Embedded Systems: Course introduction

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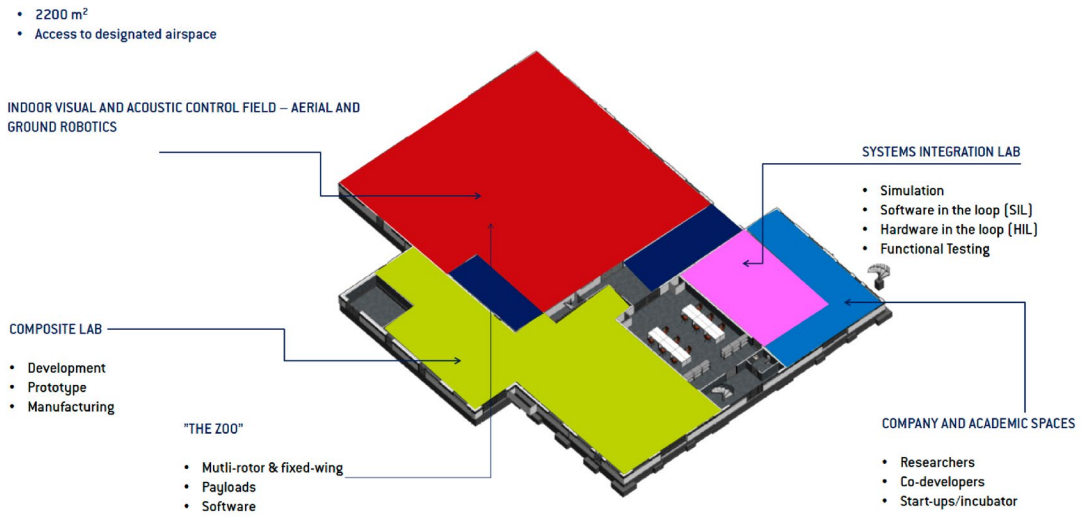
Get to know each other!

SDU UAS Center

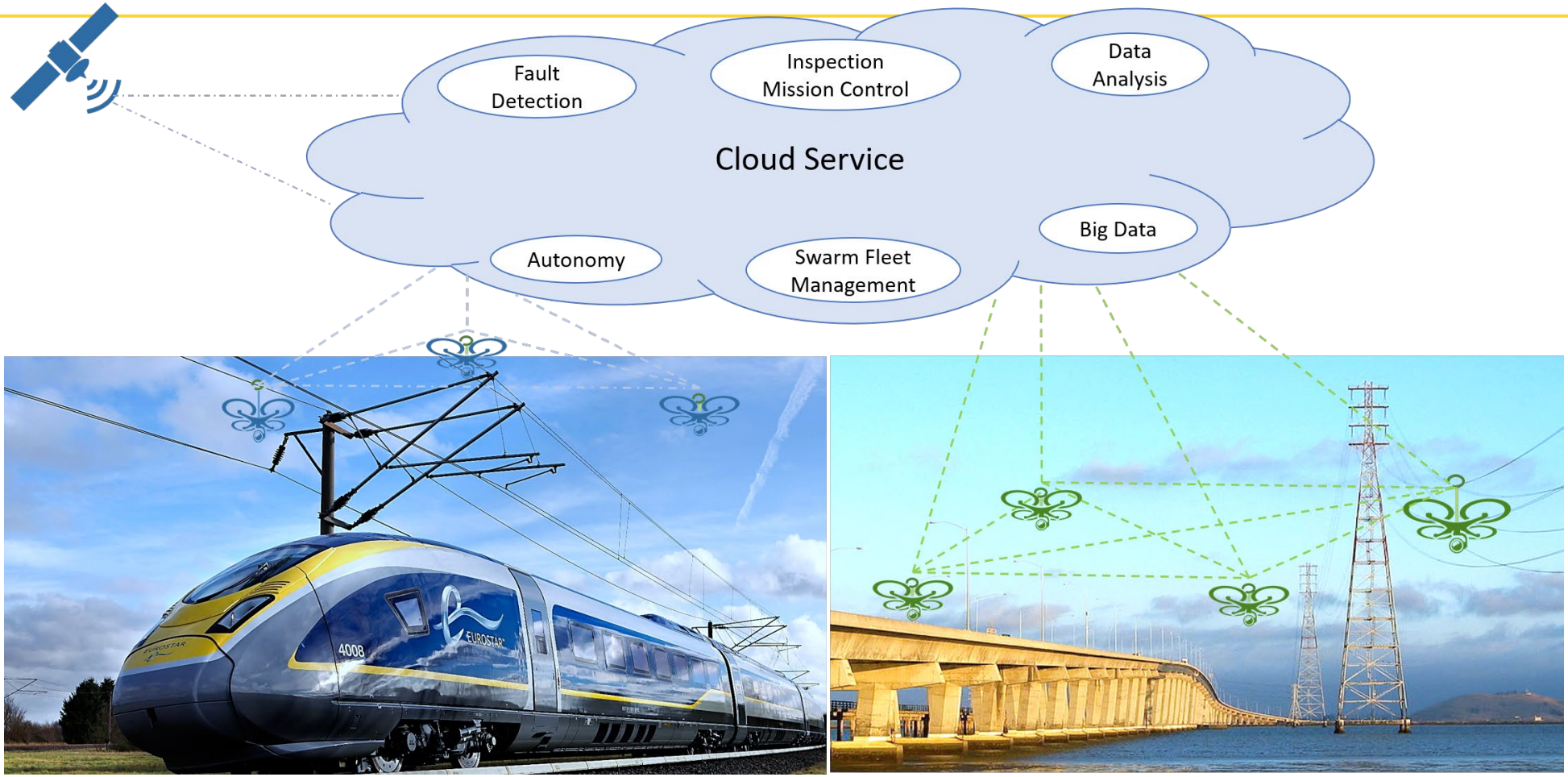
- Established in 2015
- Based on knowledge and experience in robotics, computer vision, software engineering, embedded systems, industrial design & mechanical engineering.
- New master degree specialization in UAS technology, September 2015.
- New facilities for research and innovation at HCA Airport in 2017.

SDU UAS testing centre, HCA Airport

- Established in May, 2017
- Owned by HCA Airport, Odense Municipality and SDU
- 867 km2 restricted airspace
- Indoor drone flight area
- Laboratories
- Student facilities
- Industrial partner offices
- Support staff for drone technology and operations



Drone research



https://via.ritzau.dk/pressemeddelelse/new-eu-research-project-swarms-of-drones-to-ensure-safe-bridges-and-railways-across-europe?publisherId=12056383&releaseId=13595099

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°861111.

2019 class

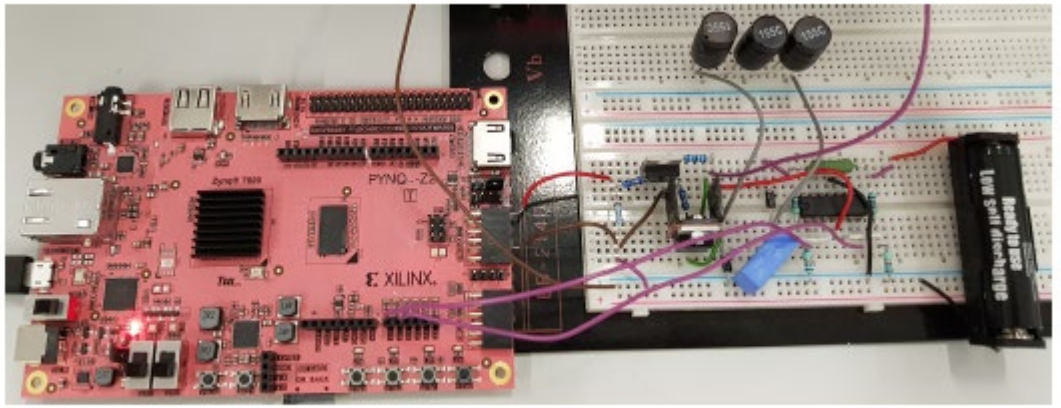
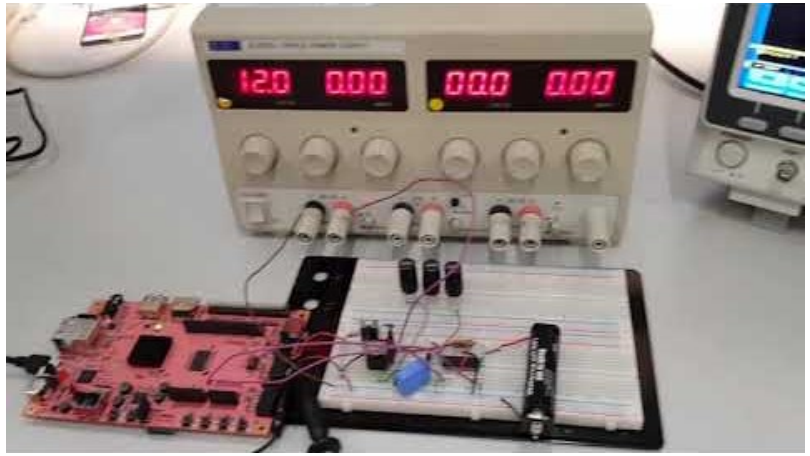


Figure 34: The combined system with the microprocessor, FPGA and charging circuit.



https://www.youtube.com/watch?v=0lCbZjbHUG8

Timeplan

Week	Date	Time	Topic	Notes
W36	01.09.2020	08:15 – 10:00	Introduction to Embedded Systems and IC design	- Book 1: Chapter 1. - Notes_2020.pdf (in Blackboard) -Book 2: ALL + Please bring your notebook
		10:15 – 11:45	Digital system design (VHDL examples)	
W37	07.09.2020	08:15 – 10:00	FPGA fabric, memories and high-level synthesis	- Book 1: Chapter 2&3 !Please install Vivado Webpack before the lesson
		10:15 – 11:45	Lab: VHDL functional and timing simulation using Vivado	
W38	14.09.2020	08:15 – 10:00	Keypad encoder and FSMs	- Please bring your laptop and notebook
		10:15 – 11:45	Lab: FPGA configuration	
W39	21.09.2020	08:15 – 10:00	Digital interfaces (PWM, UART and CAN)	Journal 1 submission week.
		10:15 – 11:45	Lab: PWM and UART implantation in FPGA	
W40	28.09.2020	08:15 – 10:00	Memories (RAM/ROM) and LCD module control	- Please bring your laptop and notebook
		10:15 – 11:45	Lab: HW memory exercises	
W41	6.10.2020	08:15 – 10:00	FPGA-CPU communication	- Book 3 - Journal 2 submission week.
		10:15 – 11:45	Lab: protocol implementations and testing in Zynq boards	
~~**W42**~~	~~13.10.2020~~	~~08:15 – 10:00~~	~~Autumn holiday~~	
		~~10:15 – 11:45~~		
W43	20.10.2020	08:15 – 10:00	Article presentations 1-7	Topics: [],[],[],[],[],[],[],[],
		10:15 – 11:45	Article presentations 8-..	
W44	27.10.2020	08:15 – 10:00	Error detection and correction techniques	- Book 4: chapter 1 to 4
		10:15 – 11:45	Intro to Zynq MPSoC	
W45	03.11.2020	08:15 – 10:00	Guest Lecture: AI applications in MPSoC – Nicolaj Malle	- Book 4: chapter 20
		10:15 – 11:45	Lab: MPSoC implementation – Nicolaj Malle	
W46	10.11.2020	08:15 – 10:00	Project introduction	- Journal 3 submission week.
		10:15 – 11:45	Project work	
W47	17.11.2020	08:15 – 10:00	Project work	
		10:15 – 11:45	Project work	
W48	24.11.2020	08:15 – 10:00	Project work	
		10:15 – 11:45	Q&A and Course evaluation	
W51	15.12.2020		Project hand in reports.	