

AGENCY

Concurrent Engineering allows students to design sample return mission to a comet/asteroid!

06/06/2019 1894 VIEWS 11 LIKES

ESA / Education / ESA Academy

30 university students from 11 different [ESA Member States](#) have completed the latest of ESA Academy's highly successful Concurrent Engineering Workshops. Held from 30 April to 3 May 2019, the host site was ESA Academy's [Training and Learning Facility](#), ESEC-Galaxia, Belgium, where the educational Concurrent Design Facility is placed.

The workshop's goal was to familiarise the participants with [Concurrent Engineering](#), a systematic approach to integrated product development that emphasises the response to customer expectations. It embodies team values of co-operation, trust and sharing in such a manner that decision making is by consensus, involving all perspectives in parallel, from the beginning of the product life-cycle. Guiding the students were two ESA Concurrent Design Facility System Engineers, as well as a National Trainee as System Engineering Assistant from ESA's Systems and Concurrent Engineering Section.

The workshop attendees began their adventure by playing a game called EcoDesign. This was both a chance to learn about the environmental impacts of a space mission and lifecycle assessment of a satellite, and an excellent opportunity to meet each other.

The next day, the attendees were introduced to the Concurrent Engineering methodology and learned how to use the Open Concurrent Design Tool (OCDT), which is routinely used to great effect in [ESA's Concurrent Design Facility](#). Then the challenge was unveiled: using Concurrent Engineering, the students had to design a space mission to return samples from Wilson-Harrington target object.

— Communication and team work make for a successful Concurrent Engineering Session

The mission itself was an ambitious one: a sample return from Wilson-Harrington, an intriguing Solar System object classified as both an asteroid and a comet. The students came up with two equally popular names: Beyond Earth Exploration for Retrieving Samples (BEERS) or Mission for Asteroid Imaging and Analysis (MAIA).

A German student from the Technical University of Berlin said: *"Throughout the workshop I've met and connected with many talented individuals, exchanged cultures and worked together on an exciting feasibility study with a sample return from an asteroid. I was impressed with the speed we moved at, our teamwork and the results at the end, gaining a new level of confidence in my abilities and I'm looking forward to applying the skills and methodologies learned in my future space endeavours."*

To meet the strict deadline, students were promptly divided into teams to cover the different disciplines:

- Configuration
- Structure
- Mechanisms
- Propulsion
- Mission Analysis
- Attitude and Orbit Control Subsystem (AOCS)
- Power
- Thermal
- Communication & Data Handling
- Optics & Sensors