Agile Software Development

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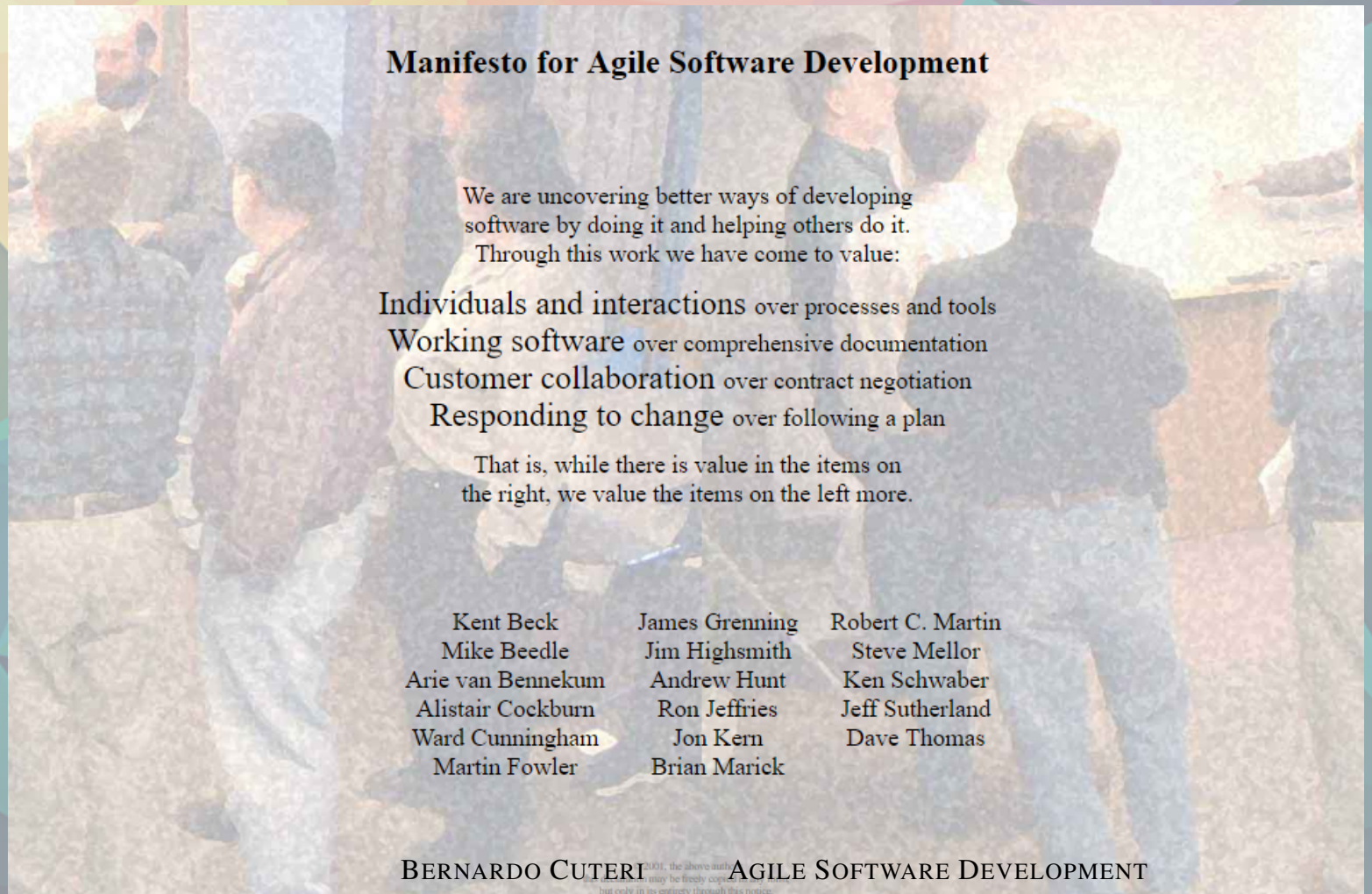
What is Agile

- a group of software development methodologies based on iterative development
- requirements and solutions evolve through collaboration between self-organizing cross-functional teams
- encourages frequent inspection and adaptation
- intended to allow for rapid delivery of high-quality software in an iterative way
- Agile development refers to any development process that is aligned with the concepts of the Agile Manifesto

The Agile manifesto

Agile has been popularized by the agile manifesto. The Manifesto was developed by a group fourteen leading figures in the software industry, and reflects their experience of what approaches do and do not work for software development.



Principles behind the Agile manifesto

These are the principles of the Agile manifesto:

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.

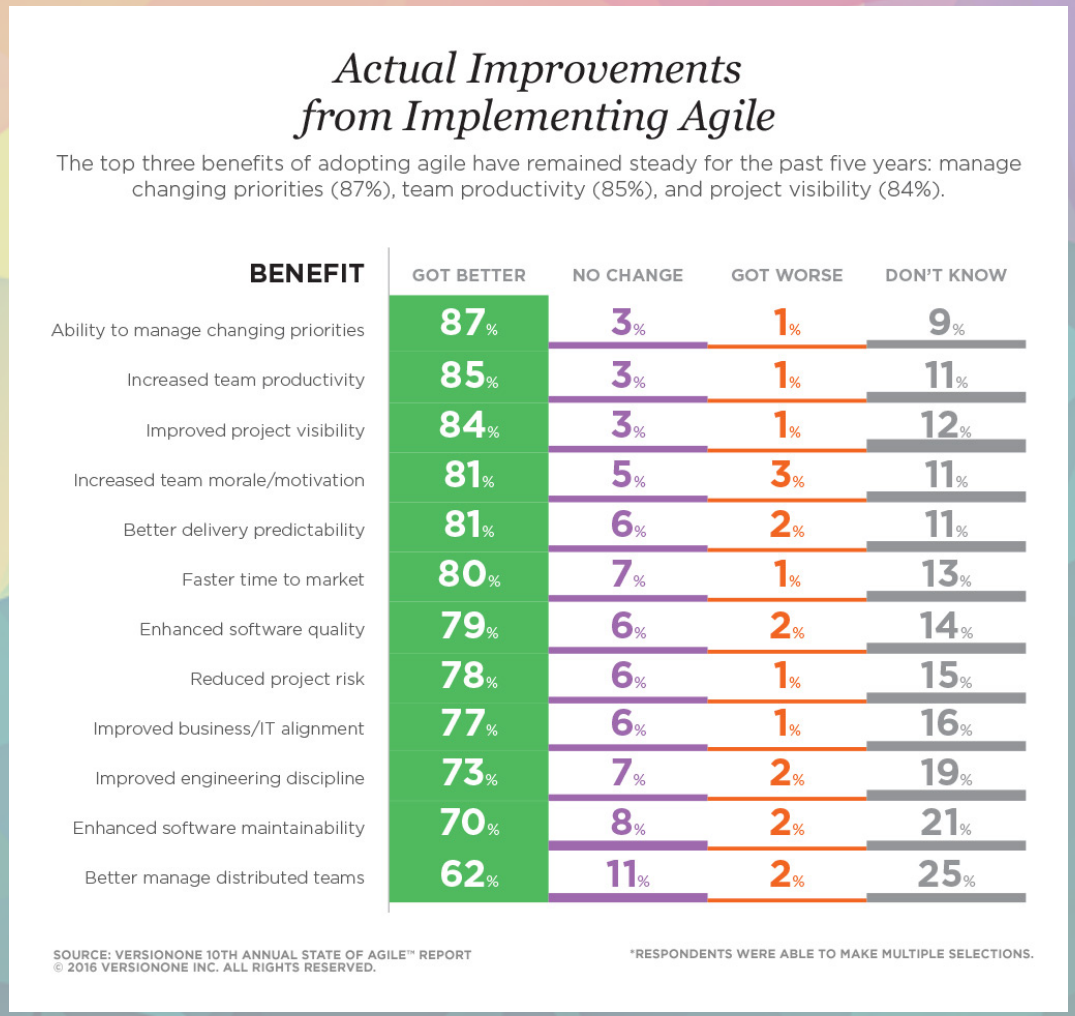
Principles behind the Agile manifesto (cont.)

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.
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.

Principles behind the Agile manifesto (cont.)

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.

Reported improvements from implementing Agile



Actual Improvements from Implementing Agile

The top three benefits of adopting agile have remained steady for the past five years: manage changing priorities (87%), team productivity (85%), and project visibility (84%).

BENEFIT	GOT BETTER	NO CHANGE	GOT WORSE	DON'T KNOW
Ability to manage changing priorities	87%	3%	1%	9%
Increased team productivity	85%	3%	1%	11%
Improved project visibility	84%	3%	1%	12%
Increased team morale/motivation	81%	5%	3%	11%
Better delivery predictability	81%	6%	2%	11%
Faster time to market	80%	7%	1%	13%
Enhanced software quality	79%	6%	2%	14%
Reduced project risk	78%	6%	1%	15%
Improved business/IT alignment	77%	6%	1%	16%
Improved engineering discipline	73%	7%	2%	19%
Enhanced software maintainability	70%	8%	2%	21%
Better manage distributed teams	62%	11%	2%	25%

SOURCE: VERSIONONE 10TH ANNUAL STATE OF AGILE™ REPORT
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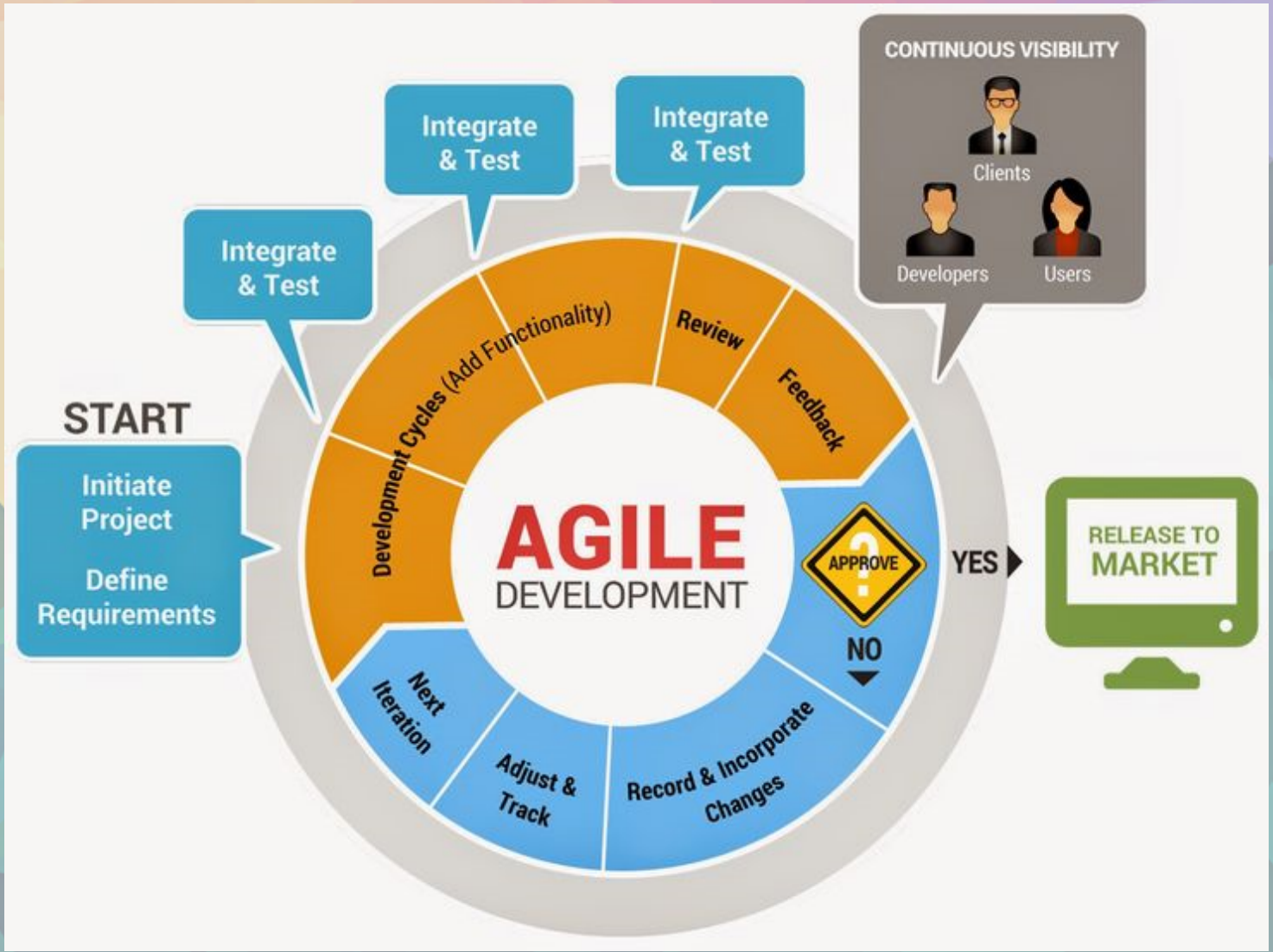
*RESPONDENTS WERE ABLE TO MAKE MULTIPLE SELECTIONS.

VersionOne releases 10th Annual State of Agile Survey Results (April 2016)

What Agile is NOT

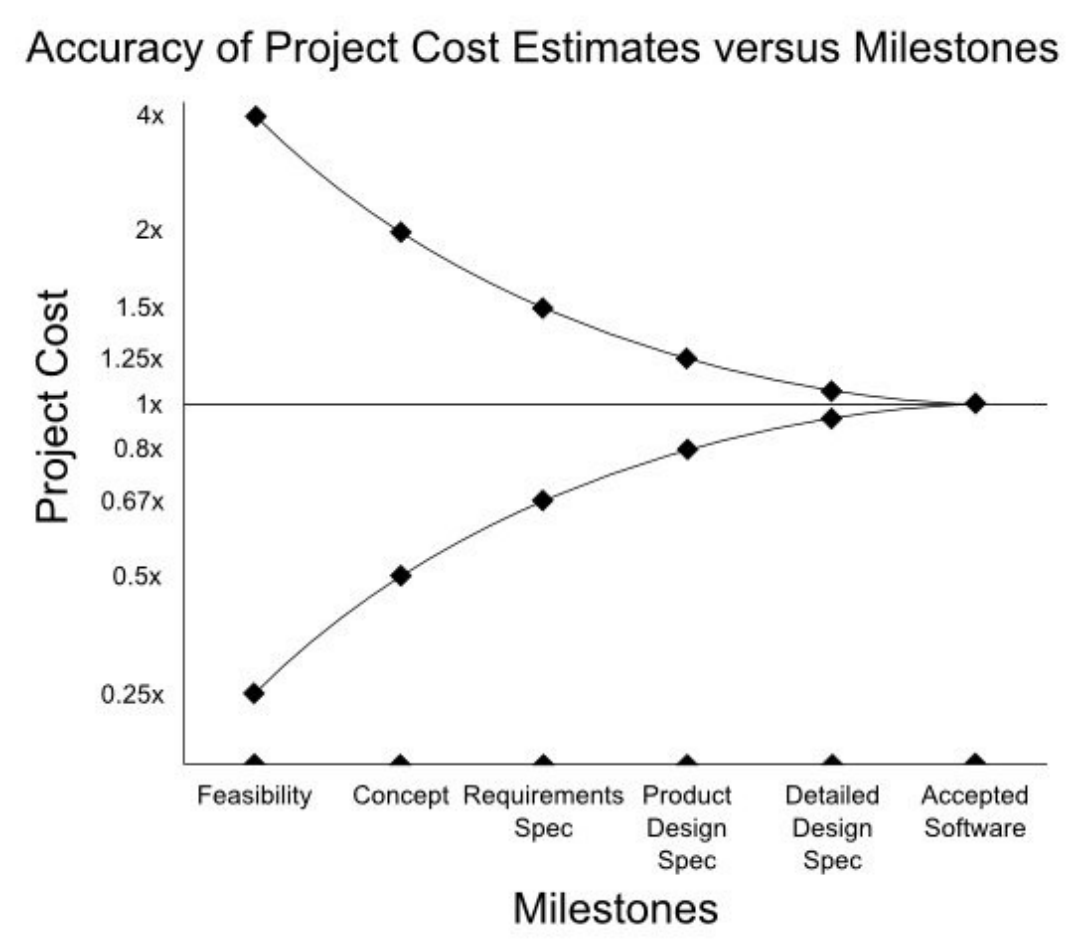
- it is NOT a silver bullet
- it is NOT for every team
- it is NOT a programming style
- it is NOT the only development methodology teams use
- it is NOT just waterfall, extreme programming, coding standards or scrum alone, it is a combination of these (and more) methods together.

AGILE DEVELOPMENT CYCLE



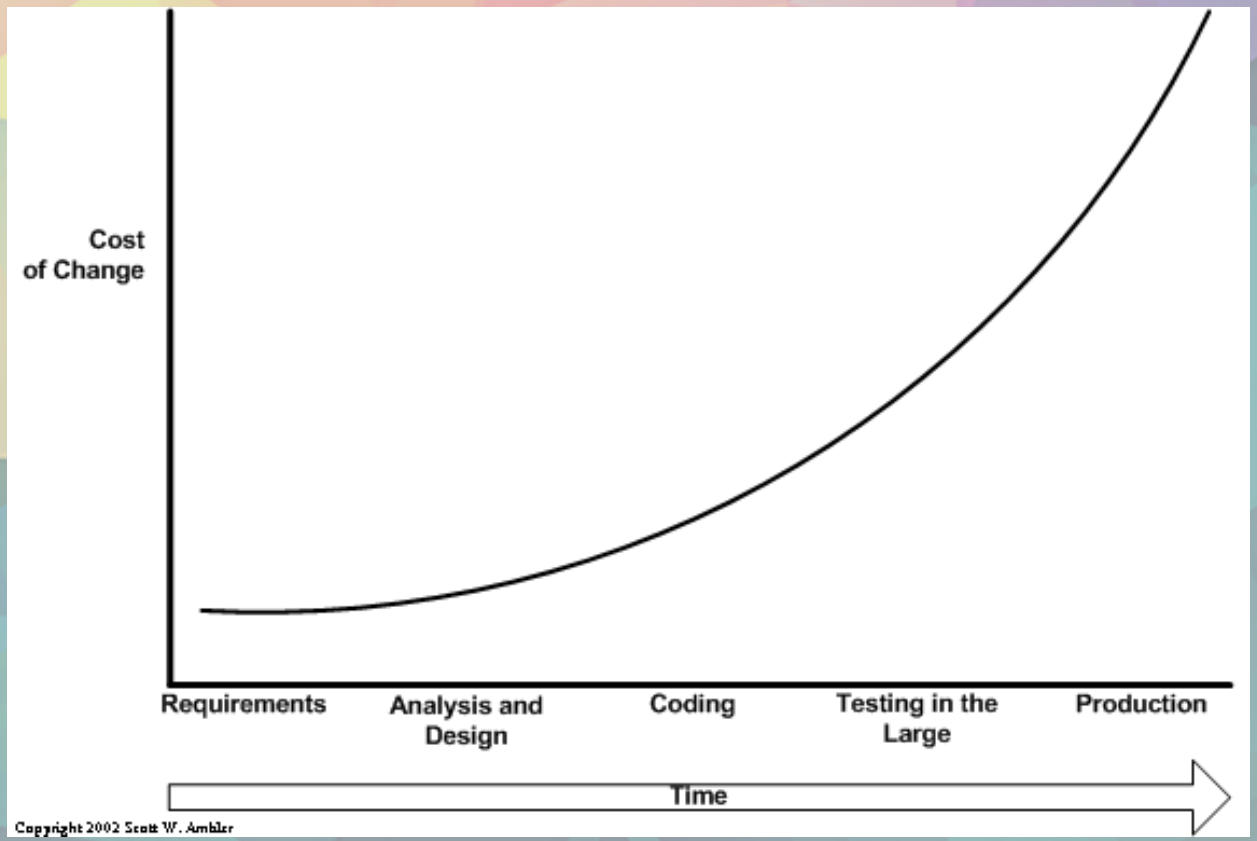
Problems made easier with Agile

Estimates created early in the project are subject of high degree of error



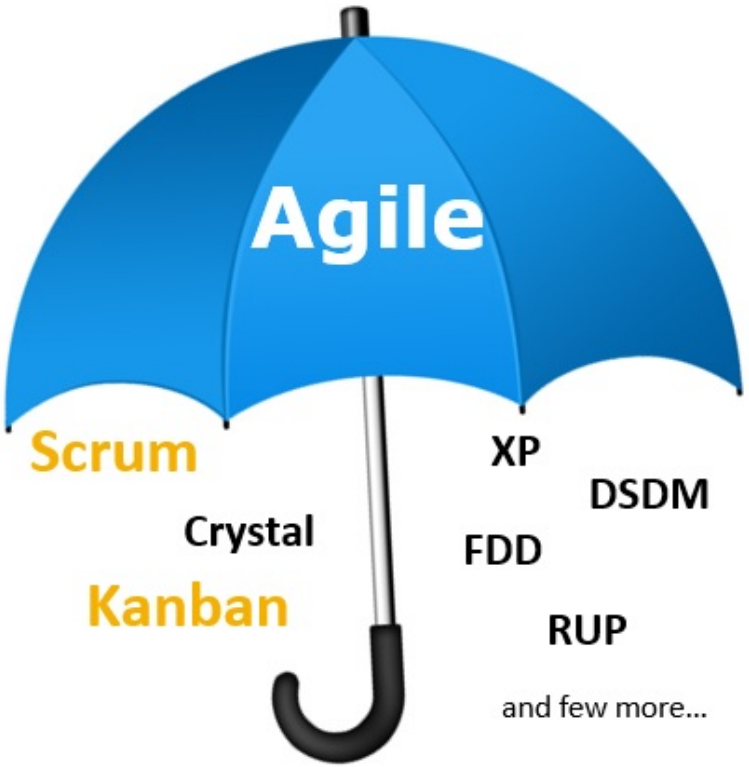
Problems made easier with Agile (cont.)

The cost of changes increases as the product progresses from requirements to production



Agile Umbrella

Methods introducing Agility

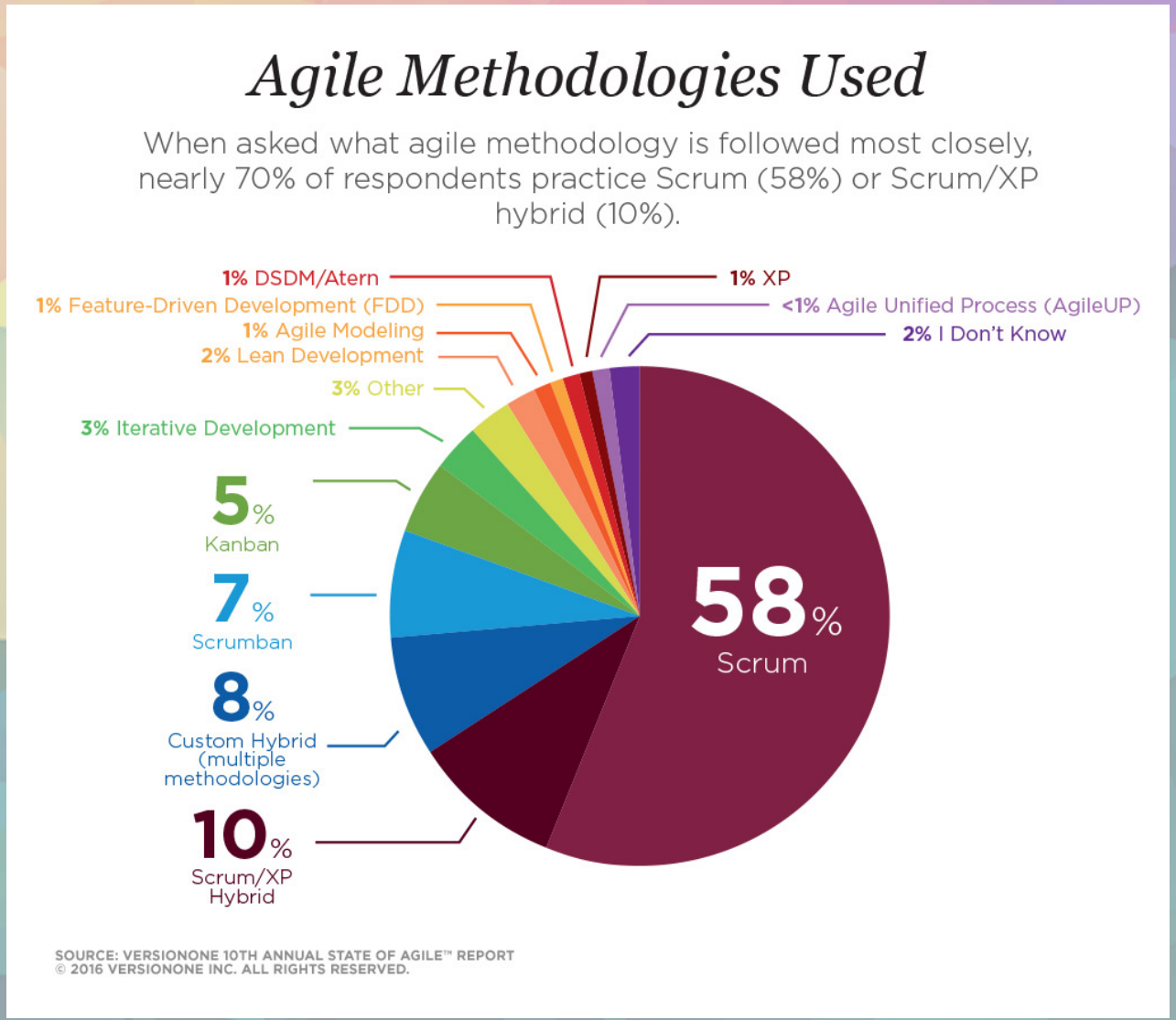


More Prescriptive
more rules to follow

- **RUP (120+)**
  RUP has over 30 roles, over 20 activities, and over 70 artifacts
- **XP (13)**
- **Scrum (9)**
- **Kanban (3)**

More Adaptive
fewer rules to follow

AGILE IMPLEMENTATIONS



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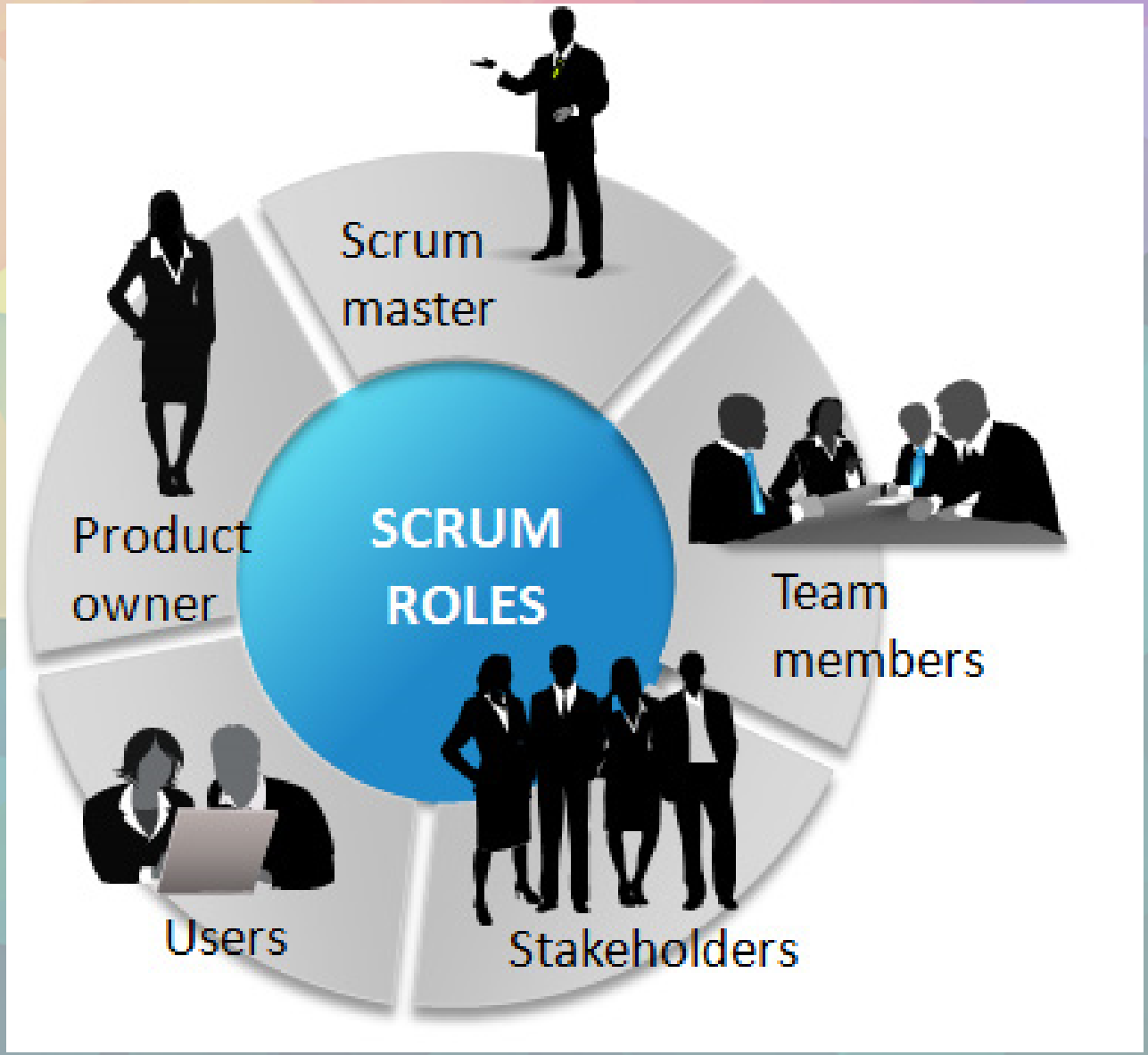
SCRUM: AN IMPLEMENTATION OF AGILE DEVELOPMENT

- A **light-weight** agile process tool
- Split the organization into small, **cross-functional**, **self-organizing** teams
- There are three main organization roles: **the developer team**, **the scrum master** and **the product owner**
- Split your work into a list of small, concrete deliverables. Sort the list by priority and estimate the relative effort of each item

Scrum: an implementation of Agile development (cont.)

- Split the time into short fixed-length iterations/**sprints** (usually 2-4 weeks), with potentially shippable code demonstration after each iteration
- Optimize the release plan and update priorities in collaboration with the customer
- Optimize the process by having **retrospective** after each iteration

SCRUM ROLES


Scrum master
Product owner
SCRUM ROLES
Team members
Users
Stakeholders

SCRUM IN ACTION

The product owner creates a list of features to be implemented: **the backlog**. Features are split and described in terms of **user stories**. The scrum team **estimates** the work associated with each story. Features are ranked in order of importance. **Every day** there is a stand-up meeting of about 15 minutes (**the scrum meeting**) to discuss three things: **What did you do yesterday? What will you do today? Is there any obstacle?** The **scrum master** helps in solving problems of the scrum team.