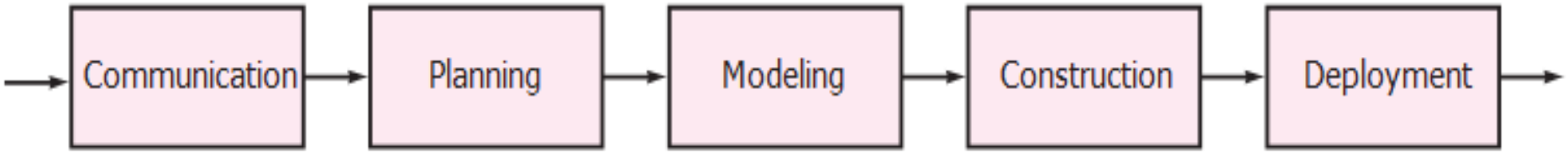
What is Software?

- *Software is developed or engineered, it is not manufactured in the classical sense.*
- *Software doesn't "wear out."*
- *Although the industry is moving toward component-based construction, most software continues to be custom-built.*

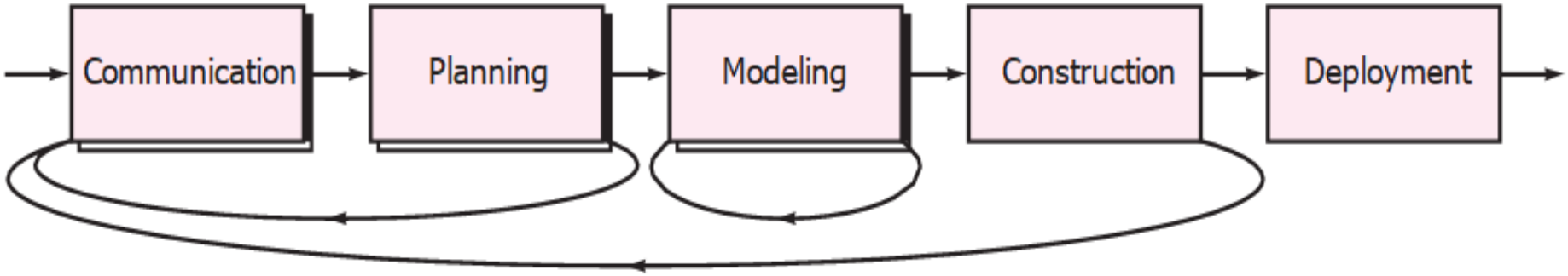
A Generic Process Model



Process Flow

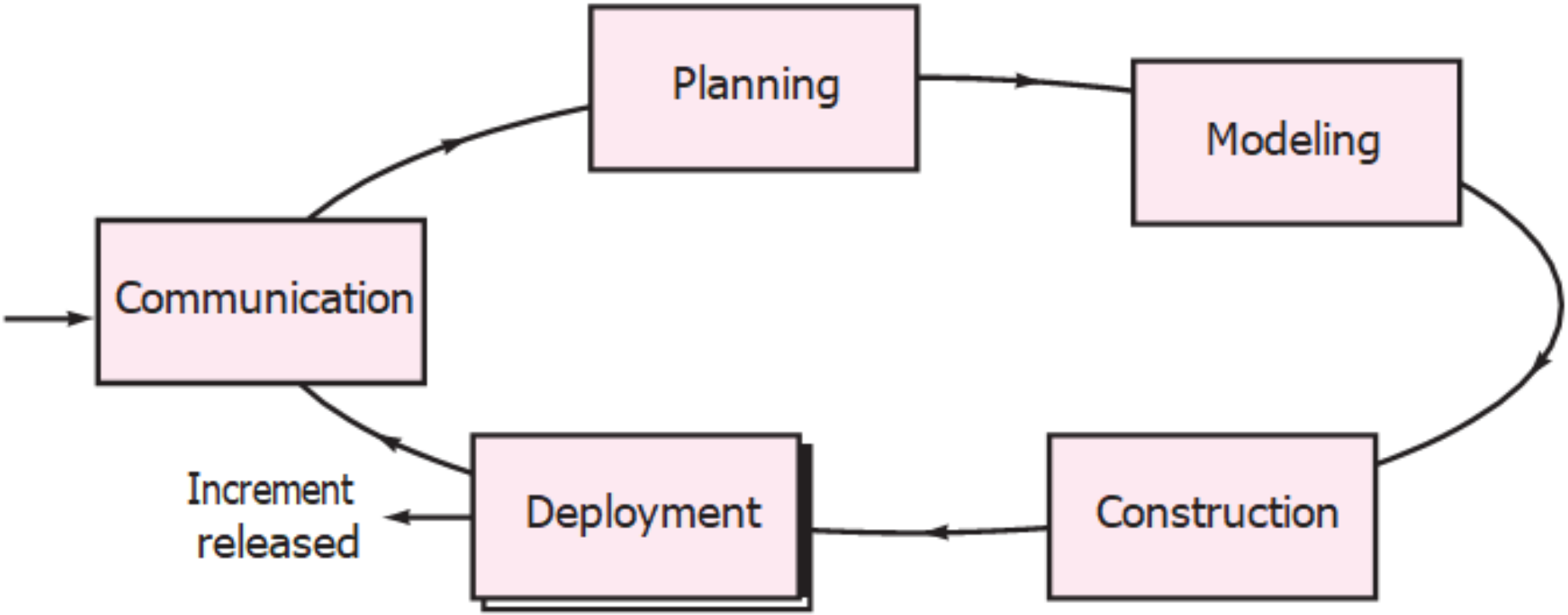


(a) Linear process flow



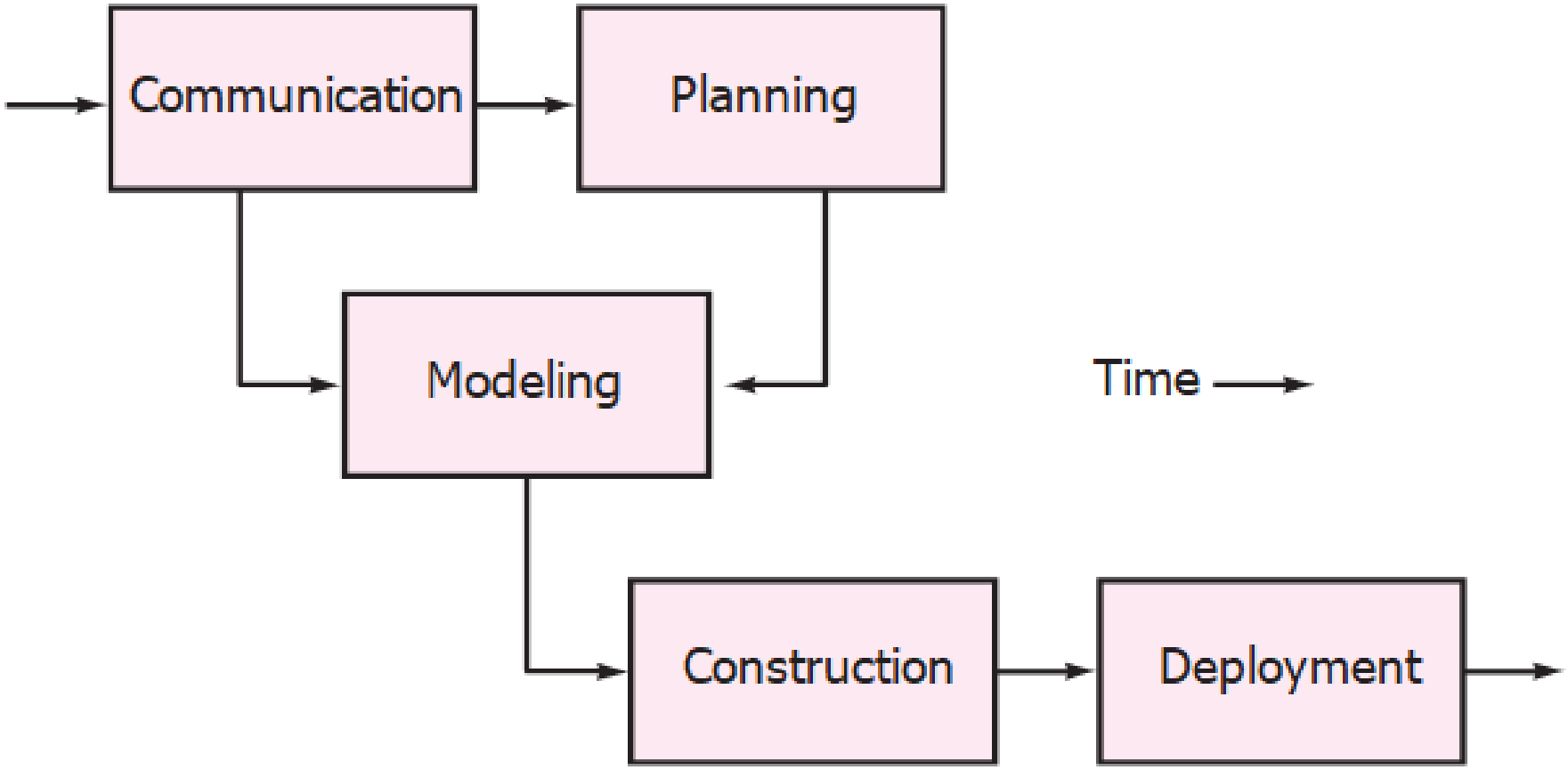
(b) Iterative process flow

Process Flow



(c) Evolutionary process flow

Process Flow



(d) Parallel process flow

Example: Actions, Tasks

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 ***tasks*** to be accomplished
  - A list of the ***work products*** to be produced
  - A list of the ***quality assurance*** filters to be applied

Identifying a Task Set

- **Framework Activity**
  - **Action #**
    - ***Task Set (work tasks), milestones, work products, QA***
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    - ***Task Set (work tasks), milestones, work products, QA***

Identifying a Task Set

For a ***small software project*** requested by one person with simple, straightforward requirements, the ***communication activity*** might be a **phone call** with the appropriate stakeholder.

Identifying a Task Set

The ***necessary action*** might be phone conversation, and the following are the ***work tasks*** (the task set) for this action;

- *Make contact with stakeholder **X** via telephone.*
- *Discuss requirements and **take your notes.***
- ***Organize** notes into brief written statement(s) of requirements.*
- ***E-mail** to stakeholder **X** for **review** and **approval***

Identifying a Task Set

For a considerably more ***complex large project*** with many stakeholders, each with a different set of (sometime conflicting) requirements, the ***communication activity*** will be divided into different set of ***sub-actions*** as well as the corresponding or associated ***task sets***

Identifying a Task Set

The ***communication activity*** might have ***six distinct actions***:

- ***inception***
- ***elicitation***
- ***elaboration***
- ***negotiation***
- ***specification***
- ***validation.***

*Each of these software engineering **actions** would have many **work tasks** and a number of **distinct work products.***

End of Lecture