Agile Overview

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Agenda for this session

- **The Story of Software Development**
- Lean Thinking
- Agile Values and Principles
- Agile Process
- Agile Practices
- Summary/Review
- Questions/Close

The Story of Software Development...

We started off with **Software Engineering...**

IEEE defines Software Engineering as....

"Software Engineering is the application of a systematic, disciplined, quantifiable approach to development, operation and maintenance of software: that is, the application of engineering to software."

IEEE Standard Computer Dictionary,
ISBN 1-55937-079-3, 1990

Who does Software Engineering?

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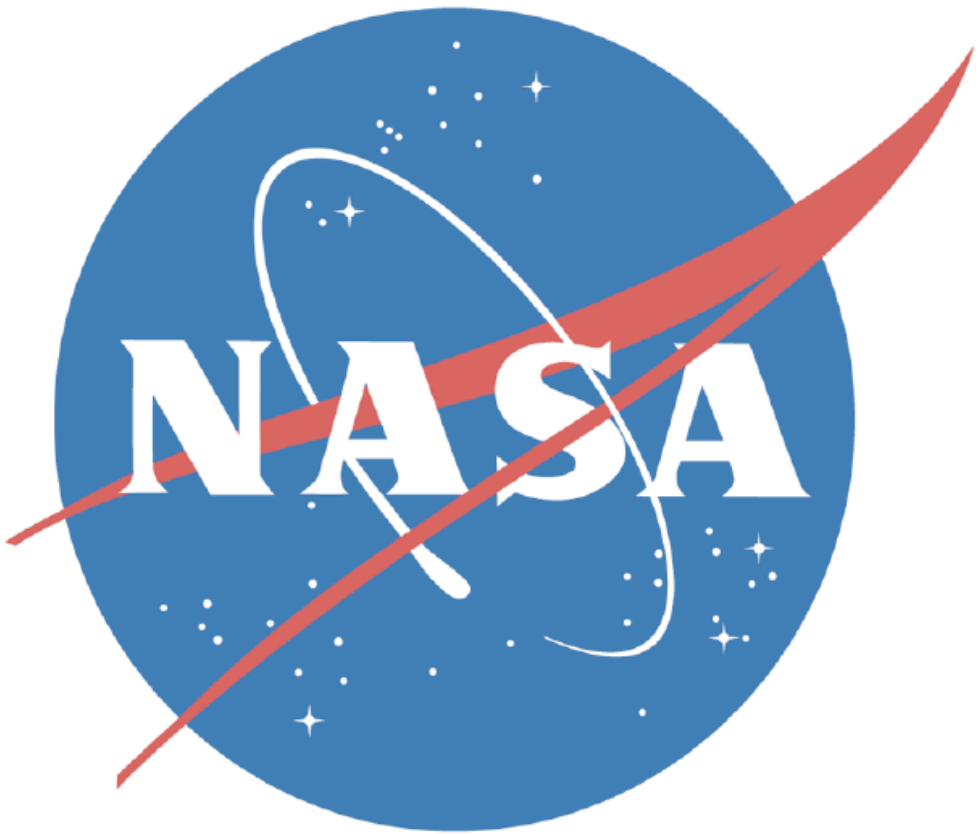
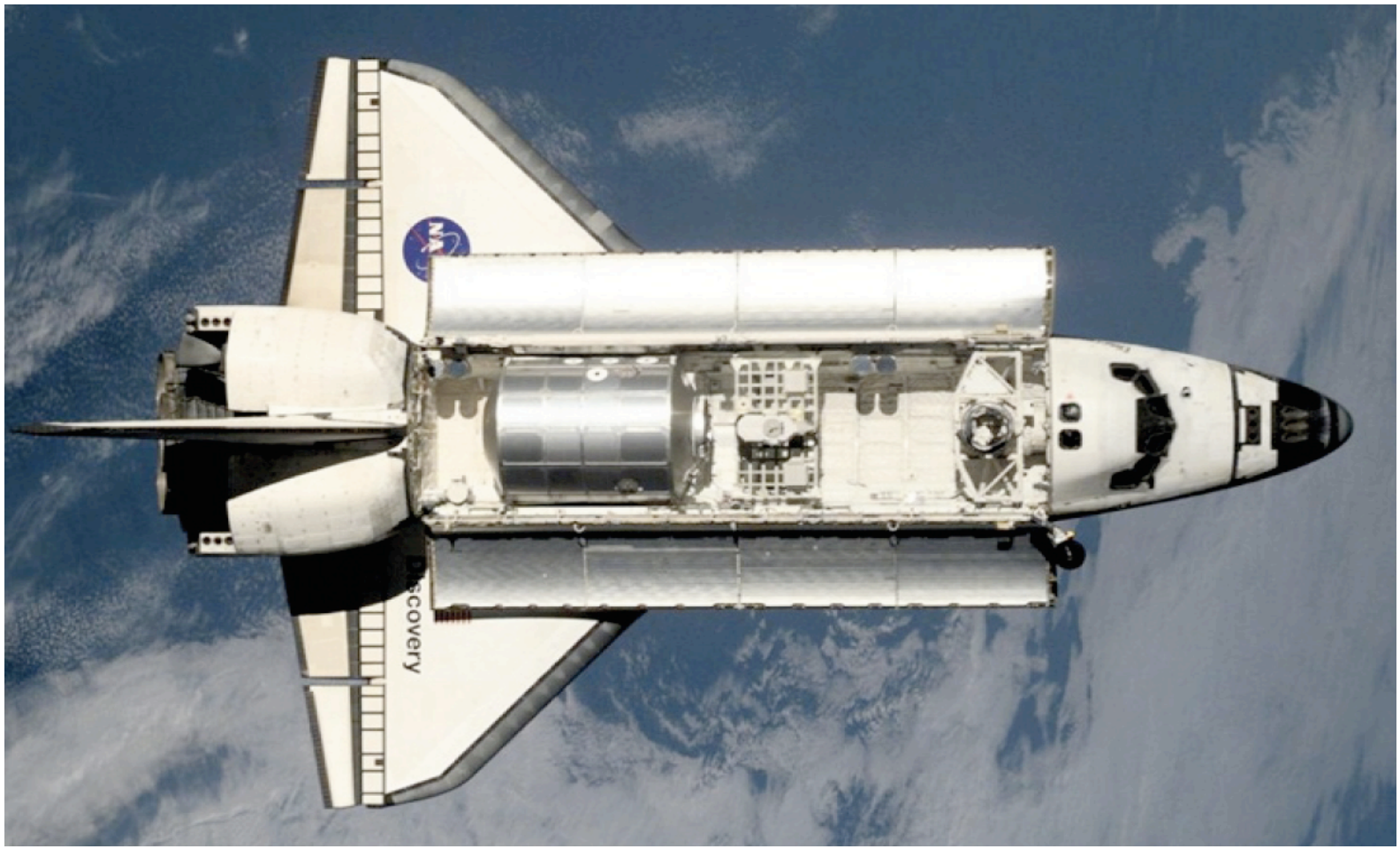


For the space shuttle’s operating system



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Some Statistics - NASA's Defect Density

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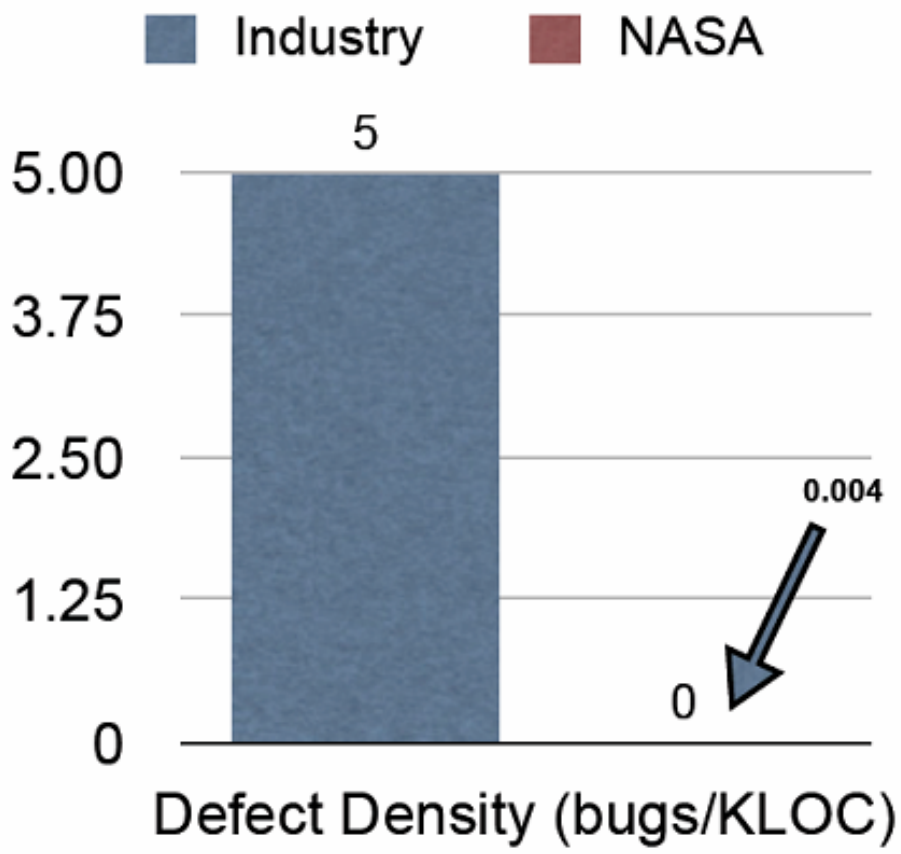
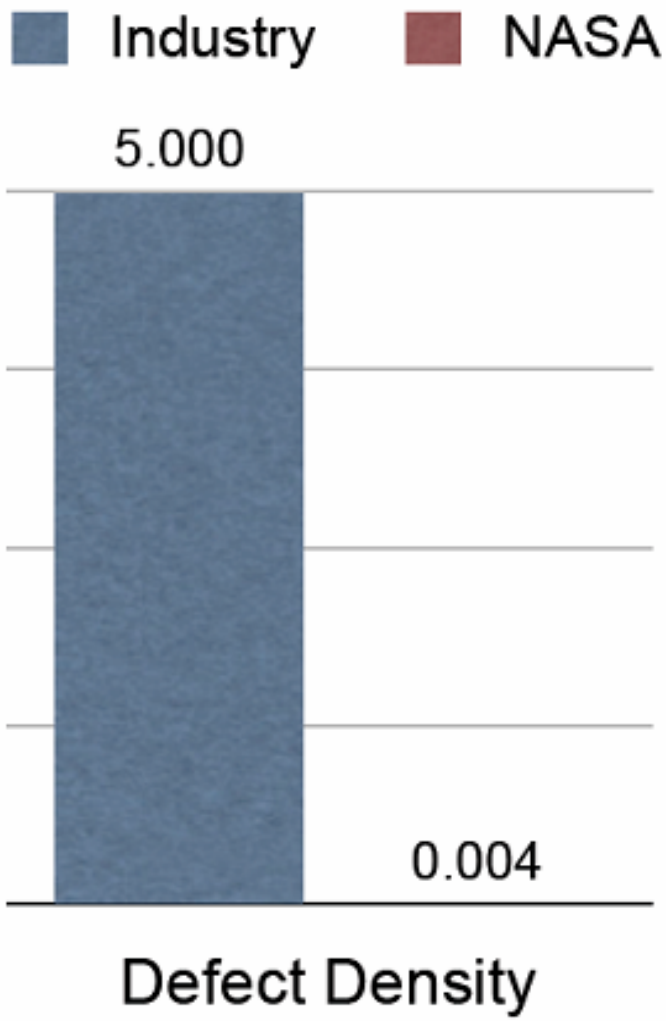


One More Data Point



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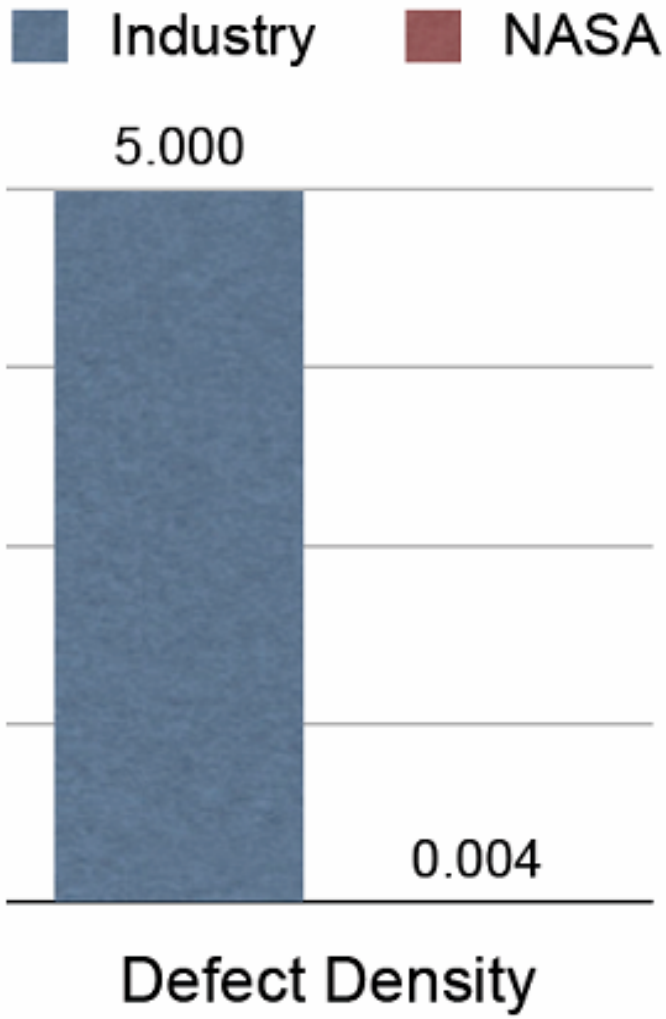

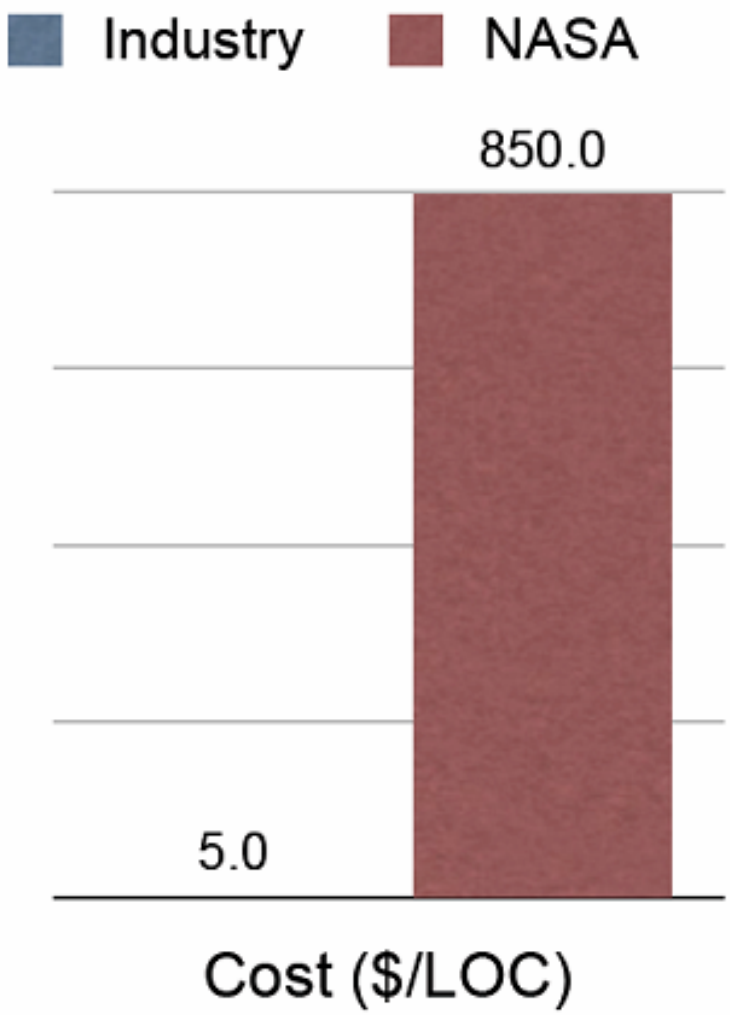

Another real software engineering project

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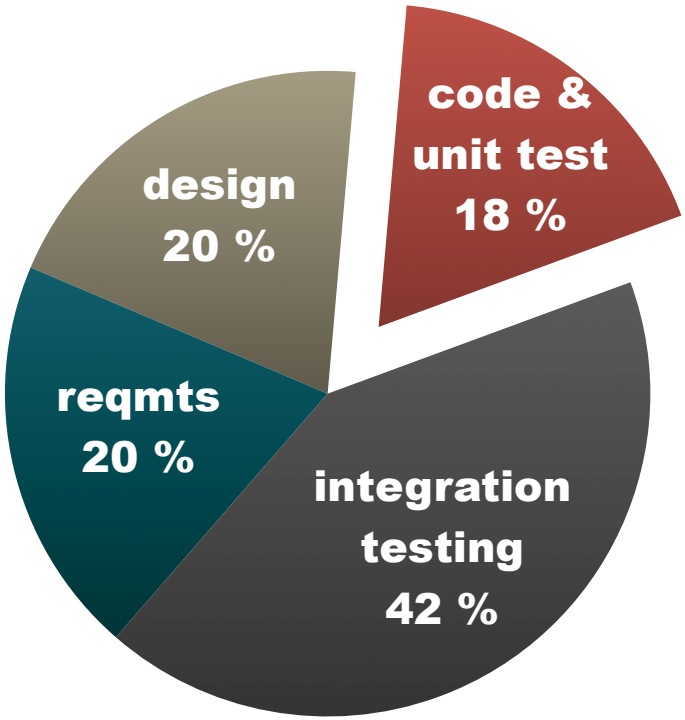
Safeguard - Ballistic Missile Defense System

Another real software engineering project

Safeguard - Ballistic Missile Defense System

- 1969-1975, 5407 person years
- Hardware designed at the same time as software specs being written
- Late changes in requirements not an option



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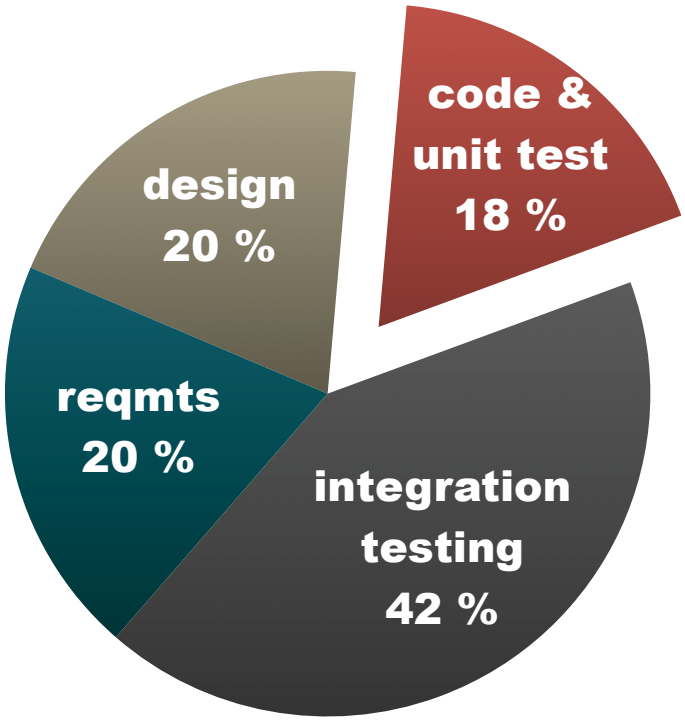

Did it Succeed?

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Safeguard - Ballistic Missile Defense System...cont.

10

Safeguard - Ballistic Missile Defense System...cont.

Revised Project Statistics

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Revised Project Statistics

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'By the time the 6-year anti-missile system project was completed, the new missiles were faster than the anti-missile missiles'

Where did things go wrong?

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Where did things go wrong?

- Software Engineering is a heavy weight methodology and such heavy weight methodologies characteristically are most successful when:
  - Requirements are **stable**
  - **Technology** is well known and mature
  - Everything happens **as one would expect**
  - We are **not taking** on anything **new** or **unknown**
  - We have done this **many times before**

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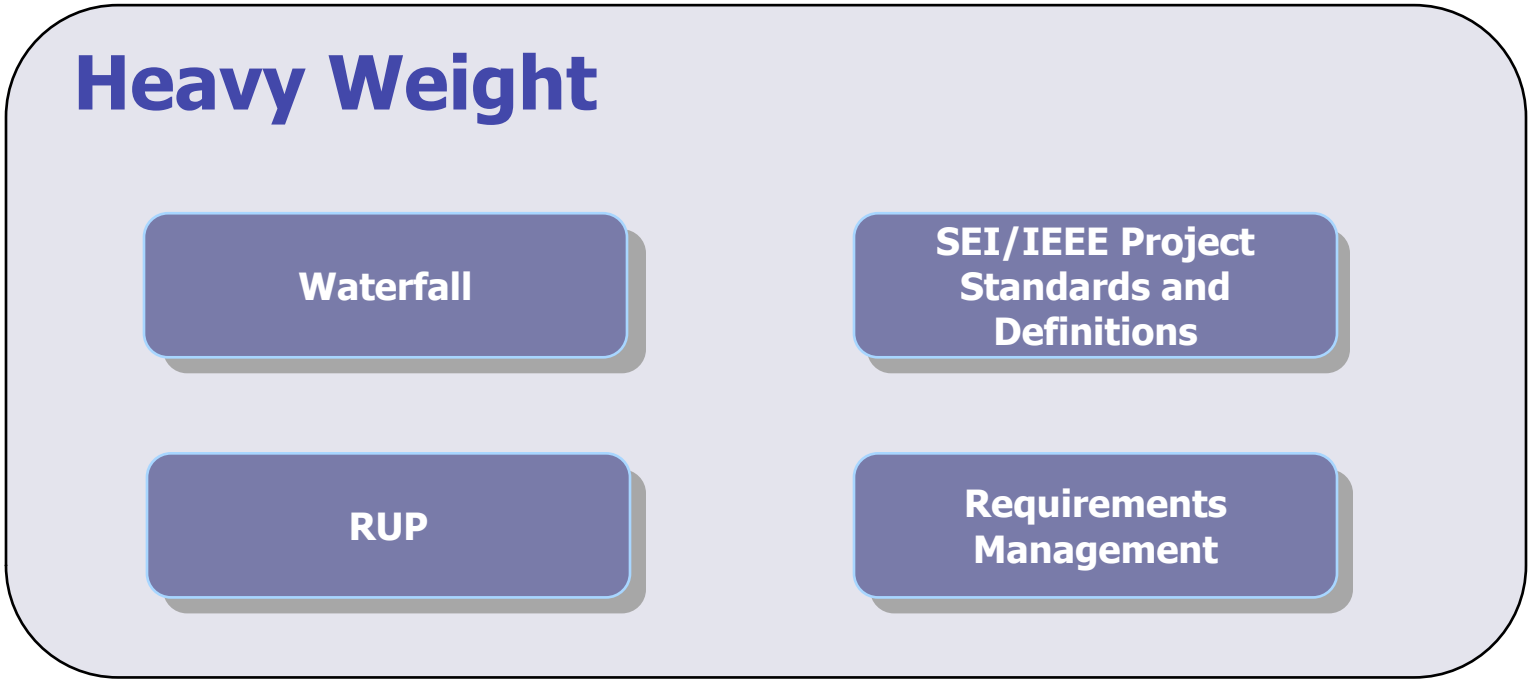
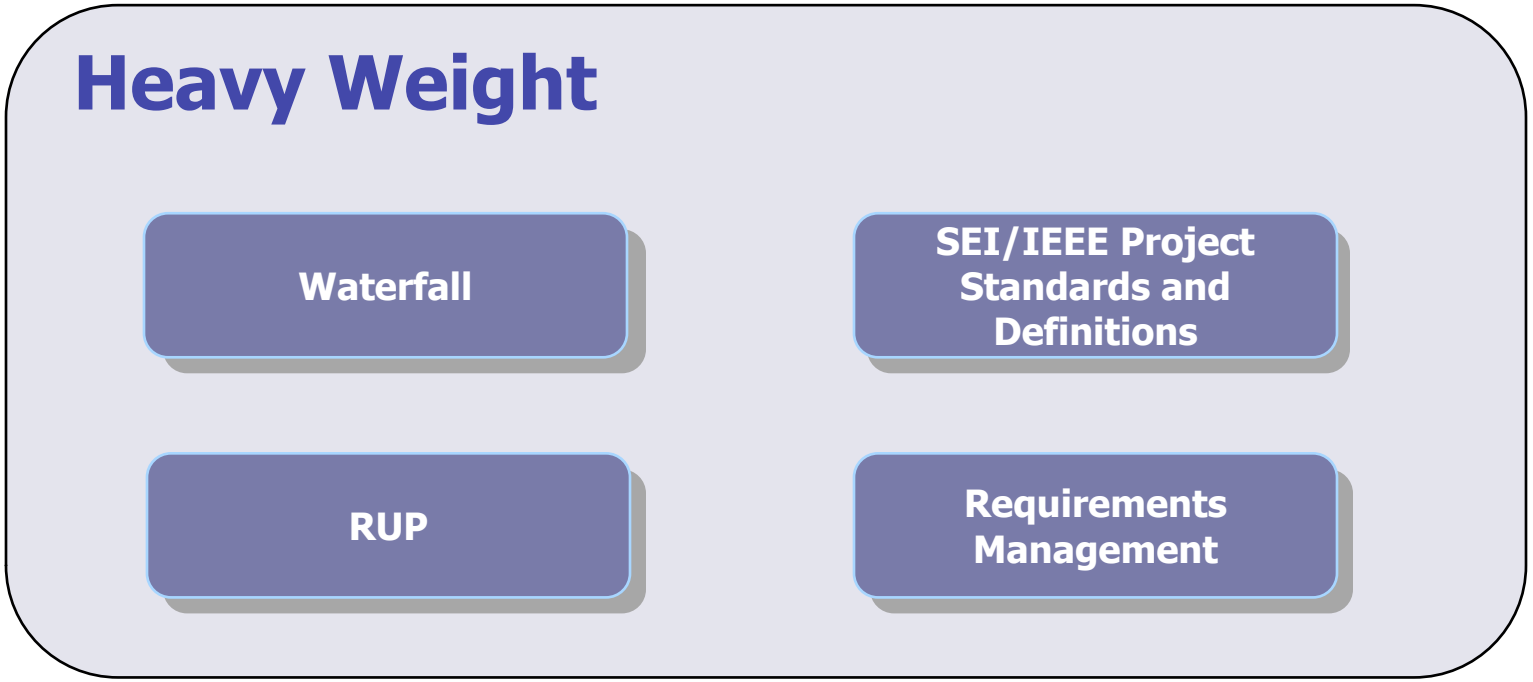
Projects with these characteristics are few and far between.

Other Heavy Weight Methodologies



Other Heavy Weight Methodologies



Heavy weight methodologies work in some instances, but there are **high costs,** and the **risk** in using them in **dynamic environments** is **high**.

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So, heavy weight methodologies don't seem to meet our needs

Is there an alternative?

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- The Story of Software Development
- **Lean Thinking**
- Agile Values and Principles
- Agile Process
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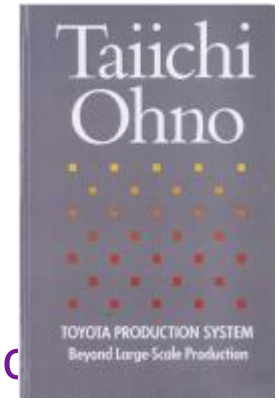
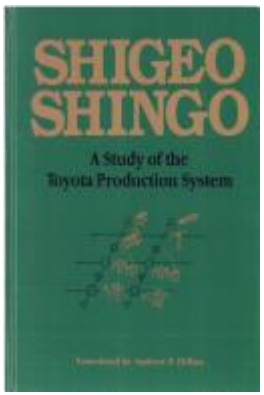
Lean Thinking – Eliminate Waste

- **The Toyota Production System,** 1988 (1978), Taichii Ohno
  - Pull Scheduling - Just-in-Time Flow
  - Expose Problems - Stop-the-Line Culture



- **Study Of 'Toyota' Production System,** 1981, Shigeo Shingo
  - Non-Stock Production - Single Minute Setup
  - Zero Inspection – Automatic Error Detection at Every Step



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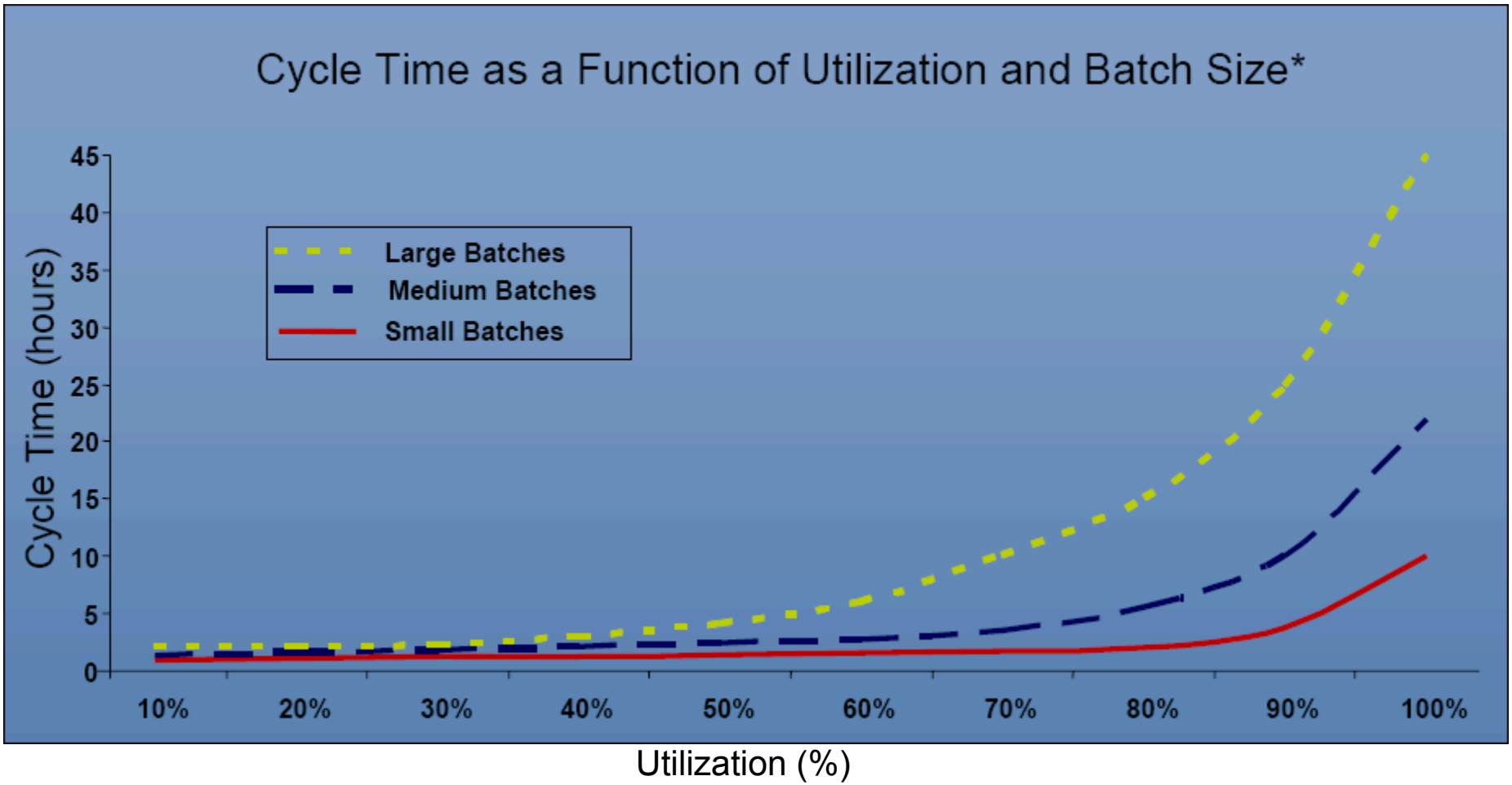
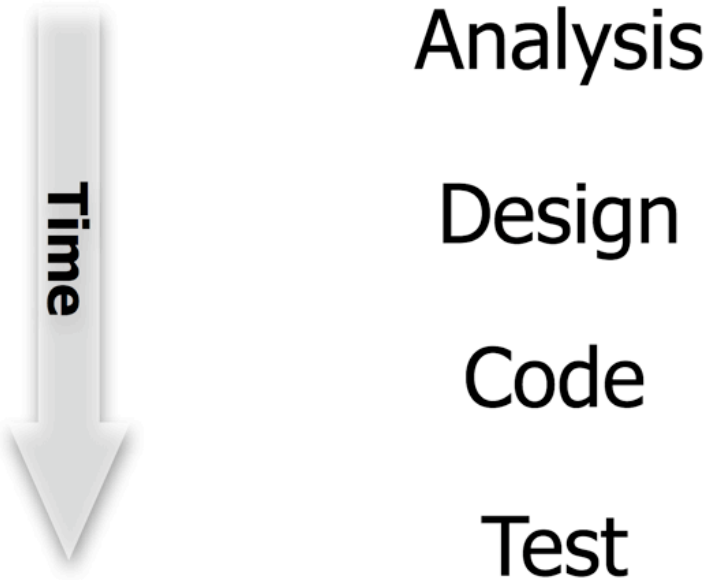
Lessons from Queuing theory



Source: Beyond Agile Software Development Becoming Lean, Mary Poppendieck, Poppendieck.llc

Applying Lean Principles to Software Development

Traditional Process



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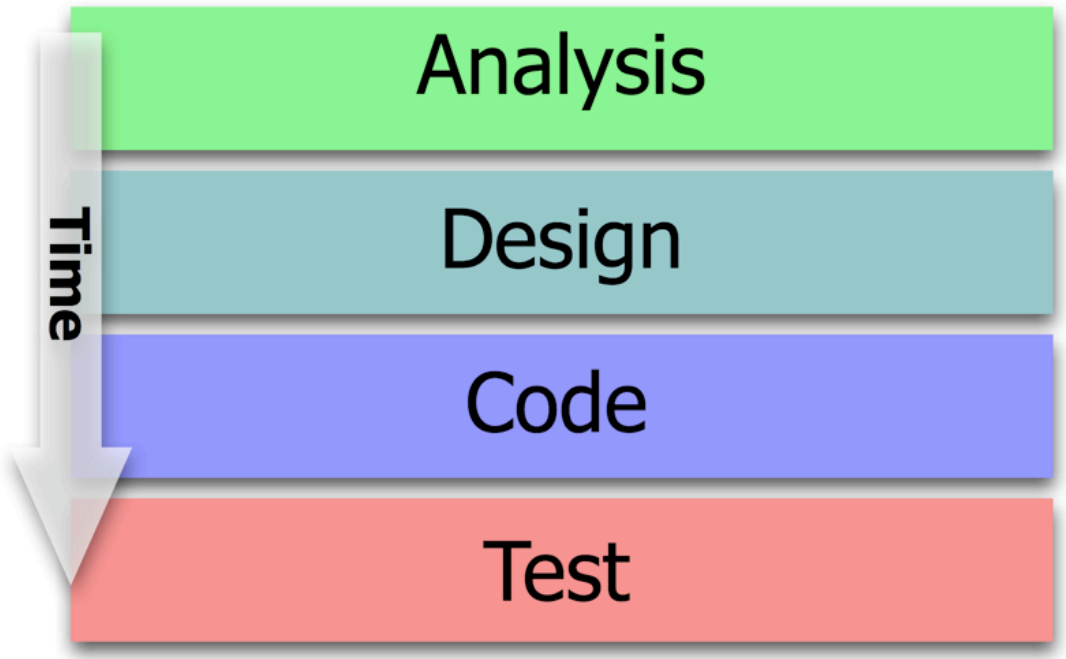

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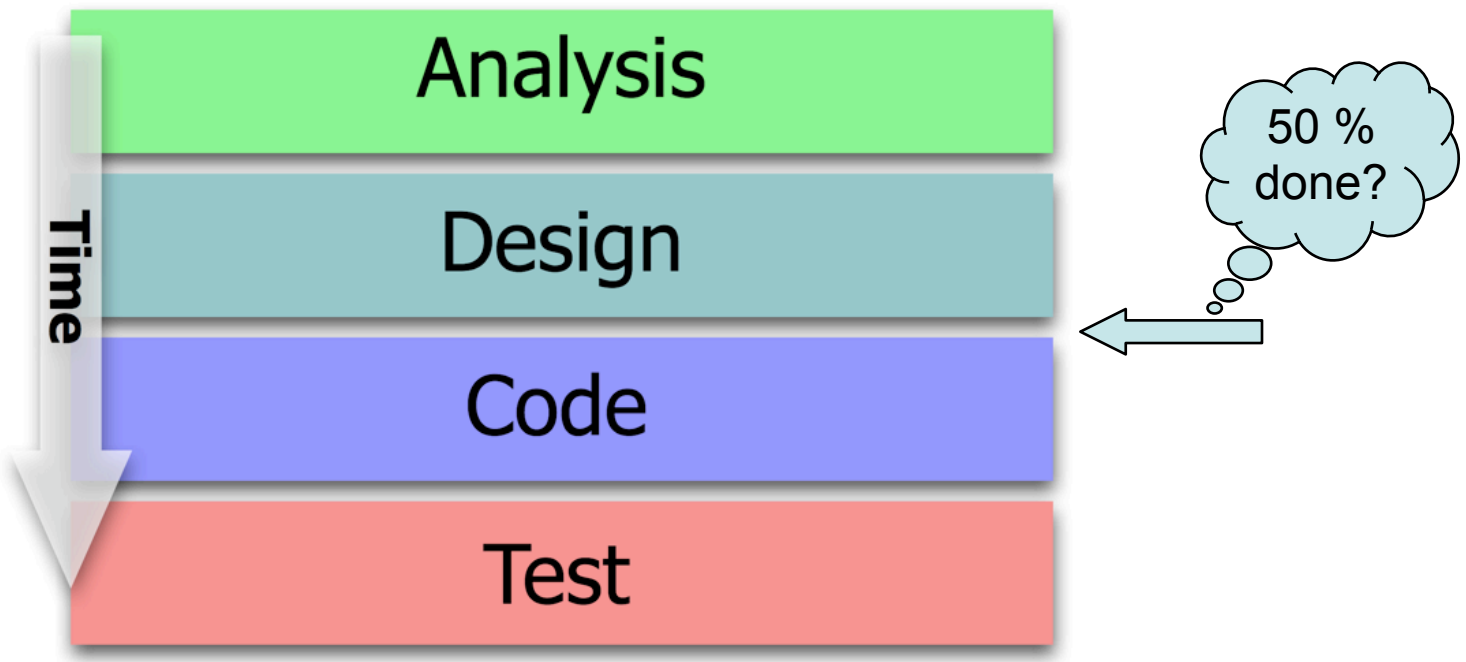

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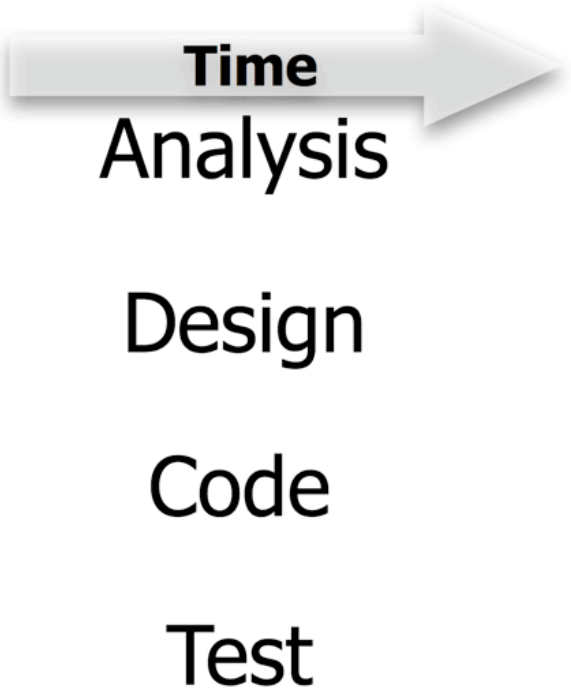
Applying Lean Principles to Software Development…cont.

A better way of doing the same



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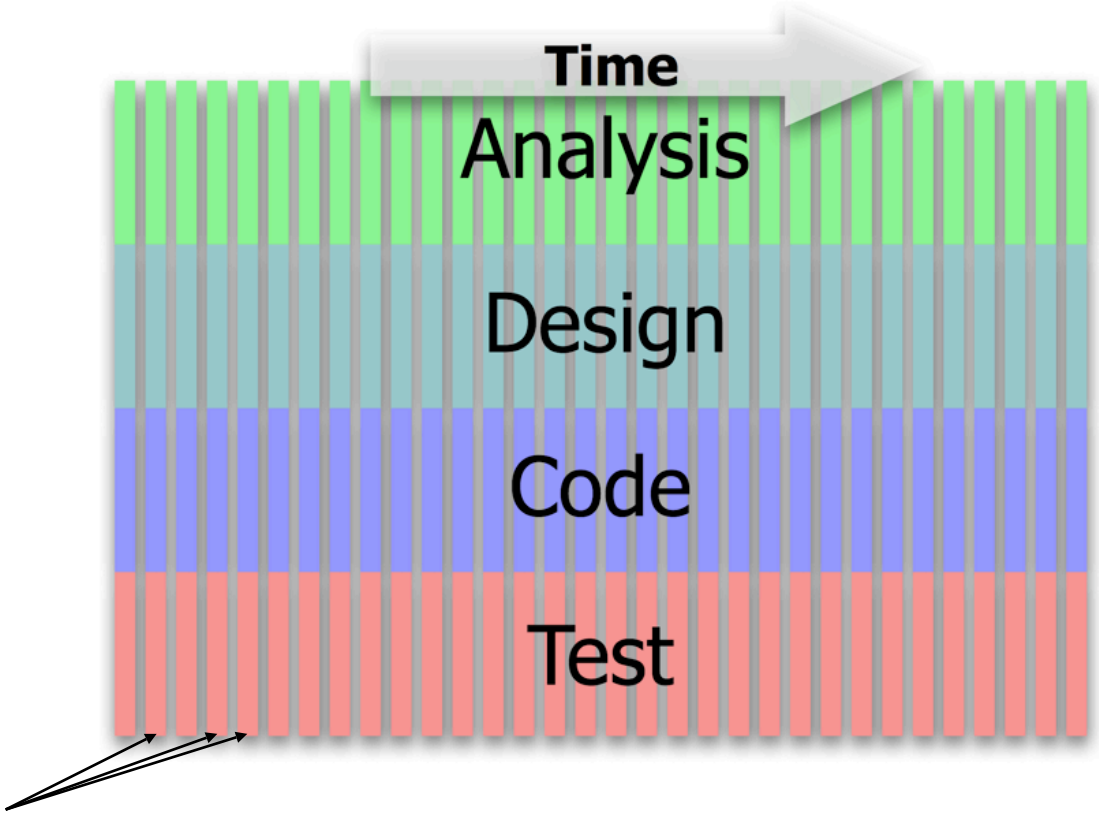

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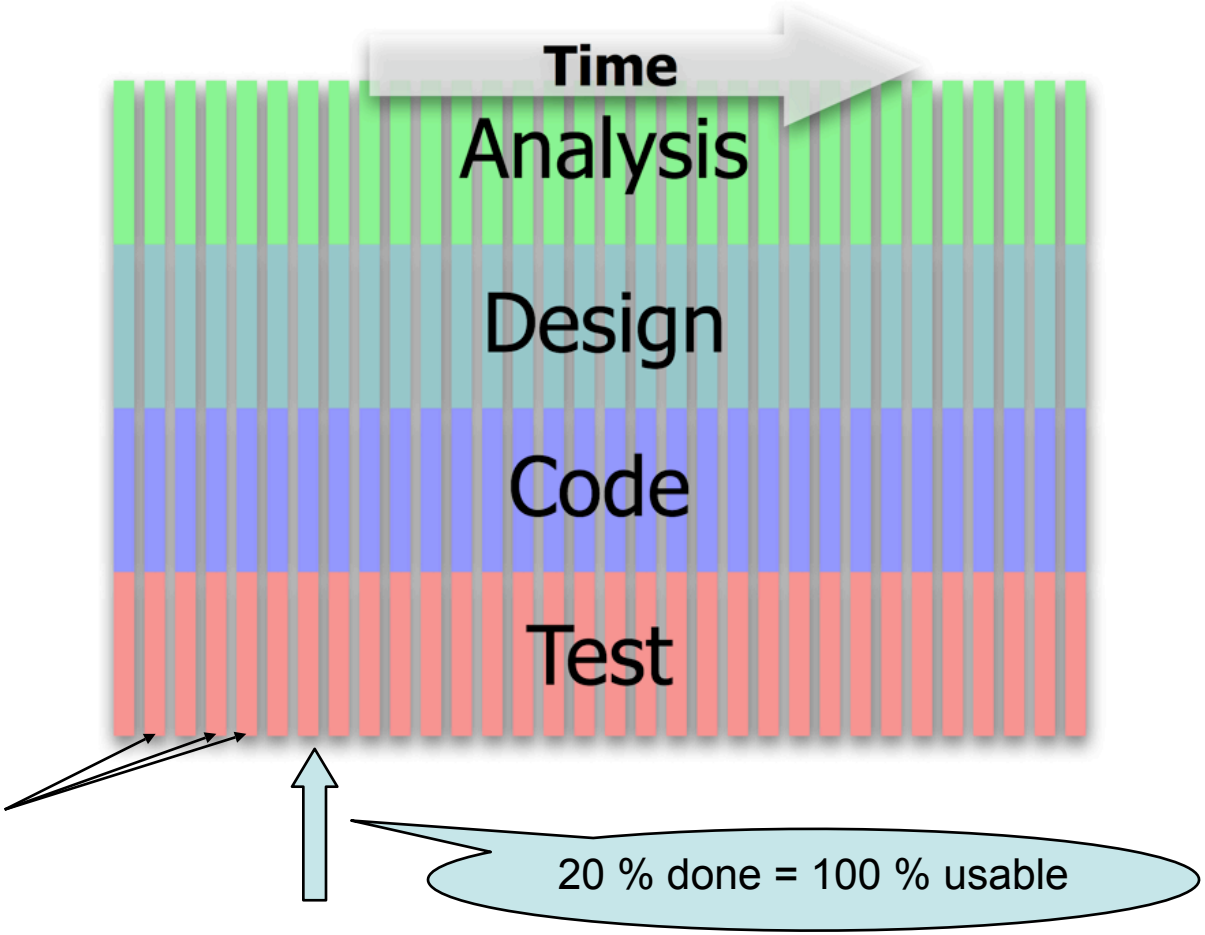

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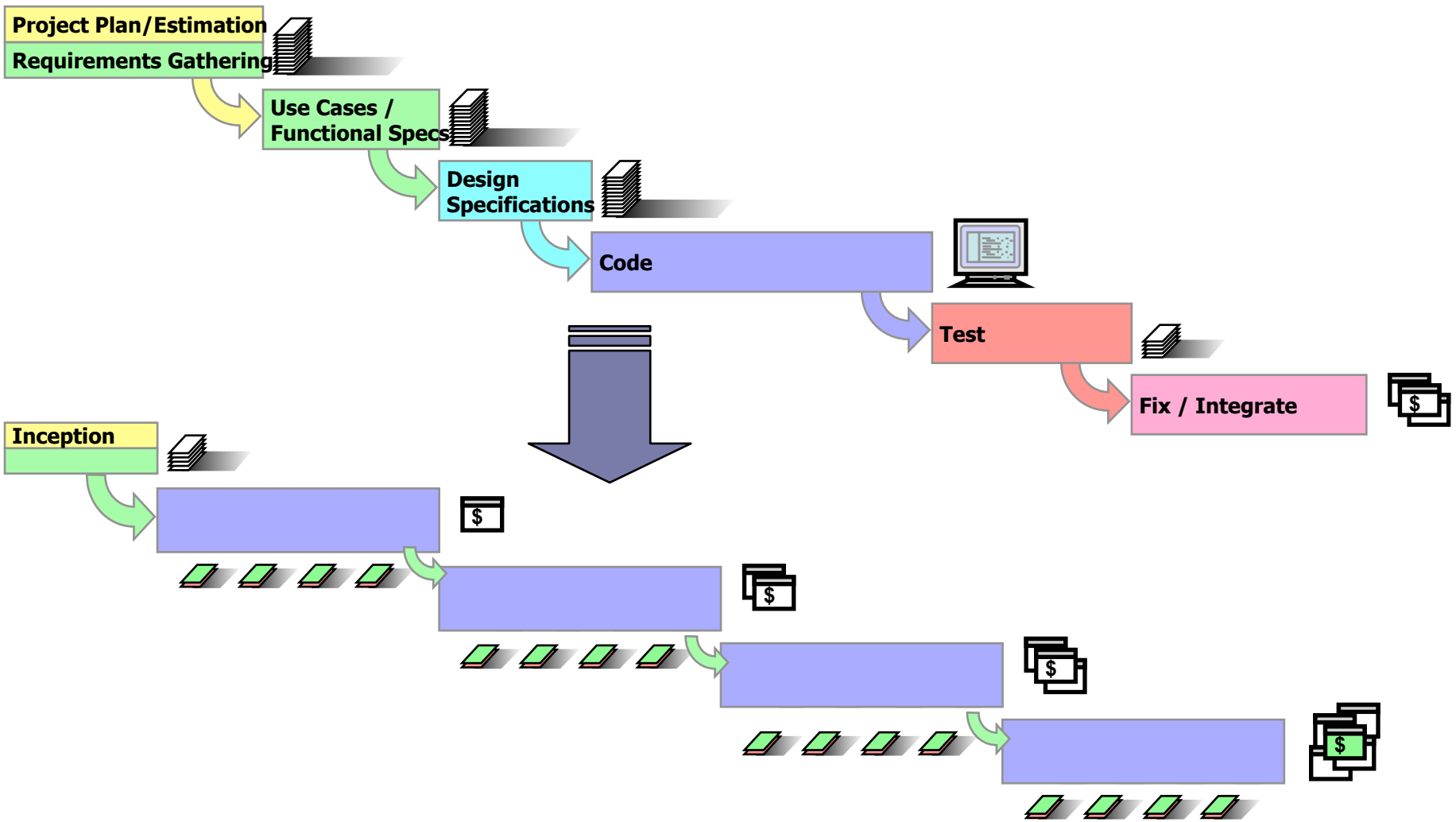
Lean Principles applied to Software Development



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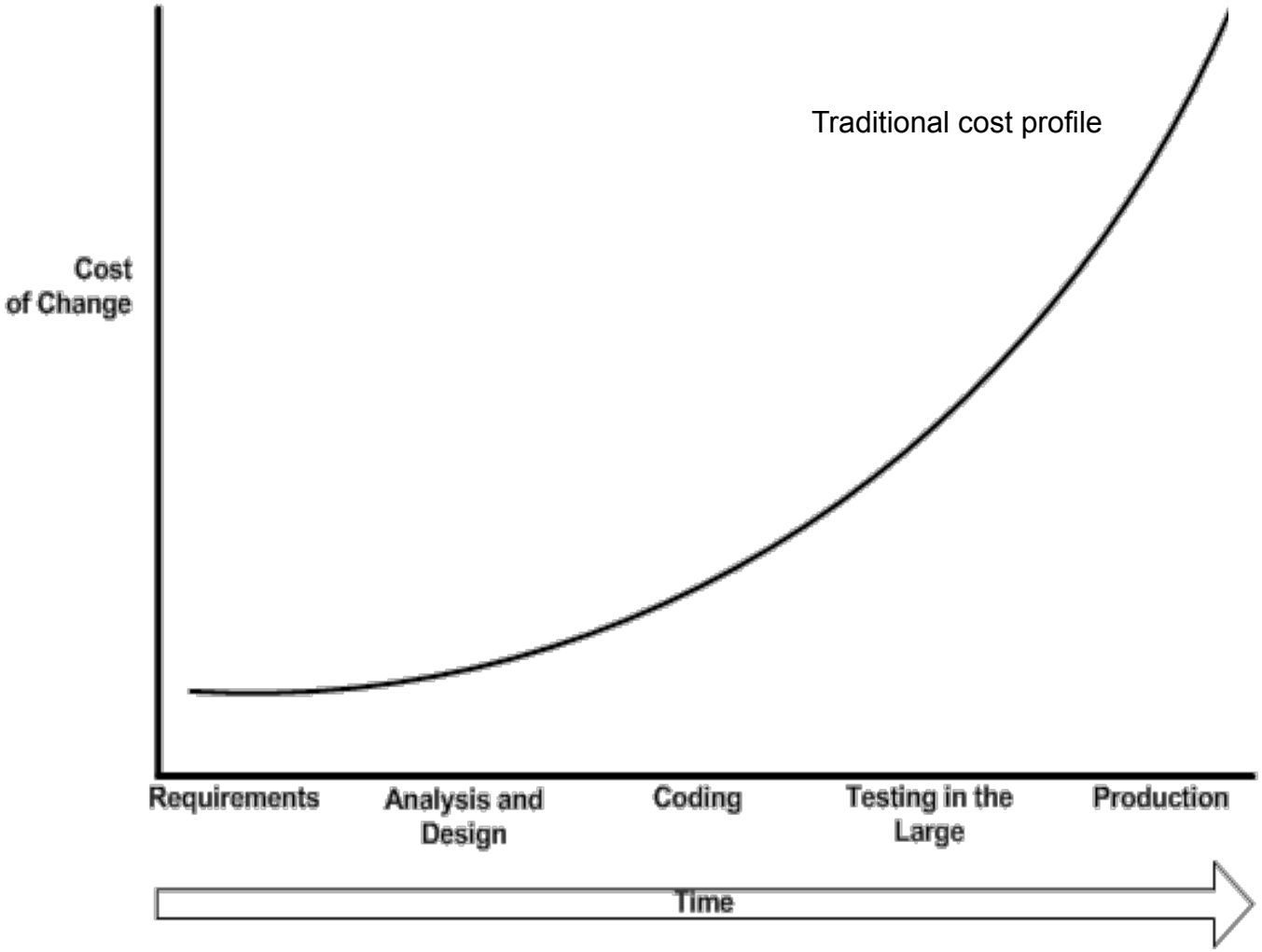
Lower cost of change through higher quality software



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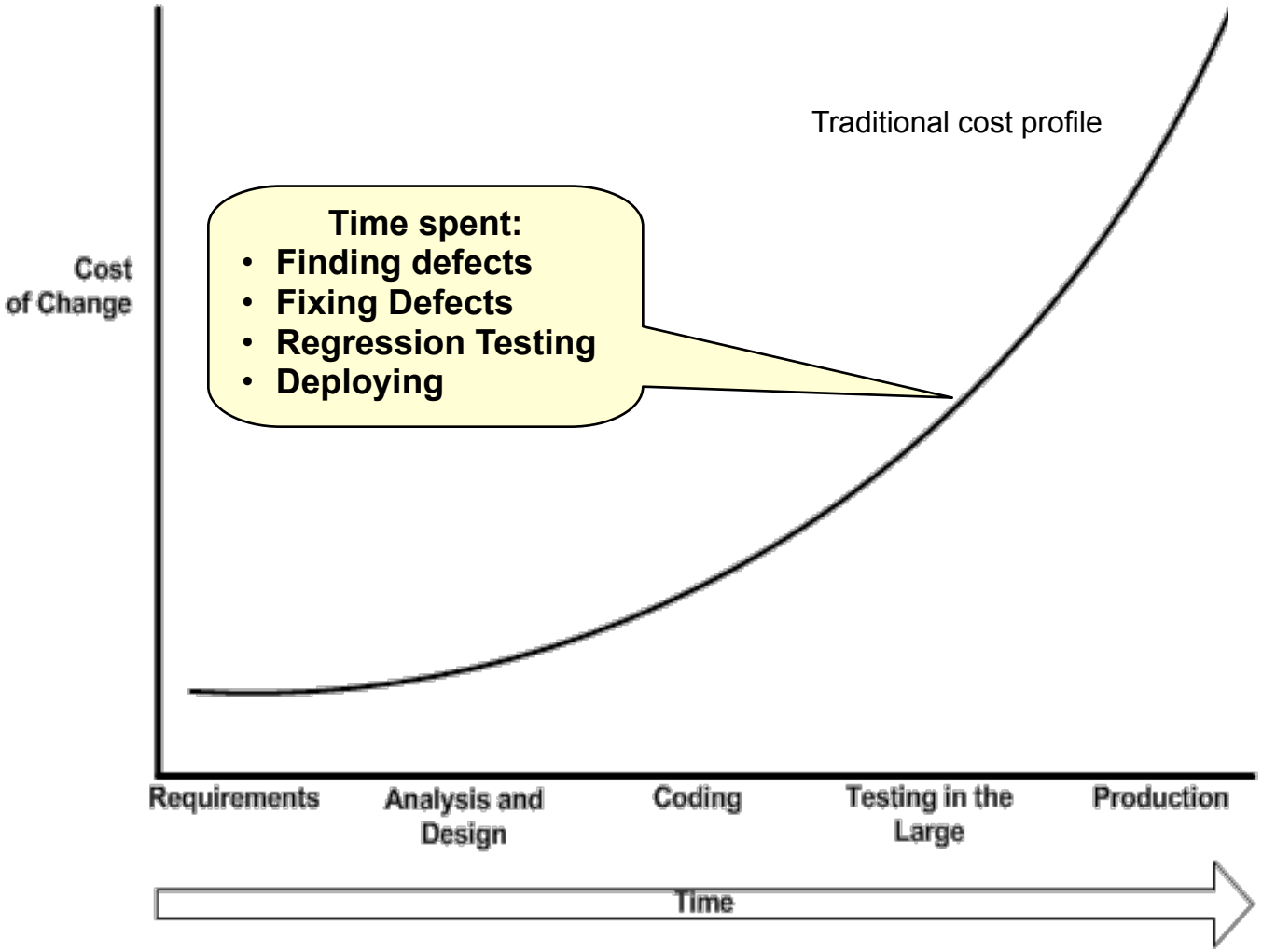

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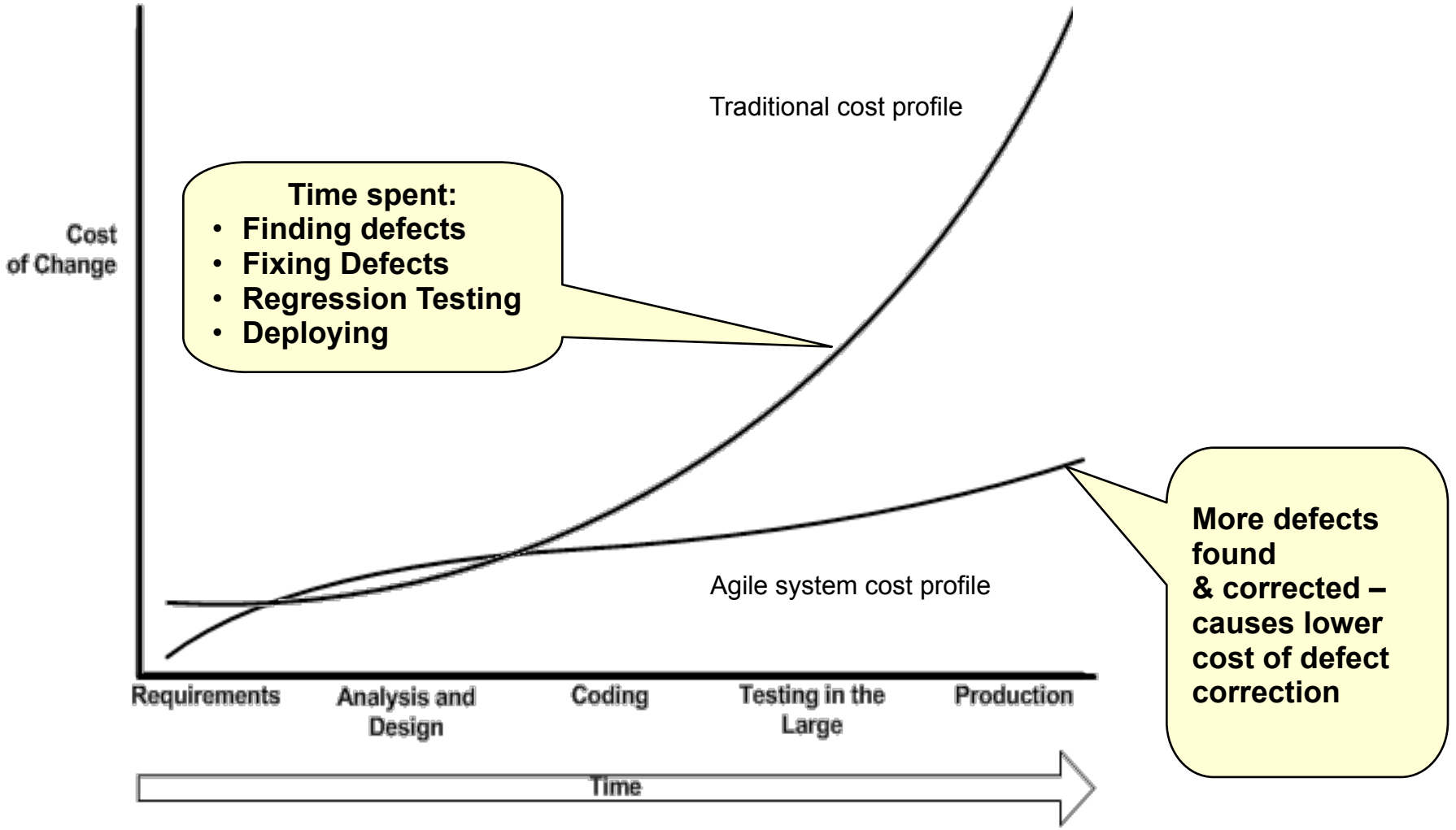

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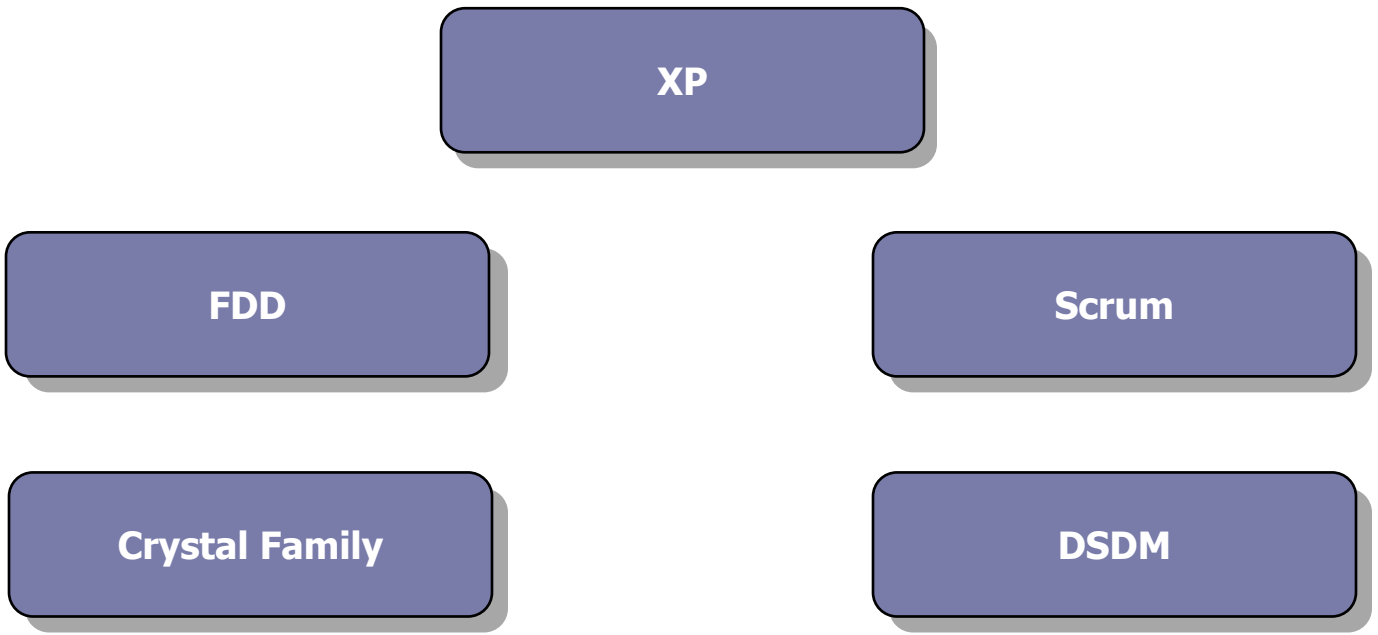
New Methodologies Emerged



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23

2000

23

2000

XP | Extreme Programming (Kent Beck)

DSDM | Dynamic System Development Method (Dane Faulkner)

FDD | Feature Driven Development (Jeff DeLuca)

SCRUM (Ken Schwaber)

Crystal (Alistair Cockburn)

Adaptive Software Development (Jim Highsmith)

Lean Software Development (Mary Poppendieck)

2001

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Agile manifesto

23

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"We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

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That is, while there is value in the items on the right, we value the items on the left more."

Agile (XP) Values

24

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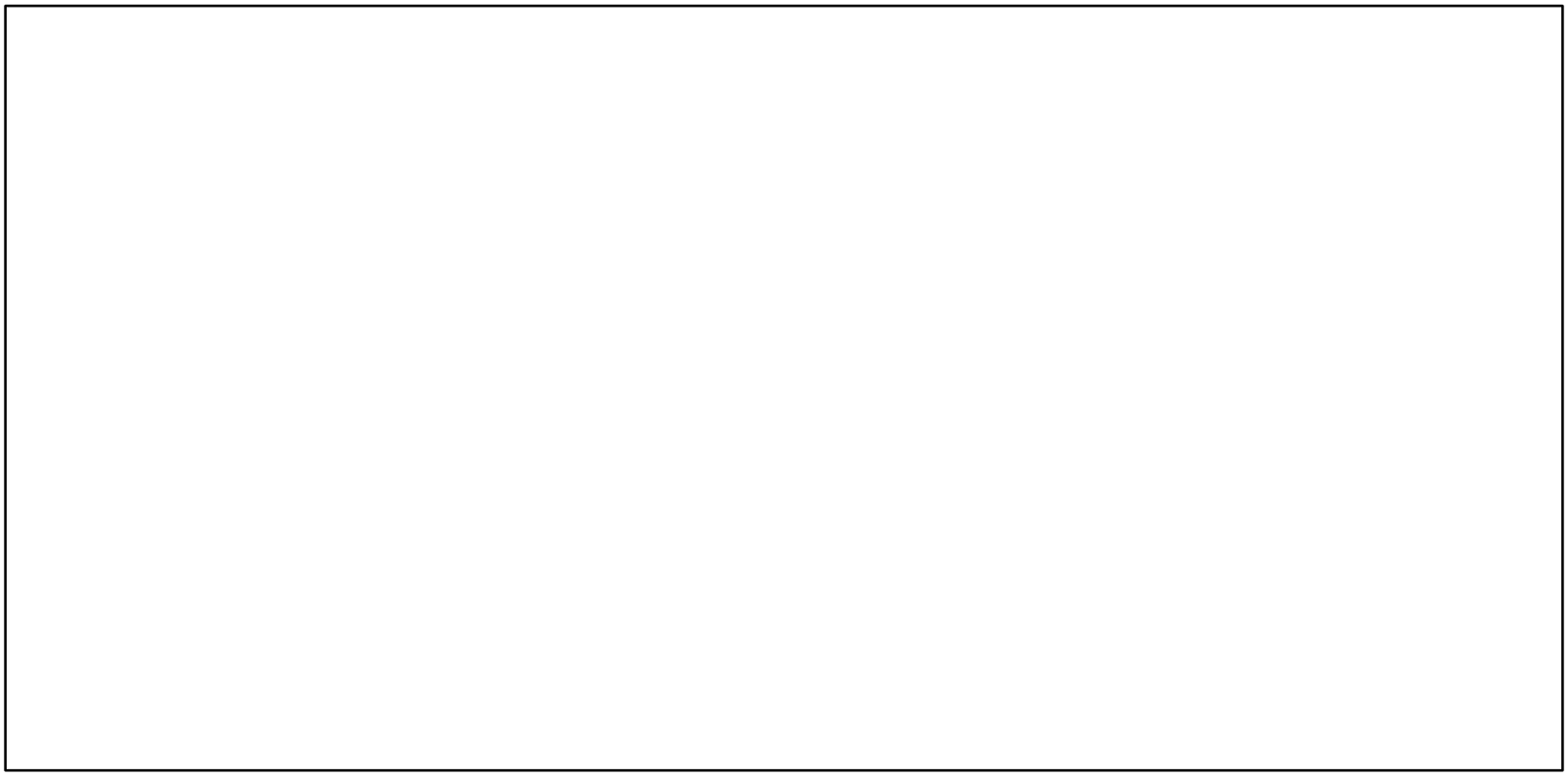

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Agile (XP) Values

communication

24

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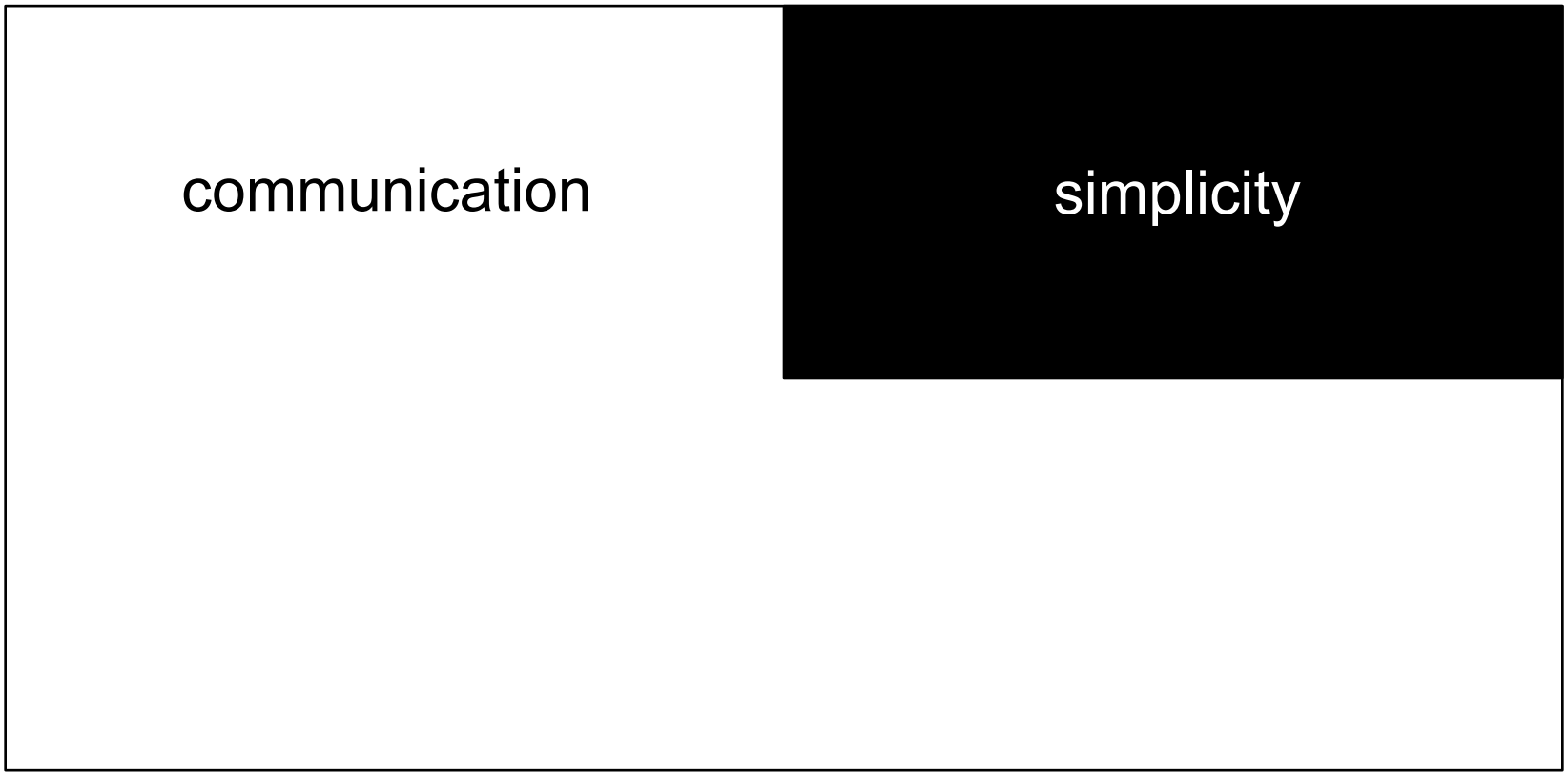

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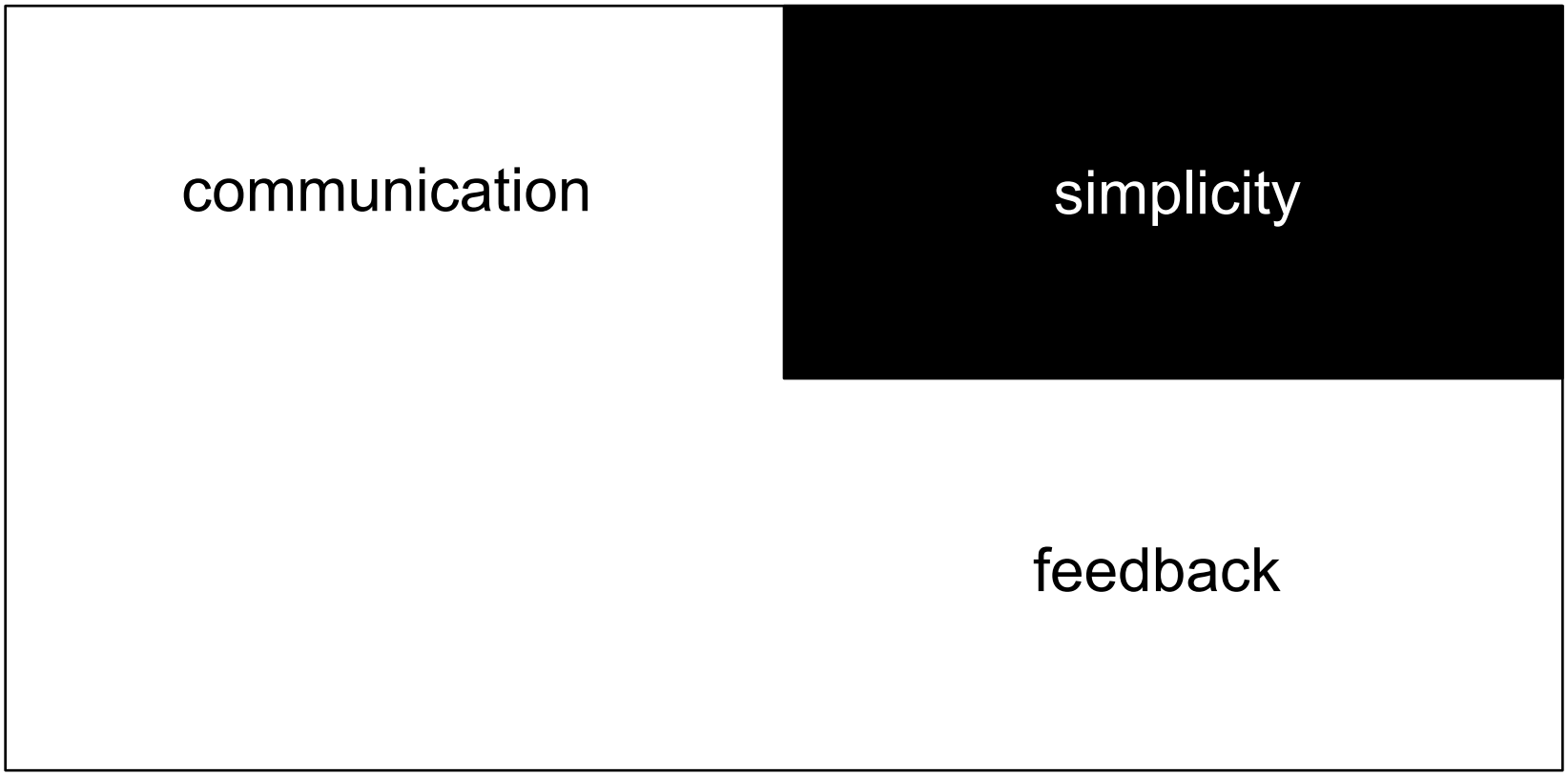

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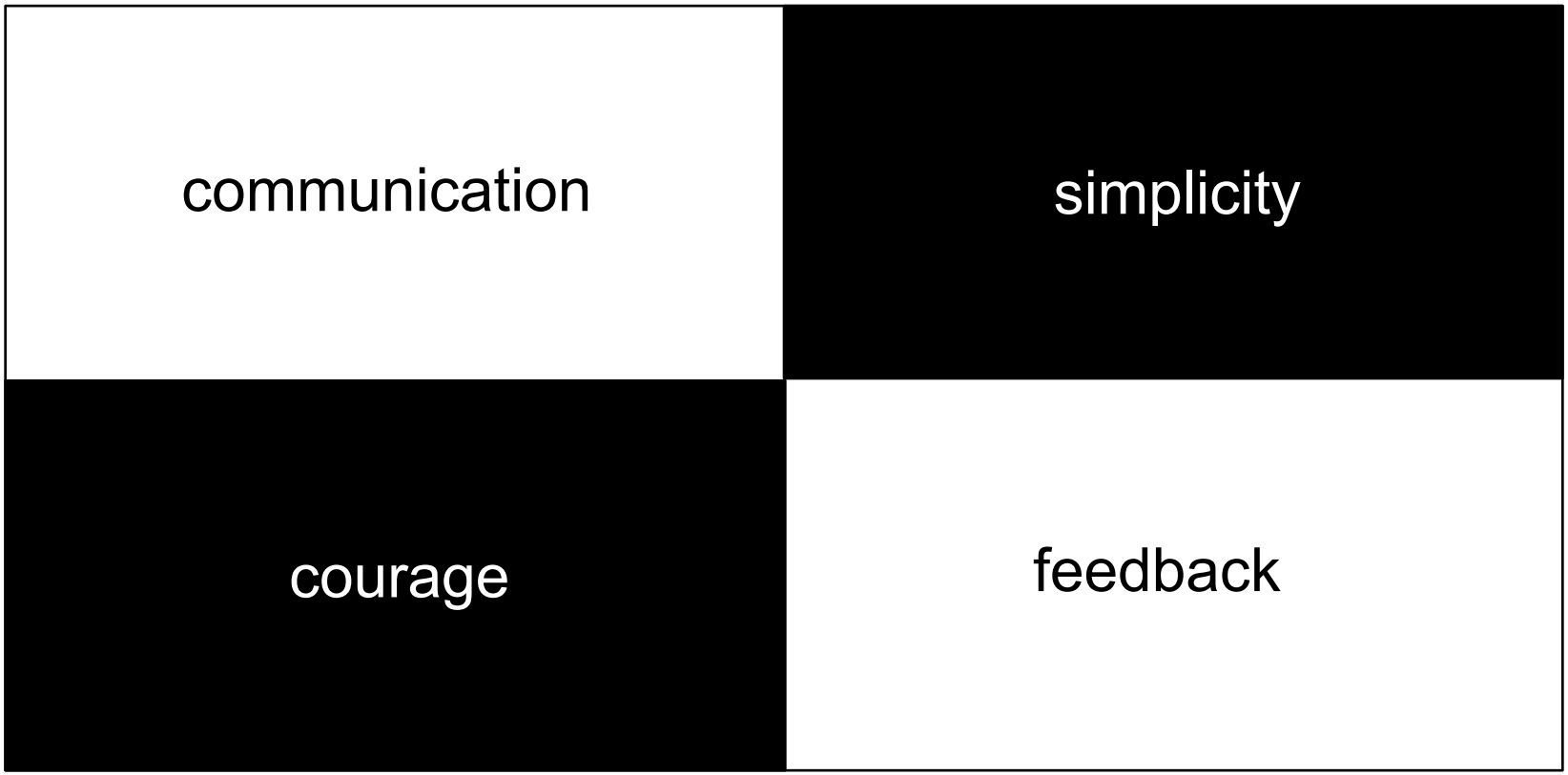

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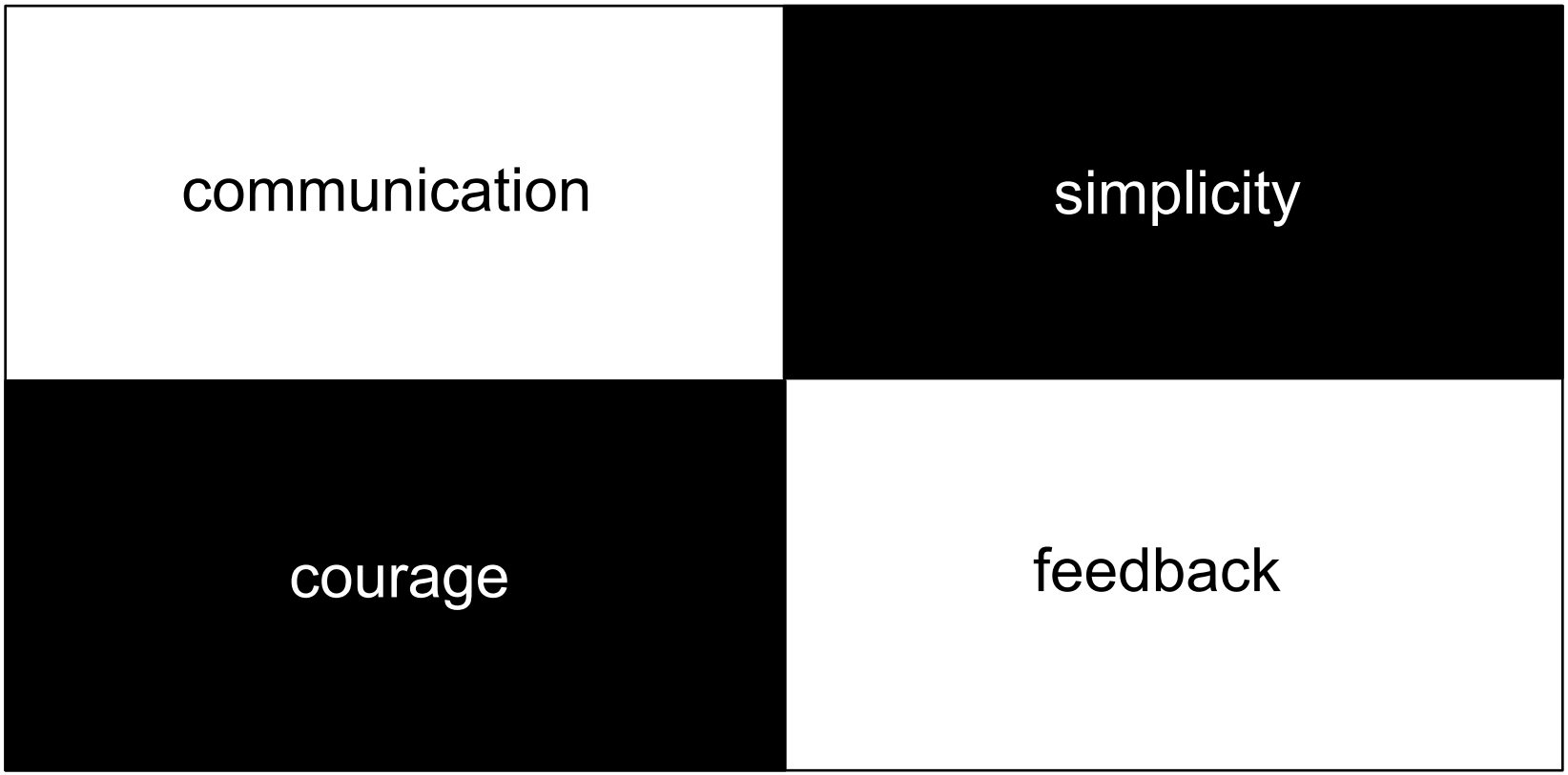

Communication leads to valuable feedback which encourages simplicity which allows for courage to change

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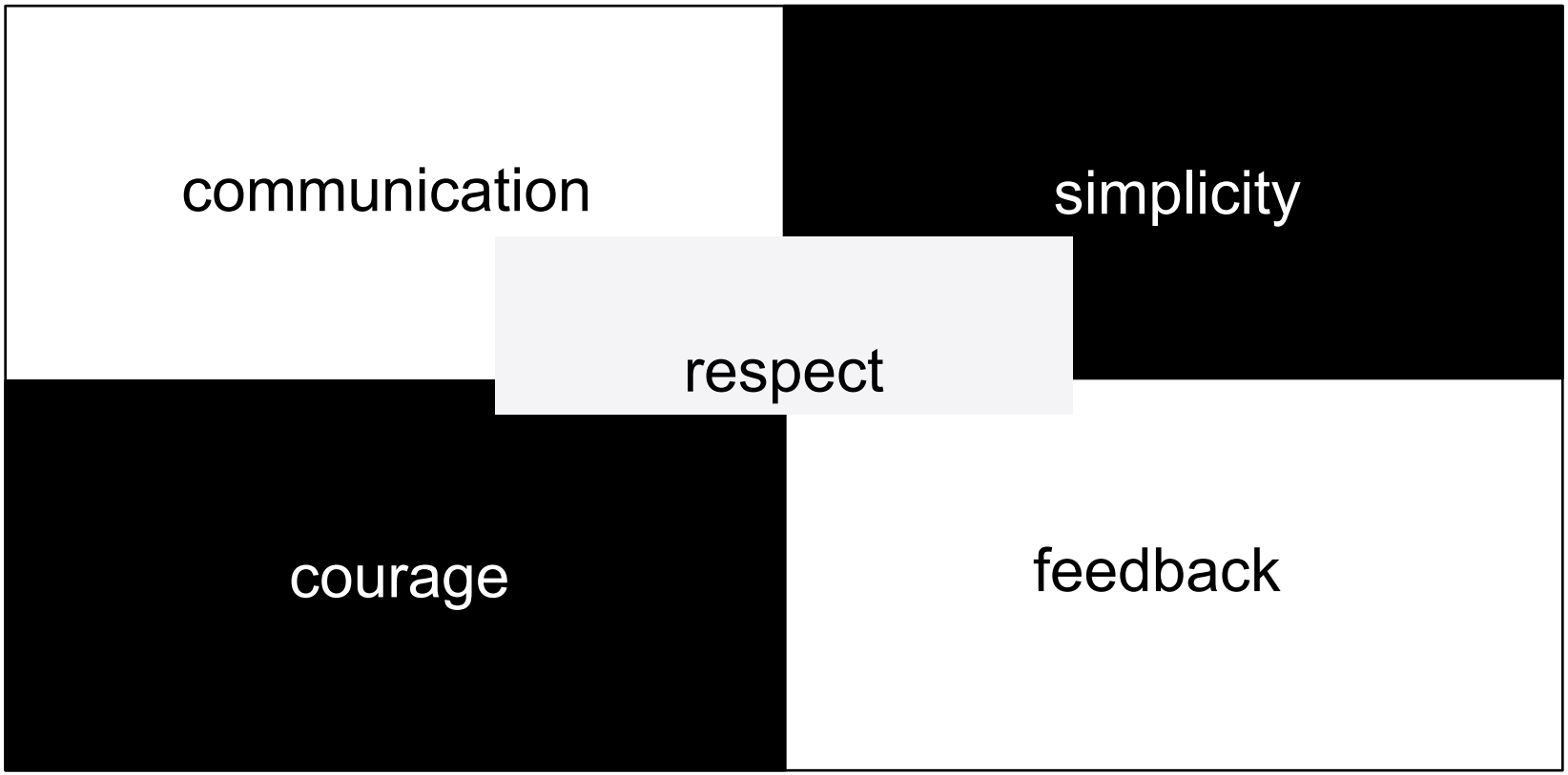

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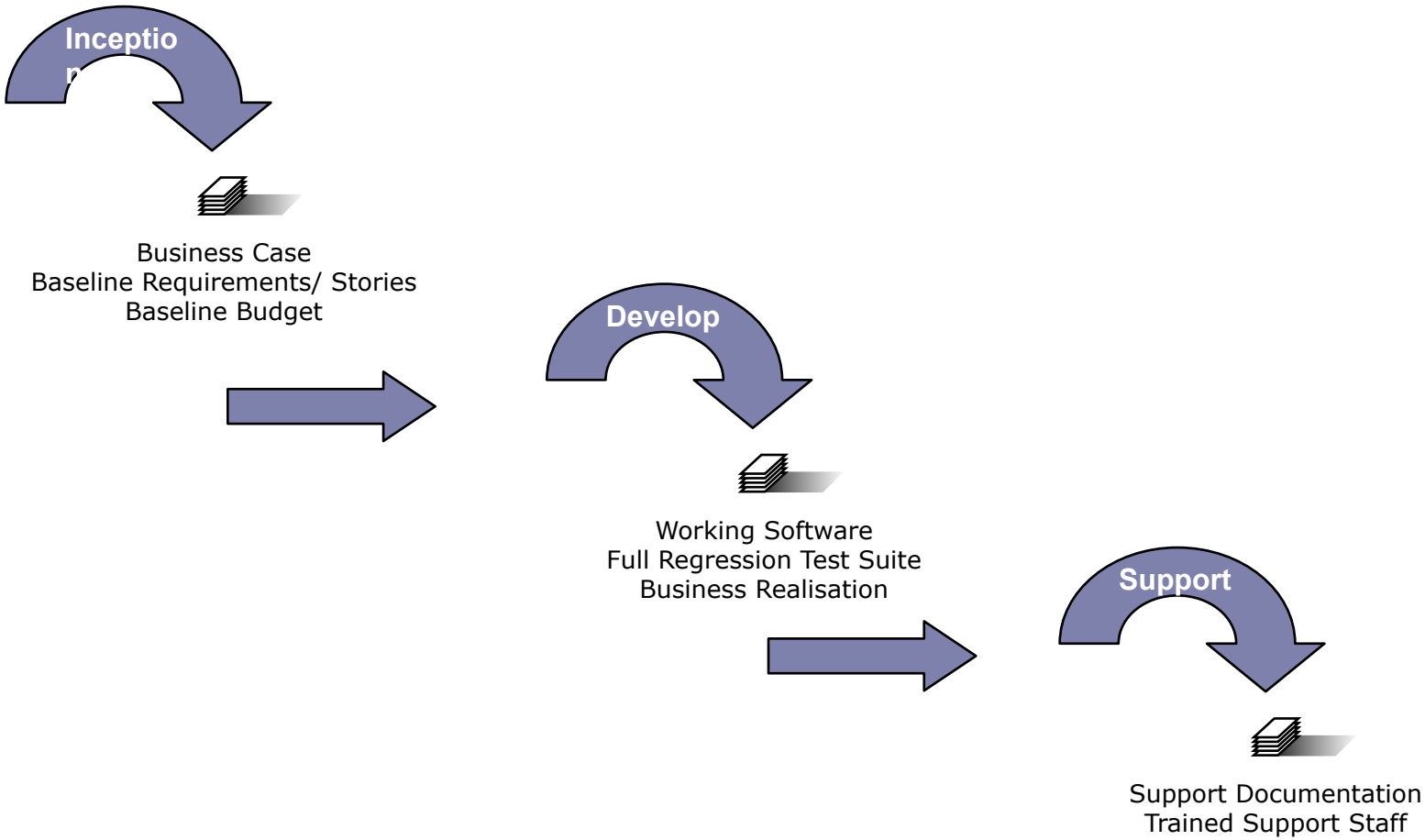
How Agile fits into software delivery



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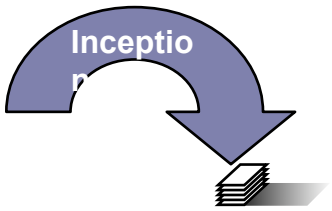
Agile development is an iterative and incremental process



High level requirements

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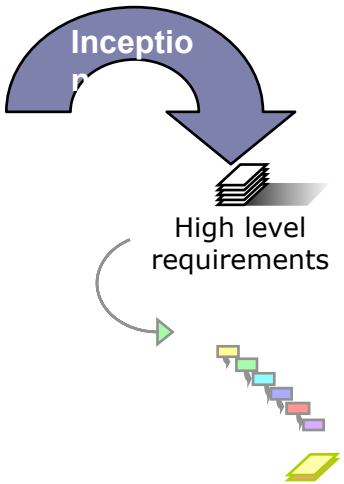

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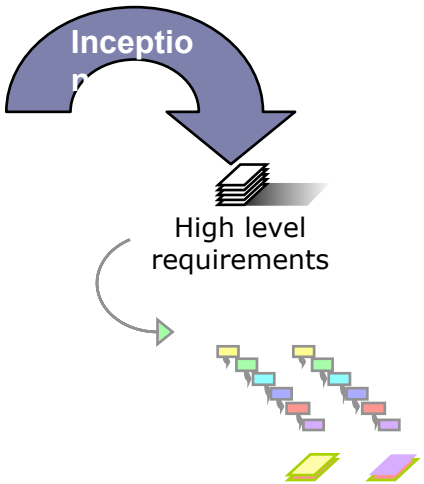

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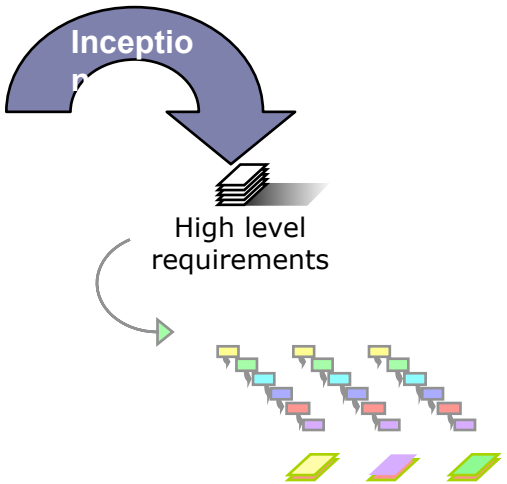

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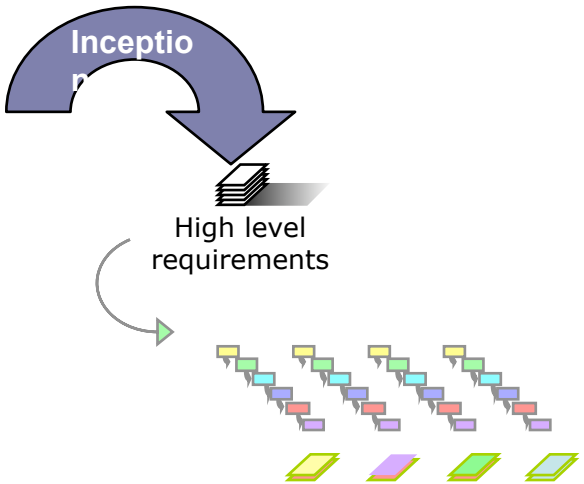

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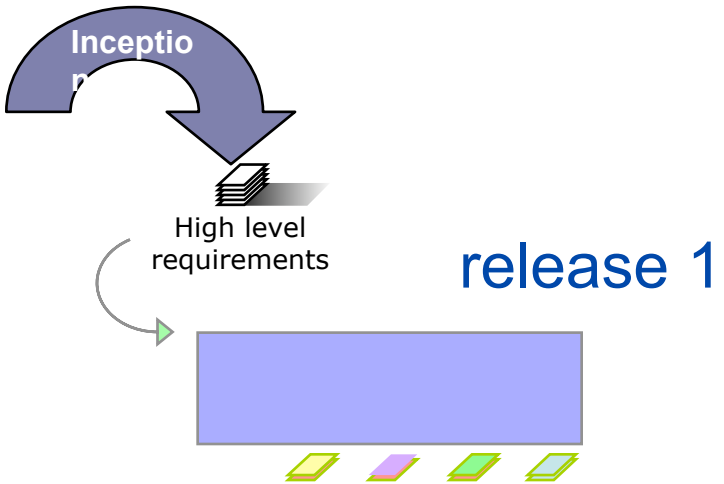

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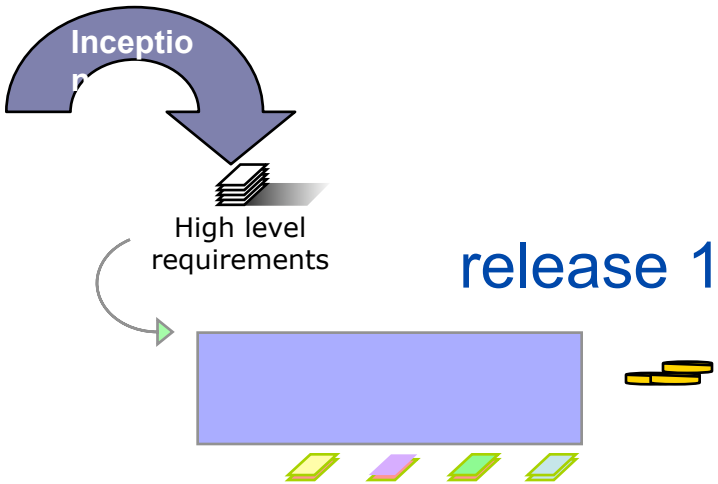

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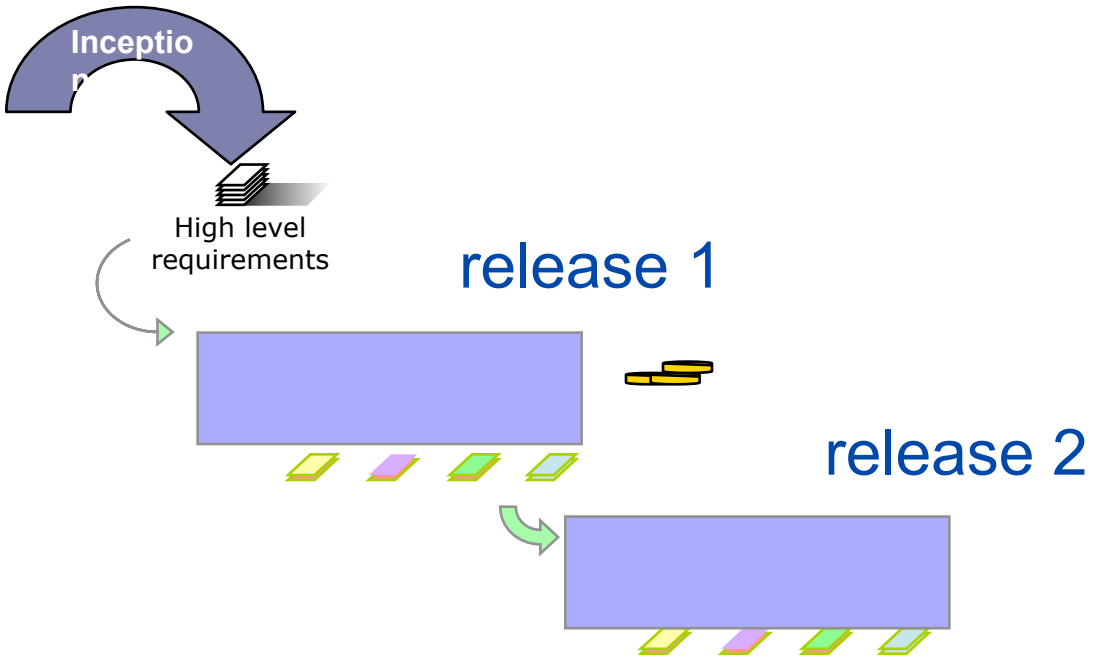

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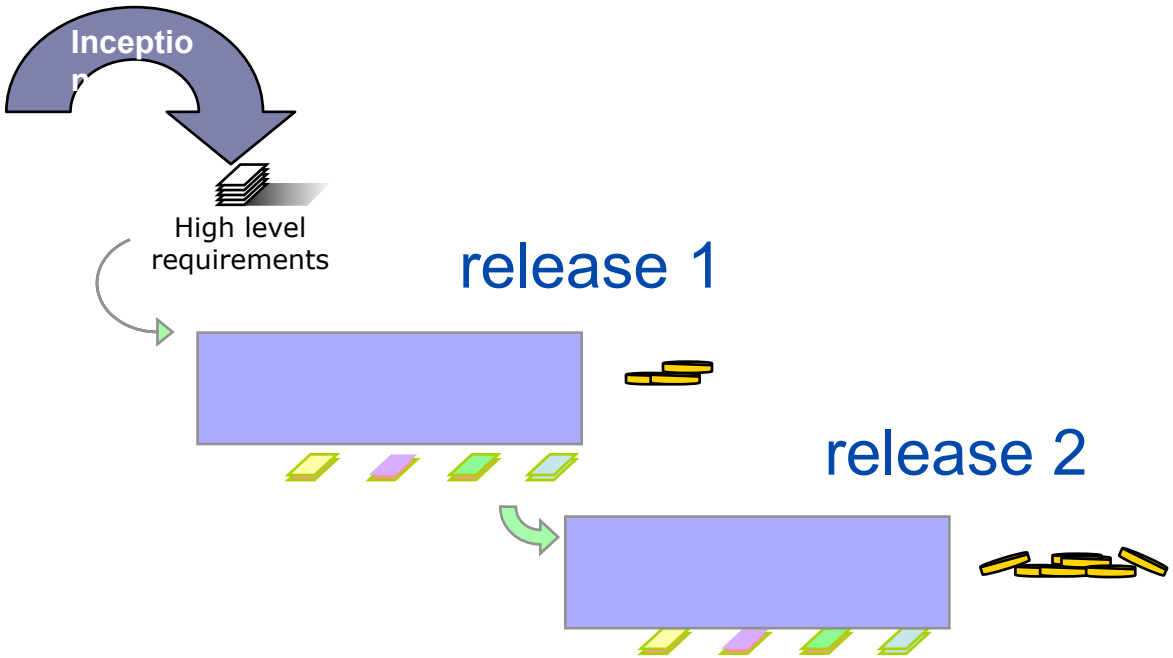

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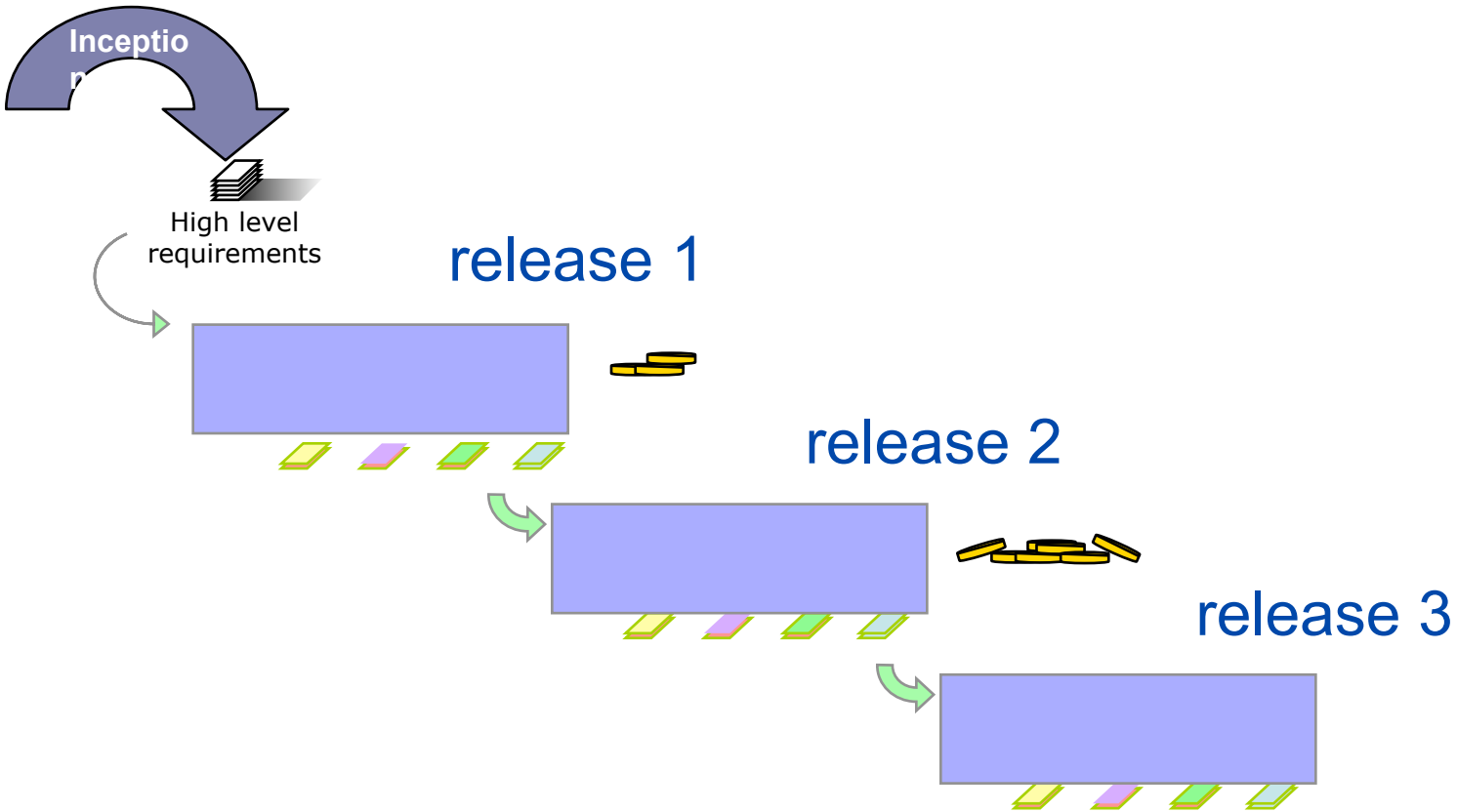

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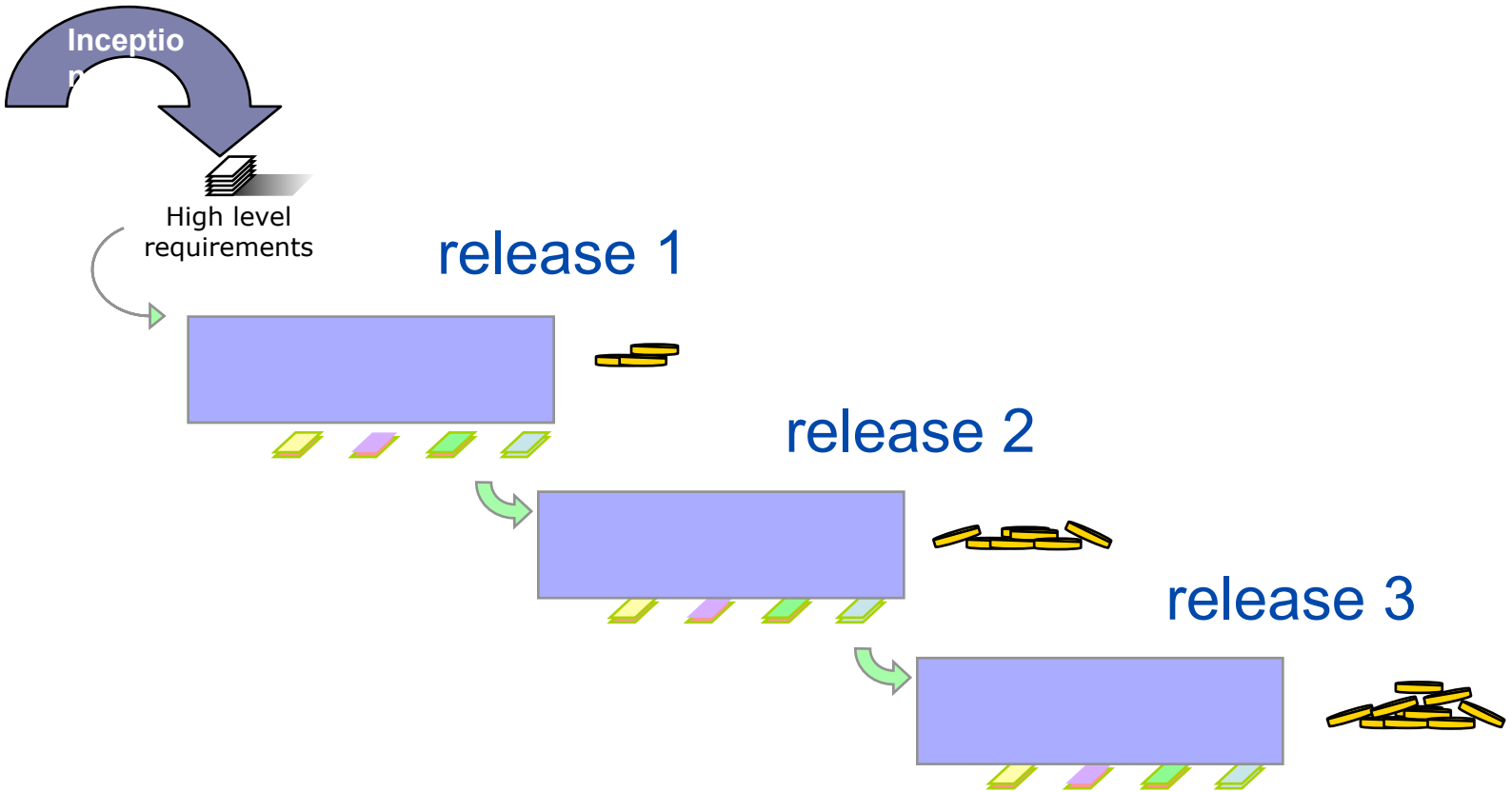

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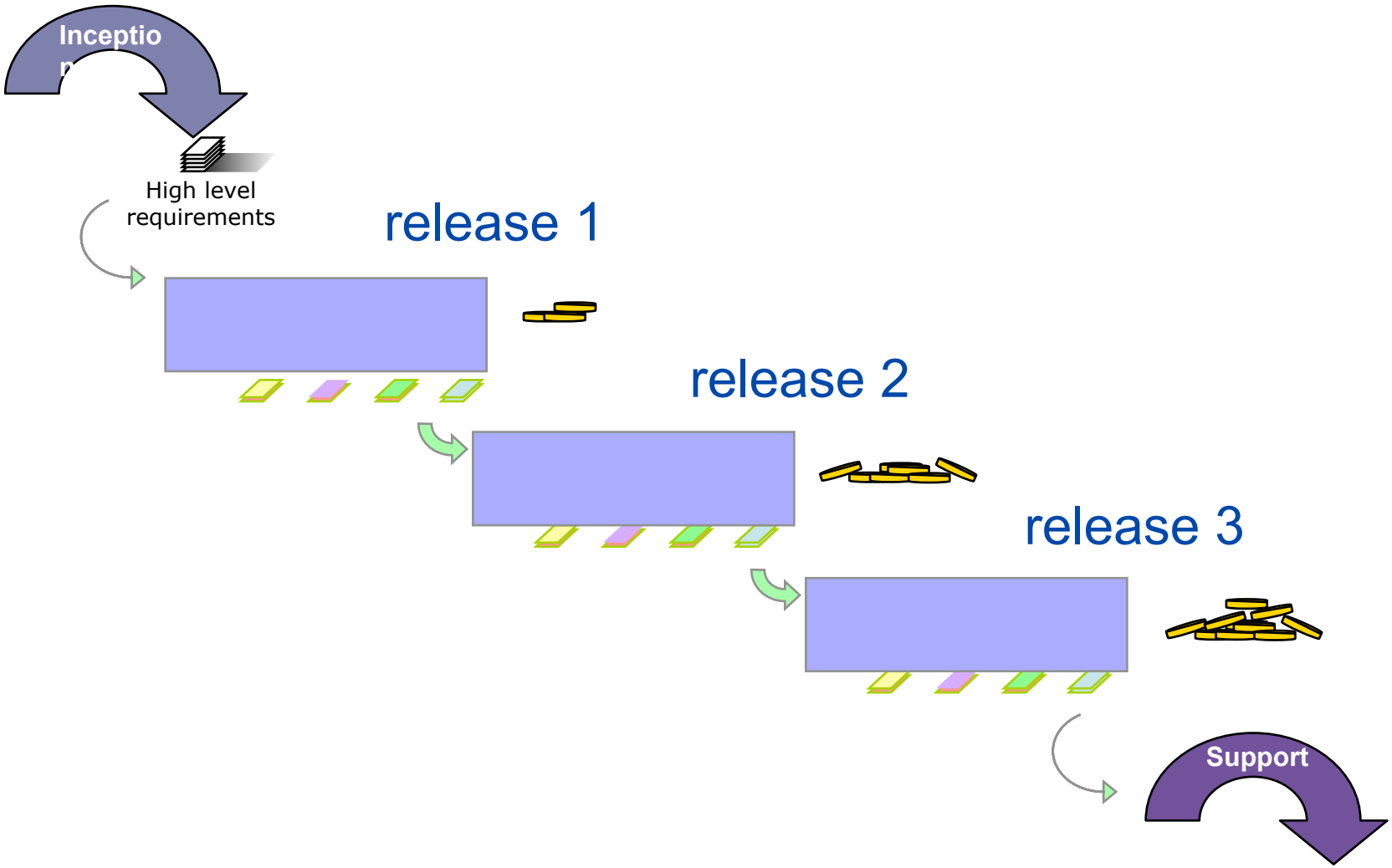

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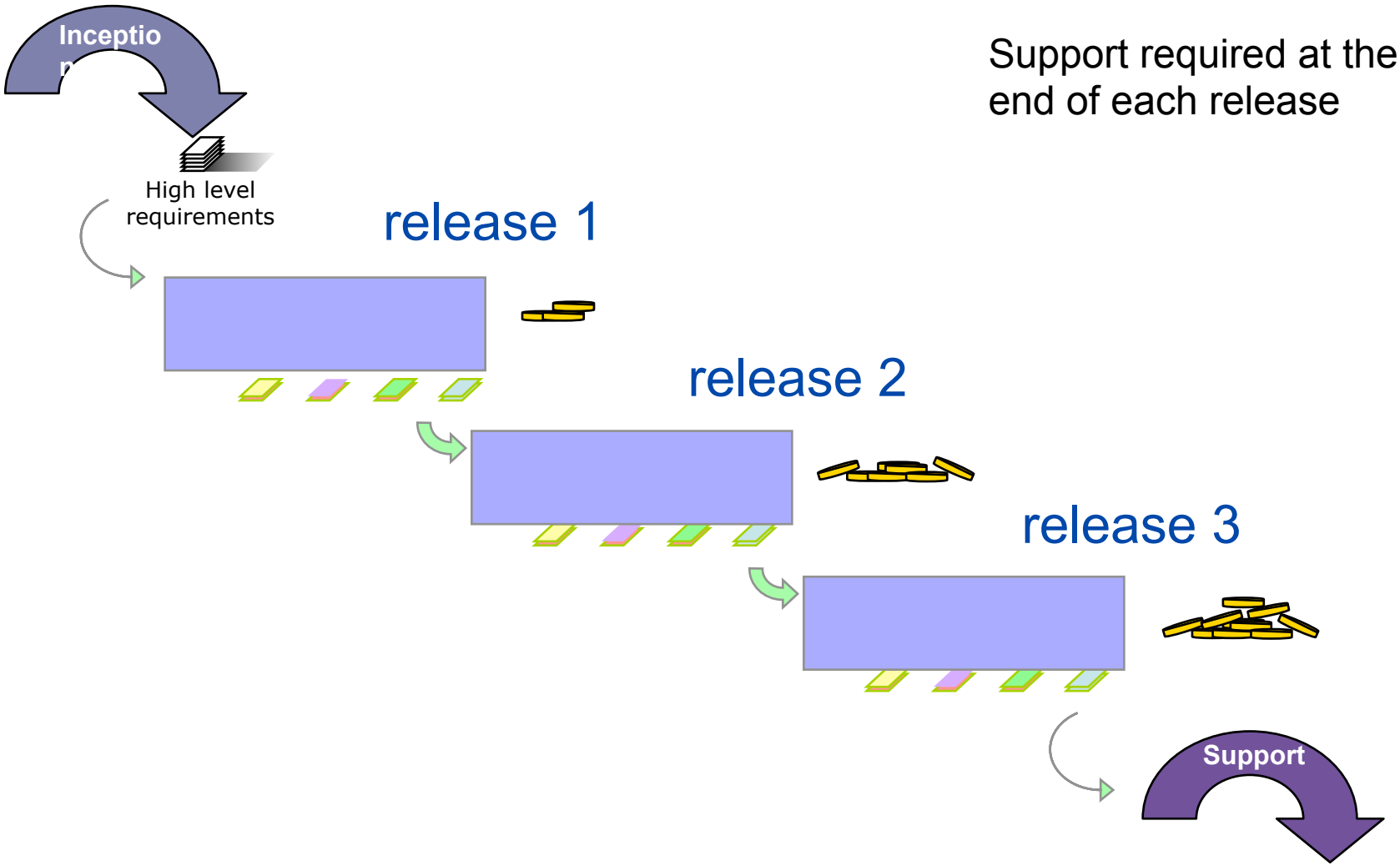

Support required at the end of each release

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Agile Practices

Pair Programming

IKO

Retrospectives

Story Wall

Daily Stand-ups

Velocity Metrics

Iterations

User Stories

Sustainable Pace

TEAM

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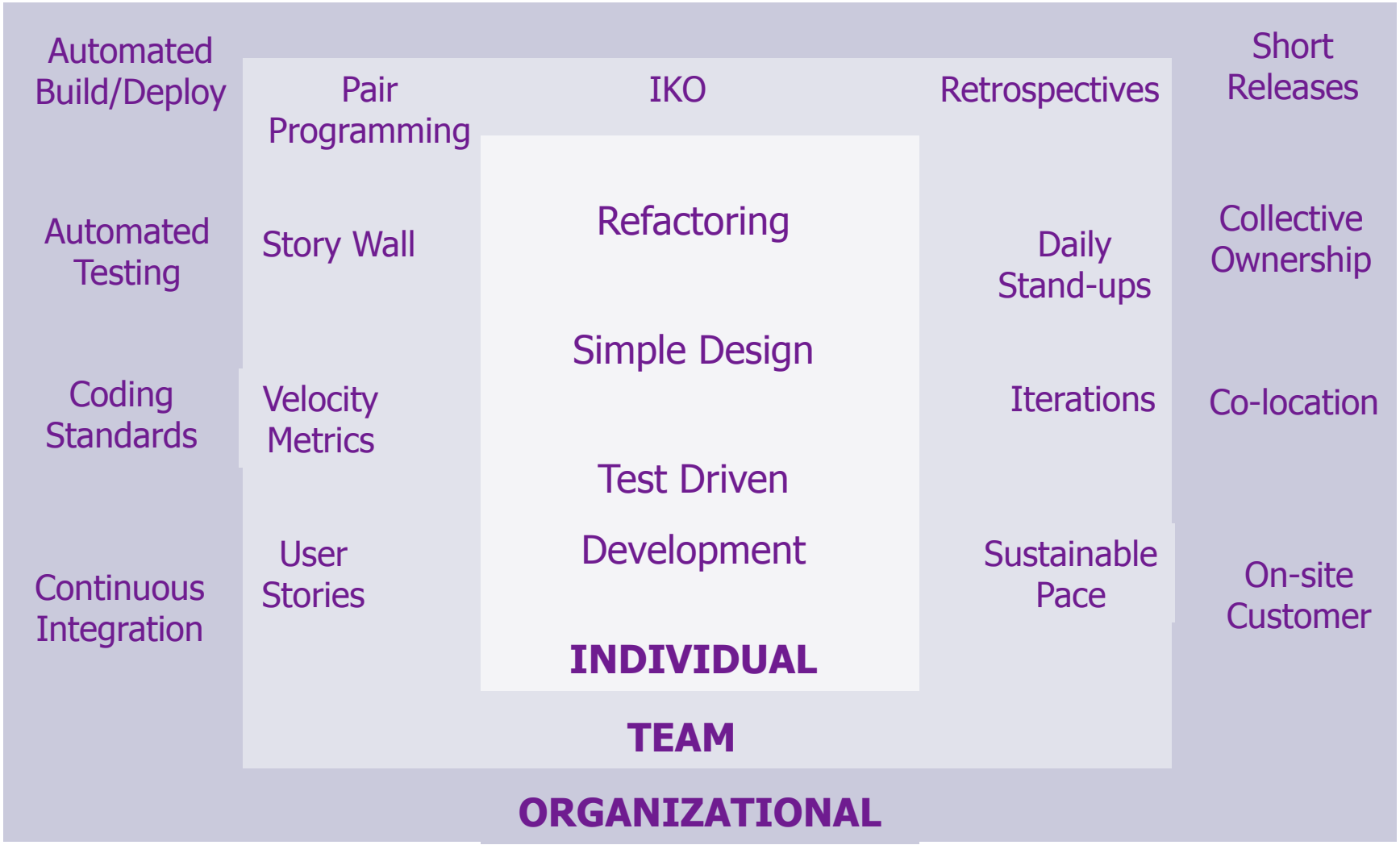
Agile Practices

29

Agile Practices



Agenda for this session

- The Story of Software Development
- Lean Thinking
- Agile Values and Principles
- Agile Process
- Agile Practices
- **Summary/Review**
- Questions/Close

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Summary

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Summary

Use of Agile methodologies

- Helps handle changing requirements & priorities
- Lowers cost of change
- Provides better visibility into project progress
- Reduces risk
- Maximizes return on investment (business value prioritized)
- Encourages higher quality, simpler code
- Delivers business value early & often

Summary

Use of Agile methodologies

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- Lowers cost of change
- Provides better visibility into project progress
- Reduces risk
- Maximizes return on investment (business value prioritized)
- Encourages higher quality, simpler code
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But, with this capability comes

- Constant business involvement
- A need for more discipline
- Greater emphasis on testing

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Questions?

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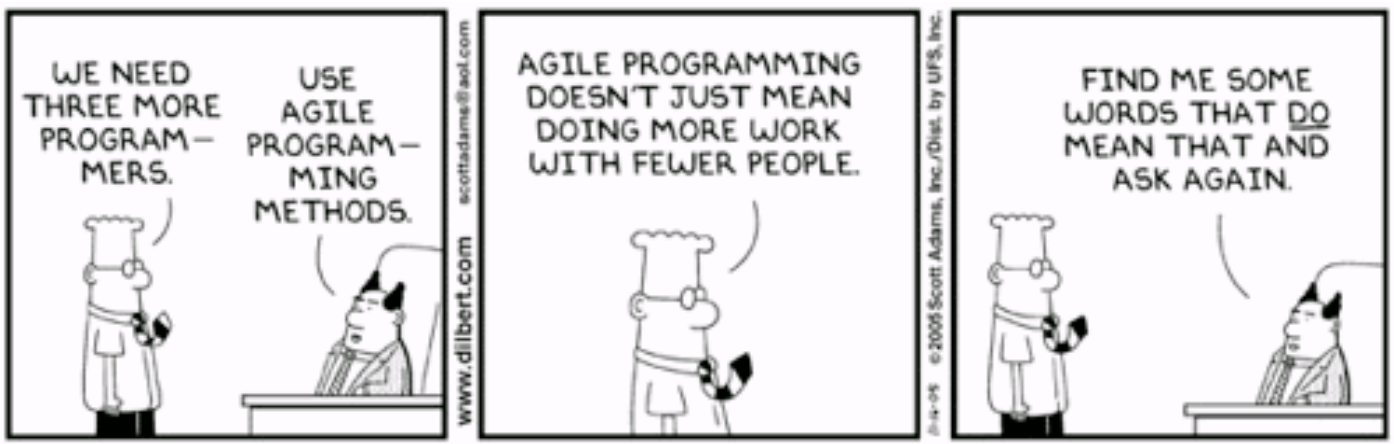

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Agile Overview

Thanks for attending!

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