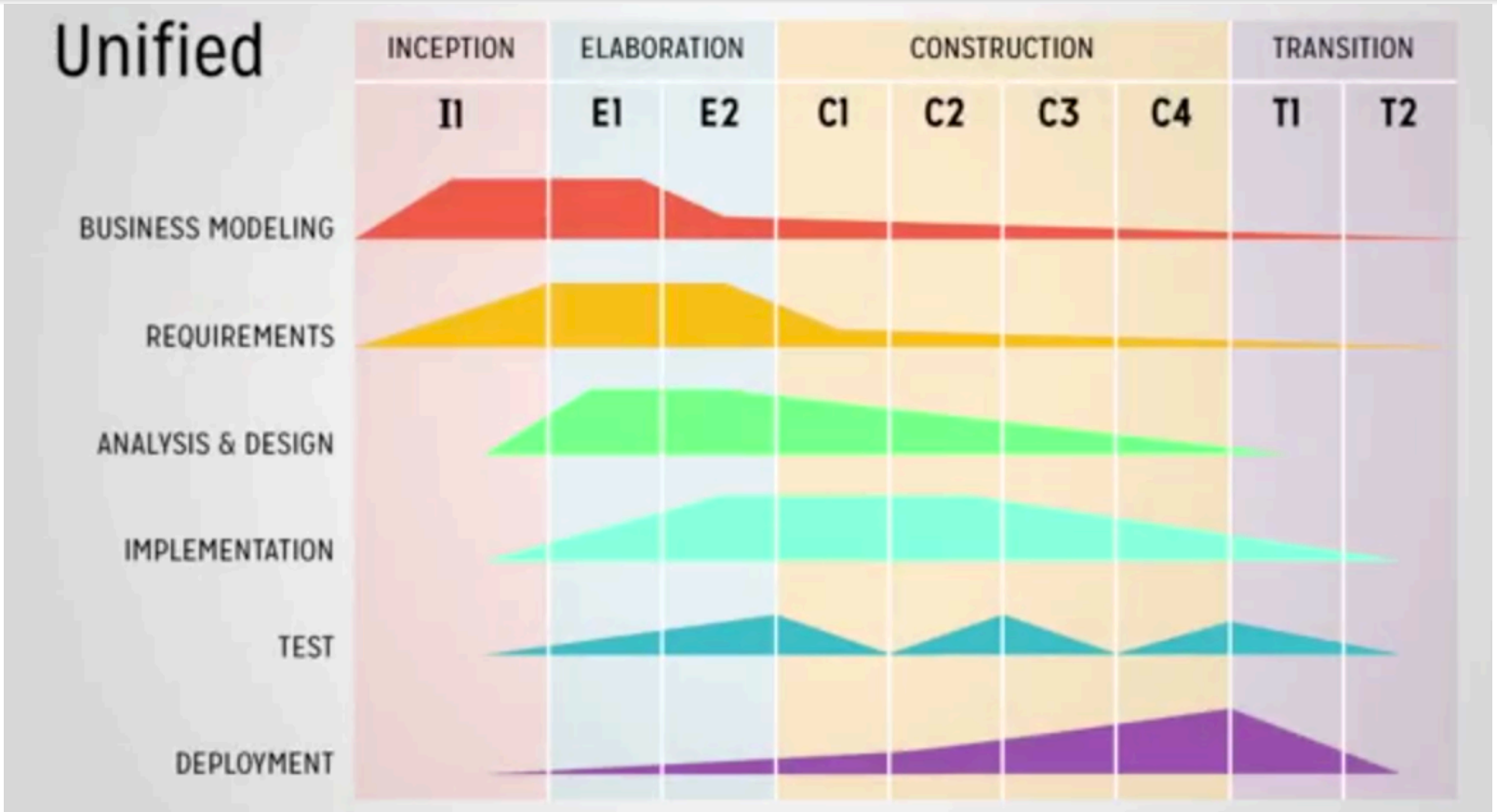
Unified Process

Iterative models: Spiral Model, Unified Process Model / Unified Process ...

General structure

- to build iteratively
- doing work in parallel
  -> allows for tasks done in one phase to overlap with another



Structure of the Unified Process

- The basic structure is to work in a series of phases which get repeated until the final phase is deemed complete.
- Within most unified process phases, development happens in **small iterations** until the phase is deemed complete.
- Usually, phases are deemed complete when a **milestone** is reached.
- Unified process tries to emphasize **gradual development as much as possible**.

Unified Process & Architecture

Architecture

Architecture is a set of designs upon which the software product is built.

Instead of narrowing down all the requirements of your software product at the beginning,
» unified process focuses on the importance of developing your product's architecture over time.
» So in unified process, the development team's focus is to develop design models along with a working product.

Doing work in parallel, Example of overlapping

design the product architecture & developing tests

Doing work in parallel, Example of overlapping

design the product architecture & developing tests

Quiz

Context

Jeff is building tests for his code as he designs his product's architecture design. He's also clarifying and eliciting requirements from his client occasionally, as he runs into issues.

What style of software development is Jeff using?

- A. Parallel development,
- B. Iterative development,
- C. Incremental development,
- D. Synchronized development

Quiz

What style of software development is Jeff using?

- ✓ A. Parallel development,
- B. Iterative development,
- C. Incremental development,
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Parallel development: participating in multiple phases of development at once

Phases of the unified process

Three Phases of the unified process

- inception
- elaboration
- construction

Phases of the unified process: Inception

the goal

» to see if there's a strong enough business case to continue development.
[There has to be good enough **financial reason** to build the product.]

Creating basic use cases to find business case

"Use cases outline the main user interactions with a product."
(more on "use cases" later in this course)

Define the project scope and potential risks

Milestone of inception phase

- achieve the **life cycle objective milestone**.
- have a reasonable description of how viable the product is.

Phases of the unified process: Inception

Phase features

- a small phase: just enough time to ensure that you have a strong enough basis to continue on to the next phase.
  » If your inception phase is long,
  this might suggest that you have spent **too much time** building **requirement** in the inception phase.
- the **only phase** in unified process where development does **not happen in iterations**.

Phases of the unified process: elaboration

Elaboration phase

the first of the unified process phases to implement small iterations

The goal

» to basically create a model, or a prototype of the product, [which you'll refine later.]

The prupose

- » to define the system architecture
- » Developers define the requirements conceived in the inception phase.
- develop key requirements in architecture documentation, such as use case diagrams and high level class diagrams.
  -> foundation on which actual development will be built.

Phases of the unified process: elaboration

Milestone

developers deliver a plan for development in the next phase, the construction phase.
» This plan basically builds on what was developed during inception and integrates everything learned during elaboration so the construction can happen effectively.

Phases of the unified process: elaboration

A iterative phase: building the prototype in an iteration

refine requirements & redesign architecture models

development can happen in parallel

When you begin the construction phase, you'll continue to do work that was being done in the elaboration phase.

The difference: emphasis on the work may change

- importance of testing and programming: in elaboration $<$ in construction
- importance of assessing risks: in elaboration $>$ construction

Phases of the unified process: construction

- another phase in which development can happen iteratively
- It focuses on building upon the work which was done in elaboration.
- Where your product's guts are really built, and the product comes to life.

Use case & Construction

- Thorough use cases are developed to drive product development.
  -> These use cases are more robust than the ones created in the inception phase.
- Construction phases use cases offer more specific insights into how your product should be created.

Milestone

The product is built iteratively throughout this construction phase until it is ready to be released. -> transitioning your product to your client and your users.

Quiz

Which of the following describe the main aspects of the elaboration phase?

- A. Identifying a strong business case for the project,
- B. Creating use cases,
- C. creating use case diagrams
- D. creating class diagrams.

Quiz

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- A. Identifying a strong business case for the project,
- B. Creating use cases,
- ✓ C. creating use case diagrams
- ✓ D. creating class diagrams.

- You identify a strong business case for the project in the inception phase. "Creating basic use cases to find business case"
- Use case diagrams and class diagrams are main work products of the elaboration phase.

Phases of the unified process: transition

Transition phase

- Your development team receives feedback from your users.
- -> to see how well the design stacks up against your users' needs.
- -> By gathering this feedback, your development team can make improvements to your product, creating bug fixes and other releases.

iterative

After your product has completed its iteration, it's possible to cycle back through the phases of unified process again.

- » in cases where you intend to create **further major releases** on the product and apply user feedback as a means of influencing plans for later development.
- » These cycles repeat until you and your development team are ready to release your product.

Summery

Unified process

- an example of an iterative process.
- a parallel process.
- activities related to requirements, design, and implementation can happen at the same time.
- much more similar to a spike-driving machine than to a sledgehammer.
- a great process for large projects
  where a great deal of refinement is needed in order for the product to stay on track.
- having iterations allows your product to grow naturally without becoming limited by upfront plans.