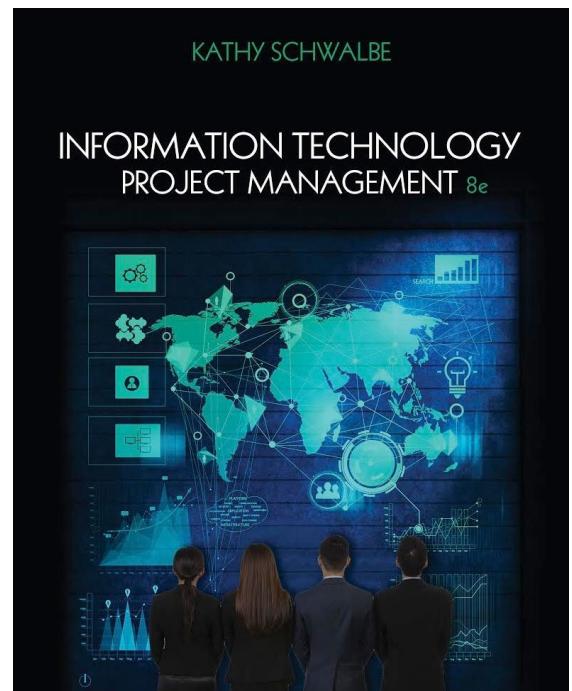


Chapter 2

The Project Management and Information Technology Context

Information Technology Project Management, Eighth Edition

Note: See the text itself for full citations.
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Chapter 2B

Agile

Introduction

Classical methods of software development have many disadvantages:

- huge effort during the **planning phase**
 - **poor requirements** conversion in a **rapid changing environment**
 - development processes are too heavyweight or cumbersome (not directly related to software product being produced)
 - Current software development is **too rigid**
 - Difficulty with incomplete or **changing requirements**
 - Analysis → Design → Implementation → Testing
- New methods: More active customer involvement needed
- **Agile Software Development Methodology:** respond quickly to changing needs

Topics covered

- Another model of development
- Agile methods
- Agile development techniques
- Agile project management
- Scaling agile methods

Plan-driven (Predictive) and agile development

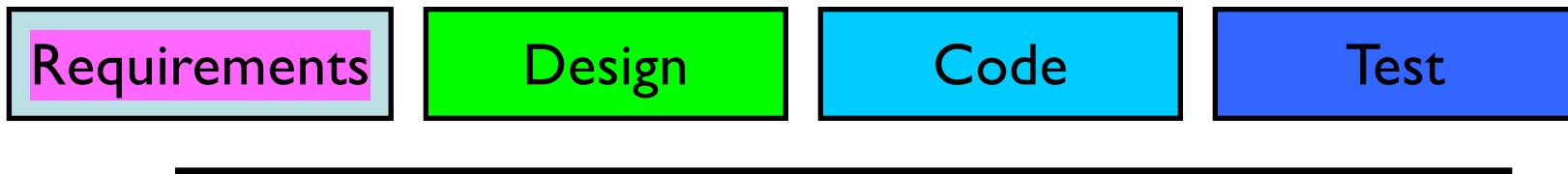
■ Plan-driven development

- A plan-driven approach to software engineering is based around separate development stages with the outputs to be produced at each of these stages planned in advance.
- Not only waterfall model – plan-driven, incremental development is possible

Plan-driven (Predictive) and agile development

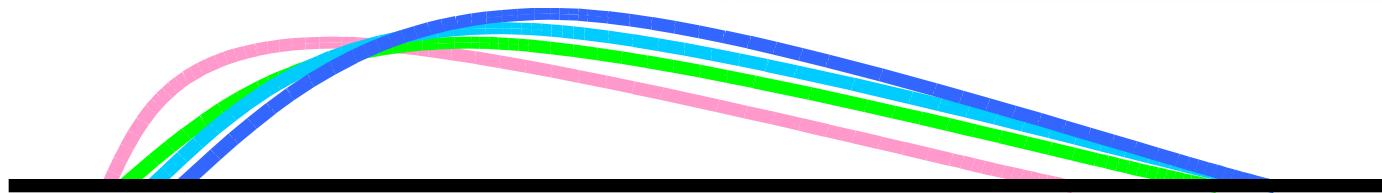
- Agile development
 - Specification, design, implementation and testing are **inter-leaved** and the outputs from the development process are decided through a process of negotiation during the software development process.

Sequential vs. overlapping development



Rather than doing all of
one thing at a time...

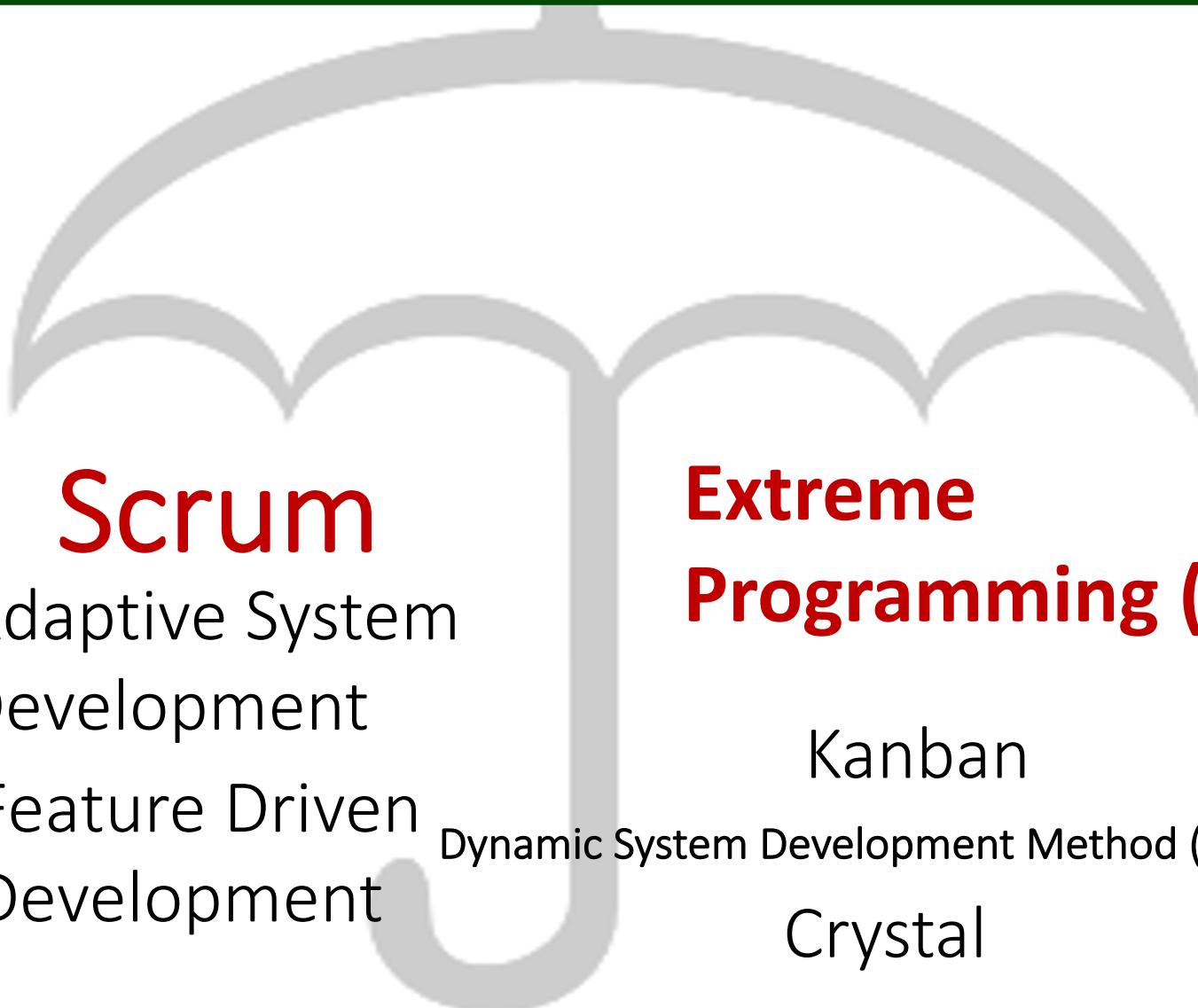
... teams do a little of
everything all the time



Source: "The New New Product Development Game" by Takeuchi
and Nonaka. *Harvard Business Review*, January 1986.

- Agile methods are considered
 - Lightweight
 - People-based rather than Plan-based
- Several agile methods
 - No single agile method
 - XP, scrum most popular
- Agile Manifesto closest to a definition
 - Set of principles
 - Developed by Agile Alliance

Agile Methods



Manifesto for Agile Software Development

Agility: Readiness for motion

- "Manifesto for Agile Software Development"
 - define the approach now known as agile software development.
 - Emphasis on flexibility in producing software quickly and radically reduce the delivery time for working software systems

The Agile Manifesto – statement of values

better ways of developing software

Individuals and interactions

over

Process and tools

Working software

over

Comprehensive documentation

Customer collaboration

over

Contract negotiation

Responding to change

over

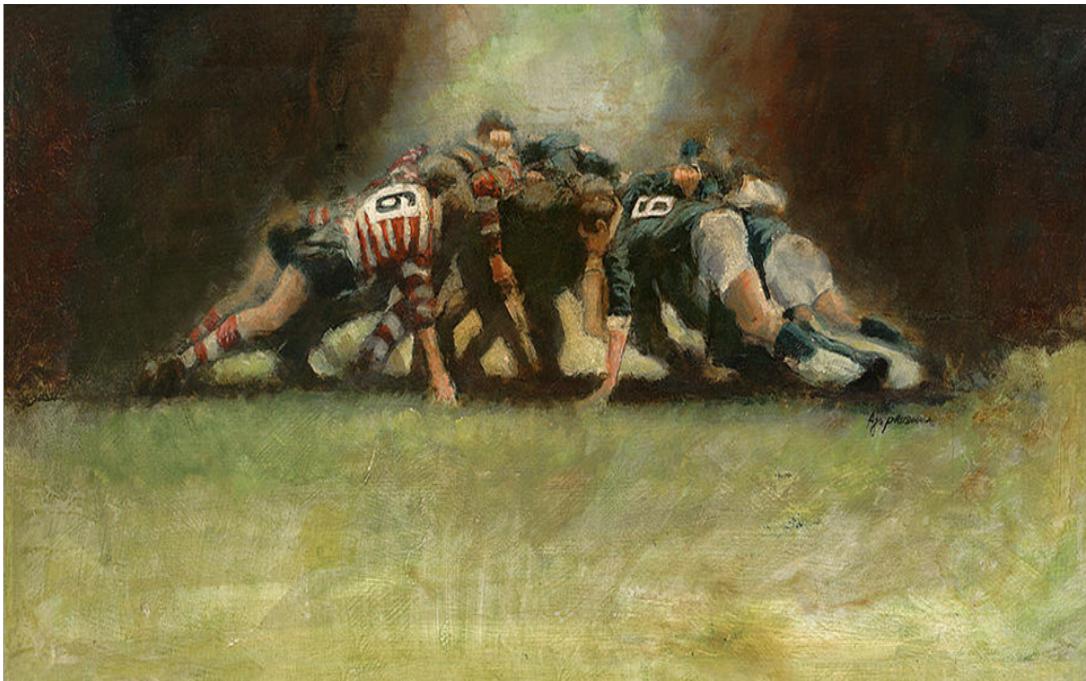
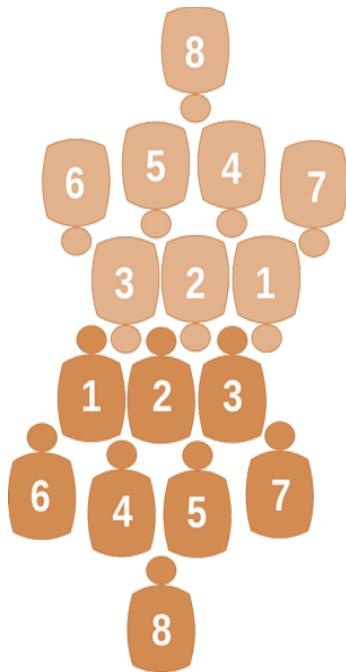
Following a plan

Source: www.agilemanifesto.org

What is Scrum?

- Scrum and Extreme Programming (XP) are probably the two best-known Agile methods
- Scrum is a lightweight, simple to understand agile process framework.
- XP emphasizes technical practices such as pair programming and continuous integration.
- Many companies use the management practices of Scrum with the technical practices of XP.

Scrum



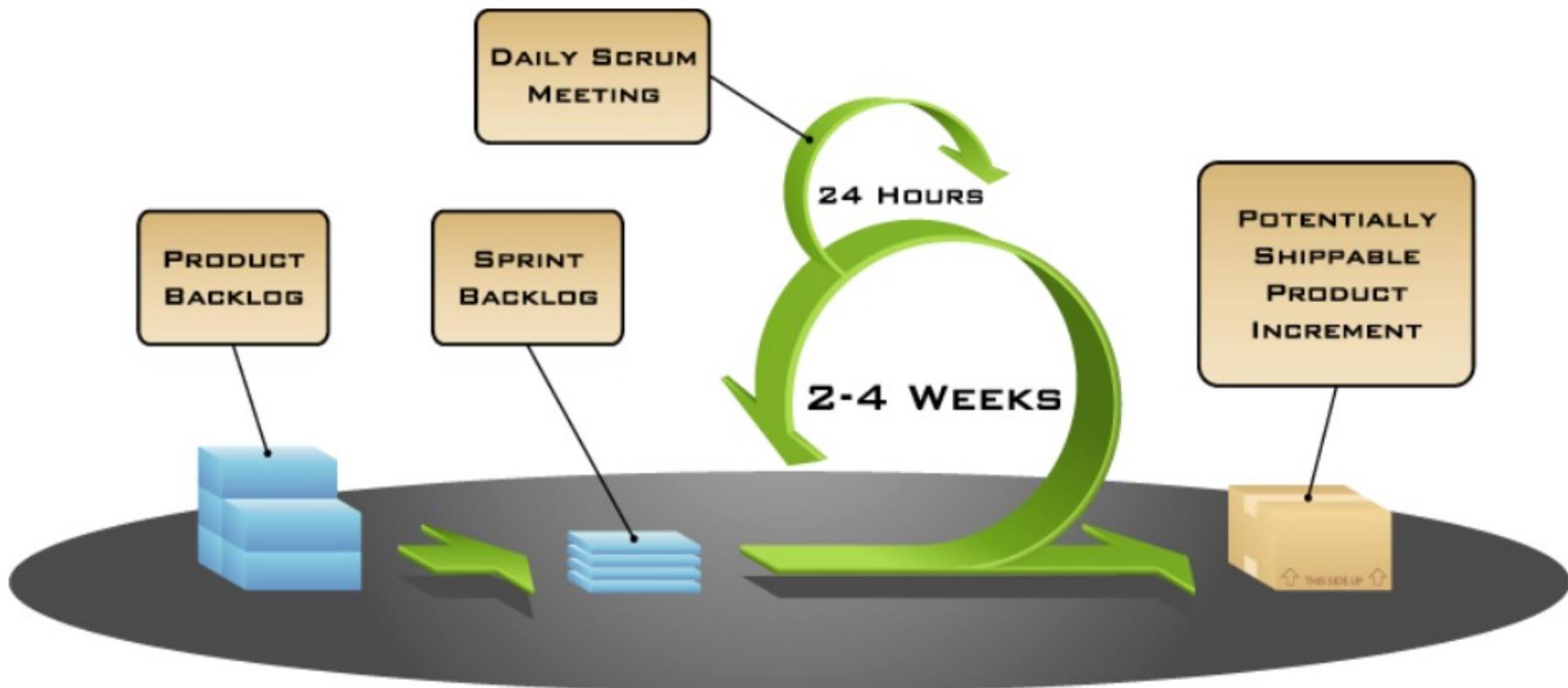
Jon Prusmack & Wikipedia

Scrum origins

- Jeff Sutherland
 - Initial scrums at Easel Corp
 - IDX and 500+ people doing Scrum
- Ken Schwaber
 - Scrum presented at OOPSLA 96 with Sutherland
 - Author of three books on Scrum
- Mike Beedle
 - Scrum patterns in PLOPD4
- Ken Schwaber and Mike Cohn
 - Co-founded Scrum Alliance initially within the Agile Alliance

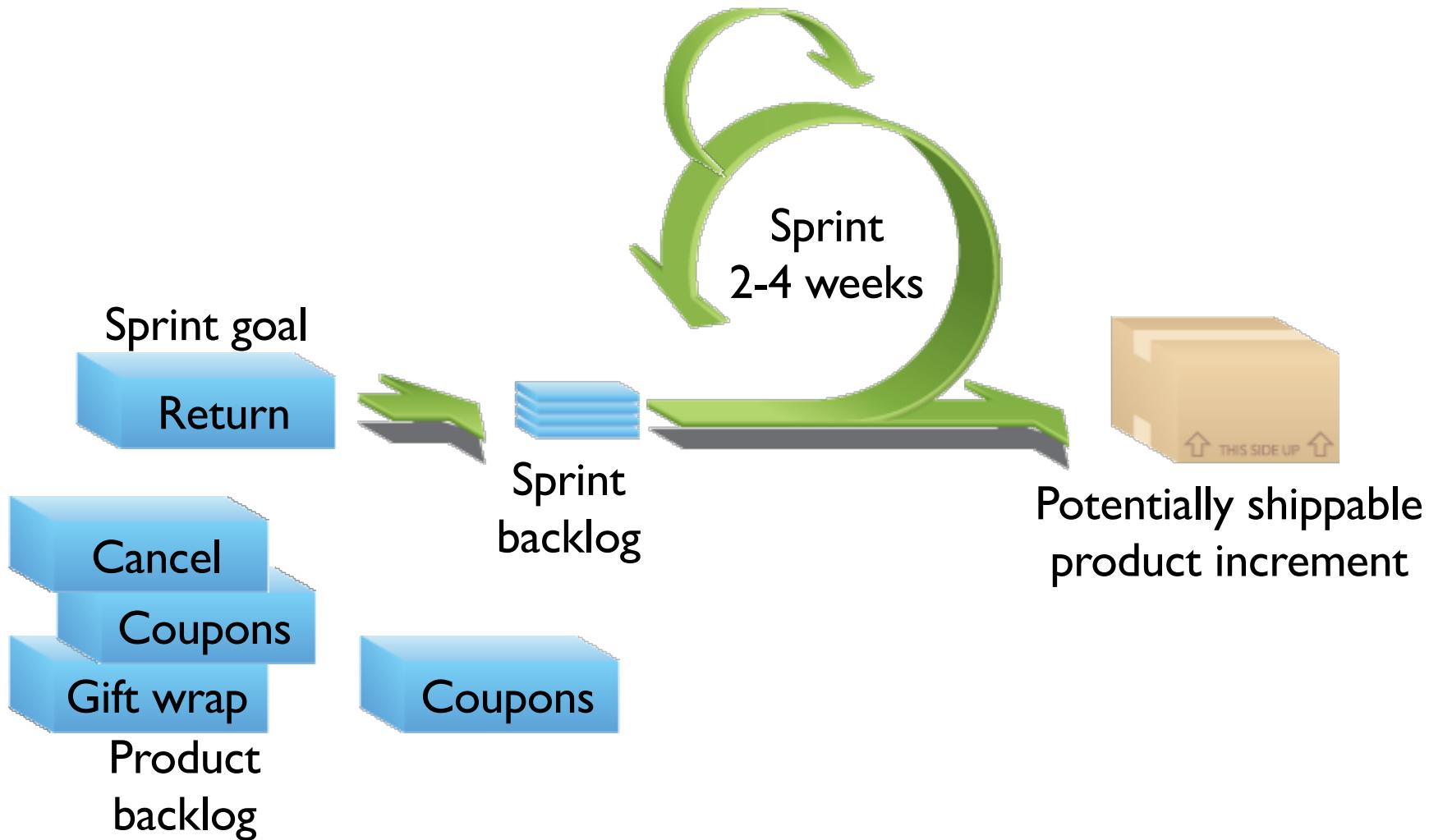


How Scrum Works

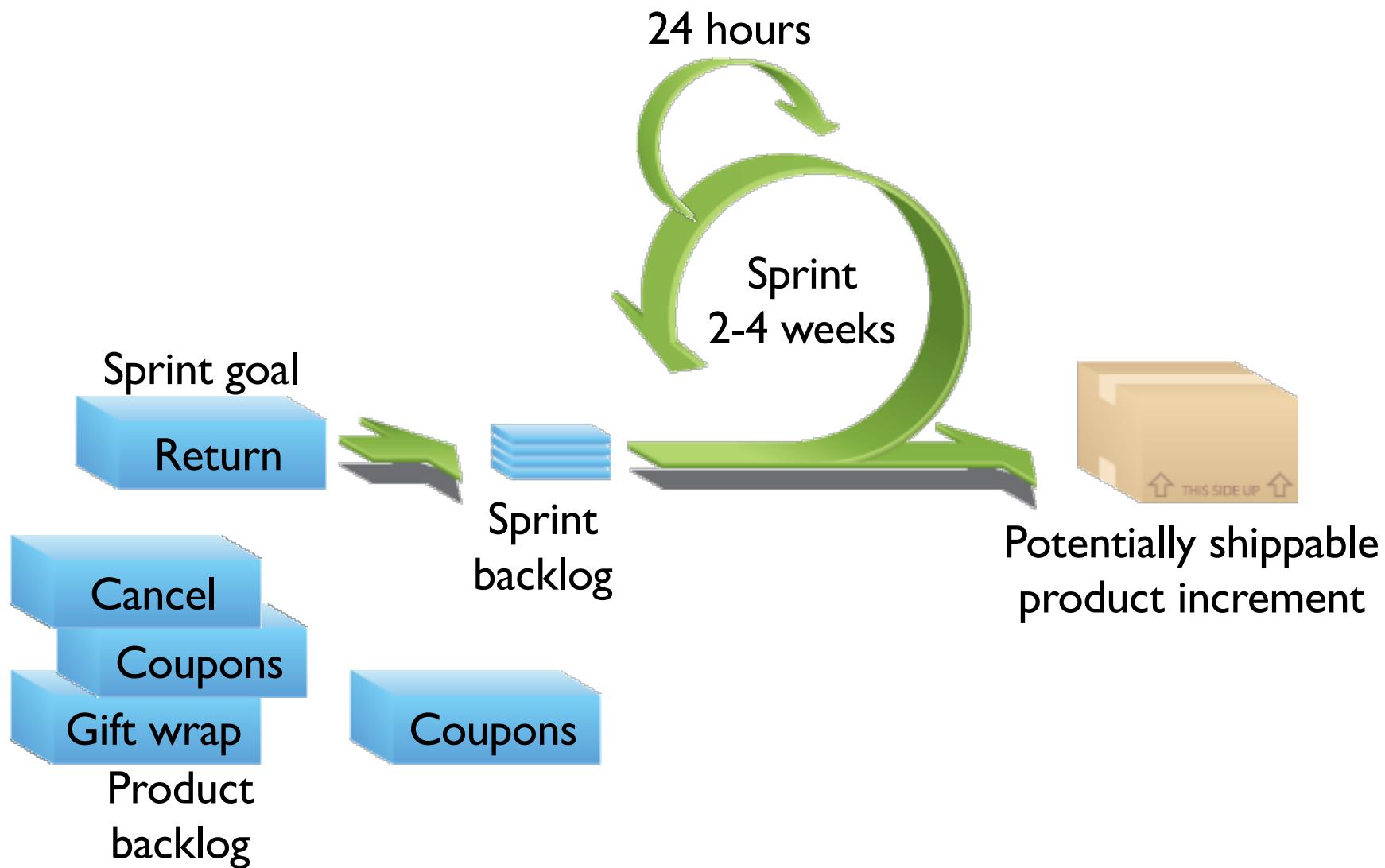


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Scrum



Scrum



Scrum terminology (a)

Scrum term	Definition
Development team	A self-organizing group of software developers, which should be no more than 7 people. They are responsible for developing the software and other essential project documents.
Potentially shippable product increment	The software increment that is delivered from a sprint. The idea is that this should be 'potentially shippable' which means that it is in a finished state and no further work, such as testing, is needed to incorporate it into the final product. In practice, this is not always achievable.
Product backlog	This is a list of 'to do' items which the Scrum team must tackle. They may be feature definitions for the software, <u>software requirements</u> , user stories or descriptions of supplementary tasks that are needed, such as <u>architecture definition</u> or <u>user documentation</u> .
Product owner	An individual (or possibly a small group) <u>whose job is to identify product features or requirements, prioritize these for development and continuously review the product backlog</u> to ensure that the project continues to meet critical business needs. The Product Owner can be a customer but might also be a product manager in a software company or other stakeholder representative.

Everyone answers 3 questions

1

What did you do yesterday?

2

What will you do today?

3

Is anything in your way?

- These are *not* status for the ScrumMaster
 - They are commitments in front of peers

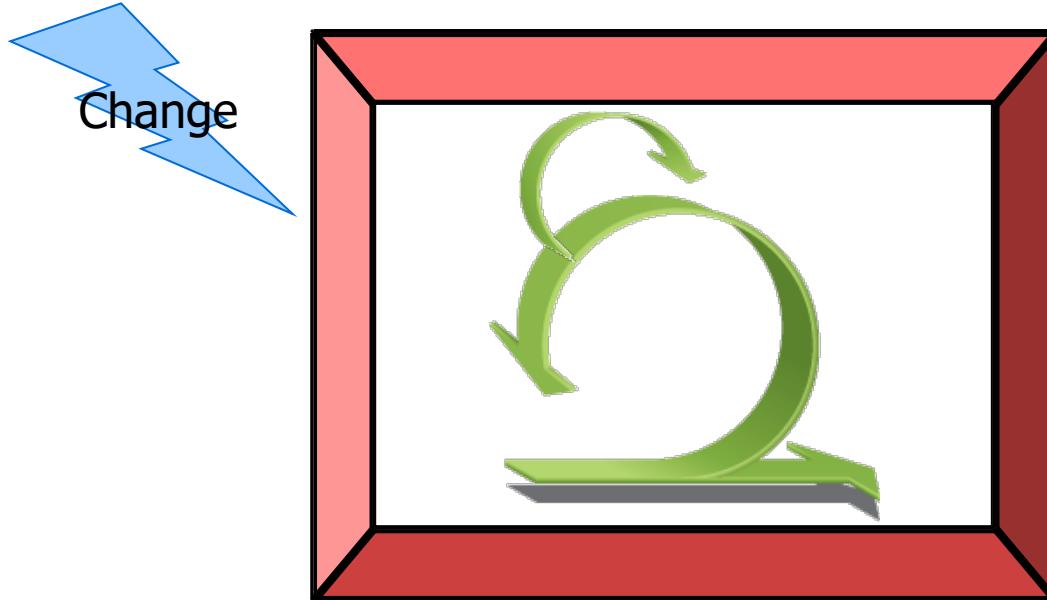
Scrum terminology (b)

Scrum term	Definition
Scrum	A daily meeting of the Scrum team that reviews progress and prioritizes work to be done that day. Ideally, this should be a short face-to-face meeting that includes the whole team.
Scrum Master	The Scrum Master is responsible for ensuring that the Scrum process is followed and guides the team in the effective use of Scrum. Responsible for interfacing with the rest of the company and for ensuring that the Scrum team is not diverted by outside interference.
Sprint	A development iteration. Sprints are usually 2-4 weeks long.
Velocity	An estimate of how much product backlog effort that a team can cover in a single sprint. Understanding a team's velocity helps them estimate what can be covered in a sprint and provides a basis for measuring improving performance.

Sprints

- Scrum projects make progress in a series of “sprints”
 - Analogous to Extreme Programming iterations
- Typical duration is 2–4 weeks or a calendar month at most
- A constant duration leads to a better rhythm
- Product is designed, coded, and tested during the sprint

No changes during a sprint



- Plan sprint durations around how long you can commit to keeping change out of the sprint

Everyone answers 3 questions

1

What did you do yesterday?

2

What will you do today?

3

Is anything in your way?

- These are *not* status for the ScrumMaster
 - They are commitments in front of peers

Kanban

- Technique that can be used in conjunction with scrum
- Developed in Japan by Toyota Motor Corporation
- Uses visual cues to guide workflow
- Kanban cards show new work, work in progress, and work completed

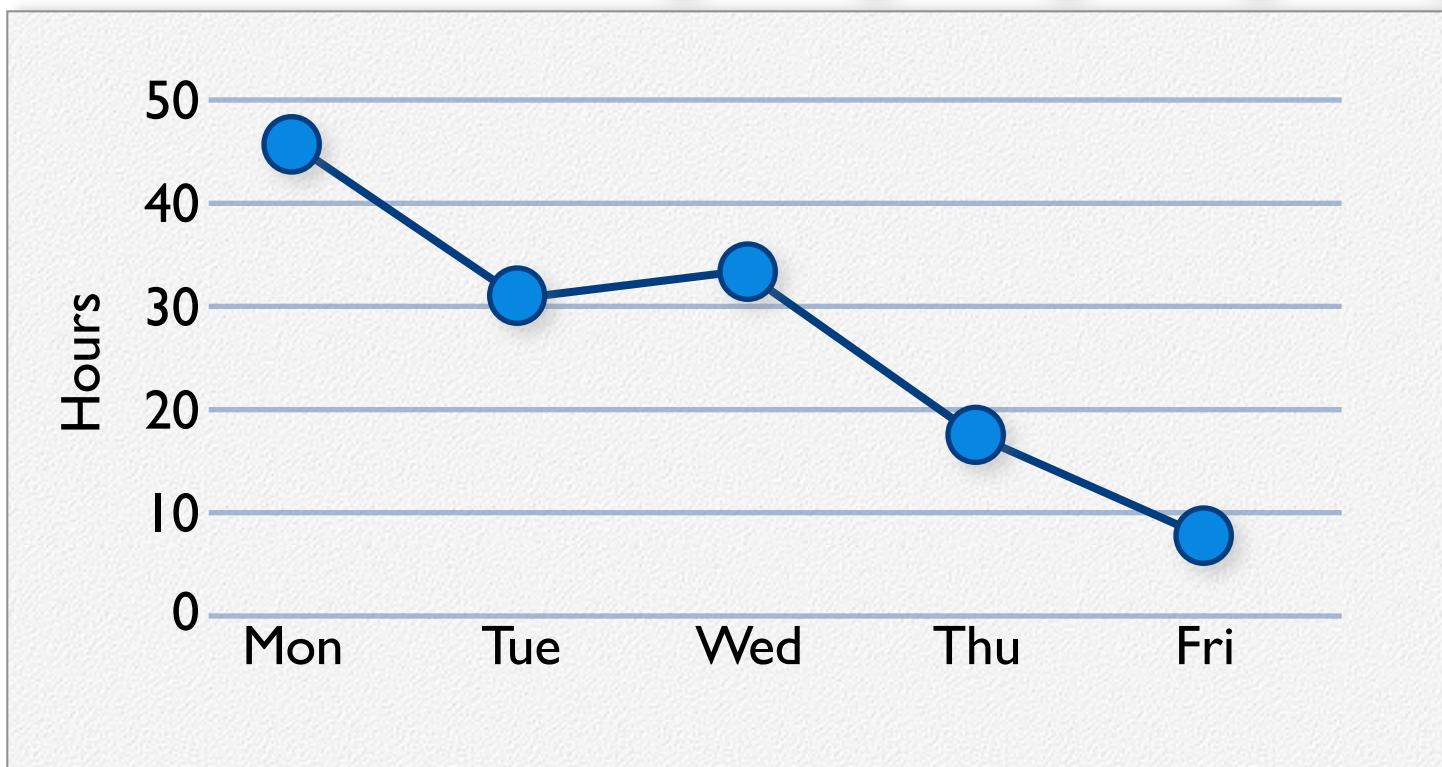
Scalability

- Typical individual team is 7 ± 2 people
 - Scalability comes from teams of teams
- Factors in scaling
 - Type of application
 - Team size
 - Team dispersion
 - Project duration
- Scrum has been used on multiple 500+ person projects

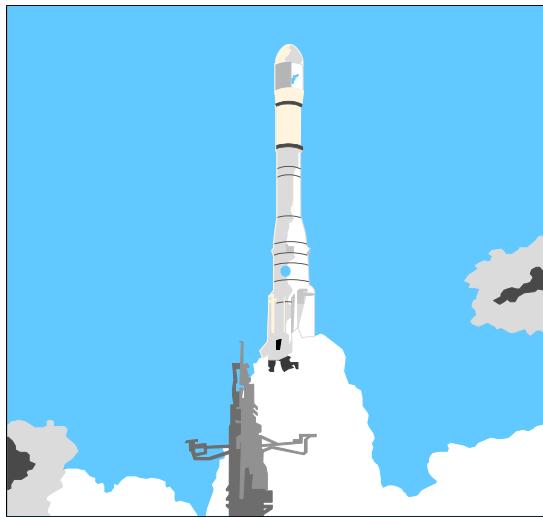
A sample product backlog

Backlog item	Estimate
Allow a guest to make a reservation	3
As a guest, I want to cancel a reservation.	5
As a guest, I want to change the dates of a reservation.	3
As a hotel employee, I can run RevPAR reports (revenue-per-available-room)	8
Improve exception handling	8
...	30
...	50

Tasks	Mon	Tues	Wed	Thur	Fri
Code the user interface	8	4	8		
Code the middle tier	16	12	10	7	
Test the middle tier	8	16	16	11	8
Write online help	12				



Well-known Problems: flight of Ariane 5



Chapter 2A and 2b Summary

- Project managers need to take a systems approach when working on projects
- Organizations have four different frames: structural, human resources, political, and symbolic
- The structure and culture of an organization have strong implications for project managers
- Projects should successfully pass through each phase of the project life cycle
- Project managers need to consider several factors due to the unique context of information technology projects
- Recent trends affecting IT project management include globalization, outsourcing, virtual teams, and Agile