Clean Space

Clean Space Team

23/05/2016

#CleanSpaceIndDays

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What is Clean Space

“Guaranteeing the future of space activities by protecting the environment”

CleanSpace in a nutshell

ecodesign

→ REDUCING IMPACTS

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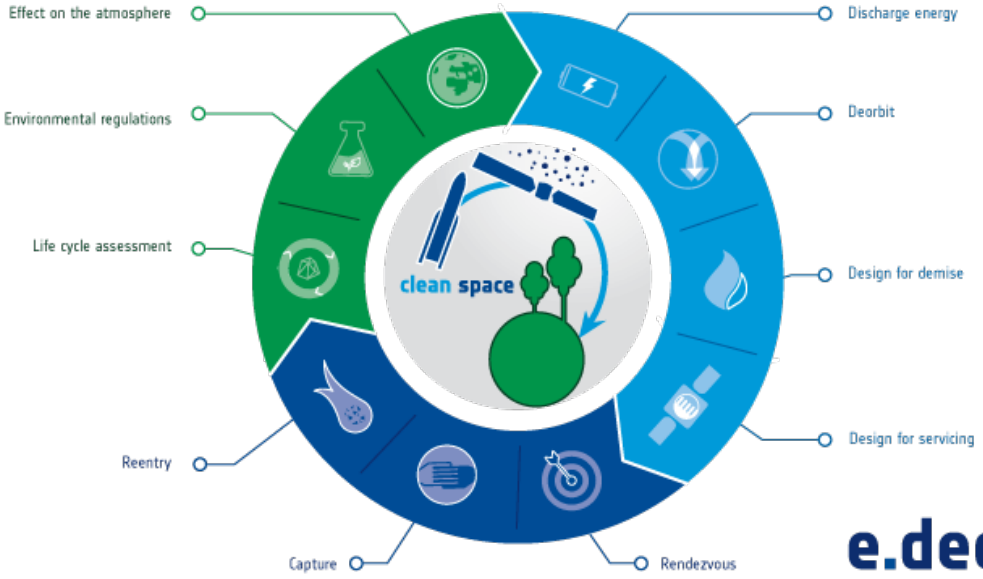
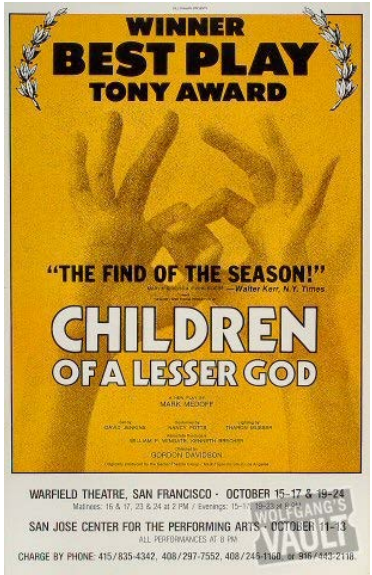
→ SPACE DEBRIS REDUCTION



e.deorbit

→ ACTIVE DEBRIS REMOVAL

Eco Design



Life Cycle of an aircraft

ECO-DESIGN: THE WAY TO SUSTAINABLE AVIATION

Air transport is an important sector in the global economy. Studies show that freight transport and passenger volume and therefore the aviation industry in general will increase during the next years.

In order to compensate the environmental impacts of this growth, new and greener designs have to be implemented, while existing processes have to be optimized. Life Cycle Assessment (LCA) is a powerful method to address those issues.

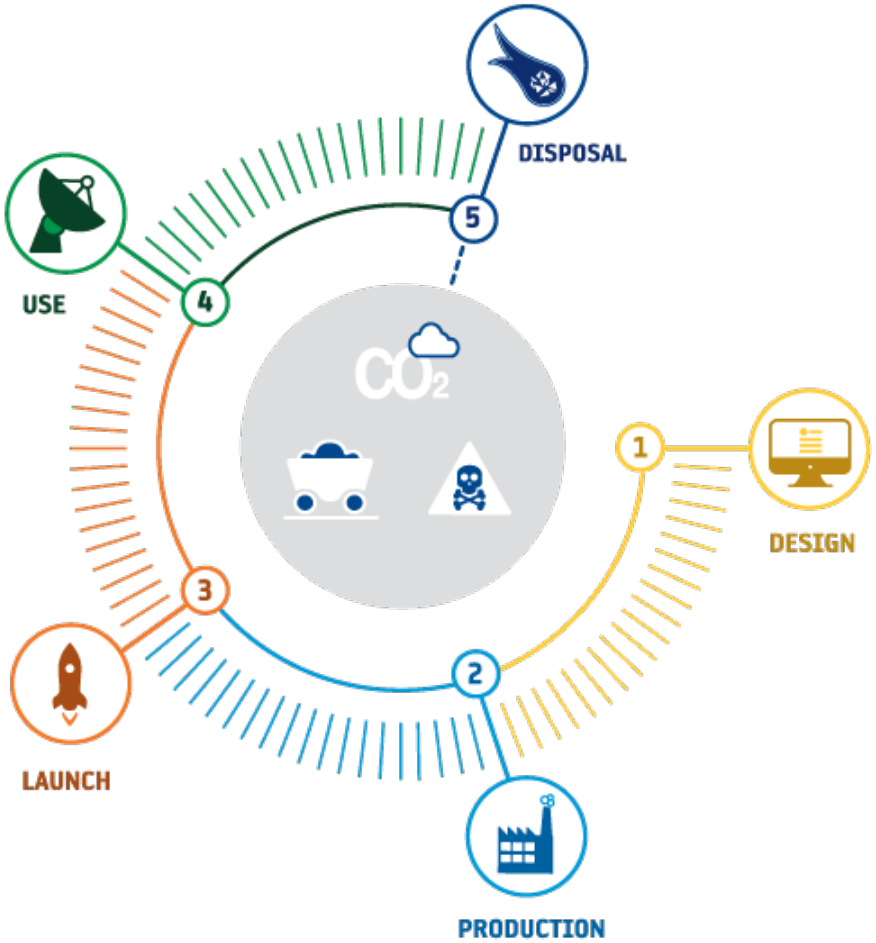
Fraunhofer Institute for Building Physics IBP

gies for upcoming work on the way to an eco-friendly aircraft.

Practical application:
- Process analysis and optimisation
- Analyse and compare recycling options
- Evaluation of future technologies
- Life cycle engineering of aircraft and aircraft systems
- Design for Environment (DfE)

Our competences:
Our competences: Together with industry

Eco design



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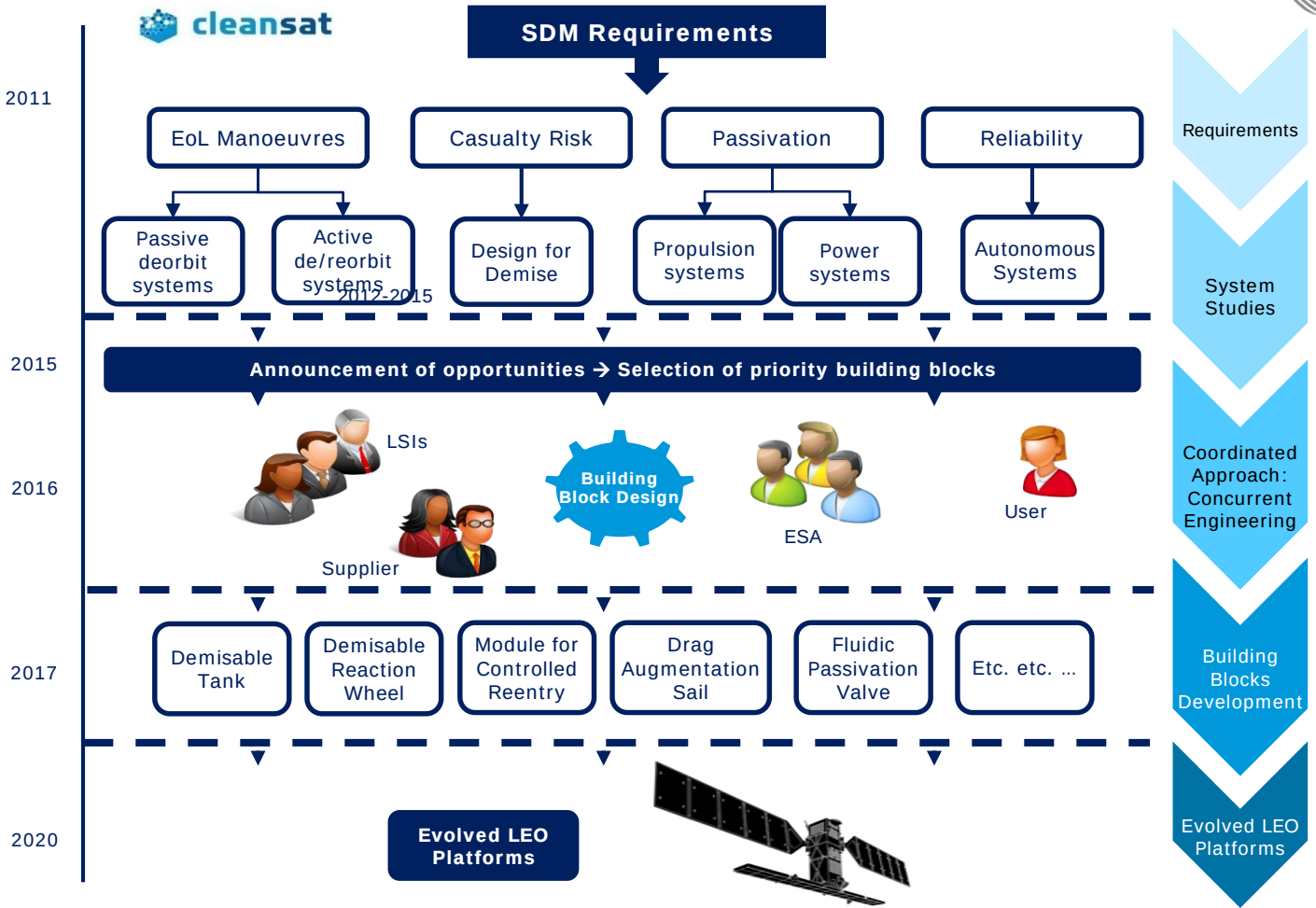
→ TECHNOLOGIES FOR DEBRIS MITIGATION

CleanSat: Past – Present – Future



Active Debris Removal

e.deorbit

➔ MISSION GOAL

Remove

- an ESA-owned heavy debris
- from 800-1000 km (near polar region)

e.deorbit Mission Scenario

JAN 2023
LAUNCH VEGA-C

JAN 2023
COMISSIONING & VERIFICATION OF GNC AND ROBOTIC TECHNOLOGIES AT 300 km CIRCULAR ORBIT

JAN 2023
TRANSFER AND PHASING TO TARGET ORBIT

FEB 2023
TARGET INSPECTION

MAR 2023
RENDEZVOUS AND SYNCHRONISATION

MAR 2023
TARGET CAPTURE

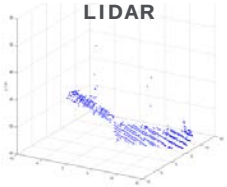
MAR 2023
STABILISATION

APR 2023
DISPOSAL

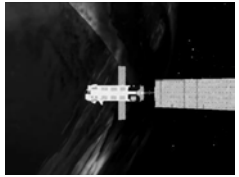
ESA's BUILDING BLOCKS TO ADR

COMPLEX GNC

LIDAR



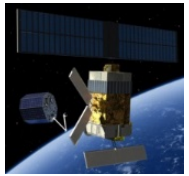
MULTISPECTRAL



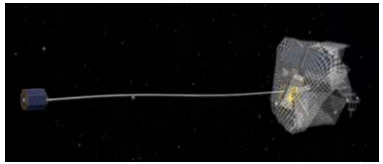
VISUAL

ADVANCED ROBOTICS

ROBOTIC ARM & VISUAL SERVOING



NET & TETHER

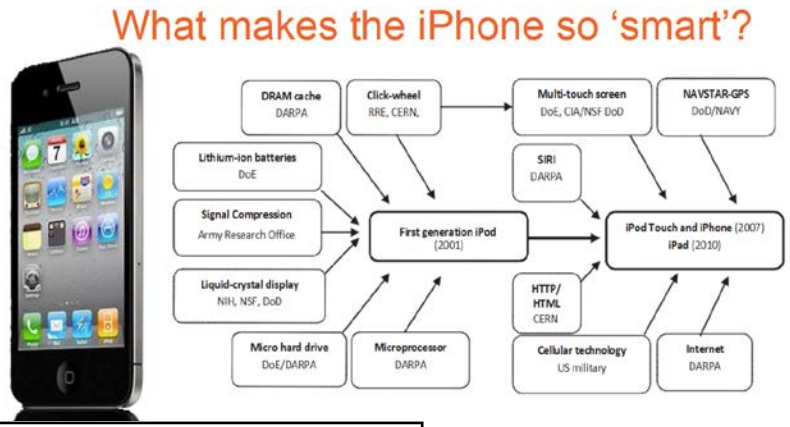


Why

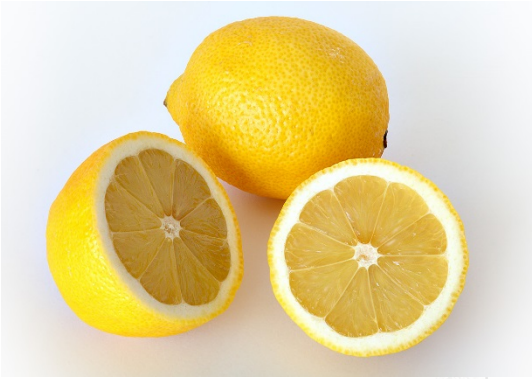
Technology innovation driven by system approach

Governments have a major role in innovation

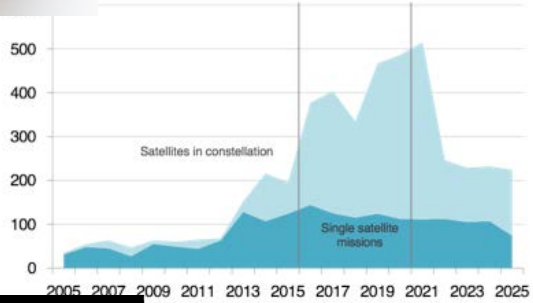
It is inspirational (and fun !)



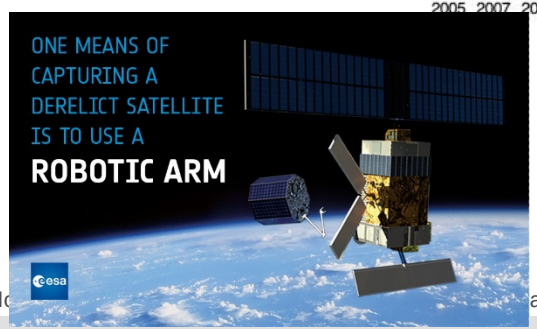
Is there a market ?



EcoDesign and green technologies: citric acid



New technologies for SDM, satellites



In-orbit servicing/assembly, debris removal

INSPIRATION

LEADERSHIP

EUROPEAN COOPERATION

COMPETITIVENESS