Evolutionary Models

Evolutionary Development:

- Interleaves the activities of specification, development and validation

- Initial system is developed from abstract specification
- Then refined with customer input to produce a system that satisfies the customer’ s needs.

Two types of evolutionary development

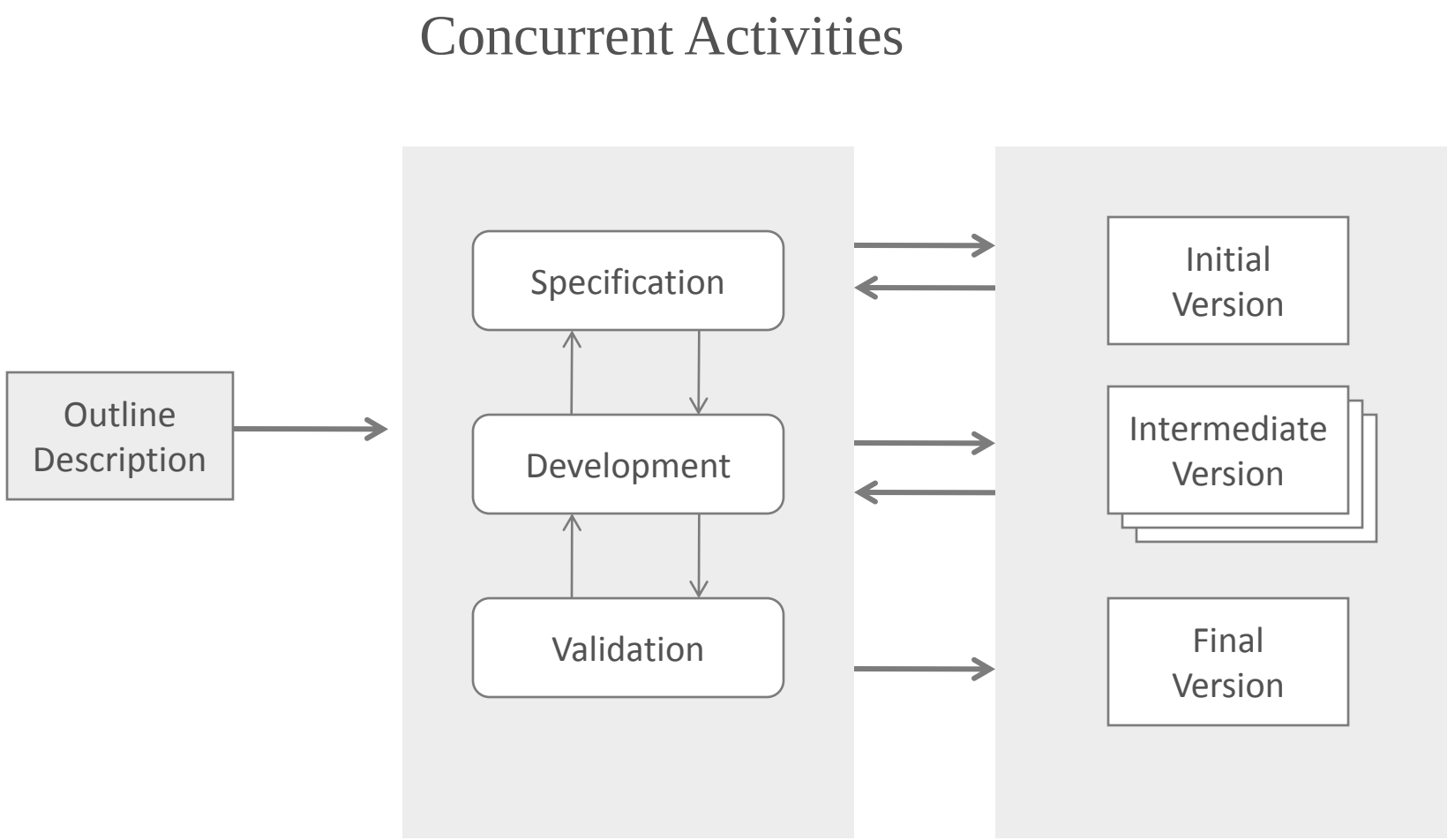
1. Exploratory
2. Prototyping

Evolutionary Models

Exploratory Model

- Objective of the process is to work with customers to explore their requirements and deliver a final system.
- The development starts with the parts of the system that are understood.
- The system evolves by adding new features proposed by customer.
- This model works best in situations where few, or none, of the system or product requirements are known in detail.

Exploratory Model



Exploratory Model

- **Problems:**
  - Lack of process visibility;
  - Systems are often poorly structured
- **Applicability:**
  - For small or medium-size interactive systems
  - For parts of large systems (e.g. the user interface)

Evolutionary Models

Prototyping Model

- When a customer defines a set of general objectives for a software but does not identify **detailed I/O** or **processing requirements.**
- A prototype is built to understand the requirements.
- By using this prototype, the client can get an “actual feel” of the system
- The interactions with prototype can enable the client to better understand the requirements of the desired system
- Prototyping is an attractive idea for complicated and large systems

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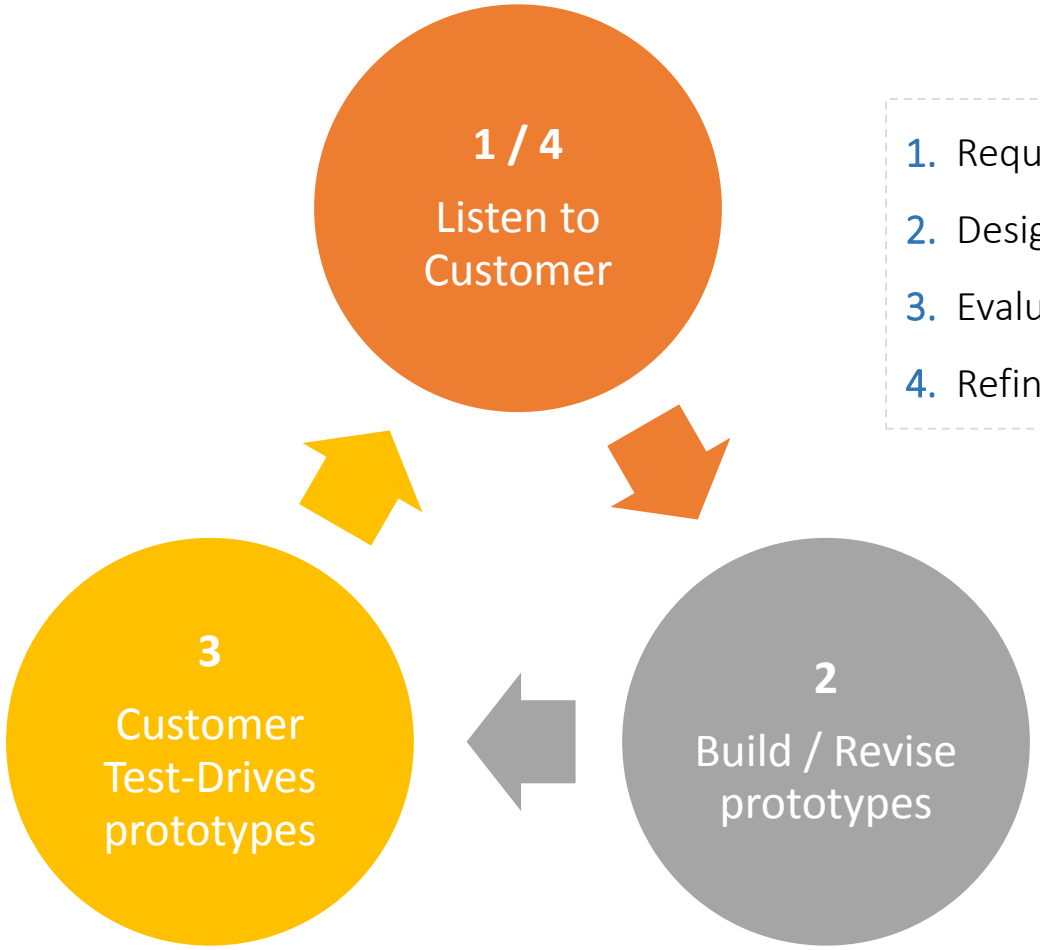
Evolutionary Models

Prototyping Model

Consists of 4 iterating phases:

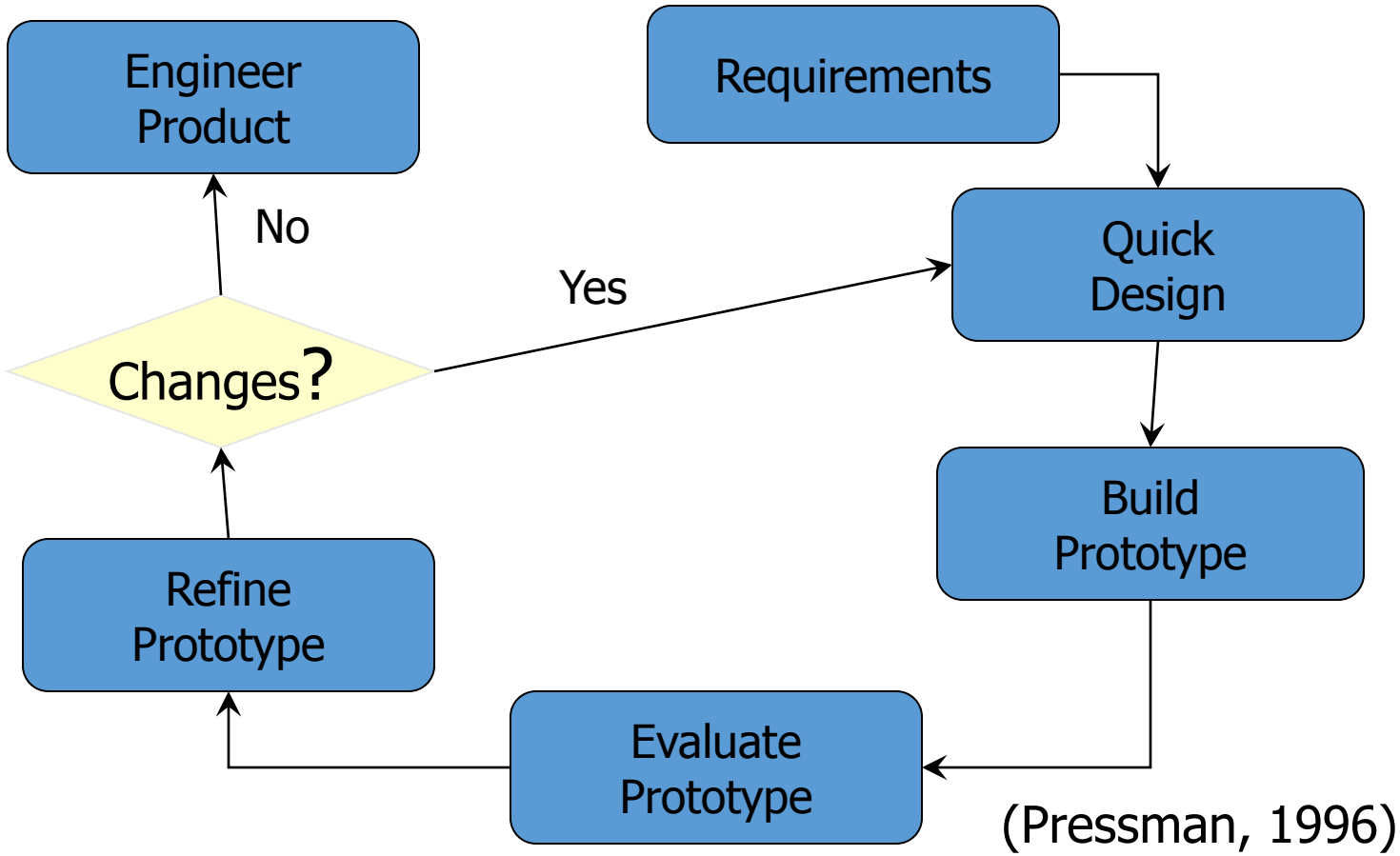
- Requirements gathering.
- Design and build prototype.
- Evaluate prototype with customer.
- Refine requirements.

Prototype Model



1. Requirements gathering.
2. Design and build SW prototype.
3. Evaluate prototype with customer.
4. Refine requirements.

Prototyping



(Pressman, 1996)

Prototype model

Advantages:

- Users are actively involved in the development
- Users get a better understanding of the system being developed.
- Errors can be detected much earlier.
- Quicker user feedback is available leading to better solutions.

Disadvantages:

- Practically, this methodology may increase the complexity of the system as scope of the system may expand beyond original plans.

Prototype model

Applicability:

- Prototype model should be used when the desired system needs to have a lot of interaction with the end users.

- Typically, online systems, web interfaces have a very high amount of interaction with end users, are best suited for Prototype model.