



European Institute of  
Innovation & Technology

# Project design and implementation

## Cycle of Seminar

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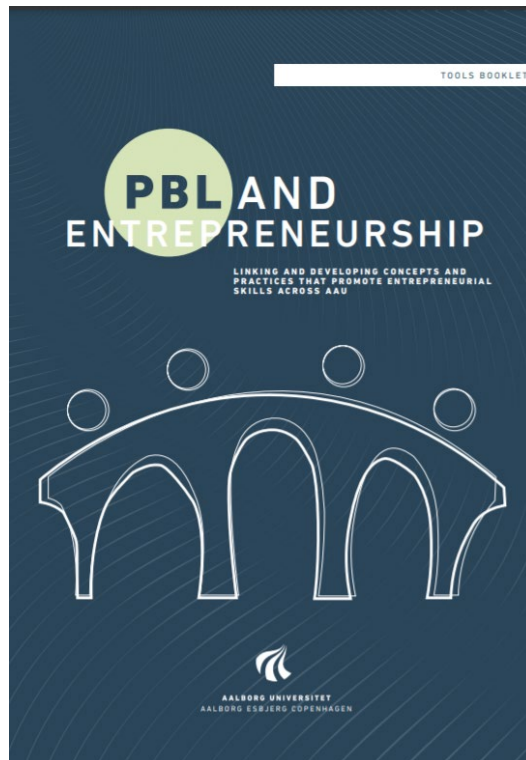


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# Introduction

## How can we define entrepreneurship?



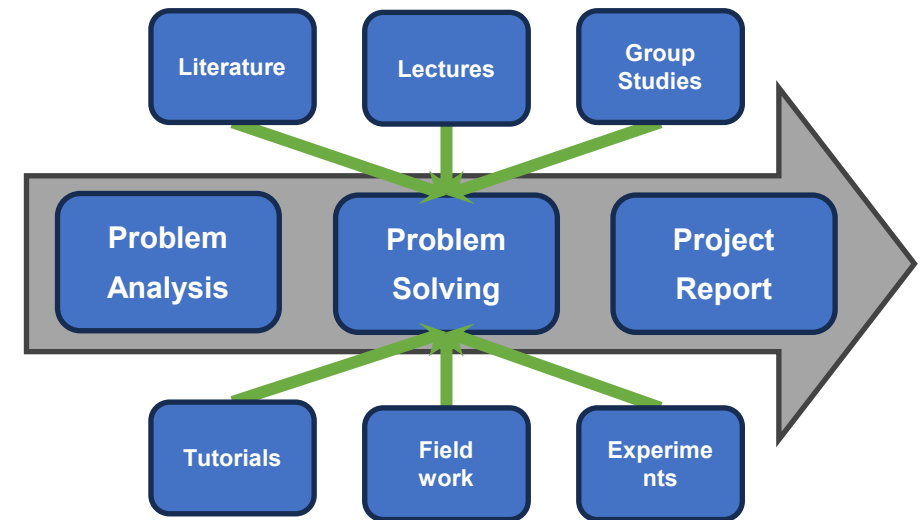
### DEFINITION

“Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural or social”

(The Danish Foundation for Entrepreneurship, 2016)

# Problem-Based Learning (PBL)

- Students develop as self-directed life-long learners
- Students can identify and address complex scientific problems
- Students can define their own learning needs
- Students can seek relevant information and knowledge to address complex problems
- Students are competent communicators and collaborators



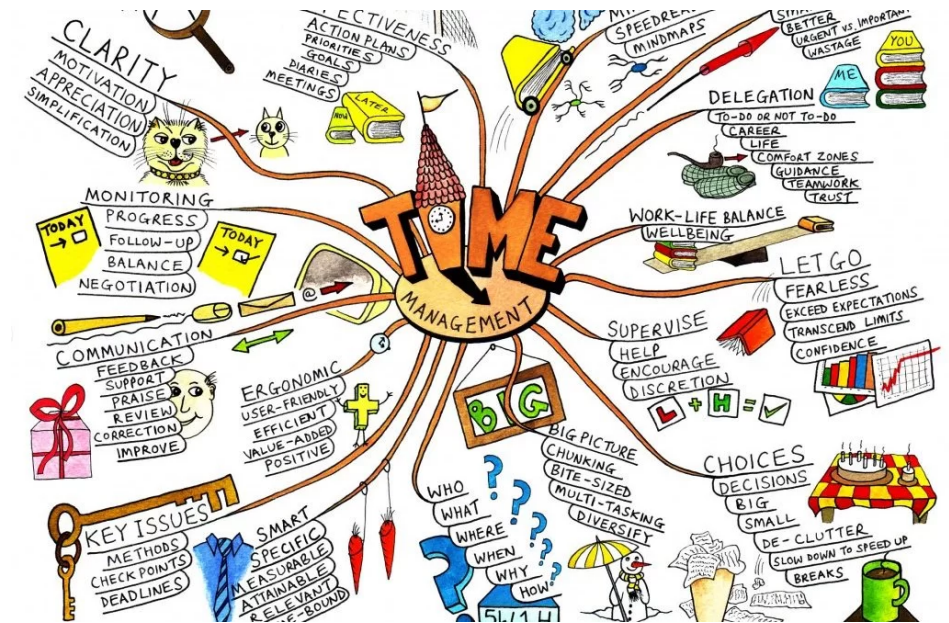
# Entrepreneurial Competencies

- Challenging to design a project
- Multiple aspects to consider
  - Ideas & Opportunities
  - Resources
  - Into Action



# Ideas & Opportunities

- Defining project objectives
- Brainstorm - Importance of innovation
- External Collaboration
- Group Creation



<https://ingelsoong.com/how-to-make-a-mind-map/>

# Ideas & Opportunities

- Clearly defined objective:
- Bad:
  - “Upgrade the organization's IT infrastructure”
- Why?
  - No specified objective.
  - No specific timeframe.
- Good:
  - “Upgrade the organization's IT infrastructure to reduce downtime and enhance system performance, achieving a 30% decrease in system-related issues within the next six months.”



# Collaboration

- Teamwork
- Knowledge sharing
- Roles
- Conflicts



# Resources

- Manpower
  - Skillset
- Courses/Lectures
  - Lectures to obtaining the right competences
  - Learning general theory
- Literature
  - Project specific learning
- Tutorials
  - Support for project specific tools etc.
- Field work
  - Find unforeseen problems

Types of resources

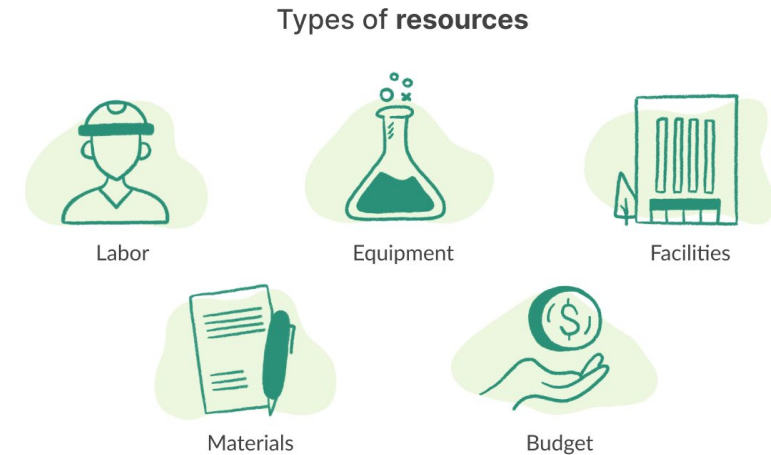


<https://blog.ganttpro.com/en/how-to-allocate-resources/>



# Budgeting

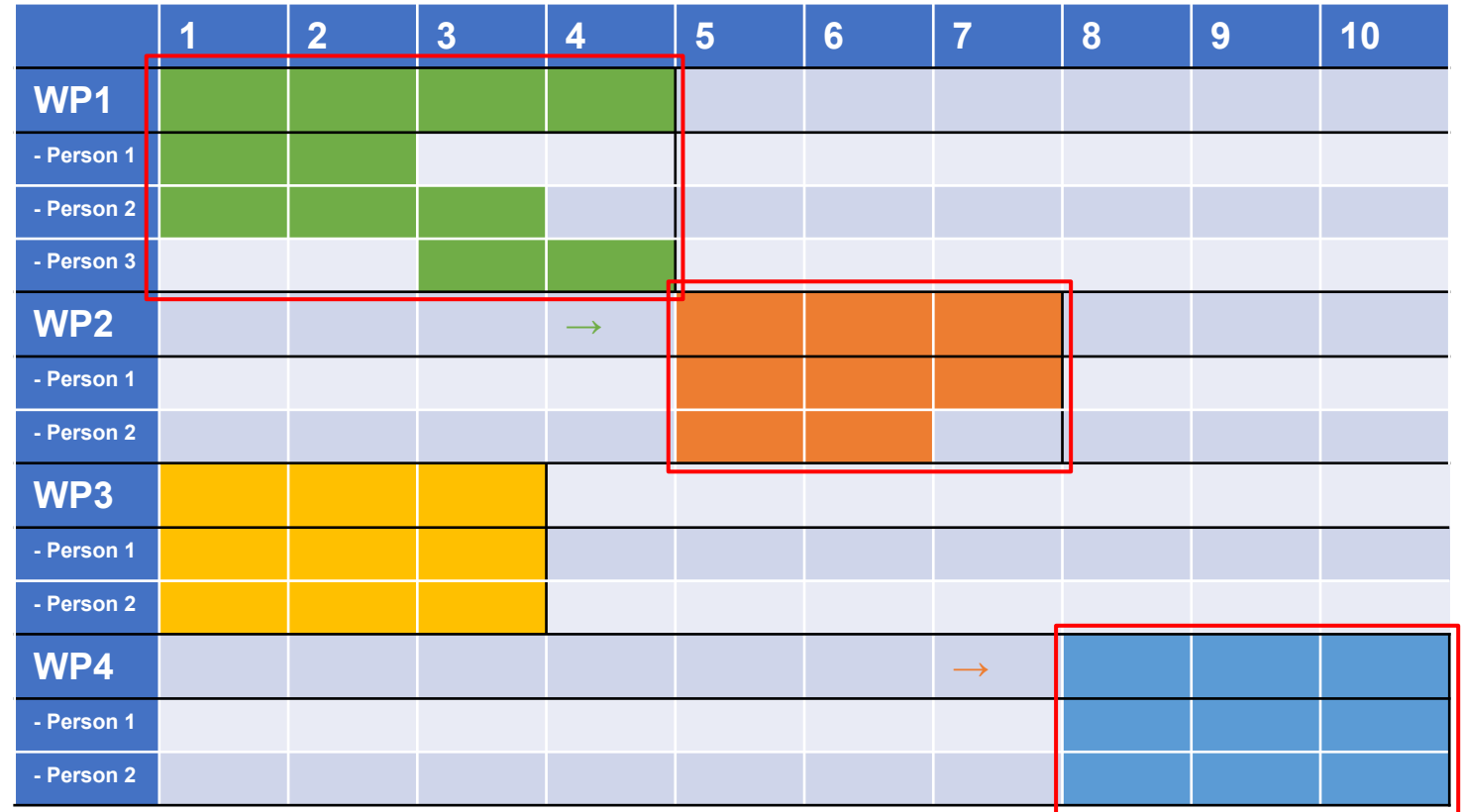
- Crucial in project design
- Fixed costs:
  - Salaries
  - Rent
  - Licenses and permits
- Variable costs:
  - Materials
  - Temporary Staff
  - Travel Expenses



<https://blog.ganttpro.com/en/how-to-allocate-resources/>

# Timeline

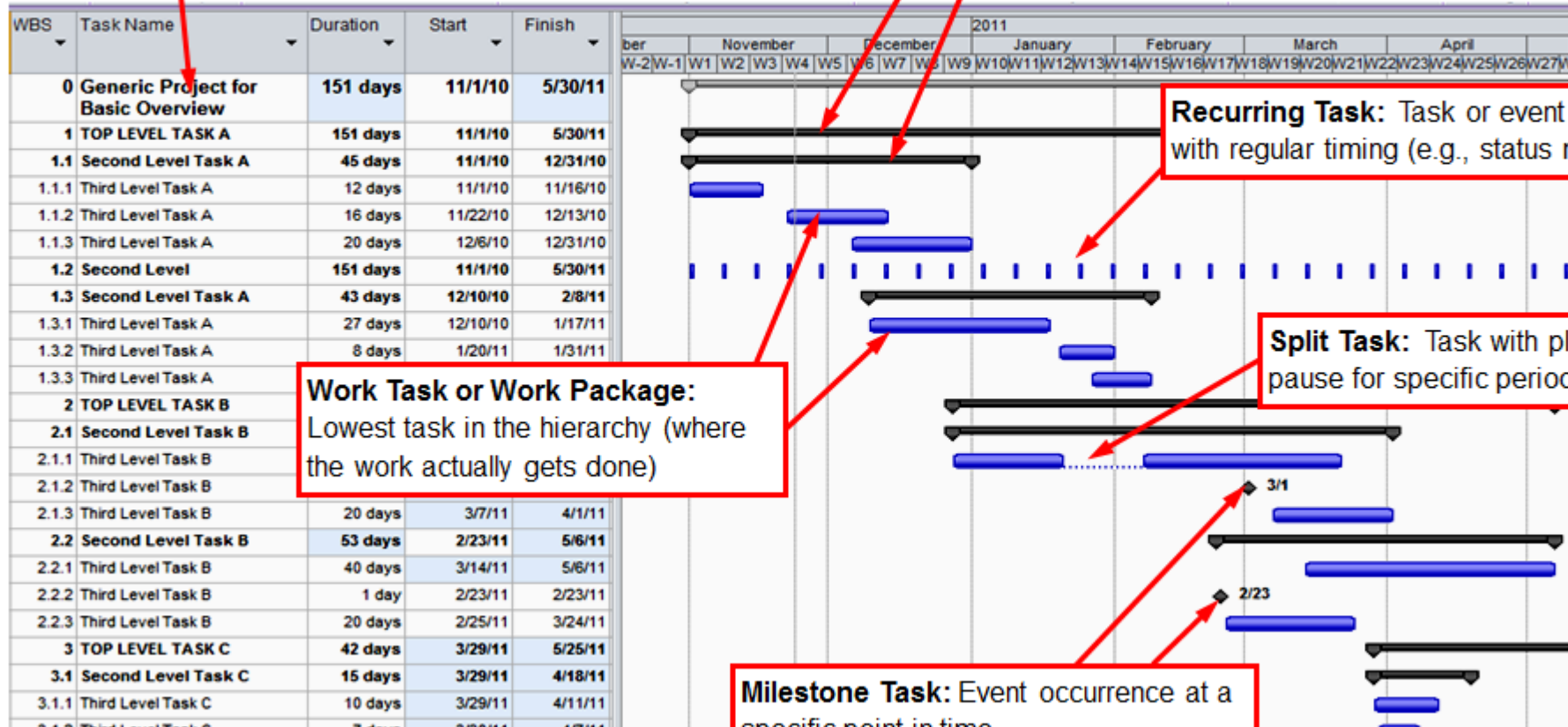
- Define milestones (The end goal is known)
- Backcasting or backward scheduling/planning
- Critical Path Analysis
- Divide into smaller tasks



# Gantt Chart

**Project Summary Task:** Special task identifying entire project

**Summary Task:** Any with lower-level subtasks



[https://www.e-education.psu.edu/geog871/l5\\_p5.html](https://www.e-education.psu.edu/geog871/l5_p5.html)

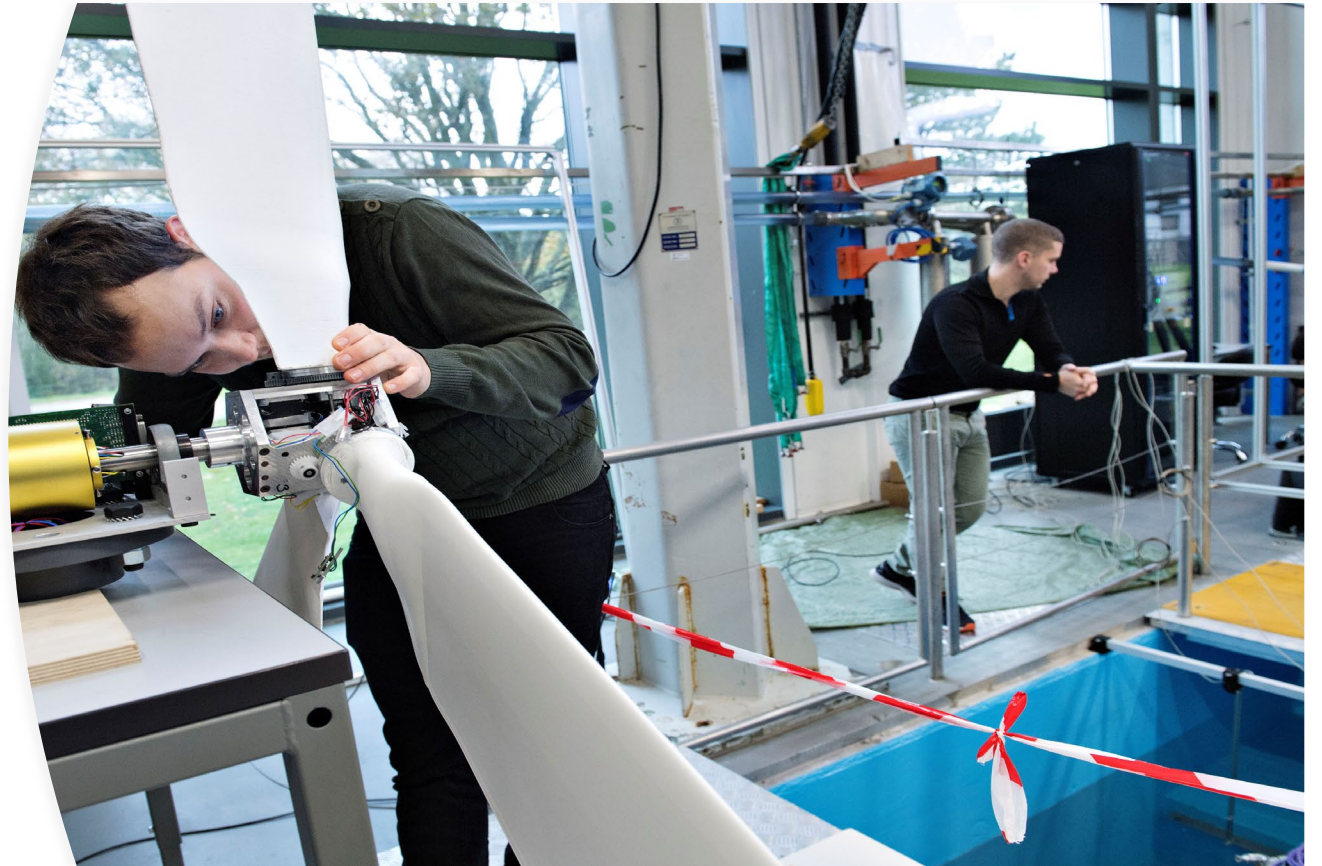
# Considerations & Risks

- Budget Constraints
- External effects
  - Material shortage – E.g., Pandemic
- Milestone not obtained?



# Into Action

- Prototype/Analysis
  - Iterative design process
  - Verify the impact of the solution
- Revisit time-schedule
- Highlight new risks/opportunities



# Supervision/Board

- Meetings through the project
  - Internal / External (stakeholder)
- Guidance
- Owner of the project and thereby responsible for the success



# Project communication

- Communicating ideas effectively
- Creating compelling visuals
- Presentation of project, where?
- Group exam (At AAU)
  - Companies can be part of the censor team



<https://teachinginnc.wordpress.com/2017/08/16/dream-it-project-part-iv/>

# Evaluation

- Analyzing successes and challenges
- Continuous improvement mindset



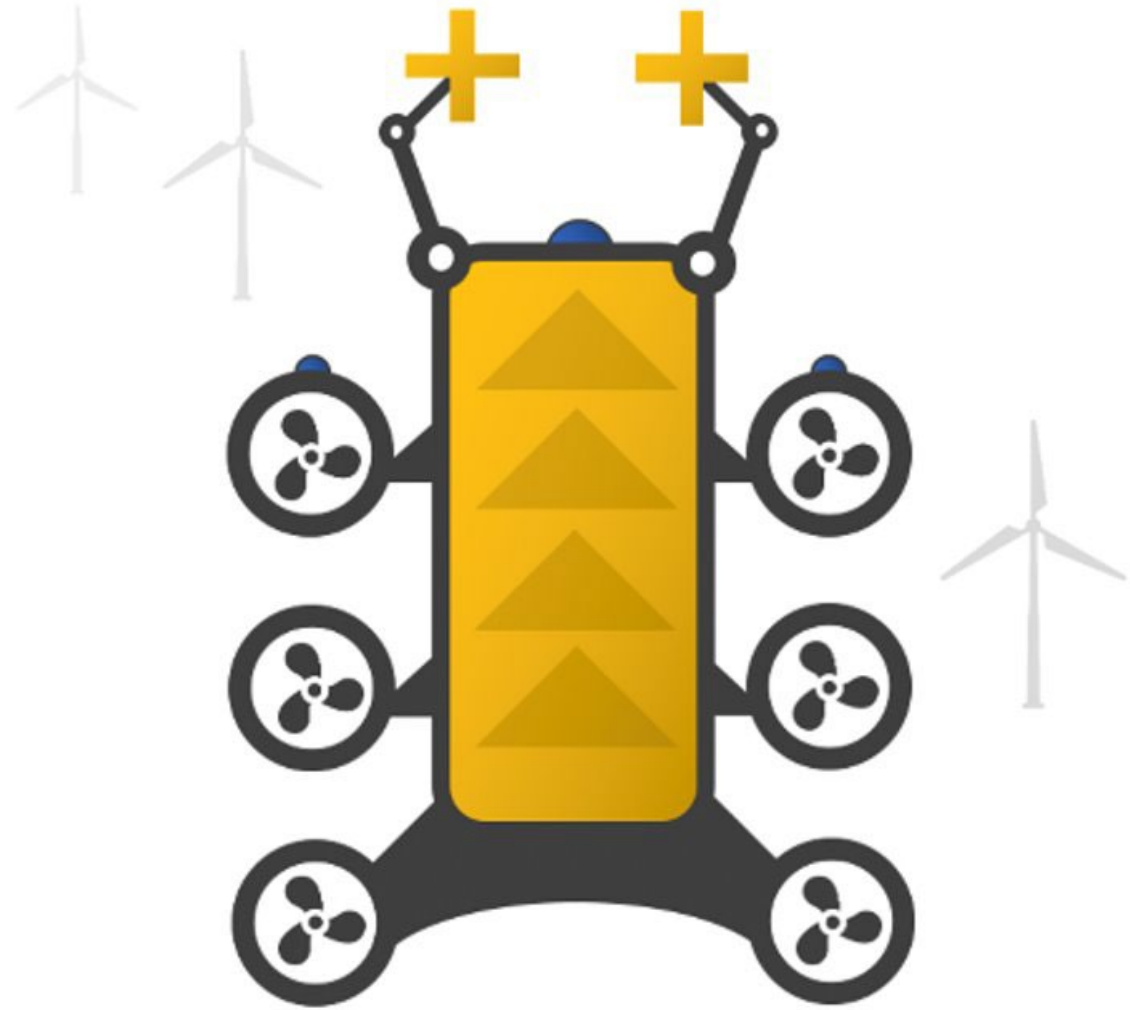
<https://teachinginncc.wordpress.com/2017/08/16/dream-it-project-part-iv/>



# Break

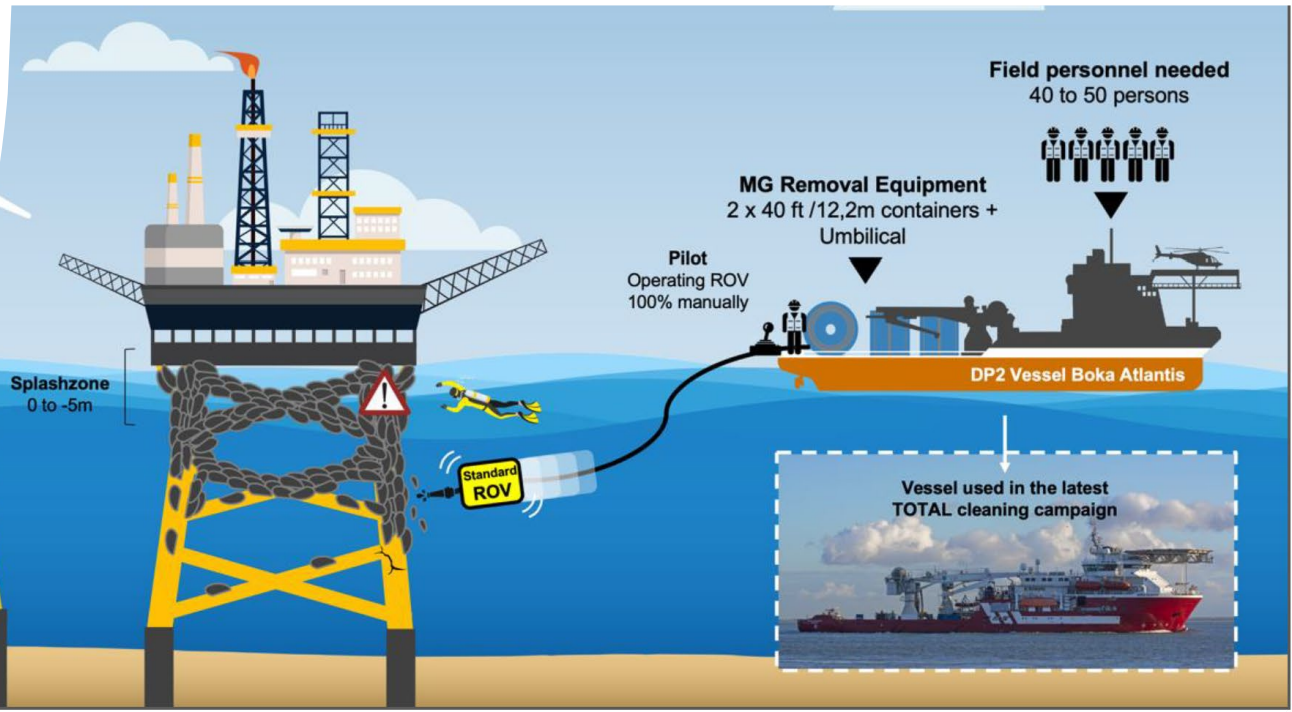
# Case: ACOMAR

- Master Thesis
  - Initiated by a local company



# Proof of Concept

- The problem
- Current solution

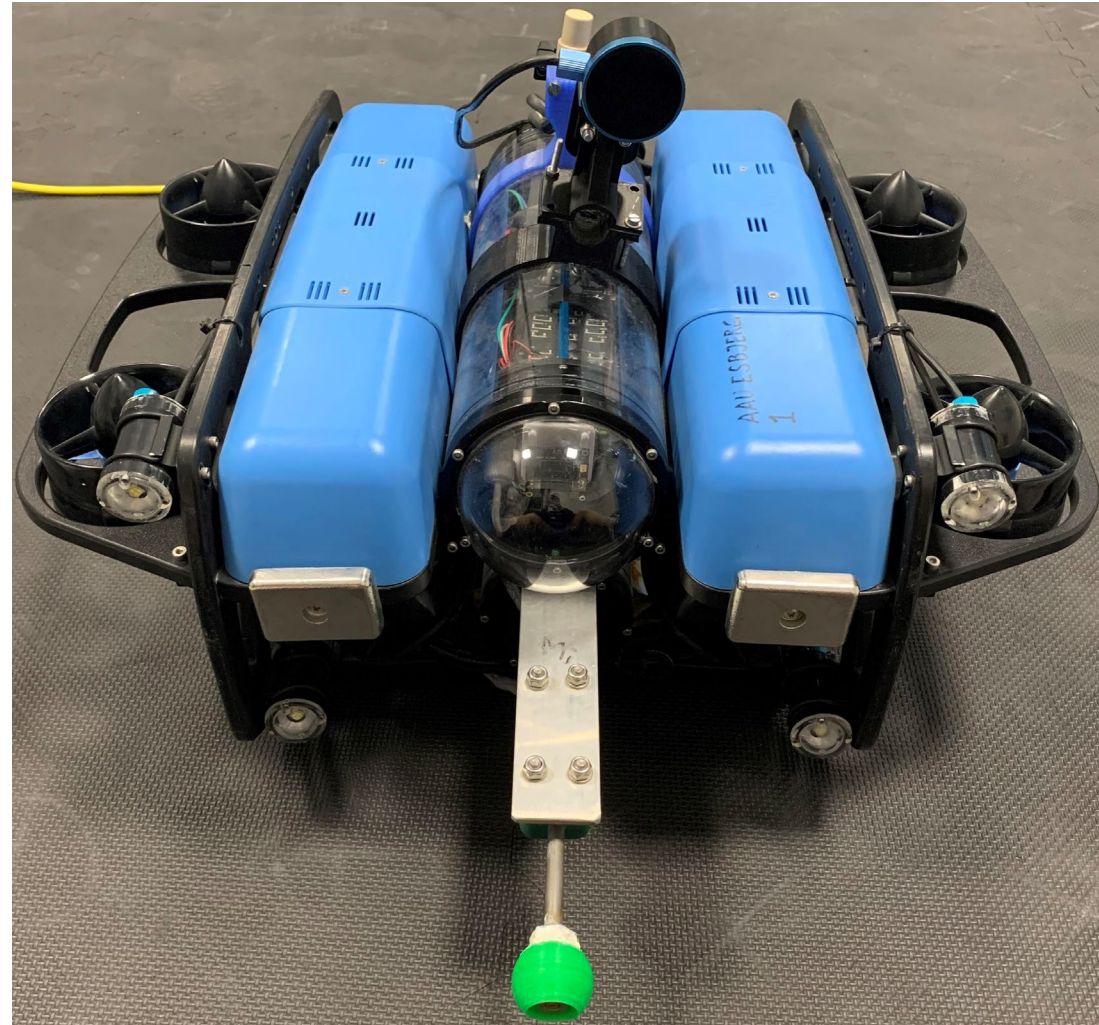




Sub sea cleaning with ROV with high-pressure jet nozzle

# Proof of Concept

- BlueROV2 (Used for semester projects)
- Existing hardware reconfigured
- Collaboration with company



# Master Thesis

- Group Project
- 1 Year
- Cooperation with company



AALBORG UNIVERSITY  
ESBJERG



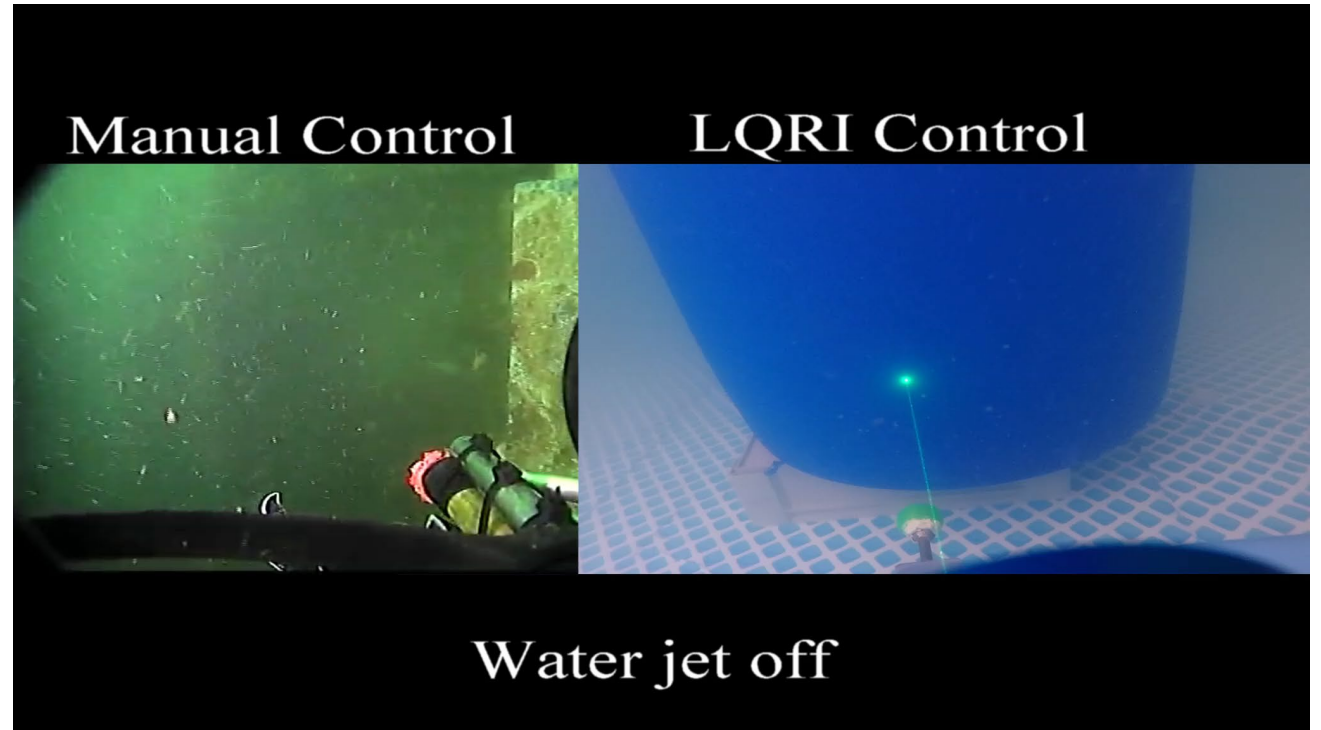
# Test facilities

- Corona Lockdown
- Garage Laboratory



# Proof of Concept Completed

- Results in laboratory
- Master thesis
- Phd and employment in company





# Beginning of ACOMAR

- Kick-off
  - Results from master-project
  - Brainstorm
- Close collaboration between University and companies



# Beginning of ACOMAR

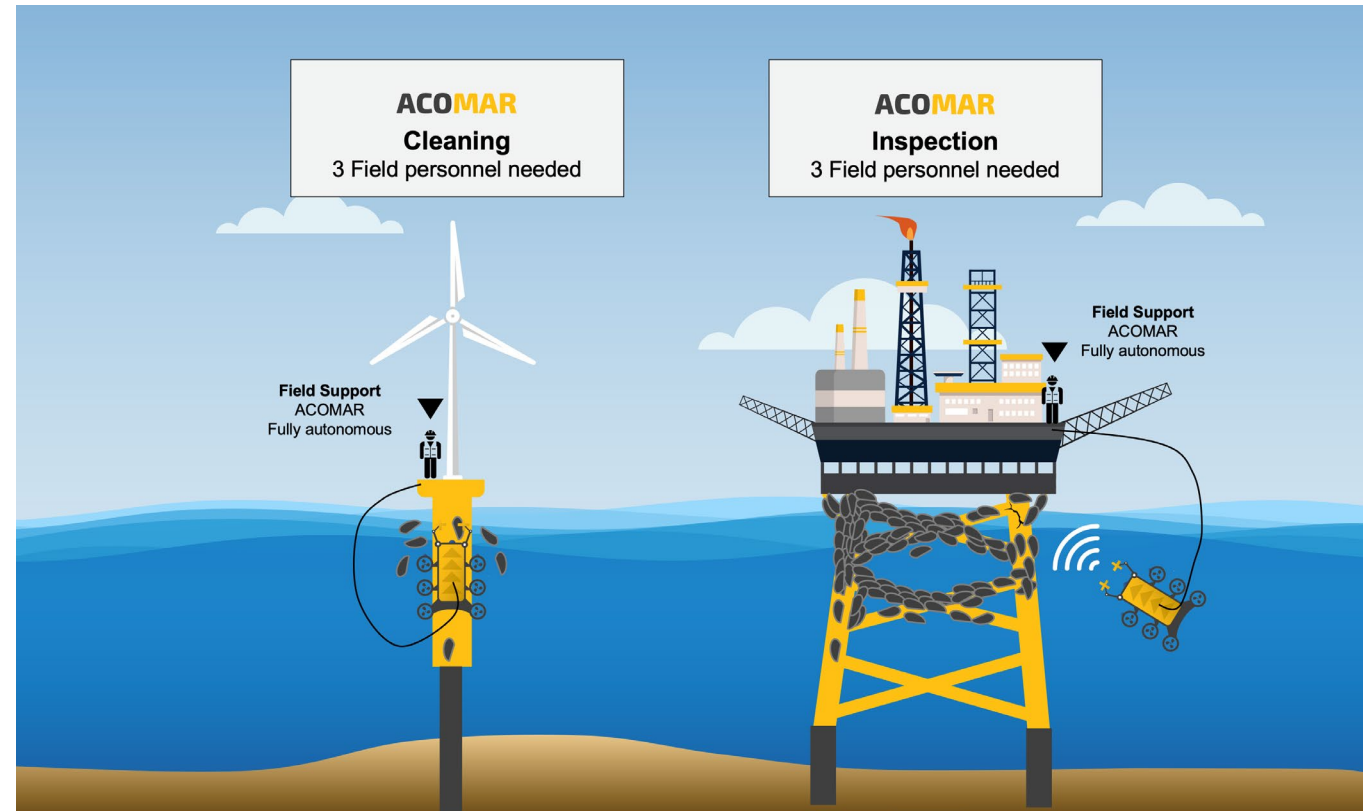
”Develop a specialized fully automated underwater vehicle, which can remove marine growth from underwater structures with the ability to launch from platform, with at least same cleaning efficiency.”

The project is set to be completed within 3,5 years.



# Risks

- The ACOMAR cannot be launched from the platform and the vessel is therefore still a requirement for campaigns. However, the combination of the ACOMAR prototype and the automation algorithms can still improve the inspection and cleaning efficiency.
- The ACOMAR prototype (either electrical, software or hardware) cannot be integrated and a conventional ROV must be used instead. In this case the improvement in inspection and cleaning efficiency will rely on the effect of the automation algorithms.

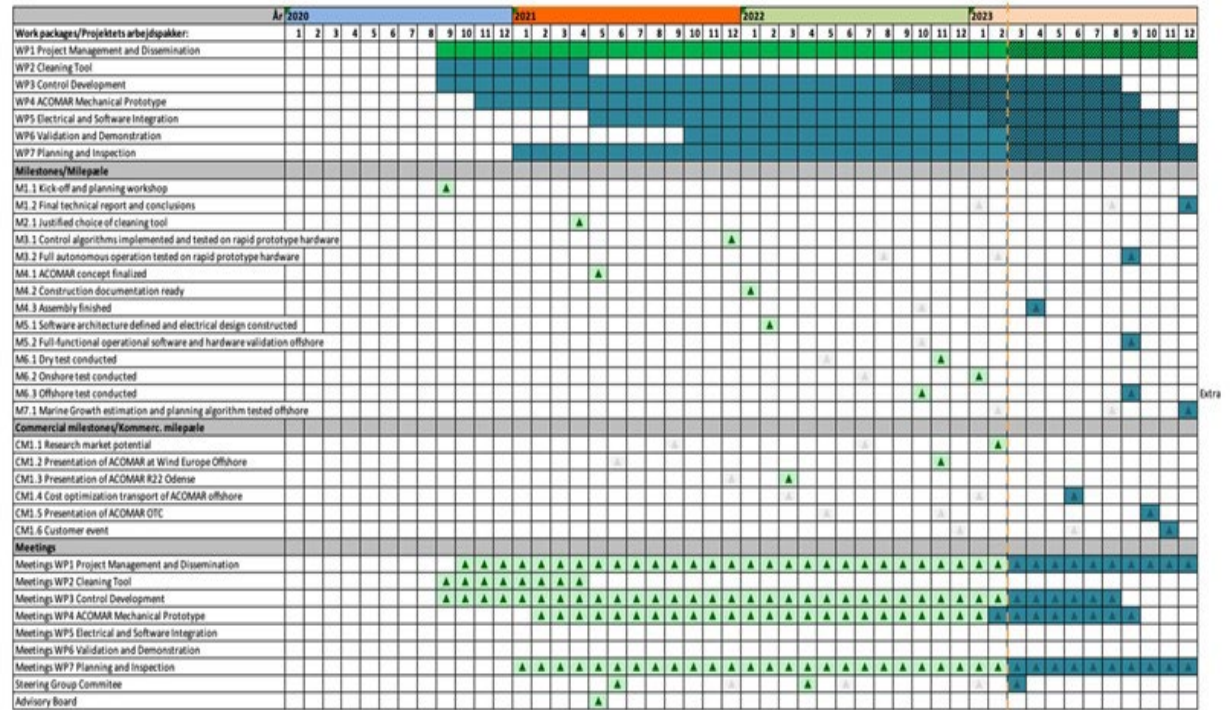


# Gant Chart

- Work package
- Milestones (Technical)
- Commercial Milestones
- Meetings

## Gantt diagram

Project title: ACOMAR  
 Project start: 1. Sep 2020  
 Project end: 31. Dec 2023



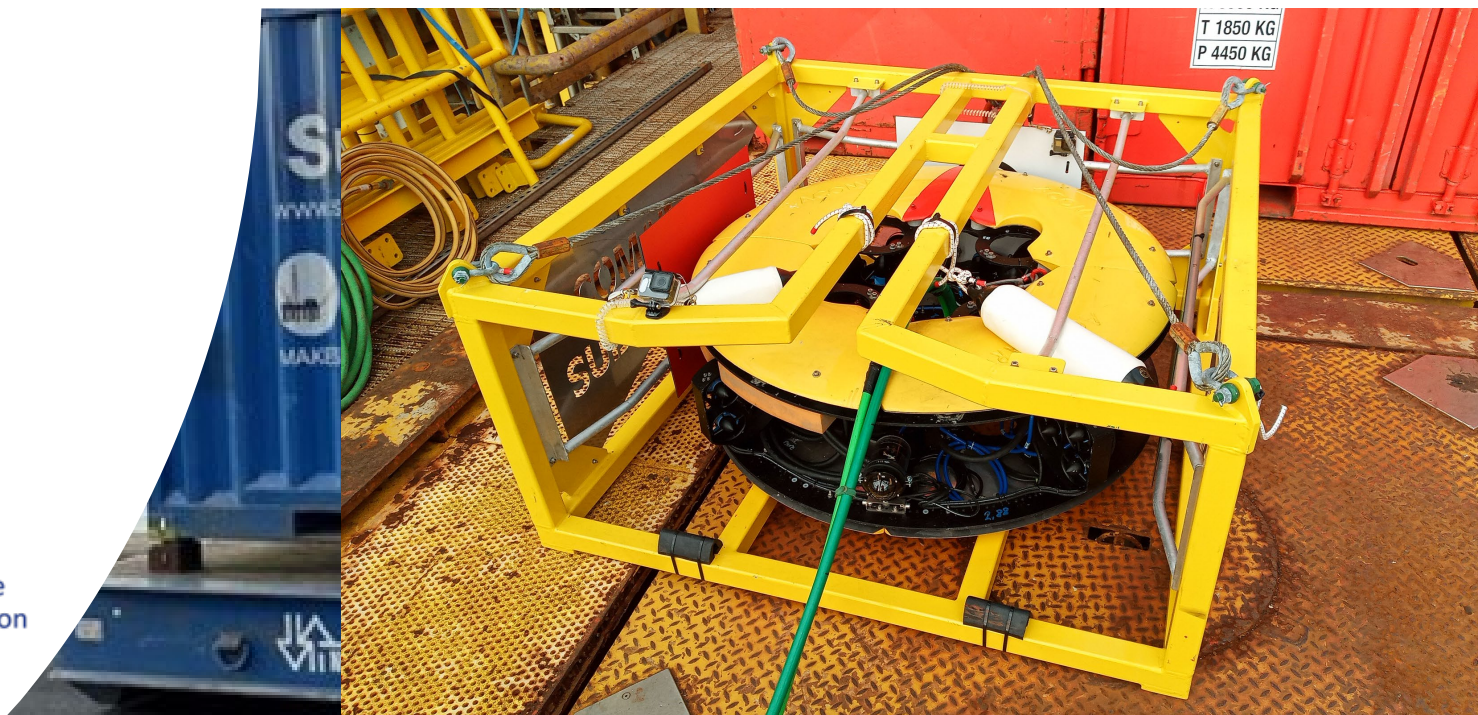
# Rapid prototype

- Changed strategy for rapid prototype
- Advantages
  - Able to perform offshore tests
  - Shorter time to market
- Disadvantages
  - Longer time to initial testing
  - More complex vehicle



# ACOMAR

- Initial design of vehicle
- Testing in harbor
- Improvements
- Iterative design
- Testing offshore
- Evaluation



# Unforeseen risks

- Propellers damaged will cleaning
- Electrical speed controllers suddenly failed



# ACOMAR

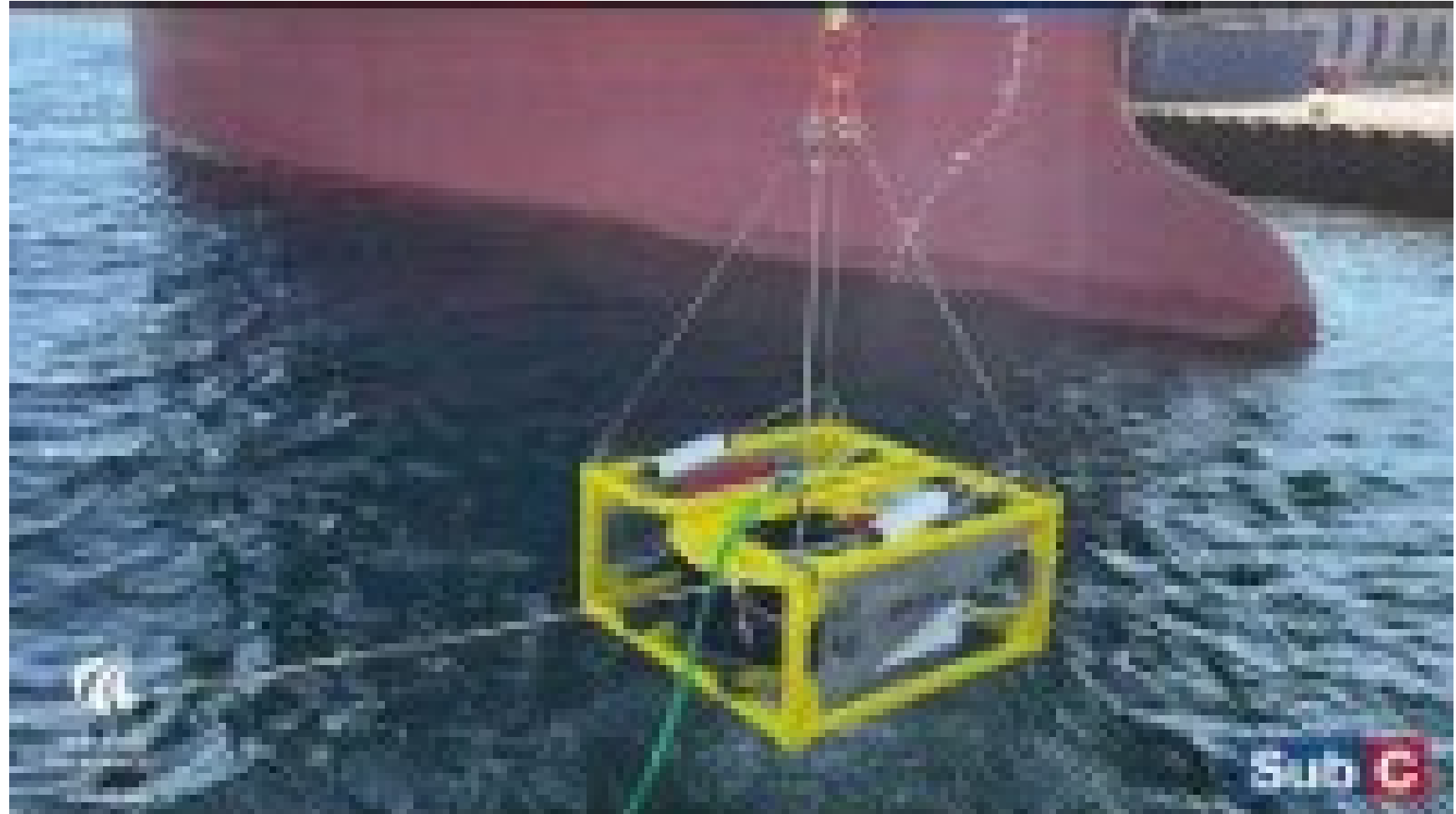
- Improvements based on offshore experience
- Planned pilot project





# Marketing

- Status video through project



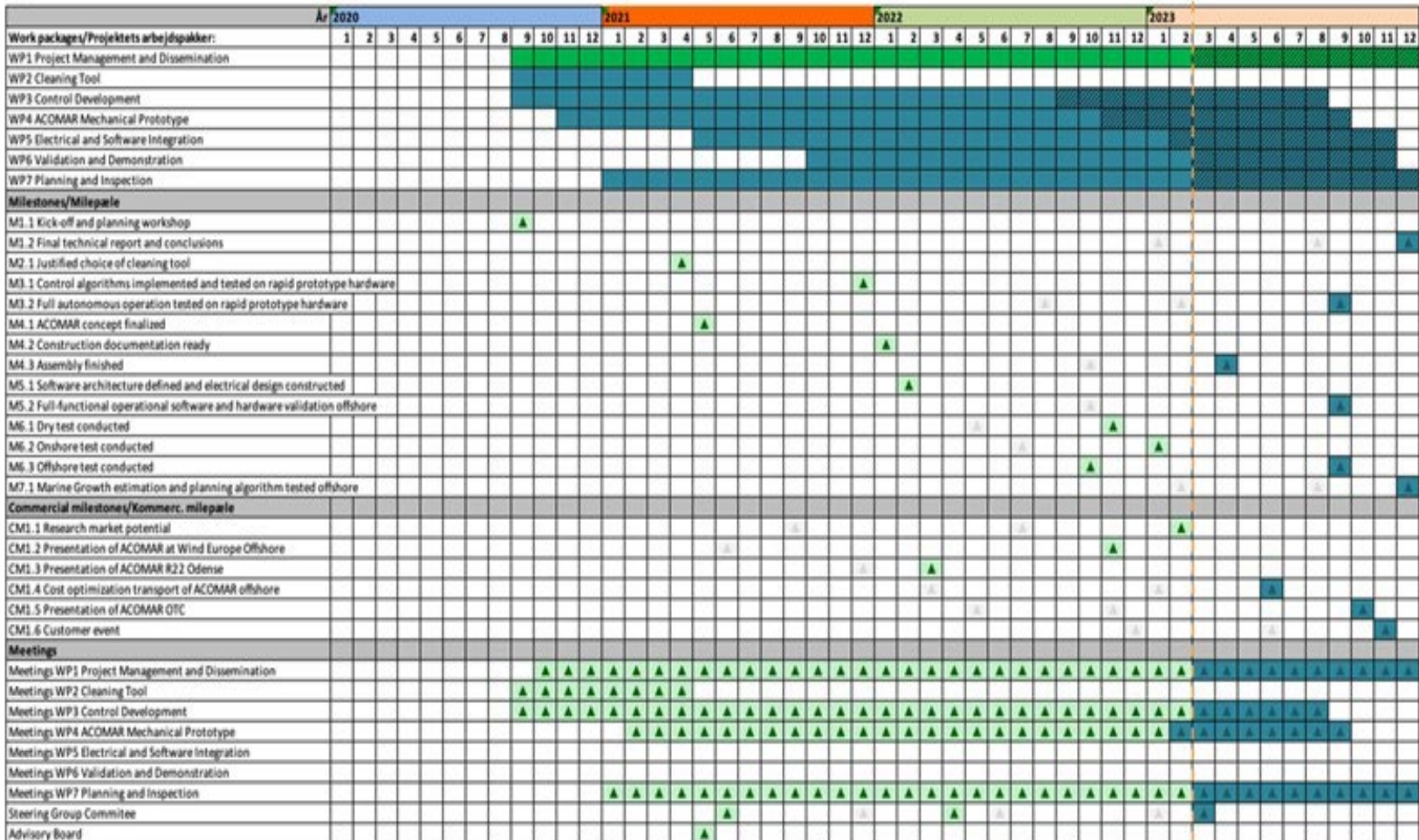
# Marketing

- Promotion of engineering educations
- Press releases
- Promotion of vehicle to industry



# Gantt diagram

Project title: ACOMAR  
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Extra

# WP7 - Inspection

- Synthetic images
- Artificial Intelligent/Machine Learning
- Classification/Thickness estimation

