

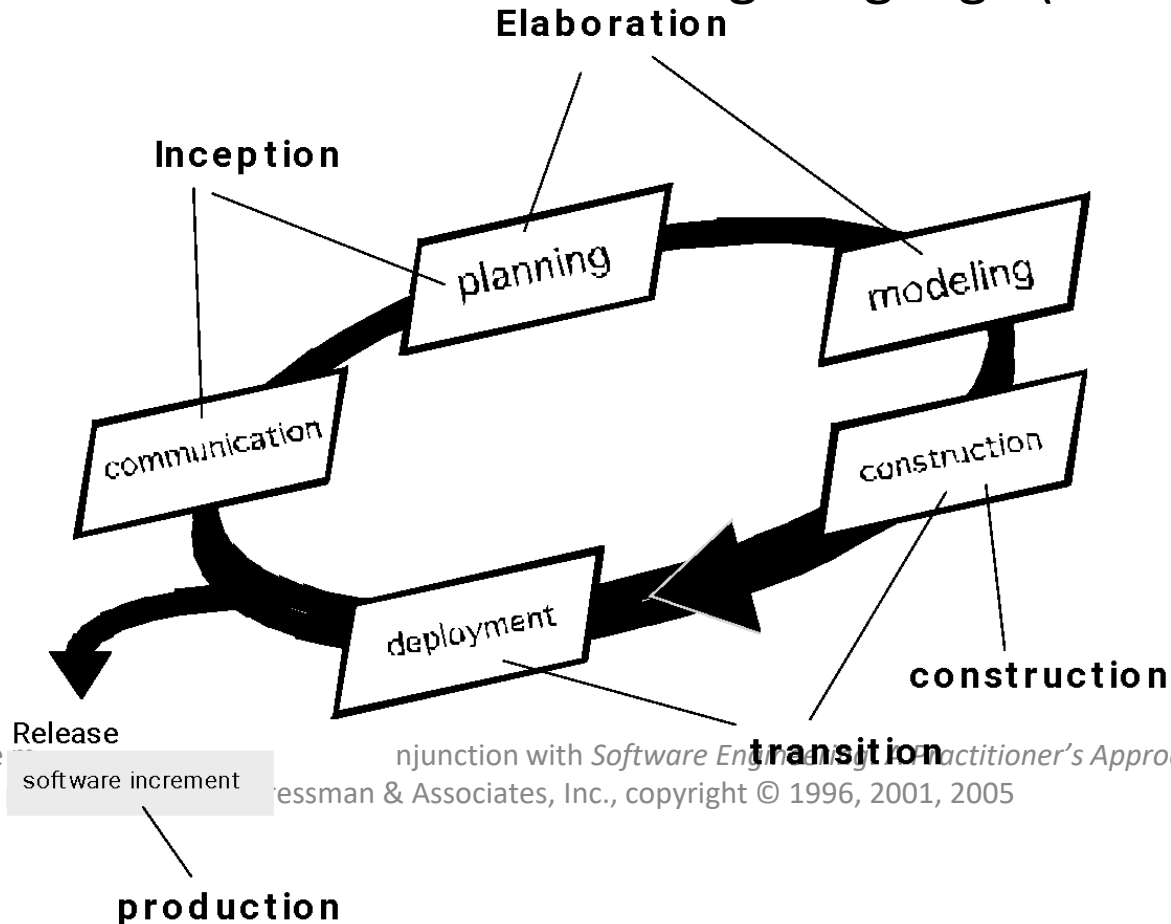
Lecture-5

Still Other Process Models

- **Component based development**—the process to apply when reuse is a development objective
- **Formal methods**—emphasizes the mathematical specification of requirements
- **AOSD**—provides a process and methodological approach for defining, specifying, designing, and constructing *aspects*

The Unified Process (UP)

Unified Process—a “use-case driven, architecture-centric, iterative and incremental” software process closely aligned with the Unified Modeling Language (UML)



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Release
software increment

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Phases of UP

- Inception
- Elaboration
- Construction
- Transition
- Production

The inception phase

of the UP encompasses both customer communication and planning activities. By collaborating with stakeholders, business requirements for the software are identified; a rough architecture for the system is proposed; and a plan for the iterative, incremental nature of the ensuing project is developed. Fundamental business requirements are described through a set of preliminary use cases (Chapter 5) that describe which features and functions each major class of users desires. Architecture at this point is nothing more than a tentative outline of major subsystems and the function and features that populate them.

The elaboration phase

encompasses the communication and modeling activities of the generic process model (Figure 2.9). Elaboration refines and expands the preliminary use cases that were developed as part of the inception phase and expands the architectural representation to include five different views of the software—the use case model, the requirements model, the design model, the implementation model, and the deployment model. Modifications to the plan are often made at this time

The construction phase

of the UP is identical to the construction activity defined for the generic software process.

Using the architectural model as input, the construction phase develops or acquires the software components that will make each use case operational for end users.

To accomplish this, requirements and design models that were started during the elaboration phase are completed to reflect the final version of the software increment. All necessary and required features and functions for the software increment (i.e., the release) are then implemented in source code. As components are being implemented, unit tests²¹ are designed and executed for each.

In addition, integration activities (component assembly and integration testing) are conducted. Use cases are used to derive a suite of acceptance tests that are executed prior to the initiation of the next UP phase.

The transition phase

of the UP encompasses the latter stages of the generic construction activity and the first part of the generic deployment (delivery and feedback) activity. Software is given to end users for beta testing and user feedback reports both defects and necessary changes. In addition, the software team creates the necessary support information (e.g., user manuals, troubleshooting guides, installation procedures) that is required for the release. At the conclusion of the transition phase, the software increment becomes a usable software release.

The production phase

of the UP coincides with the deployment activity of the generic process. During this phase, the ongoing use of the software is monitored, support for the operating environment (infrastructure) is provided, and defect reports and requests for changes are submitted and evaluated.