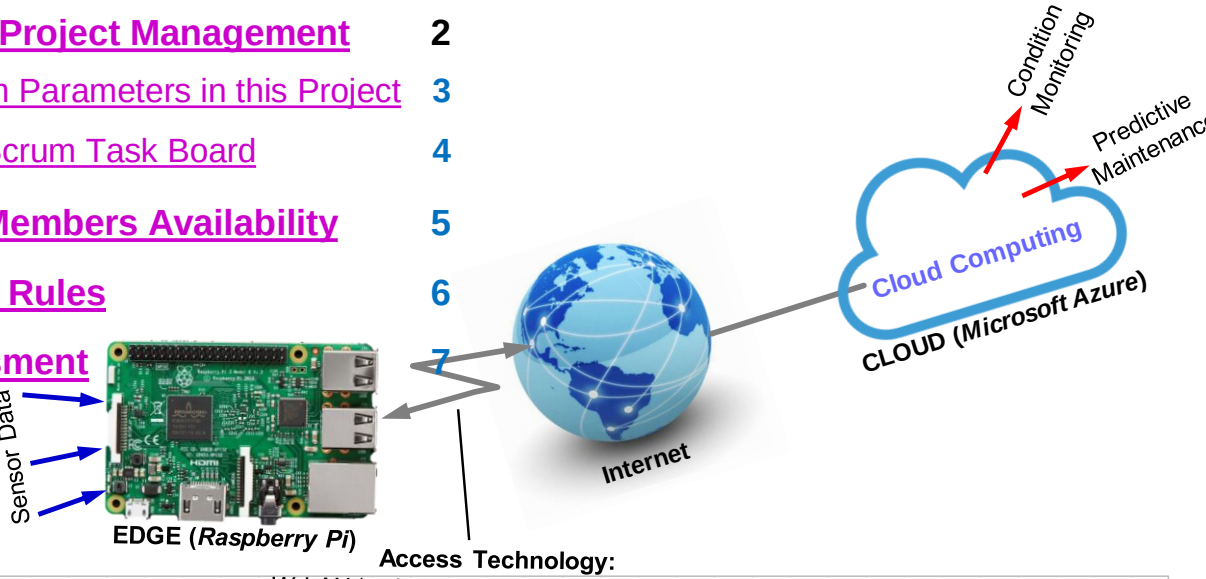
Guideline & Rules for the Master Project

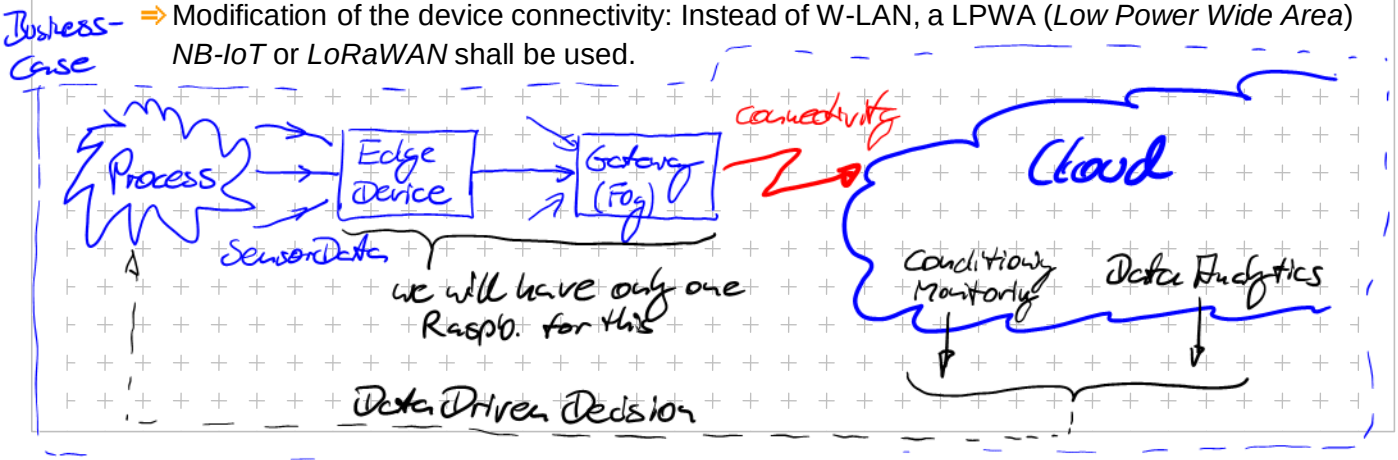
IoT (Internet of Things)

Contents:



Project Goal(s)

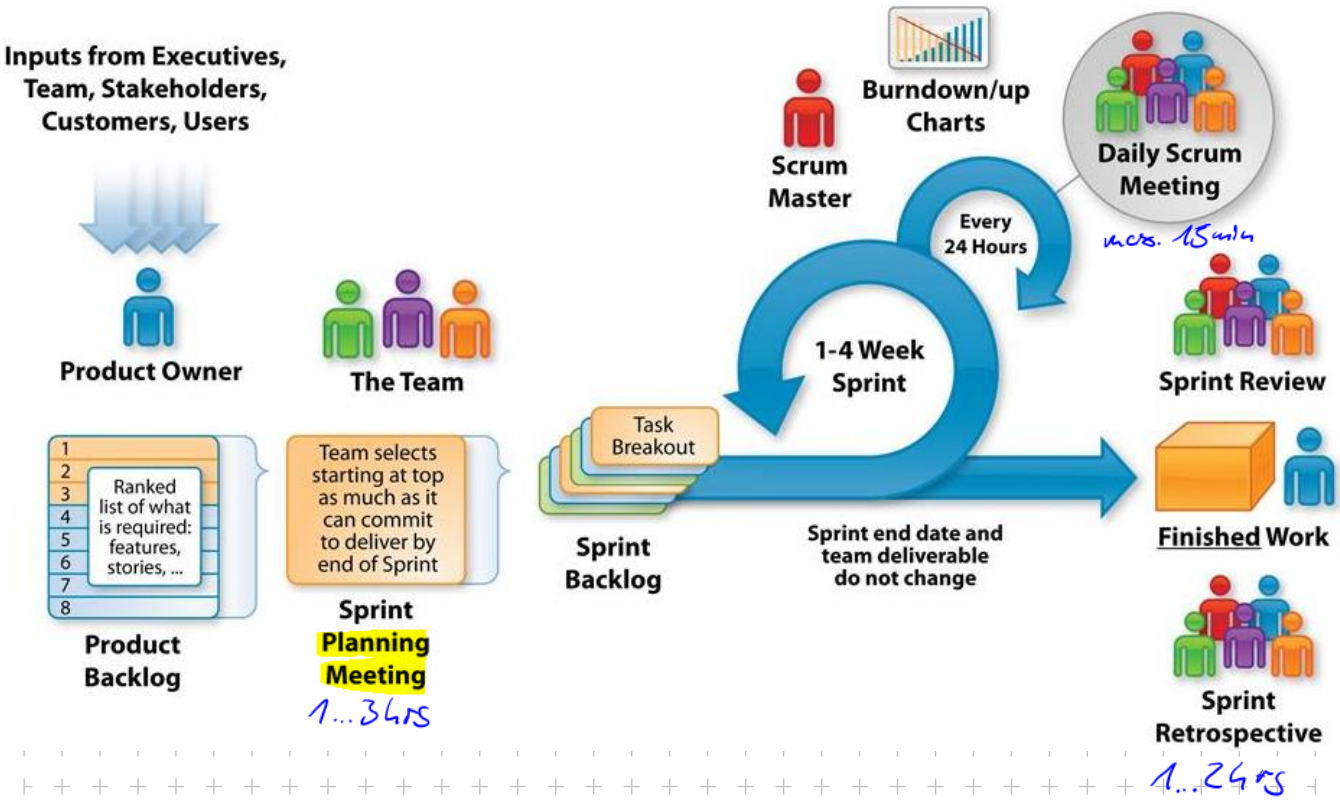
- Create a new 4hr-Lab-Exercise „End2End IoT“ to be done within the module „Communication Protocols“ in the EE/IT Bachelor‘s Program:
  - Exercise Contents: An End2End IoT Demonstrator
    - ⇒ Setup, Programming (preferably with Python), and Configuration of an IoT device
    - ⇒ Setup, Programming, and Configuration of a Cloud Service using the PaaS *(Platform as a Service)*-based *Microsoft Azure IoT Suite*
    - ⇒ Modification of the device connectivity: Instead of W-LAN, a LPWA (*Low Power Wide Area*) *NB-IoT* or *LoRaWAN* shall be used.



Project Management Style: *Scrum*

Instead of Classical Waterfall-Organized Project Management, we will Apply Agile Management using *Scrum:*

- Waterfall´-Management tries to reach a fixed goal with adapted duration and HR
- In Scrum, we keep the duration (4 month) and the human resources (3 students á 360 hrs workload) constant, thus adapting the goal to a minimum valuable product.



Advantages for Using Scrum in a Master Project:

- Project duration is fixed
  - ⇒ Students are free for the examination period.
  - ⇒ Prof. can rely on an output at the end of the semester.
- Full transparency about the current state of the project – both for the team members and for the advisor (who plays the role of the Customer / Product Owner)
- Tasks can be assigned dynamically
  - ⇒ One member can help another in order to avoid delays.
- The dates for Standup Meetings are fixed in advance ("Jour Fixe" twice a week)
  - ⇒ No overhead by agreeing in creating meeting invitations!
- Almost self-documenting meetings
  - ⇒ No boring overhead by writing and reading meeting minutes!

Scrum Parameters and Details for this Project

Scrum-Parameters and Details for this Project

- **No. of Sprints:** Four, each of them lasting one month, till End of March, April, May, and June

- **Standup Meetings** (= *Daily Scrum*): Twice a week, at fixed times, max. 15 minutes duration:
  - ⇒ What did I do since the last Standup Meeting? Did I finish my task?
  - ⇒ What will I do next, until we meet again?
  - ⇒ Everything okay? Is there anything that blocked me in finishing my task?

- **Roles:**
  - ⇒ PO (*Product Owner*) = Prof. H. Stahl
  - ⇒ Scrum Master (if necessary) = Prof. Holger Stahl

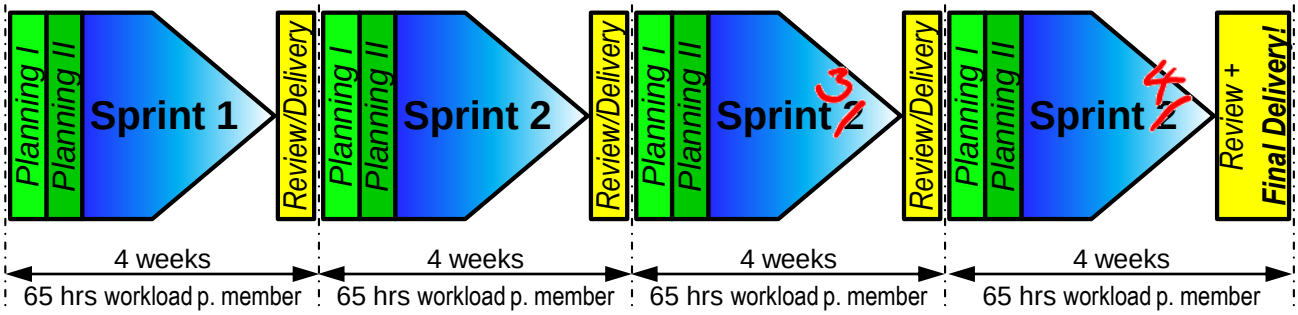
- **Delivery, at the end of each Sprint:**
  - ⇒ Short Presentation (Title + 2 Slides for each team member)
    - = Sprint Review
  - ⇒ A zip file being uploaded to the University Cloud, named **`Delivery_YYYY-MM-DD.zip`** which contains:
    - All relevant software including configuration files
    - The members short presentations (see above)
    - A short installation guide, allowing anybody to reproduce the results of the sprint
    - If applicable for the Sprint: The lab exercise instructions with solution proposals
  - ⇒ Sprint Retrospective

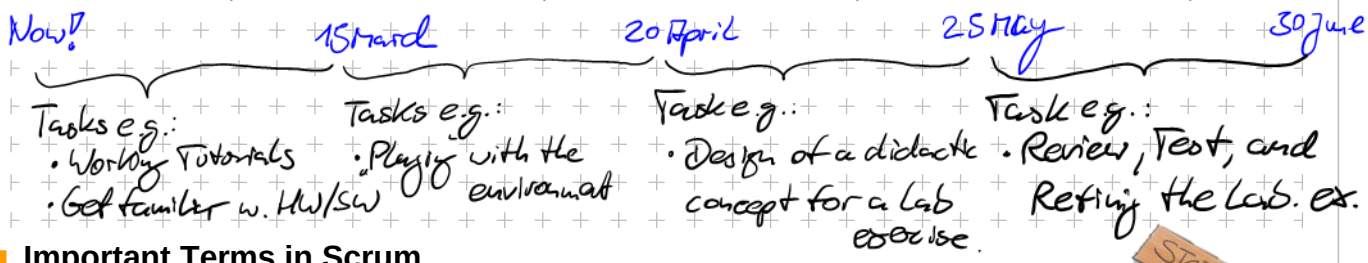
- **Points of a Story:**
  - ⇒ The complexity of a problem to be solved (called a *Story*) in Scrum is measured in *Points.*
  - ⇒ As a clue for the unit in this project, one Point can be understood as the average workload of 1 team member in days (á 7…8 hrs).

Contents of the *Scrum Task Board*

Organisation of the Project in 4 Sprints

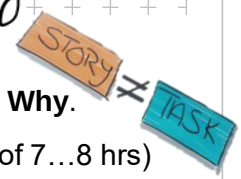
- Each Sprint comprises approx. 65 hrs.
- Each Sprint is started by the *Planning Phases I* and *II*, and terminated by *Review* and *Delivery*:





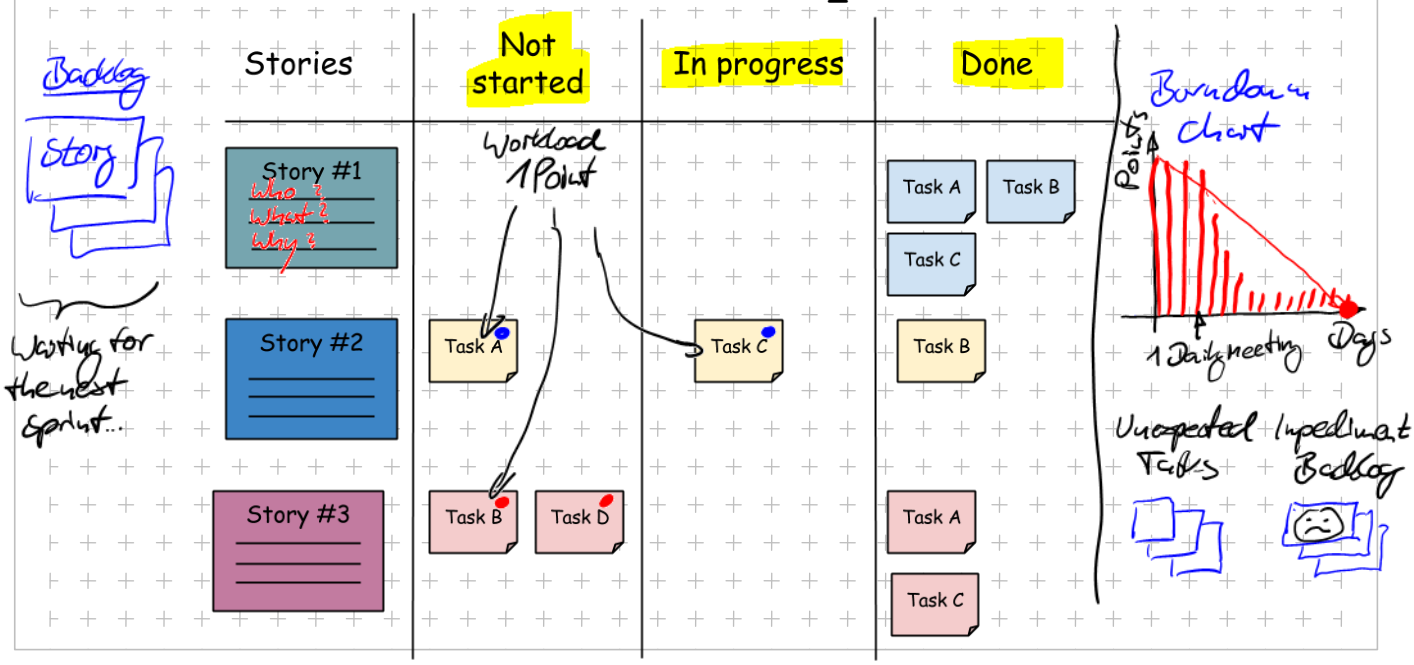
Important Terms in Scrum

- *User Stories* are the PO's wishes, explaining: **Who** wishes, **What** is the wish, and **Why**.
- *Tasks* are small work Steps (typical complexity: 1 Point, equivalent to a workload of 7…8 hrs)



Documentation:

- After each Standup Meeting, the team takes a snapshot (photograph) and uploads the picture file into the University Cloud, with the name **`Taskboard_YYYY-MM-DD.jpg`**.



Availability of the Team Members

Workload of the Team Members during the Holidays till 14 March

Mr. Jörg	Sudhan	Thayze
–	–	30%

⇒ Availability for the Project (assuming a capacity of 40 hrs/week):

100% ≈ 100 hrs	100% ≈ 100 hrs	70% ≈ 70 hrs ≙ 30 hrs/week

Workload of the Team Members during the Semester

Mr. Jörg	Sudhan	Thayze
20 CPs ≙ 67% (of 30 CPs)	23 CPs ≙ 75%	20 CPs ≙ 67%

⇒ Availability for the Project (assuming a capacity of 40 hrs/week):

33% ≙ 14 hrs/week	25% ≙ 10 hrs/week	14 hrs/week

Rules for the Project

Workload and Presence Times :

= 270 hrs (á 60 min) p. member

- **Total Workload** according to the ING-Master's study plan: 360 (school) hours á 45 min
- **Expected Workload in the Lab:** ≥ 266 school hours (= 4 Sprints á 50 hrs)

  ⇒ Presence of at least 50 hrs for each Sprint in the lab is expected and mandatory
- **Presence for all meetings** (i.e. Jour-Fixe/Standup Meeting, Planning and Review Phases) is expected and mandatory.

- Schedule for the meetings of Sprint 1: (till 14 March)

  - Planning : Fri 23. Feb , 13:30 – 15:30
  - Standup : Mon 26 Feb , 9:00
    Wed 28 Feb , 9:00
    Mon 12 Mar , 9:00
  - Delivery Wed 14 Mar , 9:00 – 12:00
    (+ Planning of Sprint 2)

- **Please Note:**

  The meeting dates are fixed and should have priority over other activities at the University. You are responsible to avoid possible collisions with examinations at the end of the lecture period.

Lab Time Record:

- For the sake of a transparent project planning and progress, every participant has to maintain a table showing the current presence time in the lab:

Lab Time Record for the Master Project *IoT*
in Summer 2018

Sprint 1
ends 30 March 2018

Week	Day	Team Member: Mickey Mouse – Presence Time (from - to)	= hrs	total Σ	Team Member: Minny Mouse – Presence Time (from - to)	= hrs	total Σ	Team Member: Dasy Duck – Presence Time (from - to)	= hrs	total Σ
7	Mon 12.2	8:00 – 12:30	4,5	4,5						
	Tue 13. Feb.	9:00 – 11:00 14:00 – 15:30	3,5	8,0						
	Wed 14. Feb.									
	Thu 15. Feb.									
	Fri 16. Feb.									

Assessment of the Project

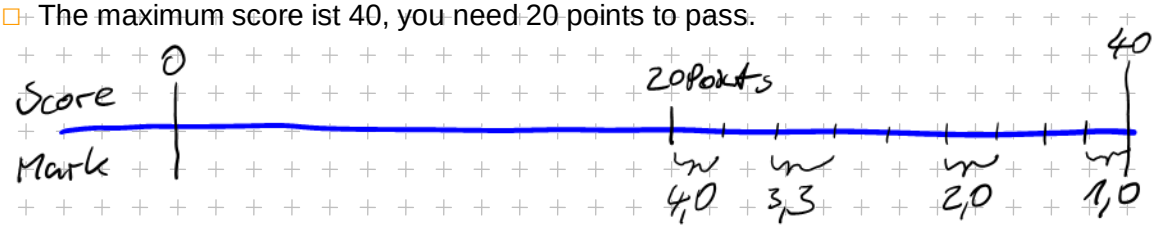
Assessment will be done transparently based on a Sprint-based score:

- **Each Sprint** gives a score 0…10 Points

  ⇒ 5 Points are given individually for each Member, if…
  - the Member was present ≥ 50hrs in the lab,
  - the Member joined the Sprint's Planning and Review meeting,
  - the Member missed ≤ 2 Standup Meetings,
  - the Member did ≥ 5 tasks.

  ⇒ 0…5 Points are given team-wise for the quality of the delivery:
  - Did the Team entirely do all tasks of the Sprint?
  - Did the Team upload a complete documentation and software the University Cloud?

- The maximum score ist 40, you need 20 points to pass.



Homework:

a) Read/Watch explanations of Scrum:
- ⇒ You shall be able to understand all terms and processes mentioned in this guideline.
- ⇒ What is a *Product Backlog*?
- ⇒ What is the difference between *Sprint Planning I* and *II*?
- ⇒ What do we talk about in the *Standup Meeting*?
- ⇒ What is a *Burndown Chart* ?
- ⇒ What is the Output of a Sprint?
- ⇒ What for is the *Impediment Backlog*?

b) Look up example for innovative *IoT* Business Models! Which are your three favorites?

Signatures:

Herewith, I state that I have understood the rules of this project, and that I agree with them:

Your Signature	Your Signature	Your Signature
Your Name	Your Name	Your Name