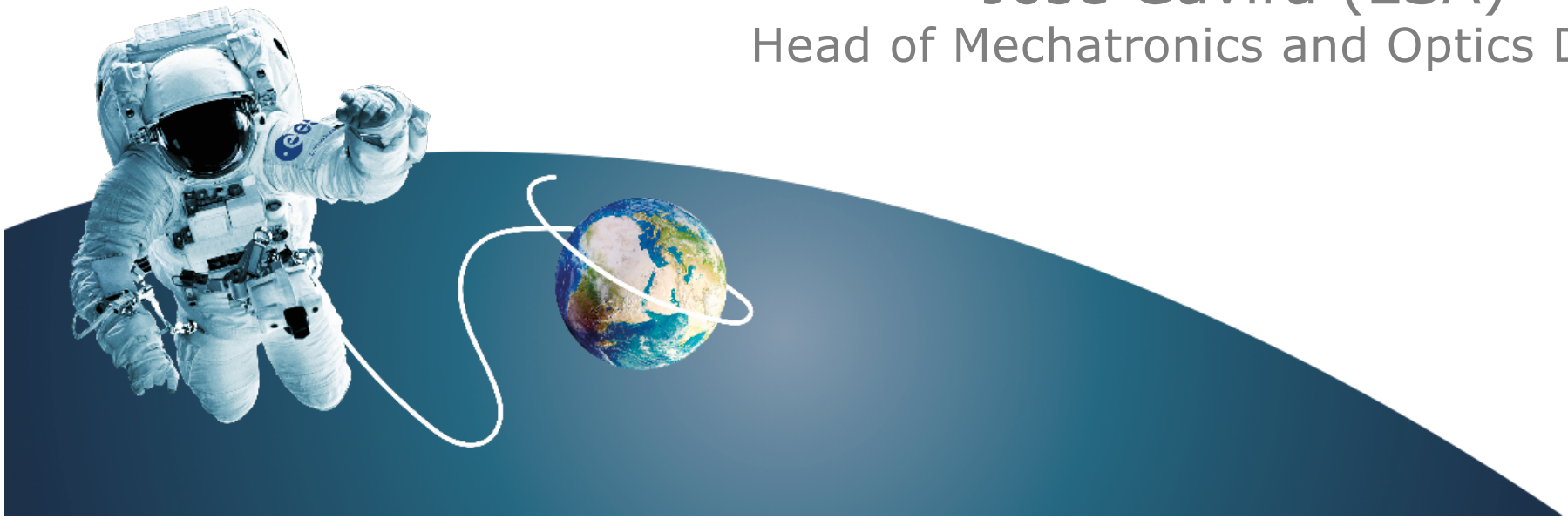
MELiSSA
MICRO-ECOLOGICAL LIFE SUPPORT SYSTEM ALTERNATIVE

CREATING A CIRCULAR FUTURE

Conference 2020: Closing remarks

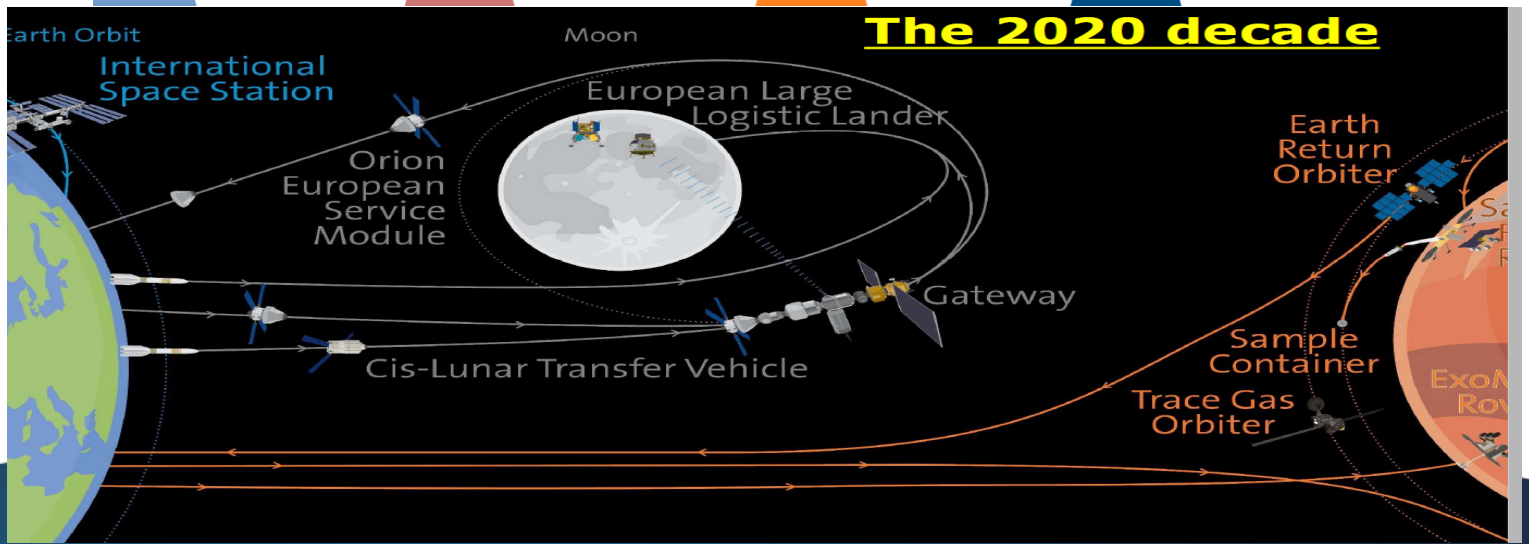
Jose Gavira (ESA)
Head of Mechatronics and Optics Division



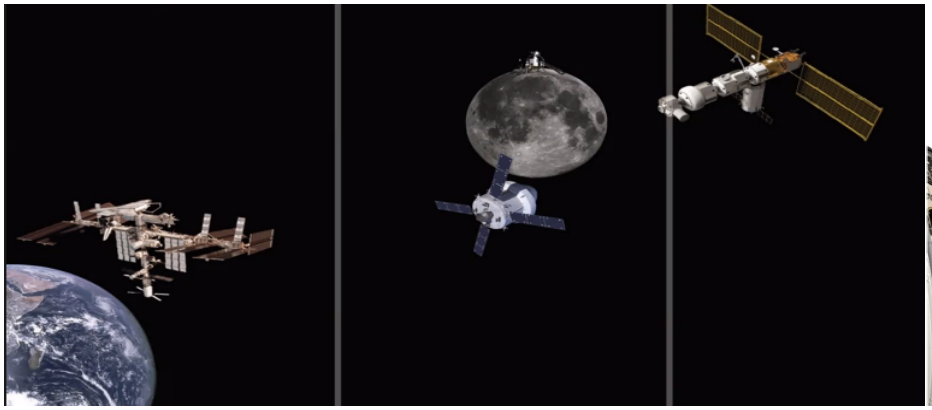
2020 Conference

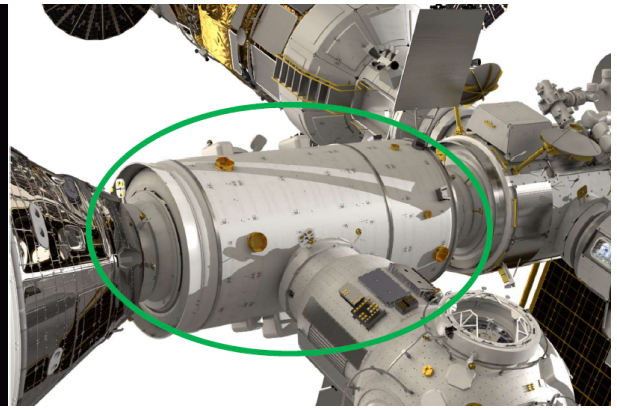
- Unique international platform
  - ✓ Exchange on Advance Life Support Systems
- Great "virtual" success
  - ✓ More than 220 registrations
  - ✓ Peak audience of 183 attendees
  - ✓ 150 papers and posters
- Major space stakeholders being represented

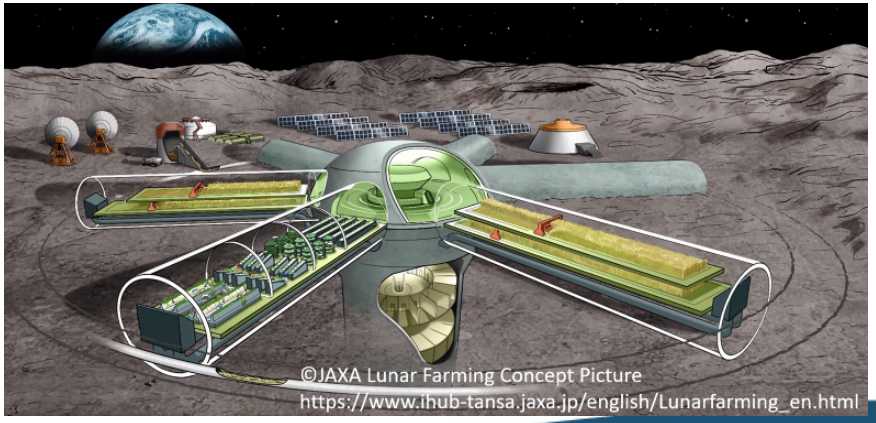
Exploration Roadmaps



International Landscape





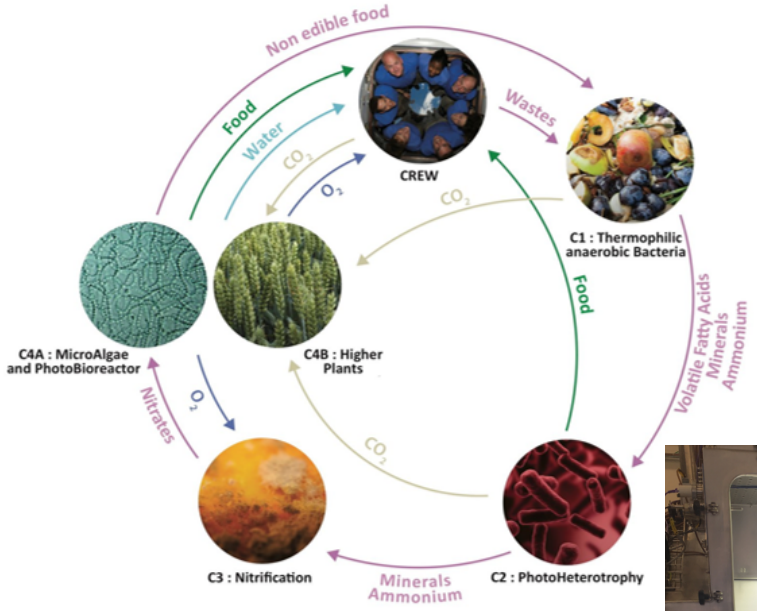


International Landscape

- China (CMSA), NASA, USSR, JAXA, ESA
  - ✓ Ambitious Human Exploration Programme
  - ✓ Large growth in Life Support Systems activities
  - ✓ Research on Space Biology and Medicine
  - ✓ Edible Biomass production: Plants cultivation
  - ✓ Organic waste treatment, grey water, urine, ..

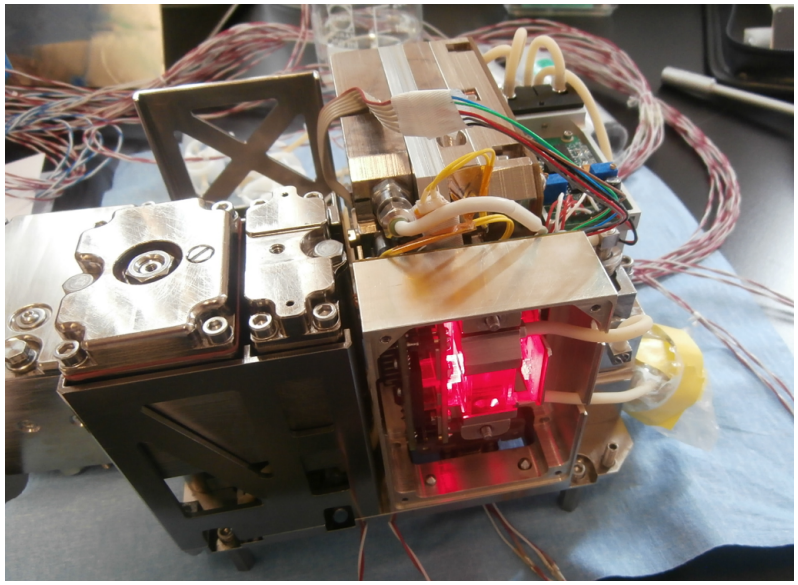
MELiSSA Contribution

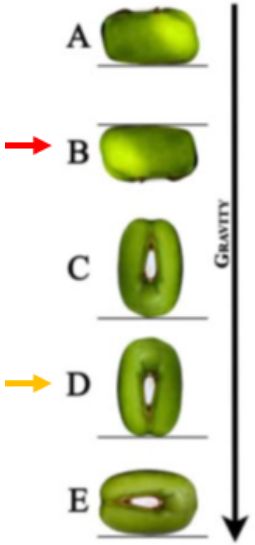
- European leadership in Scientific research

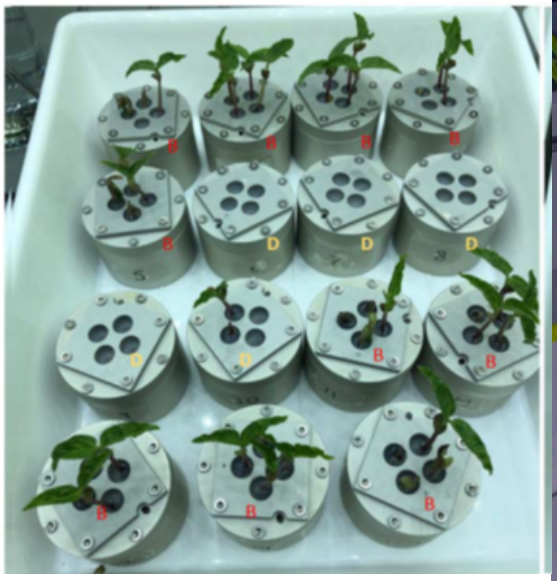


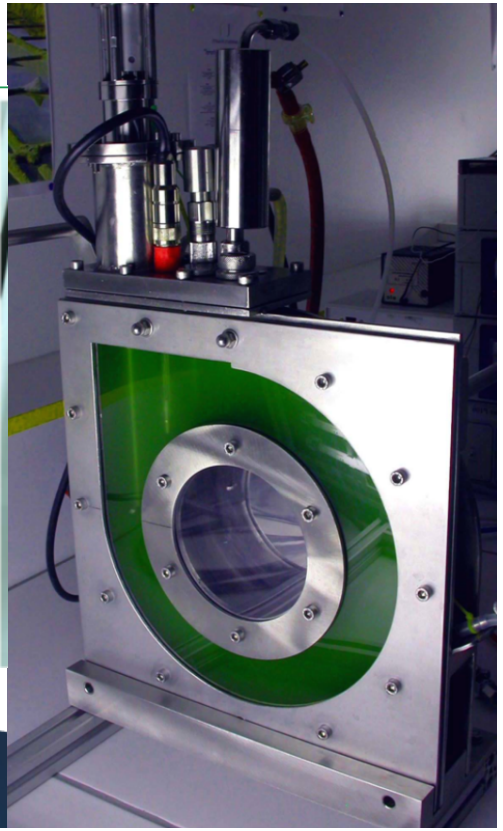
MELiSSA Contribution

- LSS Technological developments on ISS
  - ✓ ARTEMISS, URINISS, WASP, BIORAT







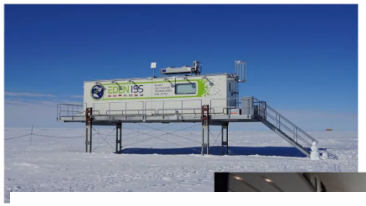


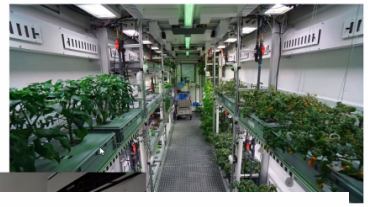
Where MELiSSA Stands ?

- Consolidated ESA stakeholders
  - ✓ Interest of participating Members States
    - ✓ Good Quality Science and technologies
    - ✓ Increase ground applications and spin off
  - ✓ Support from Human Space Exploration
    - ✓ Flight Experiments demonstrators in ISS
- Harmonised and Robust European strategy
  - ✓ ECLSS is consolidated in Europe

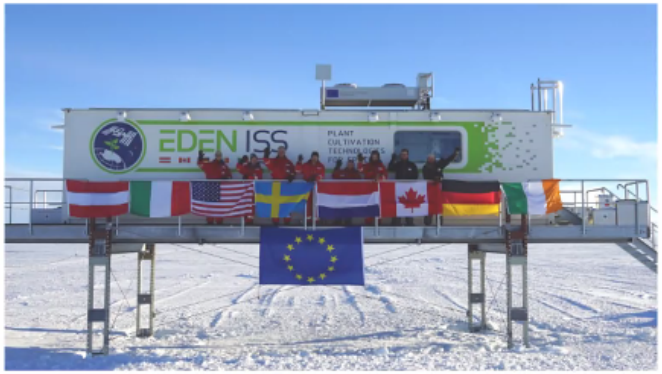
LSS Ground demonstrators

EDEN ISS Mobile Test Facility





- Funded by the Horizon 2020 research framework of the European Commission
- Started in March 2015
- Project end in May 2019, but operation continues
- 14 partners from 8 countries



EDEN ISS facility and deployment team

What is next in LSS ?

- Flights experiments under development
  - ✓ Approved : ARTEMIS C, URINIS, WASP
  - ✓ 3 Technology demonstrator : BIORAT 1/2 , PFPU
- From Space to Terrestrial applications
  - ✓ Economic and Societal impact
  - ✓ Sustainable environment on Earth & Space
  - ✓ Steady collaborative partnership (MoU reinforce)

Inspiring space solutions

Generating terrestrial success

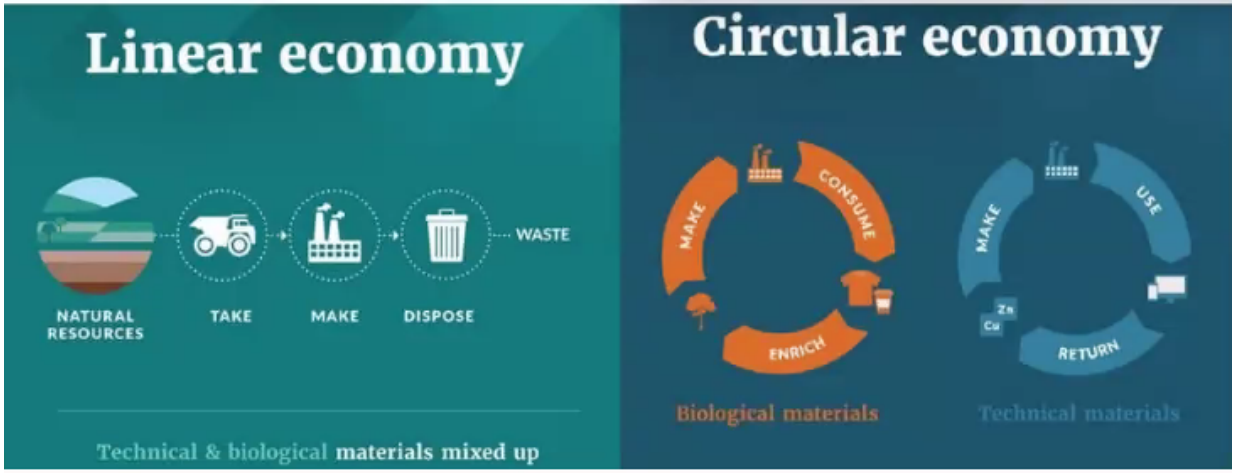
- MELiSSA know-how has great potential for societal challenges. We need to engage citizens to show economical benefit by exploring market identification (e.g. circular economy cases)
- Collaboration between MELiSSA partners on terrestrial spin-off to create 'win-win' and young-entrepreneurs (enlarge education, POMP/ PhD). Academic focus in own projects and science.
- Rise awareness of Policy makers and general public of the value of MELiSSA and its ccontribution to health/well-being

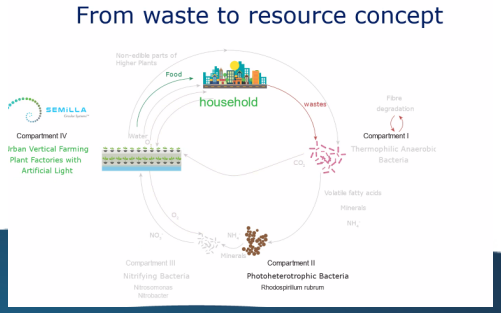
- TAKE HOME

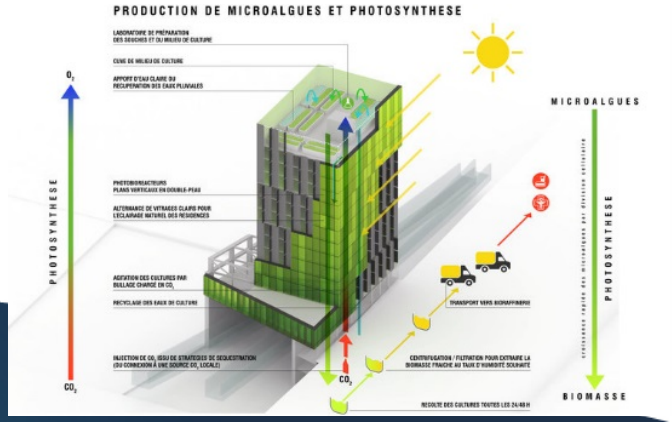
A non-Space EU Call (circular economy) would be the ideal vehicle to strenghten collaboration and create awareness of the value of MELiSSA

Using space solutions

- Circular economy initiatives

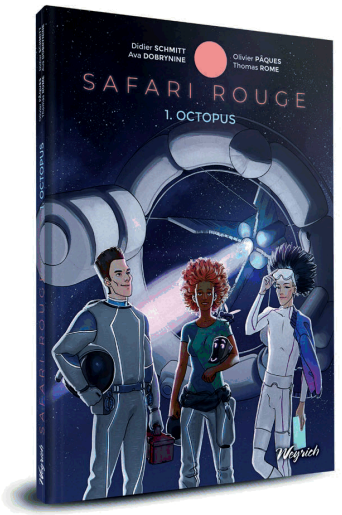






Societal impact & Education

- MELiSSA deployment on Earth requires MELISSA Adaptation to Earth encompassing both technical and business
  - ✓ Focus on technical/science and economical/financial demonstration to convince investors
- Changes to Circular Economy mindset will come through education; all actors to be engaged, from citizen up to governments, not only industry
- Breakthroughs seem to be achieved when multidisciplinary/ multi-community approaches are used
  - ✓ Amsterdam city, Roland Garros, Fairmont Hotels, XTU and VUNA (ESA HQ) Buildings



MELiSSA for future generations

We are entering an historical era where ESA and the space sector have the opportunity to reinforce the role of technology to preserve life and resources for future generations.

MELiSSA for future generations

Helping others to perform as a socially-responsible organisations, in terms of the sustainability of our environmental, economic and social activities.

MELISSA

MICRO-ECOLOGICAL
LIFE SUPPORT SYSTEM
ALTERNATIVE

THANK YOU.

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