

# Software Engineering Process Models (2)

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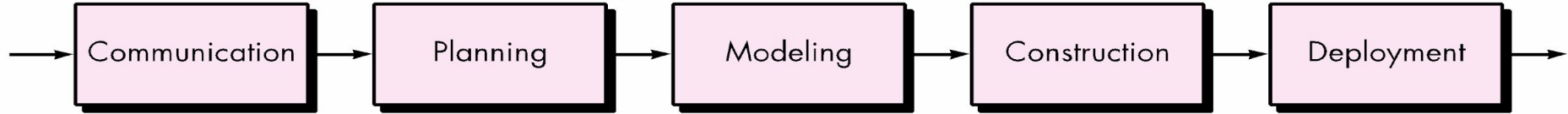
Erik Fredericks // [frederer@gvsu.edu](mailto:frederer@gvsu.edu)

# Outline

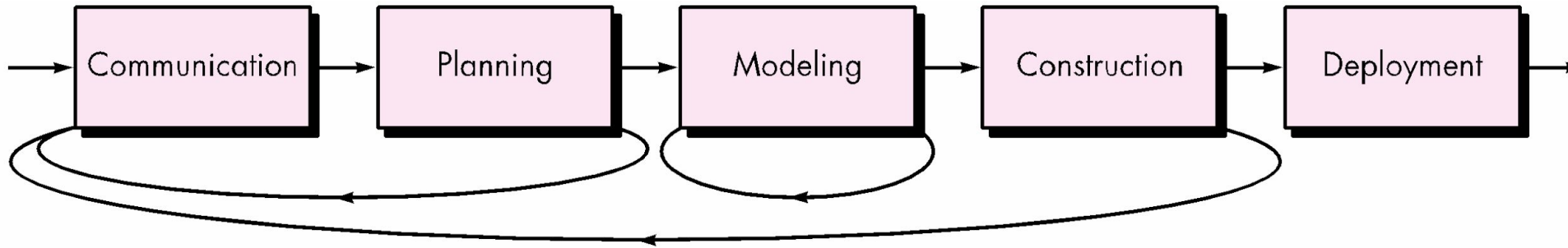
## Process Model Types:

- Linear Process Flow
- Iterative Process Flow
- Evolutionary Process Flow
- Parallel Process Flow

# Linear Process Flow

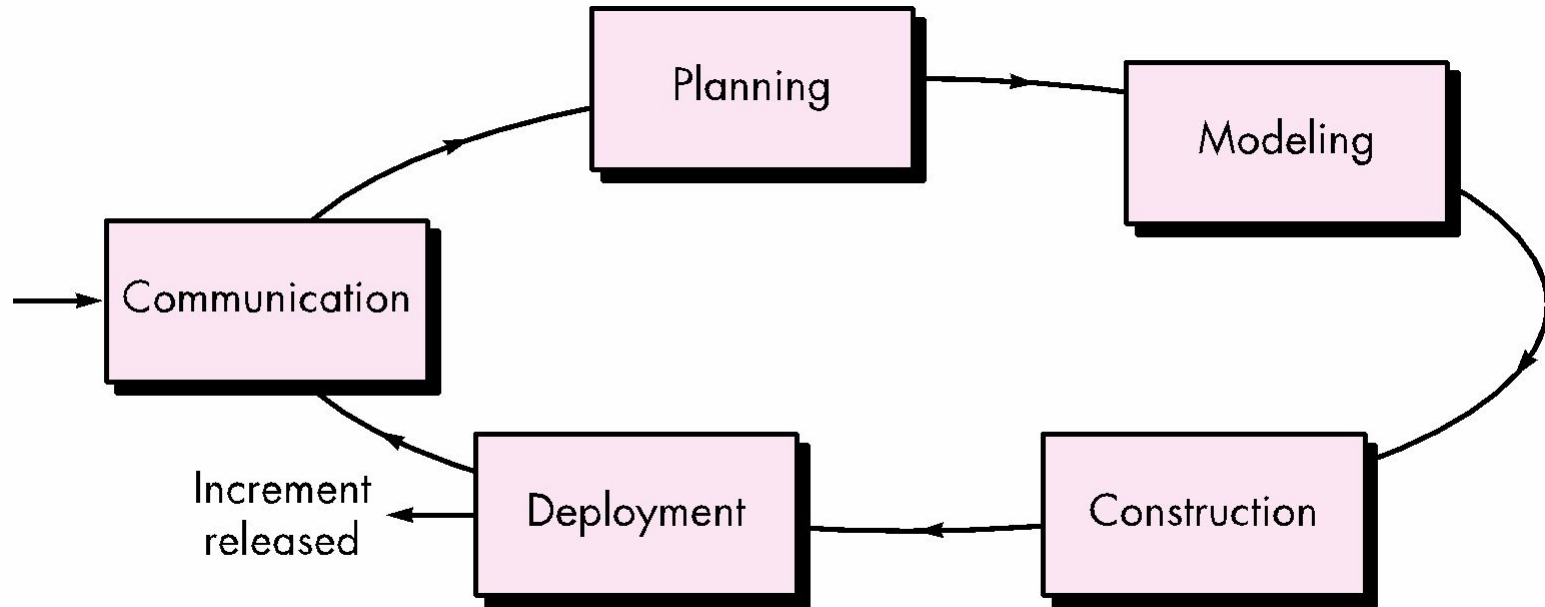


# Iterative Process Flow

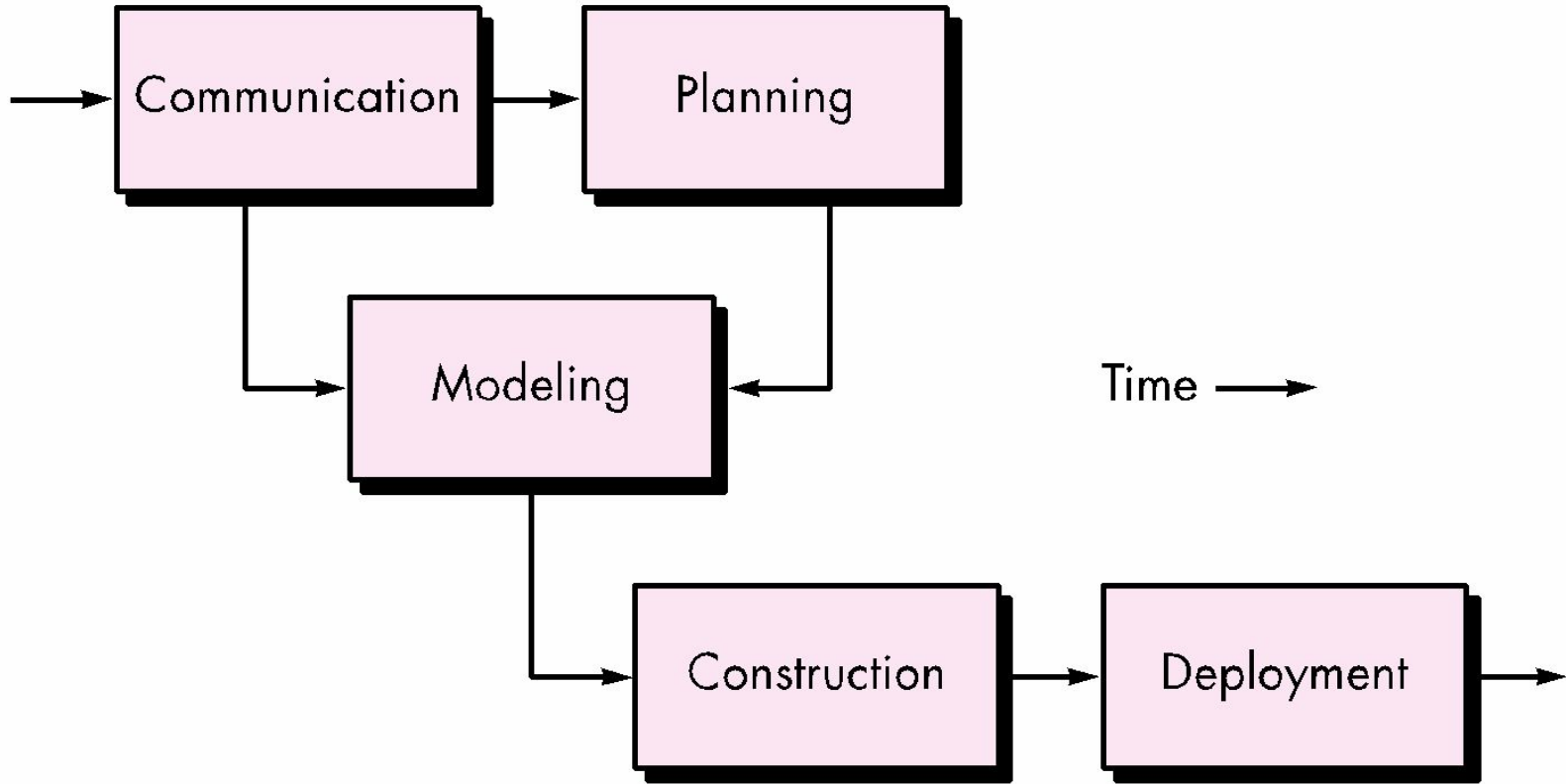


Adapted from Pressman, Roger S. *Software engineering: a practitioner's approach*.

# Evolutionary Process Flow



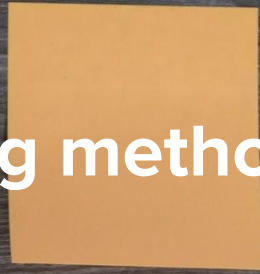
## Parallel Process Flow







But what about that "new" exciting methodology?





# Agile

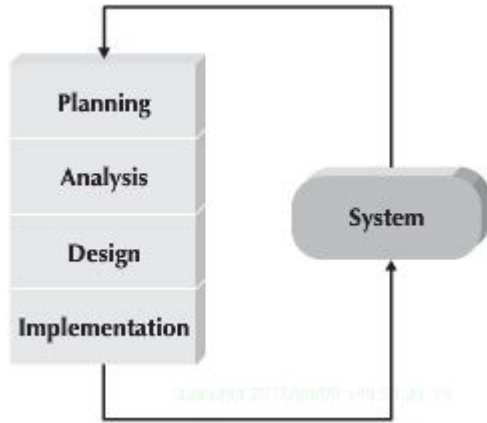
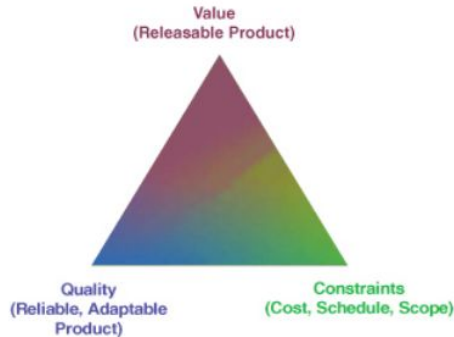


Figure 2-1 The Agile Triangle



- Software is delivered early and continuously through the development process, satisfying the customer.
- Changing requirements are embraced regardless of when they occur in the development process.
- Working software is delivered frequently to the customer.
- Customers and developers work together to solve the business problem.
- Motivated individuals create solutions; provide them the tools and environment they need, and trust them to deliver.
- Face-to-face communication within the development team is the most efficient and effective method of gathering requirements.

# Agile

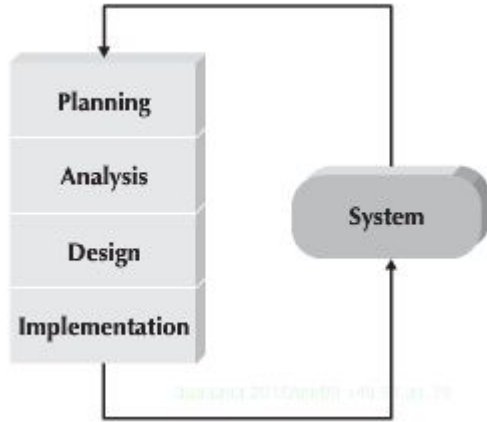
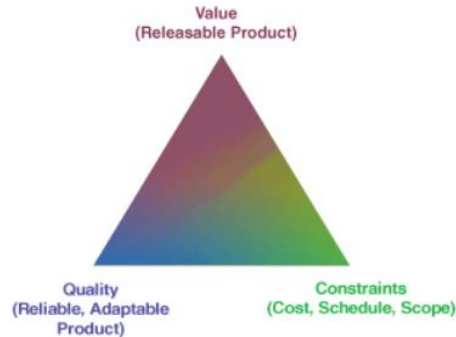
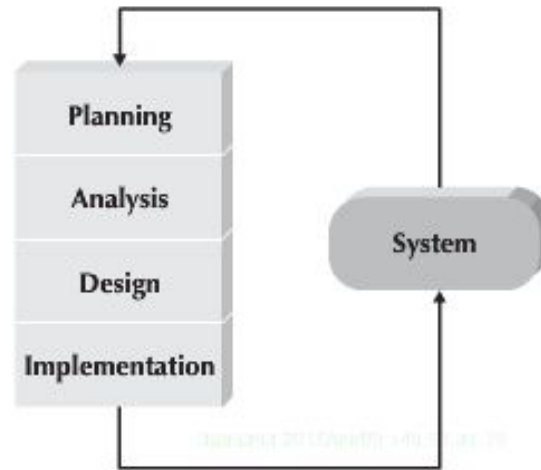


Figure 2-1 The Agile Triangle



- The primary measure of progress is working, executing software.
- Both customers and developers should work at a pace that is sustainable. That is, the level of work could be maintained indefinitely without any worker burnout.
- Agility is heightened through attention to both technical excellence and good design
- Simplicity, the avoidance of unnecessary work, is essential.
- Self-organizing teams develop the best architectures, requirements, and designs.
- Development teams regularly reflect on how to improve their development processes.

# Is Agile that simple? We just start writing code?



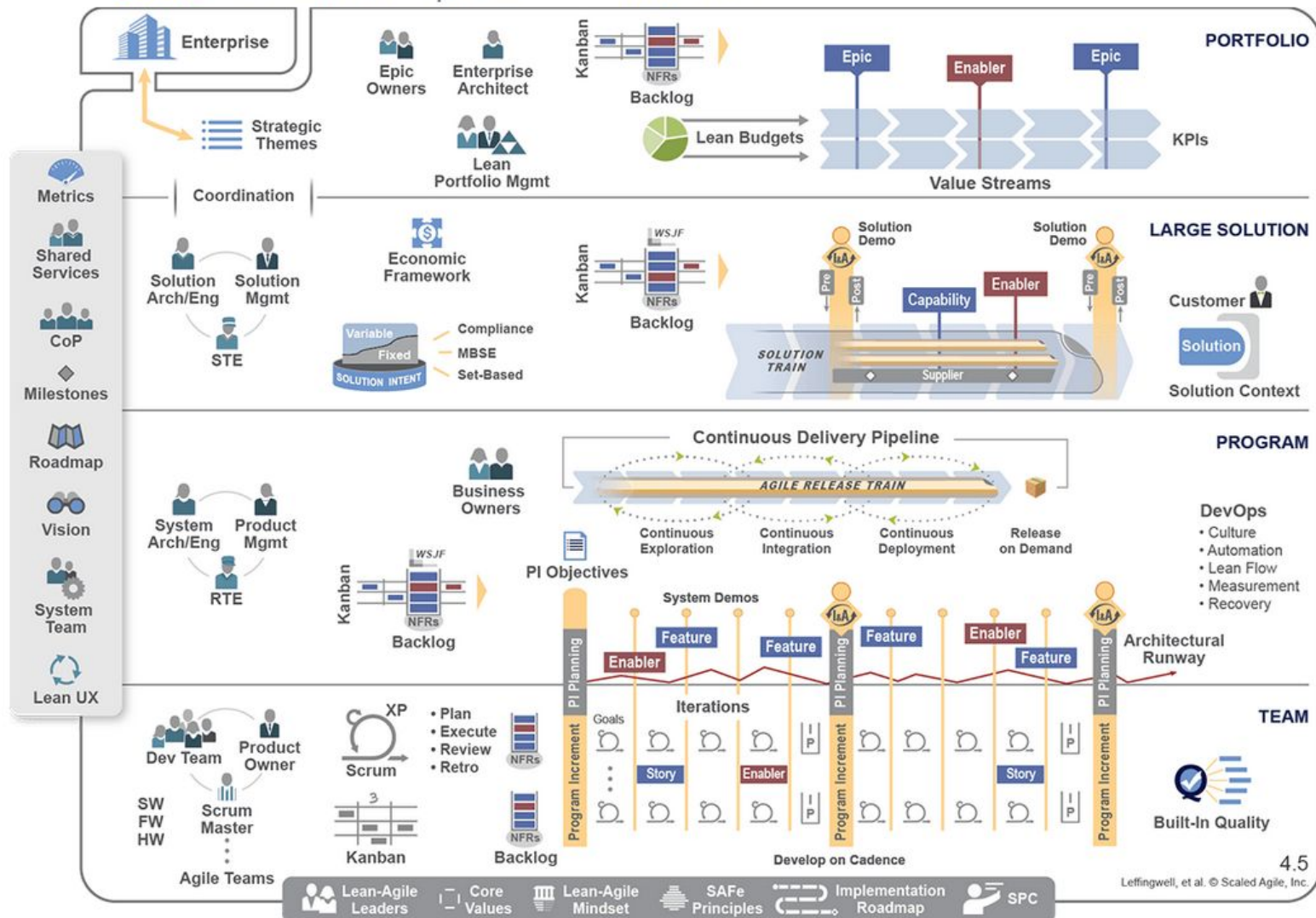






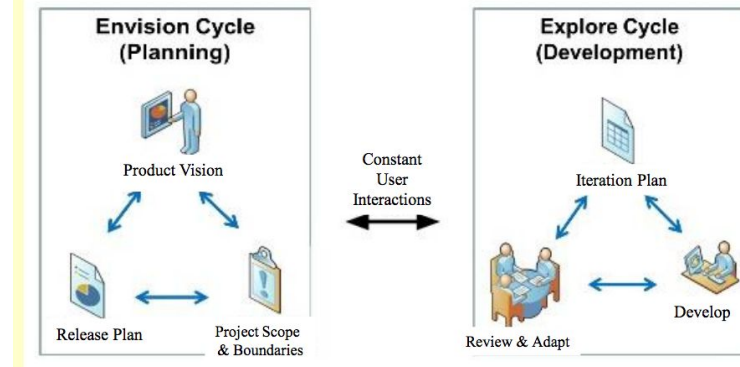
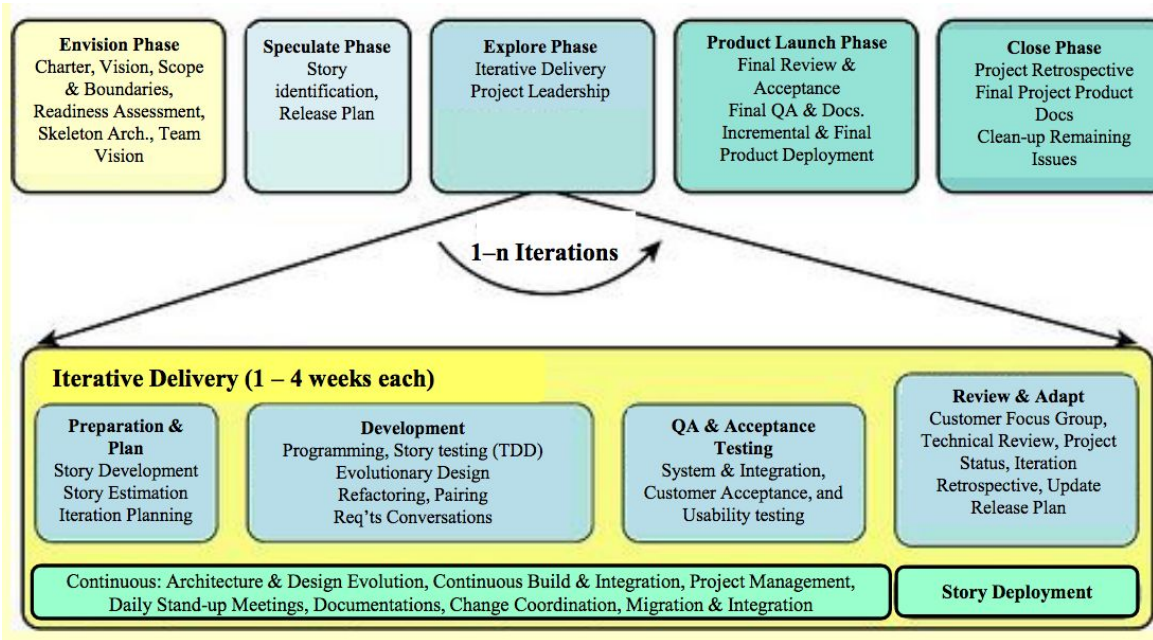
# SAFe® for Lean Enterprises

## Full SAFe





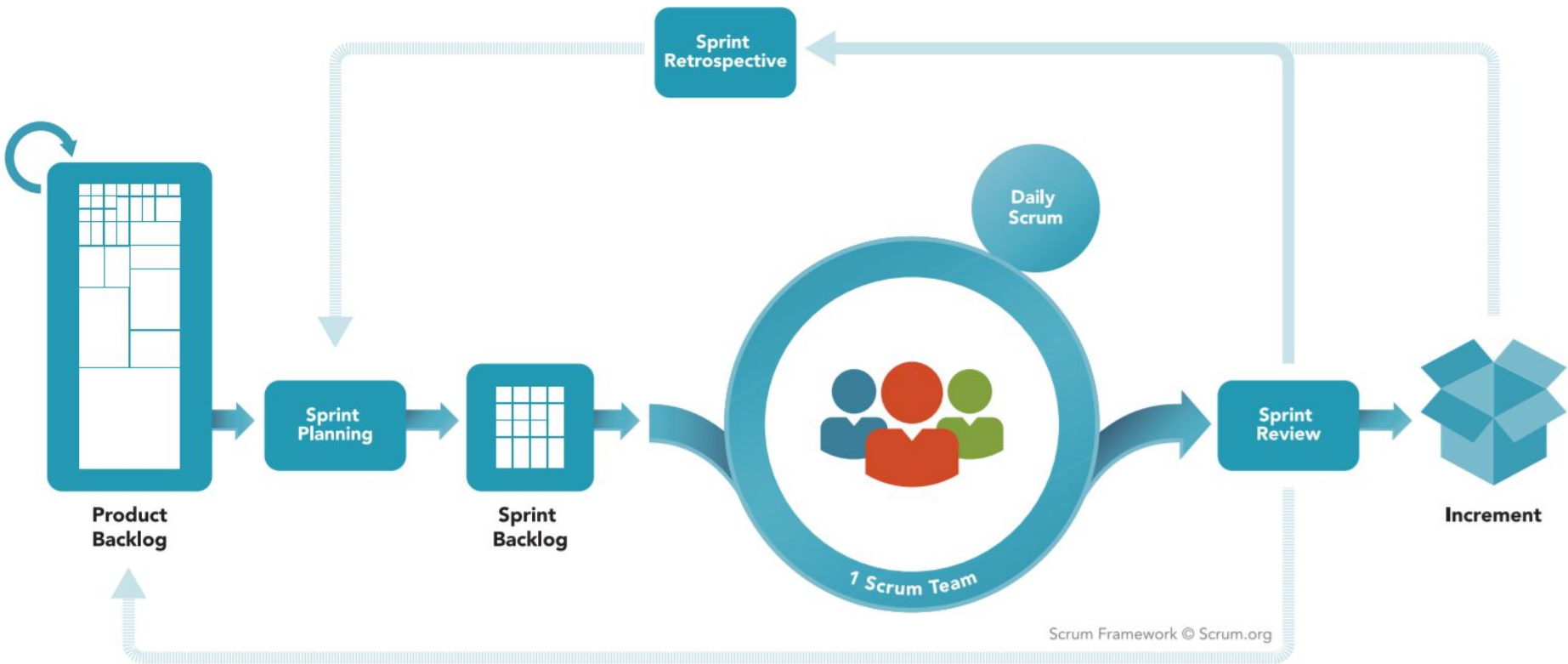
# Highsmith's Agile Development Framework



# What it is to scrum

<https://www.scrum.org/resources/what-is-scrum/>





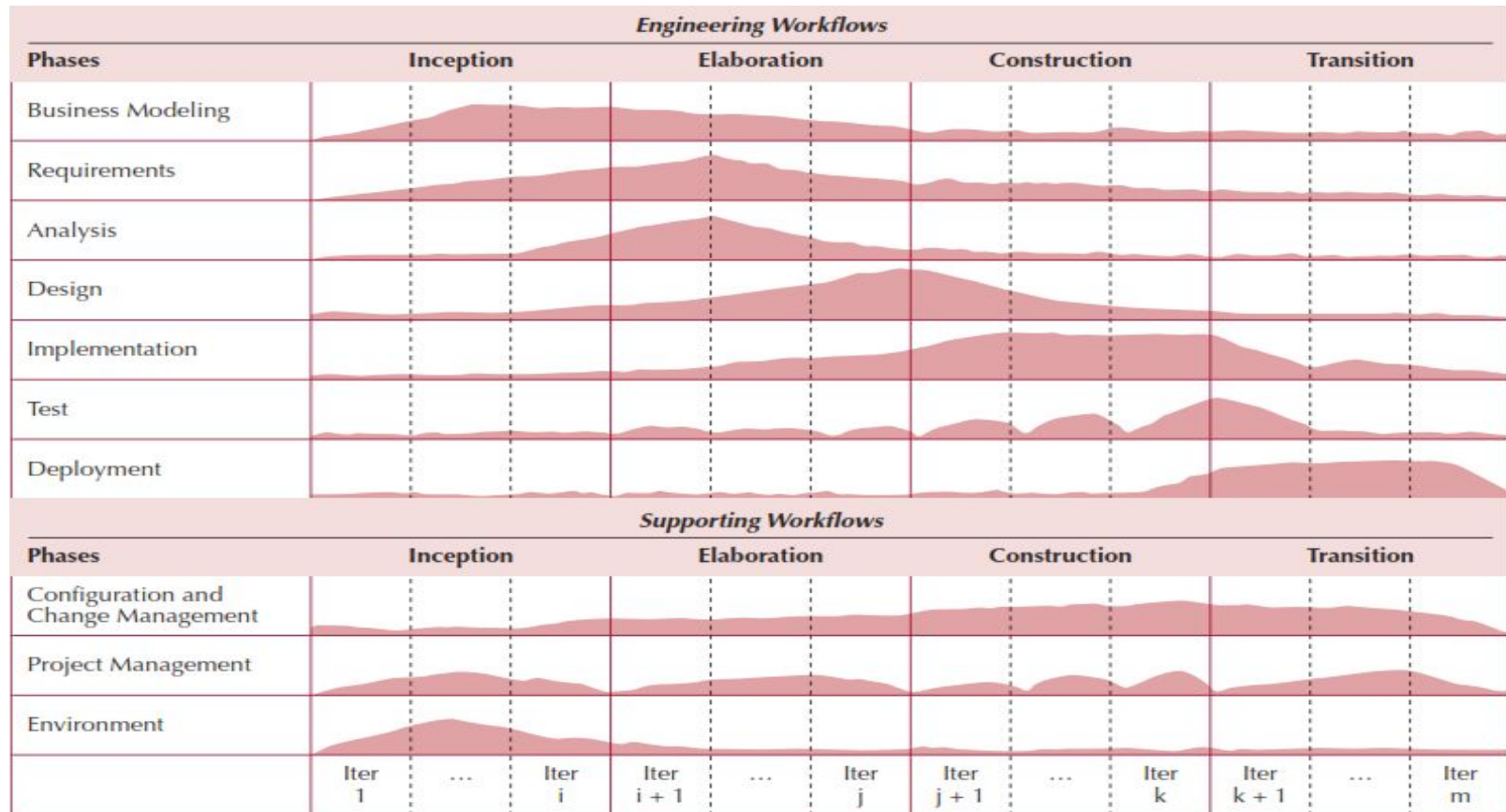
# Which methodology?

Ability to Develop Systems	Structured Methodologies		RAD Methodologies			Agile Methodologies	
	Waterfall	Parallel	Phased	Prototyping	Throwaway Prototyping	XP	SCRUM
With Unclear User Requirements	Poor	Poor	Good	Excellent	Excellent	Excellent	Excellent
With Unfamiliar Technology	Poor	Poor	Good	Poor	Excellent	Good	Good
That Are Complex	Good	Good	Good	Poor	Excellent	Good	Good
That Are Reliable	Good	Good	Good	Poor	Excellent	Excellent	Excellent
With a Short Time Schedule	Poor	Good	Excellent	Excellent	Good	Excellent	Excellent
With Schedule Visibility	Poor	Poor	Excellent	Excellent	Good	Excellent	Excellent

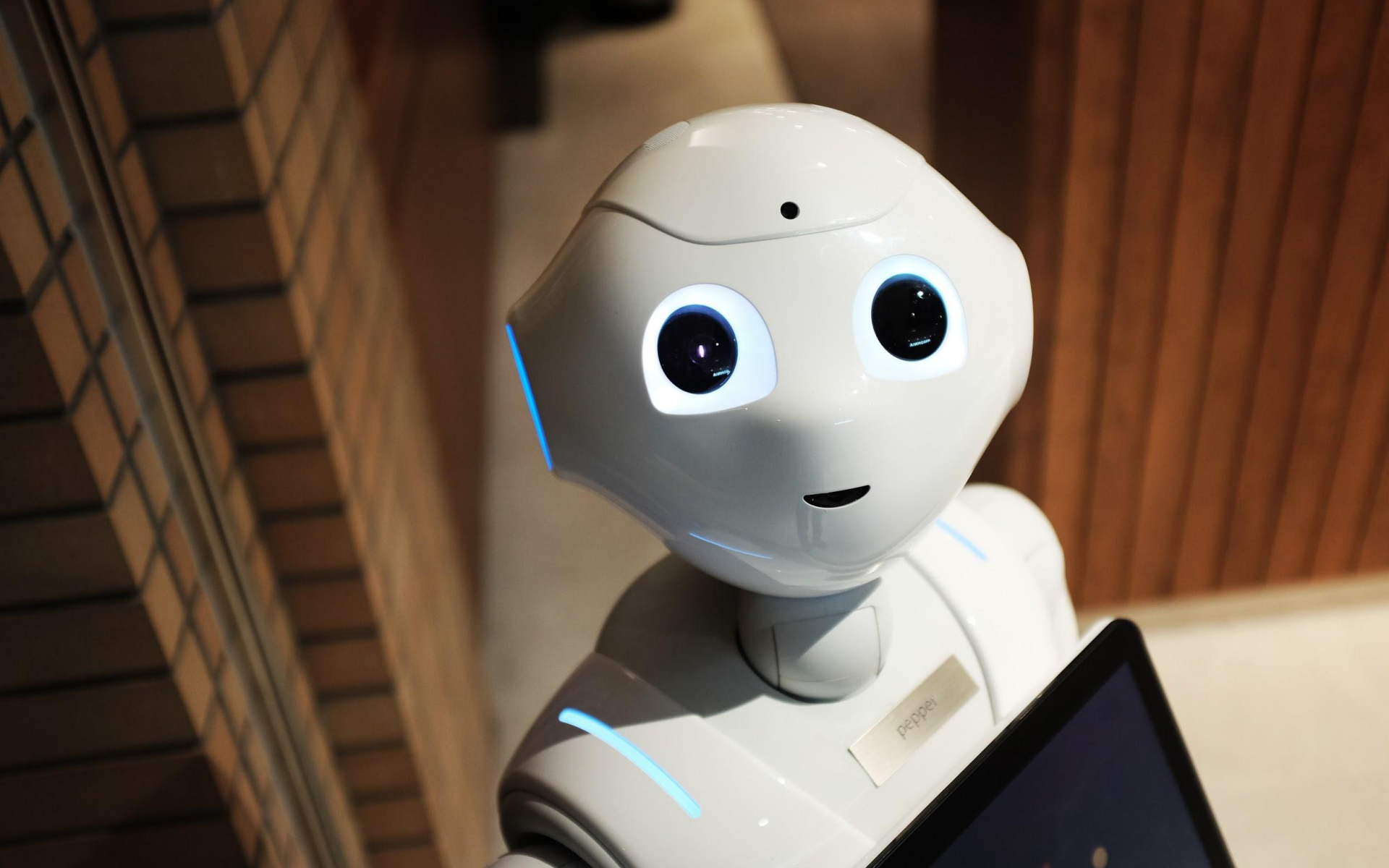
Moreover, which methodology **and why?**

- You have to pick one at the beginning of your project!
- Consider this a spectrum (left to right)

# The Unified Process







Now, POP QUIZ HOT SHOT. Which type of process is waterfall?

And what type is spiral?

And how about agile (any method)

# If time allows, and, you'd prefer...

GitHub demonstration

- 1) Adding existing files to a repository
- 2) Adding meeting minutes



# If further time allows

Break up into small groups of ~3

Answer the following questions:

1. What are **three** considerations (of many) that go into selecting a process model?
2. Is there one "true" model (i.e., the best)? Why or why not?

**Only one submission per team is needed. Submit to Blackboard with your team members' FULL names!**