

Agile digital business process development

Managing your MOT1531 project

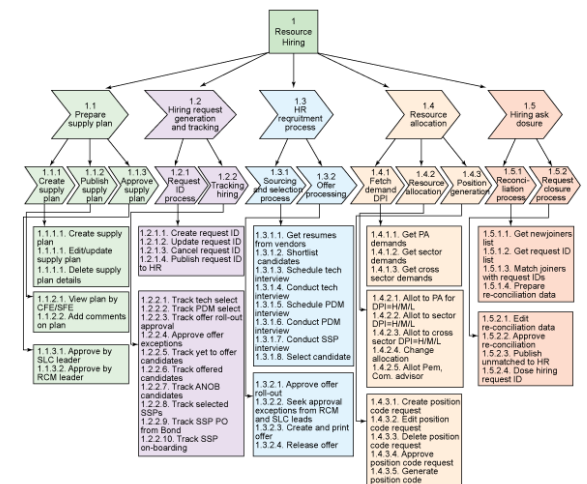
Prof.dr.ir. Marijn Janssen

Assignment and grading

- Students will collaborate in groups to make an assignment which should contain the analyses and design of a business process. The assignment consists of three parts
 - *Analysis*: Students select a company, analyse their strategy and select a critical business process. The existing process should be modelled and the resulting product, stakeholders role, customer needs and technology used should be analysed
 - *Improvement*: Based on the improvement methods and instruments a proposal for improvements should be made
 - *Realization*: The proposed business process should be realized using a technology architecture
- Students are expected to prepare a presentation and some of the groups will present these during the lectures
- Groups are around 6 persons
- The mid-term and final presentation should be a pass
- Grade for the report is the final grade
- *Presentations should be handed the day before noon (12:00) on the day before the presentation takes place using BrightSpace (deadline enforced by the system)*

Selecting a business process

- Is it a business critical process? When it halts, how long can you afford this? In hours, days or weeks? What would be the loss in terms of opportunity costs?
- Complex: Does the process consists of many tasks?
- Has the business process much risks and disturbances which affect the customer?
- For all business processes there is a beginning and an end. We can formulate this as: “from grass to glass”, or “from order to cash”. What would your formulation be for your process? What is the beginning and what is the end? At the end there is a customer. Is the customer satisfied?
- Are effected by technology (social media, IoT, semantic web, BOLD, clouds, ...)
- Can be processes from public and private organization or operating in networks
- Have high improvement potential (Not efficient, complaints, ..)
- Example:
 - Service desk (why can't they answer my question),
 - product ordering (why does it take so long),
 - buying clothes or other products,
 - any (service centre) contacts with organizations,
 - past experience, or
 - any frustration you might have.



Some examples

- A restaurant (no cold food)
- 3D printing (new technology for faster delivery)
- A service desk (of a non-responsive energy company)
- ADSL ordering process (internet at home takes so long)
- Outdoor event organization
- Home care services
- Supermarket payment process (waiting queues and new technology)
- Online and offline fashion store
- Travelling by plane
- Shoe shop
- Hospital emergency unit
- Travelling to school/work
- ...

Schedule

Week	Date	Room	Topic	Material	Lecturer
1	Mo 12 Feb 3,4	Flux Hall A (39.00.00.500)	Agile development for improving business processes and technology	Reader	Marijn Janssen
	Th 15 Feb 3,4	Flux Hall C (39.00.00.300)	Practical work: strategy, business process and Balanced Score Card (BSC) or process performance measurement,	Kettinger et al. (1997). Business Process Change: A study of methodologies, techniques, and tools. Kaplan R.S. and Norton D.P. (1992). The balanced scorecard: measures that drive performance, <i>Harvard Business Review</i> , Jan – Feb pp. 71–80	Marijn Janssen
2	Mo 19 Feb 3,4	Aula-Lecture Hall D (20.02.460)	Internet of Things (IoT) enhancing business processes	Holdowsky, J., M. Mahto, M.E. Raynor, & M. Cotteleer (2016). <i>Inside the Internet of Things (IoT). A primer on the technologies building the IoT</i> . Deloitte University Press (on BB)	Aaron Ding
	Th 22 Feb 3,4	Flux Hall A (39.00.00.500)	Process transformation and architecture in practice	Weerakkody et al. (2011). Transformational Change and Business Process Reengineering (BPR) Ch. 4*	Lars Leekers (guest lecture)
3	Mo 26 Feb 3,4	ME-Lecture Hall B - Isaac Newton (34.A-0-720)	Aligning strategy and processes, value perspective, supply chains. Workflow, resources and business process management (BPM)	Ch. 2* Ch. 6.1 -6.3*	Marijn Janssen
	Th 29 Feb 3,4	ONLINE	<i>mid-term presentations (online)</i>	Pecha Kucha – 15 min	Marijn Janssen & Fernando Kleiman
	Fr, 1 March 1,2,3,4				
4	Mo 4 March 3,4	ME-Lecture Hall B - Isaac Newton (34.A-0-720)	Improvement methodologies (LSS, lean, six sigma, theory of constraints, ..)	Bonaccorsi et al. (2011). Service Value Stream Management (SVSM) Ch. 6.4-6.7 (remaining parts of ch. 6) *	Marijn Janssen
	Th 7 March 3,4	Flux Hall A (39.00.00.500)	Business process modeling (concepts, BPMN and CMMN), root-cause analyses <i>practical work</i> Tip: use Adonis, Bizagi or Visio etc. for modeling	6.5.4 -6.5.5*. +assignment BPMN introduction: https://www.youtube.com/watch?v=Uk6WaW9QWn8	Marijn Janssen
5	Mo 11 March 3,4	ME-Lecture Hall B - Isaac Newton (34.A-0-720)	Compliance by design, privacy-by-design, build-in-controls in business processes	Sadiq et al. (2009) The journey to business process compliance	Marijn Janssen
	Th 14 March 3,4	Flux Hall A (39.00.00.500)	Practical work: Activity-based Costing (ABC), simulation for business process improvement Statistical analyses and improvement + <i>practical work</i>	Ch. 10*	Marijn Janssen
6	Mo 18 March 3,4	ME-Lecture Hall B - Isaac Newton (34.A-0-720)	Business process management in practice - BPM company		Maarten Veger, (guest lecture)
	Th 21 March 3,4	Flux Hall A (39.00.00.500)	(Optional) Digital Business Process Game – T-Shuret	No delays: students willing to join the game session need to be there on-time – it is not possible to join after the session has started.	Fernando Kleiman
7	Mo 25 March 3,4	ONLINE	<i>Final presentations (online)</i>		Marijn Janssen & Fernando Kleiman
	Th 28 March		No Lecture – groups should work on their assignments		
Assignment deadline: Wednesday 3 April (or earlier)					

Course objectives

The overall aim of the course is to learn how to improve the relationship between business processes, strategy and technology for realizing organizational strategies. The focus is on realizing business processes enabled by new technology for high tech organizations. In particular the objectives are

- To analyze the relationship between business processes, strategy and technology
- to understand new technologies and their impact on business process management
- to have knowledge of methods and tools for improving business processes
- to analyse and provide improvement suggestions for business processes
- to design a technology architecture for supporting business processes
- to report about the process, technology, strategy and methods and tools for improvement

Assignment and grading

- Students will collaborate in groups (6 persons) to make an assignment which should contain the design of a process and a technical architecture. The assignment consists of three parts
 - *Analysis*: Students select a company, analyse their strategy and select a critical business process. The existing process should be modelled and the resulting product, stakeholders role, customer needs and technology used should be analysed.
 - *Improvement*: Based on the technology developments, improvement methods and instruments a proposal for improvements should be made in a structured and systematic manner
 - *Realization*: The proposed business process should be realized using a technology enterprise ICT-architecture (ICT constraints and enables new processes).
- All groups are expected to prepare a presentation
- *Presentations should be handed the day before noon (12:00) on the day before the presentation takes place*

Generative AI



can you draw a business process starting with a cow and ending with a dinner?



Sure, here is a concise representation of a business process starting with a cow and ending with a dinner:



1. Cow breeding and raising
2. Slaughter and processing
3. Distribution to retail stores or restaurants
4. Preparation and cooking
5. Serving to customers as a meal.

- Reflect on the use of ChatGPT – how did you use this and what did you learn from this?

Simple example business process improvements

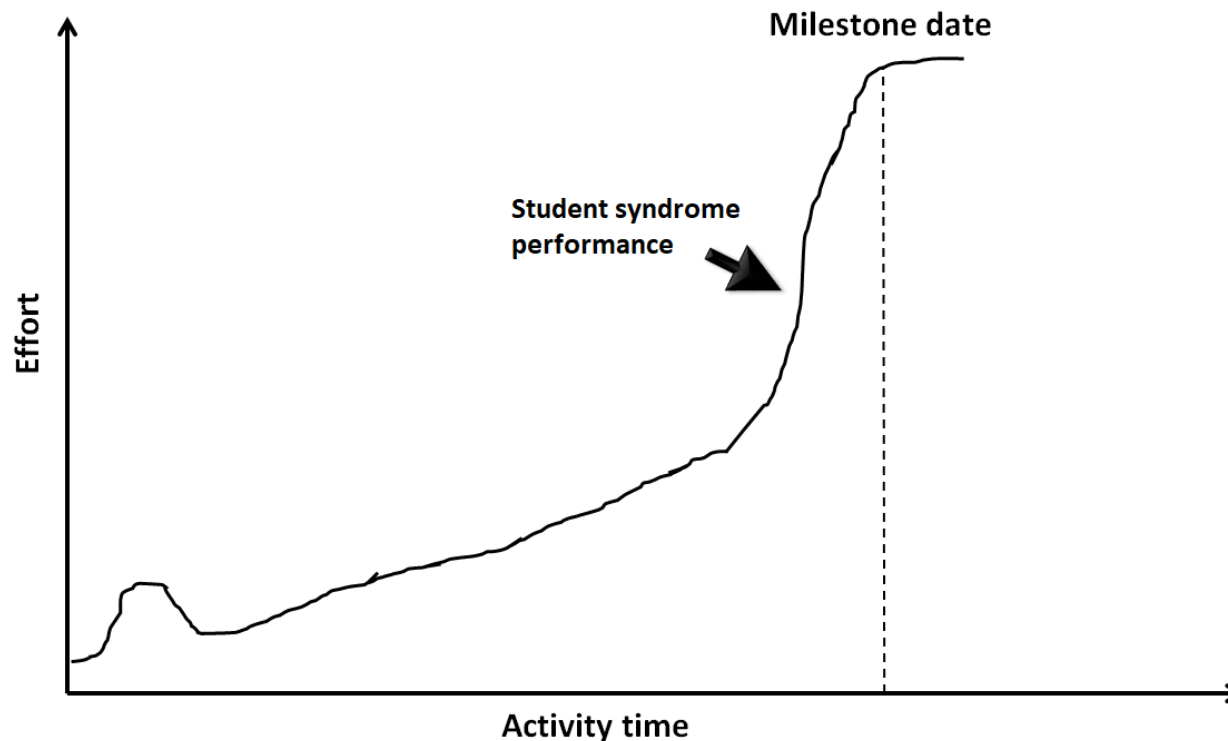
- Business process: serving customers in a restaurant
 - Start: reserving a table or arriving customers in the restaurant
 - End: leaving the restaurant
- Analysis:
 - Strategy focussed on high-end costumers
 - Shortage of staff in the sector
 - people complaint that they have to wait for a long time
 - Food is cold when served
- Improvement directions:
 - Use Smartphones and Tablets for ordering
 - Change tables to ensure waitress can walke more easily
 - Introduce Kanban for cook
- Evaluation: No cold food! Customers are 😊



Pictures generated by GenCraft 11 Feb2024

Why agile working for this course?

- 80 / 20 Rule and students syndrome
 - 80% of the Work Happens in the Last days
 - 20% of Elapsed Time for the Project



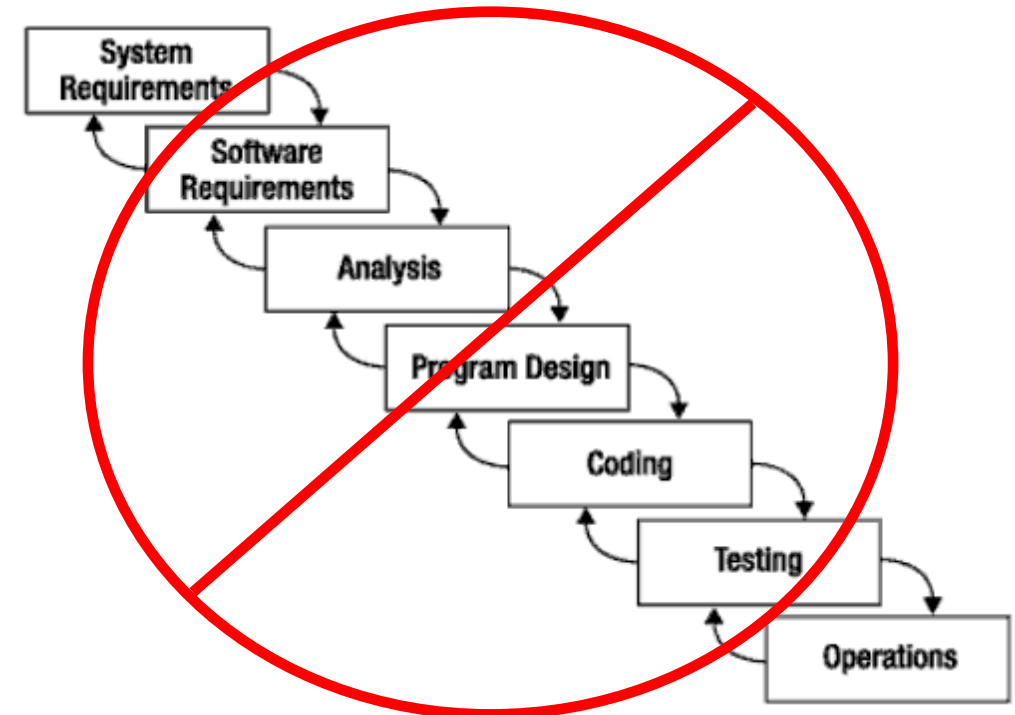
Lecture goals

- To understand differences between waterfall and agile
- To be able to work in agile teams in a large (software) project
- To understand the basic steps
- To be able to view a project as a business process

Traditional Thinking

Traditional project management used for
software development = Waterfall Method

Requirements
Design
Implementation
Verification
Maintenance



Problems with Waterfall Method

- Difficult to accommodate change once a process is underway
- Phases must be completed in a sequential order
- Difficult to respond to changing customer requirements
- Few business systems have stable requirements



How the customer explained it



How the project leader understood it



How the analyst designed it



How the programmer wrote it



How patches were applied



What the customer really needed

Agile Thinking

- A group of software development methodologies based on iterative incremental development
- Simply, a different way to manage IT projects, teams, or any work involving a complex process

Agile Manifesto

Individuals and interactions

over process and tools

Working Software

over comprehensive documentation

Customer collaboration

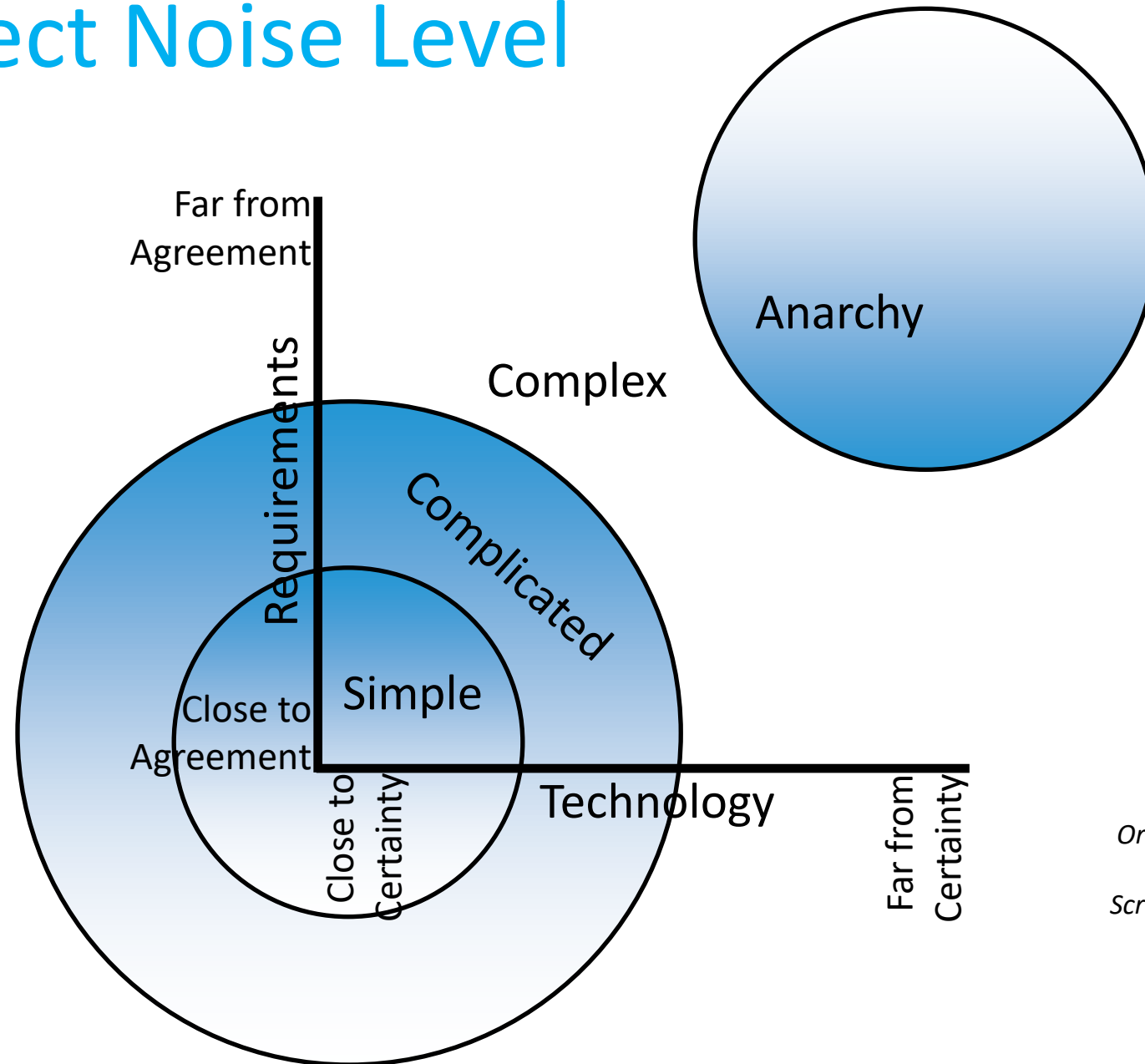
over contract negotiation

Responding to change

over following a plan

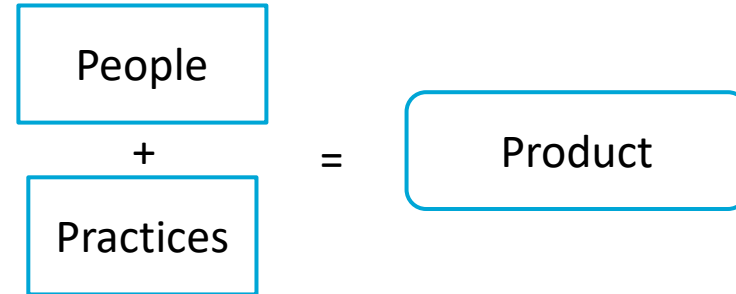
That is, while there is value in the items on the right, we value the items on the left more.

Project Noise Level



Source: *Strategic Management and Organizational Dynamics* by Ralph Stacey
in *Agile Software Development with Scrum* by Ken Schwaber and Mike Beedle.

Key Scrum Beliefs



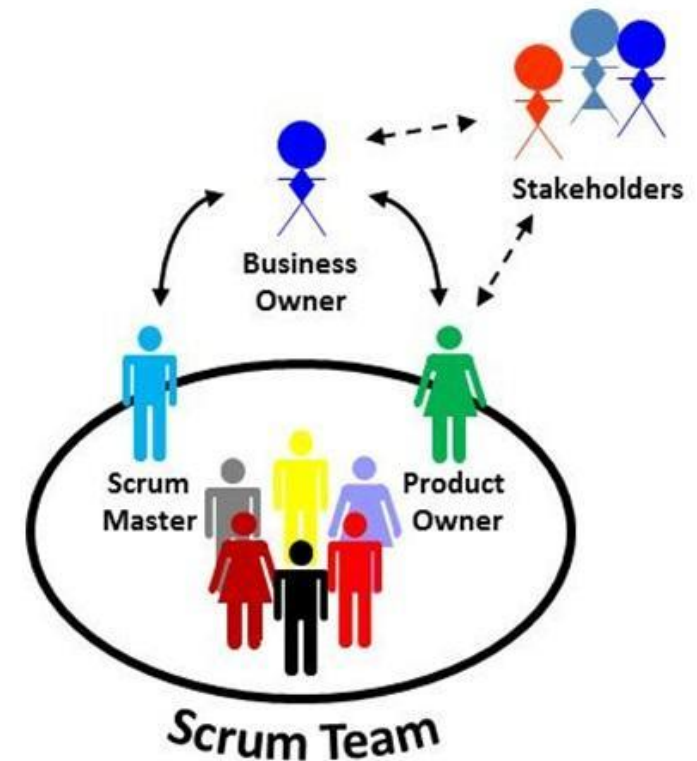
Scrum requires a mental shift in the way people think

- A preference of People over Practices: understanding that solving complex problems requires brainpower, not recipes;
- An understanding that the best Products are developed by having a Focus on User's Needs rather than relying on a requirements document;
- The acceptance that Reality Trumps Expectations, so when reality and expectations don't match, it is the expectations that must change;
- The preference for Self-Organizing Teams over either lone-wolf-ism or tightly controlled management; and
- The realization that each of us is part of a Team developing Product and that we are not simply People doing Work.

The Scrum Team

The Scrum Team is a small (ideally 5-9) group of people that provides useful Products and Results for Stakeholders.

- **Stakeholders**
 - The most important role involved in Scrum
 - The reason a Team is developing a Product
- **Business Owner (BO)**
 - A special stakeholder, often the Team's sponsor or champion and controls the budget for the Team
- **Product Owner (PO)**
 - Most important person on the Scrum Team
 - Works with Stakeholders to represent their interests to the Team
 - Held accountable for the value of the Team's results
- **Scrum Team Members**
 - Do the work (analysis, design, code, test, document, data quality checks, or whatever work is required for a desired outcome)
- **Scrum Master (SM)**
 - Facilitator, moderator, and coach
 - Manages relationship between the PO and the Scrum Team
 - Focuses on team improvement



12 Principles behind the Agile Manifesto (1)

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

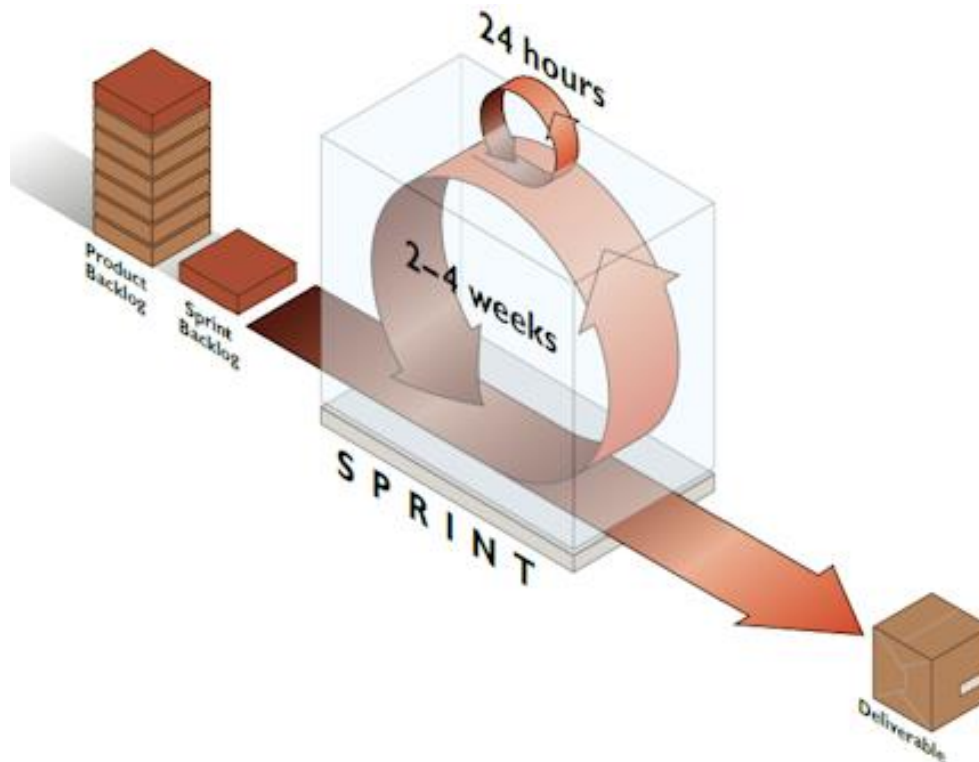
12 Principles behind the Agile Manifesto (2)

- 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.
- 9. Simplicity--the art of maximizing the amount of work not done--is essential.
- 10. The best architectures, requirements, and designs emerge from self-organizing teams.
- 11. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

The Sprint

- Fundamental process flow of Scrum
- A short, fixed-length period of time
- Goal is to produce Backlog Items into renewable products that Stakeholders can provide feedback on
- Sprint Planning allows the PO to work with the Team to negotiate what Backlog Items the Team will work on in order to meet Release Goals
- Scrum Master ensures Team agrees to realistic goals

The Sprint

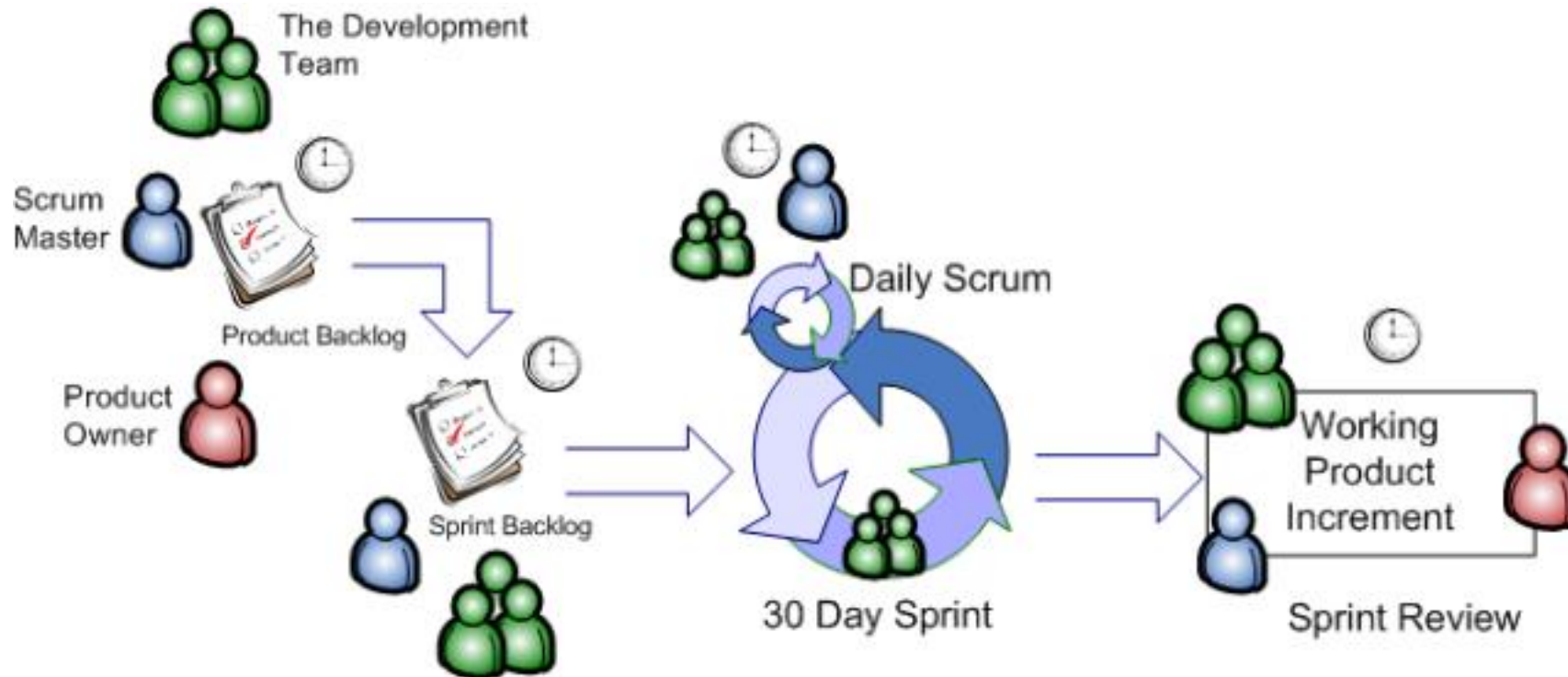


- Sprint Planning
- Daily Scrum
 - Daily Standups
- Sprint Review
- Sprint Retrospective

Scrum roles and artifacts

Scrum meeting

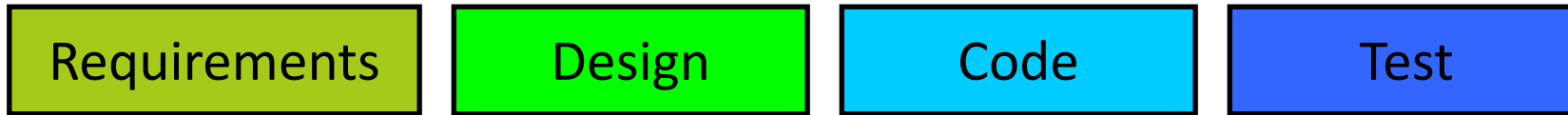
1. Sprint planning meeting
2. Daily standup meeting
3. Sprint review meeting



Sprint planning meeting

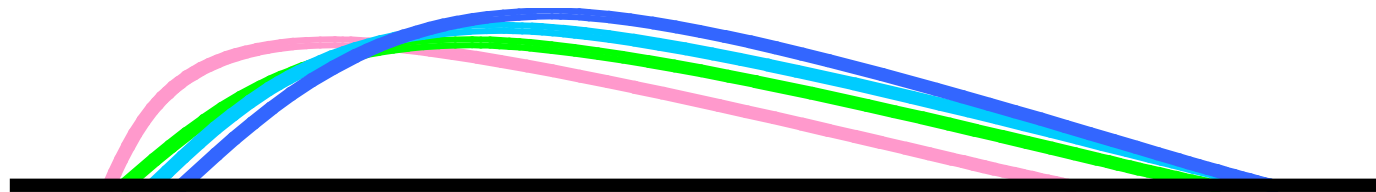
- Stakeholders to refine and re-prioritize the Product Backlog and Release Backlog and to choose the goals for the next iteration, usually driven by the highest business value and risk
- Scrum team and Product Owner meet to consider how to achieve the requests, and to create a sprint backlog of tasks to meet the goals

Sequential vs. Overlap



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

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



Daily Standup Meeting

- Three things to talk in 5-10 minutes
 - What did I accomplish yesterday?
 - What will I do today?
 - What obstacles are impeding my progress?
- Why standup meeting?
 - Promote individual's commitment to the team
 - Promote close working relationship
 - Identify issues in timely fashion



Sprint Review Meeting

- Demo time
 - Informal
 - Anybody can attend
- Did the team achieved the sprint goal?

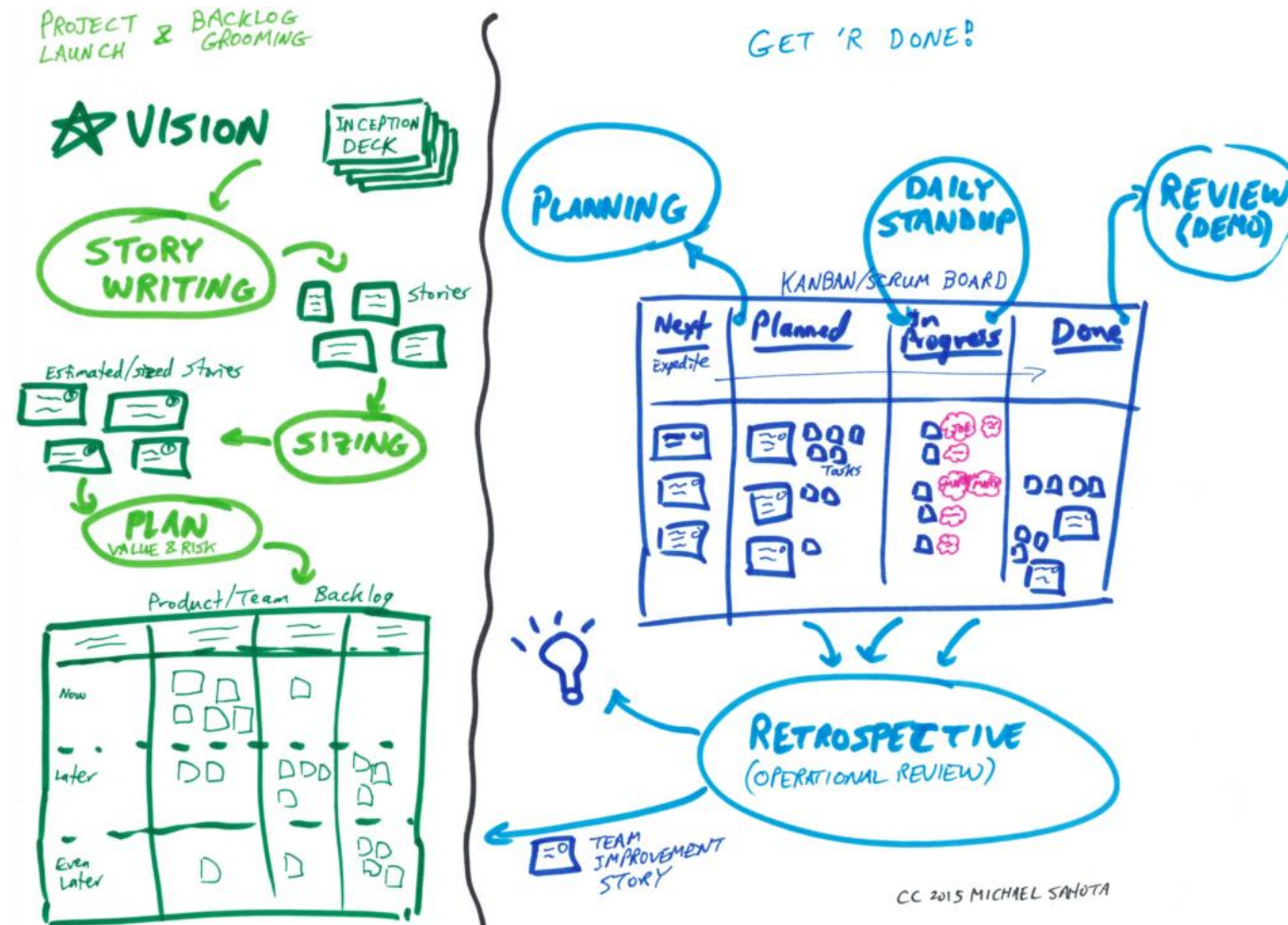
Sprint Retrospective Meeting (reflection chapter assignment)

- Find the ways to improve team' s performance
 - Start doing
 - Stop doing
 - Continue doing
- Who can attend?
 - Team, product owner, scrum master

What to do for the assignment?

- Groups of 5 persons
- Assignment of roles to team members
 - Product owner
 - One from each team (pretending)
 - Scrum Master
 - Team coordinator
 - Scrum team
 - Everyone in your team
 - Others stakeholders
 - Customers
 - Business process analysts
 - Technology development experts
 - ICT-architectures
 - ..

From vision to planning



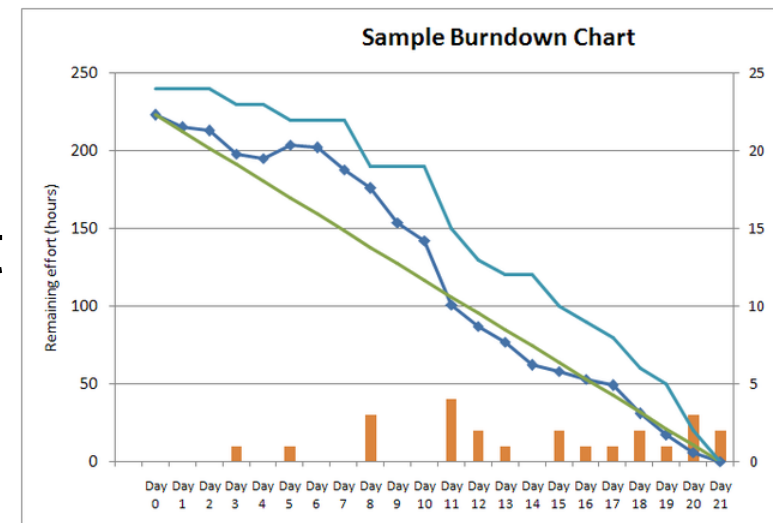
*<https://shift314.com/structure-of-kanban-energy-of-scrum-2/>

Example breakdown structure final product: report

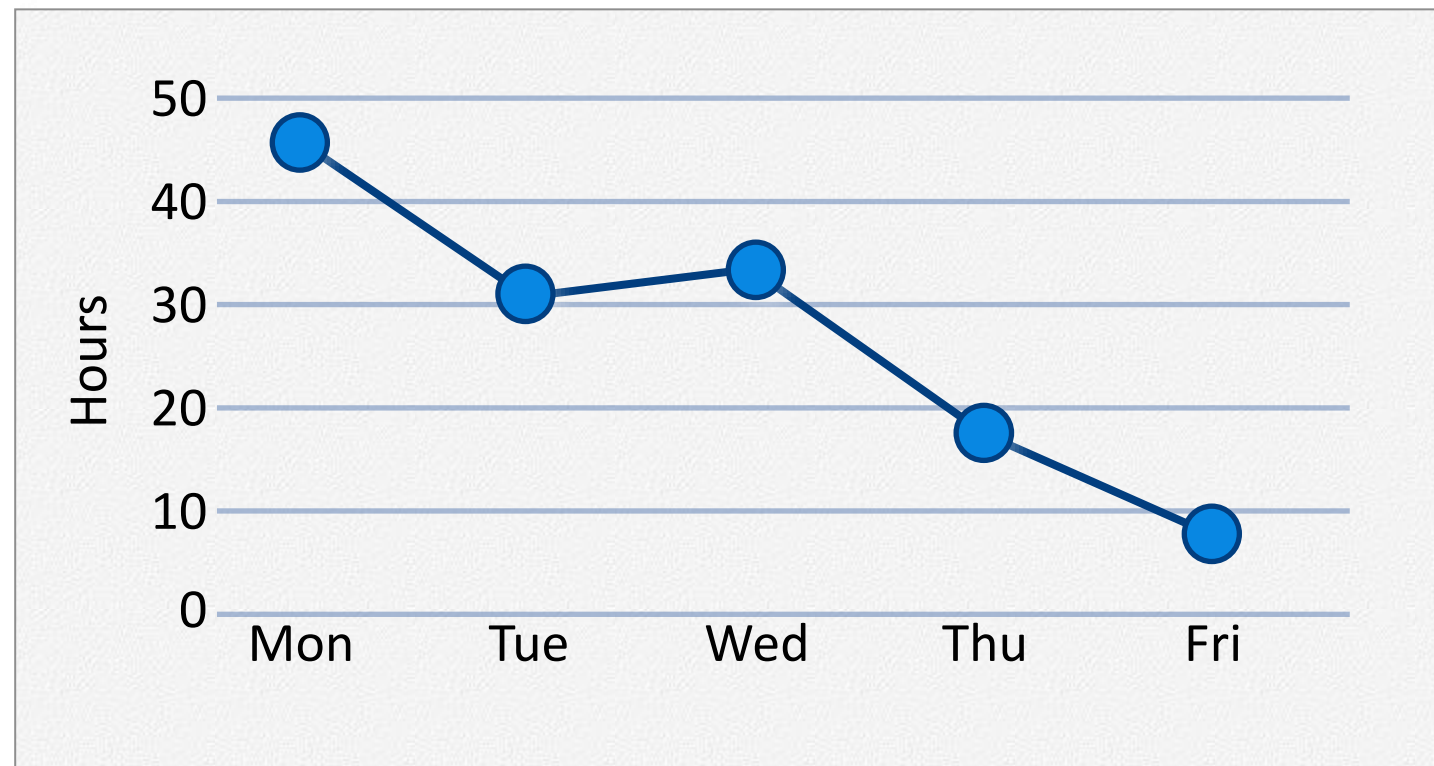
- Market analysis and technology developments
- Stakeholder analyses
- Performance indicators (Balanced Score Card)
- Descriptive models of current business process (in BPMN)
- Improvement suggestions
- Prescriptive models of 'improved' business process (in BPMN)
- Evaluation of impact (Activity-based Costing)
- ICT-Architecture for realizing impact
- Change management suggestions

Sprint Burndown Chart

- A display of what work has been completed and what is left to complete
 - one for each developer or work item
 - updated every day
 - (make best guess about hours/points completed each day)
- How many hours is 5 ECTS?
- *variation:* Release burndown chart
 - shows overall progress
 - updated at end of each sprint



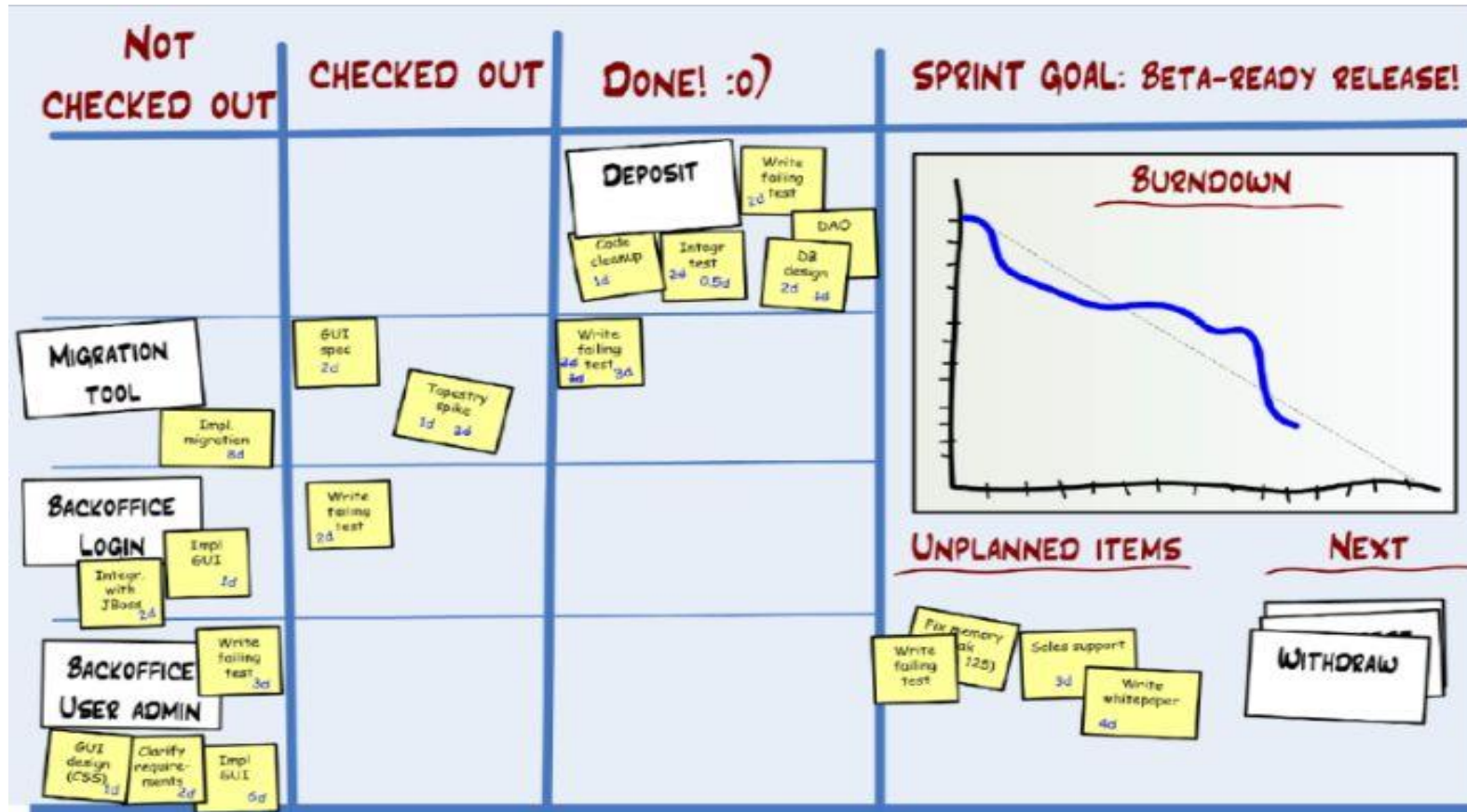
Tasks	Mon	Tue	Wed	Thu	Fri
Select business process	1	1	2		
Market overview	1		2		
Identify ICT developments	1			2	
Identify performance indicators	1		1		1



Agile Task Board

Backlog	On Deck	In Progress	Done

Agile task board and burndown Chart



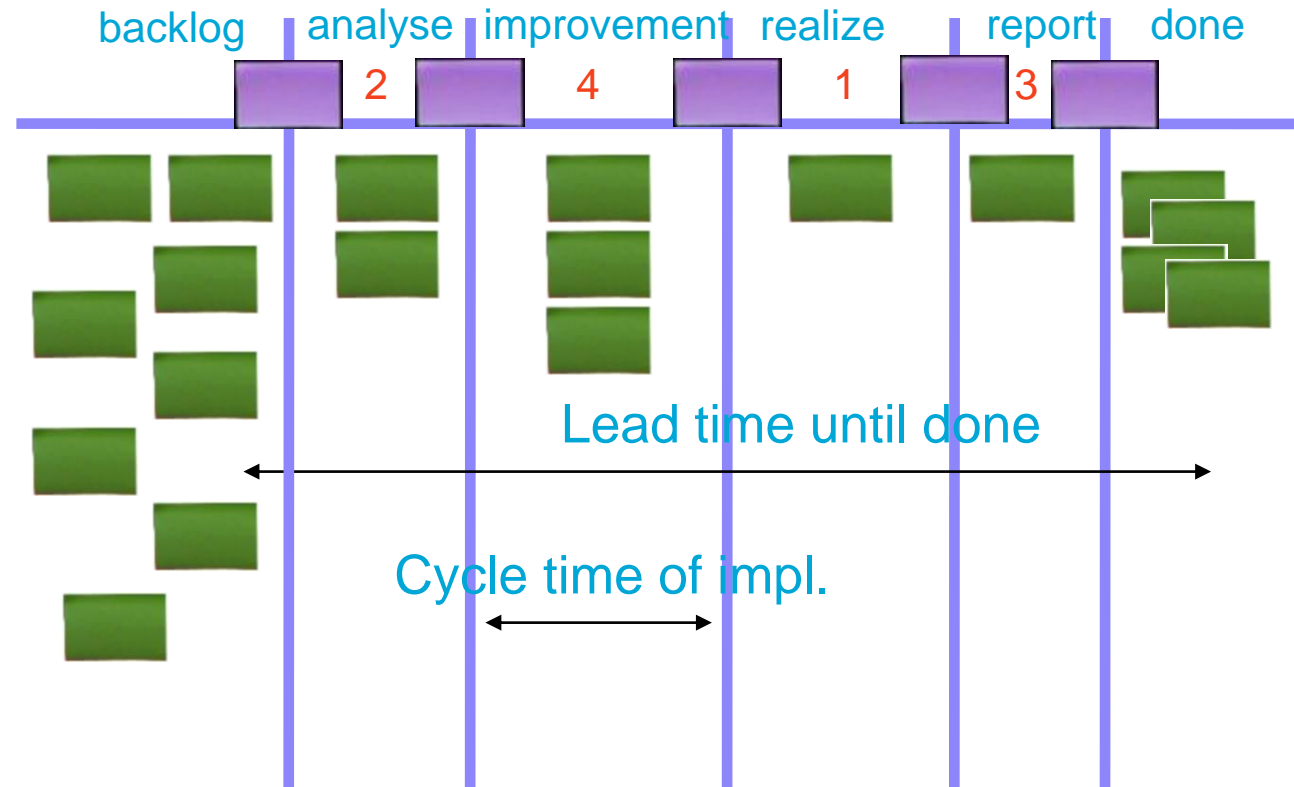
看板 – Kanban cards limit excess work in progress

- 看板 – kanban literally means “visual card,” “signboard,” or “billboard.”
- Toyota originally used Kanban cards to limit the amount of inventory tied up in “work in progress” on a manufacturing floor
- Kanban cards act as a form of “currency” representing how Work in Progress (WIP) is allowed in a system
- Kanban is an emerging process framework that is growing in popularity since it was first discussed at Agile 2007 in Washington D.C.



Kanban basic rules

- Visualize the workflow
- Limit Work In Progress (WIP)
- Measure and manage flow
- Make process policies explicit
- Improve Collaboratively (using models/scientific method)



Agile vs. Kanban

Agile

- Customer orientation
- Continuous delivery of software
- Dealing with changes
- Business and IT working together (SCRUM teams)
- Focus on developing working software
- Technical expertise

Kanban

- A board to visualize workflow to create an overview for everybody
- Identify and eliminate problems
- Reprioritizing work to create steadily flow and demand pull

What will we do?

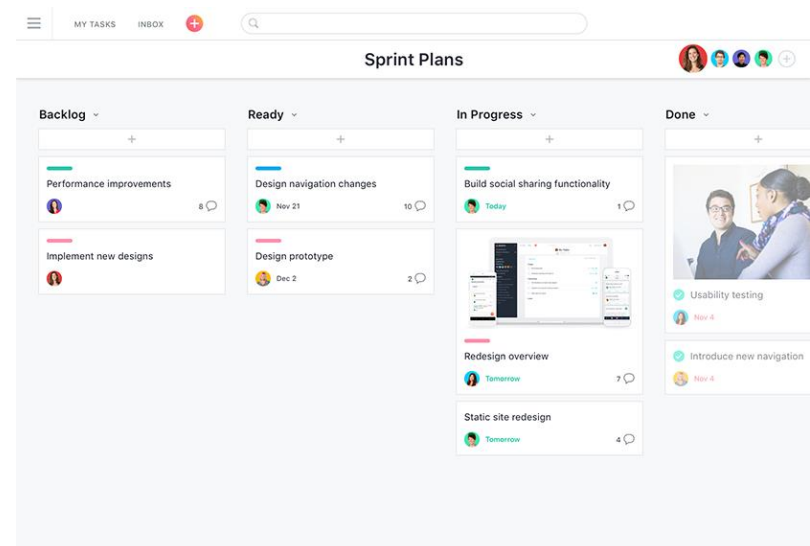
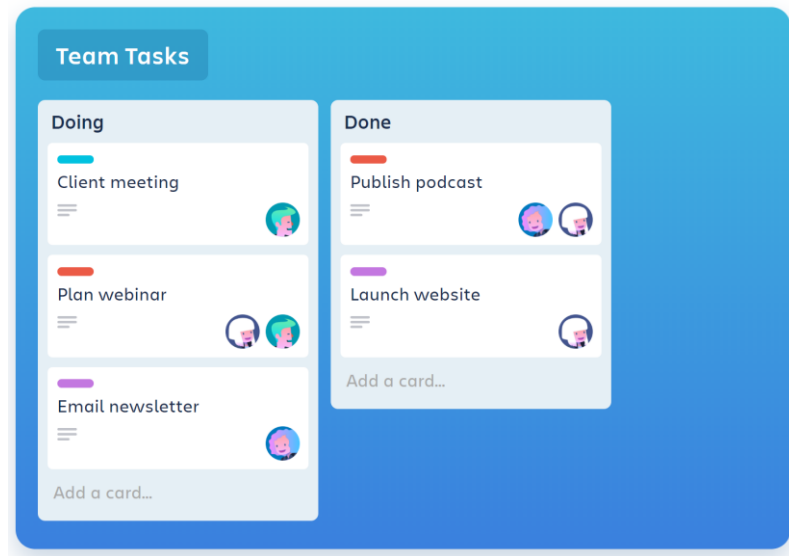
- Artifacts
 - Product Backlog
 - Created and maintained by product owner
 - Do not change it if you are not the product owner
 - Available to the public to see
 - Spring backlog
 - Created and maintained by the team
 - Updated daily
 - Available to the teacher/public (include this in the report)
 - Burndown chart
 - Created every day and available to the public (include this in the report)

What should you do?

- Sprint Planning meeting (this week)
- Sprint time
 - 2-3 weeks for each sprint to fit the course schedule
 - 3 sprints: *Analysis, improvement, and realization*
- Twice a week standup meeting
 - What have you done since last meeting?
 - What will you do before the next meeting?
 - What is blocking you?
- Part of the reports at the end of each sprint and 1 presentation after first sprint and a final presentation after all sprints
- Sprint retrospective meeting to write individual reflection (Each student should describe him/her contribution to the report and reflect on the learning in max 1 page)

How can you do this?

- Just use paper
- Select a tool for supporting this, e.g. Trello, Asana, ...
- In the appendix add an explanation of how you managed your project in this way is required



Questions?



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Do we have to standup for a standup meeting?