

Summer School for **Systems** and **Software** Engineering in **Robotics** (SSER'26)

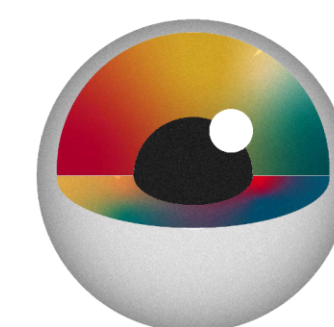
Carlos Hernandez

Dep. of Cognitive Robotics, Mechanical
Engineering, TU Delft

On behalf of the Organizing Committee



Robotics Institute



CORESENSE





Welcome



*to
Delft*



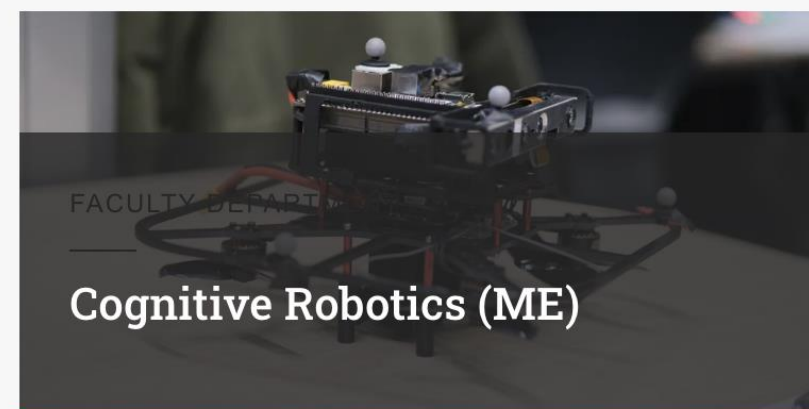
TU Delft Robotics Institute

Jordan Boyle

Research across faculties



BioMechanical Engineering (ME)



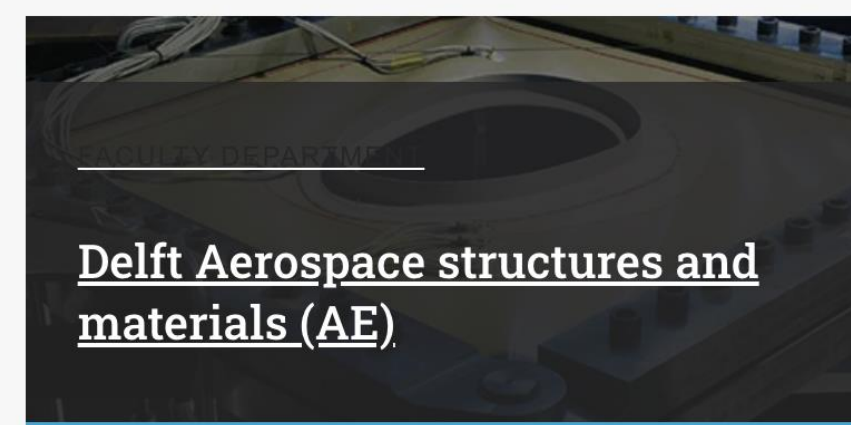
Cognitive Robotics (ME)



Human Information
Communication Design (IDE)



Intelligent Systems (EEMCS)



Delft Aerospace structures and
materials (AE)

Field Labs

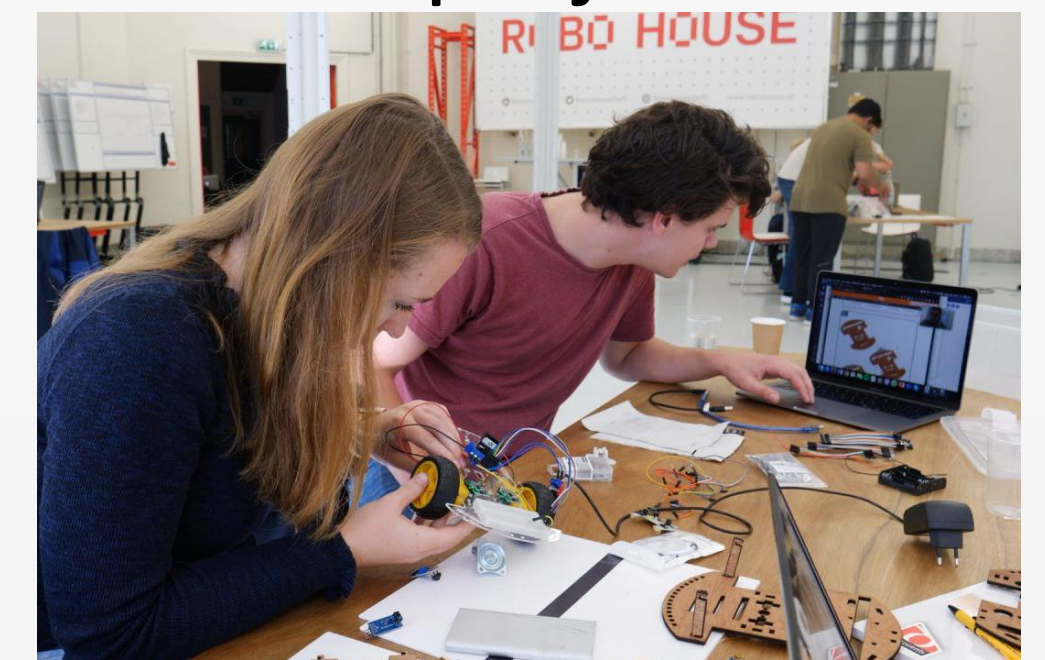


Education

Master Robotics



Student projects

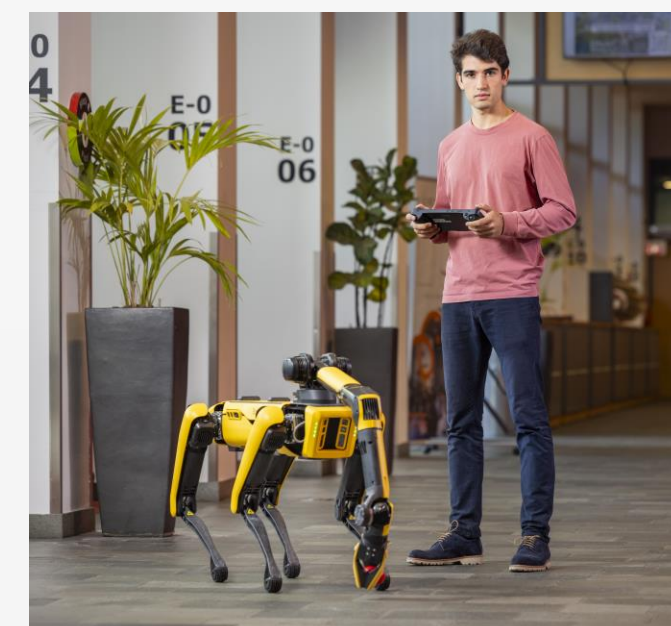
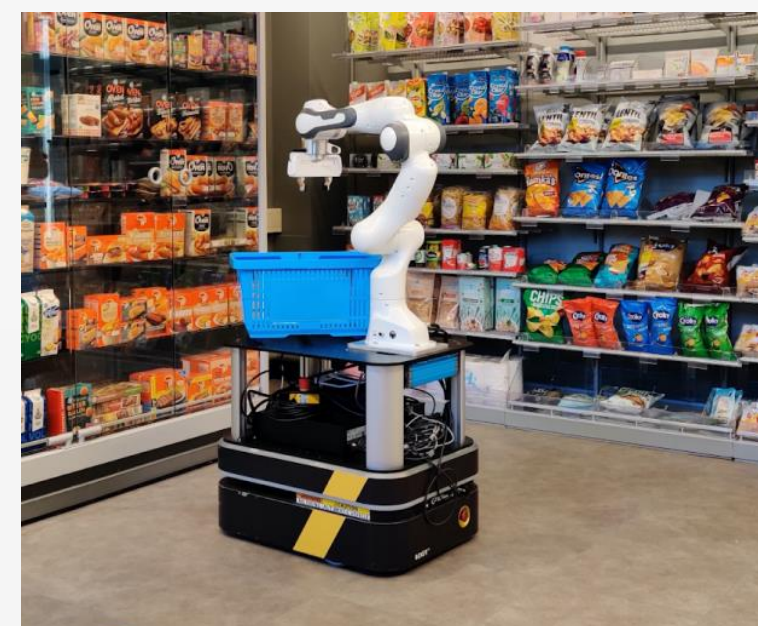
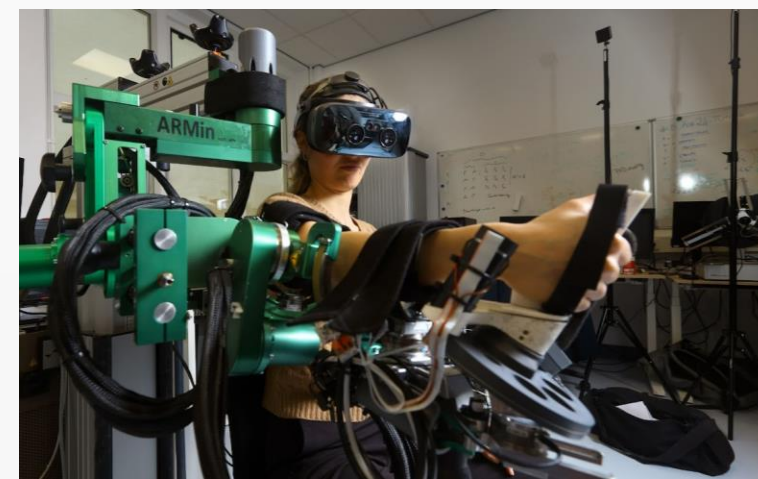


Cognitive Robotics department

Humans ... and robots



> 100 staff
mobile manipulators, drones, cars ...



Robust Robot Systems (R²S)



TU Delft | Mechanical Engineering | Cognitive Robotics

Building resilient robot intelligence for safe, real-world performance.



prof. dr. Martijn Wisse
Intelligent robot control
Self-directed learning



dr. Carlos Hernández Corbato
Self-adaptive systems
Cognitive architectures



dr. Gillian Saunders
Systems engineering
Engineering education



dr. Chris Pek
Algorithmic robot safety
Formal robot foundations



Martin Klomp
Hardware design
Open-source robotics



Gijs van der Hoorn
Robot software architectures
Robot Operating System (ROS)



Gustavo
Rezende



Elvin Alberts



Forough
Zamani



Alex Gabriel



Burak Sisman



Moses Ebere



Arend-Jan van
Hilten

Robust Robot Systems (R²S)

TU Delft | Mechanical Engineering | Cognitive Robotics

Building resilient robot intelligence for safe, real-world performance.



Sense Predict Plan (Re)Act Recover

- 1) Knowledge-based reasoning & meta control
Self-adaptive and self-aware systems
- 2) Active inference
Learn to improve world understanding
- 3) Verification and guidance layer
Safe and task-robust actions

Robust Robot Systems (R²S)

TU Delft | Mechanical Engineering | Cognitive Robotics

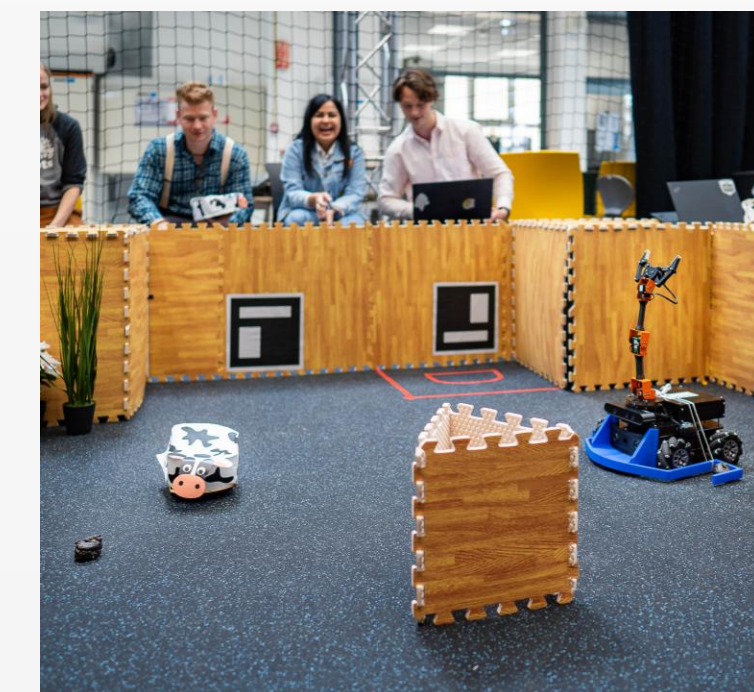
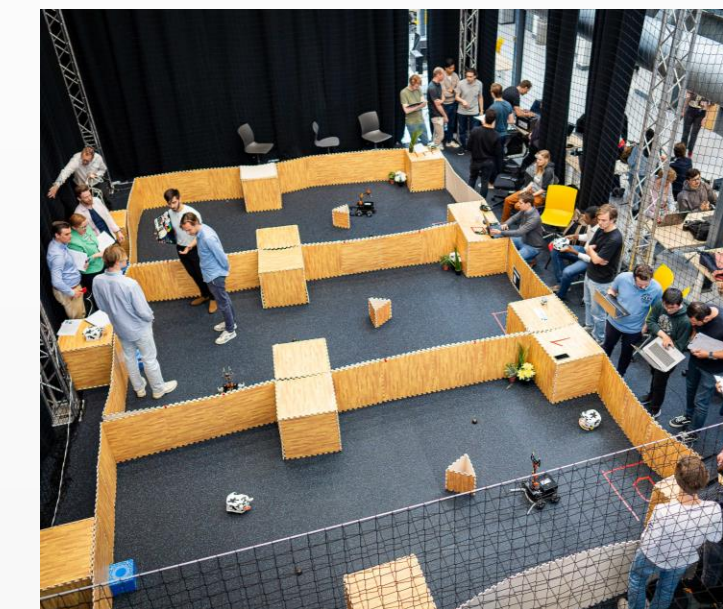
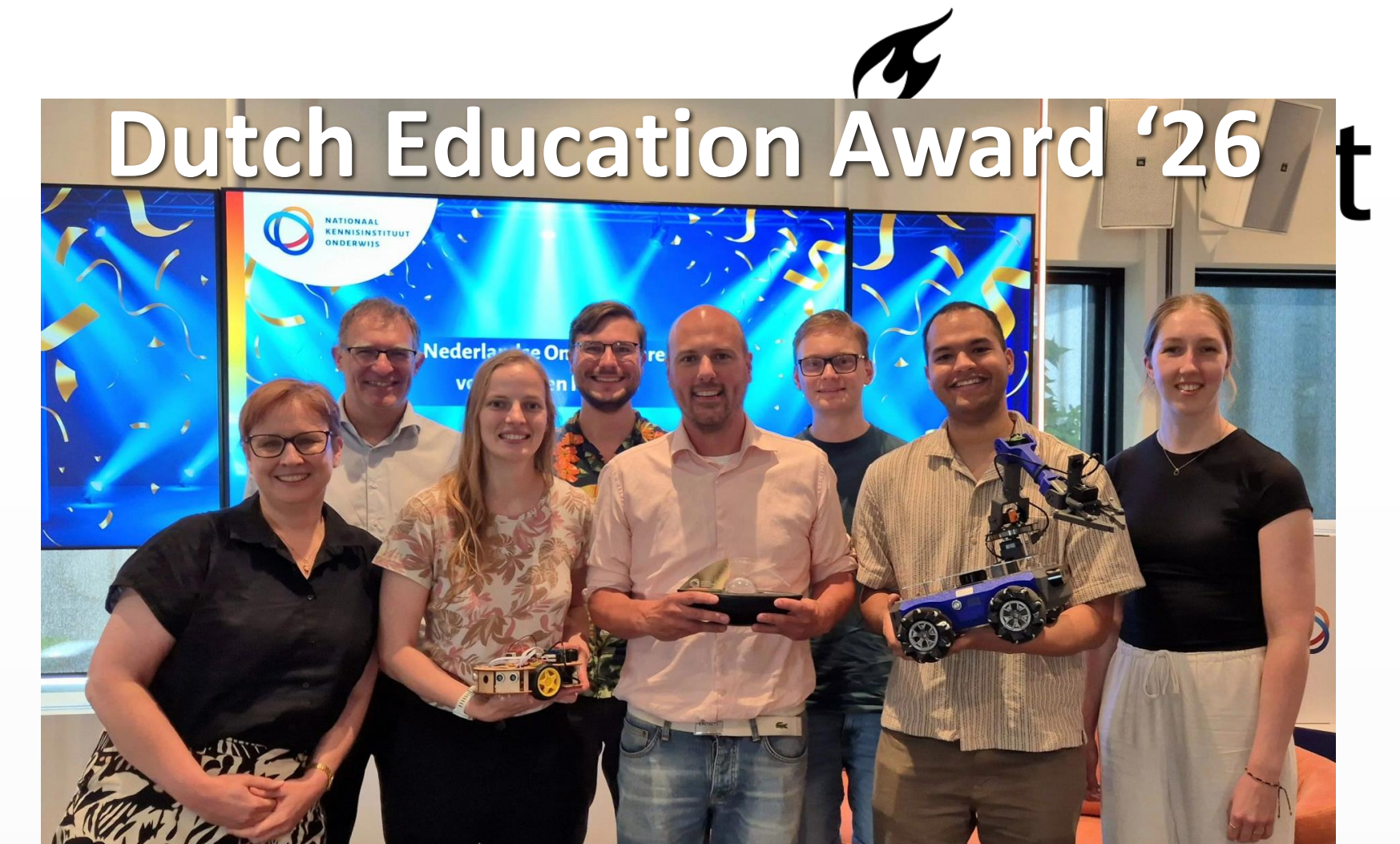
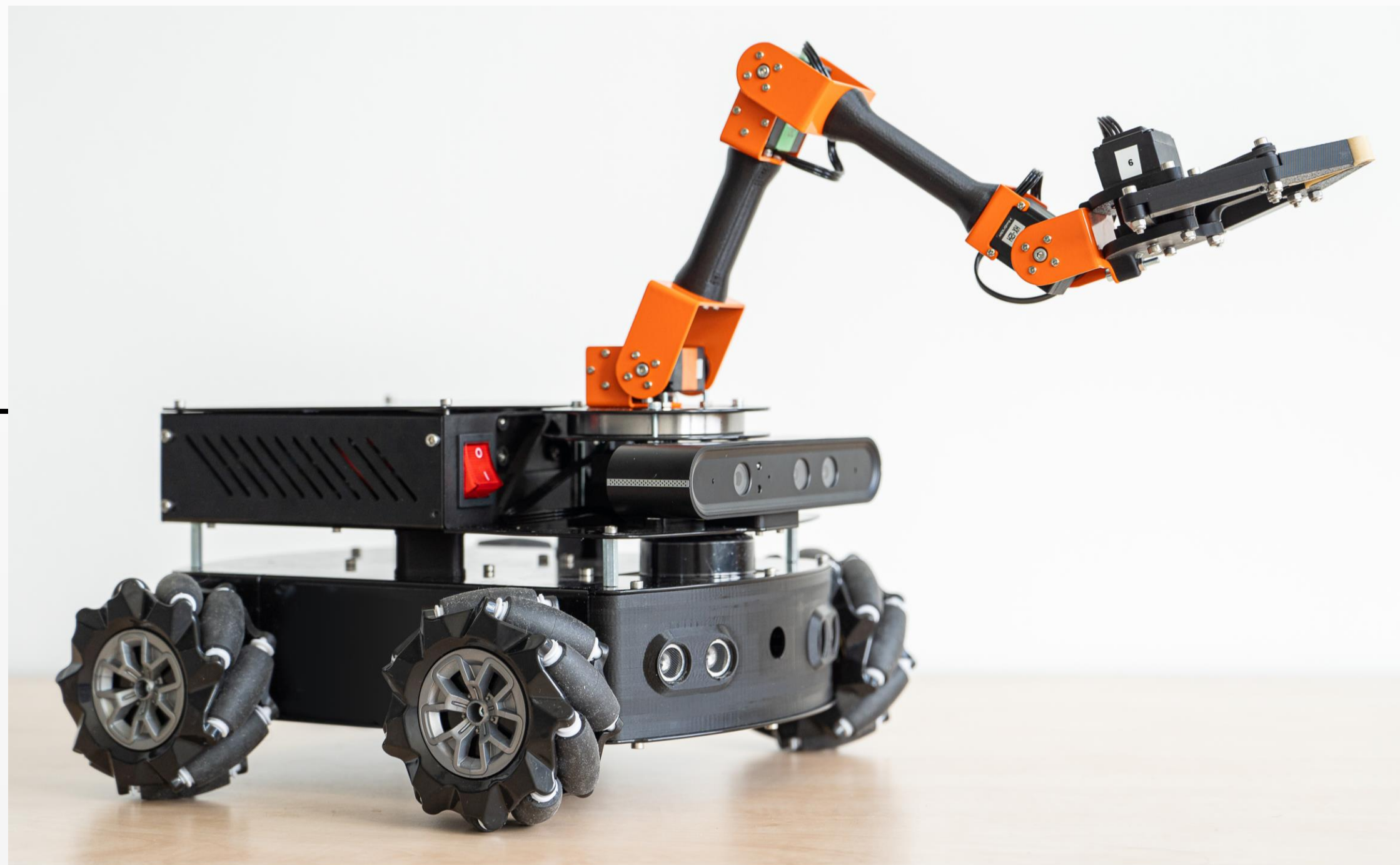
Developing engineering education around robotics

Open-source platforms

Robot hardware, software, and educational resources

Mirte Master

Low cost
Open-source
40+ available



Agenda

- Welcome! Robotics in Delft
- The School
- School Program
- Logistics

Summer School for (**Systems** and) **Software** Engineering in **Robotics**

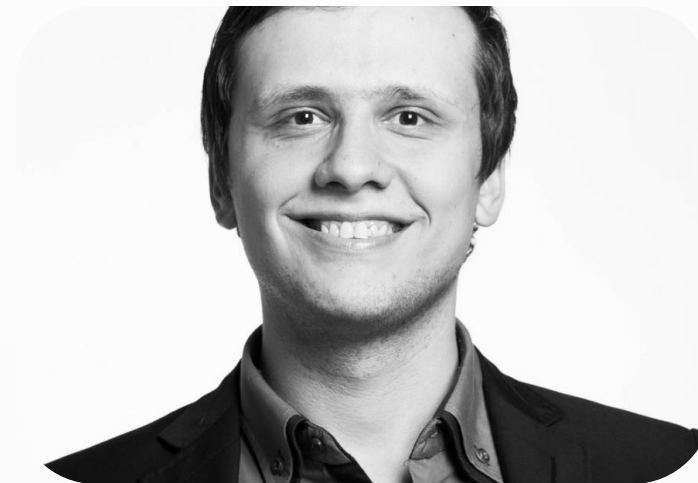
School Team '26



Juri Morisse
(TU Delft)



Elvin Alberts
(TU Delft)



Darko Bozhinoski
(SciVenja / ORISE)



Shirley Elprama
(imec-VUB)



Carlos Hernandez Corbato
(TU Delft)



Antreas Kourris
(TU Delft)

Sponsors '26



Robotics Institute

ROBO
HOUSE

umec



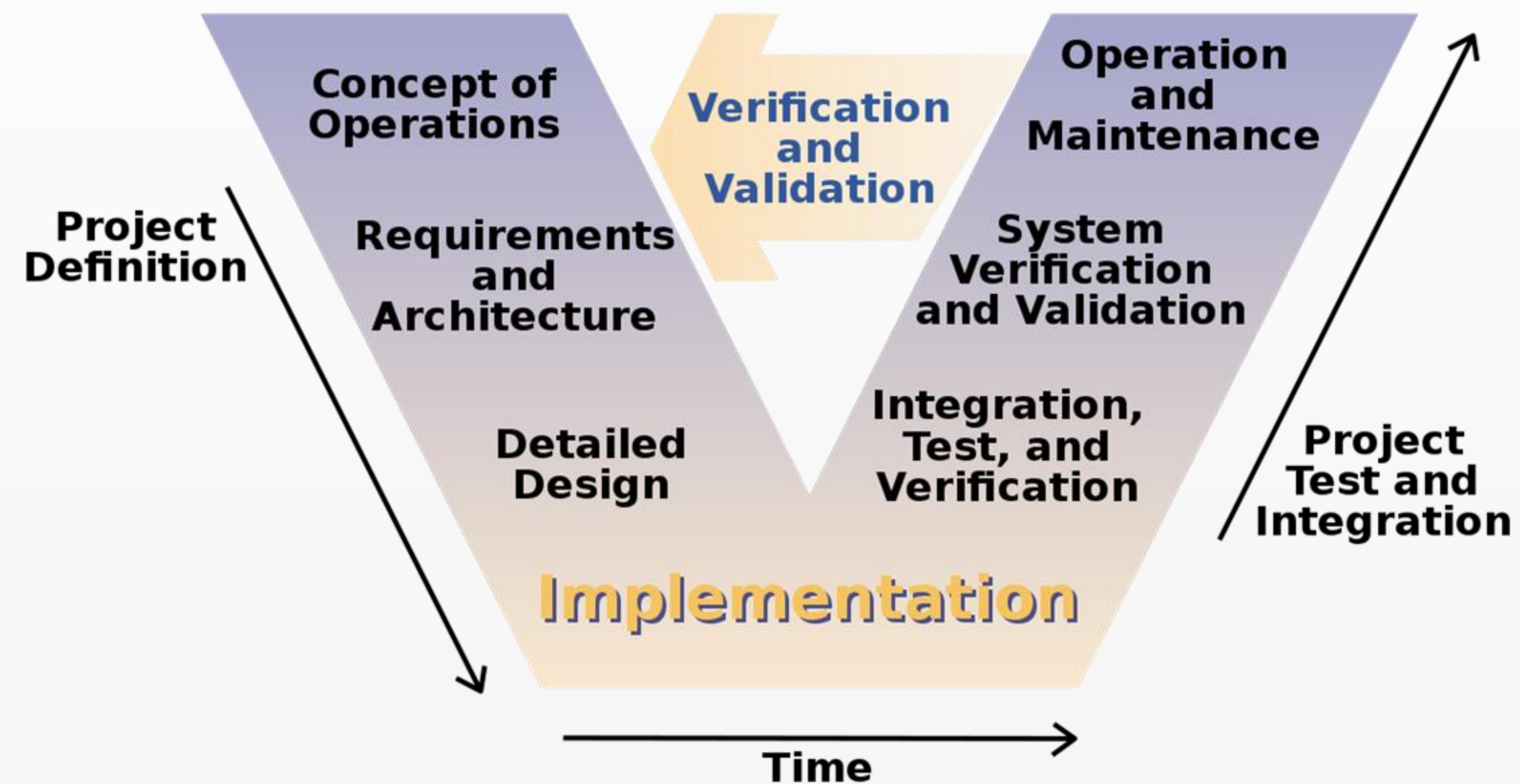
School Objectives

HOW CAN WE CREATE BETTER ROBOTICS SOFTWARE?

- To address challenges raised by real-world robotic applications and how software engineering could contribute towards increasing technological maturity **(Address Real-world Problems)**
- To provide an intensive, hands-on learning experience in software engineering for robotics. **(Practical Sessions)**
- To expose participants to research and industry-standard robotics software development practices. **(Presenters from Academia and Industry)**
- To facilitate networking opportunities between participants **(Learn new things but have also fun doing it)**

Theme '26: Cognitive Robotic Systems Engineering

System's life cycle

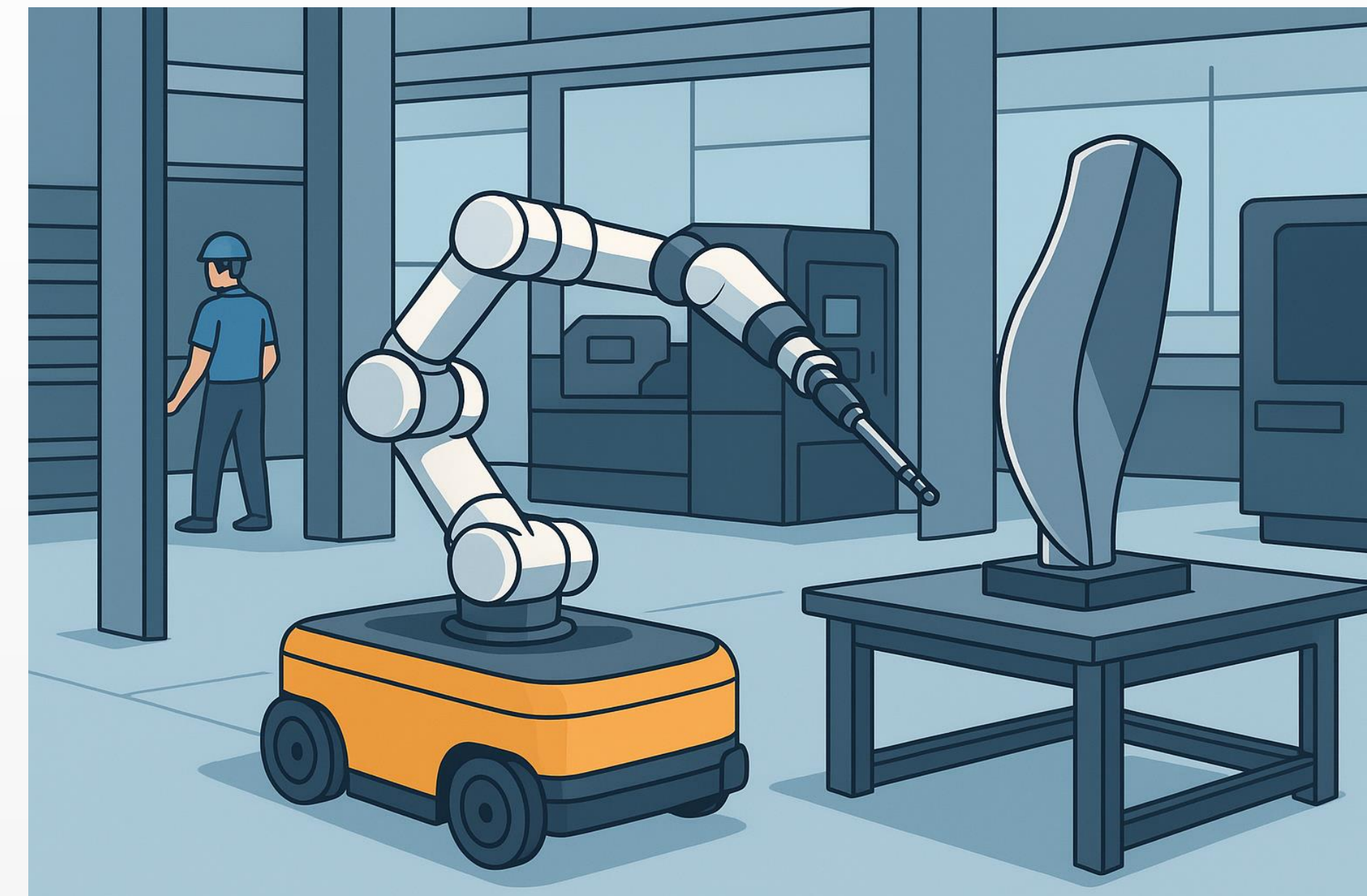


V-model borrowed from [Clarus Concept of Operations Archived](#) 2009-07-05 at the [Wayback Machine](#), Publication No. FHWA-JPO-05-072, Federal Highway Administration (FHWA), 2005.

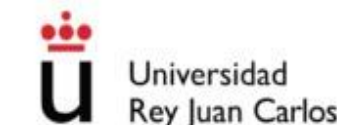


CORESENSE

A **Hybrid Cognitive Architecture** for
Deep **Understanding**

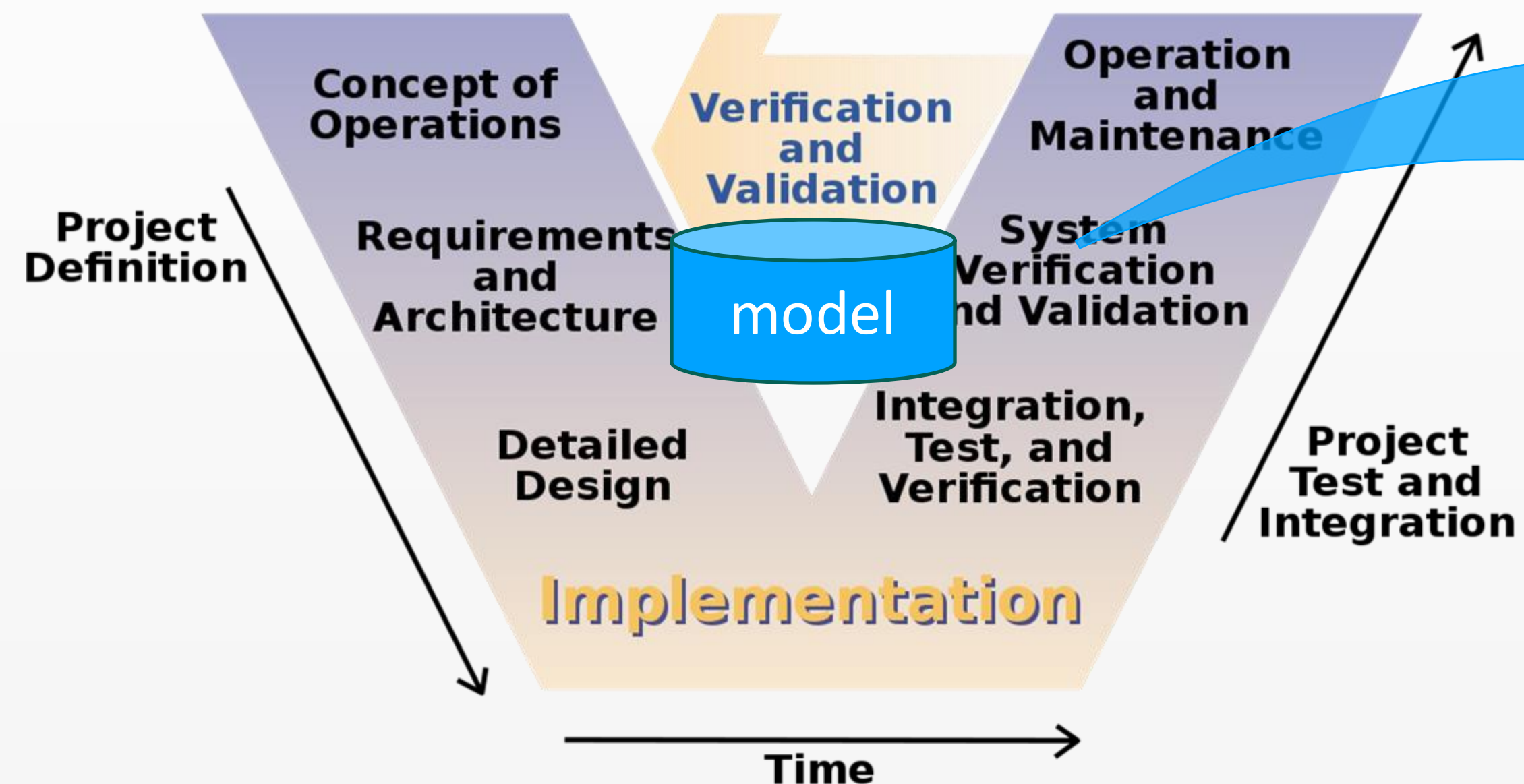


The CoreSense project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 10107054



Theme '26: Cognitive Robotic Systems Engineering

Cognition explicit models

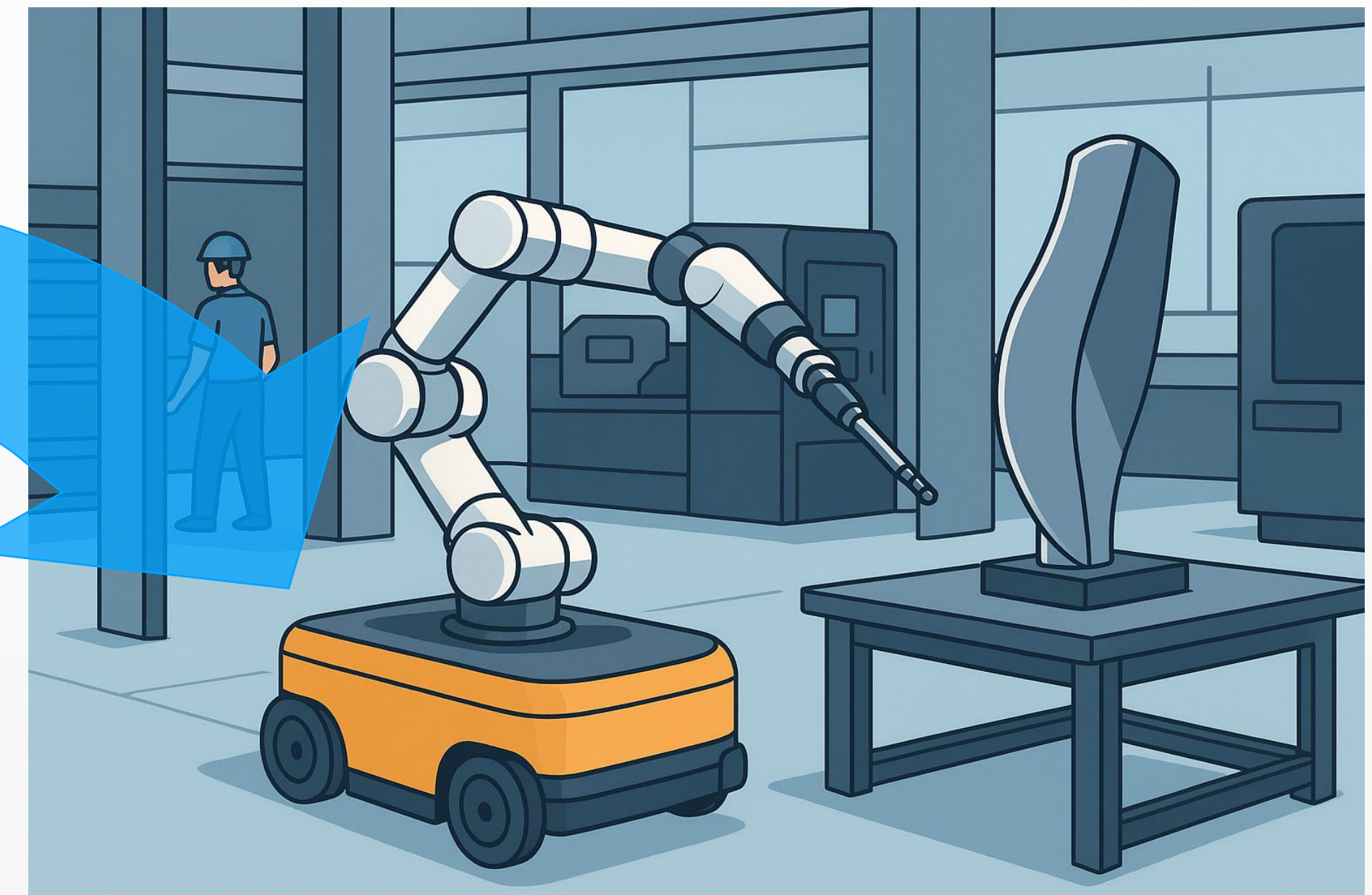


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CORESENSE

A Hybrid Cognitive Architecture for Deep Understanding



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Fraunhofer
IPA

Universidad
Rey Juan Carlos

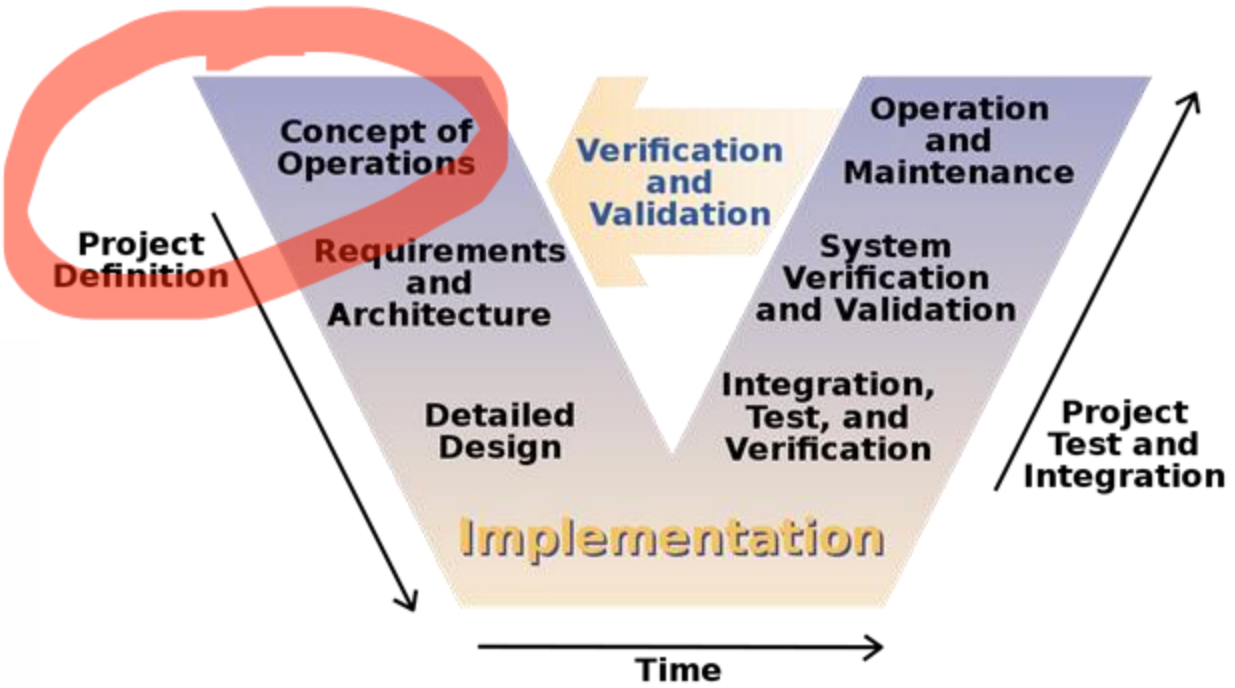
PAL
ROBOTICS

IRISH
MANUFACTURING
RESEARCH

Schedule

Day 1: June 29th

Robots in Society





Juri Morisse



Carlos Hernandez Corbato



An Jacobs



Shirley Elprama



Patrizio Pelliccione



Martin Klomp



Arend-jan van Hilten

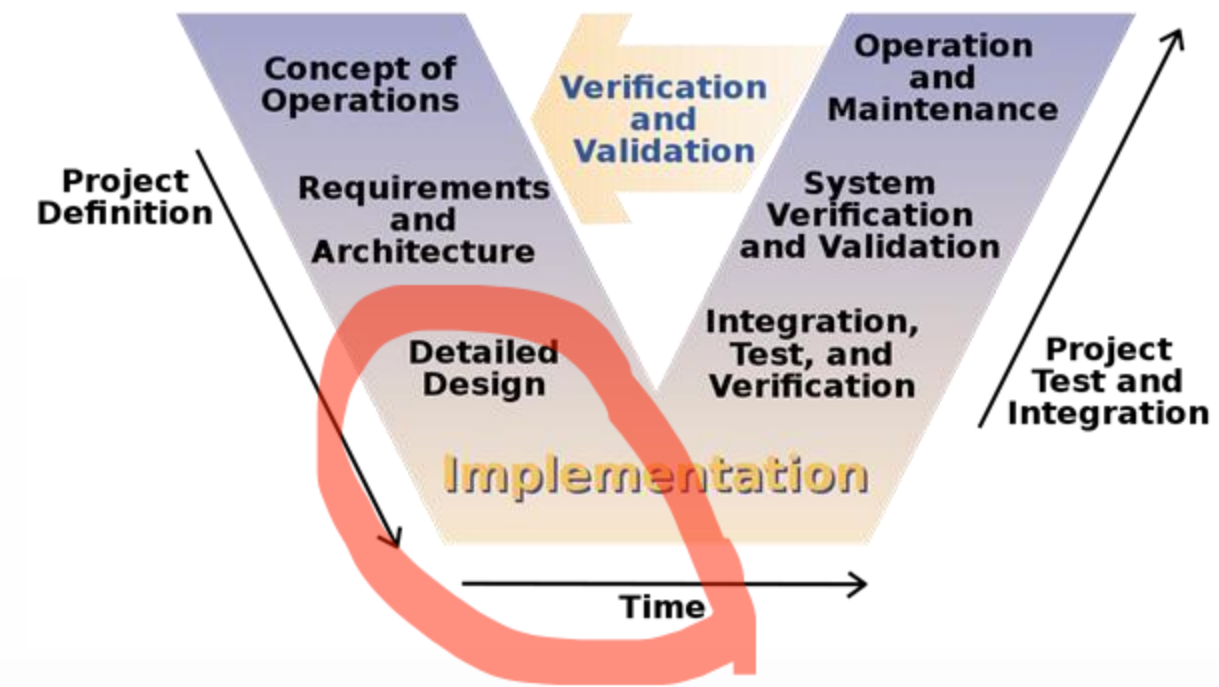


Antreas Kourri

Date	Time	Speakers/Instructors	Topic
Day 1			
29/06	09:00-10:00	Juri Morisse	Registration
	10:00-10:30	Carlos Hernandez Corbato	Opening
29/06	10:30-11:00	/	Coffee Break
29/06	11:00-12:30	An Jacobs, Shirley Elprama	HRI in the Wild
29/06	12:30-13:30	/	Lunch
29/06	13:30-14:30	Patrizio Pelliccione	Democratizing the use of robots
29/06	14:30-17:00	MIRTE Support Team	MIRTE Master Setup

Day 2: June 30th

Programming and Planning for Robots



Date	Time	Speakers/Instructors	Topic
Day 2			
30/06	09:00-10:30	Jose Miguel Guerrero, Francisco Martin Rico	Intro to ROS 2
30/06	10:30-11:00	/	Coffee Break
30/06	11:00-12:00	Jose Miguel Guerrero, Francisco Martin Rico	Intro to ROS 2
30/06	12:00-13:00	/	Lunch
30/06	13:00-14:00	Francisco Javier Rodriguez Lera	Planning and Deliberation with PDDL (Lecture)
30/06	14:00-15:30	Francisco Javier Rodriguez Lera	Planning and Deliberation with PlanSys2 (Tutorial)
30/06	15:30-15:45	/	Coffee Break
30/06	15:45-17:00	Carlos Hernandez Corbato, MIRTE Support Team	Planning and Deliberation on the MIRTE
30/06	17:00-20:00	/	Social Dinner



Jose Miguel Guerrero



Francisco Martin Rico



Francisco J. Rodriguez Lera



Carlos Hernandez Corbato

Day 3: July 1st

Evaluating Robots & Building Cognitive Robots

Date	Time	Speakers/Instructors	Topic
Day 3			
01/07	09:00-10:30	Nico Hochgeschwender	Validation & Testing in Robotics (lecture)
01/07	10:30-11:00	/	Coffee Break
01/07	11:00-12:30	Nico Hochgeschwender	Validation & Testing in Robotics (tutorial)
01/07	12:30-13:15	/	Lunch
01/07	13:15-14:00	Esther Aguado	Cognitive Architectures for Robust and Reliable Robotics (keynote)
01/07	14:00-15:00	Esther Aguado, Carlos Hernandez Corbato	Cognitive Architectures for Robust and Reliable Robotics (tutorial)
01/07	15:00-15:30	/	Coffee Break
01/07	15:30-17:00	Esther Aguado, Carlos Hernandez Corbato	Cognitive Architectures for Robust and Reliable Robotics (continuation tutorial)



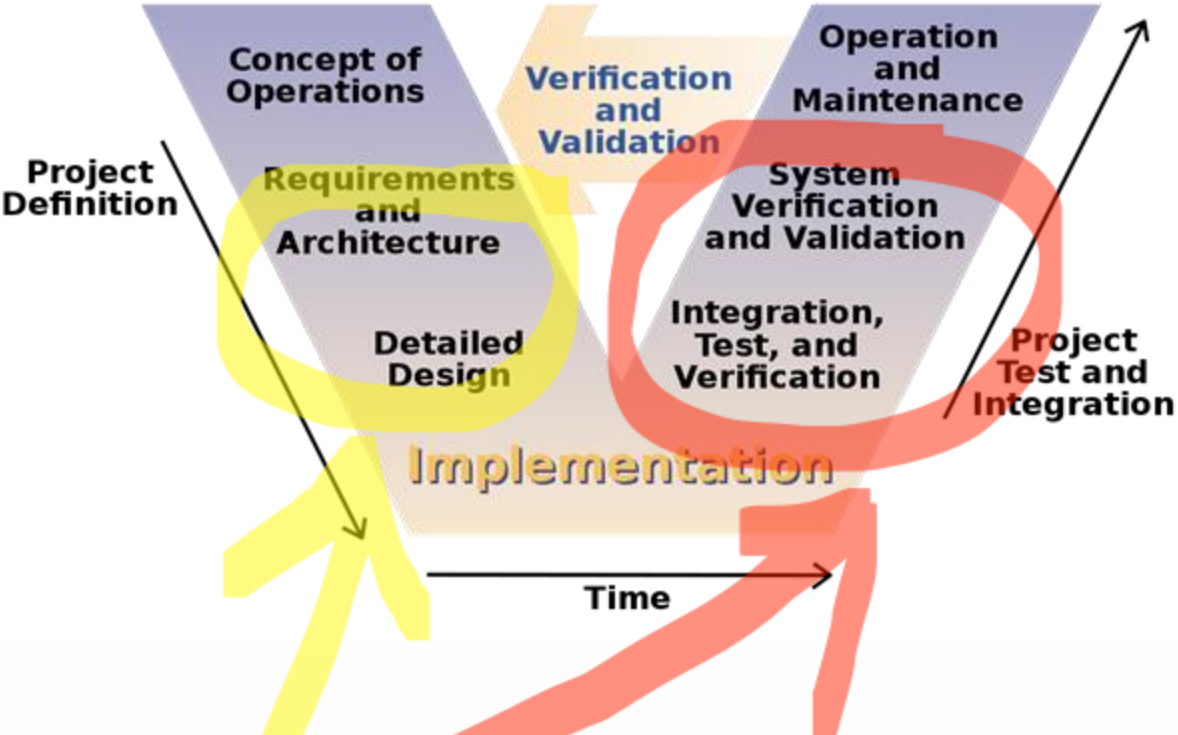
Nico Hochgeschwender



Esther Aguado Gonzalez



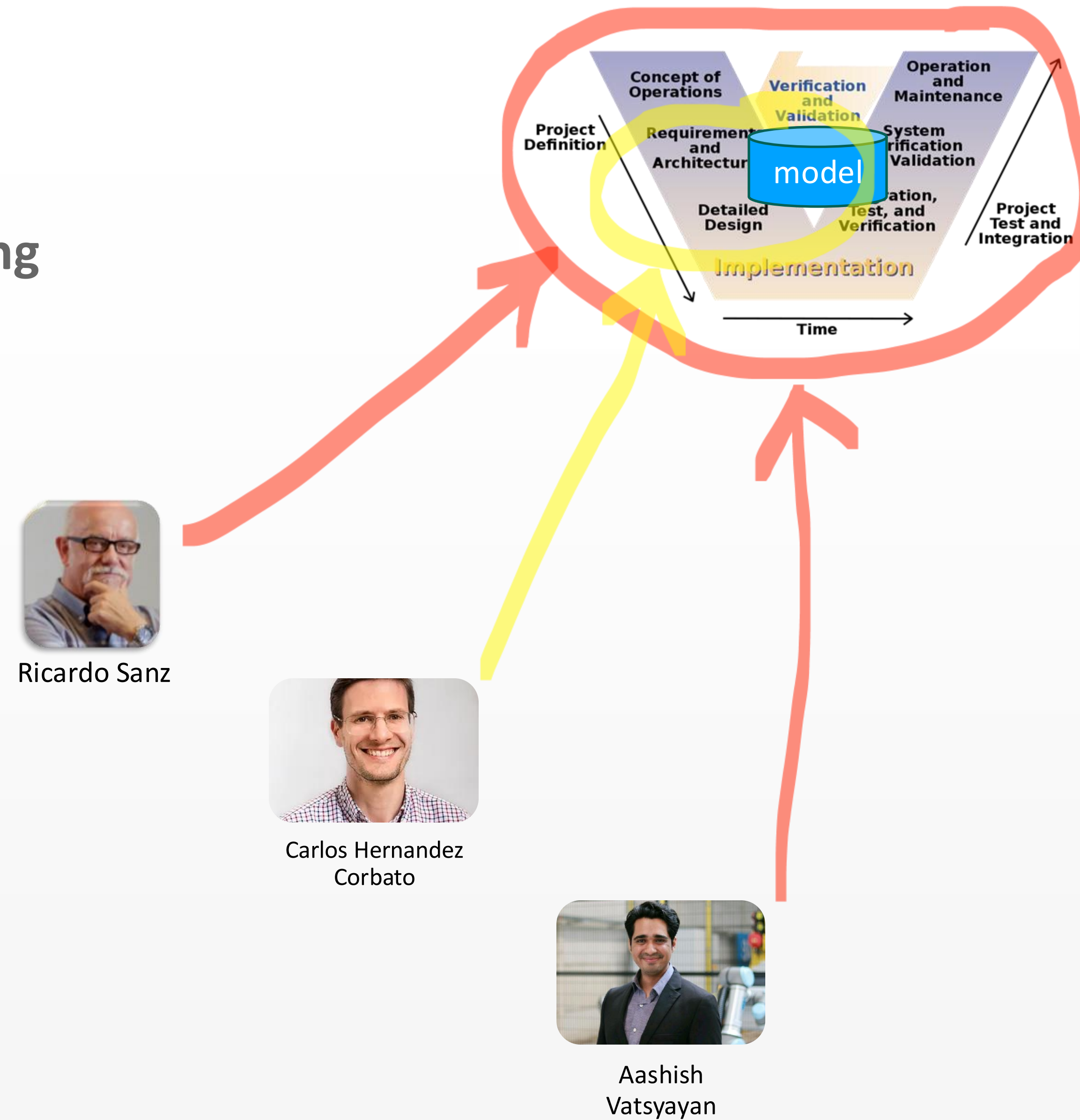
Carlos Hernandez Corbato



Day 4: July 2nd

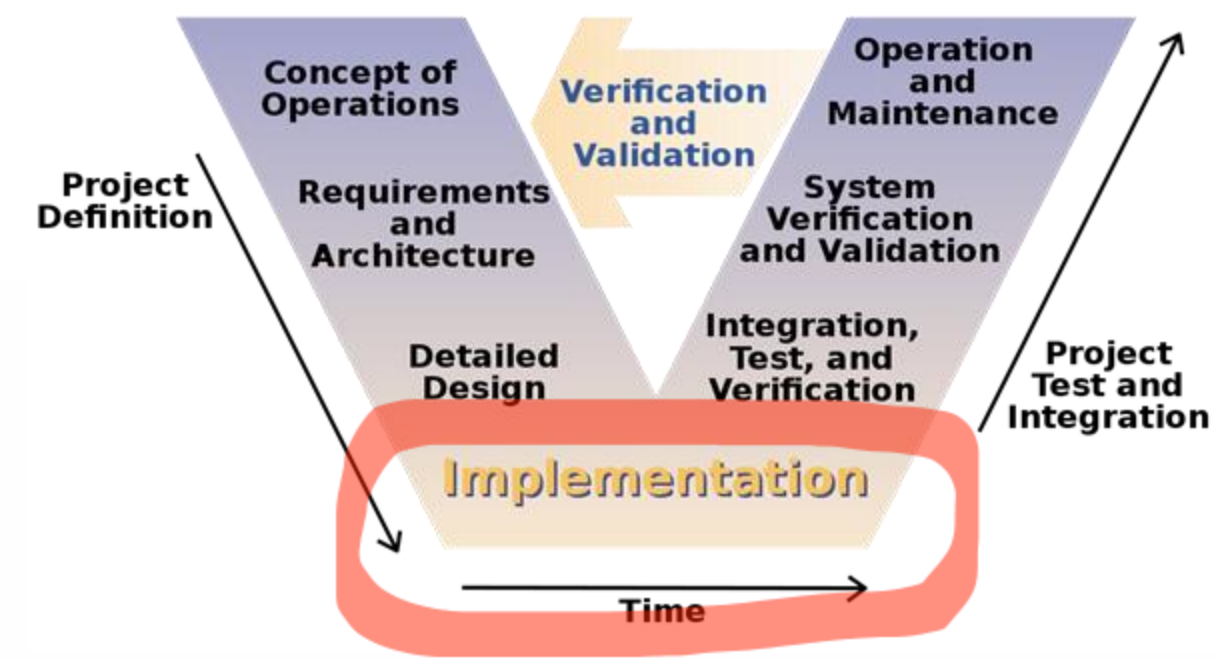
Model-Based Cognitive Robotic Systems Engineering

Date	Time	Speakers/Instructors	Topic
Day 4			
02/07	09:00-10:30	Ricardo Sanz	Developing Cognitive Robots with CoreSense
02/07	10:30-11:00	/	Coffee Break
02/07	11:00-12:30	Carlos Hernandez Corbato	Model-Based Systems Engineering (lecture + tutorial)
02/07	12:30-13:30	/	Lunch
03/07	13:30-17:00	Aashish Vatsyayan	Industry visit: SamXL
02/07	19:00-20:00	/	Delft Boat Tour



Day 5: July 3rd

Hands-On Work



Date	Time	Speakers/Instructors	Topic
Day 5			
03/07	09:00-10:30	School Team	Hands-On Session
03/07	10:30-11:00	/	Coffee Break
03/07	11:00-12:30	School Team	Hands-On Session
03/07	12:30-13:30	/	Lunch
03/07	13:30-15:00	School Team	Hands-On Session
03/07	15:00-15:30	/	Coffee Break
03/07	15:30-17:00	School Team	Hands-On Session



Carlos Hernandez Corbato



Elvin Alberts



Antreas Kourri

Logistics

Logistics: Registration

If you have not, please **REGISTER** at the registration desk during the coffee break!

Logistics: **WiFi**

Yes!Delft Guest

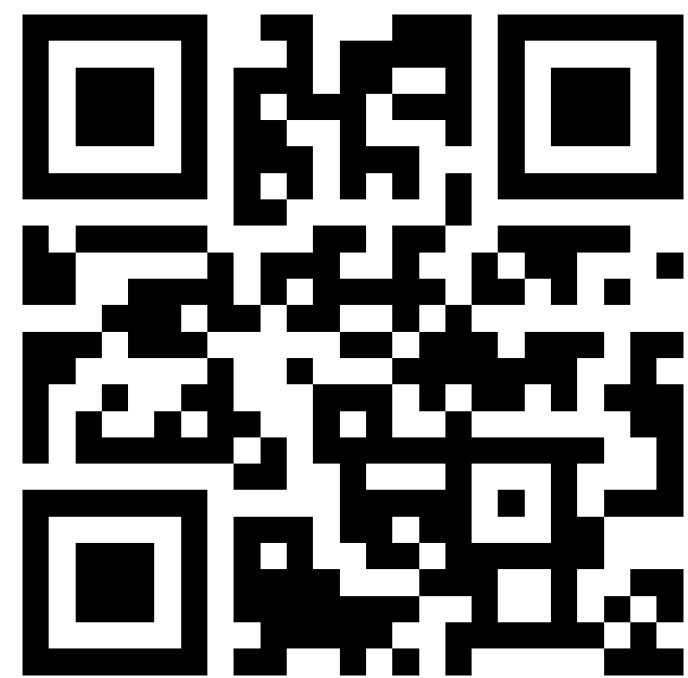
You can also try **eduroam**

Logistics: Social dinner

Mooie Boules, Prof. Schermerhornstraat 9, Delft

Tuesday June 30th

18:00 – 21:00



Logistics: Social Activity

[Boat tour Rondvaart Delft, Koornmarkt 113, 2611 ED Delft](#)

Thursday

19:00



We hope you enjoy the school
as much as we did preparing it

let's have fun with robots!