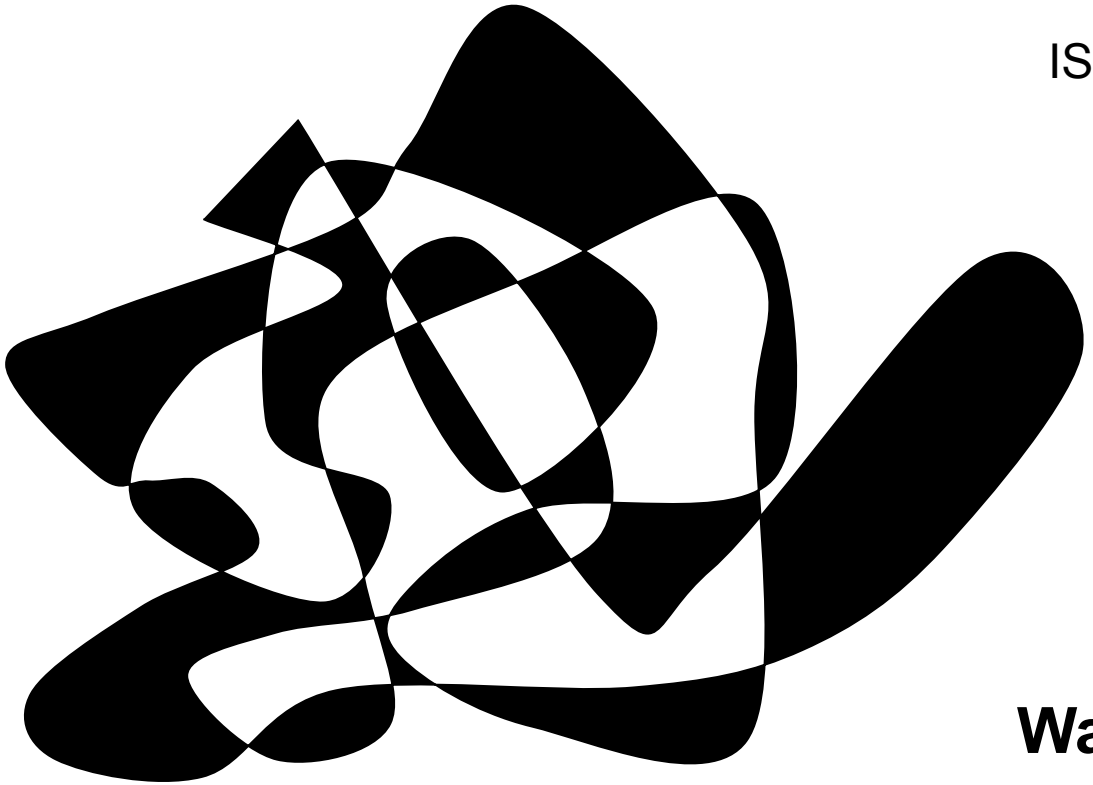
Advanced Project Management

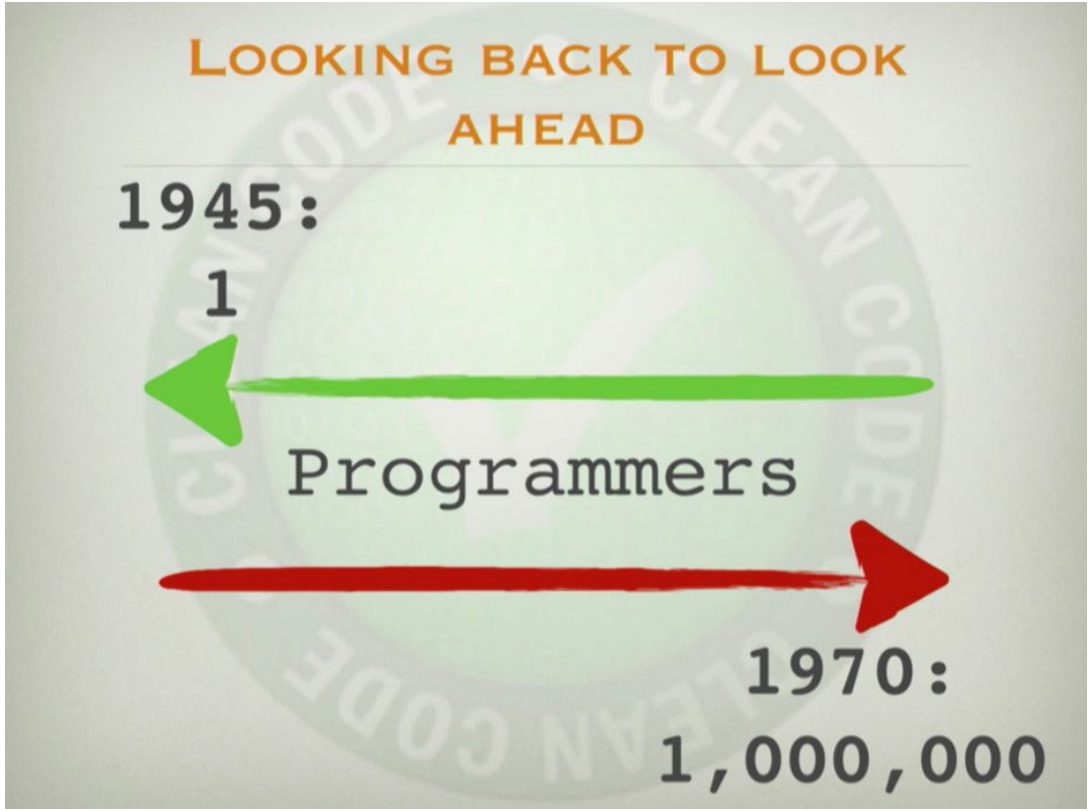
IS 594, Section PJ



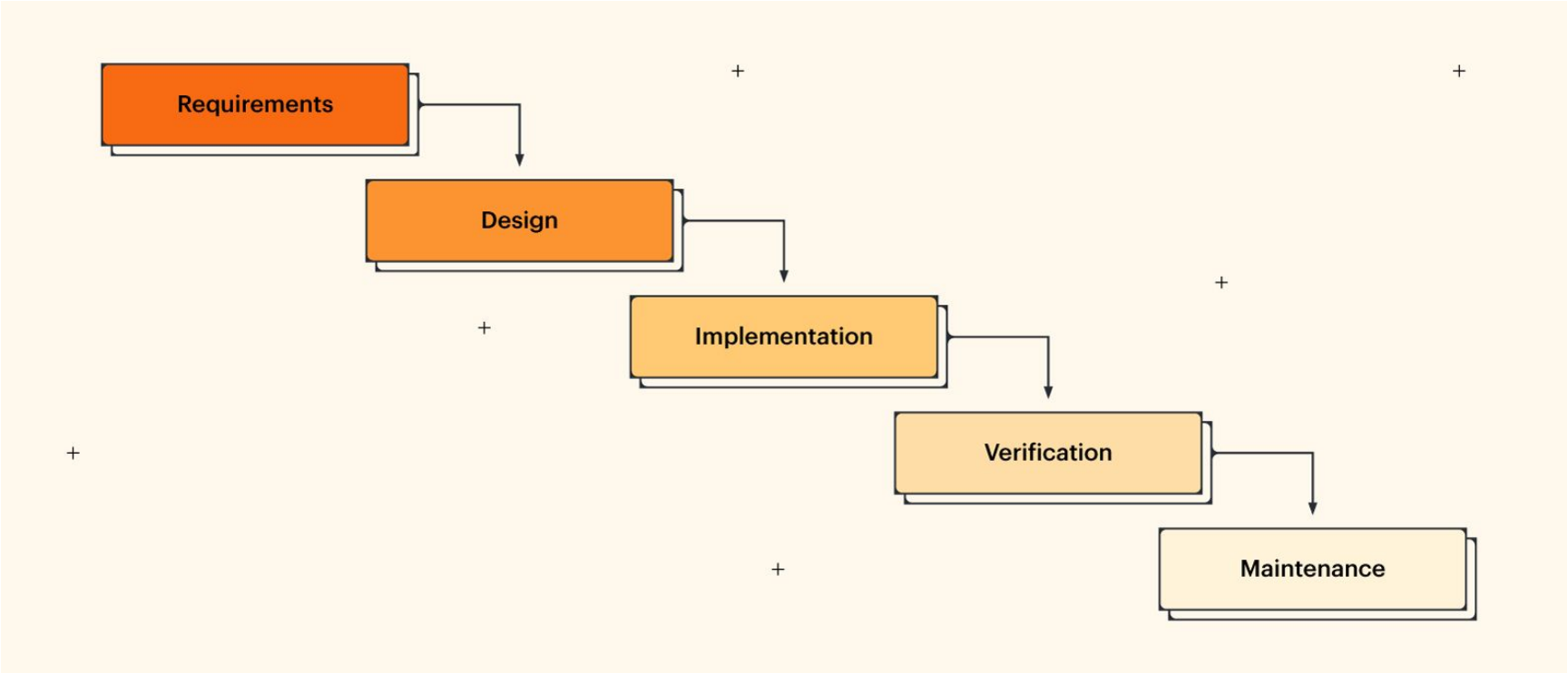
Waterfall I (Specs)

"The Future of Programming" Bob Martin. *YouTube*

https://www.youtube.com/watch?v=ecIWPzGEbFc&t=2972s



Waterfall Approach



Waterfall vs. Agile (Atlassian)
https://www.atlassian.com/agile/project-management/project-management-intro

Winston M. Royce (1970)
***Managing the Development of Large Software Systems*.**

A Summary of the Waterfall Paper. Milo Todorovich, Medium, https://medium.com/@milo.todorovich/a-summary-of-the-waterfall-paper-ae9153788d1

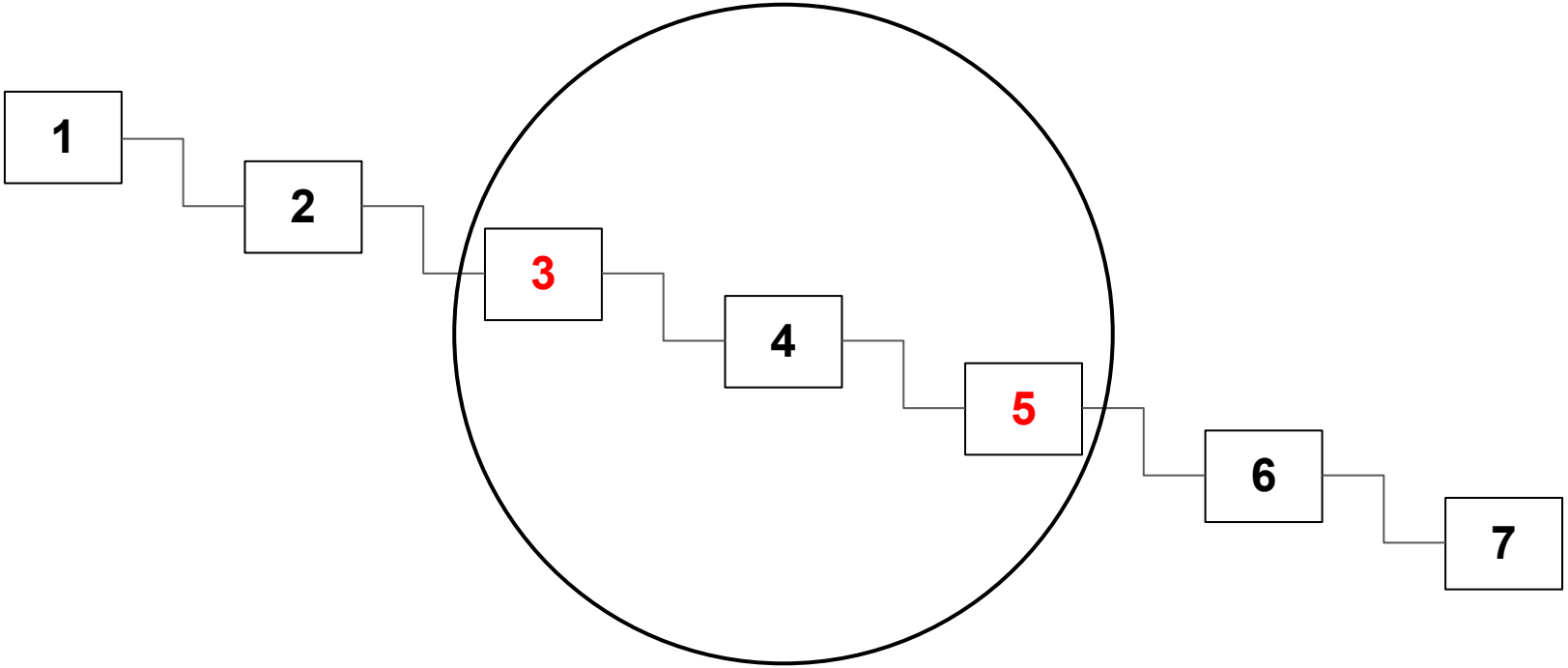
Minimal steps in developing software: **Analysis** and **Coding**.

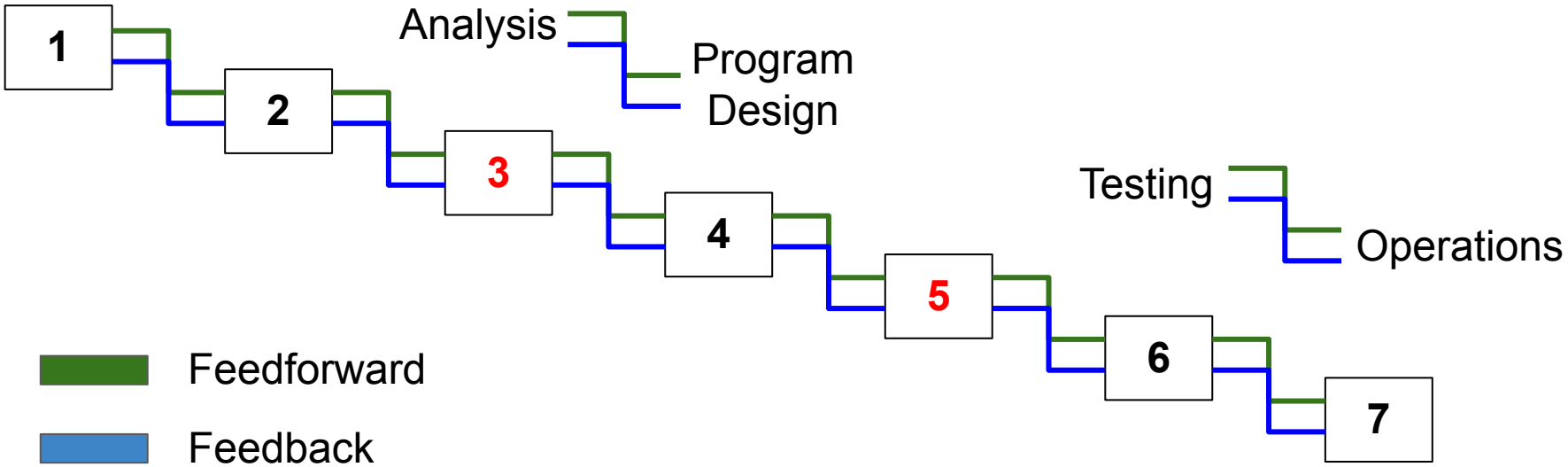
Single-person team = Minimal steps model.

Multi-person team, minimal system practices are “doomed to failure”.

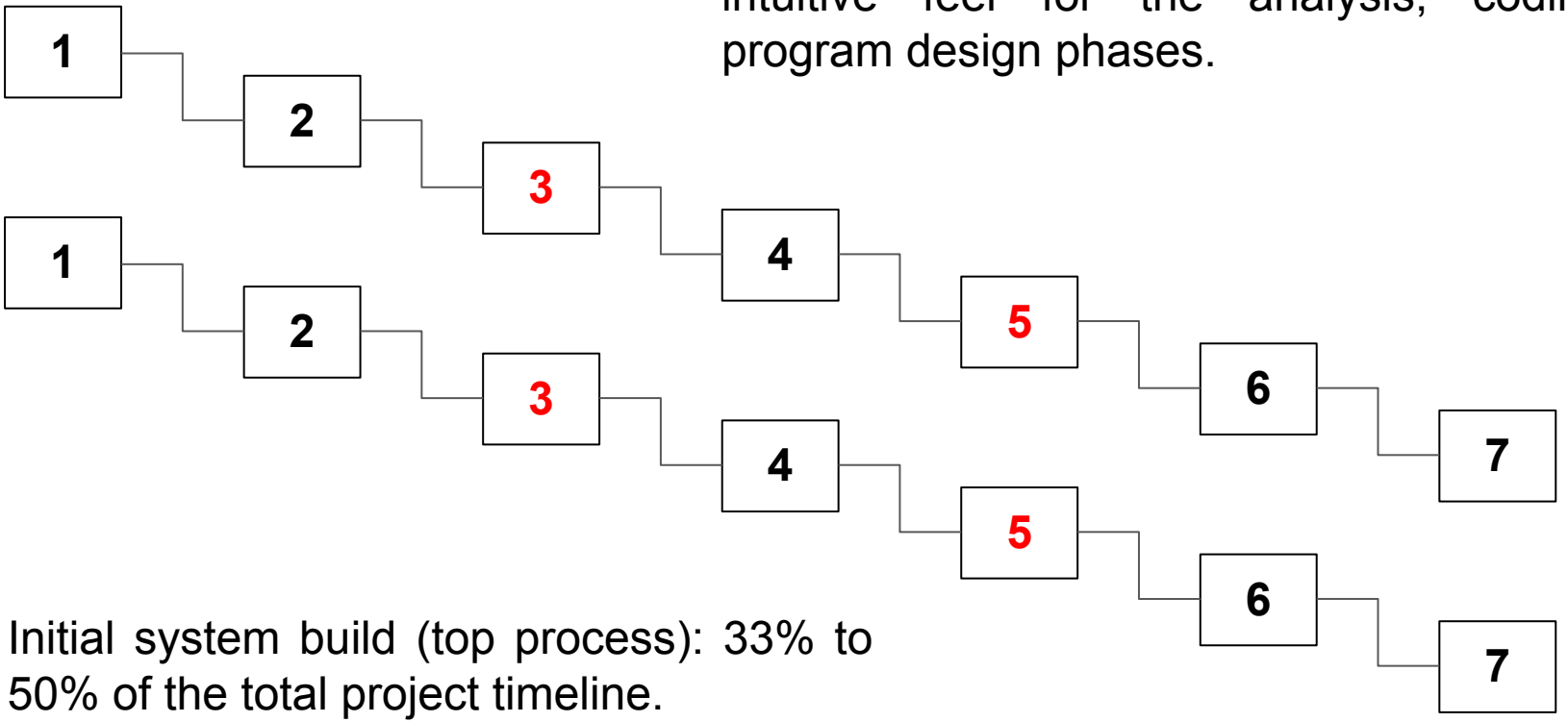
Specifications needed for multi-person teams:

1) System Requirements, 2) Software Requirements, 3) **Analysis**, 4) Program Design, 5) **Coding**, 6) Testing, and 7) Operations.

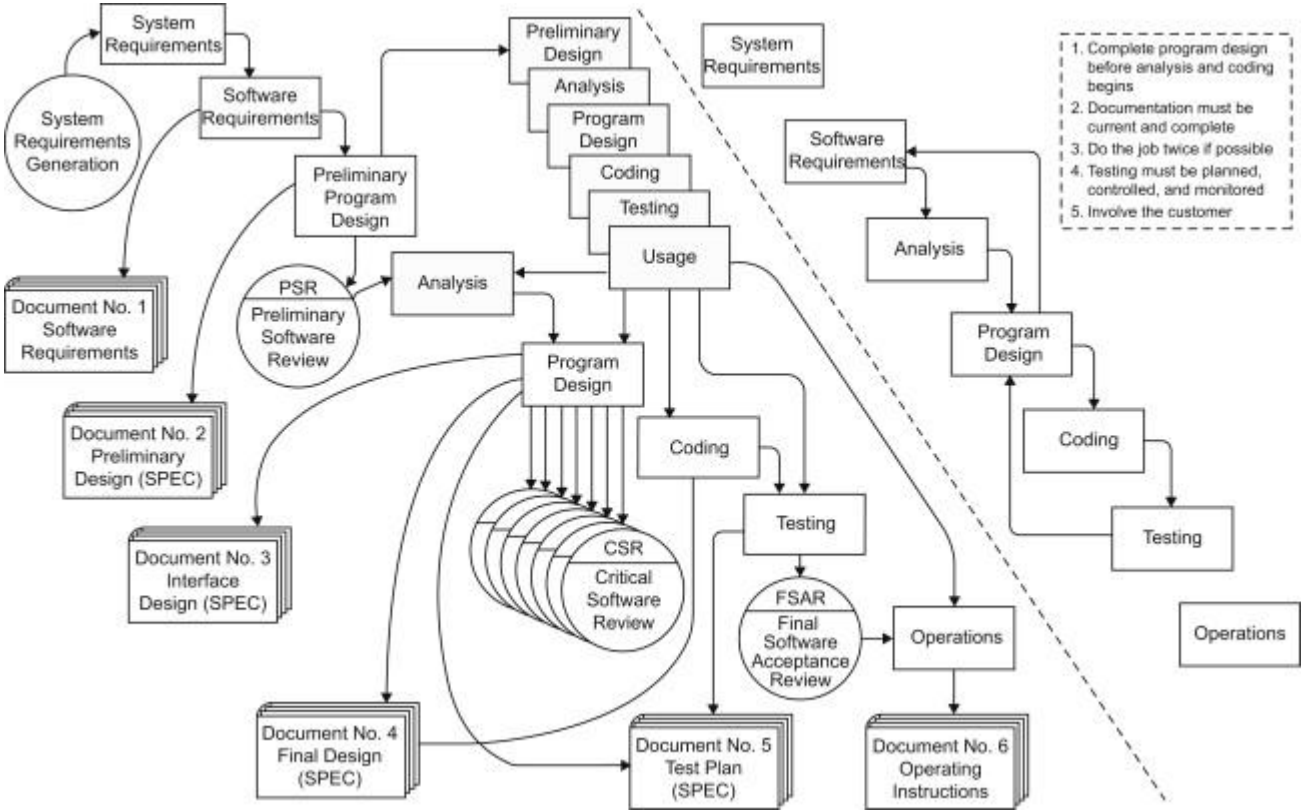



1
2
3
4
5
6
7
Analysis
Program
Design
Testing
Operations
Feedforward
Feedback

Novel projects: repeat steps 2x. Develop an intuitive feel for the analysis, coding, program design phases.

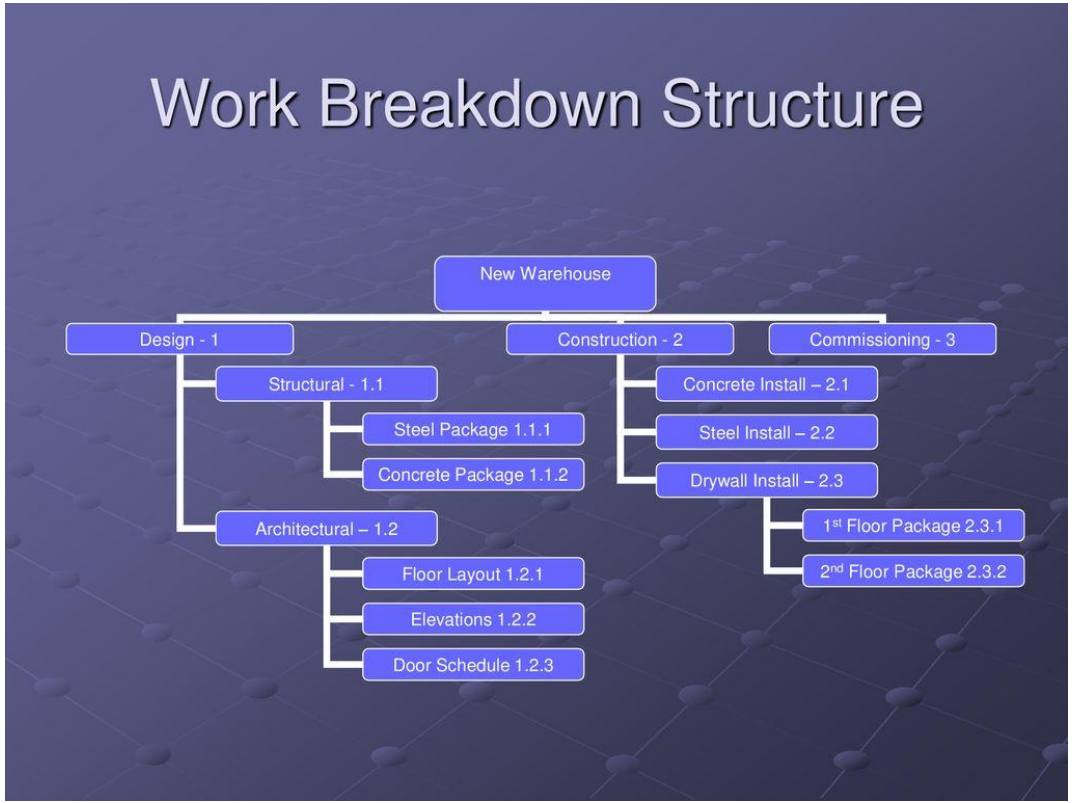


Initial system build (top process): 33% to 50% of the total project timeline.



Waterfall Approach: documents specify parts (6x), top-down documentation (controlled versioning and complete before development).

Developing a Work Breakdown Structure (WBS)
Design Phase



Developing a hierarchy of tasks and assign to teams/ individuals.

Leads to schedule with milestones.

Specs and Documentation

Pros	Cons
Provide a comprehensive plan	Cannot respond to evolving needs
Provide institutional memory	Reduces spontaneity (improvization)
Ability to reduce error	Encourages too many processes
Ability to think about project as a system	Requires large teams, specialization
Easier to set timelines	Takes longer than Agile

Time investment

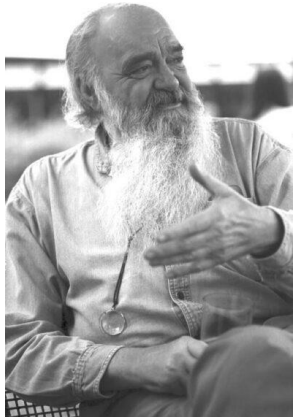
Added efforts in planning and documentation now >>> Rescoping and fixing via redesign later

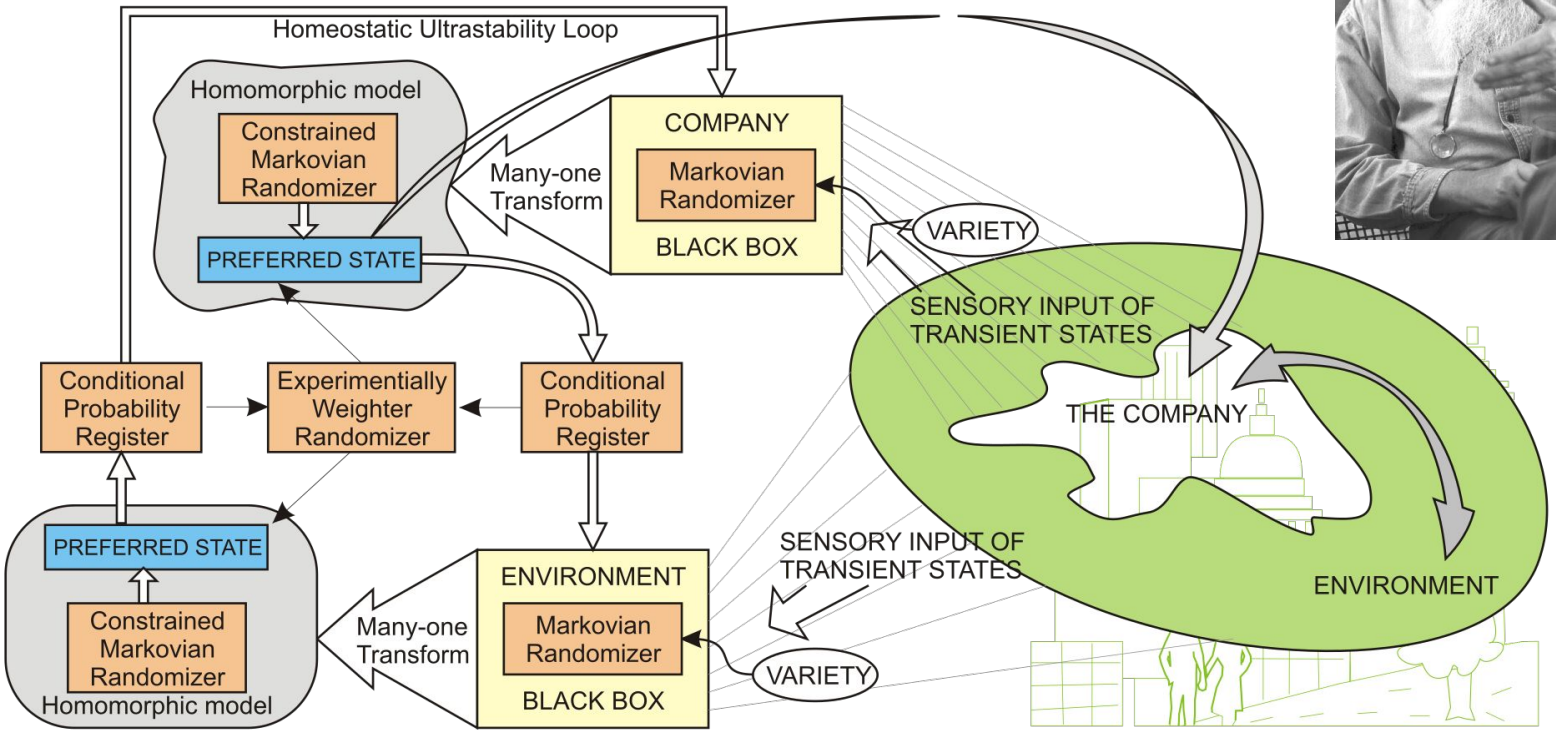
Remove simple errors through inspections of process and code review (most source of error).

To remove the remainder of error, hand system off to an area test specialist.

Sketch of a Cybernetic Factory

Stafford Beer, *Brain of the Firm*, 1972





1970 2000 2020s

Agile Manifesto: http://agilemanifesto.org/

Waterfall

Much documentation needed up front, development happened after docs are in place.

Agile

Break problems into digestible components, documentation is secondary.

Lean documentation: communication replaces reliance of documentation
http://agilemodeling.com/essays/agileDocumentation.htm

Better Technical Methods

Infoworld: A Brief History of the Agile Method
https://www.infoworld.com/article/3655646/a-brief-history-of-the-agile-methodology.html