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Becoming Agile in Research Computing – Learning Journey

Lesson 1 – Buy-in and Mindset

- Important requirements for implementing a functional structured workflow process like Agile
- Not going too far if you do not have buy-in from upper management
- “At the very least” – this is needed from your immediate line manager
- Tried some form of ”structured working” prior, but for us, this “buy-in” opportunity truly arose and solidified when covid hit in 2020 and team switched to remote-working
- And I had thought “buy-in” was the tough part…
- Next task was to help team evolve and make a “mindset shift” – a continuous process

Pre-Agile…

- Unaware of too much Agile or need for any structured work process as a team - work processed in an ad hoc manner – not all the time, but often prioritised based on mood, who shouts loudest and/or emergencies.

- Work arriving through tickets, individual inboxes, meetings, corridor chats, etc. – leading to “unpleasant” phrases heard more frequently than normal…

  “Oh yes, we discussed (promised) “X” in the meeting we had 3 months ago…remember?! ”

  “He/she had emailed me a month ago about “X”…sorry…it’s due in 2 days!”

  (Typically by Managers) **“Oh! Thought you were working on that already for the past X weeks??”**

Lesson 2 – Centralising work capture

- Agile boards help with this – often called a “Backlog”.
- Started using a “Backlog”, however some work was still coming through multiple channels
- Had to make continuous effort to capture **everything** (however small or big) in **one-place**
    - This central capture cannot be underestimated – serves as the foundation **(Needs to be backed up by regular review!)**
- Great – we have a way to do this! 2 popular frameworks – Scrum and Kanban.
- Scrum was more popular and sounded appealing….let’s try it !

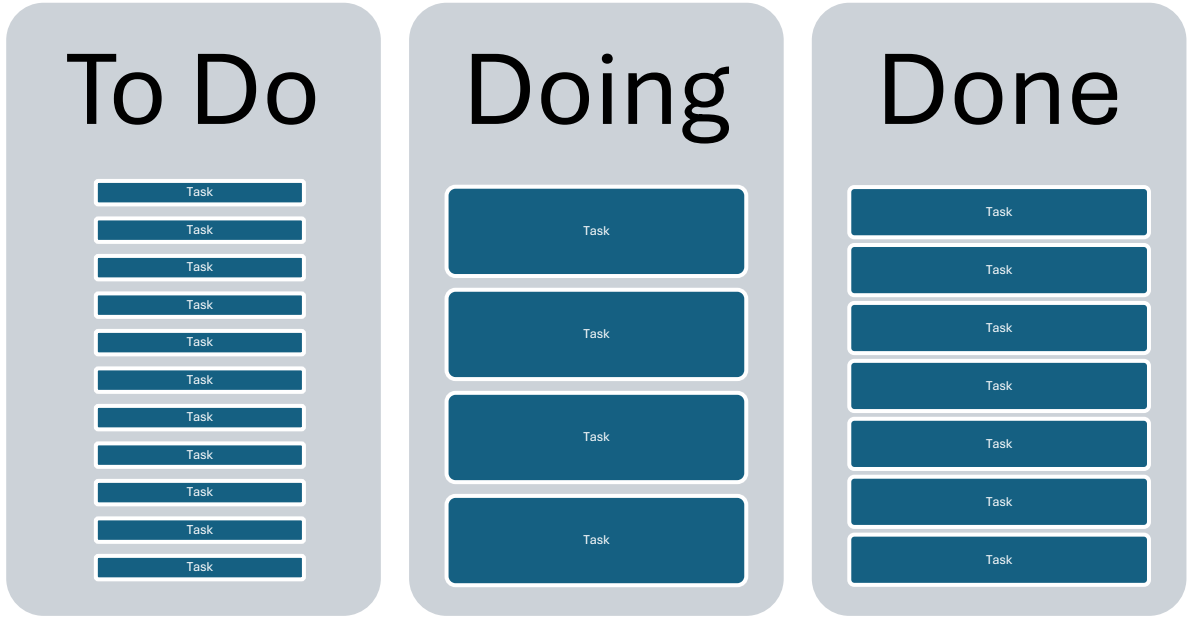
Lesson 3 – Choosing appropriate Agile approach!

- Scrum's drawback
  - Typically, fixed tasks over a fixed period (1-4 weeks; usually 2 weeks). Avoid other distractions.
  - Experimented for short period, but soon found out it's rigidness is not allowing for flexibility, which Kanban typically was meant to offer, so made switch to Kanban.
- Tried Kanban and came to conclusion
  - **Scrum** – typically for "development" teams with more planned tasks and less flexibility
  - **Kanban** – typically for "operational" teams with a more dynamic approach and flexibility

Another key Kanban benefit – no "overheads" for initial setup – visualise your current real-time snapshot and iterate as you go!

Lesson 3 – Choosing appropriate Agile approach!

- Method to visualise workflow, using a “board” with columns. Kanban often called a “Lean” process.
- Columns represent the various “stages” of work, starting with 3 basic columns, often many more columns.



Kanban is a “Pull” system

“Stop starting; start finishing”

Lesson 4 – A need for Prioritisation

- Through consistent capturing of “work items” – overtime, the backlog grew and overwhelmed the boards!
- Pulling work-items from backlog “to start” became trickier with time
- Prioritise based on work-item age – i.e., “all else being equal”, so you pick the oldest task – “semi-worked”
- However with tasks “all else is rarely equal” – felt like we were missing something obvious
- Researched prioritisation methods – this felt like the right direction, however there are many
- Kanban **“Classes of Service” (CoS)** – this truly felt like a breakthrough for our situation!

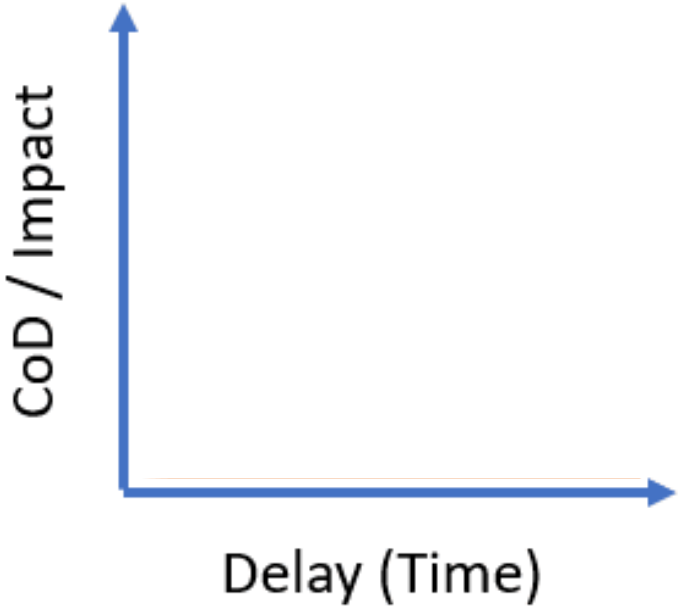
Kanban Classes of Service (CoS)

- CoS help categorize different types of work based on nature, priority, delivery times, etc.
- Each CoS represents a specific set of rules/expectations regarding how work items should be treated and processed
- In our case, used the most popular method – every work-item assigned 1 of 4 CoS

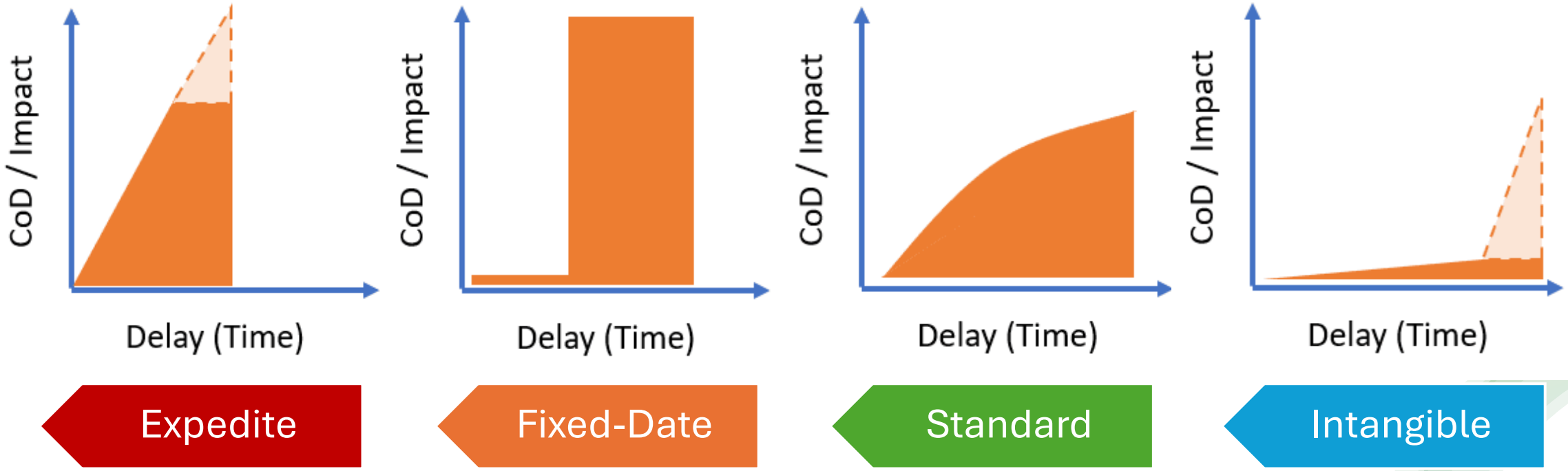
1. Expedite
2. Fixed-Date
3. Standard
4. Intangible

Cost of Delay (CoD) framework

- The CoS (Classes of Service) technique uses the **Cost of Delay (CoD) prioritisation framework**
- To a team/organization – CoD is a principle that helps evaluate impact based on delaying a task, i.e. “Cost of Delay”



Cost of Delay (CoD) framework



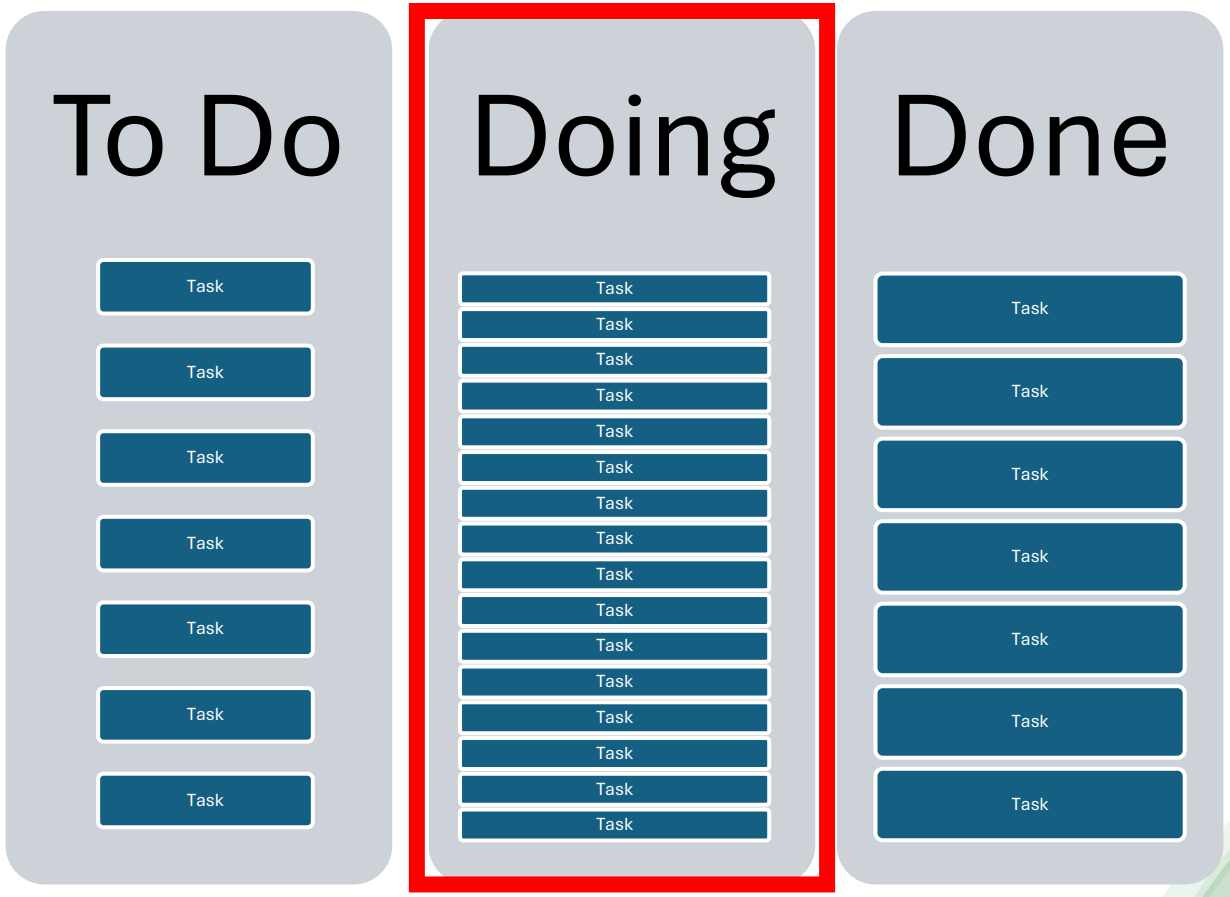
Ref: https://teamhood.com/kanban-resources/kanban-classes-of-service/

Cost of Delay (CoD) framework

- CoD is ultimately a good way to manage “risk”
- “Cost” does not only mean financial
- Risks come in many forms, some examples include:
  - Financial
  - Security
  - Service Availability
  - Reputational
  - Customer/User Satisfaction
  - Etc.

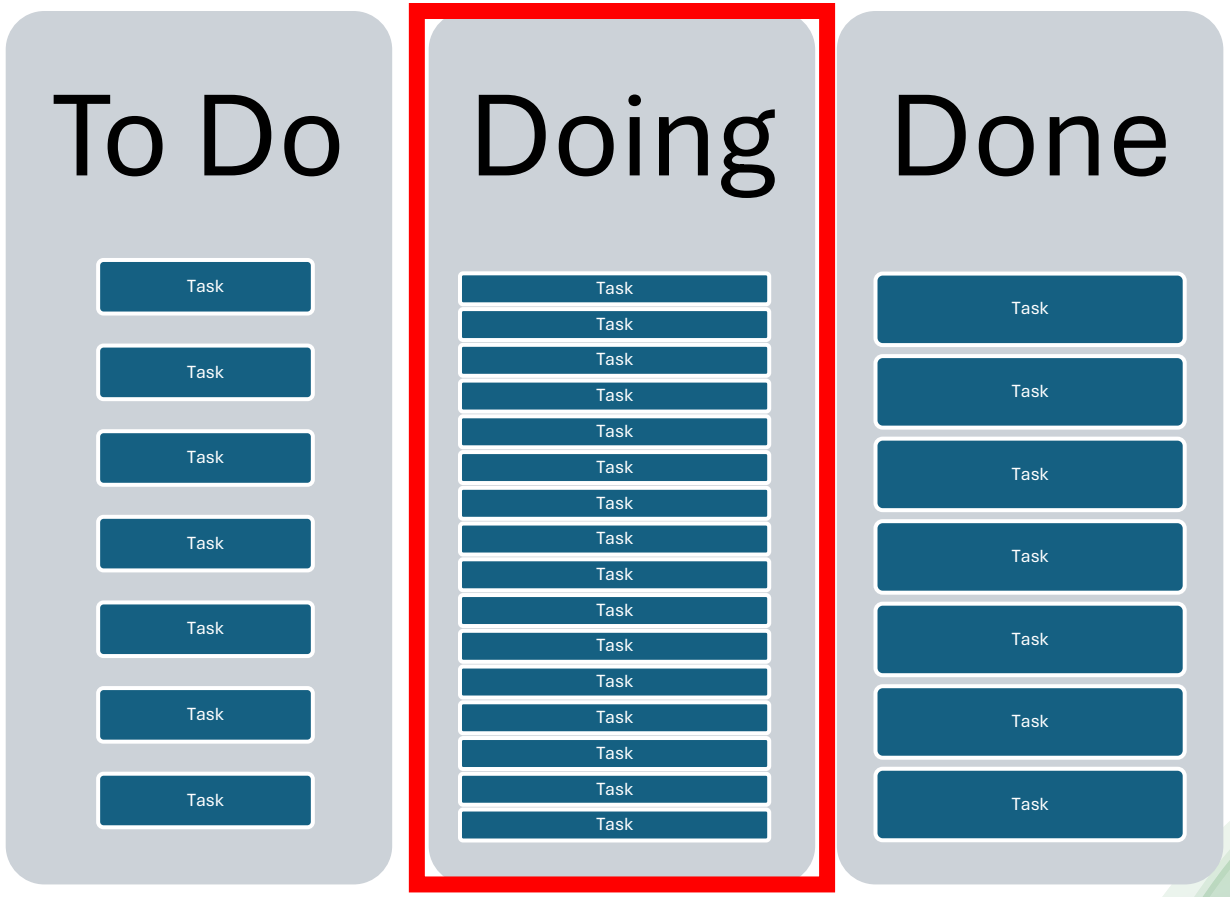
Lesson 5 – Pay attention to “WIP” - a silver bullet!

- One of the fundamentals about the Kanban process is to limit **WIP (Work In Progress)** so individuals are not overwhelmed
- Ensured no individual was working on > 3-5 work items at once.
- However, if these are not “shared” work-items, but 5 separate work-items each, this increased the overall “Team WIP”
- Became a real bottleneck for us!



Lesson 5 – Pay attention to “WIP” - a silver bullet!

- Idea was to limit WIP at ”team level”, not only for individuals.
- Started putting an arbitrary value. This was still not working very well.
- Experimented and researched further.
- Found out - Team WIP = approx. n+1 or n+2



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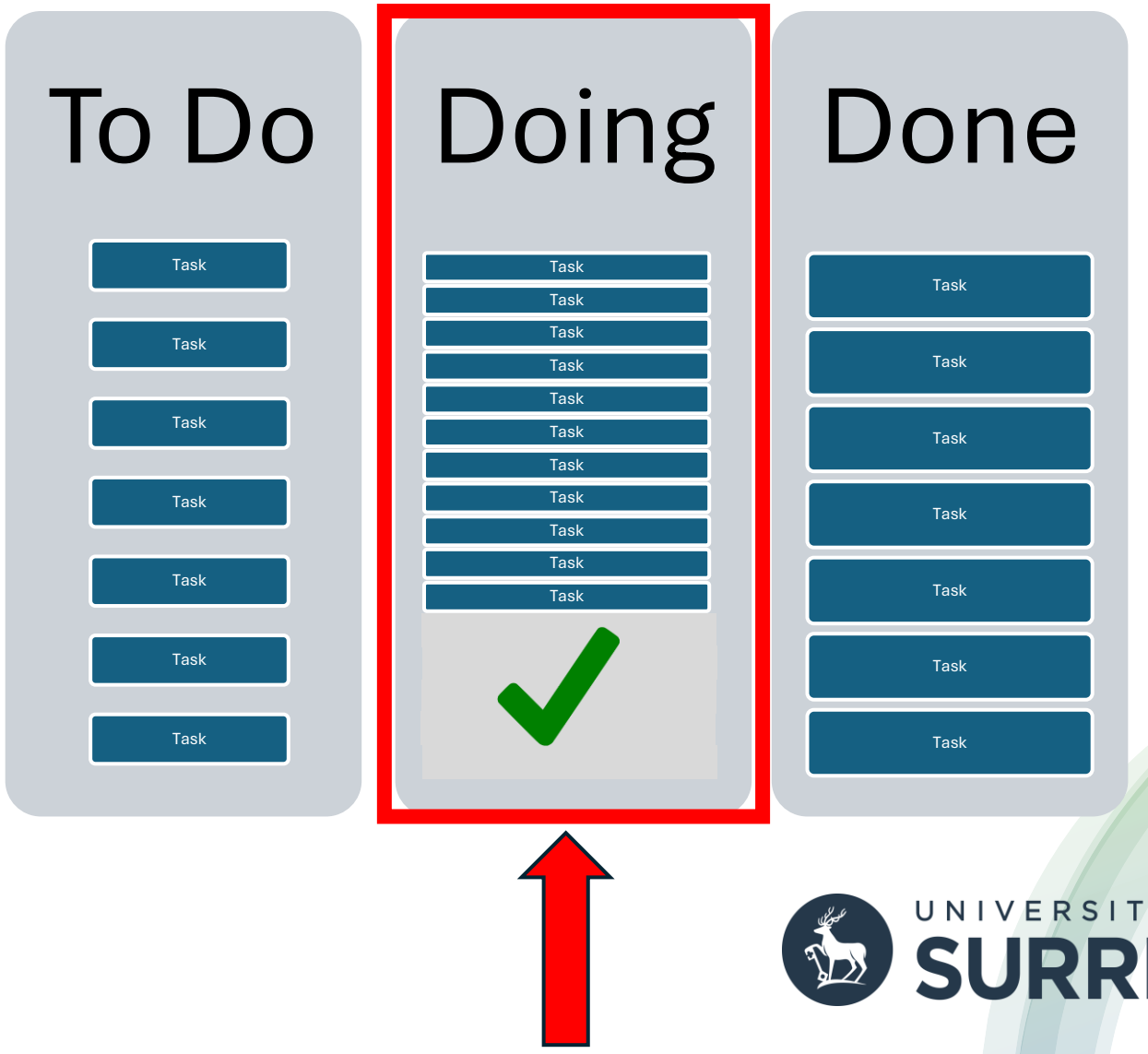


Lesson 6 – How are we doing?

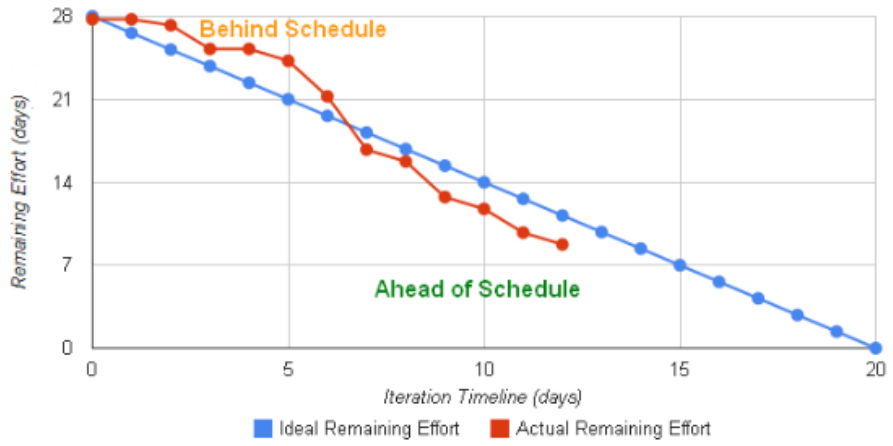
- Kanban is a method of managing workflow – “flow” being operative.
- Focus of Kanban is to improve “flow” of tasks across the stages/columns, usually more columns than 3
- Some key “Flow Metrics” are:
  - Lead time
  - Cycle time
  - Work-in-Progress
  - Throughput
  - Flow Efficiency
  - Work-Item Age
  - CFD (Cumulative Flow Diagram)
  - Burndown chart

Lesson 6 – How are we doing?

- If you were to pick 2 to start with, they can be:
  - Cycle time – how long a work-item spends “In-Progress”, i.e. work ”start time” to “done”

  (Philosophy – not a “prescribed” period – you measure what this is for your team/context and keep improving.)

  - Burndown chart



Ref: https://dzone.com/articles/the-ideal-burn-down-chart

Our learning Journey