Processo de Desenvolvimento

As 6 melhores praticas de desenvolvimento de software e “Rational Unified Process” (RUP)

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Objectives

- Explain the Six Best Practices
- Present the Rational Unified Process within the context of the Six Best Practices

Why Are We Here?

The **GOAL** is to deliver
quality products
on time and ***on budget***
which meet the customer's
real needs.

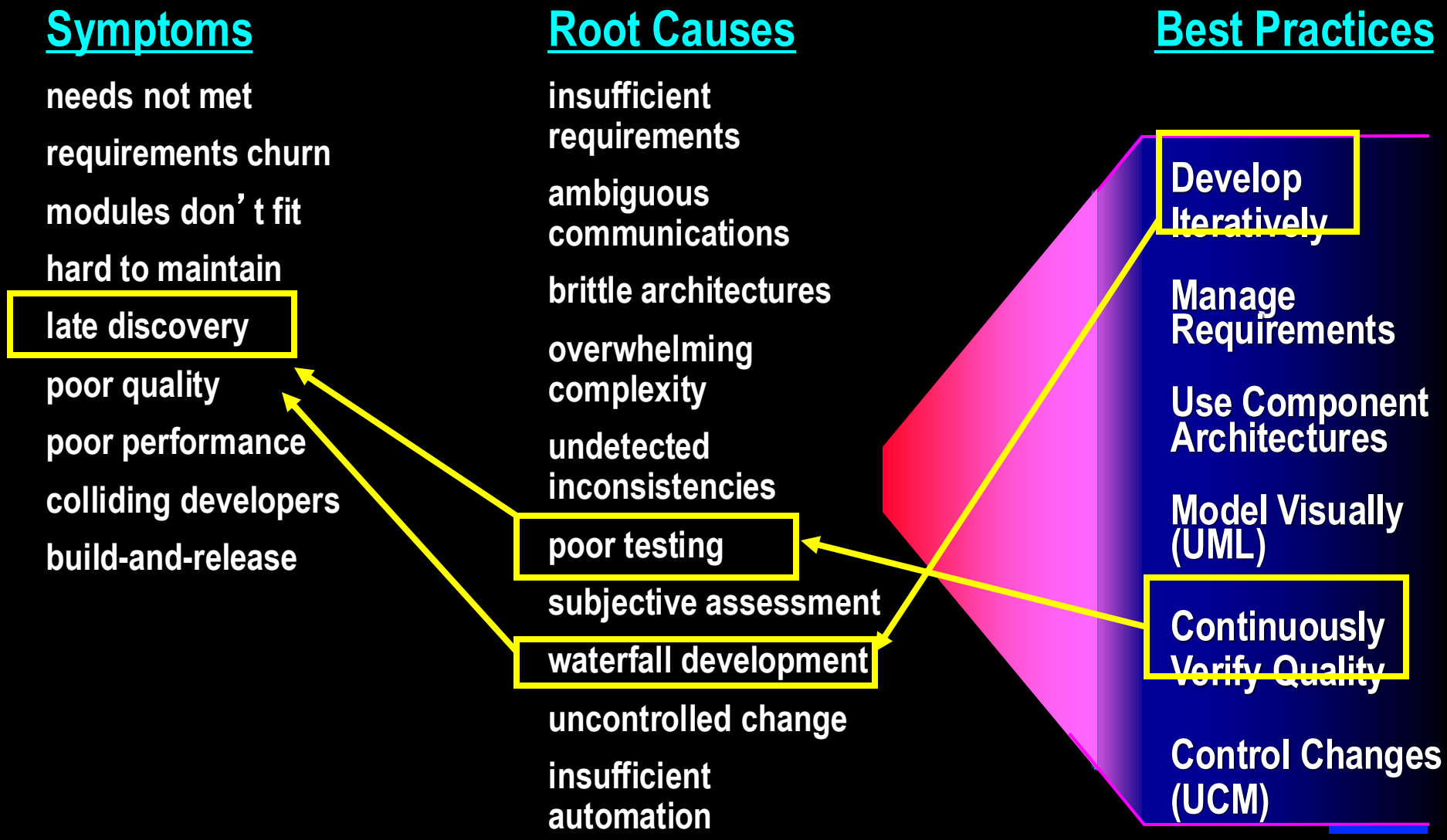
Symptoms of Software Development Problems

- Inaccurate understanding of end-user needs
- Inability to deal with changing requirements
- Modules that don't fit together
- Software that's hard to maintain or extend
- Late discovery of serious project flaws
- Poor software quality
- Unacceptable software performance
- No coordinated team effort
- An unreliable build-and-release process

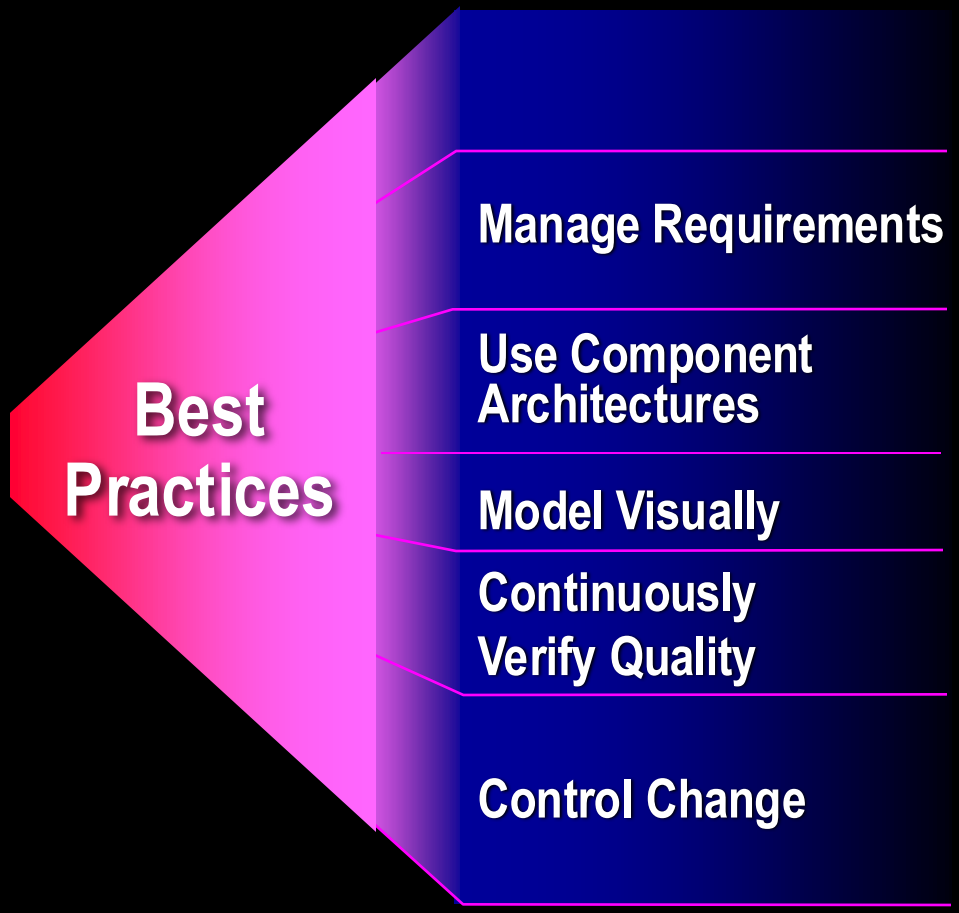
Root Causes of Software Development Problems

- Insufficient requirements management
- Ambiguous and imprecise communications
- Brittle architectures
- Overwhelming complexity
- Undetected inconsistencies among requirements, designs, and implementations
- Insufficient testing
- Subjective project status assessment
- Delayed risk reduction due to waterfall development
- Uncontrolled change propagation
- Insufficient automation

Addressing Root Causes Eliminates the Problems



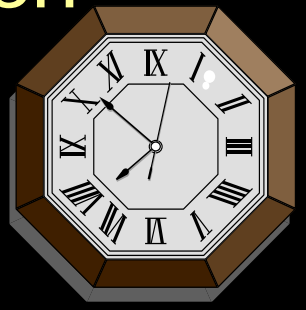
Practice 1: Develop Software Iteratively



Develop Iteratively

You Can't Know Everything Initially

- An initial design will likely be flawed with respect to its key requirements
- Late-phase discovery of design defects results in costly over-runs and/or project cancellation



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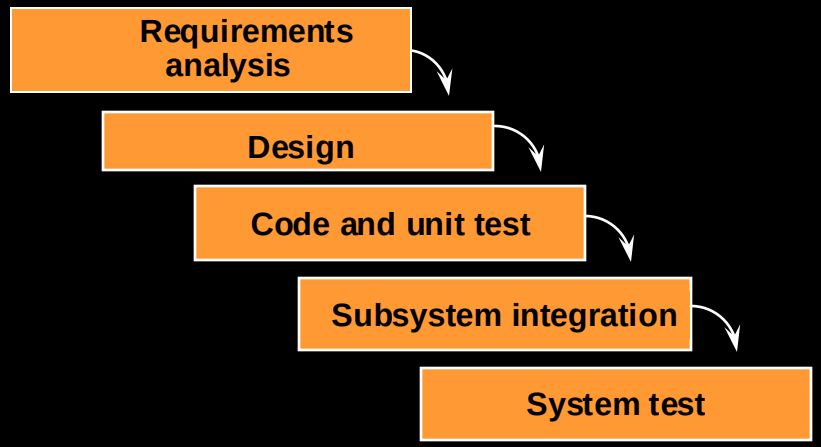
The time and money spent implementing a faulty design are not recoverable

Waterfall Development Characteristics

Waterfall Process

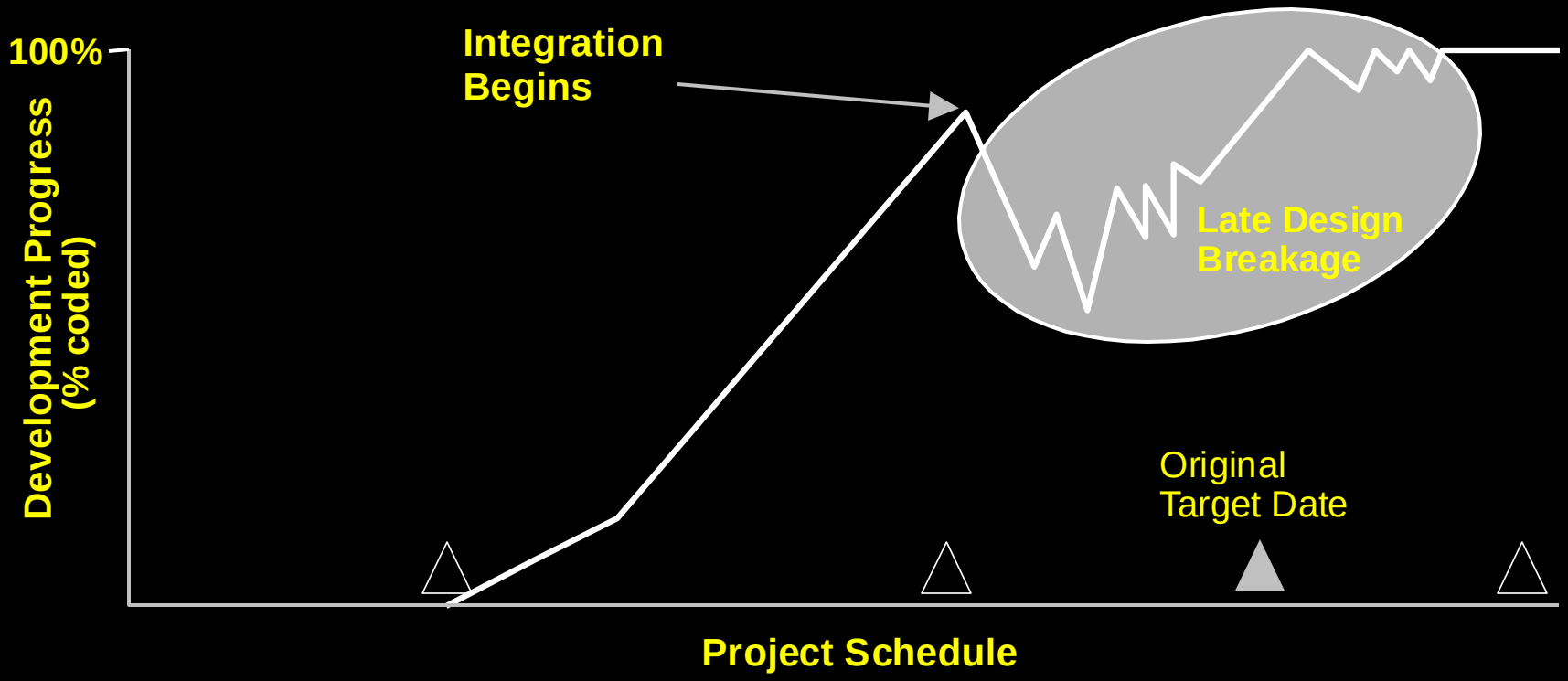


- Delays confirmation of critical risk resolution
- Measures progress by assessing work-products that are poor predictors of time-to-completion
- Delays and aggregates integration and testing
- Precludes early deployment
- Frequently results in major unplanned iterations

Conventional Software Process

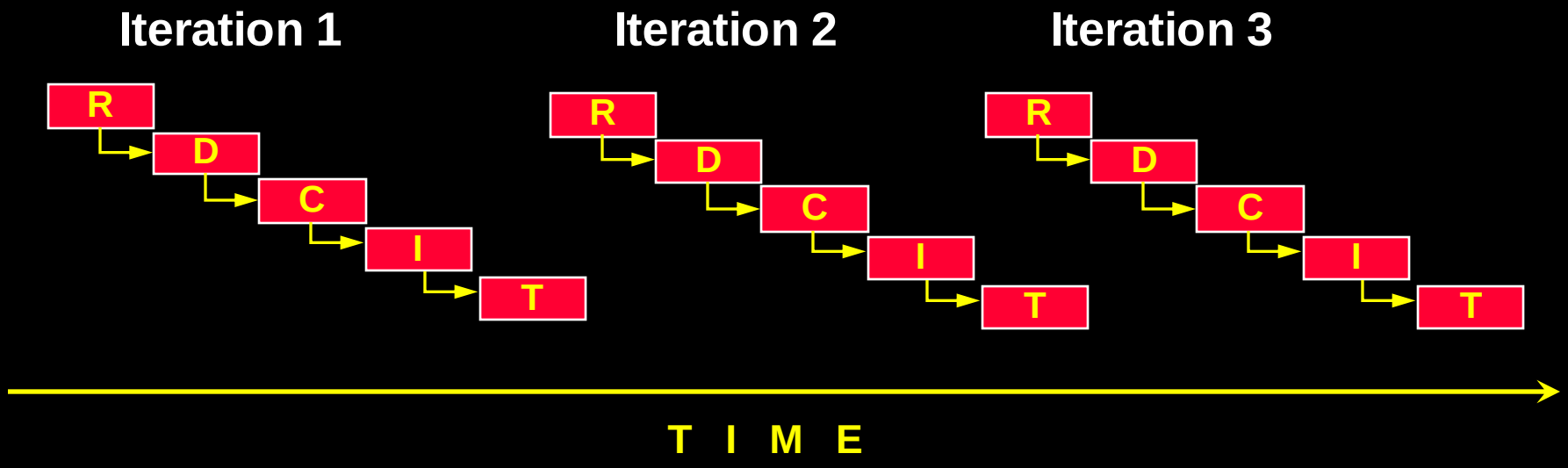
Sequential activities:

Requirements ➡ Design ➡ Code ➡ Integration ➡ Test

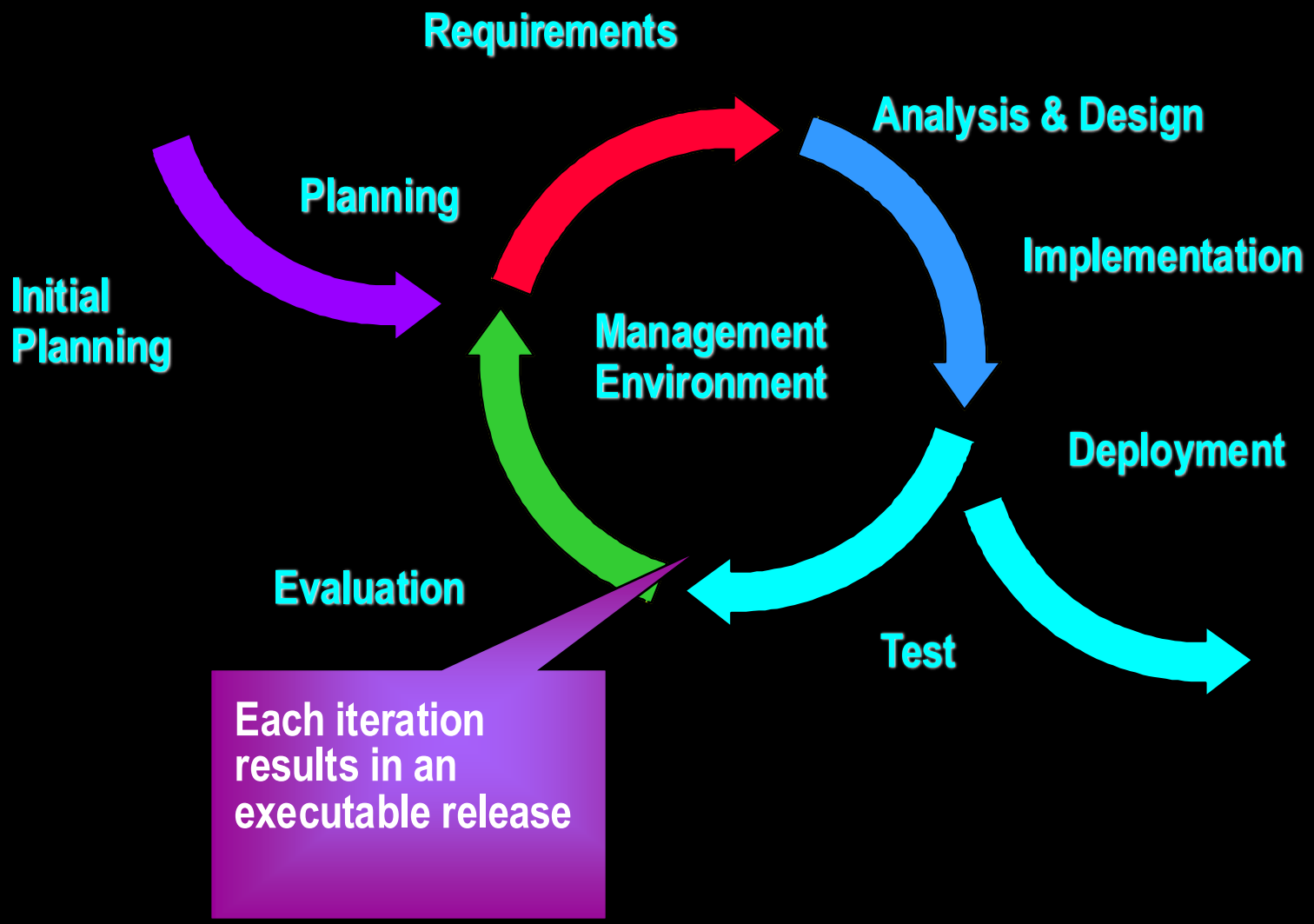


Iterative Development Characteristics

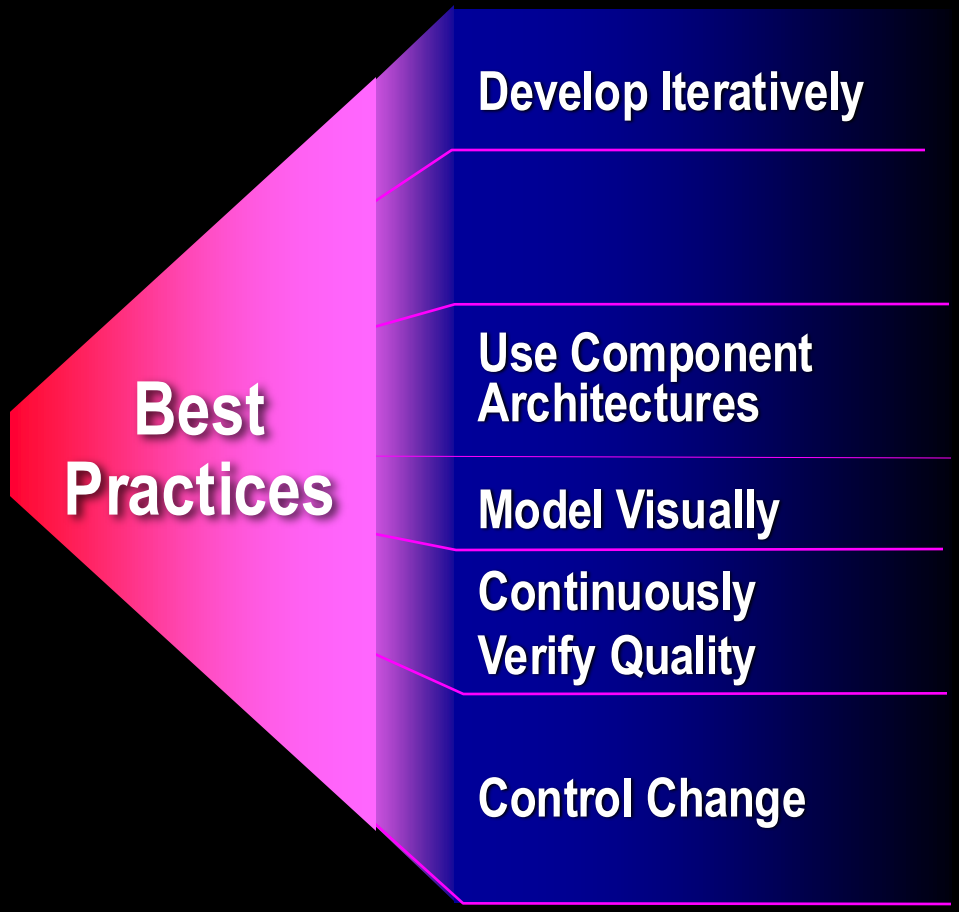
- Resolves major risks before making large investments
- Enables early user feedback
- Makes testing and integration continuous
- Focuses project short-term objective milestones
- Makes possible deployment of partial implementations



Iterative Development Produces an Executable



Practice 2: Manage Requirements

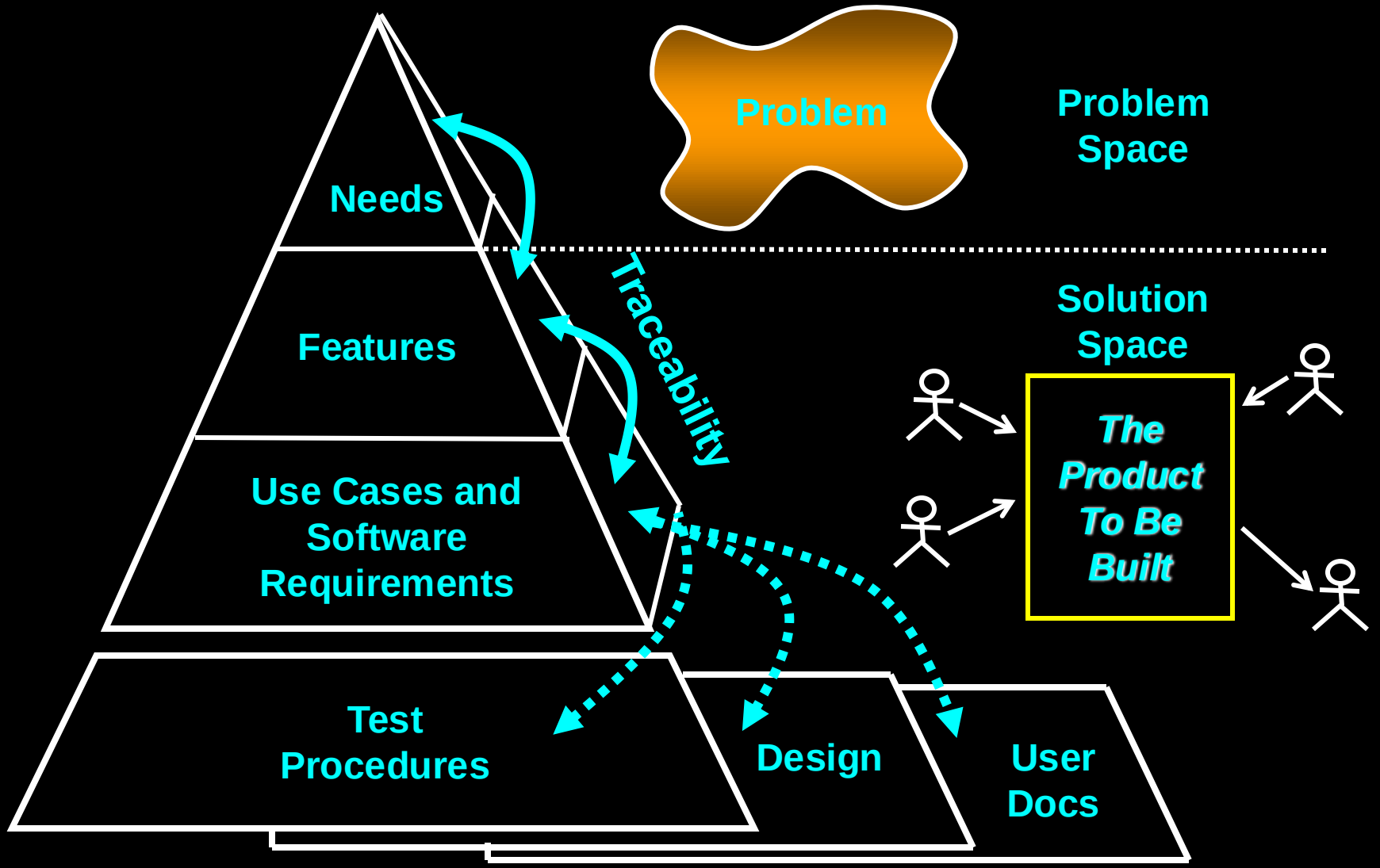


Manage Requirements

Aspects of Requirements Management

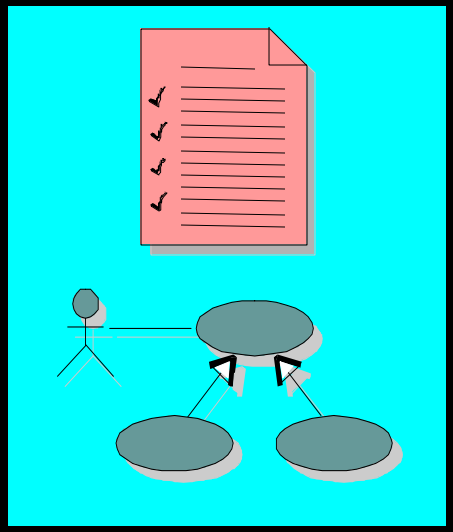
- Analyze the Problem
- Understand User Needs
- Define the System
- Manage Scope
- Refine the System Definition
- Build the Right System

Map of the Territory



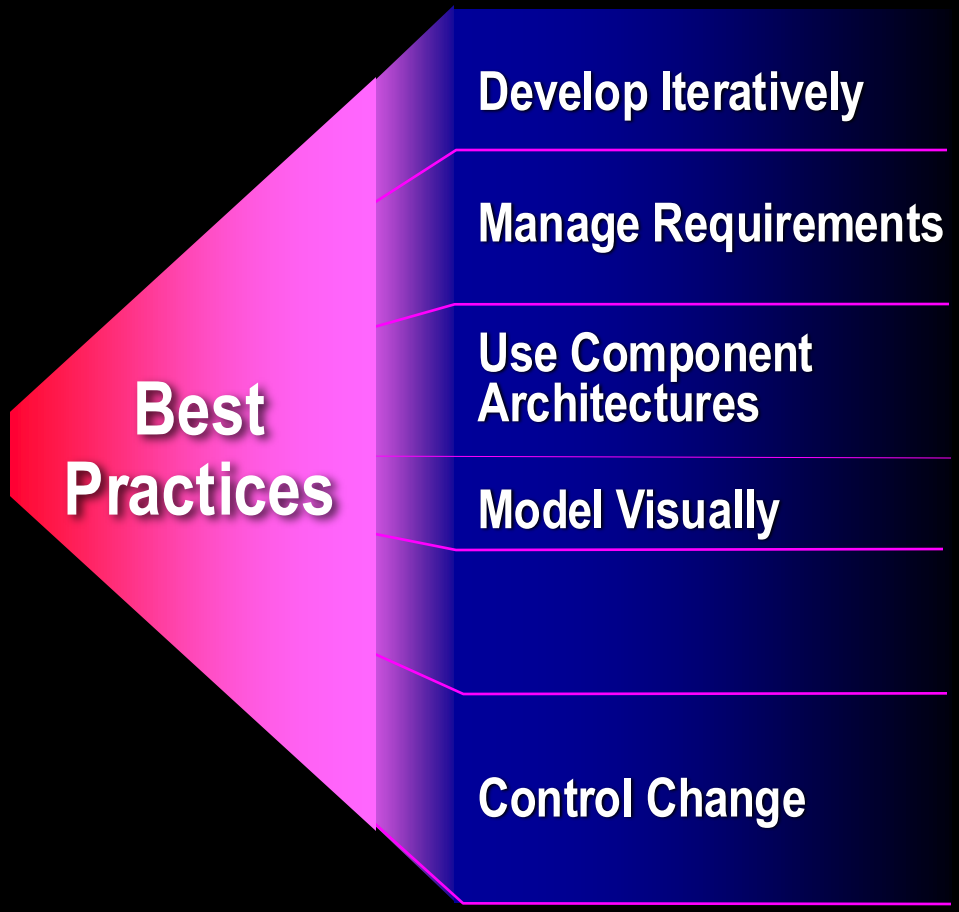
Manage Changing Requirements

Requirements are dynamic -- They will change during development



- Establish the baseline - elicit, organize, and document functionality and constraints
- Evaluate changes and determine their impact
- Track and document tradeoffs and decisions

Practice 5: Continuously Verify Software Quality



Continuously Verify Quality

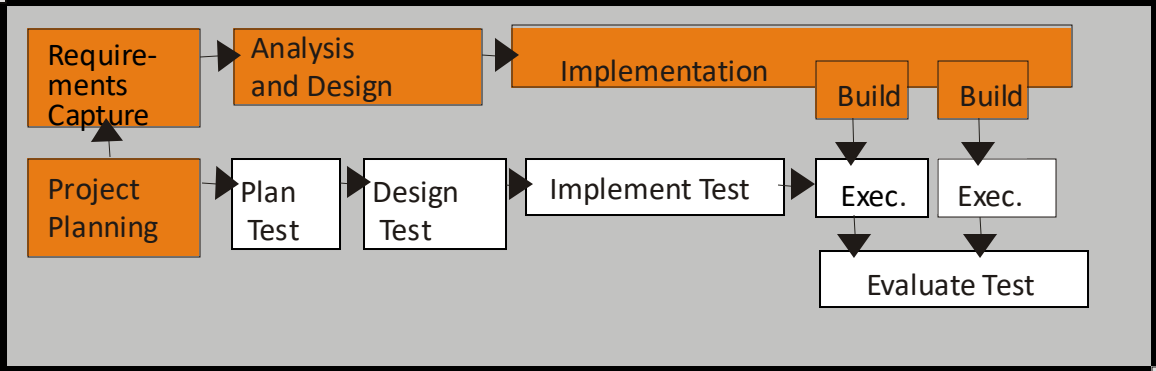
Iterative Development Benefits Testing

Iteration X

Testing:

- Starts earlier
- Is continuous

Iteration X + 1



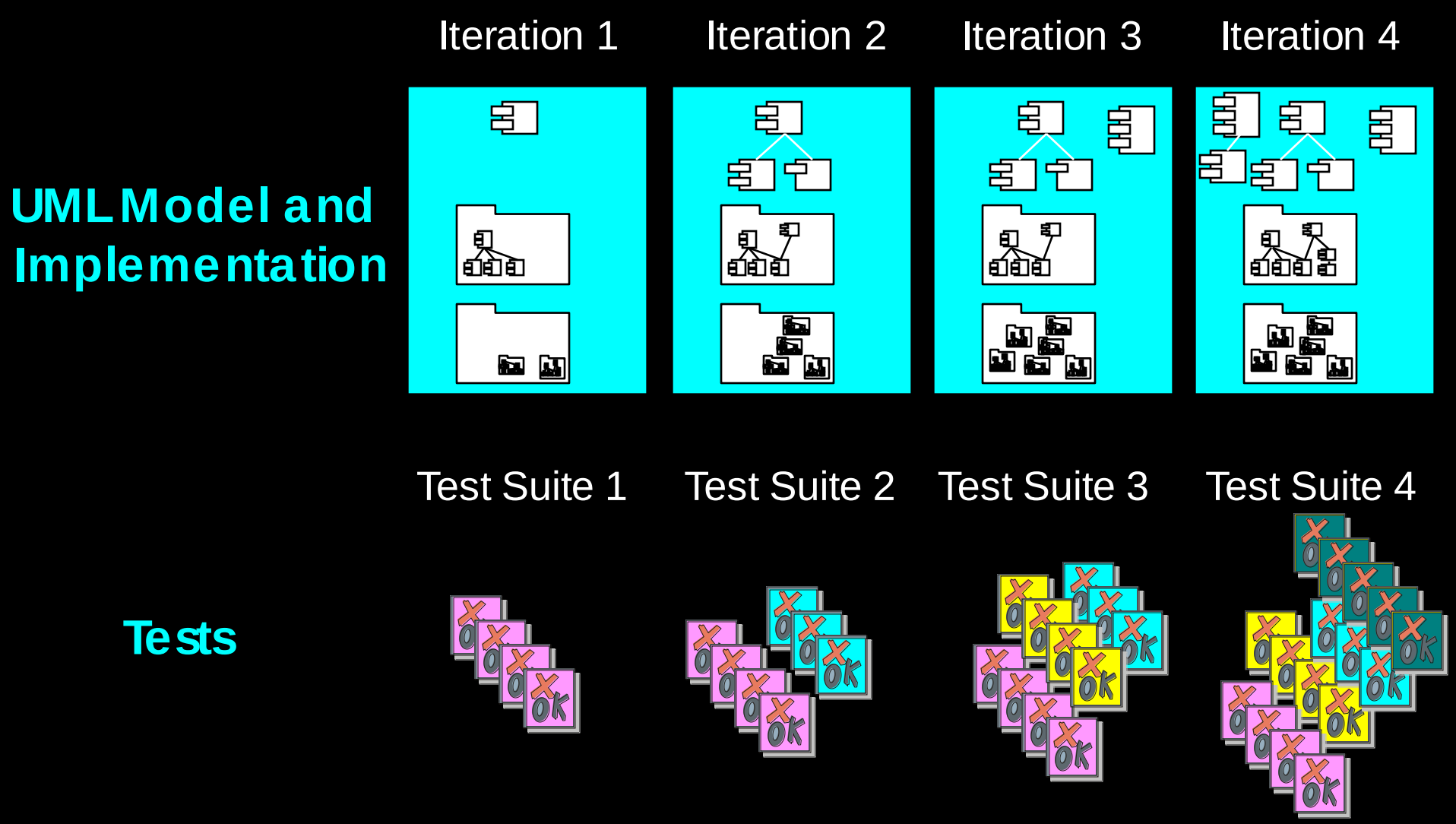
Iteration X + 2

Result:

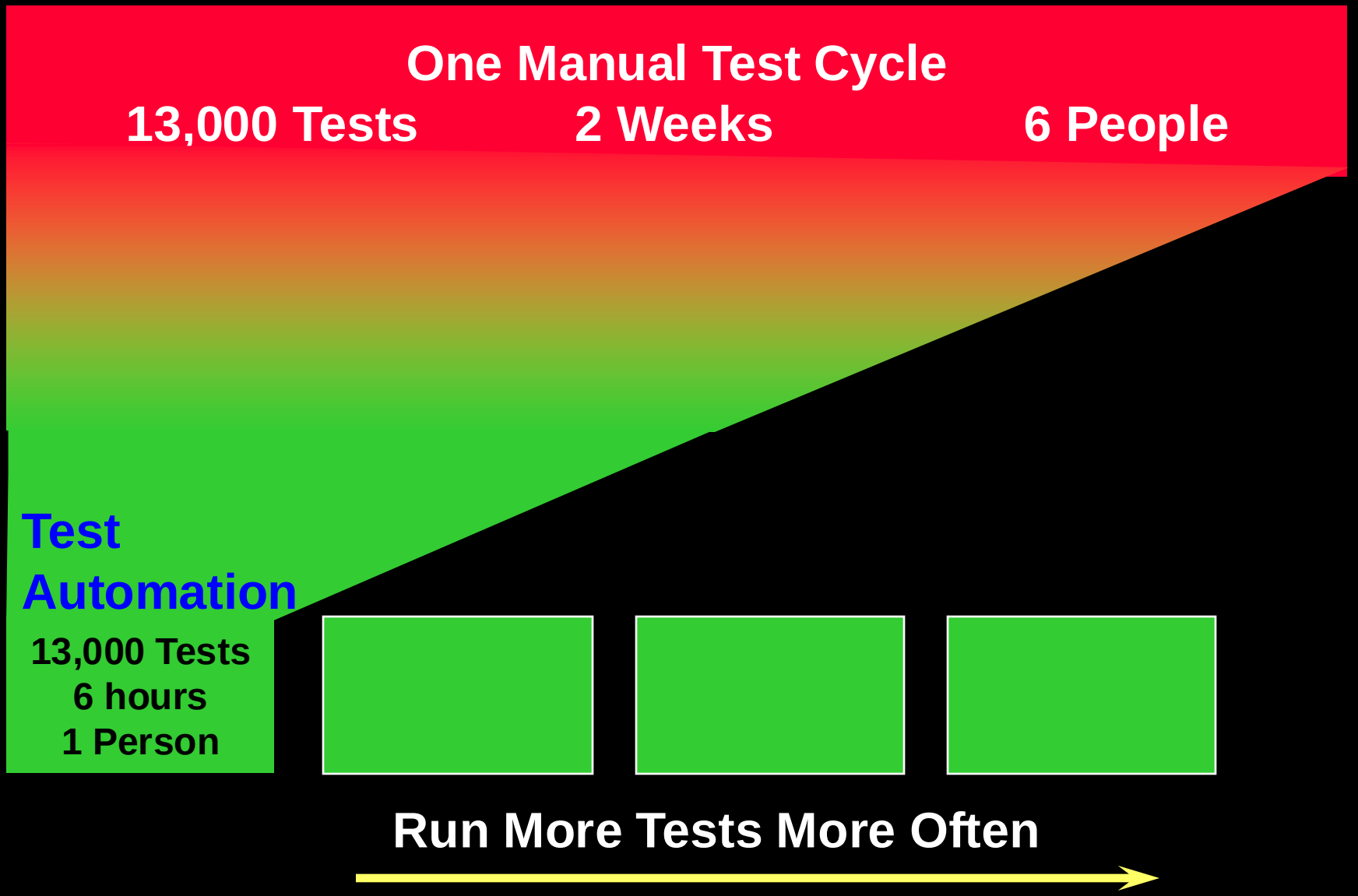
Higher Quality

Lower Risk

Test Each Iteration: Functionality & Performance



Automation Reduces Testing Time and Effort



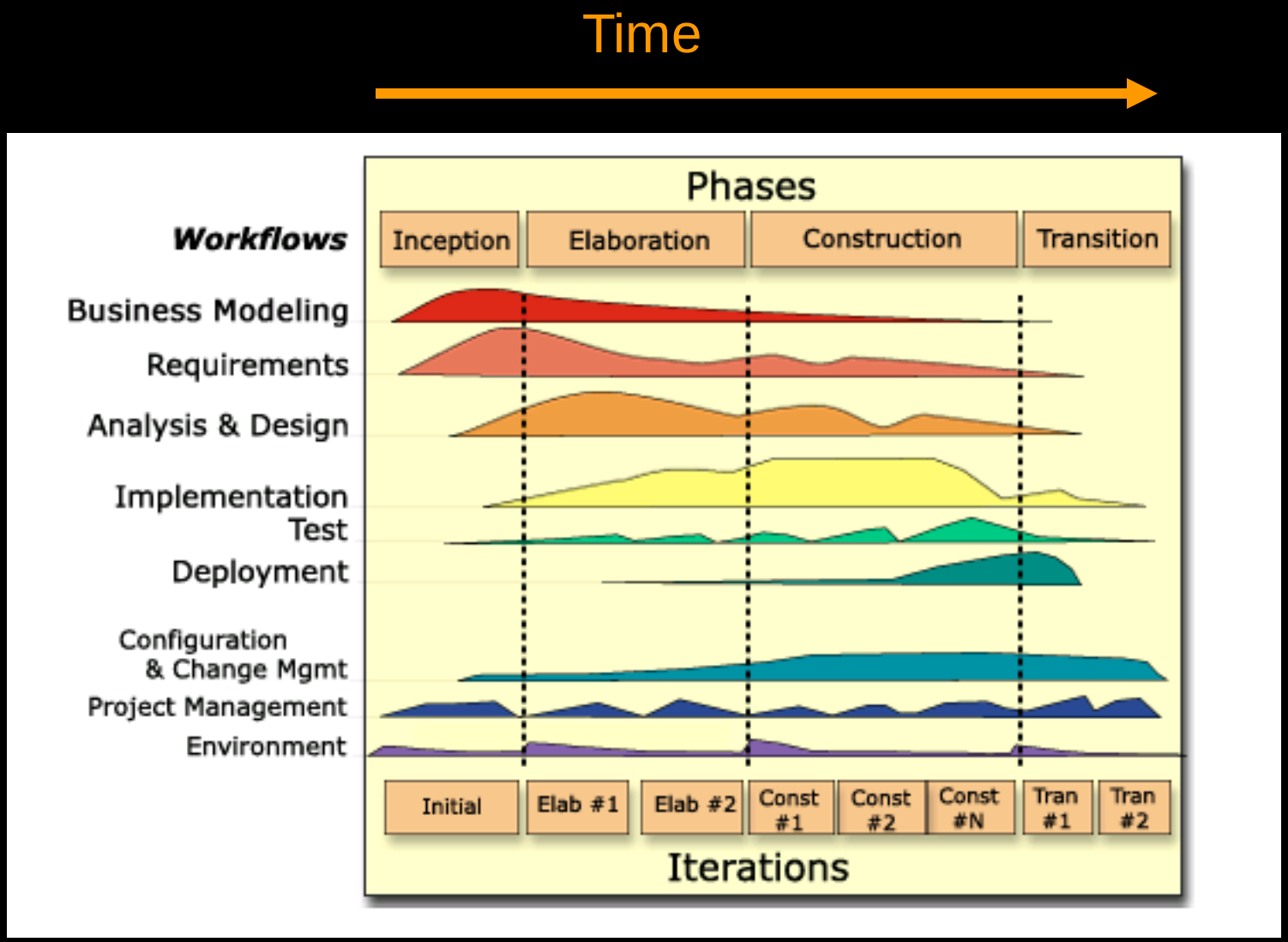
Why Have a Process?

- The Rational Unified Process is a means of achieving Best Practices
- Provides guidelines for efficient development of quality software
- Reduces risk and increases predictability
- Promotes a common vision and culture
- Captures and institutionalizes best practices

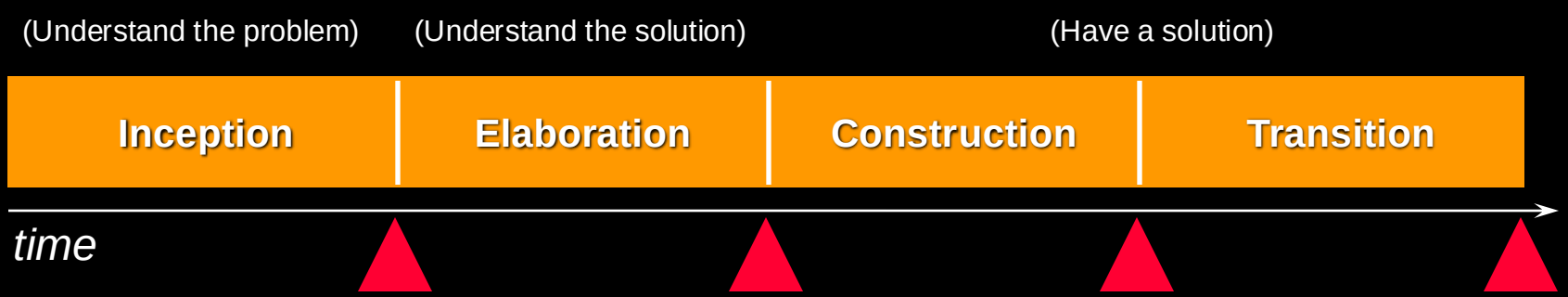
Process Structure

- Two orthogonal structures
- Organization along time
  - Lifecycle structure: phase, iterations
  - Process enactment: planning, executing
  - Activity management, project control
- Organization based on content
  - Workers, artifacts, activities, workflows
  - Process configuration, process enhancement

Organization Along Time



Phases: Objectives



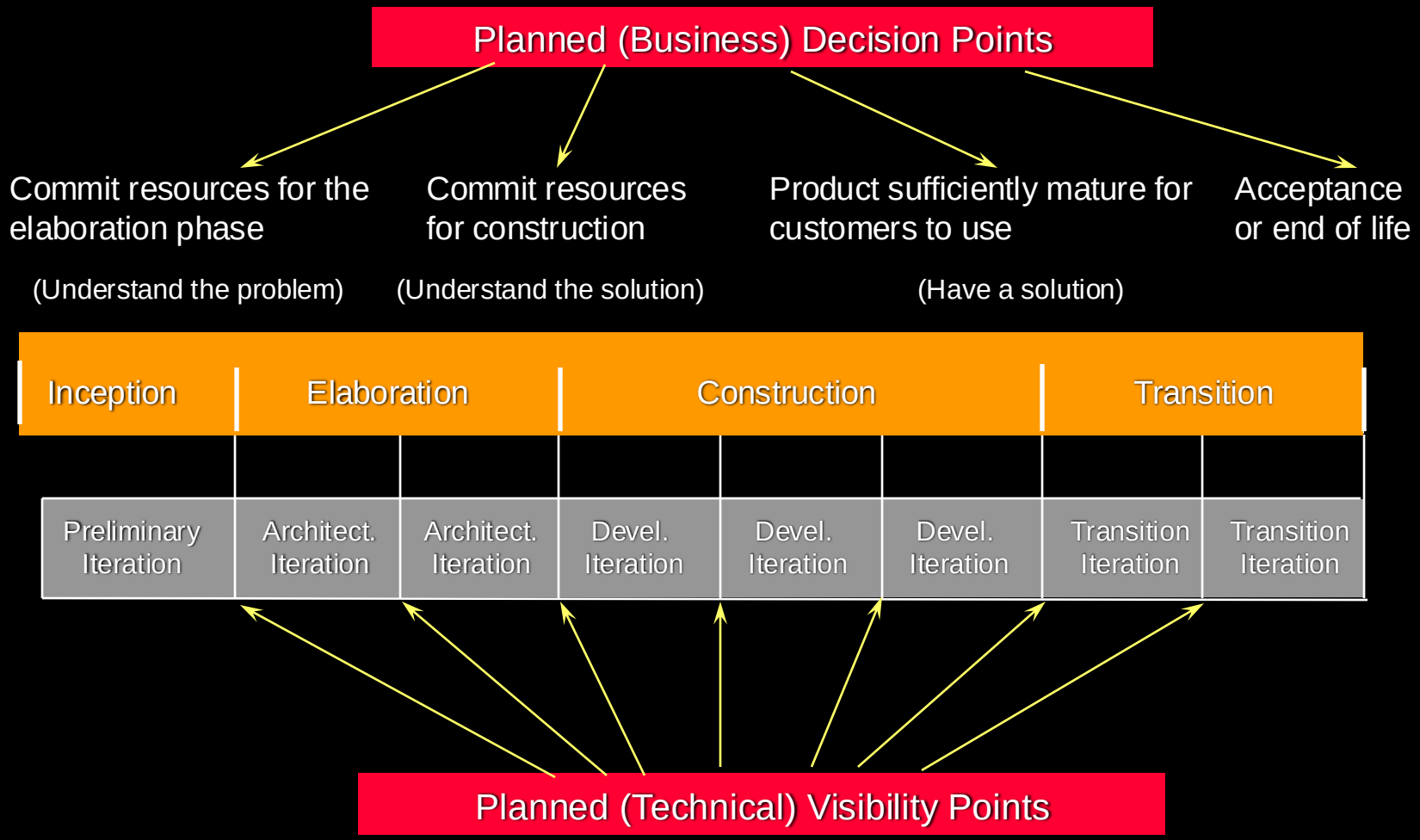
- Establish project scope and boundary conditions.
- Determine the use cases and primary scenarios that will drive the major design trade-offs.
- Demonstrate a candidate architecture against some of the primary scenarios.
- Estimate the overall cost and schedule.
- Identify potential risks the sources of unpredictability).

- Define and validate the architecture
- Create a detailed plan for the construction phase.
- Demonstrate that the architecture will support the vision at a reasonable cost in a reasonable period of time.

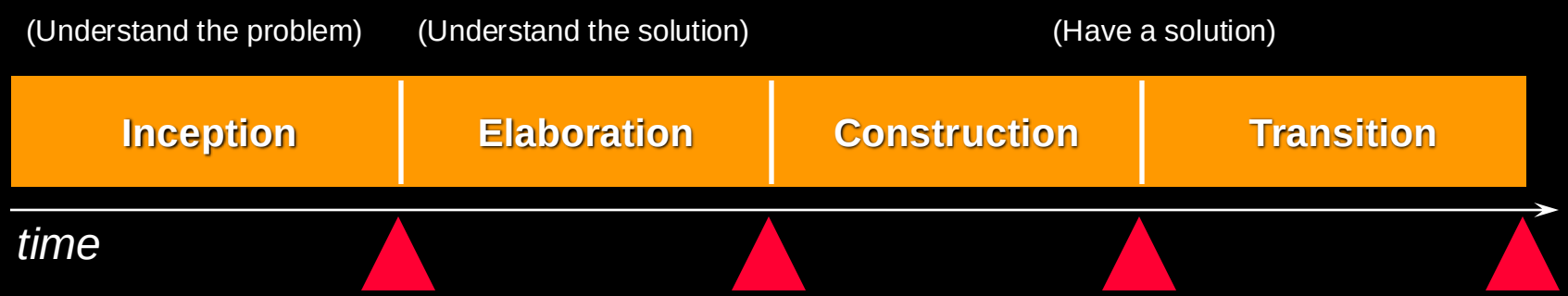
- Minimizing development costs by optimizing resources and avoiding unnecessary scrap and rework
- Achieving adequate quality as rapidly as is practical
- Achieving useful versions (alpha, beta, and other test releases)

- Achieving user self-supportability
- Achieving stakeholder concurrence that deployment are complete and consistent with the evaluation criteria of the vision
- Achieving final product as rapidly and cost effectively as possible

Phases and Iteration



Phases: Outcome



- Vision document
- Use case model survey
- Initial glossary
- Initial risk assessment
- Project plan

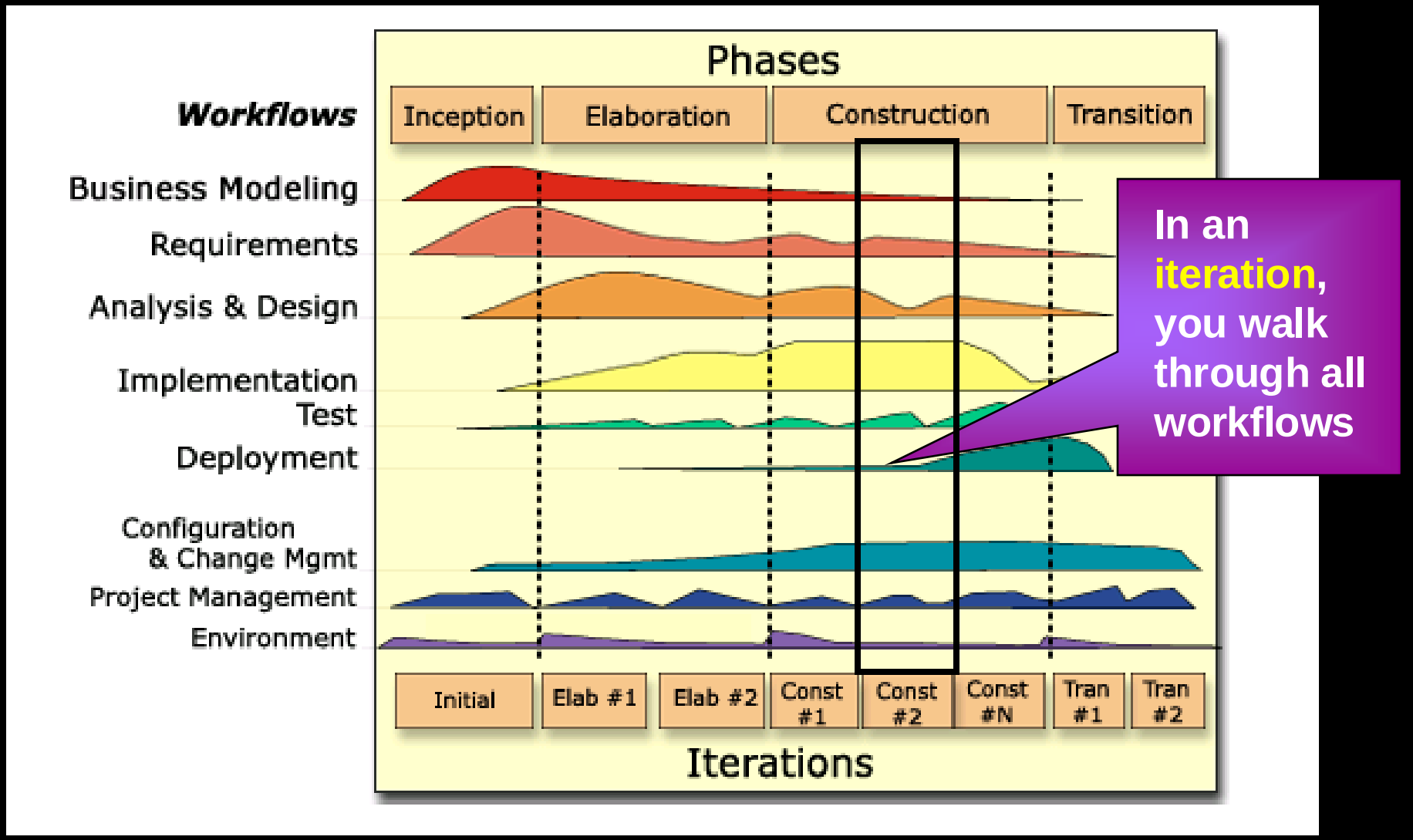
- A use-case model (80% complete) -
- Supplementary requirements
- An executable architecture
- Revised business case
- Revised risk list
- Development plan

- The software product, integrated on the adequate platform.
- User manual as necessary
- A description of the current release

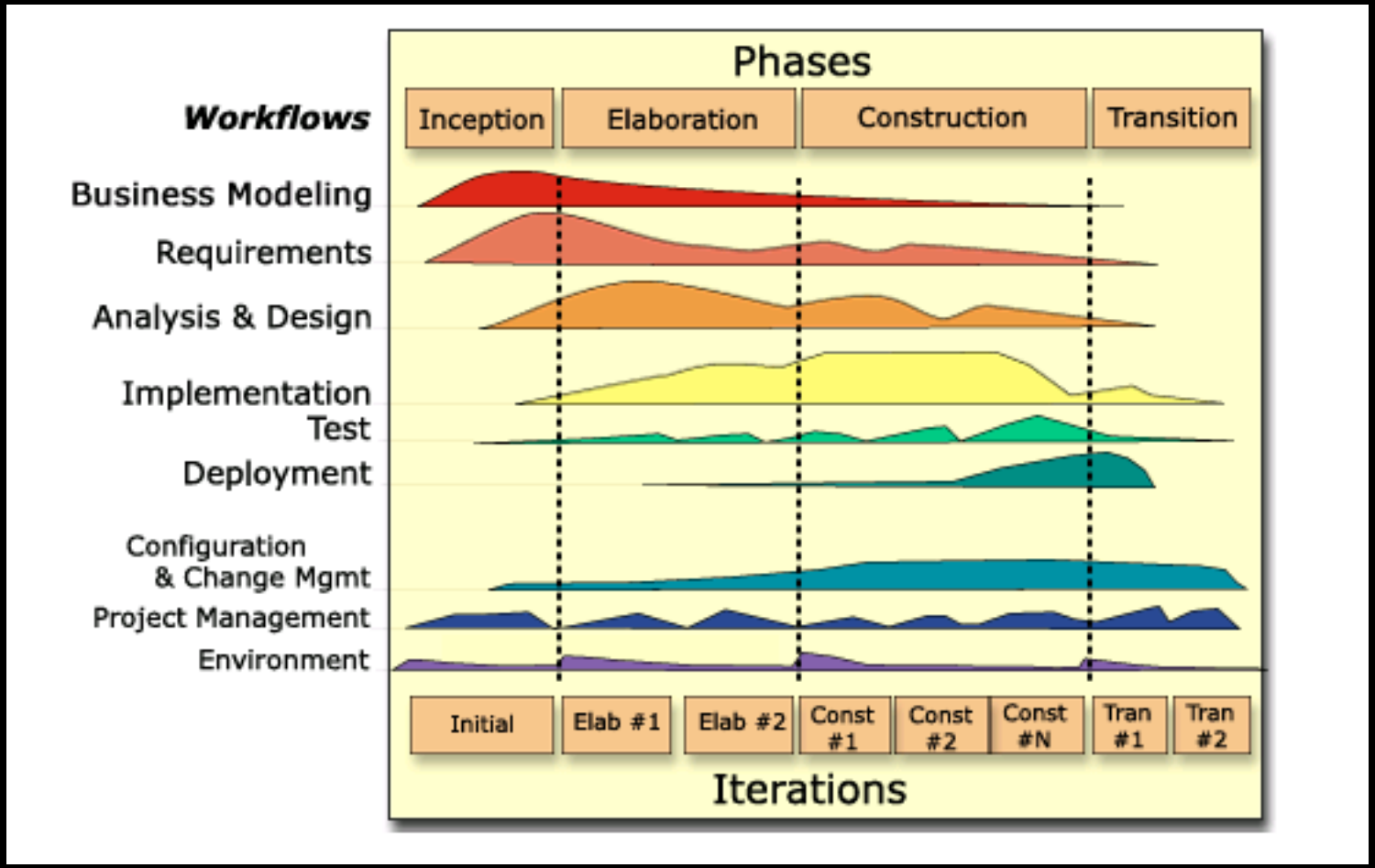
- Setup Instructions
- Setup programs
- Release Documentation

Product Release

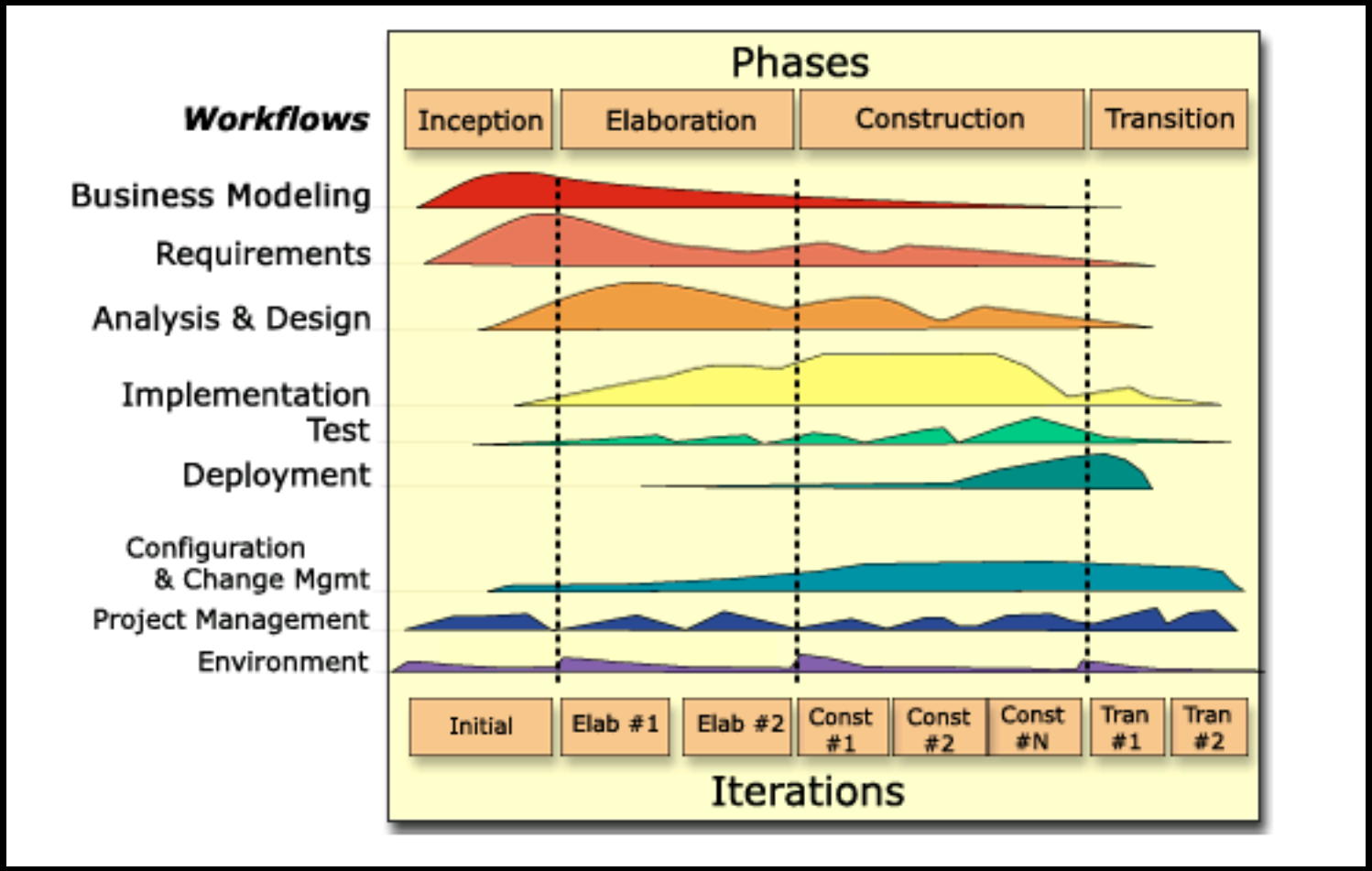
One iteration



Organization Based on Content



Nine Core Process Workflows - “Disciplines”



Summary: Best Practices of Software Engineering

- Best Practices guide software engineering by addressing root causes
- Process guides a team on what to do, how to do it, and when to do it
- The Rational Unified Process is a means of achieving Best Practices