

Software Project Management

Unit 4: Agile & Scrum (part 1)

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Goals for this week

1. Describe the core ideas behind agile software development.
2. Begin to explain the structure, participants, artefacts, and events of the Scrum methodology.

What is agile development?

- Different focus:
 - Change is something to embrace; we determine what is best for the project as we go along
 - Instead of big-design-upfront and fixed deadlines/costs, focus on client-developer collaboration
 - Keep only the parts of the process that deliver value (no process for the sake of process)
- Examples of agile methodologies:
 - **Extreme Programming (XP)** (technical excellence)
 - **Scrum** (management, process)
 - **DSDM** (*Dynamic Systems Development Method*) (controlled agile option)
 - **Crystal** (there is no “one-size-fits-all” Agile method)
 - **Adaptive Software Development** – an evolution of RAD (focus learning)
 - **Pragmatic Programming** (developers encouraged to be flexible but disciplined, mindset)
 - **Kanban** (continuous flow agile, visualise and optimise)

Projects suited for agile delivery

- The most appropriate projects for agile are ones with aggressive deadlines, high degree of complexity, and high degree of novelty to them

- Novelty 

- Urgency 

- Complexity 

Focus is on delivering the highest business value in the shortest time

- Agility allows a better alignment between business objectives and IT
- Agility provides gains in terms of visibility, adaptability, business value, and risk reduction
- Costs reduction thanks to better effectiveness
- Time-to-market reduction
- Alignment with the market and business requirements
- Control over change cost
- Longer life software
- People aware of their responsibilities, more motivated
- Problems arise faster

...but success
depends upon
people rather than
processes

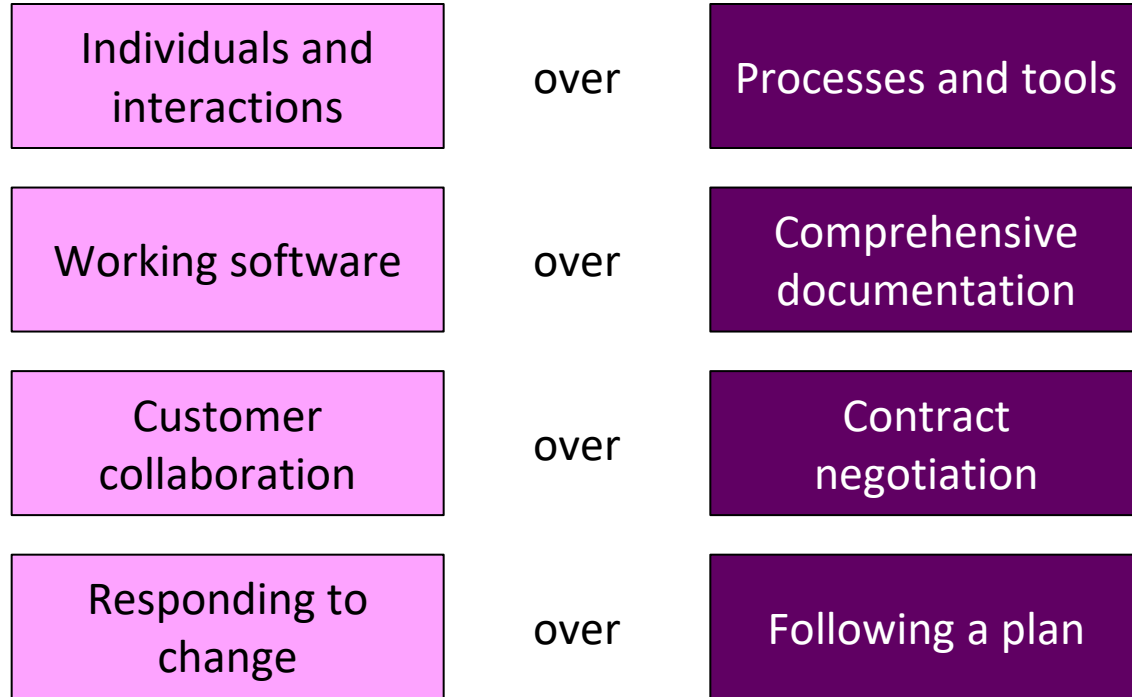
- Active user involvement and close collaboration is essential
- Requirements emerge and evolve
- Frequent delivery
- System structure tends to degrade as new increments are added
- Regular changes to the deliverable usually corrupt the structure unless time & money spent on refactoring

Quick poll vote – Agile discussion

1 – You prefer to deliver fast and tidy things up later?

2 – You would rather spend more time keeping everything clean from the start?

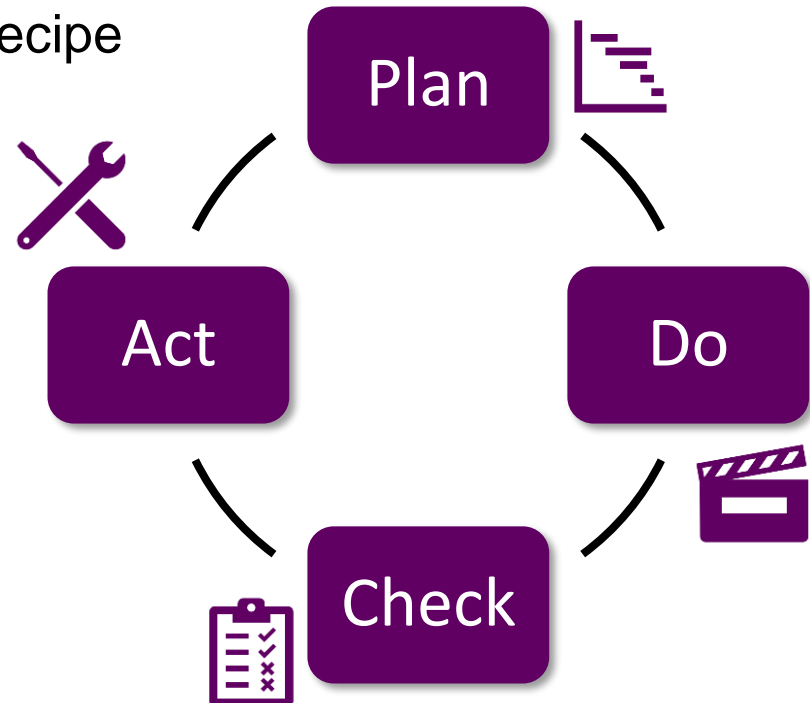
Agile Manifesto - values



- Trust between:
 - Manager and employees
 - Colleagues
 - Customers and partners
- Transparency:
 - To identify and prevent obstacles
 - To be more effective
 - To facilitate collaboration
 - To adapt
 - **Not to watch or oversee**

- At the centre of empiric approaches
- Agility provides a framework, not a recipe
- Adapting practices according to:
 - the product we want to deliver
 - the skills and talents of the team
 - the conditions and the environment
- No agility without quality

(PDCA Cycle)

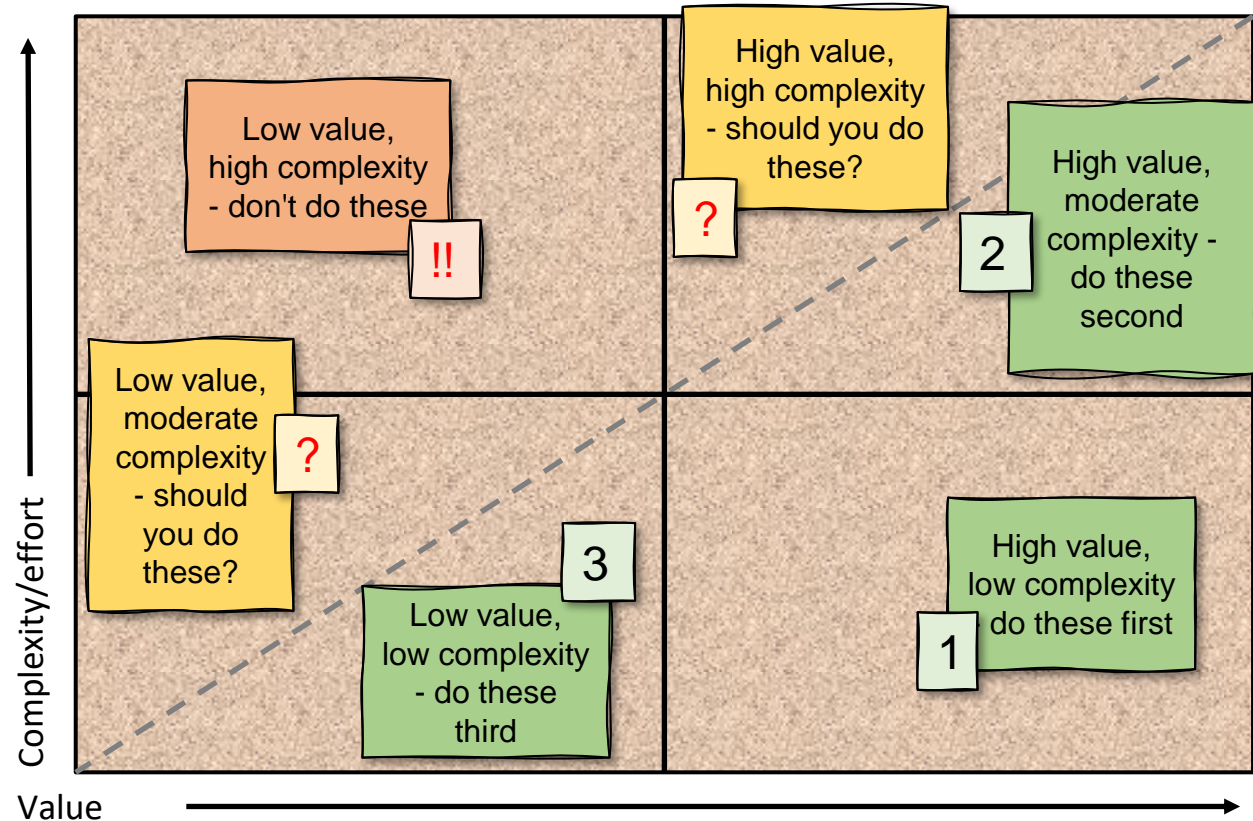


- Working at a steady and sustainable pace:
 - Promotes motivation
 - Increases effectiveness over time
 - Reduces the likelihood of risk
- Traditional project:
 - The closer we are to delivery, the greater the pressure
- Agile project
 - Pace and pressure are steady

System of prioritisation

- Visibility is central to agile:

- Information shared with all
- Problems arise easier
- Actors feel responsible



- What is Scrum?

- Term originally comes from **rugby**
- Success in a scrum depends upon **working closely** together as a team

- The Scrum framework:

- Lightweight framework that promotes **lightweight**, **adaptive** solutions to complex problems
- Originated in **1995** (**Sutherland and Schwaber**)
- Several books published by both

- Teamwork
- Coordination
- Trust

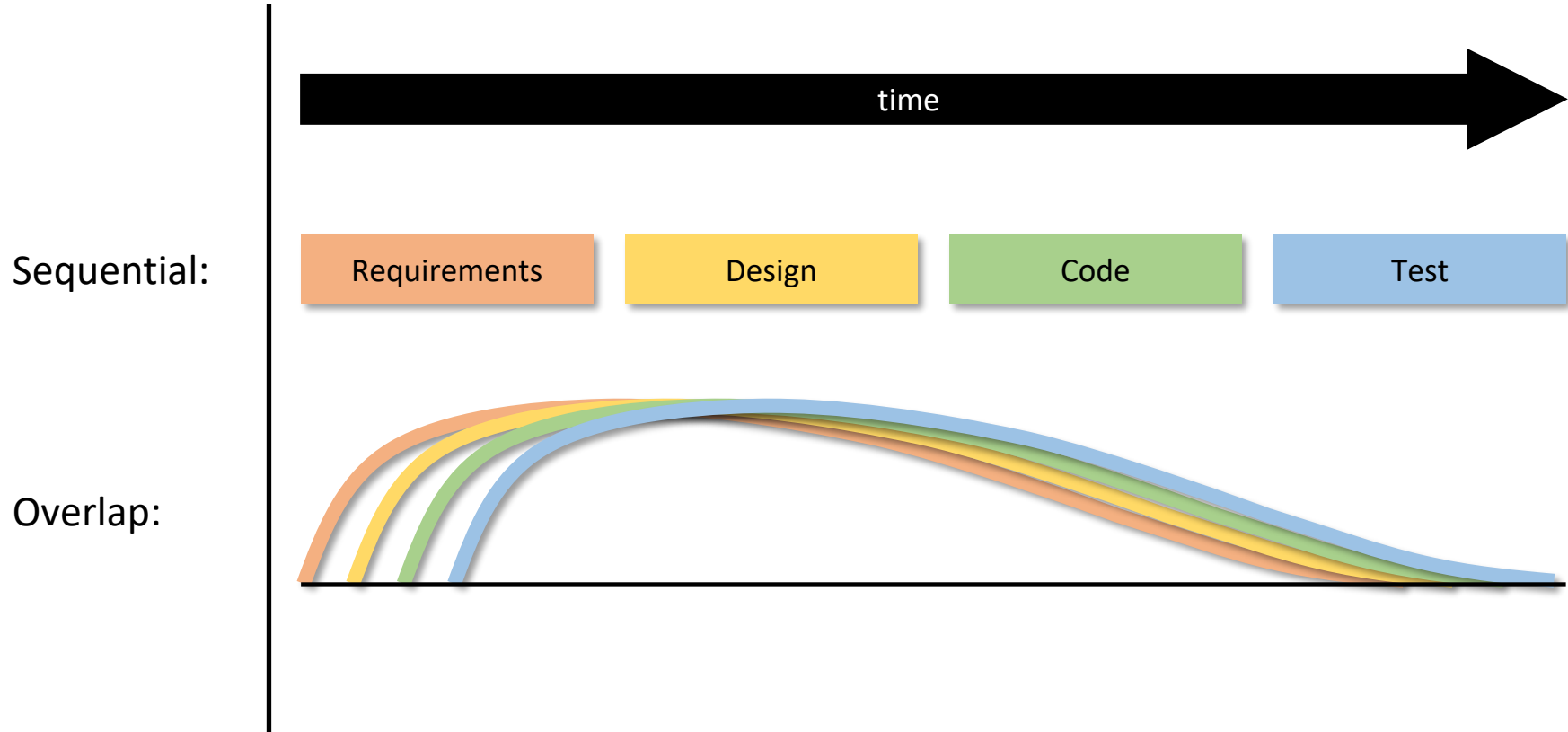
What is Scrum

- Is an agile, lightweight process
- Emphasis on collaboration
- Can manage and control software and product development
- Uses iterative, incremental practices
- Has a simple implementation
- Increases productivity
- Suited to complex product development
- Reduces time to benefits
- Easy to understand – hard to execute
- Embraces adaptive, empirical systems development

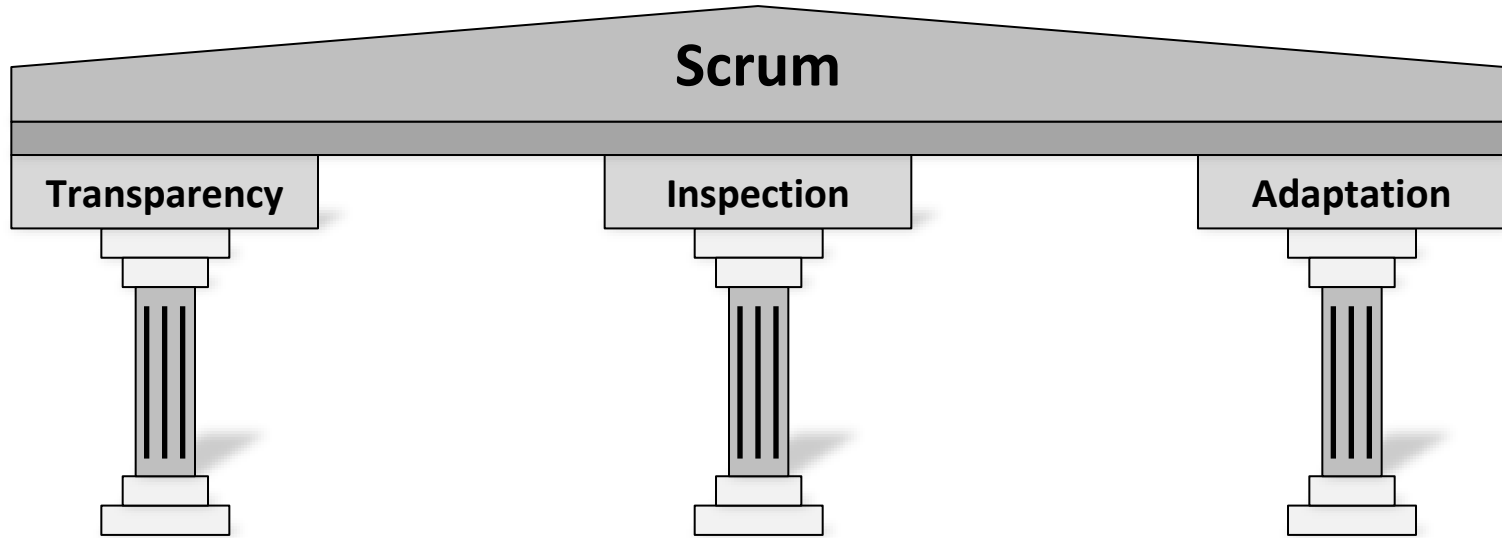
Values according to Scrum

1. **Commitment** to achieving the goals and supporting each other
2. **Focus** on the work of the Sprint to make the best possible progress toward the sprint goal
3. **Openness** about the work and the challenges you run into
4. **Respect** each other to be capable, independent people
5. **Courage** to do the right thing and work on tough problems

What is Scrum? Sequential vs. Overlap



The three pillars of Scrum



Work is visible to everyone, enabling early identification of obstacles

The team, the Product Owner, and stakeholders

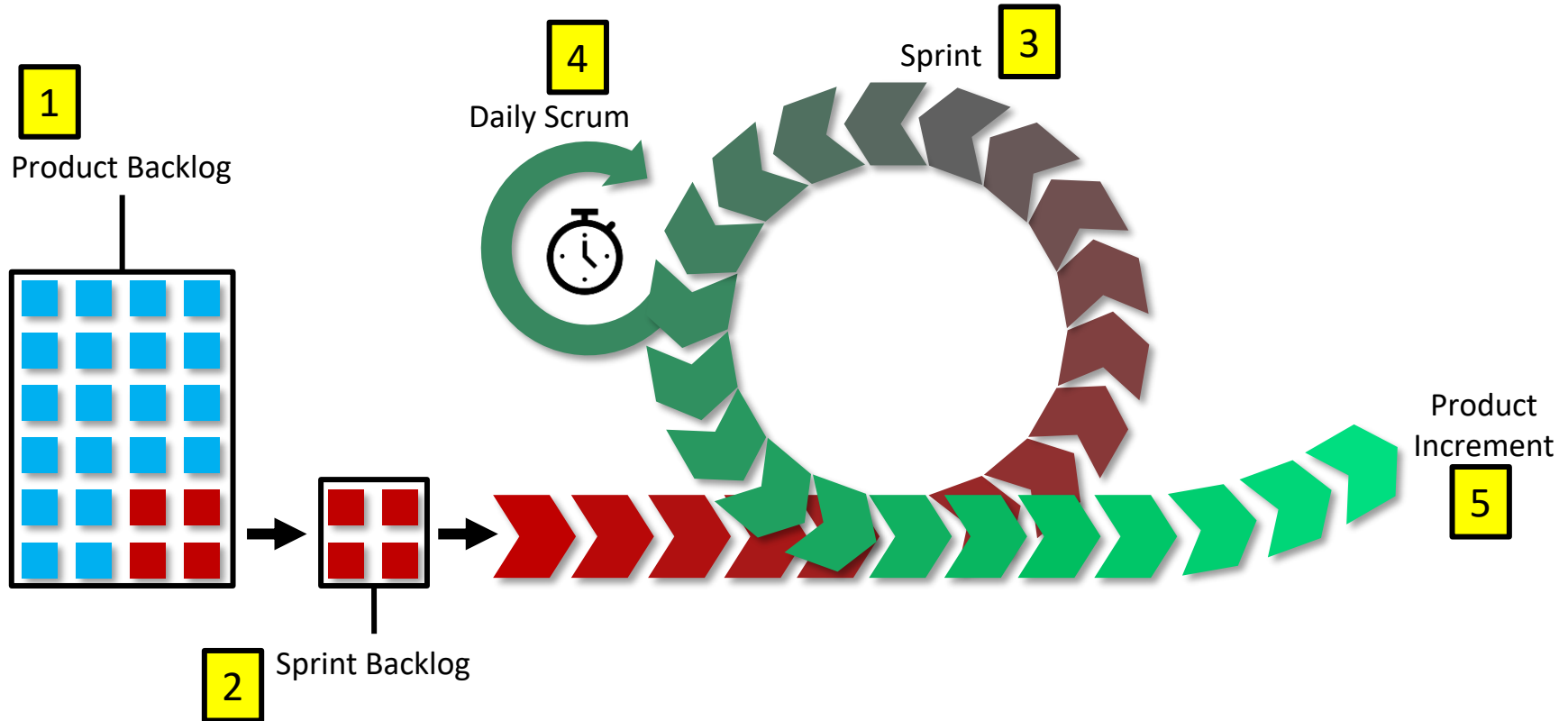
Artefacts are **checked frequently**, as they are being developed

The product, the Sprint progress, the backlog

Change direction as soon as it becomes necessary; give up if necessary

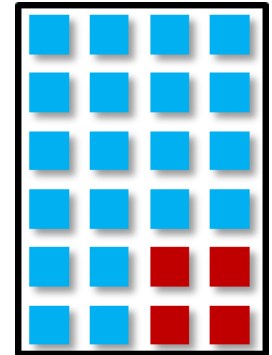
Agile doesn't fear change — it expects it.

Product Backlog



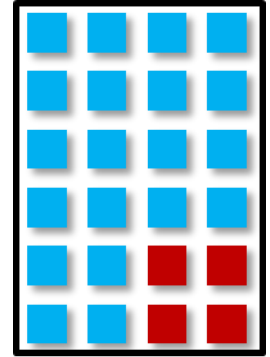
1 - Product Backlog

- Defines what will be built
- Contains a broad list of descriptions of all required features, wish-list items, etc. prioritised by business value.
- Product owner is in charge of defining priorities here
- Items here are gradually refined into items that can be completed in a sprint



2 - Sprint backlog

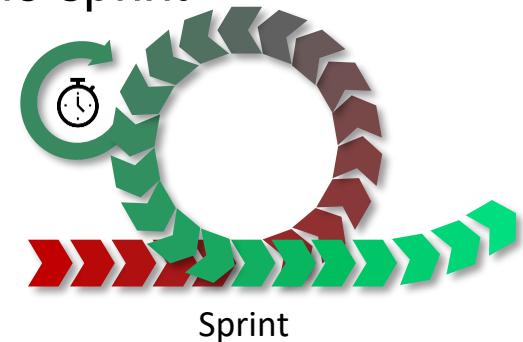
- Task items from the product backlog that will be completed in the next 'sprint'
- Collectively planned by the whole team
- Updated every day to reflect the team's latest decisions



Sprint backlog

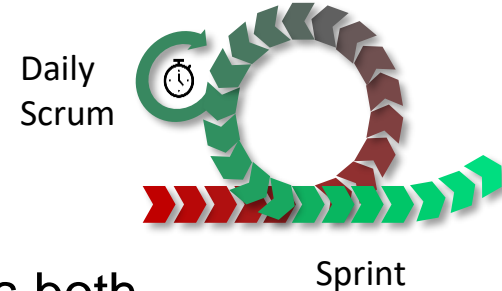
3 - Sprint

- Also known as an iteration, these are the units into which large, complex problems are broken down
- Occurs over a timeframe of typically 1-4 weeks, with a new sprint beginning as soon as one ends
- Team must respect the prioritisation agreed for the sprint backlog



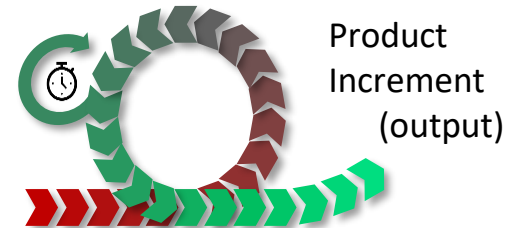
4 - Daily Scrum

- Also known as a 'stand-up meeting', this is a short but essential daily meeting involving everyone working on the sprint.
 - Updates on the previous day are shared
 - Plans for the day ahead are shared
 - Anything that has been learned since the last meeting, including problems, is discussed
- Run by an individual titled 'Scrum Master'
- An opportunity to reflect and plan, and ensure work is both synchronised and relevant to the sprint goal



5 - Product Increment

- The output of every sprint, which should be a deliverable, functional, usable product
- Each increment builds on all previous increments; the next increment should comprise everything that existed already, plus everything from the latest sprint
- Each increment should be a working version of the product that could, if necessary, be shipped.



fully tested, integrated, and meeting the definition of “done”

- **Product owner**

- Possibly a Product Manager / Project Sponsor / Key end-user
- Decides features, release date, prioritisation, budget

maximising value

- **Scrum Master**

- Typically a Project Manager or Team Leader
- Responsible for enacting Scrum values and practices
- Remove impediments / politics, keeps everyone productive

*creating space
for productivity*

- **Project Team**

- 5-10 members; Teams are self-organising
- Cross-functional: QA, Programmers, UI Designers, etc.
- Membership should change only between sprints

*delivering value
through collaboration*

- **Sprint planning**

- Determining what will take place during a sprint

- **Daily stand-up**

- What did I do yesterday, what will I do today, what obstacles am I facing?

- **Sprint review**

- Everyone who wants to attend can attend; accomplishments are shown

- **Sprint retrospective**

- Examining lessons learned for the next sprint

- Apply **Agile thinking** – plan in small, achievable steps
- Be ready to **adapt** when feedback or new ideas emerge
- Keep your **scope realistic** and deliver value early
- **Reflect regularly** – what's working, what needs improvement
- **Document your process** clearly — show evidence of iteration and learning
 - **From Agile:** Product Backlog, Sprint Log or Progress Journal, Reflections
 - **From Waterfall (still useful!):** Project Definition, Requirements document, meetings and decisions log, design diagrams (UML, mock-ups, flowcharts), Timeline (Gantt chart), Trello board – keep versioned documentation

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Unit 4: Agile & Scrum (Intro)

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