

Agile Software Development

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- Methodologies, Standards, and Models
- Agile Manifesto
- Agile Principles
- Agile Practices
- Agile Methodologies
- Components of a Methodology
- Heavyweight or Lightweight ?
- Agile Characteristics
- Agile Benefits

Methodologies, Standards and Models

- Waterfall Model (1970s)
- Spiral Model, Iterative Model (1980s)
- ISO, Capability Maturity Model (1990s)
- Object Modeling Technique (1990s)
- Unified Modeling Language (1990s)
- Rational Unified Process (1990s)
- Agile Software Development (2000)

The Problem

*31.1% of projects will be canceled
before they ever get completed ... 52.7% of projects will
cost 189% of their original estimates.*

– The Standish Group

Reality: Project complexity is increasing. We do see

- Demand for quicker delivery of useful systems
- Increasingly vague, volatile requirements
- Greater uncertainty/risk from limited knowledge of:
 - Underlying technologies
 - Off-the-shelf (OTS) components used

What is Agility

- **Agility**

- The ability to both create and respond to change in order to profit in a turbulent business environment
 - Companies need to determine the amount of agility they need to be competitive

- **Chaordic**

- Exhibiting properties of both ***chaos*** and ***order***
 - The blend of chaos and order inherent in the external environment and in people themselves, argues against the prevailing wisdom about predictability and planning
 - Things get done because people adapt, not because they slavishly follow processes
- An agile view is a ***chaordic*** view
 - “Balanced between chaos and order, perched on the precipice at the edge of chaos.”
 - Some people are not comfortable in this environment; others thrive on

Agile Manifesto

Developed by 17 of the leaders in agile methodologies (Feb 2001).

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

- Individuals and Interactions over Processes and Tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

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

Agile Principles

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

Agile Principles

7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity - the art of maximizing the amount of work not done - is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

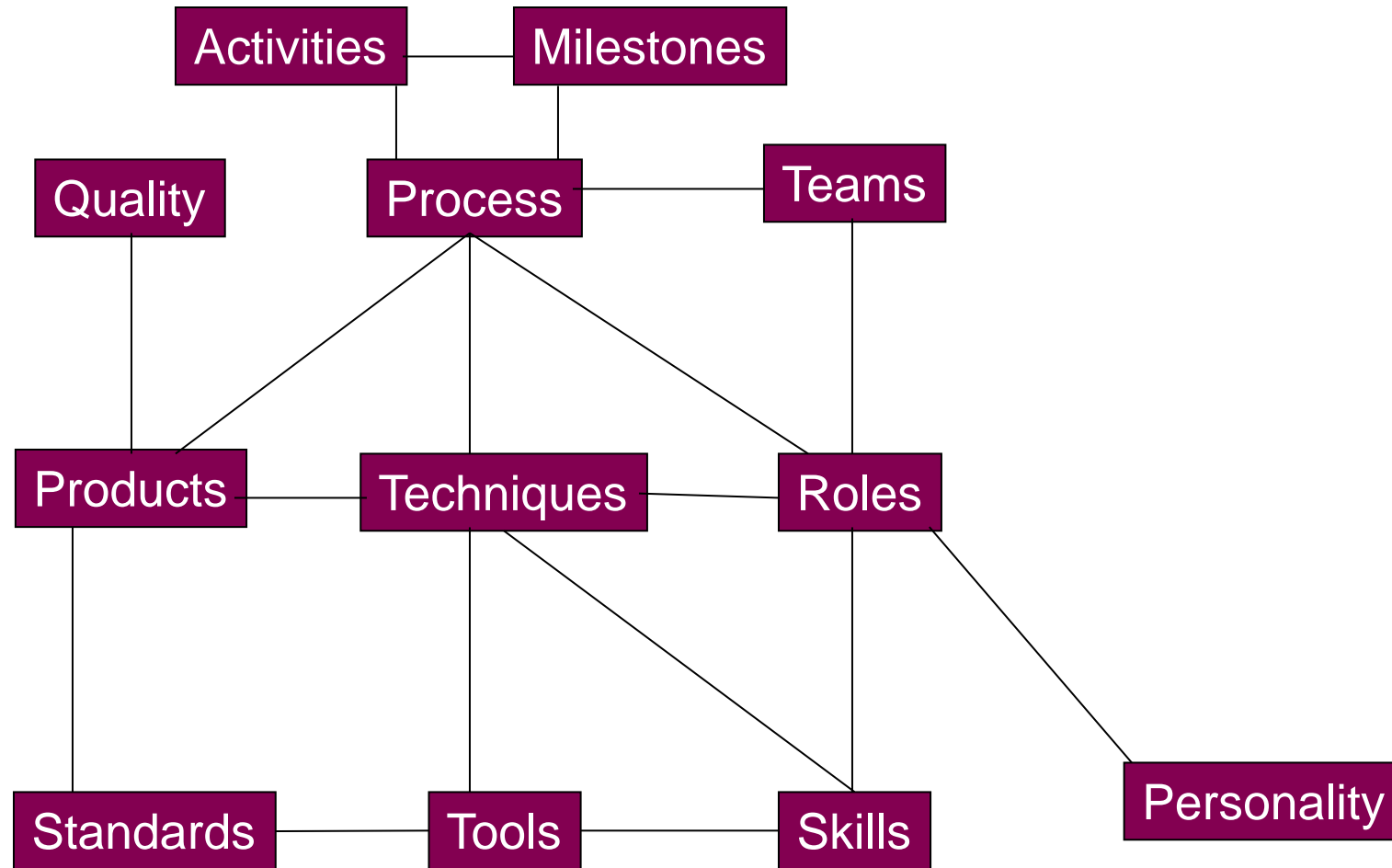
Agile Practices

- Agile Requirements Management (Prioritize, Reprioritize as you move along, Remove unwanted)
- Continuous Integration, Regular Deployment of Working Software, Sandboxes (Environments)
- Pair Programming, Refactoring, Test-Driven Development
- Collocated Teams, Face-to-Face Interaction, White-board Sessions
- Standards and Guidelines

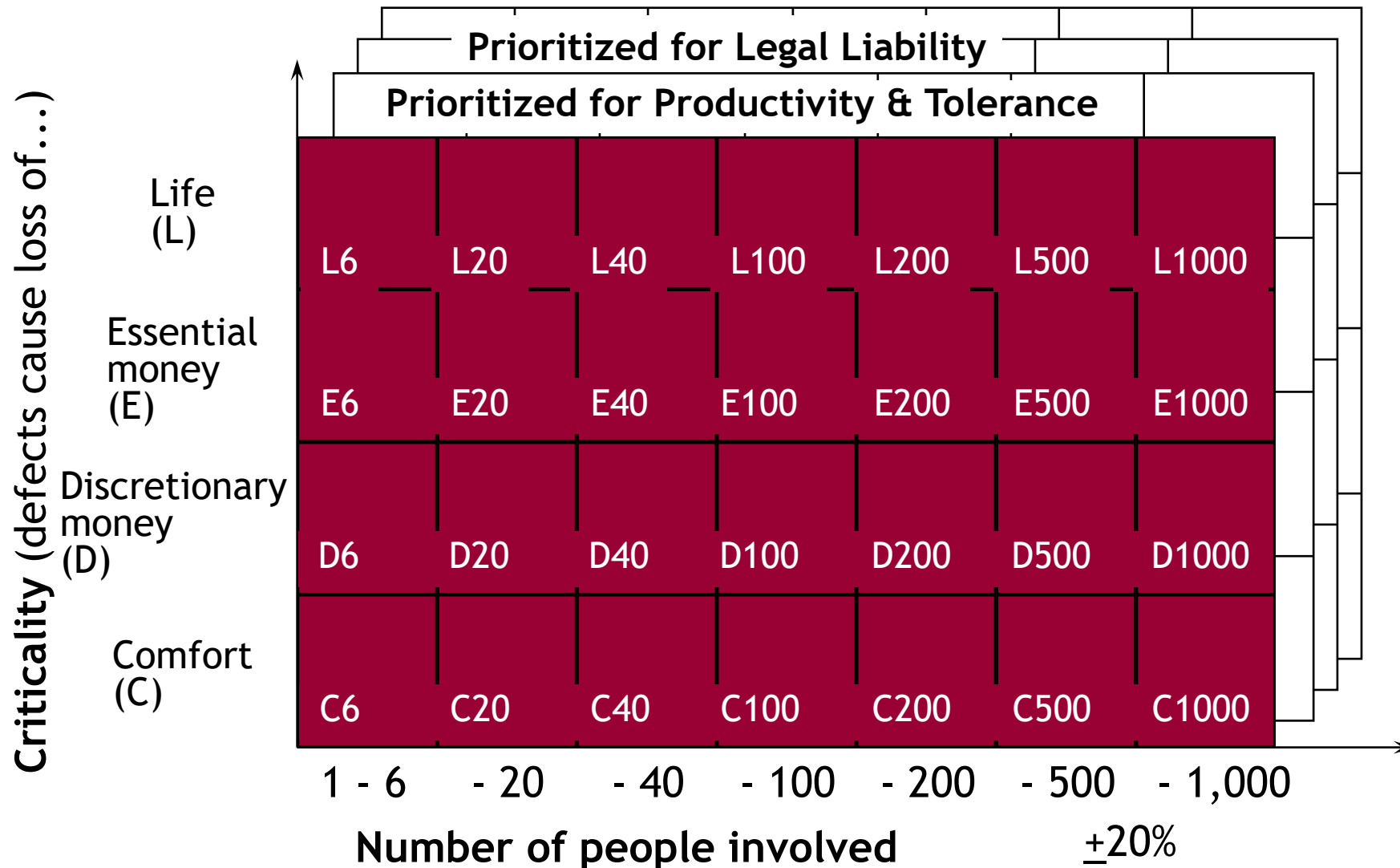
Agile Methodologies

- Extreme Programming (Kent Beck)
- Scrum (Ken Schwaber, Jeff Sutherland, Mike Beedle)
- Dynamic System Development Method (Arie Van Bennekum)
- Feature Driven Development (Jeff De Luca)
- Crystal Clear (Alistair Cockburn)
- Lean Development (Bob Charette)
- Adaptive Software Development (Jim Highsmith)

Components of a Methodology



Heavyweight or Lightweight?



Agile Characteristics

- Adaptability rather than Predictability
- People rather than Development Process
 - Being agile means accepting that outcomes are not predictable and that processes are not repeatable
- Collaborative values and principles
- A barely sufficient methodology
 - “the conventions we agree to”
 - Processes are described in manuals; practices are what happen in reality

Agile Benefits

- Early and Frequent Deliveries (Visibility & Predictability)
- Ability to Respond to Changes (Flexibility)
- Quality of Deliverables
- Improved Customer Satisfaction

Question 1

Agile Methodologies are based on

- A. Agile Manifesto (or Agile Values) and Agile Principles
- B. Adopting a phase-by-phase approach for software development
- C. Minimum or no focus on team members and customer collaboration
- D. Creating a detailed plan and requirements document at the start of every project

ANSWER: A

Question 2

Which of the following is not part of Agile principles?

- A. Early and continuous delivery of working software at a sustainable pace and customer collaboration,
- B. Motivated and self-organizing teams that reflect at regular intervals to learn and improve their ways of working
- C. Simplicity and technical excellence
- D. Delivering cost-effective software

ANSWER: D

Question 3

Which of the following need not be a benefit of Agile methods?

- A. Early and Frequent Deliveries (Visibility & Predictability)
- B. Maximum reuse and zero rework
- C. Ability to Respond to Changes (Flexibility)
- D. Quality of Deliverables and Improved Customer Satisfaction

ANSWER: B

Question 4

Which of the following is a technique that helps resolve build errors in a timely manner and improves efficiency?

- A. Automated Unit Testing
- B. Continuous Integration
- C. Functional Testing
- D. Customer Collaboration

ANSWER: B

Question 5

Which of the following is not a characteristic of Agile model?

- A. Adaptability rather than predictability
- B. Maximize efforts to deliver maximum features
- C. Collaborative values and principles
- D. A barely sufficient methodology

ANSWER: B

Question 6

Which of the following is not an Agile method?

- A. Object Modeling Technique
- B. Scrum
- C. Dynamic System Development Method (DSDM)
- D. Extreme Programming (XP)

ANSWER: A

Question 7

The four values in Agile Manifesto does not include

- A. Individuals and Interactions over Processes and Tools
- B. Working software over comprehensive documentation
- C. Customer collaboration over contract negotiation
- D. Resisting change over following a plan

ANSWER: D

Question 8

Agile methods are not suited for which one of these projects?

- A. Online Examination System
- B. Social Networking Site
- C. On-demand home entertainment on mobile, tablets and TV sets
- D. Embedded software in healthcare devices used for life-critical treatments

ANSWER: D

Question 9

Agile Manifesto includes four values and __ principles.

- A. 14
- B. 10
- C. 8
- D. 12

ANSWER: D

Question 10

Agile software development is

- A. Iterative
- B. Iterative and incremental
- C. Incremental
- D. Not flexible

ANSWER: B

Summary

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Thank You!