

Project & Introduction to Software Engineering

2023/12/27 (BeiJing Time)

What is Software Engineering?

Software Engineering is the process of

- **designing:** requirements, architecture, and components
- **developing:** implementation, make the designing to codes
- **testing:** test bugs and fix them
- **maintaining:** maintain the software

Main Attributes of Software Engineering

- **Efficiency:**It provides a measure of the resource requirement of a software product in an efficient way.
- **Reliability:**Will deliver the same results when used in similar working environment.
- **Reusability:**This attribute makes sure that the module can be used in multiple applications.
- **Maintainability:**It is the ability of the software to be modified, repaired, or enhanced easily with changing requirements.

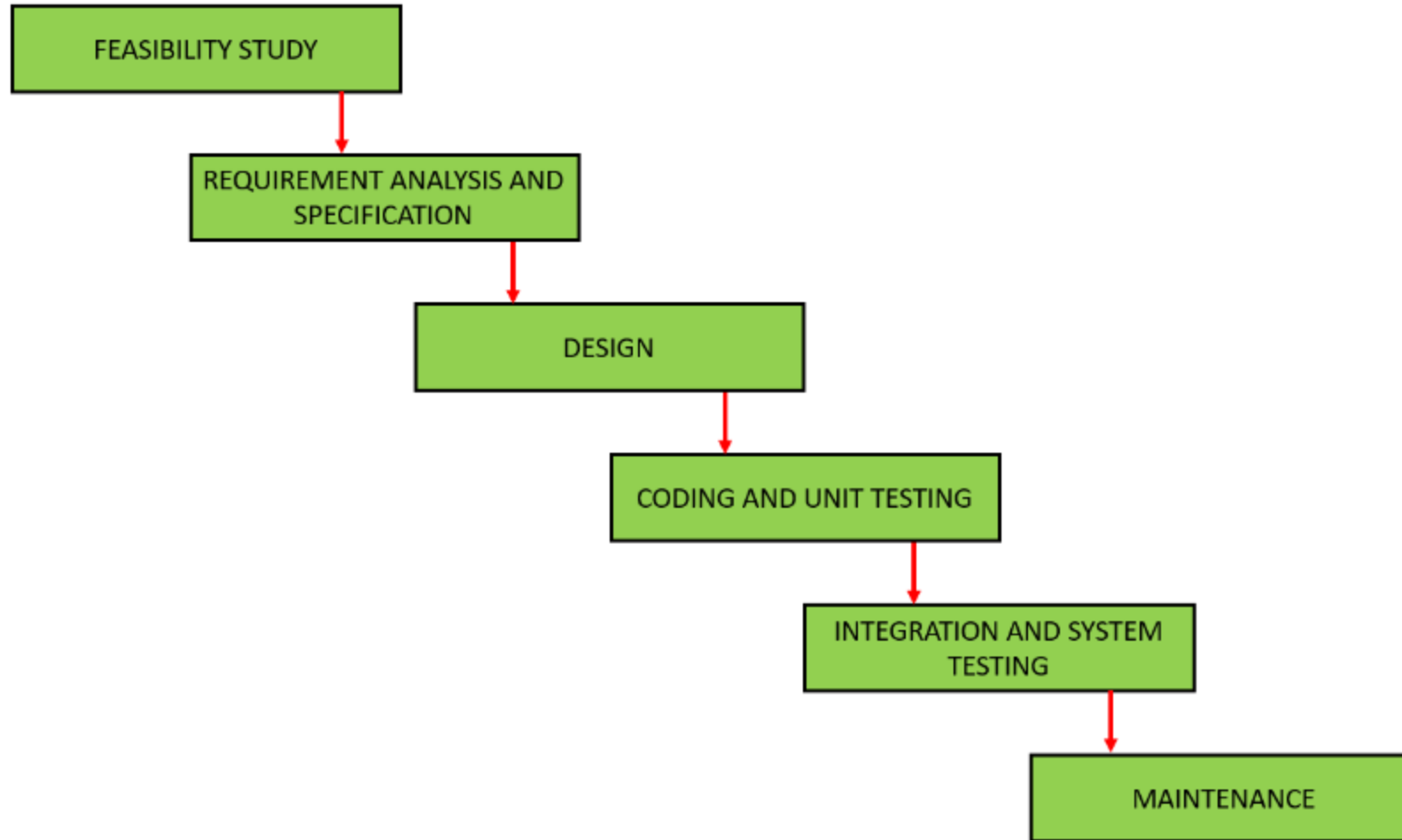
Software Engineering 【Trade Off】

- time
- cost
- quality
- scope
- risk

Life Cycle Models

- **Waterfall Model:** The waterfall model is a software development model used in the context of large, complex projects, typically in the field of information technology. It is characterized by a structured, sequential approach to project management and software development.

Waterfall Model



Phases of Classical Waterfall Model

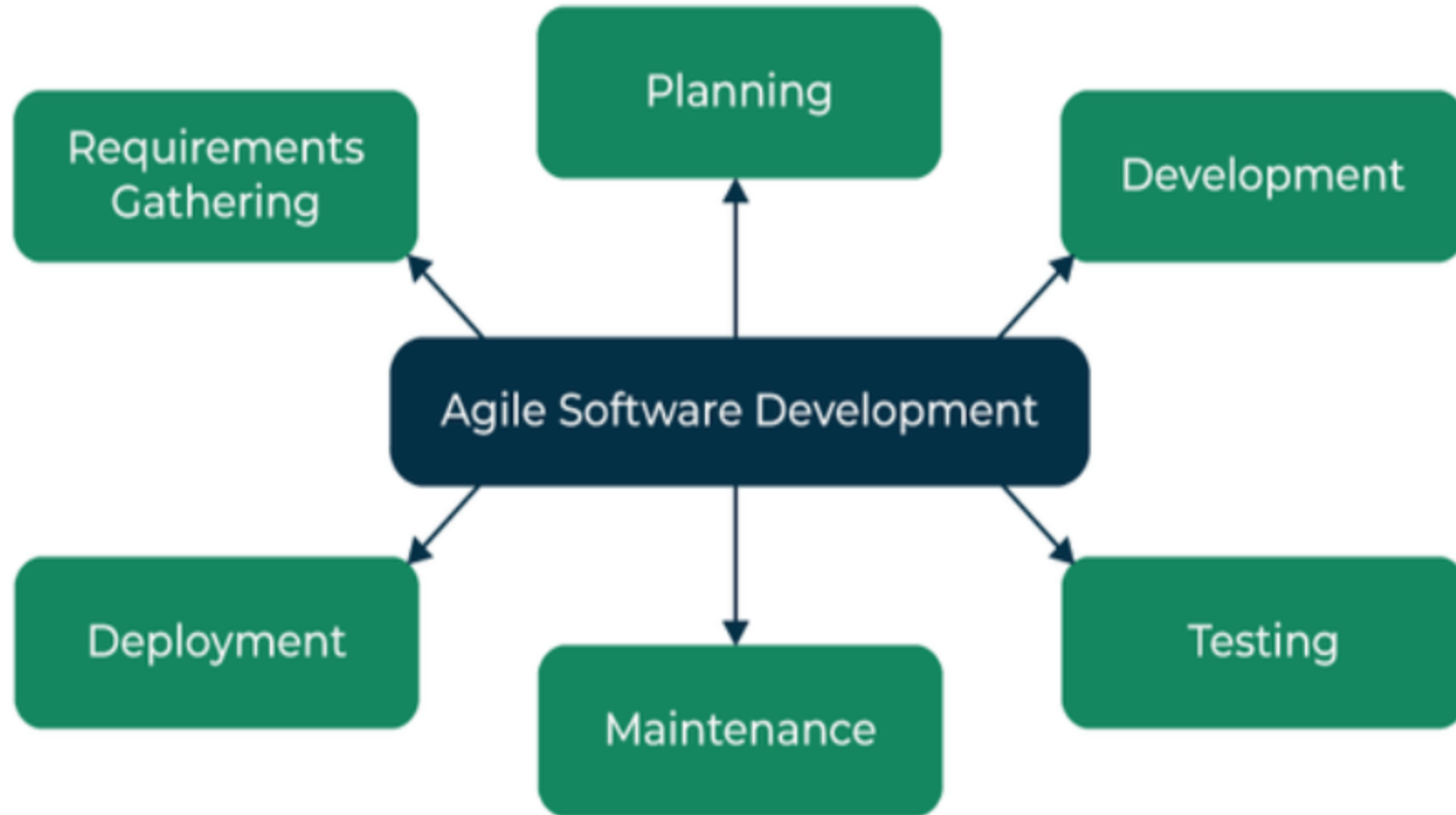
When to Use the Classical Waterfall Model

- Only well-defined, unambiguous, and fixed requirements are employed with this paradigm.
- The definition of a product is constant. People understand technology.
- There are no unclear prerequisites.
- There are many resources with the necessary knowledge readily available.
- When it's a brief project.

Life Cycle Models

- **Agile Model:** Agile Software Development is an iterative and incremental approach to software development that emphasizes the importance of delivering a working product quickly and frequently. It involves close collaboration between the development team and the customer to ensure that the product meets their needs and expectations.

The Agile Software Development Process:



Agile Software Development

Agile Model

Agile Software Development Cycle



Agile software development cycle

Agile Model

We use the Agile Model to finish our project.