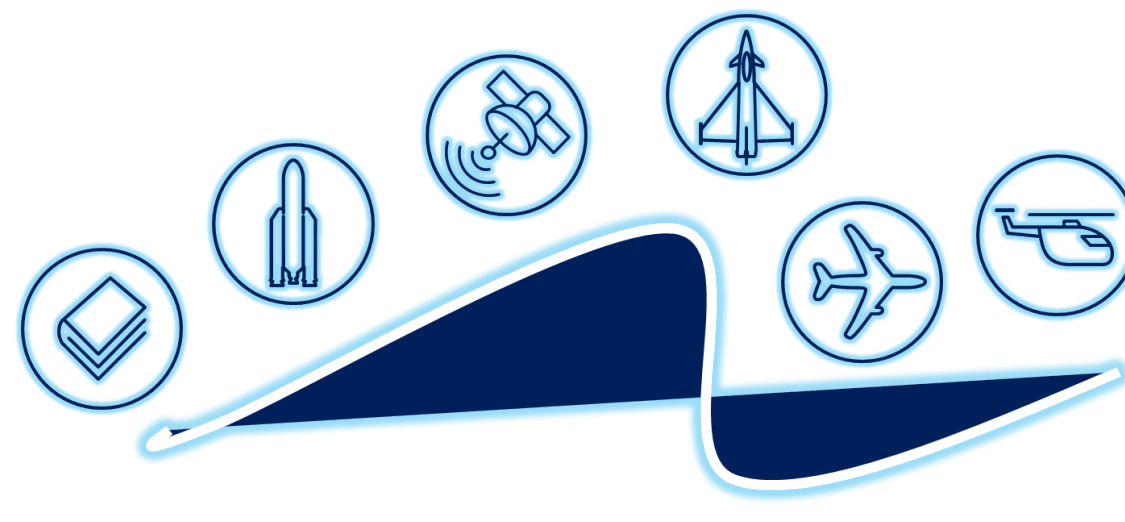


Airbus Sloshing Community



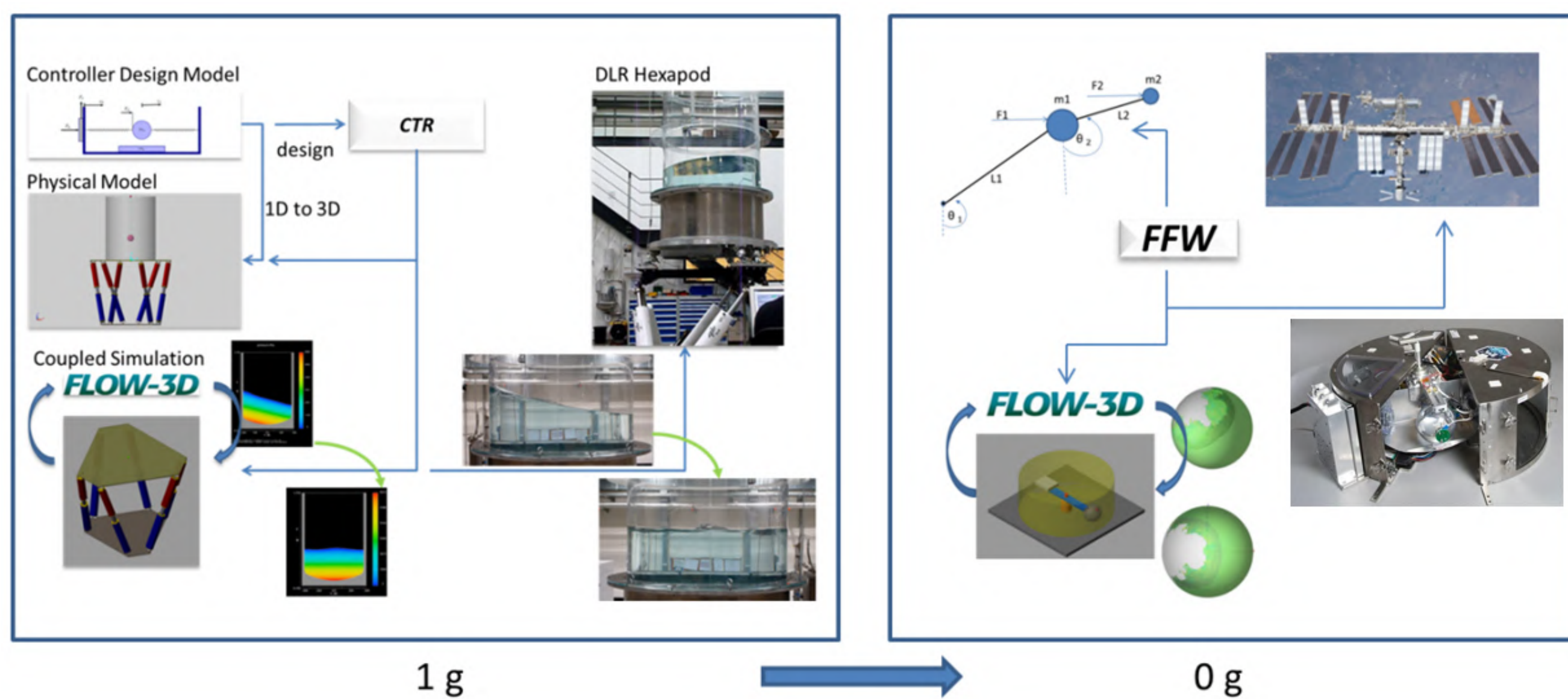
In the last years the phenomenon of sloshing came more and more into view. Multiple engineering decisions were working in the field of sloshing without knowing that others have similar issues with the topic or even have already found solutions for it. Based on this deficit the sloshing community started to grow. The Airbus Sloshing Community evolved over the last years and currently consists of more than 40 engineers in 5 different Airbus divisions.

Objectives

The Airbus Sloshing Community aims to provide a platform for enthusiastic debate and exchange regarding propellant sloshing in air- and spacecraft. Beyond discussions and exchange the community started to create benchmark cases for each application in order to define, track, compare and assess tools and methods dealing with the sloshing phenomenon, e.g. coupled simulation of sloshing. In inter-divisional and interdisciplinary projects the community tries to understand, simulate and assess the sloshing phenomenon with the goal of providing support to all dedicated engineering activities.

Sloshing Competencies in Airbus

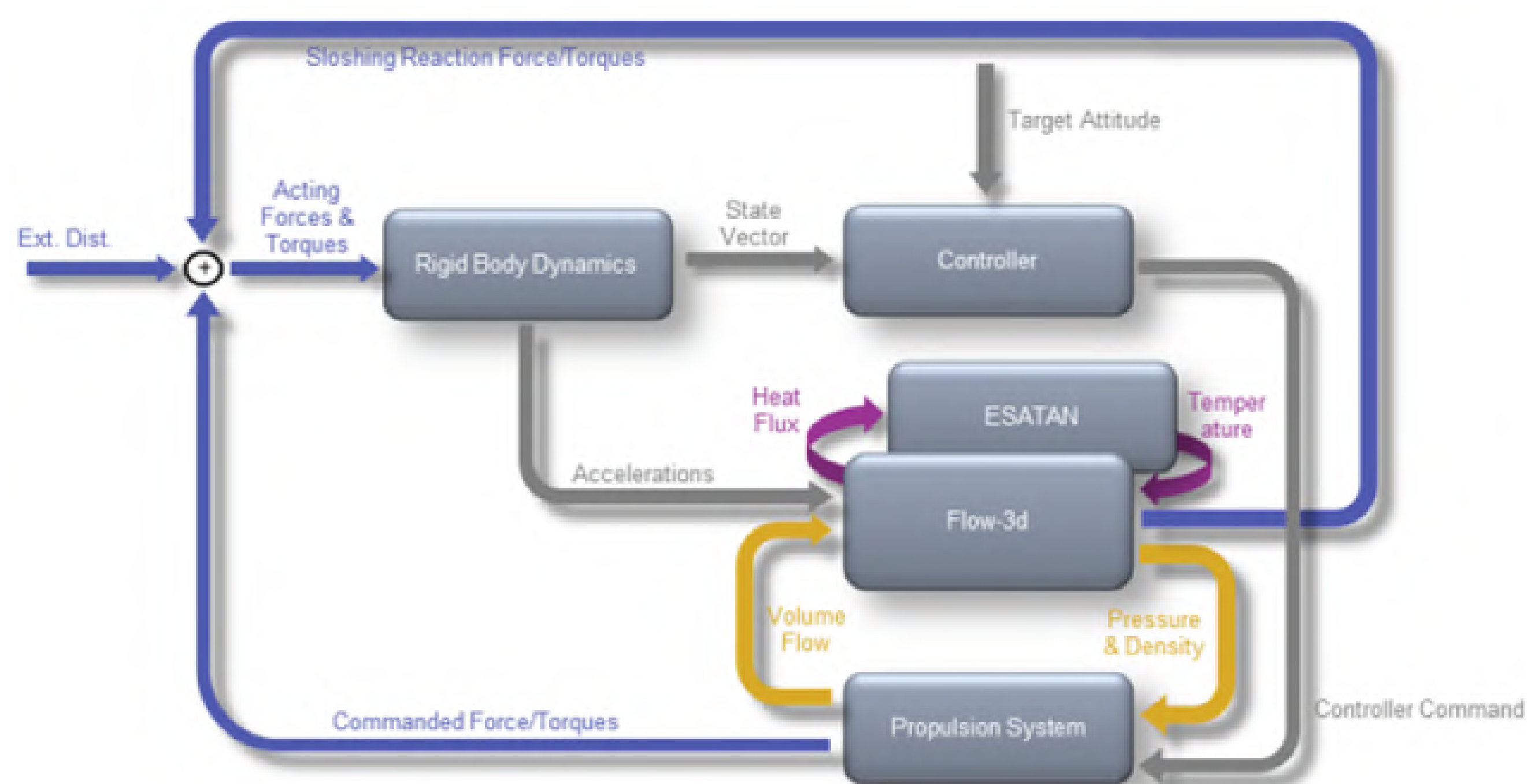
Model Based Design:



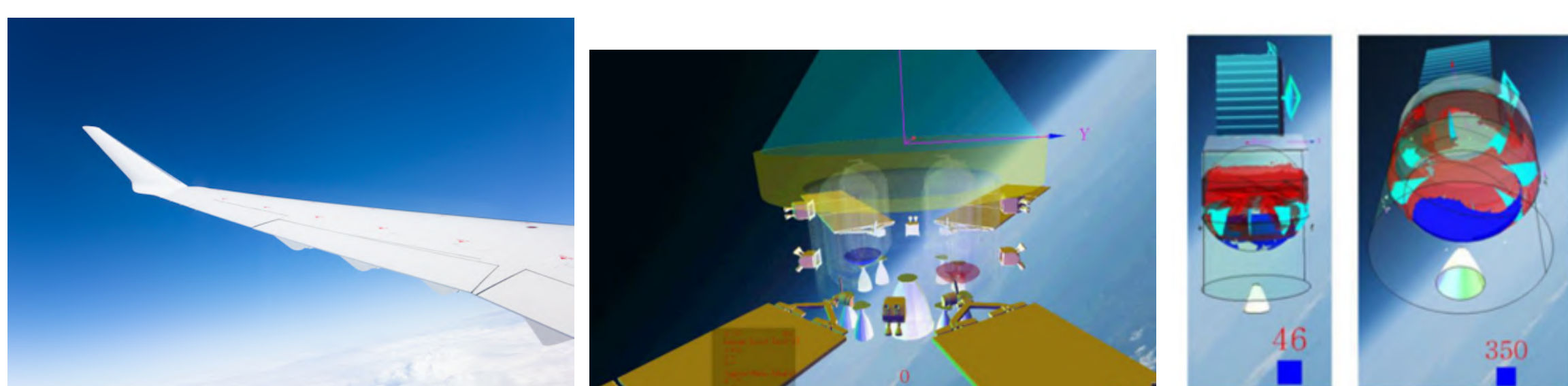
Modelling of sloshing using the Model Based Design approach, based on MATLAB® and Simulink®.

Especially used for fast and early development phases, but also for controller design and CoM estimation.

Coupled Simulation:

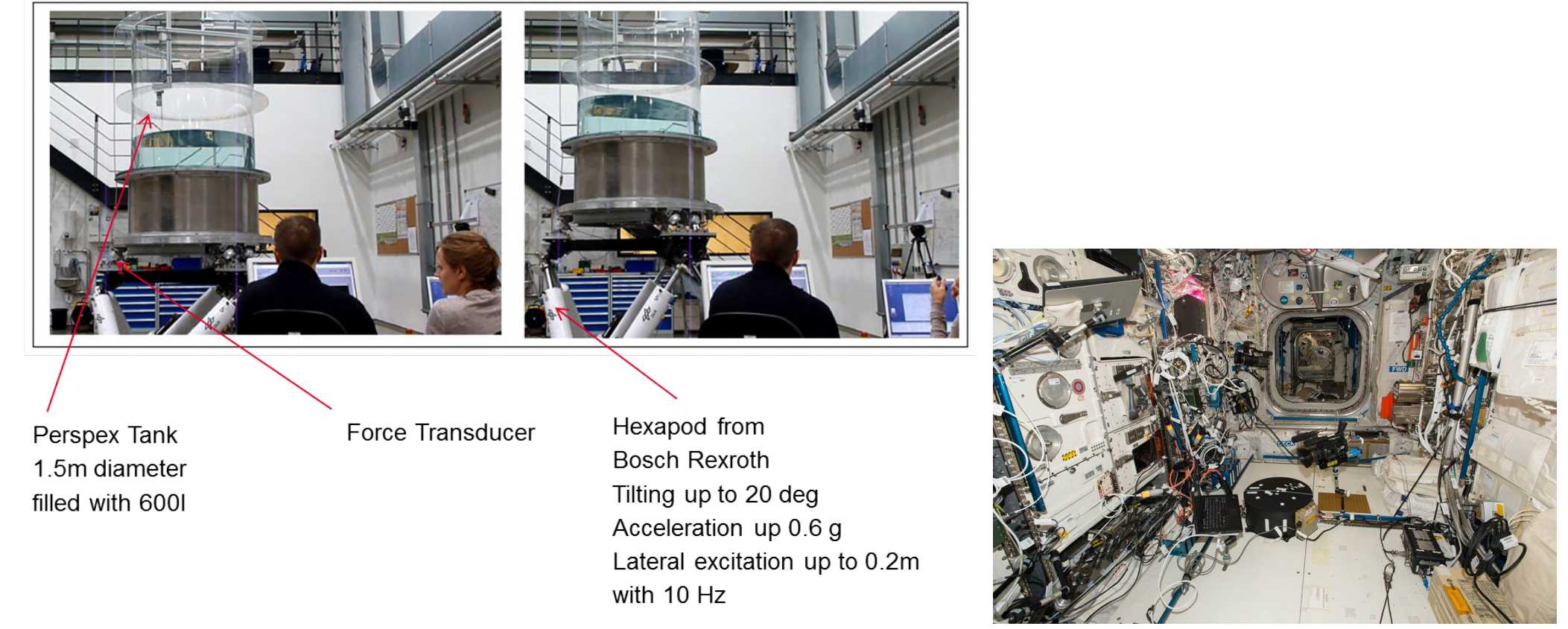


Multi-disciplinary simulations using coupled simulation (ESATAN, Flow3D, Simulink®) saves iteration time, increases simulation accuracy. Covers detailed analysis and design phases.



Extracting CoM, induced forces and torques, temperatures, evaporation and overall sloshing dynamics.

Testbeds:

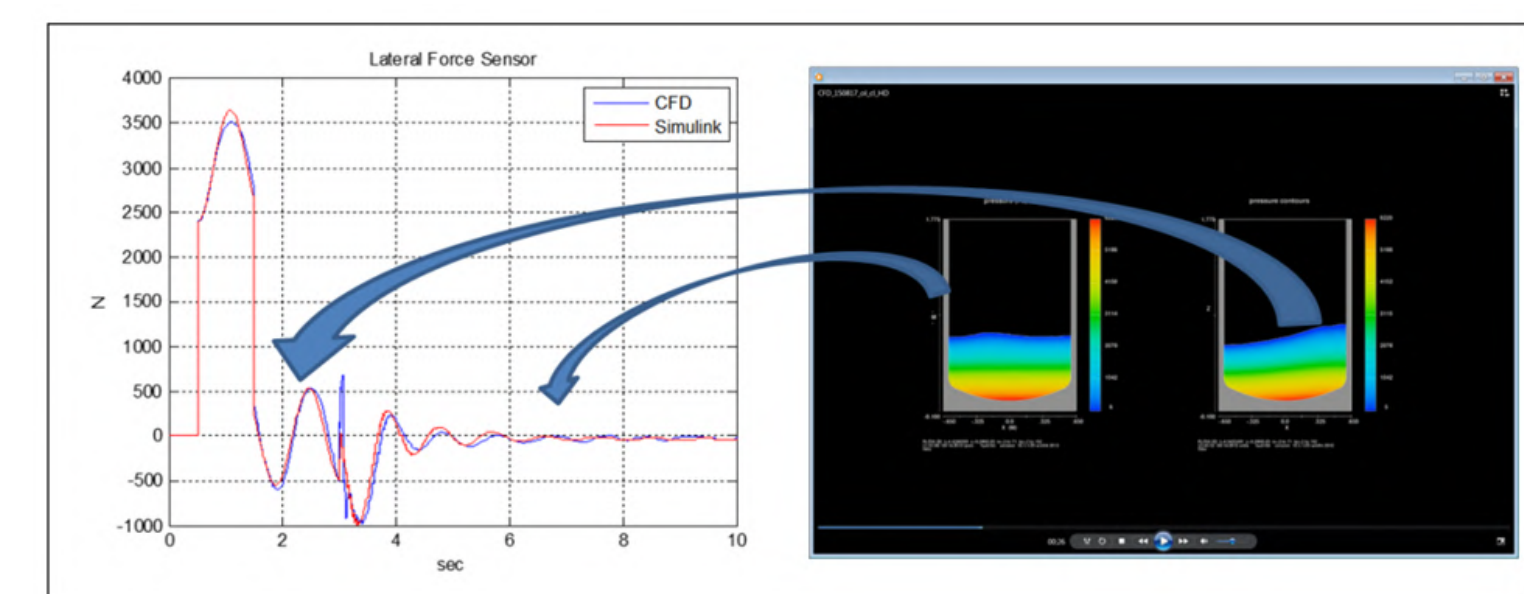


Gravity and micro-gravity testbeds used for sloshing control (closed-loop and open-loop input shaping).



Gravity testbed used for SLOWD project (SLOshing Wing Dynamics).

Sloshing Control:



Closed-loop sloshing control to counteract sloshing and open-loop input shaping to avoid/reduce sloshing effects.

Airbus Sloshing Symposia

- Propellant Sloshing Symposium Airbus
September 22nd 2015
AIRBUS Site Bremen, Germany
- 2nd AIRBUS Propellant Sloshing Symposium,
Nov 2nd and 3rd 2016
AIRBUS Site Filton, Bristol, UK
- 3rd Airbus Sloshing Symposium
Nov 8th and 9th 2017
AIRBUS Site Toulouse, France
- 4th Airbus / Ariane Sloshing Symposium
Nov 7th and 8th 2018
AIRBUS Site Friedrichshafen, Germany
- 5th Airbus / Ariane Sloshing Symposium

Next symposium:

5th Airbus / Ariane Sloshing Symposia 2019 at ArianeGroup Site, Forêt de Vernant, France

Call for papers and registration until September 27th, 2019. If you want to participate, please contact one of the PoC's listed below or

Dr. Cindy Merlin

Method & Tools Cryo & Storage Propulsion Systems - Ariane Group, Vernon
✉ cindy.merlin@ariane.group

Points of Contact

Airbus DS Bremen, Germany
Christina Jetzschmann
✉ christina.c.jetzschmann@airbus.com

Airbus Operations Ltd, UK
Francesco Gambioli
✉ francesco.gambioli@airbus.com

ArianeGroup Bremen, Germany
Dr. Philipp Behruzi
✉ philipp.behruzi@ariane.group

HUB:

✉ <https://communities.intra.corp/sites/sloshsympo/default.aspx>

