SCRUM

EPITA Information Management Master

Scrum Agile

Module 1

Olivier BERTHET

SCRUM

Agile Scrum

My courses
Planning Sep 2018- Feb 2019

CRM

PRI

IT Purchasing

6σ

Green IT

Ground Rues

- **Be respectful of those talking or presenting**
- **Be ON TIME**
  - **Being late is a sign of disrespect to the trainer and your peers**
  - **After 10 minutes delay , you will not be accepted in class**
- **Switch off your cell phones**
- **Laptops or tablets are tolerated only if you take notes**
- **Do not be shy , participate actively**
- **One discussion at a time**
- **Collaborate with your peers even if they are from a different nationality**

Objectives of this course

- **Understand the Agile project management approach**
- **Define the conditions to use Agile versus Waterfall traditional**
- **Understand the SCRUM framework**
- **Review in details the different phases of a SCRUM project**
- **Know how to build and prioritize a Product backlog**
- **Practice the roles and the sprint of a SCRUM project**

Agenda

- **Session 1** **15th of September 2018**
  - Definition , history
  - Agile principles, comparison waterfall versus scrum, Scrum benefits
  - Scrum framework and main principles
  - Scrum artifacts , product backlog

- **Session 2** **12th of October 2018**
  - User stories
  - Planning : scrum planning principles , product and release planning

Agenda

- **Session 3** **13th of October 2018**
  - Estimating and velocity
  - Poker game

- **Session 4** **26th of October 2018**
  - Sprinting : sprint planning , sprint execution, sprint review and retrospective

Agenda

- **Session 5** **9th of November 2018**
  - **Exam preparation : sprint planning**

- **Session 6** **9th of November 2018**
  - **Exam : Execution of sprints**

Exam

- **Participation** **30%**
- **Quiz** **30%**
- **Scrum game play** **40%**

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Game

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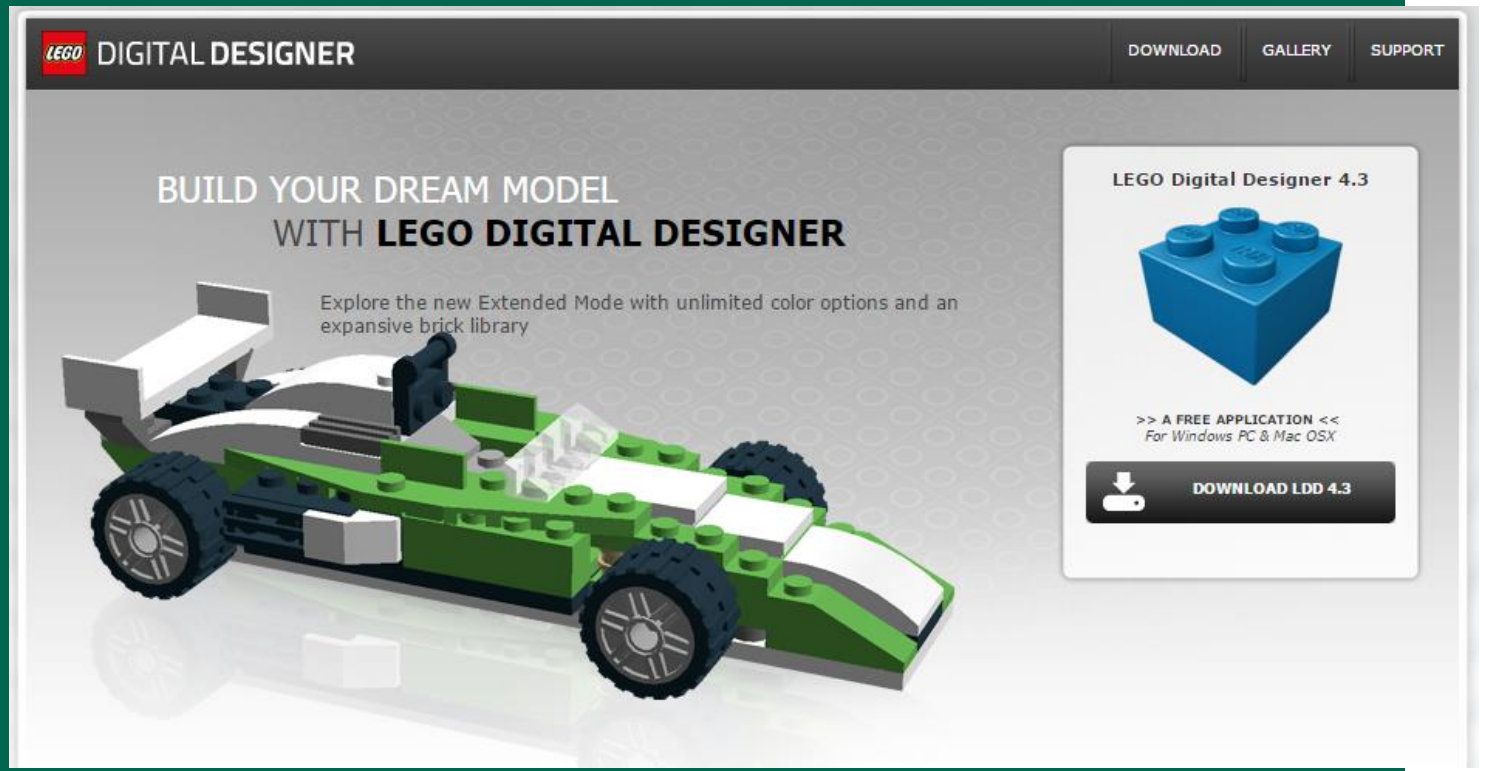
Lego Digital Designer

- http://ldd.lego.com/en-us/



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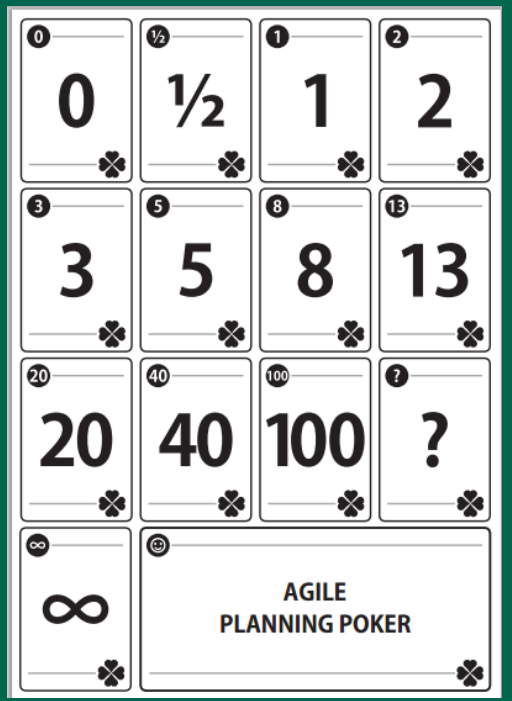
Planning poker

- http://wwwis.win.tue.nl/2R690/doc/agile_planning_poker.pdf



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Relay race versus Scrum

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We’re losing the relay race

“The… ‘relay race’ approach to product development…may conflict with the goals of maximum speed and flexibility. Instead a holistic or ‘rugby’ approach—where a team tries to go the distance as a unit, passing the ball back and forth—may better serve today’s competitive requirements.”

Hirotaka Takeuchi and Ikujiro Nonaka, “The New New Product Development Game”, *Harvard Business Review*, January 1986.

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Scrum in 100 words

- **Scrum is an agile process that allows us to focus on delivering the highest business value in the shortest time.**
- **It allows us to rapidly and repeatedly inspect actual working software (every two weeks to one month).**
- **The business sets the priorities. Teams self-organize to determine the best way to deliver the highest priority features.**
- **Every two weeks to a month anyone can see real working software and decide to release it as is or continue to enhance it for another sprint.**

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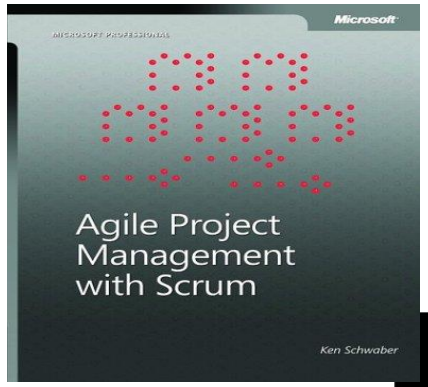
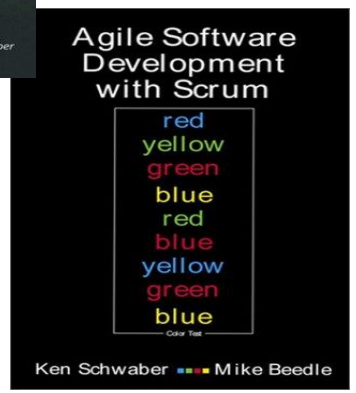
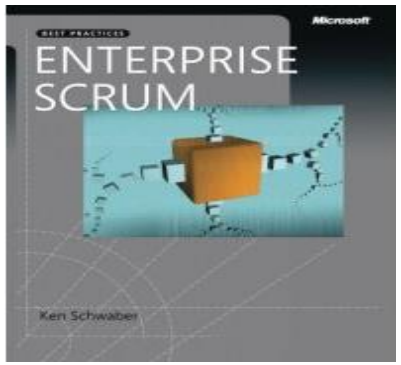
Origins

- **Jeff Sutherland**
  - Initial scrums at Easel Corp in 1993
  - IDX and 500+ people doing Scrum
- **Ken Schwaber**
  - ADM
  - Scrum presented at OOPSLA 95 with Sutherland
  - Author of three books on Scrum
- **Mike Beedle**
  - Scrum patterns in PLOPD4
- **Ken Schwaber and Mike Cohn**
  - Co-founded Scrum Alliance in 2002, initially within the Agile Alliance







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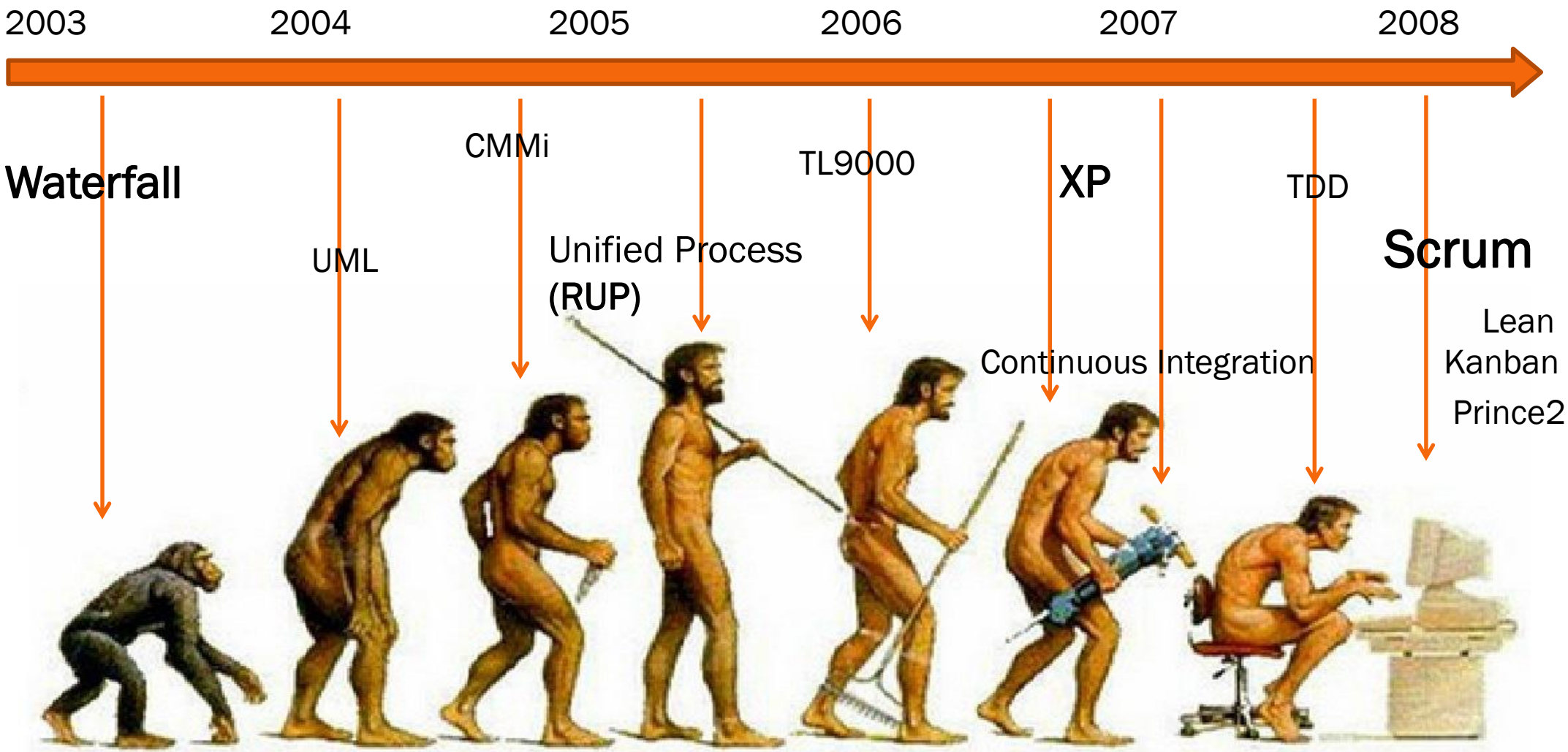

Source : Đức Quốc

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WE'RE GOING TO TRY SOMETHING CALLED AGILE PROGRAMMING.
THAT MEANS NO MORE PLANNING AND NO MORE DOCUMENTATION. JUST START WRITING CODE AND COMPLAINING.
I'M GLAD IT HAS A NAME.
THAT WAS YOUR TRAINING.
www.dilbert.com scottadams@aol.com
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Why Agile ?

- **Structure Empowers Team Members**
- **Encourages Change & Learning**
- **Avoids rigidity of Traditional Bureaucratic Organizations**
- **Establishes an Environment Conducive to:**
  - **Communication**
  - **Cooperation**
  - **Cross-Fertilization**

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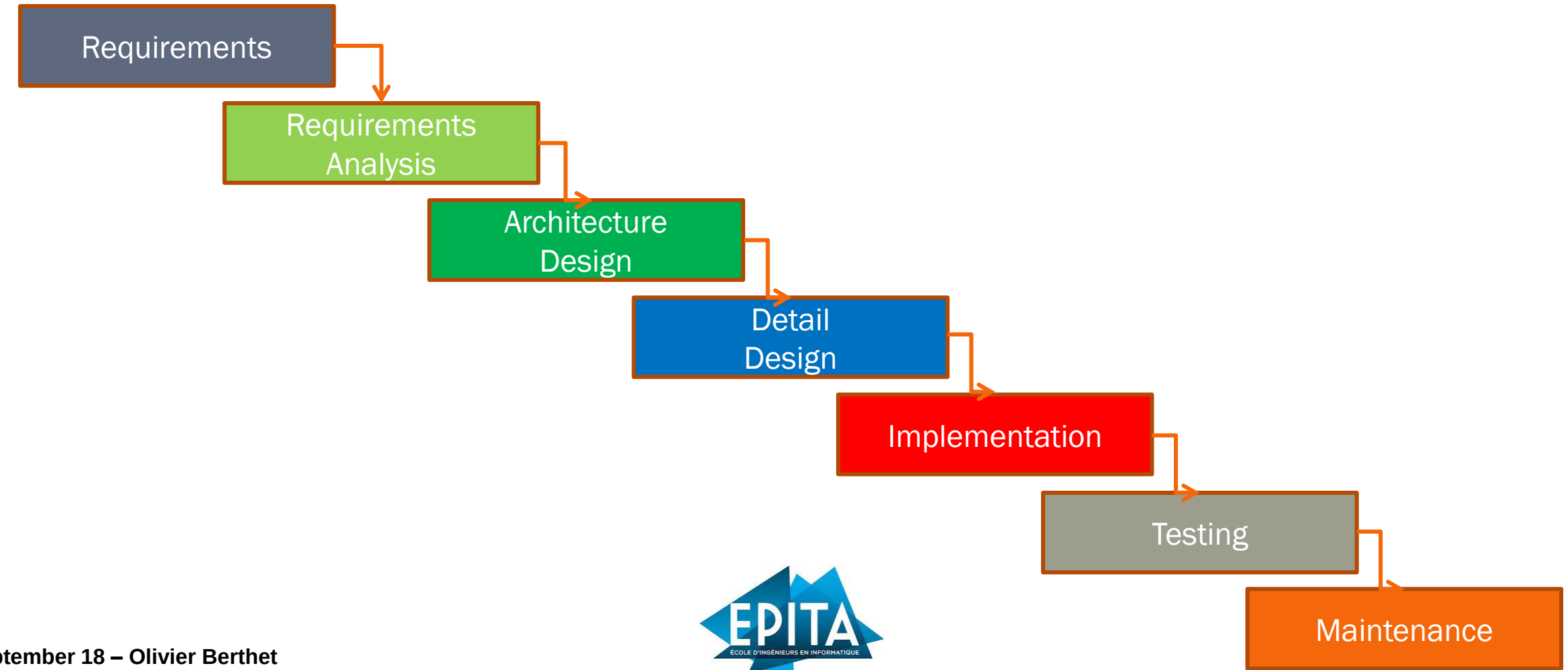
Traditional waterfall



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Process where waterfall works

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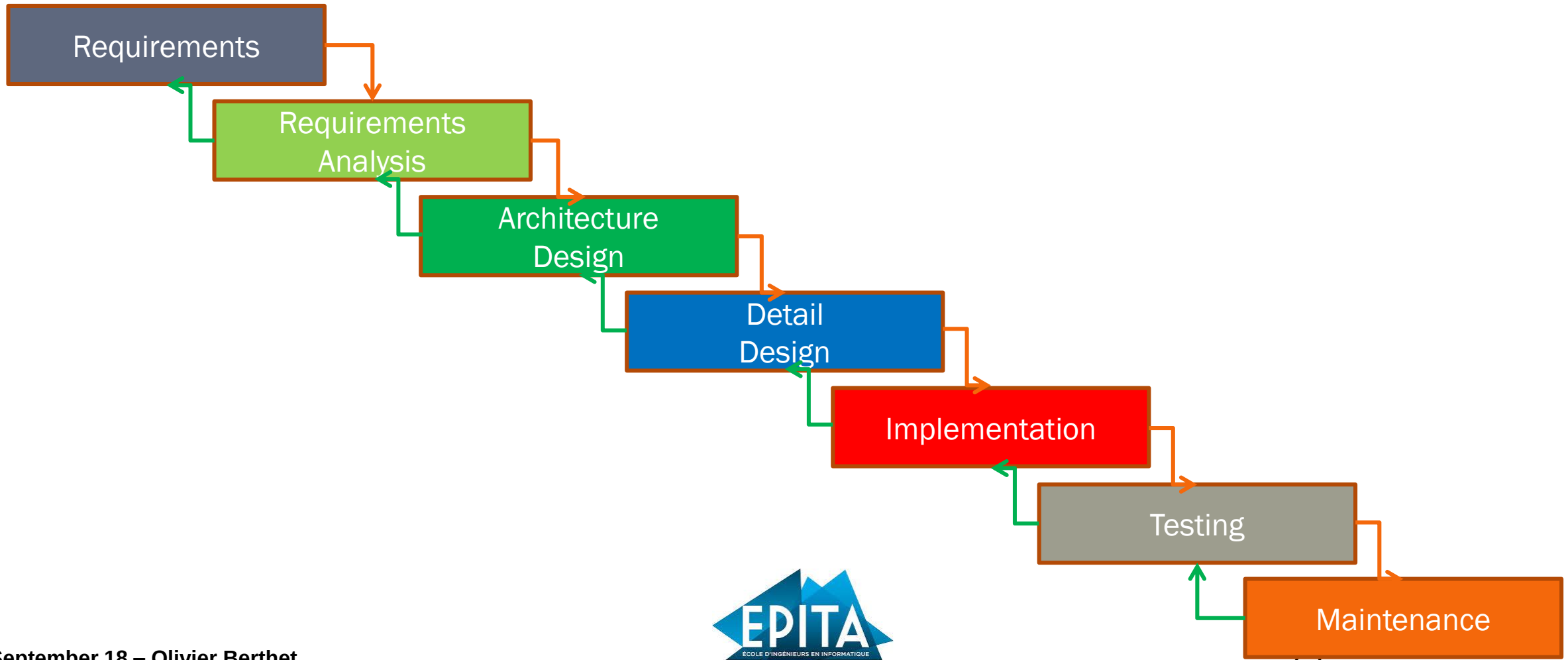
Processes - Waterfall with feedback



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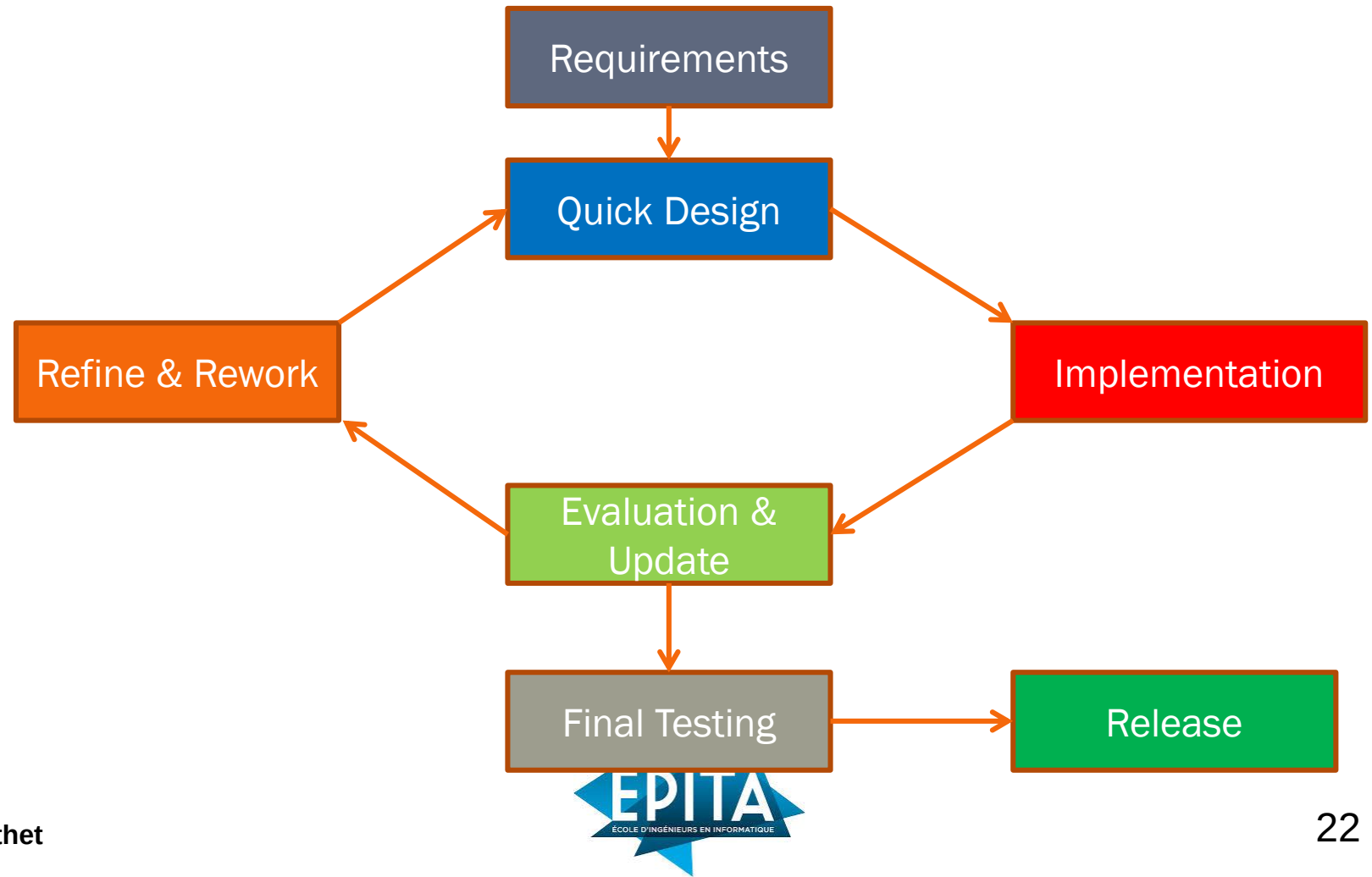
Processes - Iterative & Incremental



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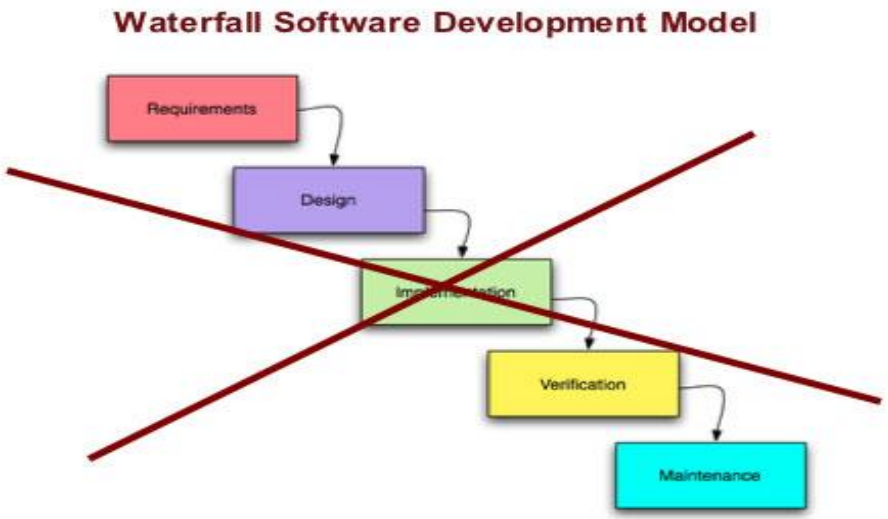
Agile methodologies

Agile Software Development Principles

Have fun	Focus on Simplicity	Adapt the code
Embrace Change	Get Feedback	Refactor
Communicate	Release Often	Test



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Agile Manifesto

Individuals and interactions	over	Process and tools
Working software	over	Comprehensive documentation
Customer collaboration	over	Contract negotiation
Responding to change	over	Following a plan

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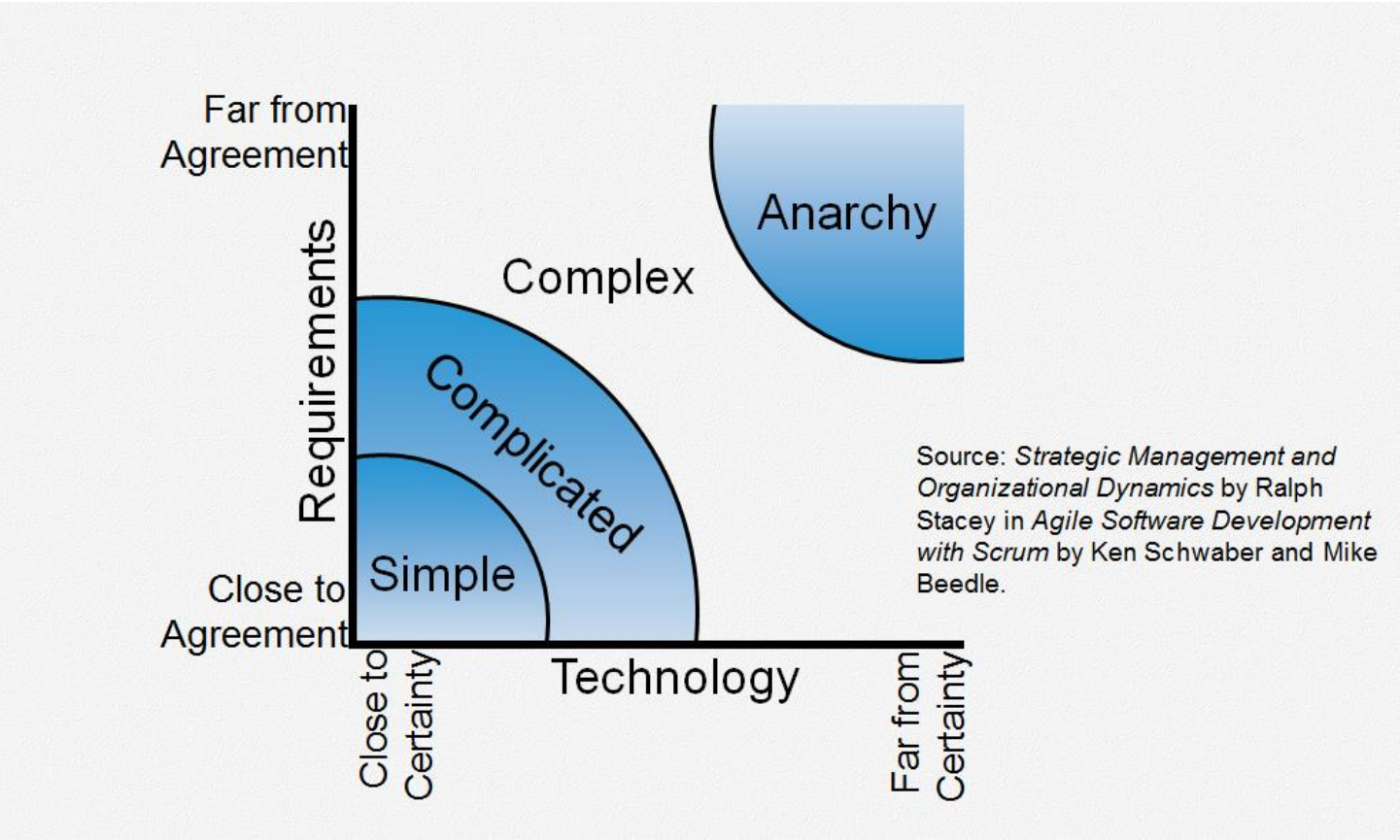
Project noise level



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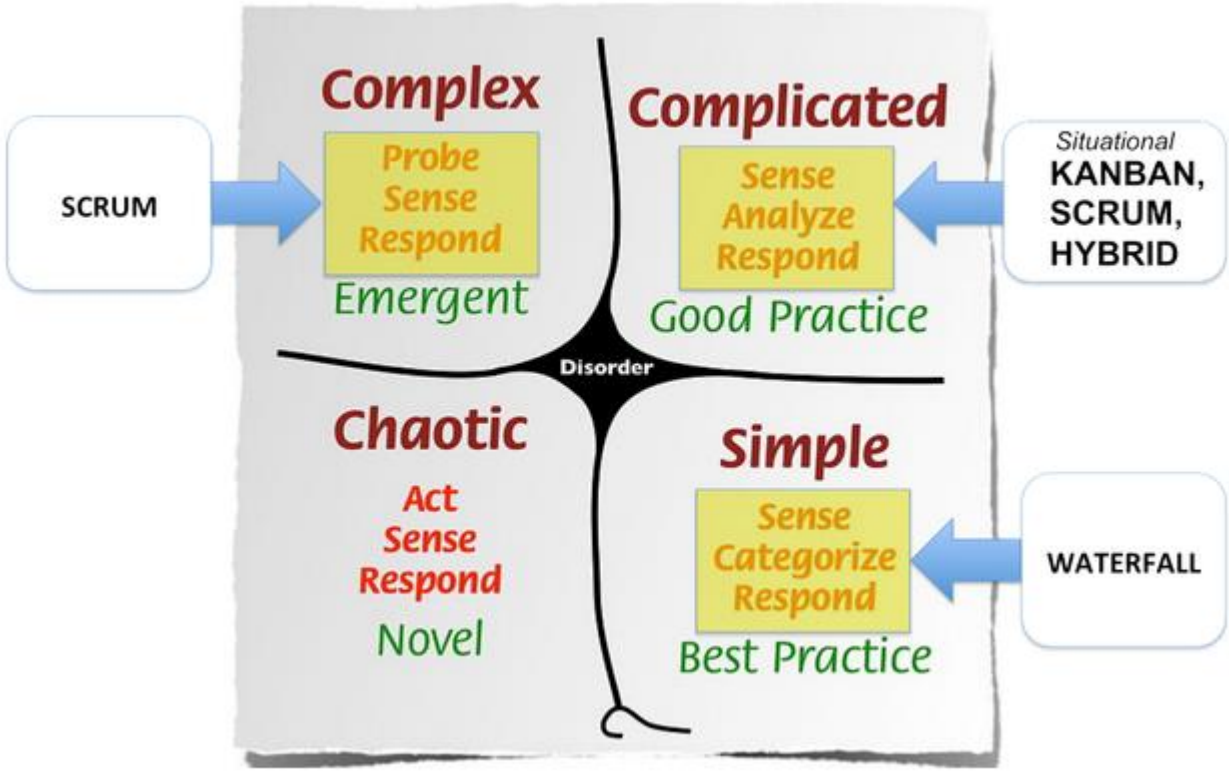
Cynefin model



Agile versus Traditional

- **Use Traditional**
  - When a project is relatively familiar
  - The goal and solution are easy to identify
  - The scope and deliverables are clear.

- **Use Agile**
  - When dealing with unfamiliar territory
  - The solution itself is unknown
  - There are several possible outcomes

- **Agile is growing in popularity**

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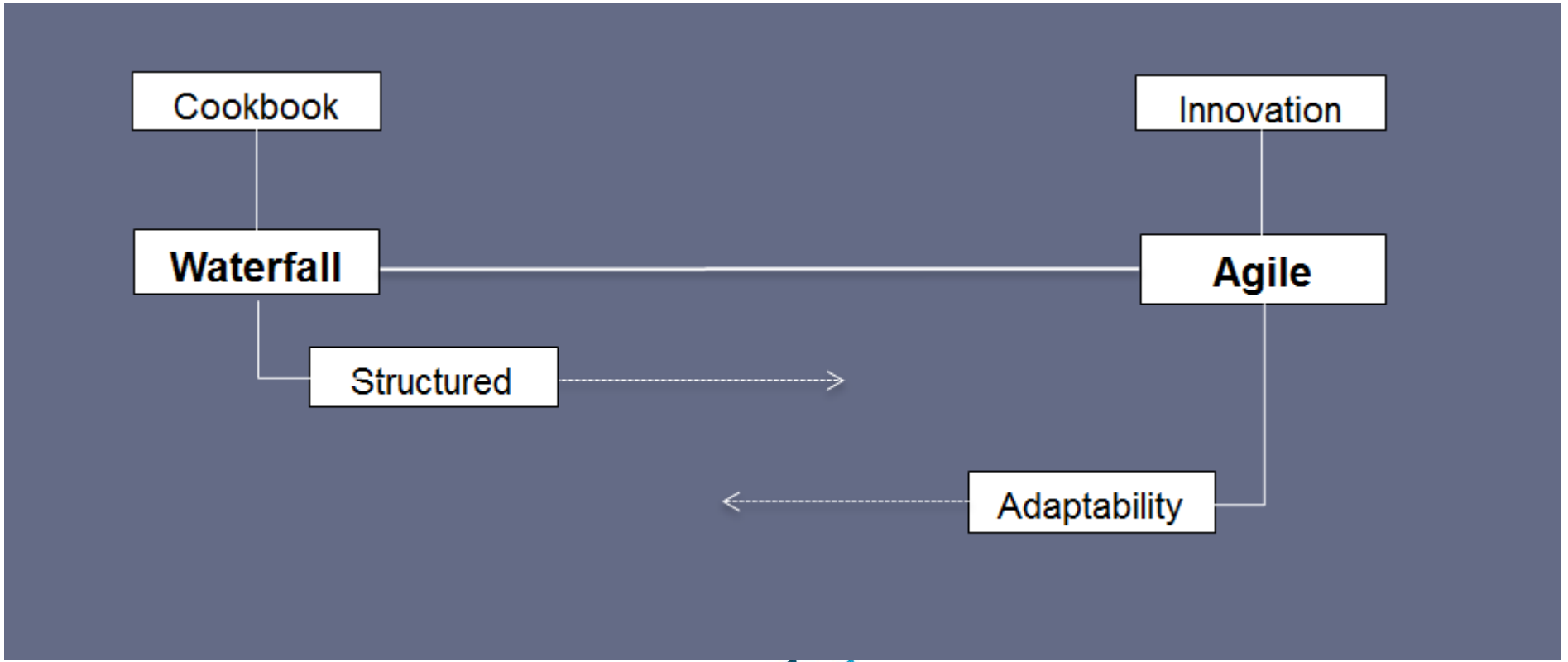
Difference between Agile and Traditional Framework



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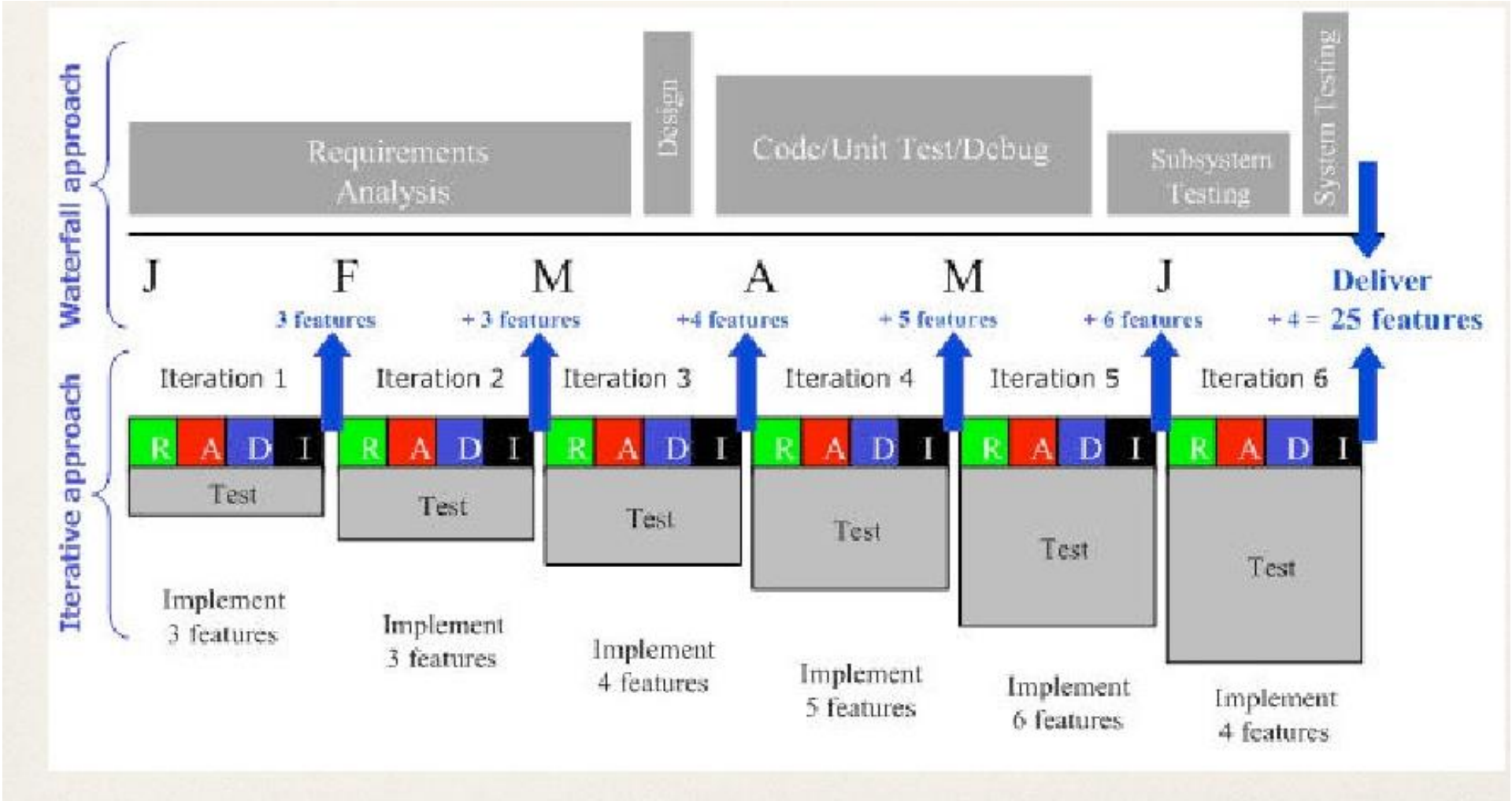
Scrum versus Waterfall



Software Development as Product Development

- **Software is more of a discovery process**
- **Parallels the work of designing a product prior to manufacturing**
  - **A useful definition of Product Development is that it is the collective activities, or system, that a company uses to convert its technology and ideas into a stream of products that meet the needs of customer and the strategic goals of the company**

- **Software Development is not like building construction**
  - **Where you know what you need to do**
  - **Little discovery is taking place**
- **Instead it is like product development**
  - **Where you don't know what to do**
  - **Where much of your time is in discovery : Discover what the customer wants , discover how to build it and then build it**

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Scrum has been used in

- **Independent Software Vendors (ISVs)**
- **Fortune 100 companies**
- **Small startups**
- **Internal development**
- **Contract development**

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Scrum has been used by

- Microsoft
- Yahoo
- Google
- Electronic Arts
- High Moon Studios
- Lockheed Martin
- Philips
- Siemens
- Nokia
- Capital One
- BBC
- Intuit
- Nielsen Media
- First American Real Estate
- BMC Software
- Ipswitch
- John Deere
- Lexis Nexis
- Sabre
- Salesforce.com
- Time Warner
- Turner Broadcasting
- Oce

SCRUM

Scrum has been used for

- Commercial software
- In-house development
- Contract development
- Fixed-price projects
- Financial applications
- ISO 9001-certified applications
- Embedded systems
- 24x7 systems with 99.999% uptime requirements
- the Joint Strike Fighter
- Video game development
- FDA-approved, life-critical systems
- Satellite-control software
- Websites
- Handheld software
- Mobile phones
- Network switching applications
- ISV applications
- Some of the largest applications in use

Scrum is Agile

- **Delivers highest customer value first.**
- **Focuses on planning than on plan.**
- **Builds working software at rapid and repetitive pace.**
- **Builds Self-organizing teams**

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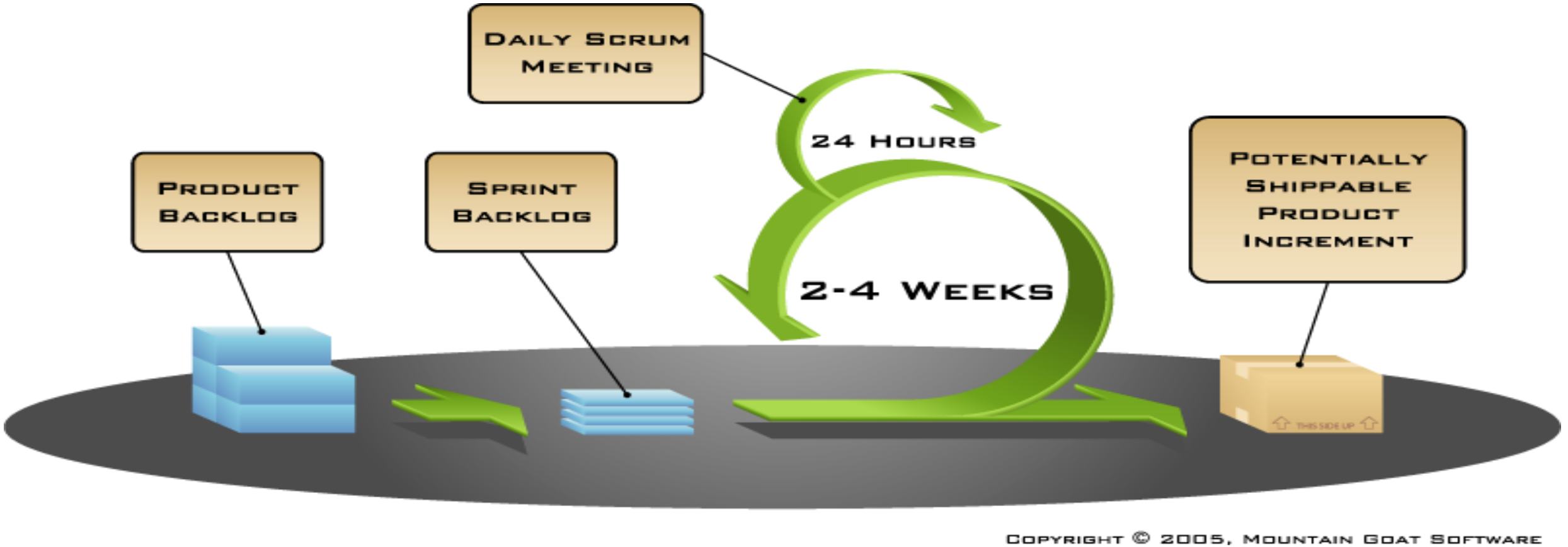
Putting it all together



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Characteristics

- **Self-organizing teams**
- **Product progresses in a series of month-long “sprints”**
- **Requirements are captured as items in a list of “product backlog”**
- **No specific engineering practices prescribed**
- **Uses generative rules to create an agile environment for delivering projects**
- **One of the “agile processes”**

Scrum benefits

- **According to you what are they ?**

Scrum benefits

- **Delighted customers**
- **Improved return on investment**
- **Reduced costs**
- **Fast results**
- **Confidence to succeed in a complex world**
- **More fun**

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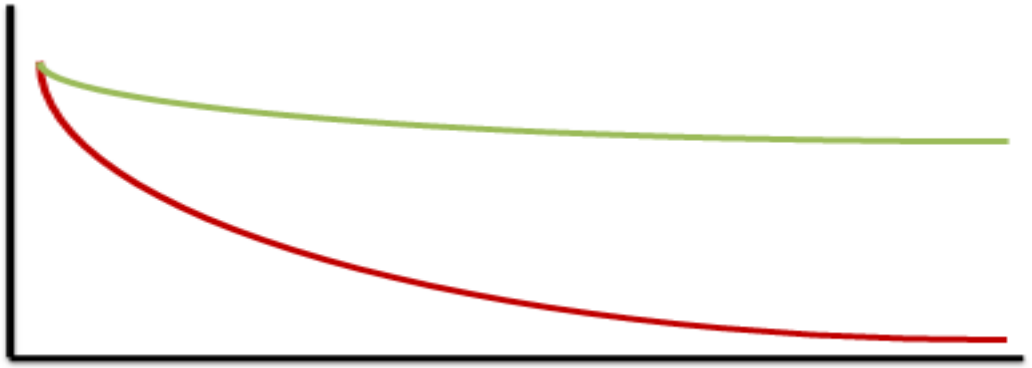
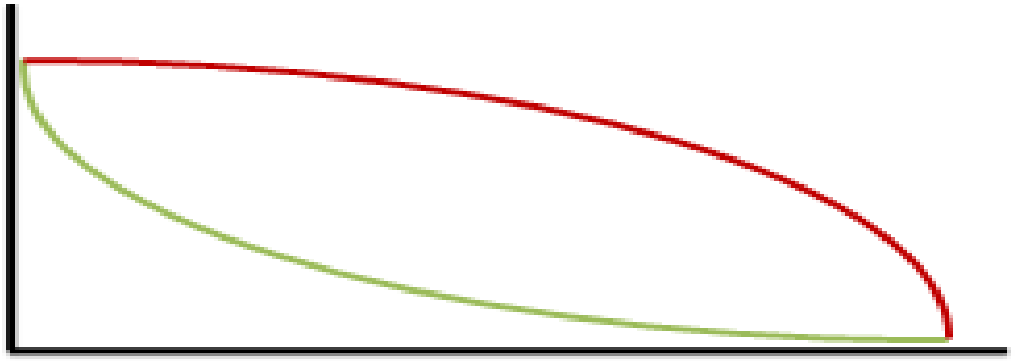
Scrum benefits - project

Ability to Change

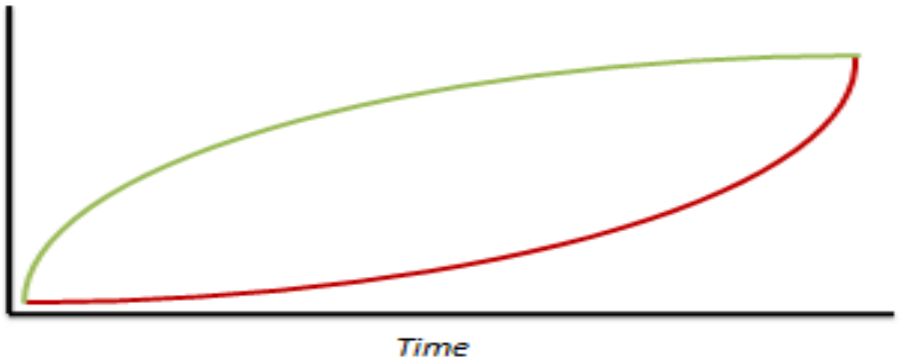


Risk

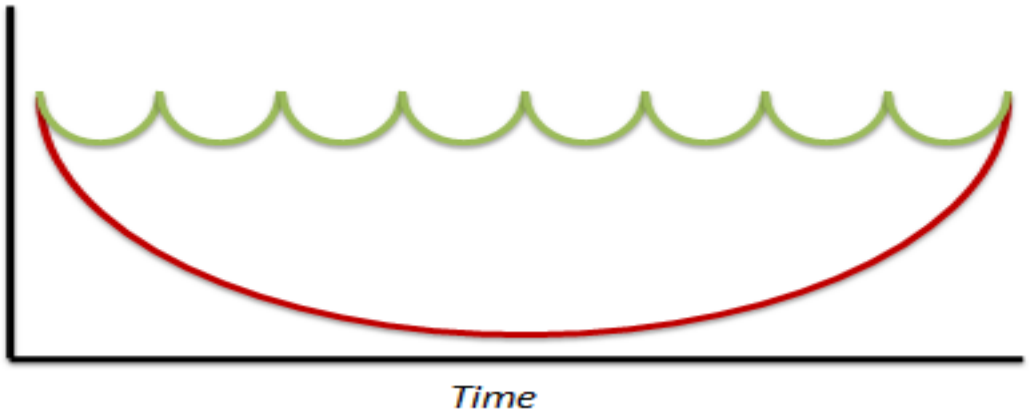


Scrum
Plan Driven Development

Business Value



Visibility



Scrum Framework

- **Scrum is NOT a standardized process that you follow methodically**
- **Scrum is a framework for organizing and managing work**
- **Foundations**
  - **Values, principles and practices**
- **You build your own version of Scrum**

Scrum values

- **Honesty**
- **Openness**
- **Courage**
- **Respect**
- **Focus**
- **Trust**
- **Empowerment**
- **Collaboration**

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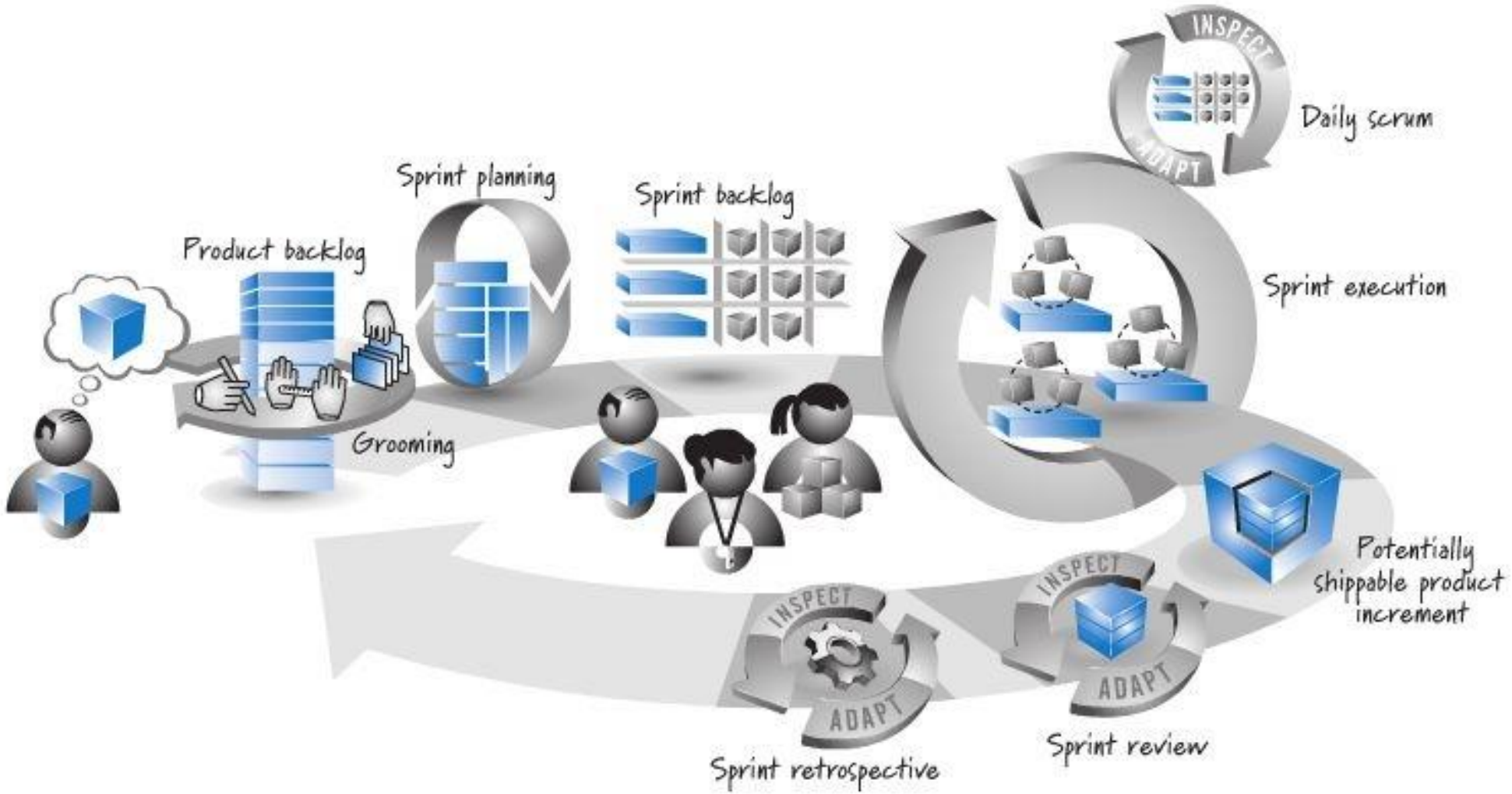
INSPECT
ADAPT
Daily scrum
Sprint planning
Sprint backlog
Product backlog
Sprint execution
Grooming
Potentially shippable product increment
INSPECT
ADAPT
Sprint retrospective
INSPECT
ADAPT
Sprint review

SCRUM

Roles

- Product owner
- ScrumMaster
- Team

Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

Scrum Framework

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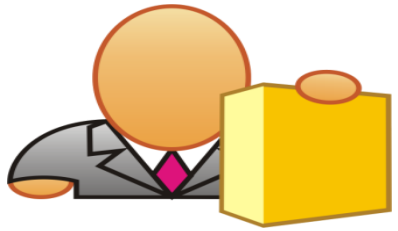
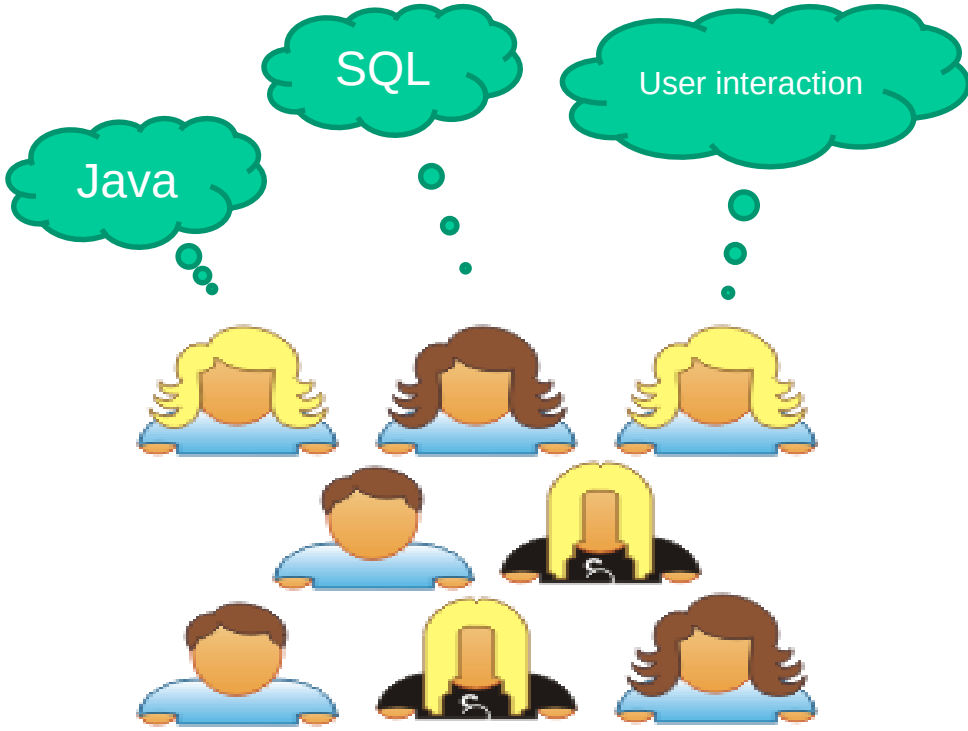
SCRUM

Scrum roles



Product owner

Scrum Master



Team

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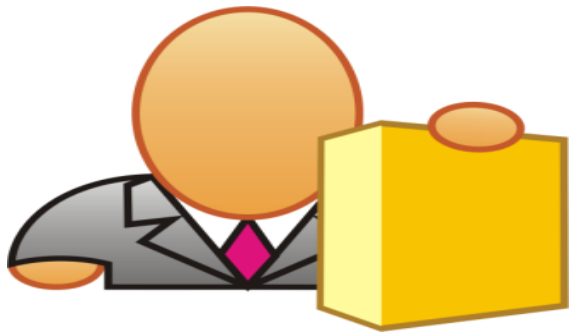
Product owner

- **The Product owner is the empowered central point of product leadership**
- **Single authority responsible for deciding which features and functionalities to build**
- **He may be the customer representative**
- **He prioritizes product requirements**

- **He is responsible for the overall success of the solution**



Scrum Master

- **The Scrum Master helps everyone involved understand and embrace the Scrum values, principles and practices**
- **He acts as a coach, helps the team to resolve issues**
- **He takes a leadership role in removing impediments to the ability of the team to deliver the sprint goal.**
- **Not necessarily the leader of the team (as the team is self-organizing) but acts as a buffer between the team and any distracting influences.**
- **Understands the benefits of the Scrum process to ensure that Scrum practices are used as intended**

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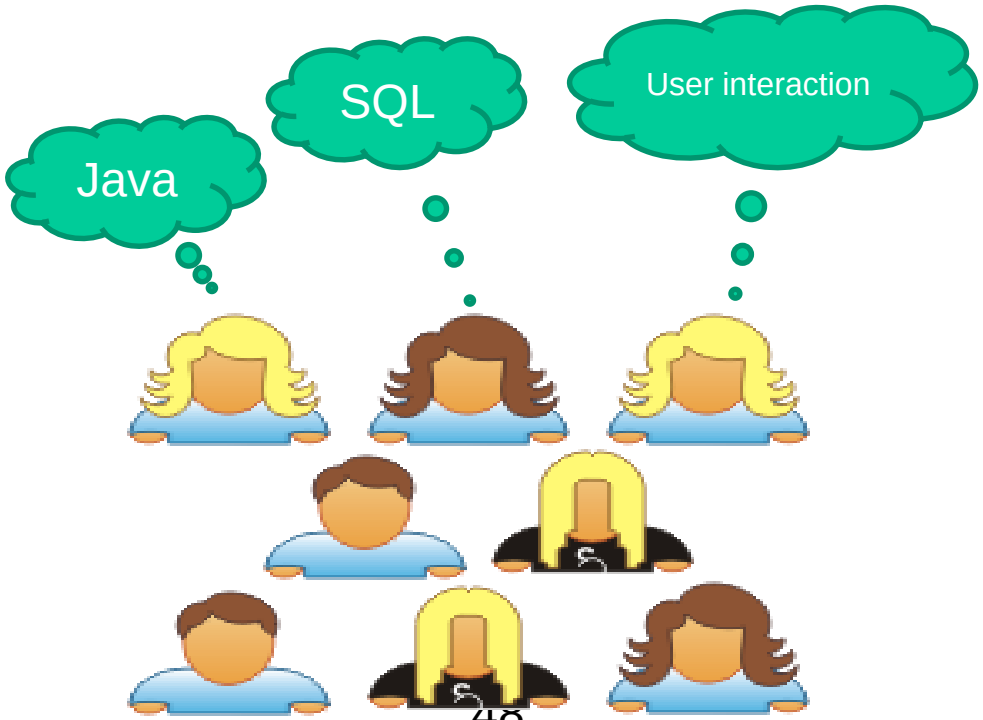
Scrum Development team

- **Typically 5-9 people**
- **Cross-functional:**
  - **Programmers, testers, user experience designers, etc.**
- **Members should be full-time**
  - **May be exceptions (e.g., database administrator)**
- **Teams are self-organizing**
  - **Ideally, no titles but rarely a possibility**
- **Membership should change only between sprints**



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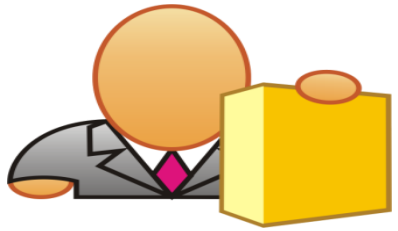
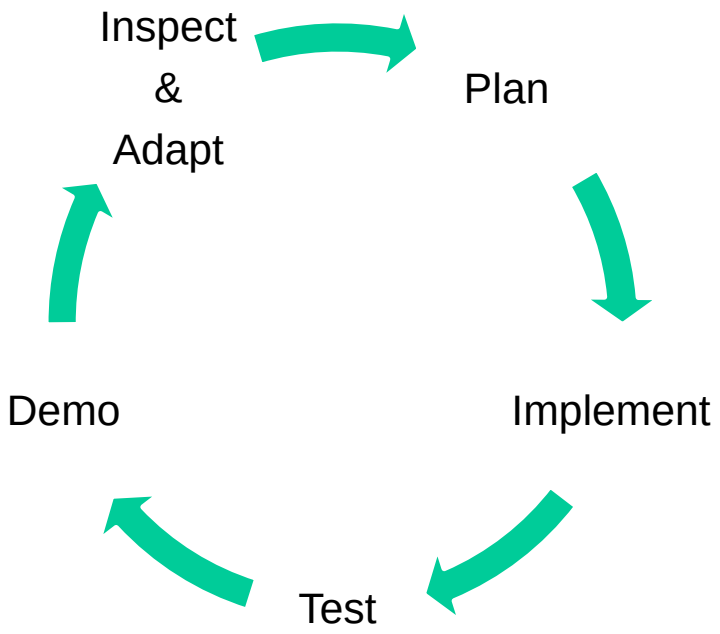
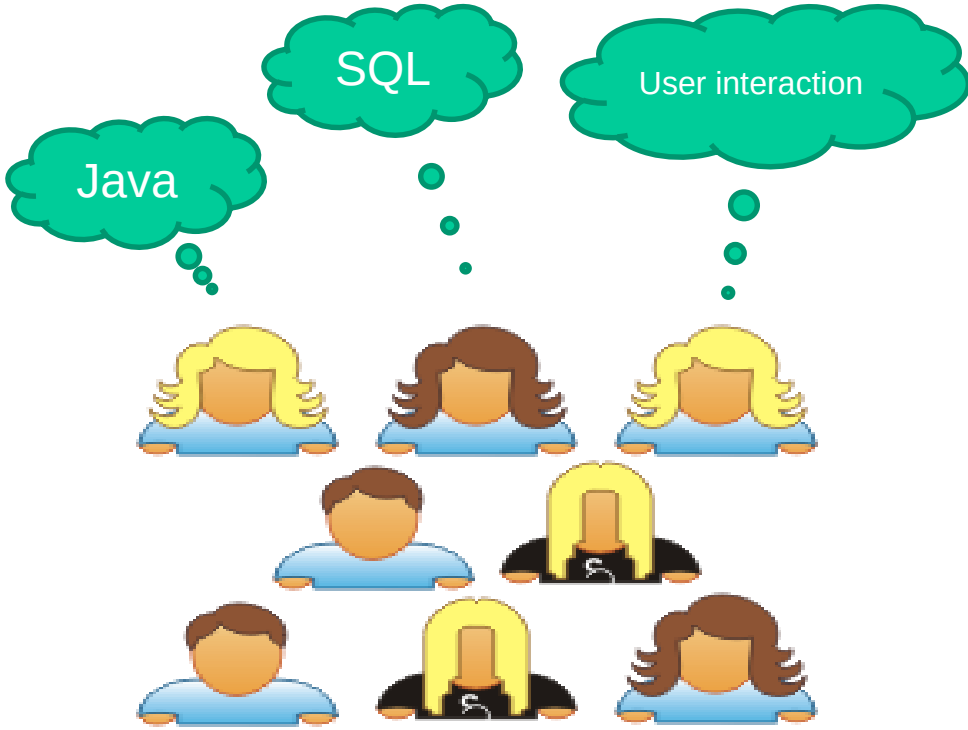


Product owner

Scrum team





Team

Scrum Master

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Pigs & Chicken

- **Pigs : who are committed to building software regularly and frequently. (e.g. the Scrum team)**
- **Chicken: who involved but not a pig. Usually they are informed of the progress. (e.g. stakeholders, managers)**

SCRUM

Roles

- Product owner
- ScrumMaster
- Team

Ceremonies

- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

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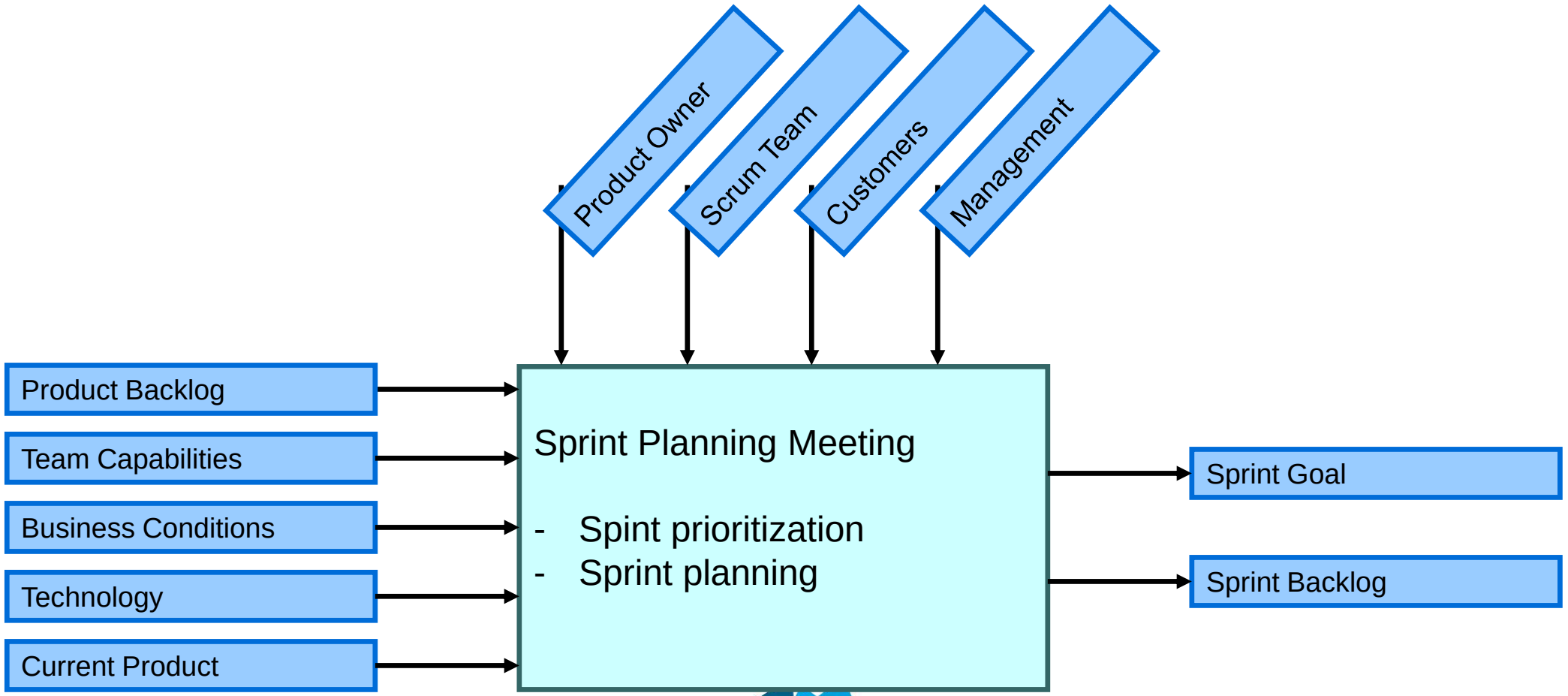
Sprint Planning Meeting



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**

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Team capacity
Product backlog
Business conditions
Current product
Technology
Sprint planning meeting
Sprint prioritization
• Analyze and evaluate product backlog
• Select sprint goal
Sprint planning
• Decide how to achieve sprint goal (design)
• Create sprint backlog (tasks) from product backlog items (user stories / features)
• Estimate sprint backlog in hours
Sprint goal
Sprint backlog

The daily scrum

- **Parameters**
  - **Daily**
  - **15-minutes**
  - **Stand-up**
- **Not for problem solving**
  - **Whole world is invited**
  - **Only team members, ScrumMaster, product owner, can talk**
- **Helps avoid other unnecessary meetings**

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Everyone answers 3 questions

- **What did you do yesterday?**
- **What will you do today ?**
- **Is anything in your way ?**

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

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The sprint review

- **Team presents what it accomplished during the sprint**
- **Typically takes the form of a demo of new features or underlying architecture**
- **Informal**
  - **2-hour prep time rule**
  - **No slides**
- **Whole team participates**
- **Invite the world**

Sprint retrospective

- **Periodically take a look at what is and is not working**
- **Typically 15–30 minutes**
- **Done after every sprint**
- **Whole team participates**
  - **ScrumMaster**
  - **Product owner**
  - **Team**
  - **Possibly customers and others**

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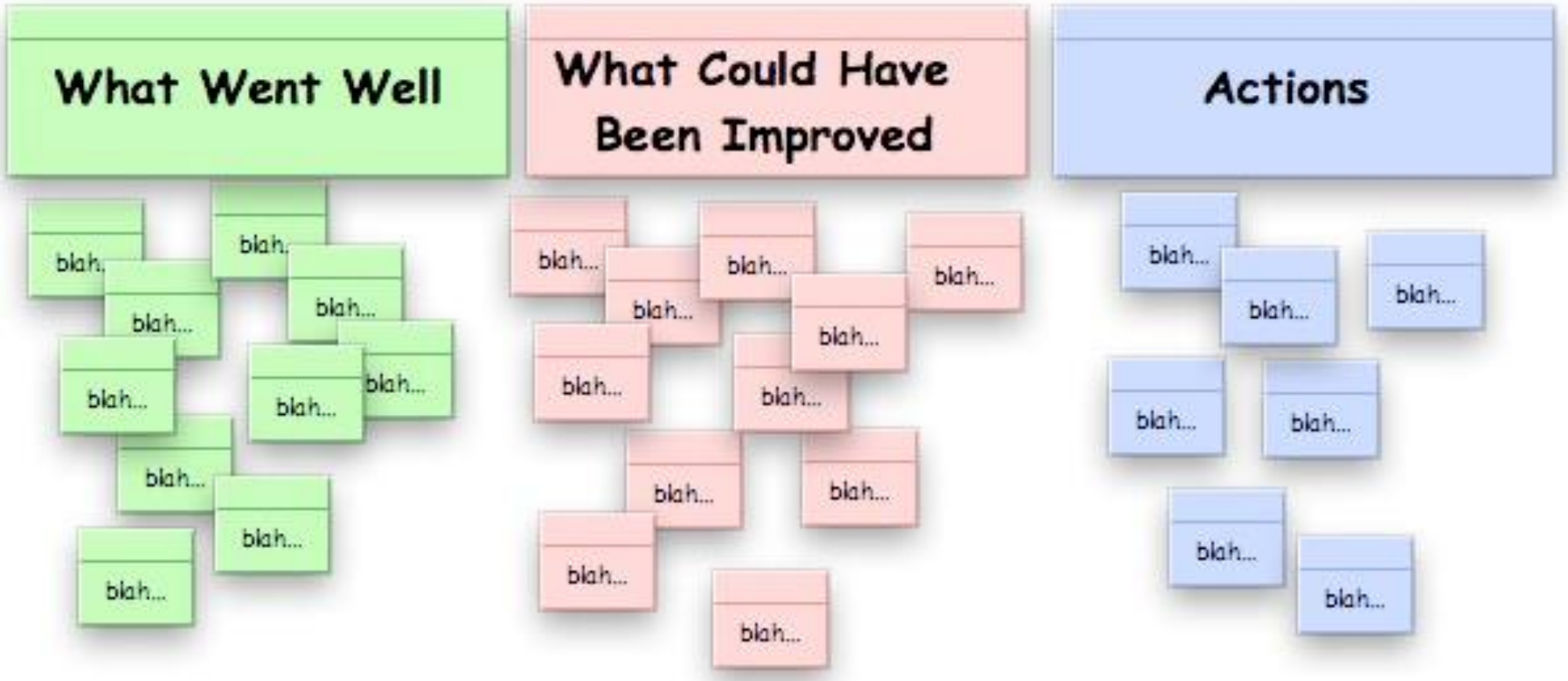
Sprint retrospective



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Start / Stop / Continue

- **Whole team gathers and discusses what they'd like to:**

Start doing

Stop doing

Continue doing

This is just one of many ways to do a sprint retrospective.

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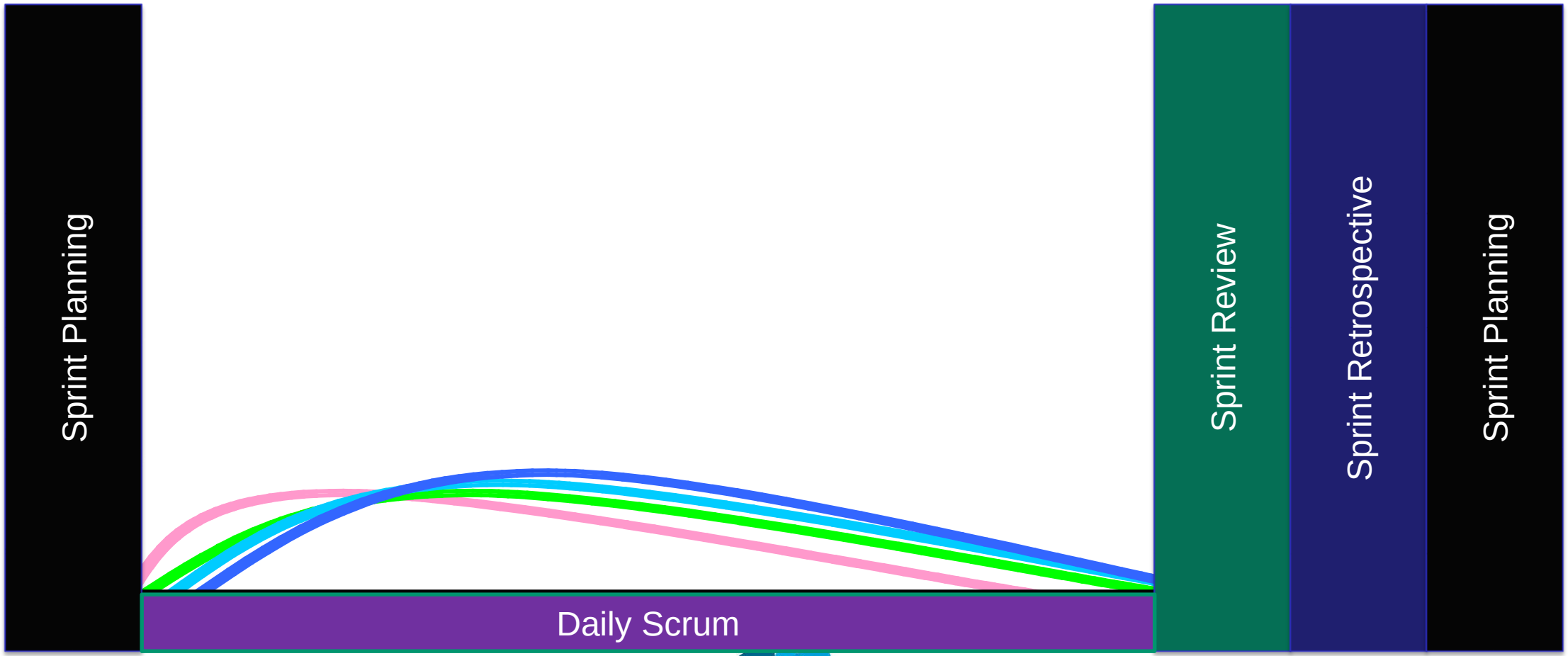
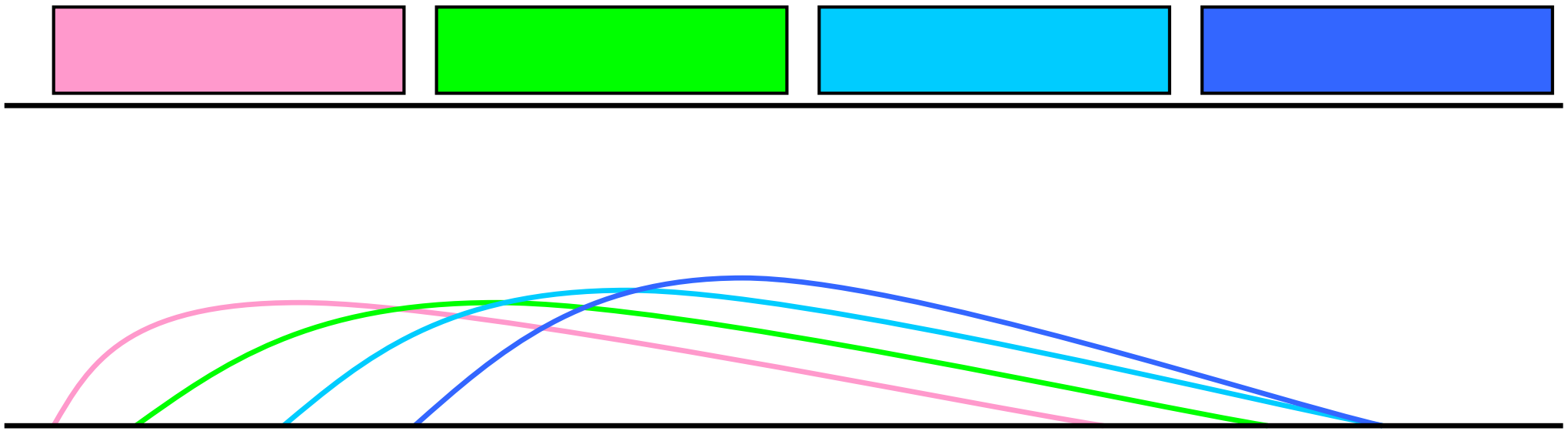
Meetings in Scrum



Sequential versus Overlapping Development



Source: “The New New Product Development Game”, Hirotaka Takeuchi and Ikujiro Nonaka, *Harvard Business Review*, January 1986.

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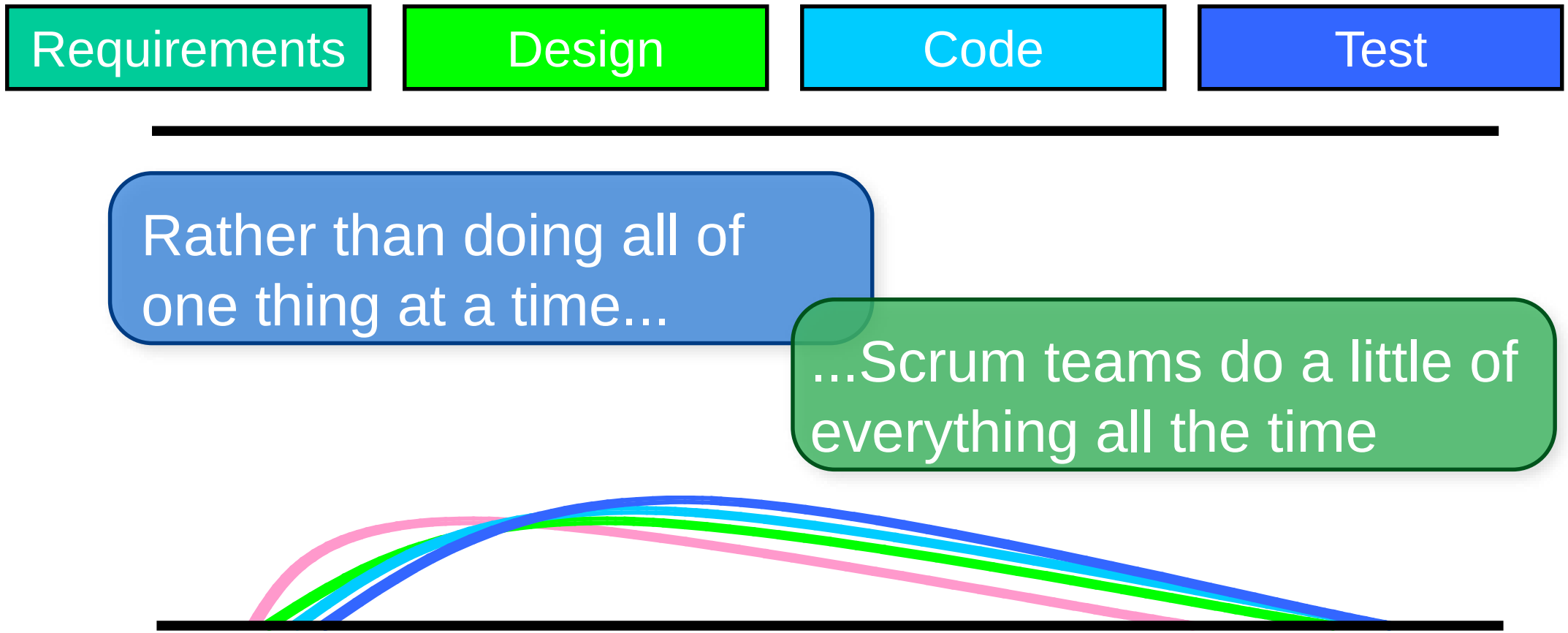

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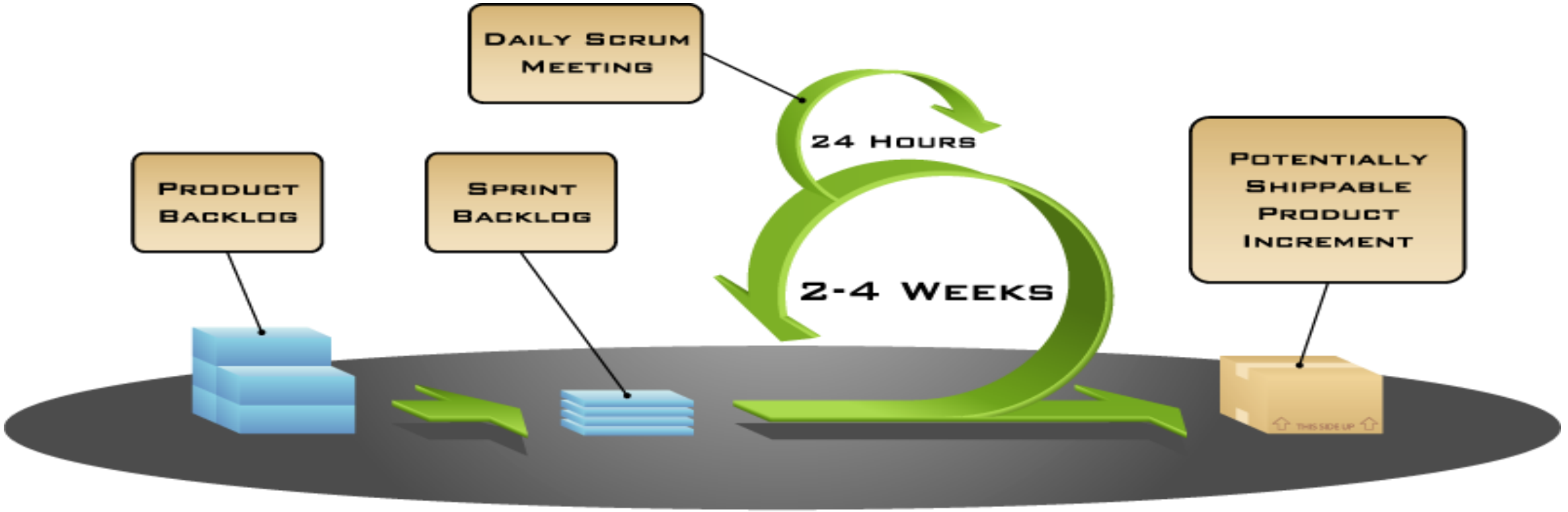
Putting it all together



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Product backlog

This is the product backlog

- **The requirements**
- **A list of all desired work on the project**
- **Ideally expressed such that each item has value to the users or customers of the product**
- **Prioritized by the product owner**
- **Reprioritized at the start of each sprint**

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Product backlog

- **A list of all desired work on the project**
- **Usually a combination of**
  - **story-based work (“let user search and replace”)**
  - **task-based work (“improve exception handling”)**
- **List is prioritized by the Product Owner**
  - **Typically a Product Manager, Marketing, Internal Customer, etc.**

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Sample Product backlog

	Item #	Description	Est	By
Very High				
	1	**Finish database versioning**	16	KH
	2	**Get rid of unneeded shared Java in database**	8	KH
	-	**Add licensing**	-	-
	3	Concurrent user licensing	16	TG
	4	Demo / Eval licensing	16	TG
		Analysis Manager		
	5	File formats we support are out of date	160	TG
	6	Round-trip Analyses	250	MC
High				
	-	**Enforce unique names**	-	-
	7	In main application	24	KH
	8	In import	24	AM
	-	**Admin Program**	-	-
	9	Delete users	4	JM
	-	**Analysis Manager**	-	-
	10	When items are removed from an analysis, they should show up again in the pick list in lower 1/2 of the analysis tab	8	TG
	-	**Query**	-	-
	11	Support for wildcards when searching	16	T&A
	12	Sorting of number attributes to handle negative numbers	16	T&A
	13	Horizontal scrolling	12	T&A
	-	**Population Genetics**	-	-
	14	Frequency Manager	400	T&M
	15	Query Tool	400	T&M
	16	Additional Editors (which ones)	240	T&M
	17	Study Variable Manager	240	T&M
	18	Haplotypes	320	T&M
	19	**Add icons for v1.1 or 2.0**	-	-
	-	**Pedigree Manager**	-	-
	20	Validate Derived kindred	4	KH
Medium				
	-	**Explorer**	-	-
	21	Launch tab synchronization (only show queries/analyses for logged in users)	8	T&A
	22	Delete settings (?)	4	T&A

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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

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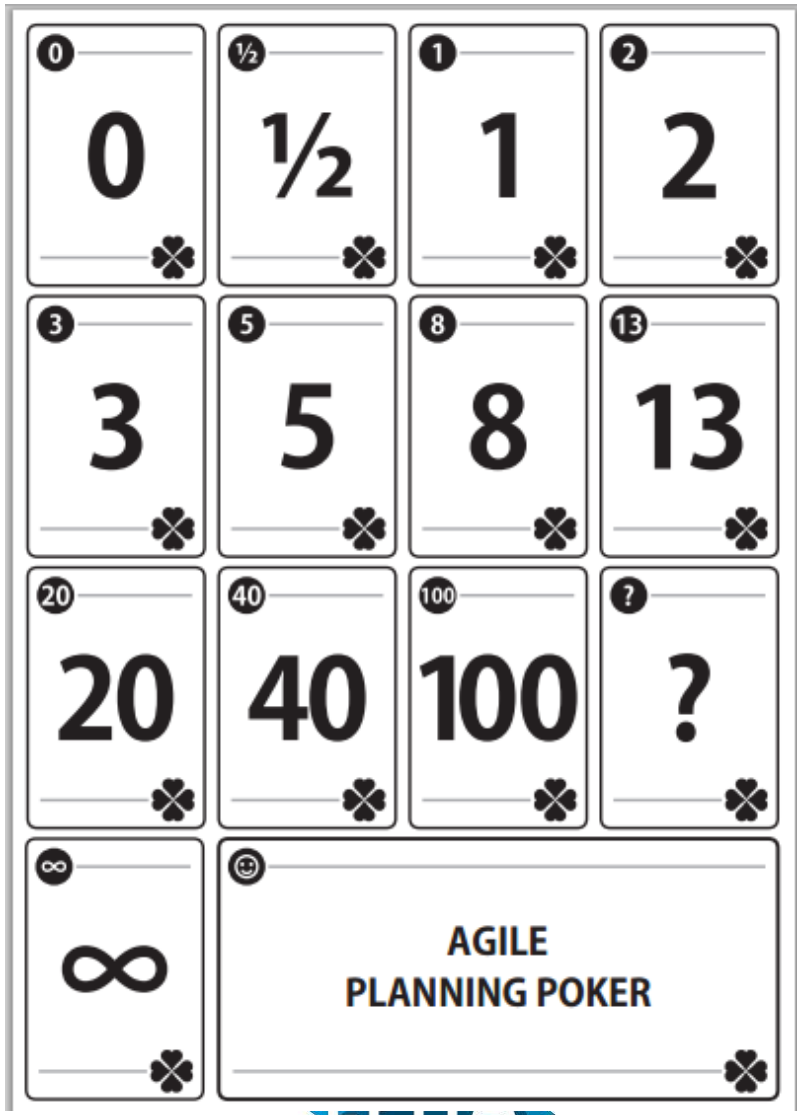
0
0
½
½
1
1
2
2
3
3
5
5
8
8
13
13
20
20
40
40
100
100
?
?
∞
∞
AGILE
PLANNING POKER

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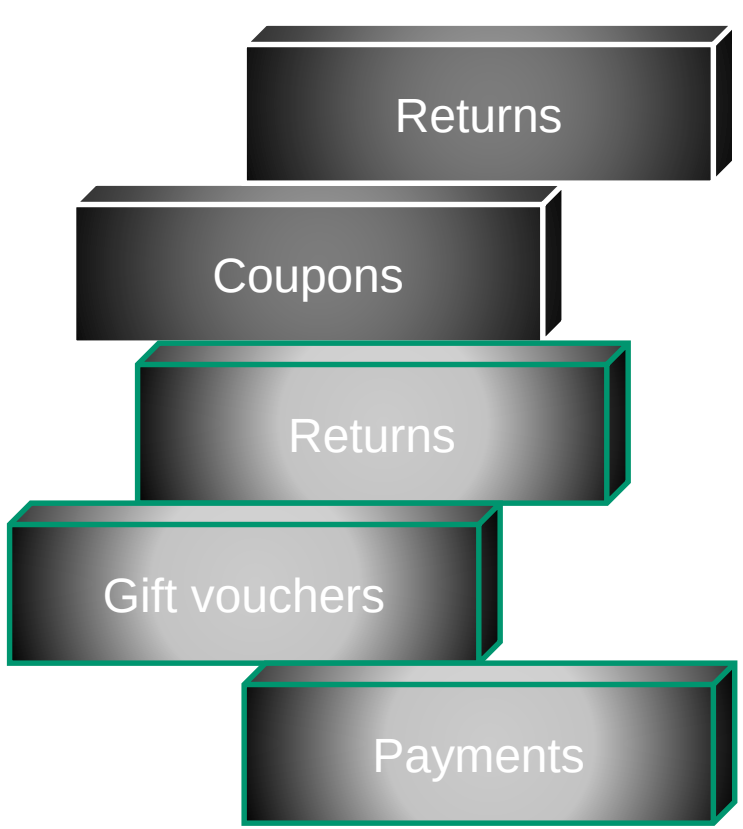
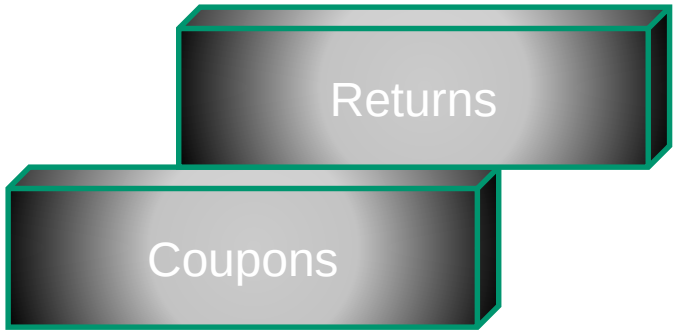


Prioritized Product backlog



Sprint backlog

Sprint goal

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The Sprint Goal : a short theme for the Sprint

Life Sciences
"Support features necessary for population genetics studies."

Database Application
"Make the application run on SQL Server in addition to Oracle."

Financial Services
"Support more technical indicators than company ABC with real-time, streaming data."

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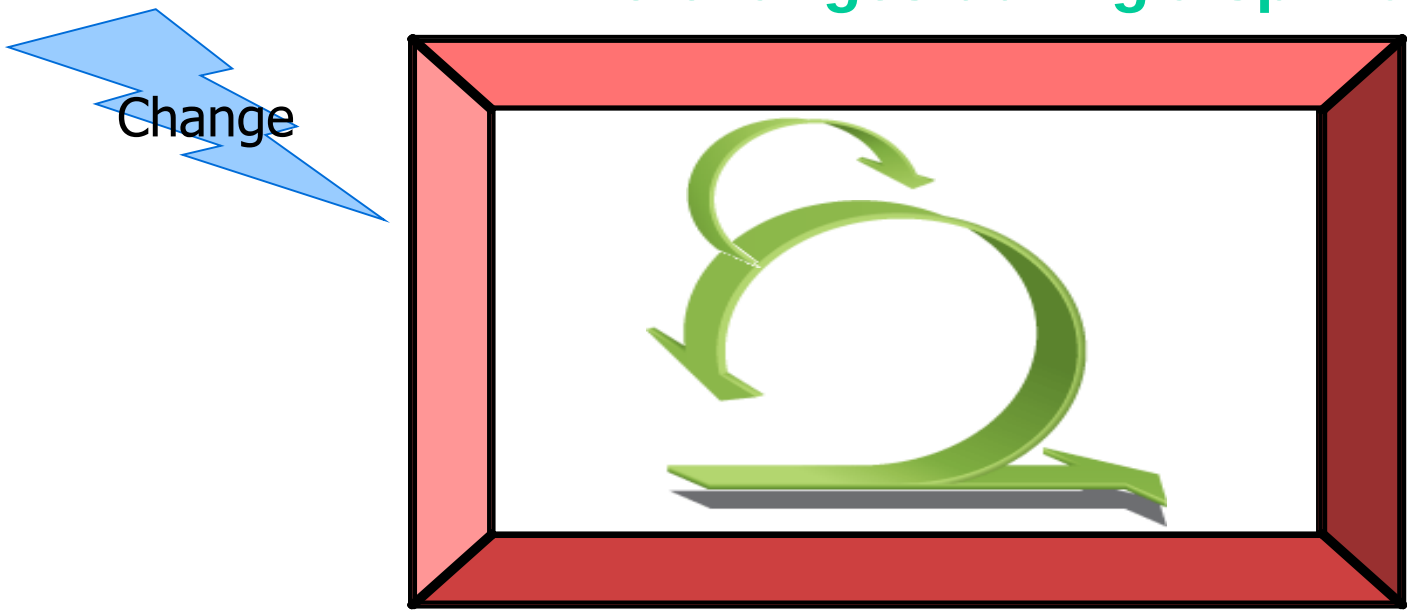
No changes during a sprint



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

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A Sprint backlog

Tasks	Mon	Tues	Wed	Thur	Fri
Code the user interface	8	4	8		
Code the middle tier	16	12	10	4	
Test the middle tier	8	16	16	11	8
Write online help	12				
Write the foo class	8	8	8	8	8
Add error logging			8	4	

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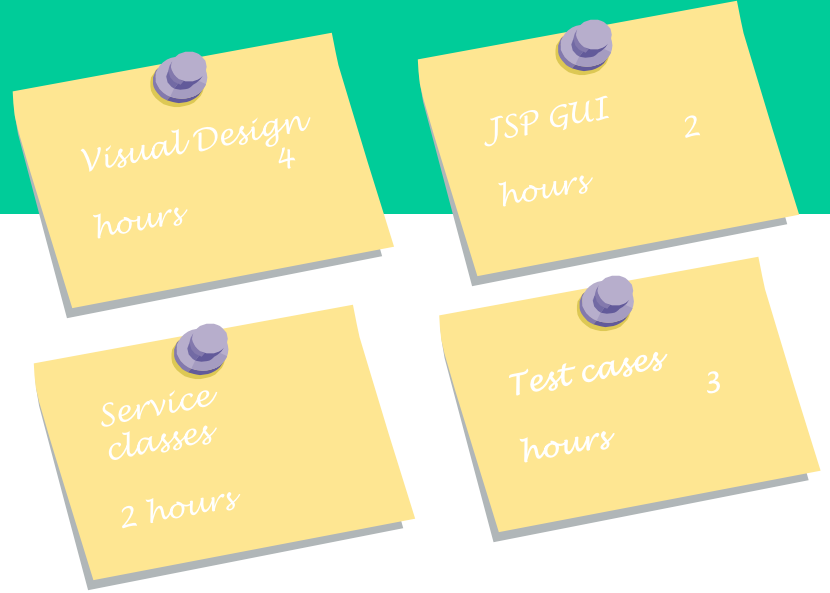


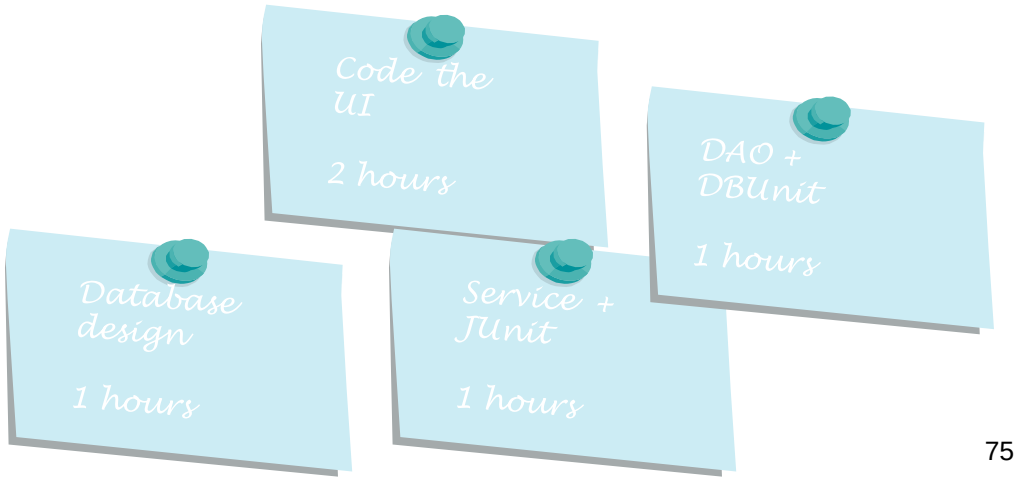
Returns

Sprint backlog

Team builds

Tasks

Coupons



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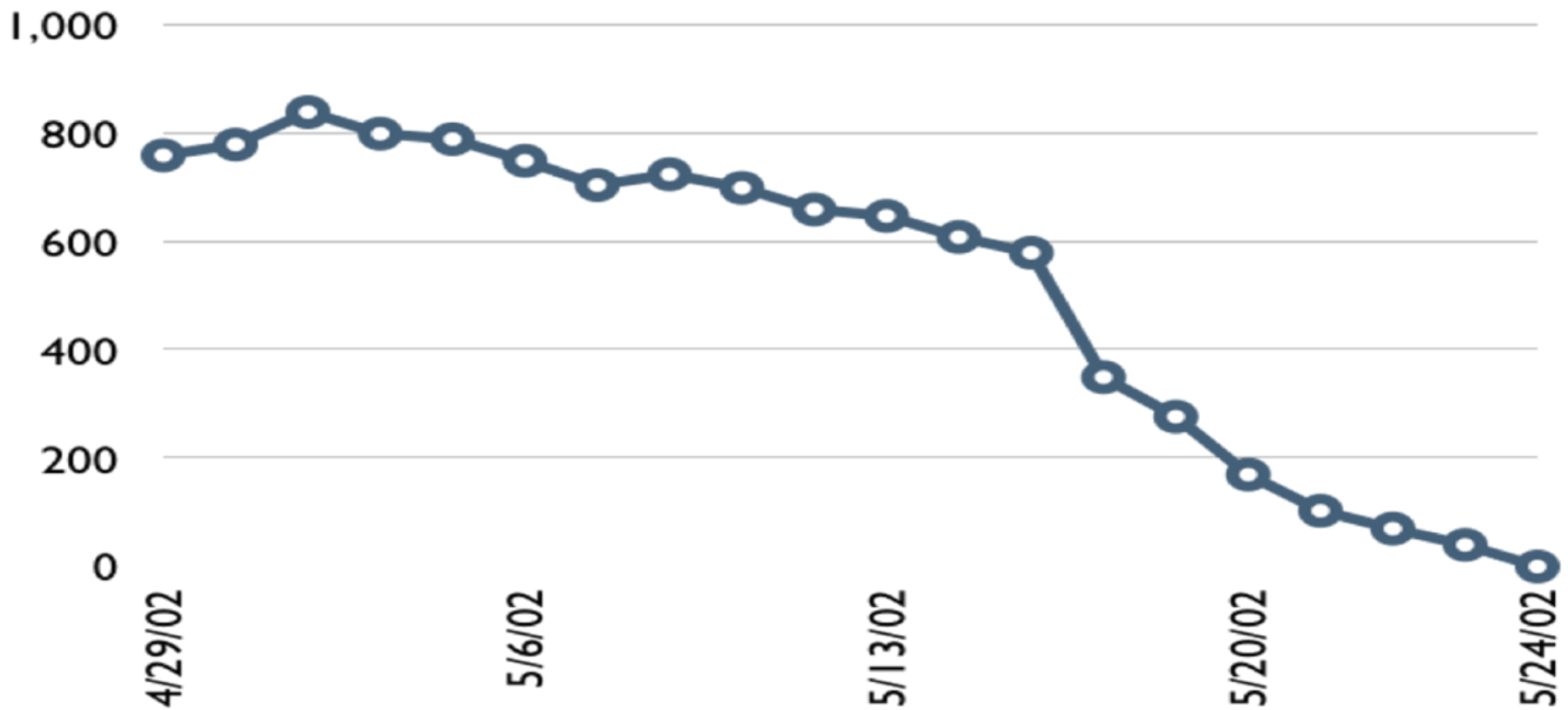
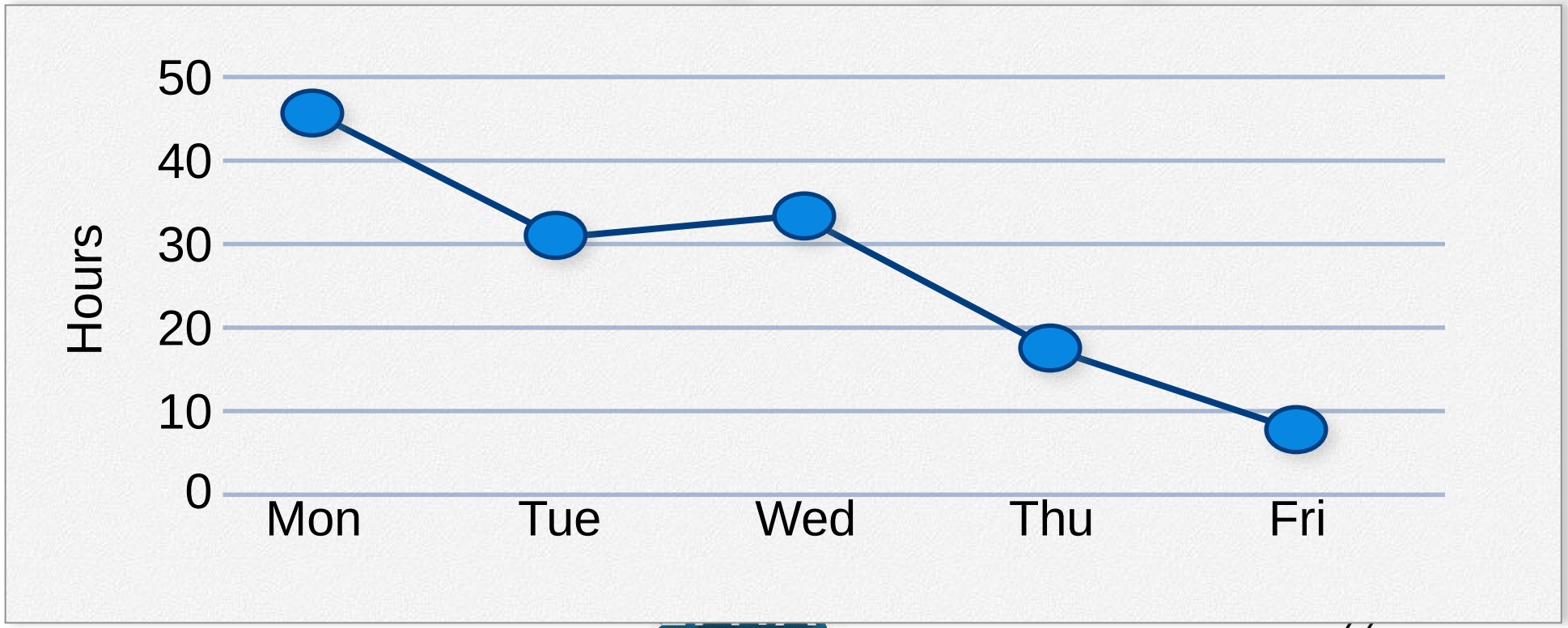
A sprint burndown chart



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				



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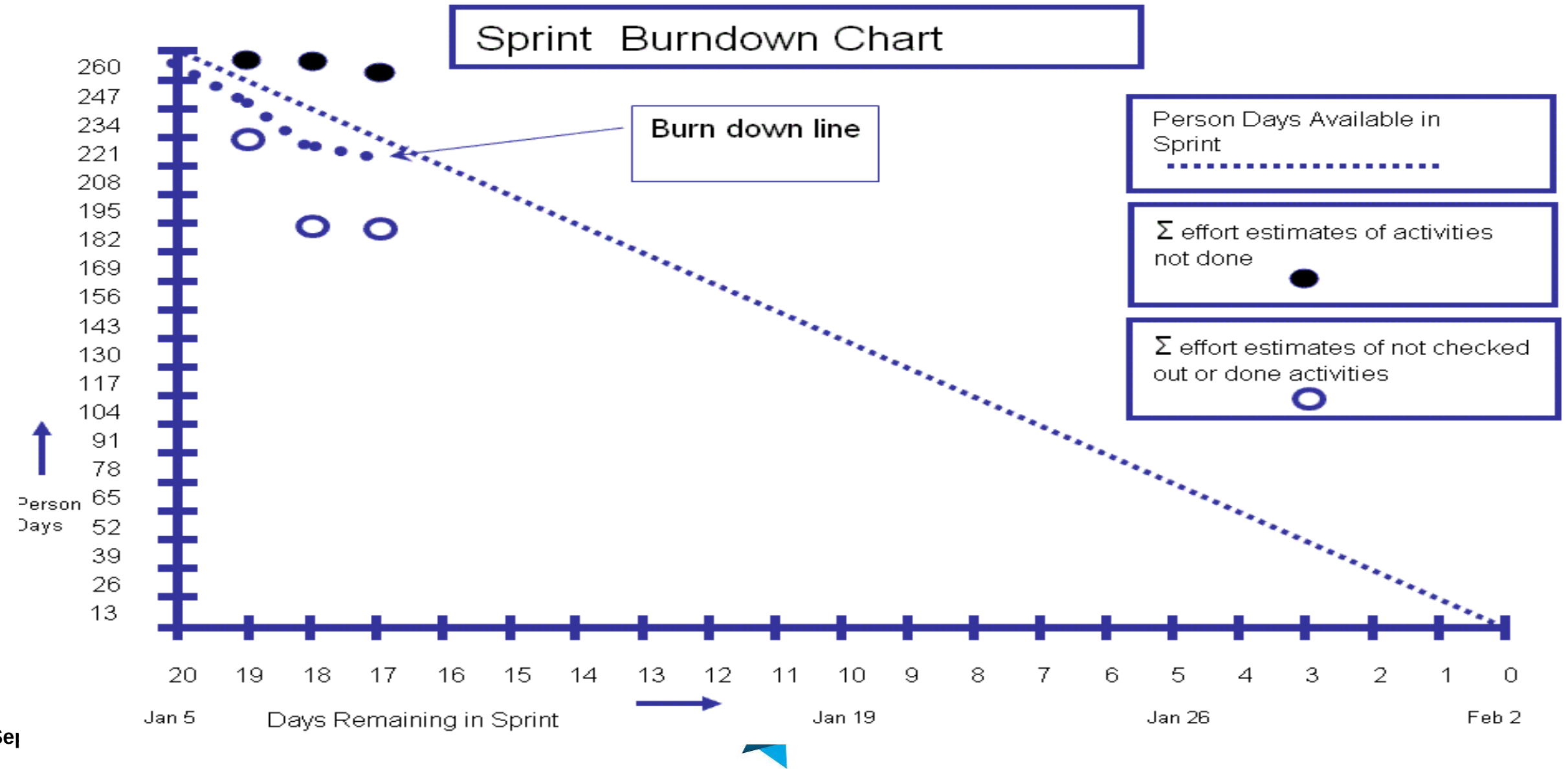
Sprint Burndown Chart
Burn down line
Person Days Available in Sprint
Σ effort estimates of activities not done
Σ effort estimates of not checked out or done activities
260
247
234
221
208
195
182
169
156
143
130
117
104
91
78
65
52
39
26
13
Person Days
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Jan 5
Days Remaining in Sprint
Jan 19
Jan 26
Feb 2

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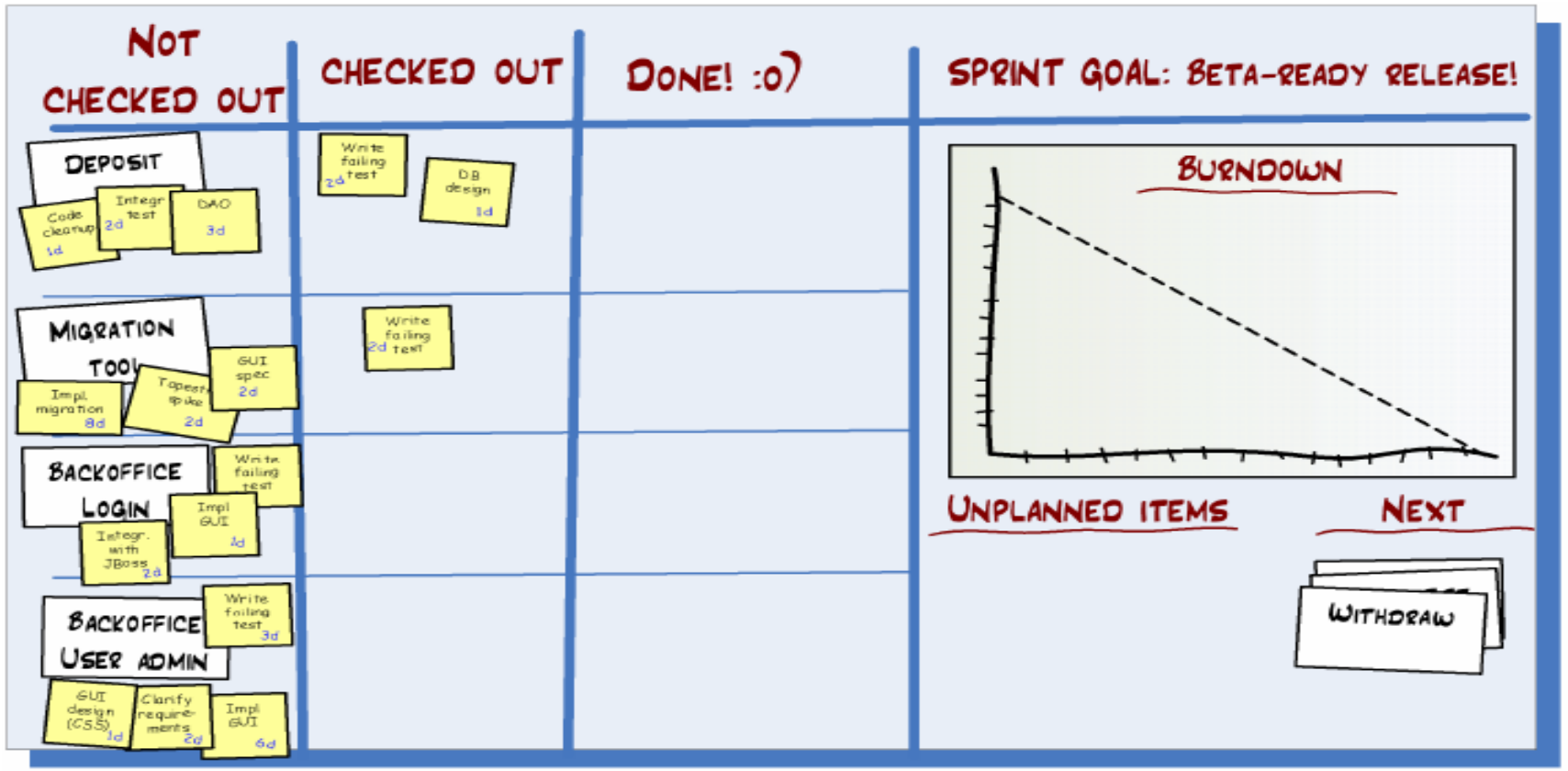
Process



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**

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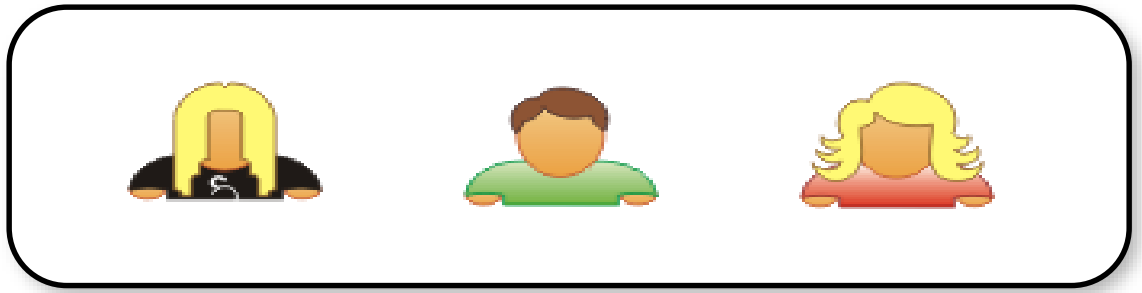
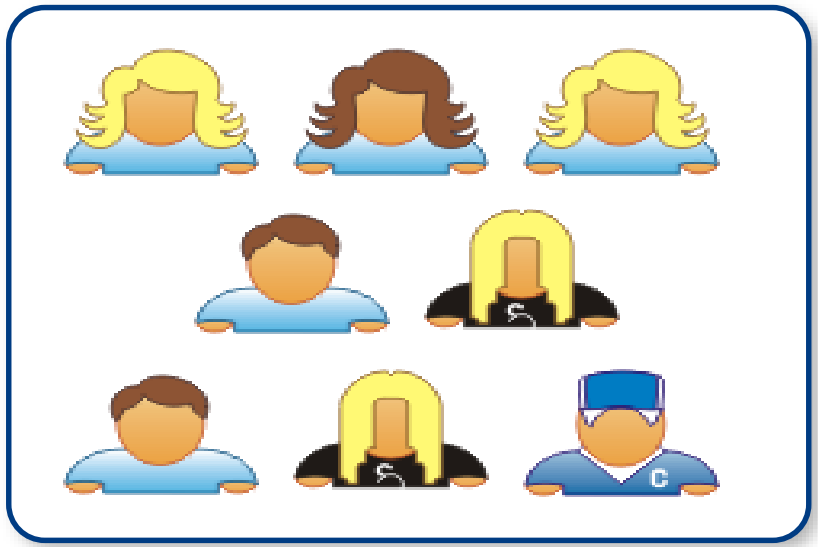
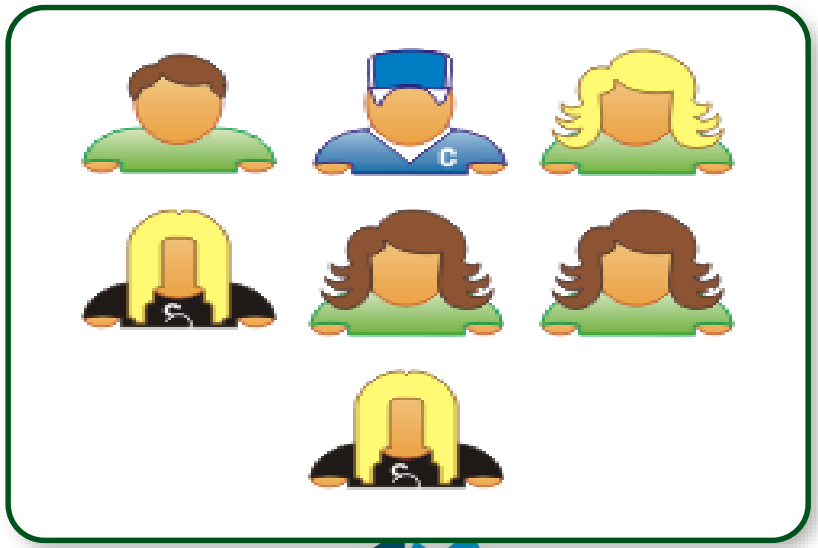
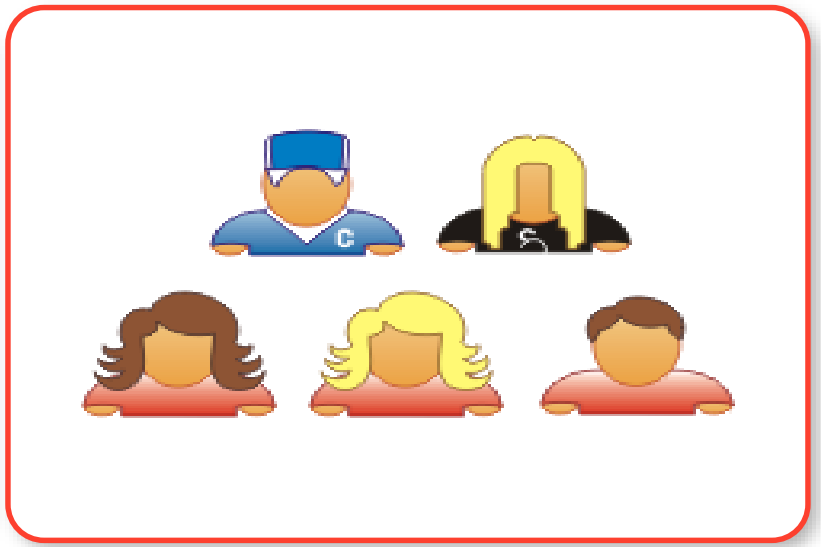
Scaling through the scrum of scrums









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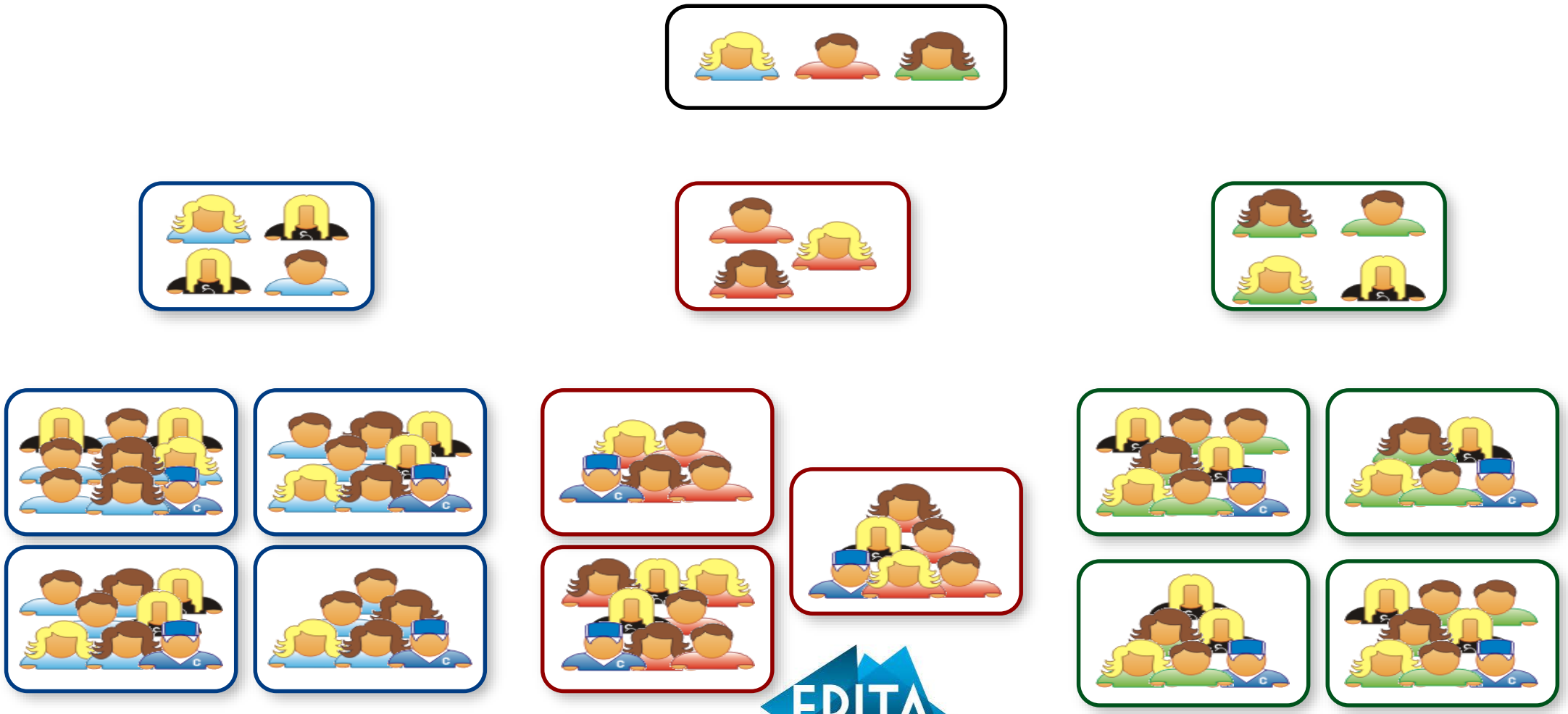
And scrum of scrums of scrums



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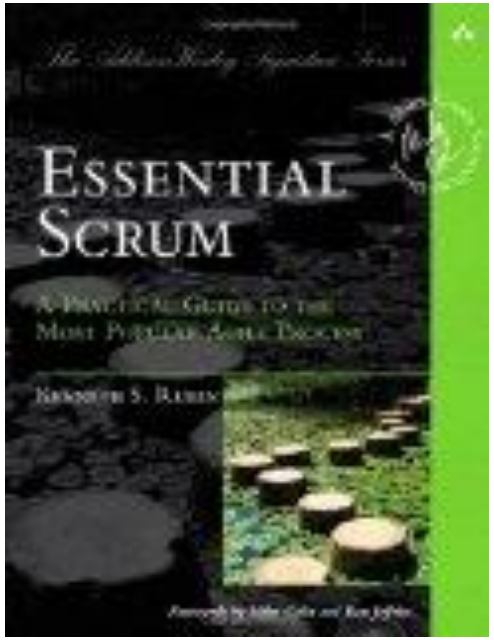
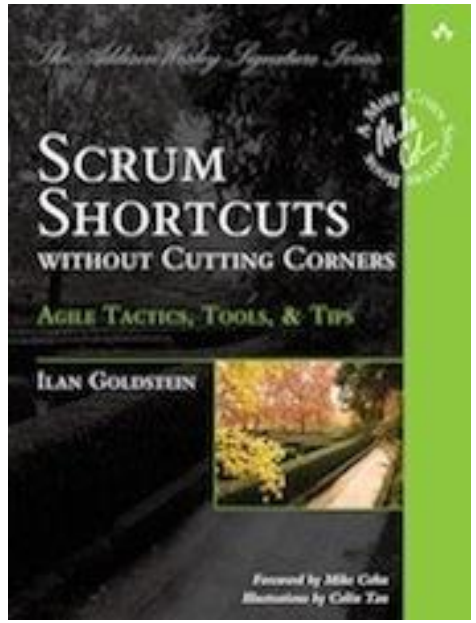
Reference books





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