Intracom Telecom
Java SE / EE Workshop

Software Development Methodologies

Ioannis Gkionis

Network Management Systems Section Manager - ggio@intracom-telecom.com

Question

When you develop software, where do you start from?

Software Development

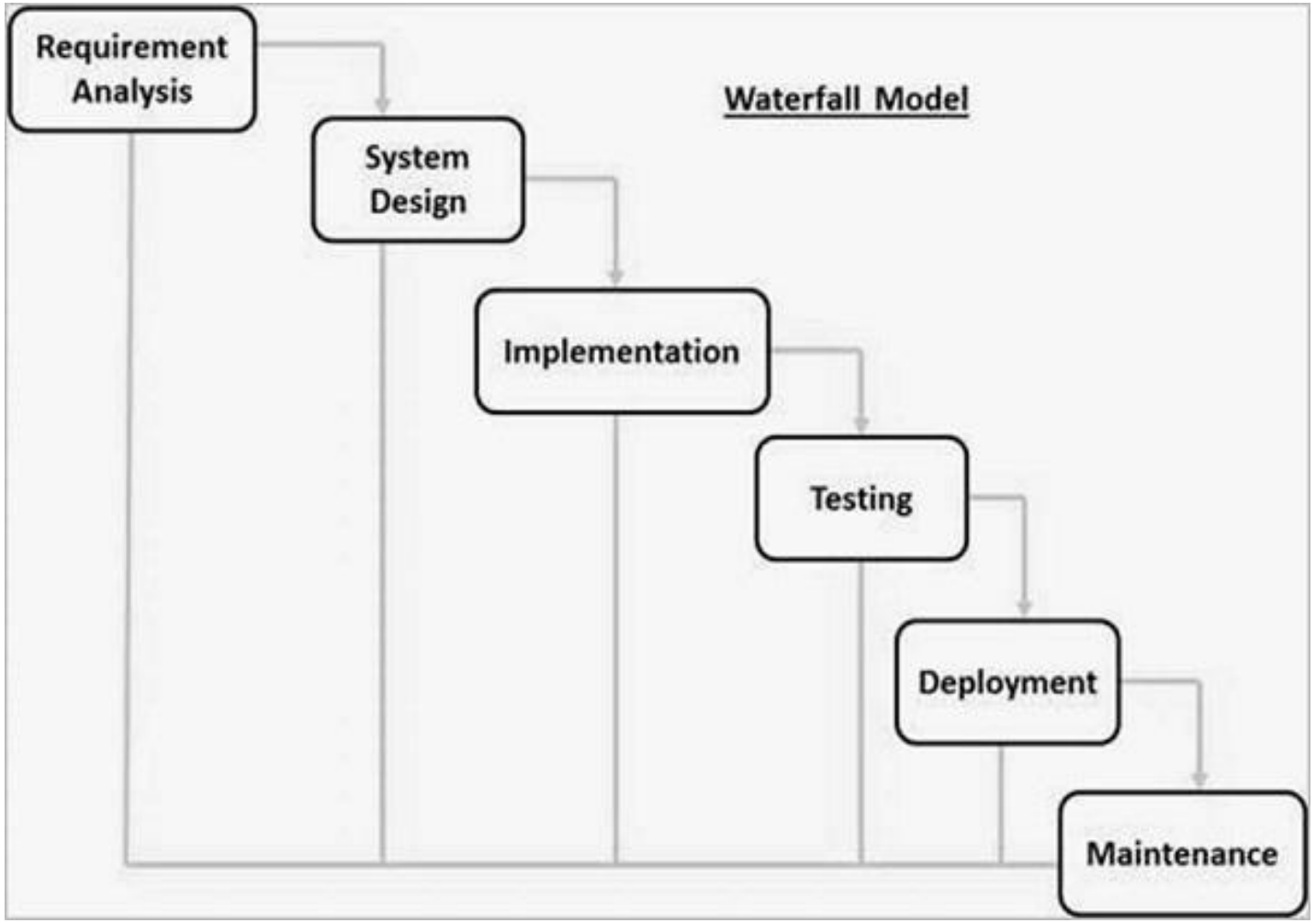
These things always occur when software is developed.

- Requirements – What to make?
- Design – How to make it?
- Implementation – Making it.
- Testing – Make sure it works.
- Operations – Deliver it.

Software Methodologies provide a framework for doing these.

Software Development Method - WATERFALL

- Development is broken into distinct phases
- The next phase begins when the previous phase is completed
- Involves detailed documentation and reviews
- As the name suggests, you can't go backwards
- Suitable for software where the cost of failure is high.



Question

What is the main disadvantage with the Waterfall method?

Disadvantages

- The software is delivered to the end users when it is completed.
- Users realize what they needed when they start using the software.
- Users will ask for changes or addition of new features.
- Who failed? Who pays for the cost of change?
- It is very difficult to get all the requirements right up front in the requirements phase

Agile Manifesto - agilemanifesto.org

Representatives from Extreme Programming, SCRUM, DSDM, Adaptive Software Development, Crystal, Feature-Driven Development, Pragmatic Programming, and others (“The Agile Alliance”) gathered in 2002 at a Ski Lodge in UTAH and came up with this manifesto.

Individuals and interactions over processes and tools

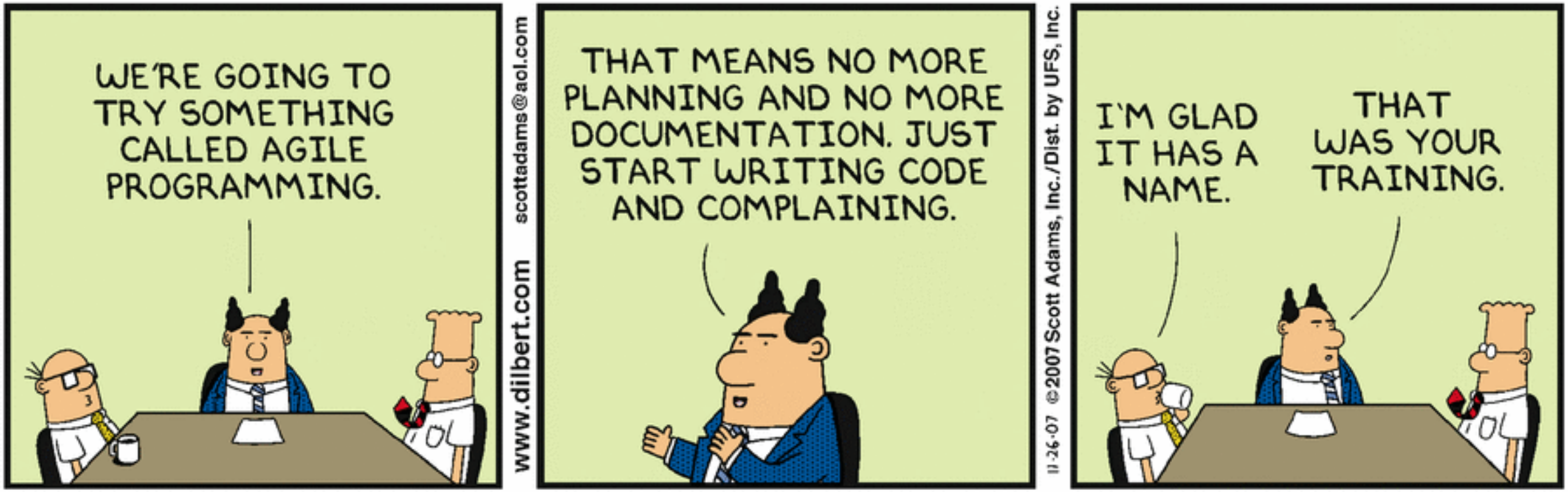
Working software over comprehensive documentation

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.

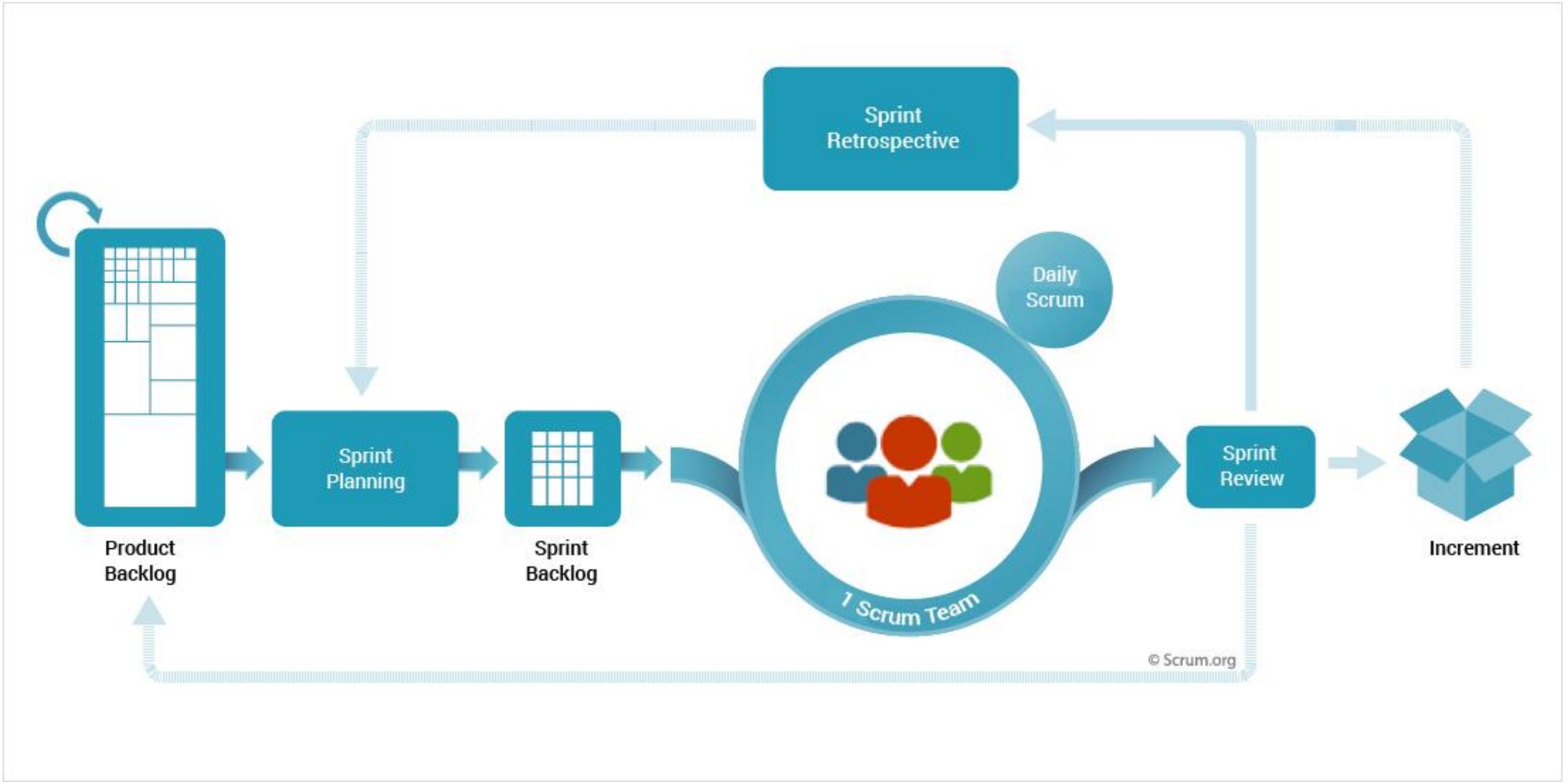
Agile


WE'RE GOING TO TRY SOMETHING CALLED AGILE PROGRAMMING.
scottadams@aol.com
www.dilbert.com
THAT MEANS NO MORE PLANNING AND NO MORE DOCUMENTATION. JUST START WRITING CODE AND COMPLAINING.
11-26-07 ©2007 Scott Adams, Inc./Dist. by UFS, Inc.
I'M GLAD IT HAS A NAME.
THAT WAS YOUR TRAINING.

Software Development Method - SCRUM

- Scrum is a widely used Agile method
- Software is delivered in regular increments called sprints
- Scrum has Roles
  - The Product Owner (Responsible for the Product Backlog)
  - The Scrum Master (Responsible for the Scrum Ceremonies)
  - The Scrum Team (Software Developers)

Software Development Method - SCRUM



Question

What would the the Product Backlog be called in the Waterfall method?

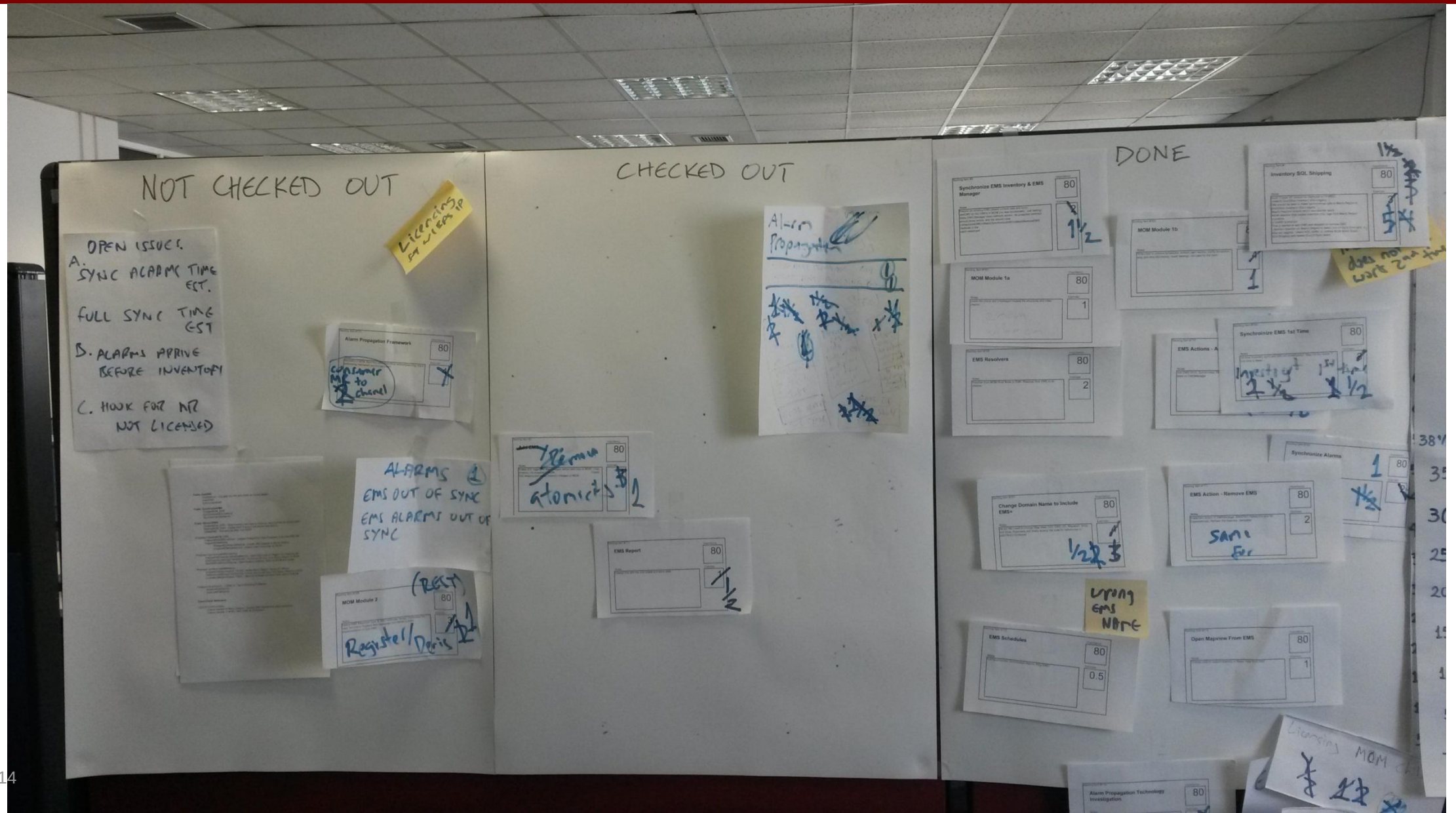
SCRUM Artifact – Product Backlog

- The Product Backlog is a list of Requirements.
- Scrum does not specify its form but..
- The Product Backlog must be DEEP
  - Detailed Appropriately (Goes into more detail when close to developing)
  - Estimated
  - Emerging (Welcomes change)
  - Prioritized

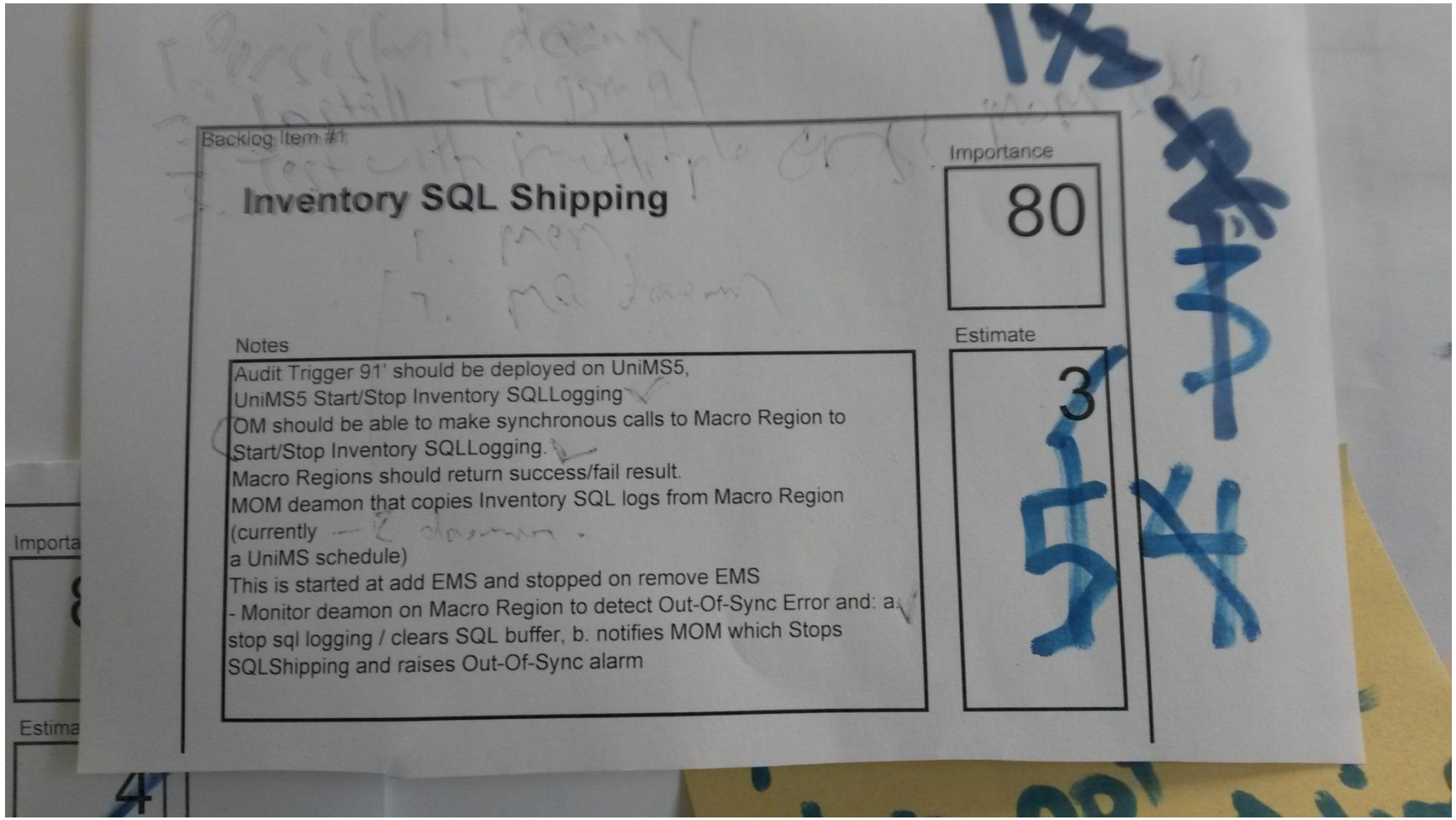
SCRUM Ceremony – Sprint Planning

- The most challenging ceremony in Scrum.
- Attendees
  - Product Owner
  - Scrum Master
  - Scrum Team
- Input
  - Product Backlog (The highest priority items that can fit in the Sprint)
- Output
  - Sprint Backlog
  - Daily Standup Time & Location

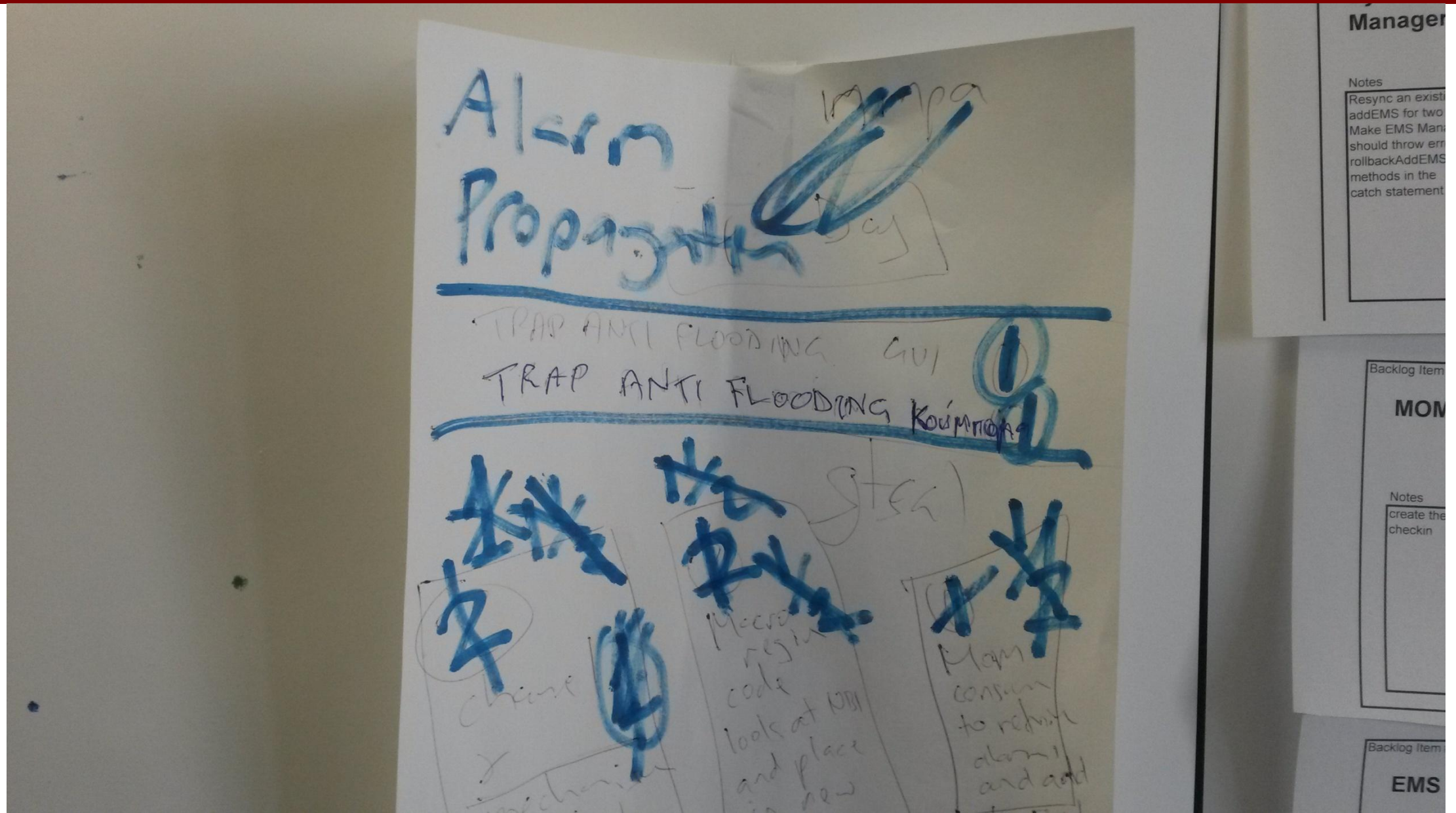
SCRUM Artifact – The Sprint Backlog (This one is Physical)



SCRUM Artifact - A Sprint Backlog Item



SCRUM Artifact - A Few Sprint Backlog Items



SCRUM – Sprint Planning (Producing the Sprint Backlog)

- The Product Owner is there to clarify proposed items from the Product Backlog
- The team converts Product Backlog Items into Sprint Backlog Items (development tasks)
- For complex items this can involve some brainstorming, design, architecture considerations, feasibility considerations.
- The Sprint Backlog items are best written on paper with large writing so all the team can read.

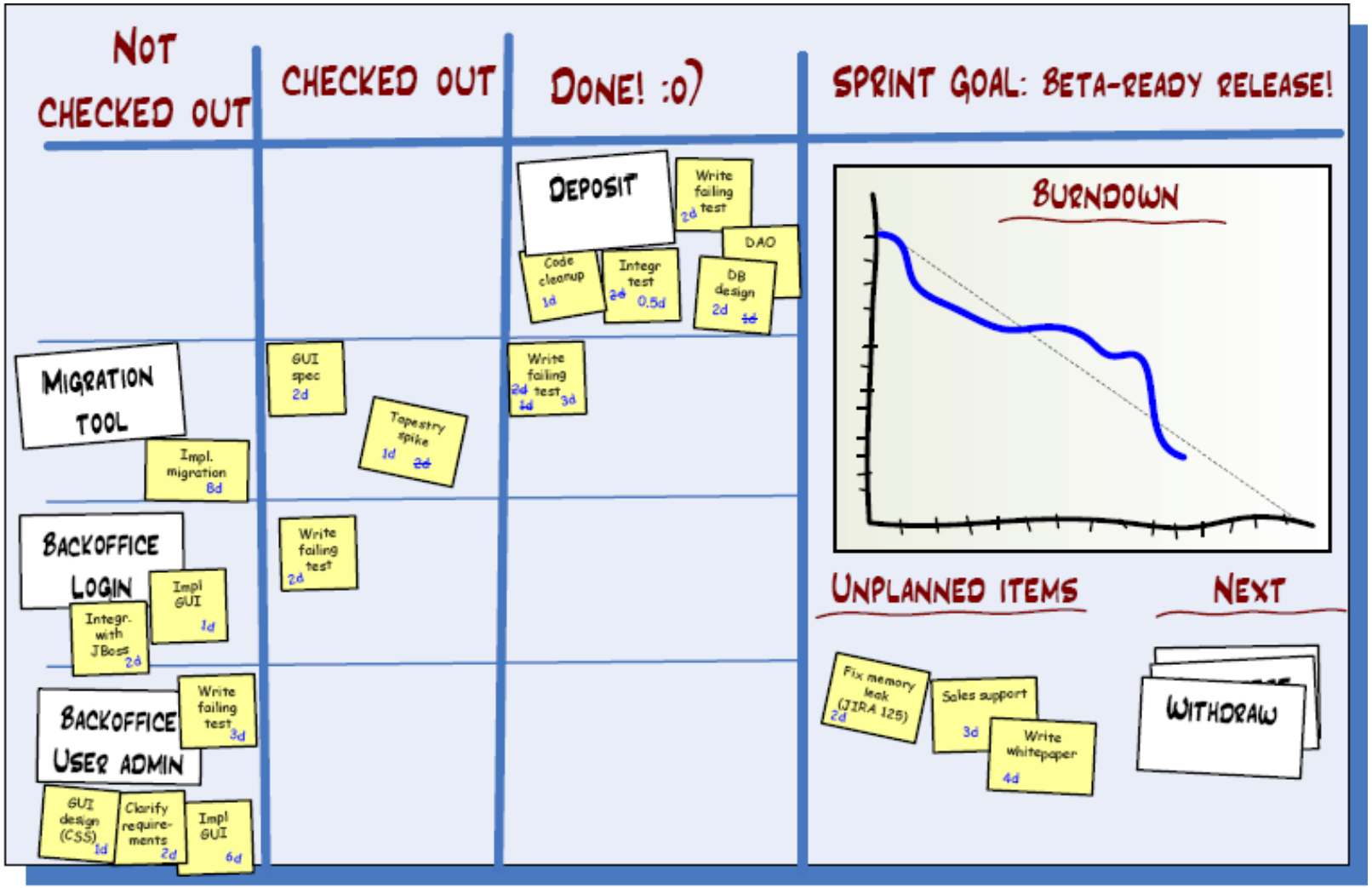
Example – Product Backlog to Sprint Backlog

- Product Backlog Item
  - I want to keep my customers details in the system
- Sprint Backlog Items
  - Design the customer table in the database
  - Implement the persistency layer (Data Access Object & Value Objects)
  - Implement the UI for adding and updating customers
  - Implement a UI for the customer list
  - etc

SCRUM – Sprint Planning (Estimating the Sprint Backlog)

- Sprint Backlog items are then estimated using a method called Planning Poker.
- Each team member estimates the cost (man days) for a Sprint Backlog item by choosing one of:
  - 0, 1, 2, 3, 5, 8, 13, 20 …
- Each team member does not know the other team members estimates to avoid group think
- It is good practice to break items >5 to smaller more manageable ones

SCRUM – The Sprint Task Board holds the Sprint Backlog

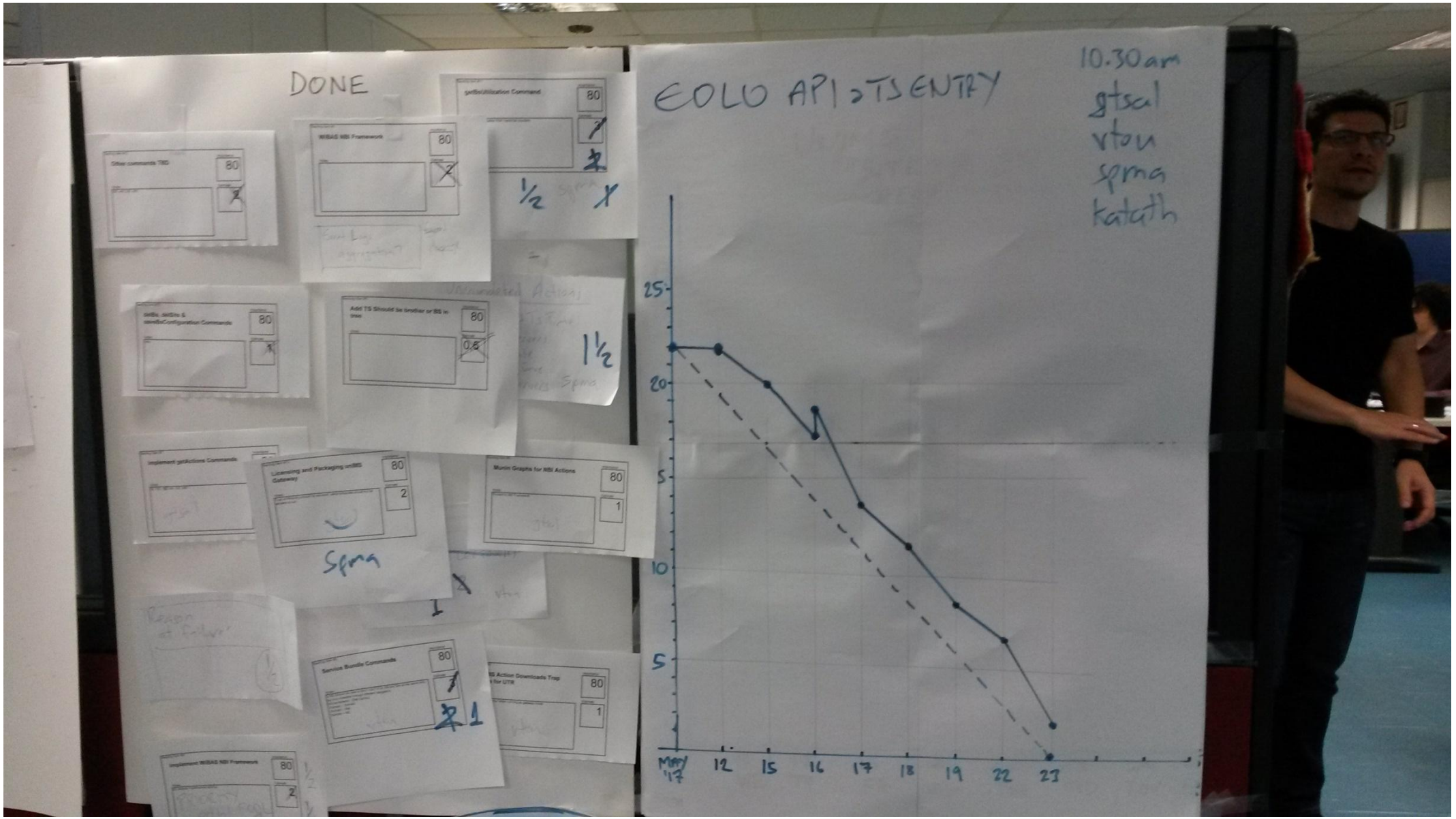


from Scrum & XP from the Trenches by Henrik Kniberg

SCRUM – The Sprint Task Board

- The Sprint Task Board is located at the Daily Scrum Meeting location
- It holds the Sprint Backlog
- It has 4 parts
  - Not Checked Out - Items no one has started work on
  - Checked Out – Items that are in progress
  - Done – Items completed
  - The Burndown Chart
    - X-axis – The working days of the sprint
    - Y-axis – The costs remaining (Not Checked Out + Checked Out)
    - Shows progress

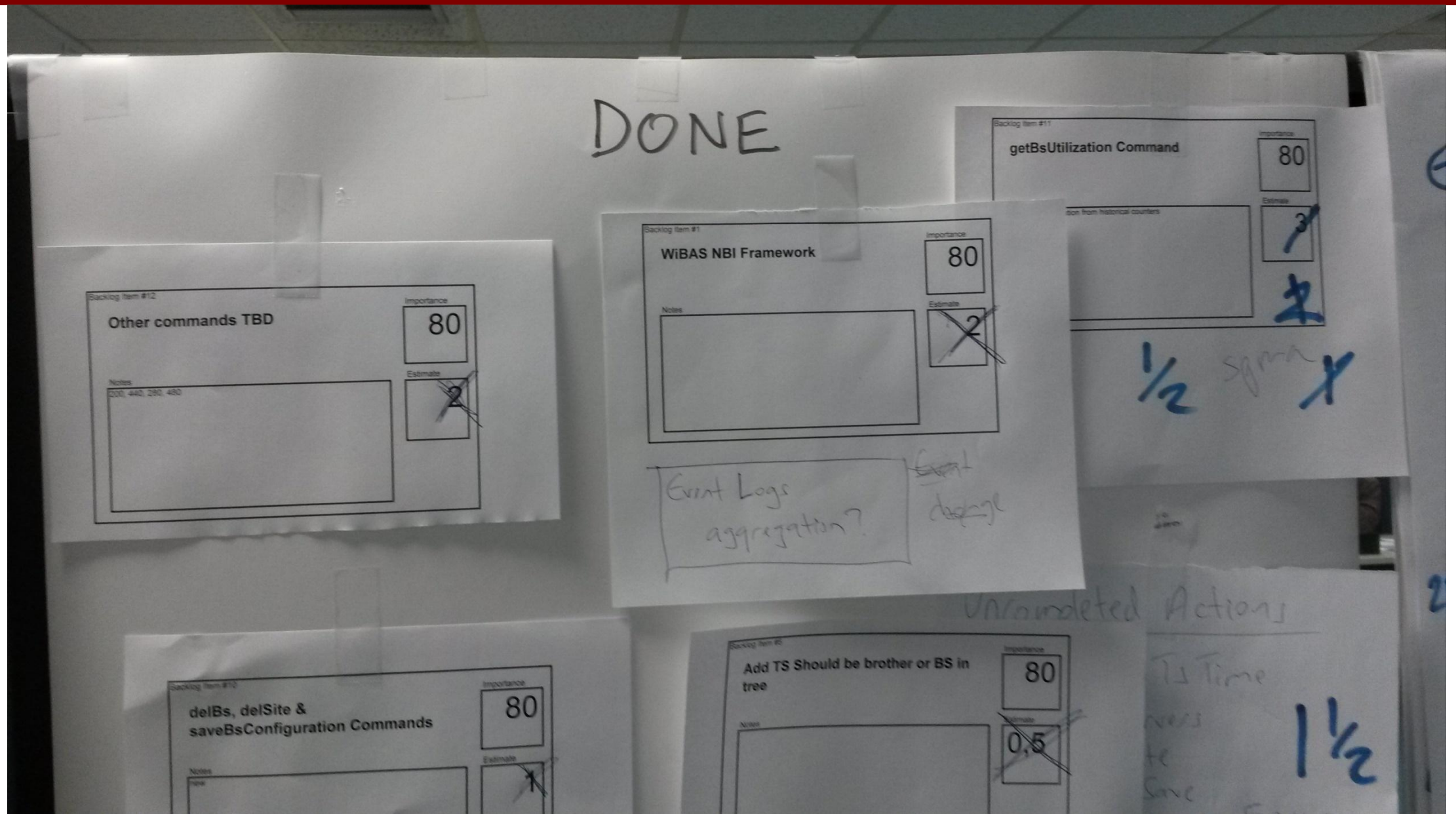
SCRUM – Daily Standup Meeting



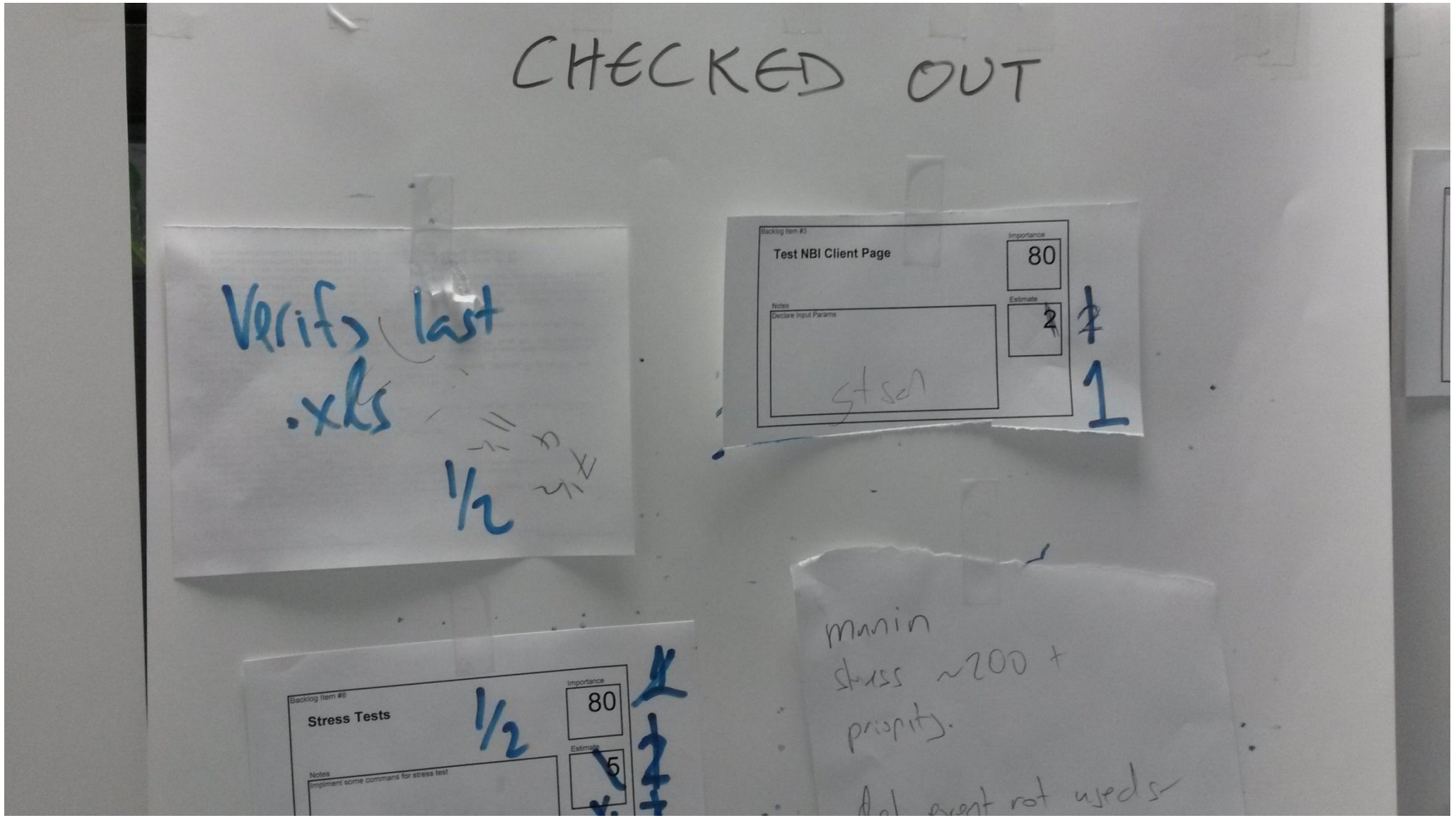
SCRUM – Daily Standup Meeting

- Same place and same time every day (The heartbeat)
- Standing up so your legs tell you if it has gone on for too long.
- Each Team Member Reports
  - What they did yesterday
  - What they will do today
  - Updates estimates on their checked out items and may introduce new items
  - Obstacles for Scrum master to remove
- The scrum master updates the burn down chart

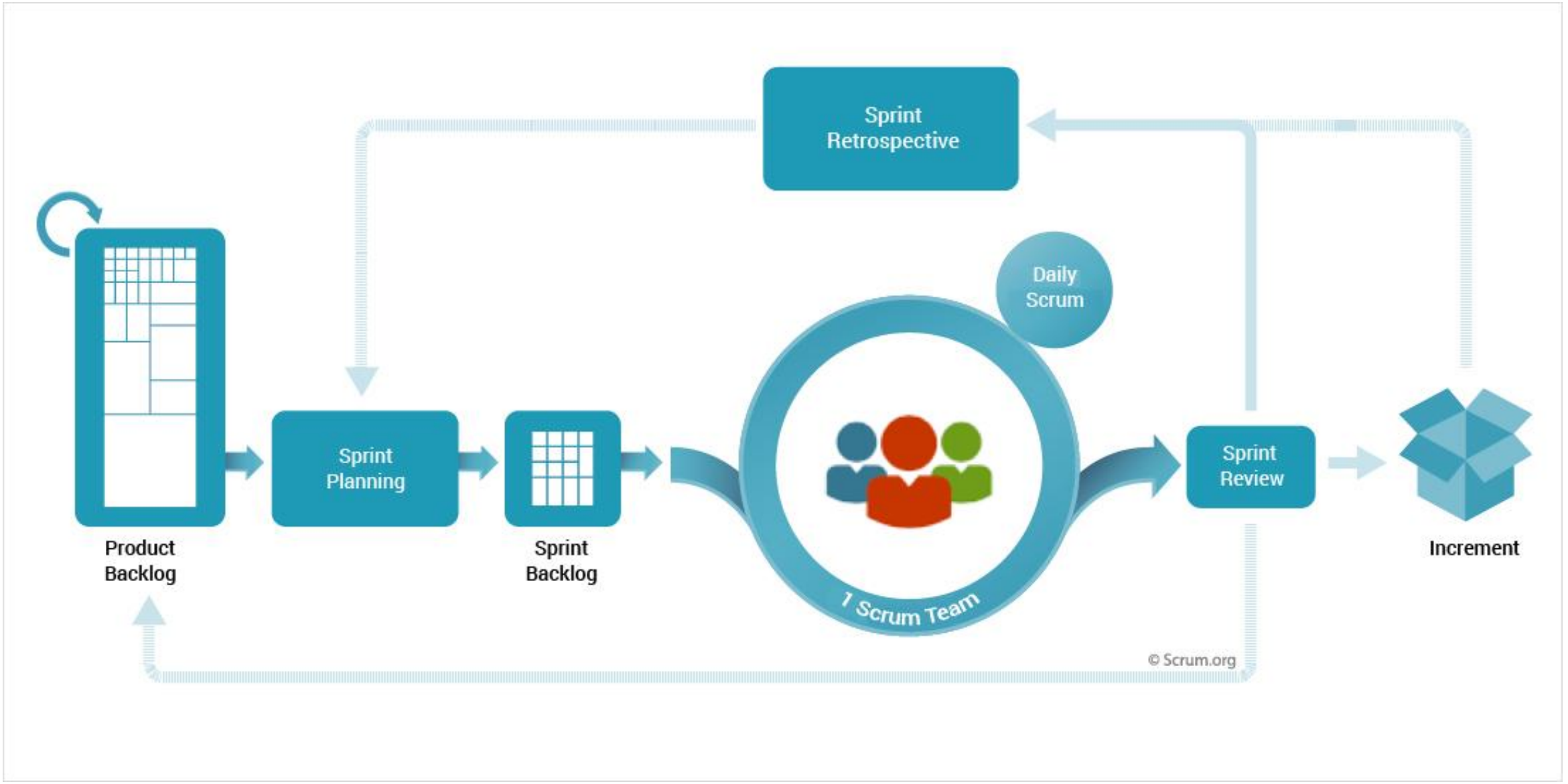
SCRUM – Daily Standup Meeting



SCRUM – Daily Standup Meeting



Where in Scrum is Design taking place?



SCRUM – The Scrum Team

- Design, Implementation, Testing and Operations are not specifically addressed in the process but are carried out by the Scrum Team during the Sprint
- The Scrum Team is self organizing in these tasks
- The Scrum team needs to be balanced in capabilities and experience

Question

Can you guess what the disadvantages with Scrum are?

SCRUM – Disadvantages

- For complex systems the time boxing of a Sprint may be too small for comprehensive Analysis and Design
- Inexperienced developers who are still “learning the trade” will find it difficult to estimate work and produce in such tight timeframes
- Scrum is not suitable for critical systems like an aircraft landing system.

Software Development Methodology - Wisdom

- A methodology should not be an obstacle to your software development team’s productivity.
- There are horses for courses.
- You can modify a methodology to suit your needs
- Software development success is more about people than methodologies
  - Less capable developers will usually fail and more capable developers will usually succeed regardless of the methodology followed.

thank you

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