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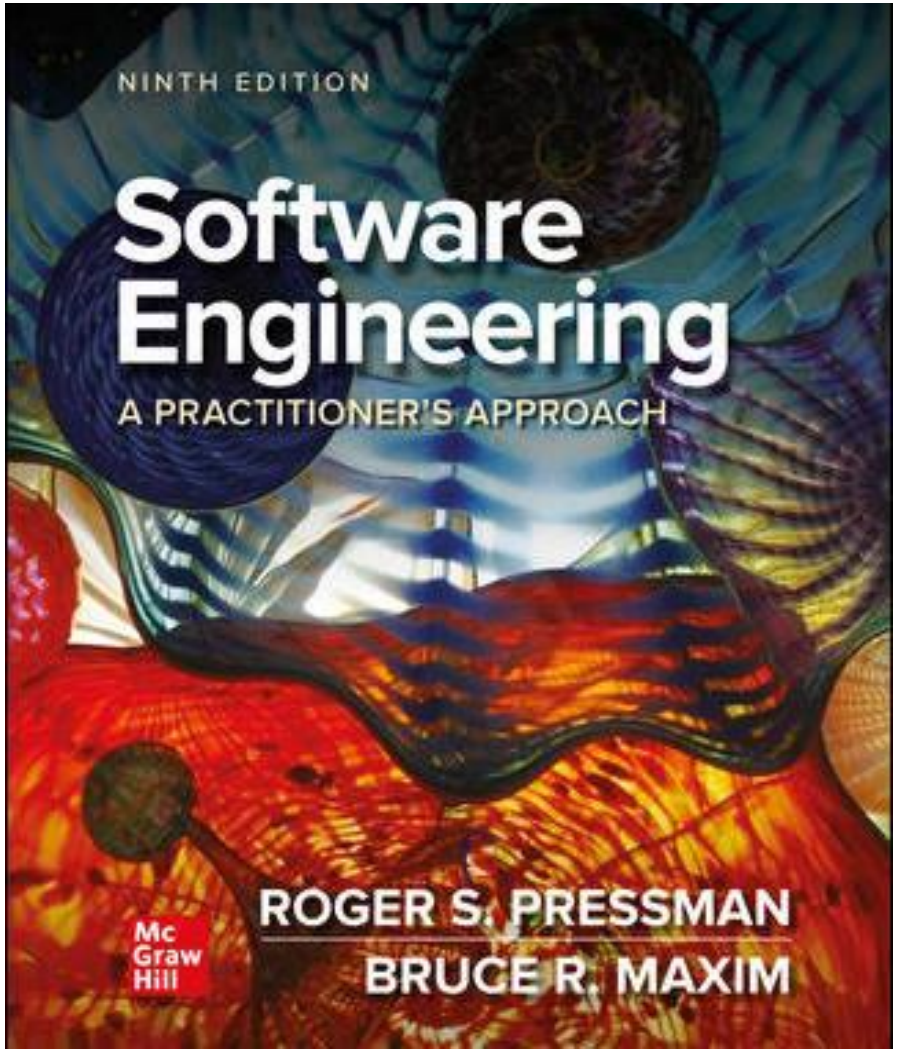
# Chapter 2

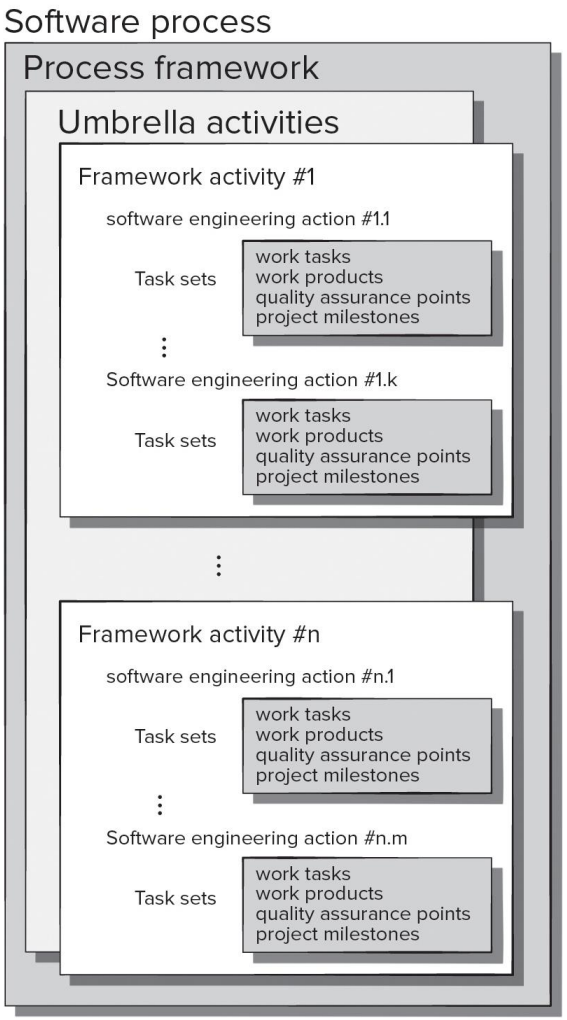
## Process Models

**Part 1 - The Software Process**



# Generic Process Model



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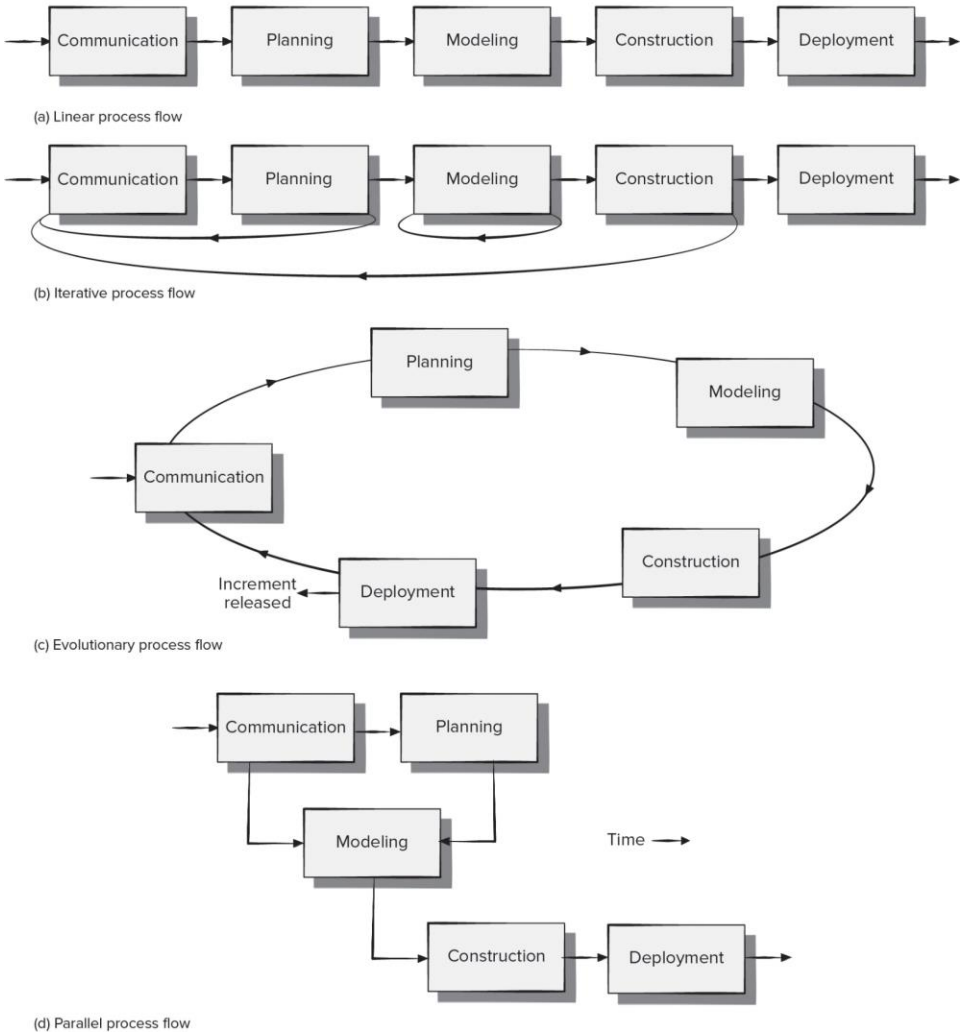
# Process Flow



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# Identifying a Task Set

A task set defines the actual work to be done to accomplish the objectives of a software engineering action.

A task set is defined by creating several lists:

- 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.

# Process Assessment and Improvement

- The existence of a software process is no guarantee that software will be delivered on time, or meet the customer's needs, or that it will exhibit long-term quality characteristics.
- Any software process can be assessed to ensure that it meets a set of basic process criteria that have been shown to be essential for successful software engineering.
- Software processes and activities should be assessed using numeric measures or software analytics (metrics).

# Prescriptive Process Models [1]

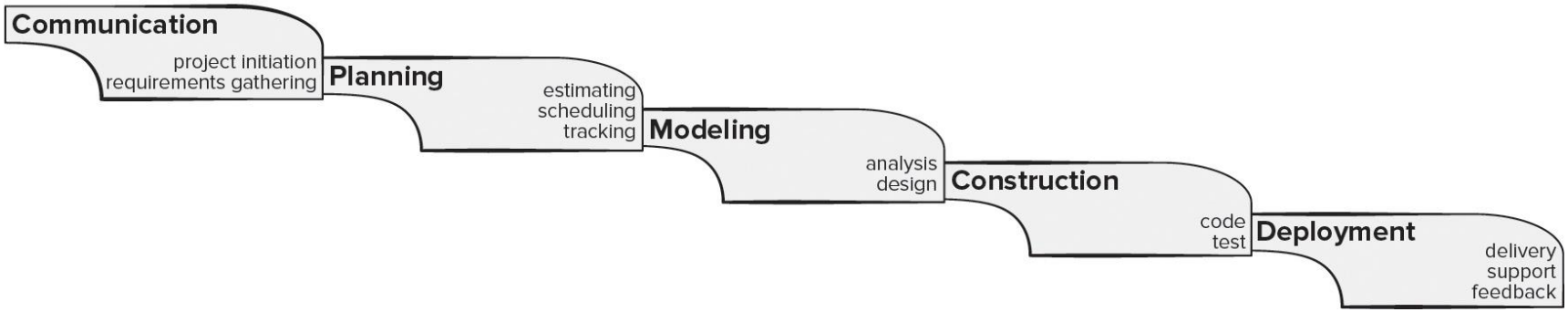
Prescriptive process models advocate an orderly approach to software engineering.

*That leads to a two questions:*

- If prescriptive process models strive for structure and order, are they appropriate for a software world that thrives on change?
- If we reject traditional process models and replace them with something less structured, do we make it impossible to achieve coordination and coherence in software work?

# Waterfall Process Model






**Pros**

- It is easy to understand and plan.
- It works for well-understood small projects.
- Analysis and testing are straightforward.

**Cons**

- It does not accommodate change well.
- Testing occurs late in the process.
- Customer approval is at the end.

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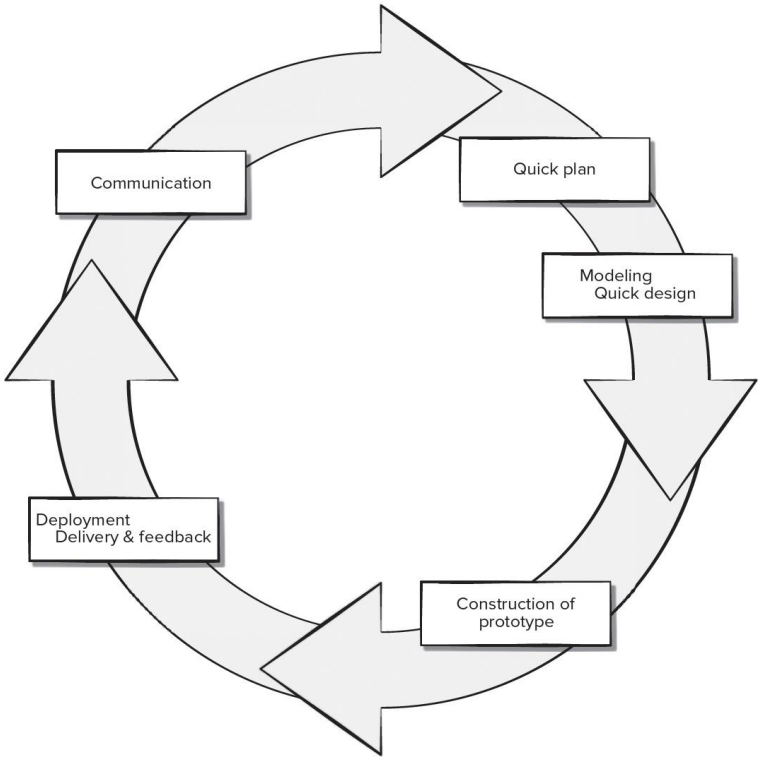
# Prototyping Process Model






**Pros**

- Reduced impact of requirement changes.
- Customer is involved early and often.
- Works well for small projects.
- Reduced likelihood of product rejection.

**Cons**

- Customer involvement may cause delays.
- Temptation to "ship" a prototype.
- Work lost in a throwaway prototype.
- Hard to plan and manage.

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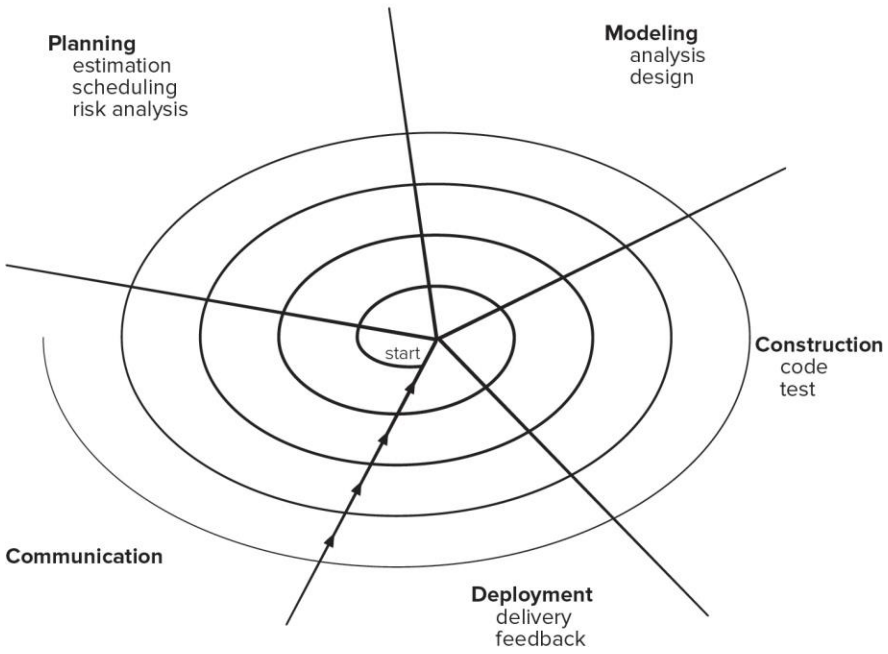
# Spiral Process Model






**Pros**

- Continuous customer involvement.
- Development risks are managed.
- Suitable for large, complex projects.
- It works well for extensible products.

**Cons**

- Risk analysis failures can doom the project.
- Project may be hard to manage.
- Requires an expert development team.

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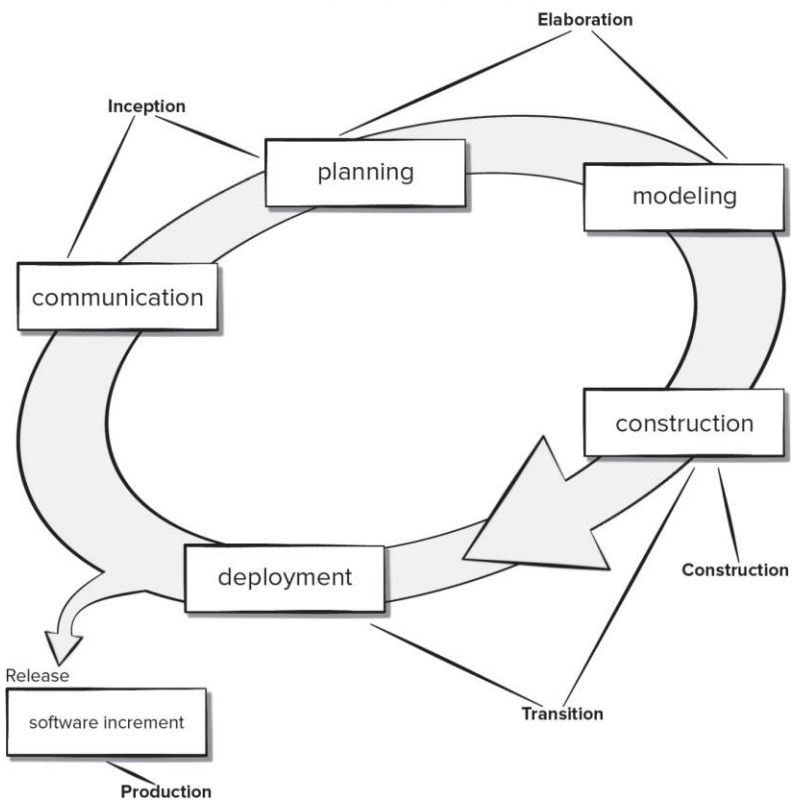
# Unified Process Model






**Pros**

- Quality documentation emphasized.
- Continuous customer involvement.
- Accommodates requirements changes.
- Works well for maintenance projects.

**Cons**

- Use cases are not always precise.
- Tricky software increment integration.
- Overlapping phases can cause problems.
- Requires expert development team.

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# Prescriptive Process Models 2

Prescriptive process models advocate an orderly approach to software engineering.

*That leads to a two questions:*

- If prescriptive process models strive for structure and order, are they appropriate for a software world that thrives on change?
- If we reject traditional process models and replace them with something less structured, do we make it impossible to achieve coordination and coherence in software work?


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