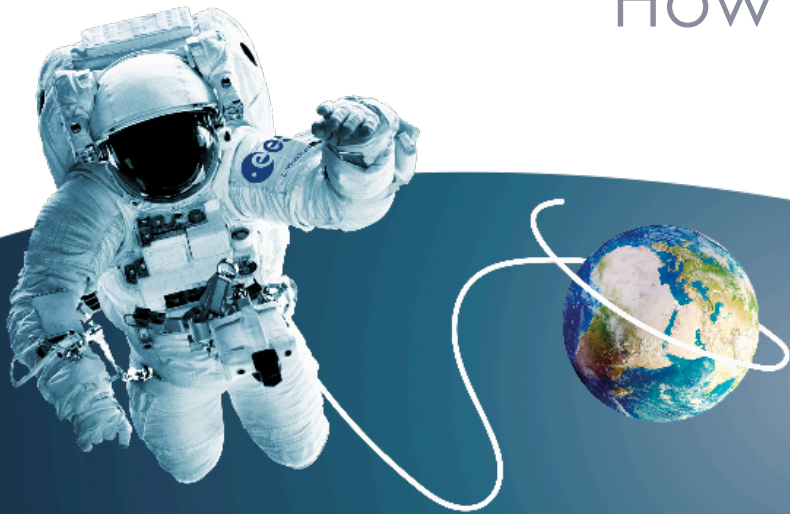




MELISSA IGLUNA 2020

How MELISSA POMP's spent the last year creating a circular future



MELISSA





IGLUNA 2020 – space habitat with remote operations




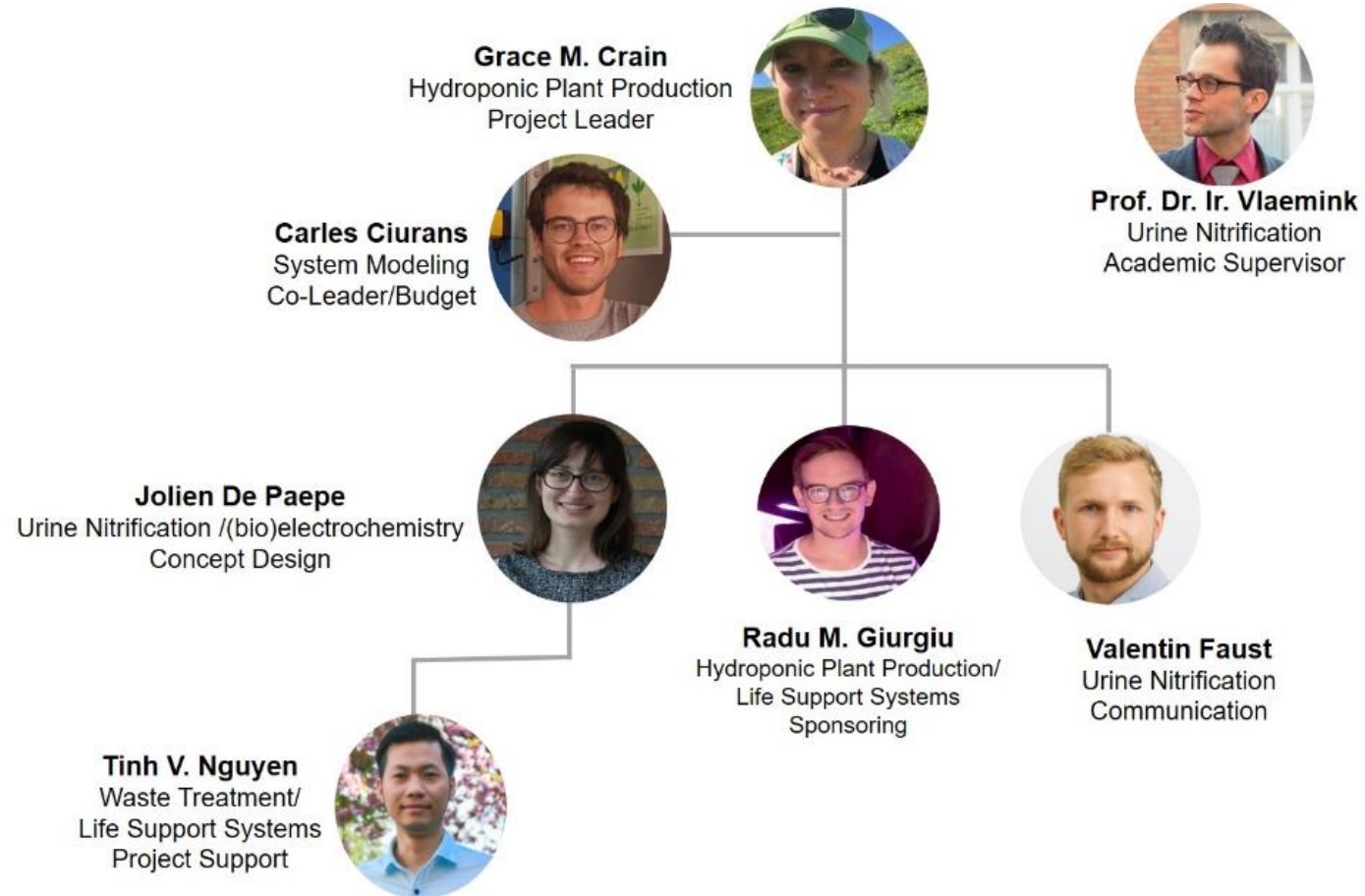
- Based on the ESA_Lab@ initiative
- Building up on IGLUNA 2019
- Developing bottom-up ideas into technologies with terrestrial applications for space exploration

Igniting innovation



Powered by

 Schweizerische Eidgenossenschaft
Confédération suisse
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Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI
Swiss Space Office





IGLUNA 2020

Life Support Systems	Habitat Conception & Structure	Communication & Navigation	Power Management	Human Well-being	Science
P01_MELISSA	P07_HABITAT	P11_CELESTIAL	P15_POWERHAB	P10_FOCUS	P14_LDMS FOR LIFE
P02_GROWBOT HUB	P08_AMPEX	P13_LIGHT		P12_SMART LUNAR CLOTHING	
P03_SWAG		P16_ROVER			
P04_V-GELM					
P05_SAMPLE					
P06_HYDRATION II					

- + 15 student teams
- + 15 universities
- + 10 countries
- + 150 students



HOCHSCHULE
LUZERN



Warsaw University
of Technology



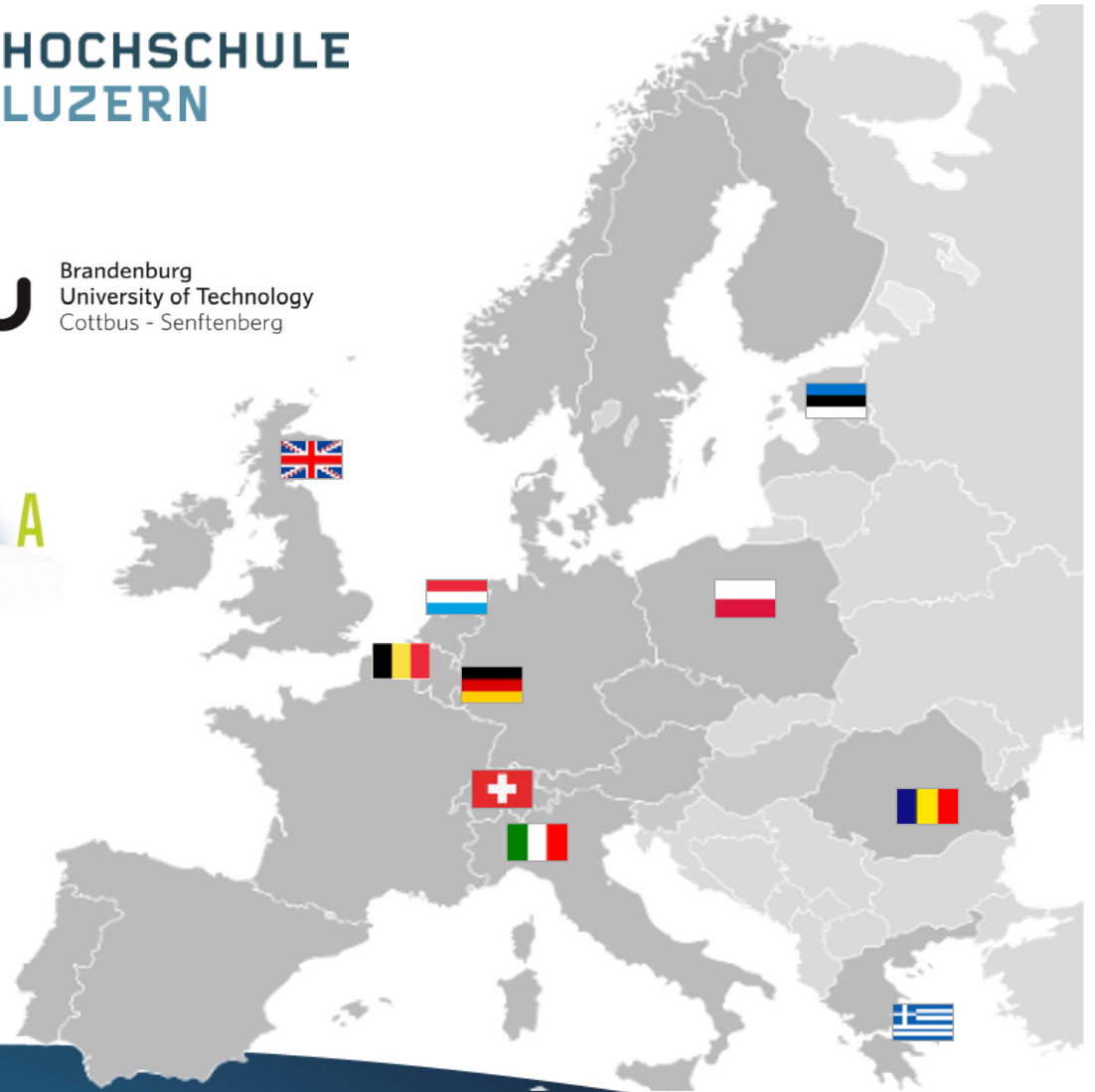
Brandenburg
University of Technology
Cottbus - Senftenberg



Aristotle University of
Thessaloniki



POLITECNICO
MILANO 1863
SCUOLA DEL DESIGN





Kick-Off Event – Sept. 2019



<https://www.youtube.com/watch?v=zFf27vDDpnk>



Reviews – Nov. 2019 / Feb. 2020 / May 2020

- Based on the European Cooperation for Space Standardization (ECSS)
- To introduce students to systems engineering best practices, but simplified with respect to a formal space project review process
- Preliminary Design Review (PDR)
- Critical Design Review (CDR)
- Readiness Review (RR)





Mission statement

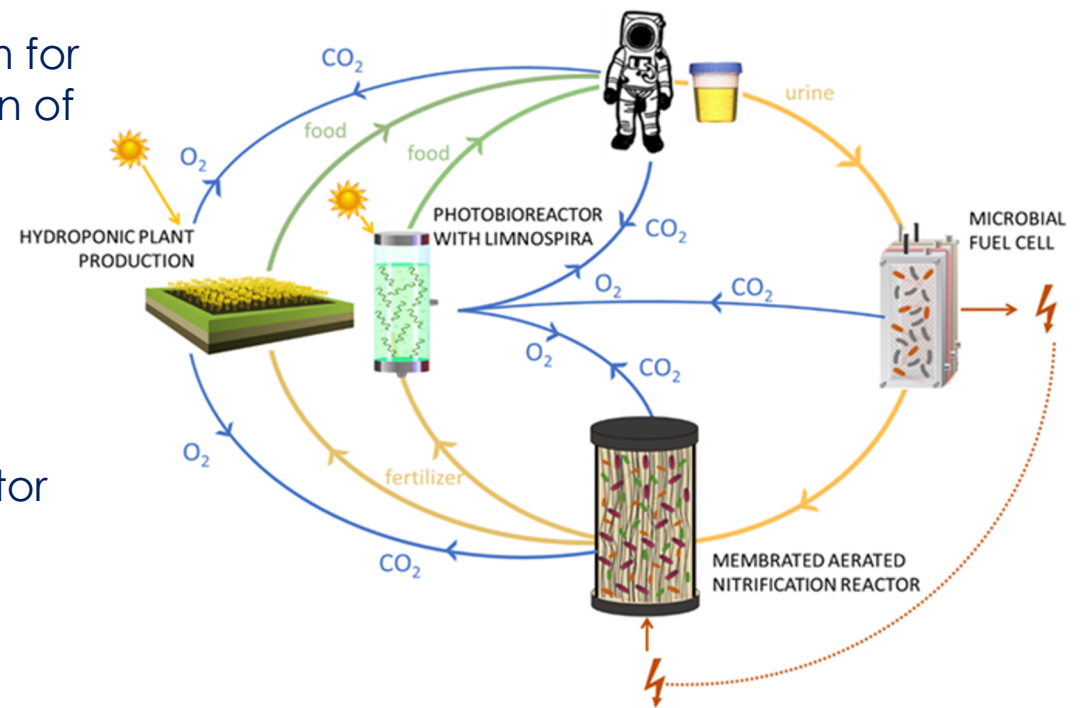
Towards creating a complete recycling system for long-term space missions: Biological conversion of human urine for food and bio-based oxygen production.

Technology

Bio-based waste conversion:

- Microbial Fuel Cell
- Membrane-aerated nitrification reactor

Photobioreactor
Hydroponics culture

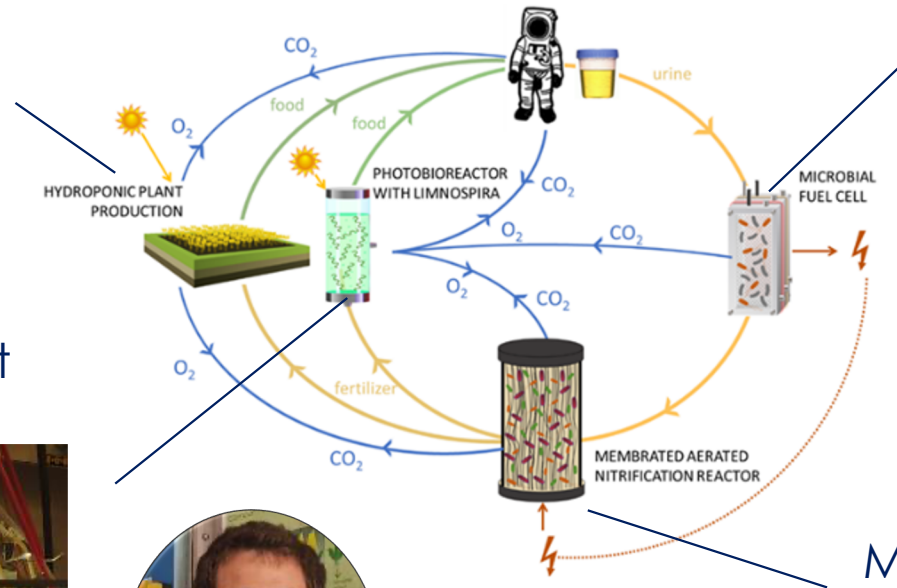


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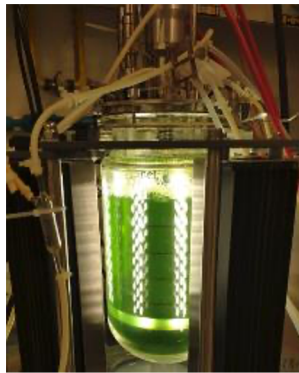
MFC: Microbial Fuel Cell



Hydroponic unit



MANR: membrane-aerated nitrification reactor

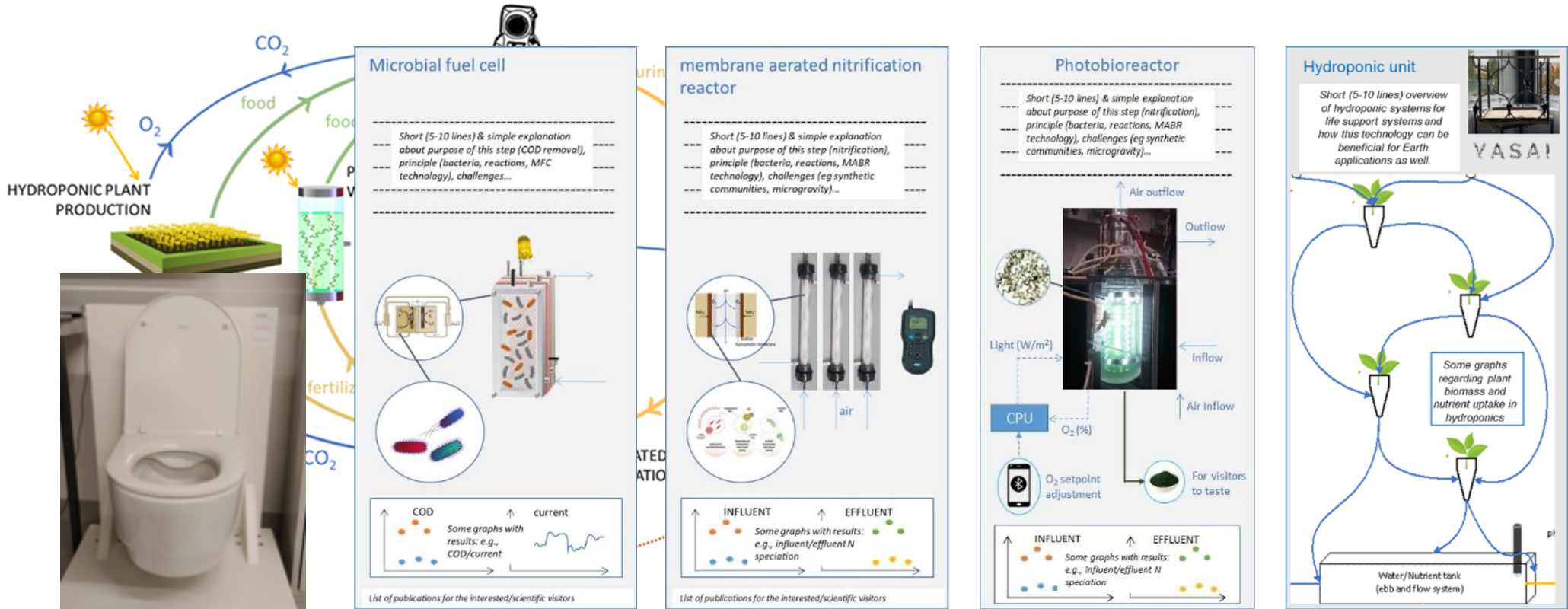


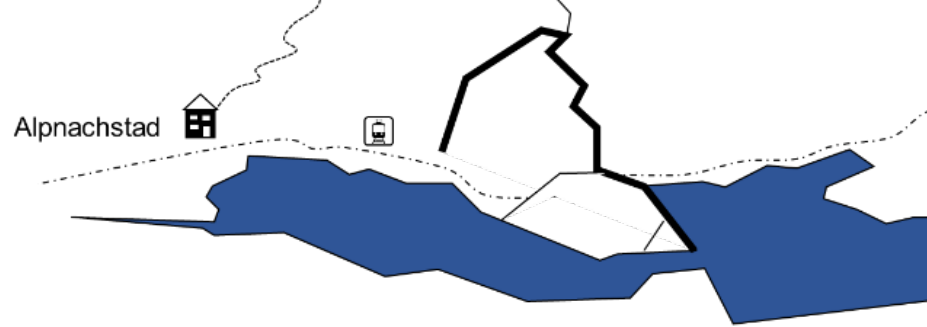
PBR: photobioreactor



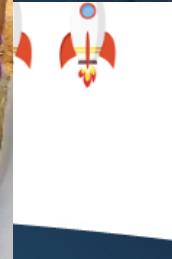


MELISSA Citizen Science





MELISSA

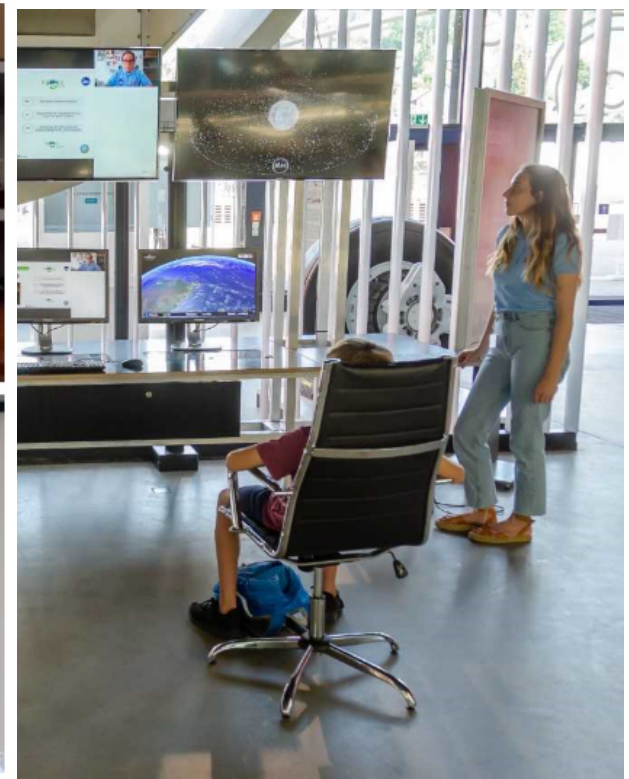




<https://www.youtube.com/watch?v=PHTVep3Fik0&t=59s>



Virtual Field Campaign





eawag
aquatic research

ETH zürich

UAB

KU LEUVEN



GHENT UNIVERSITY



CMET



Universiteit Antwerpen

YASAI

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THANK YOU.

Grace M. Crain

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