

WP 1- R&D industry/academy

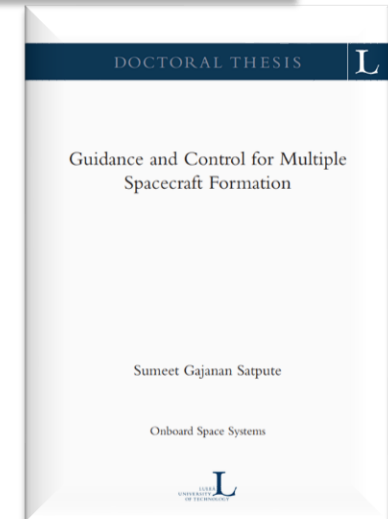
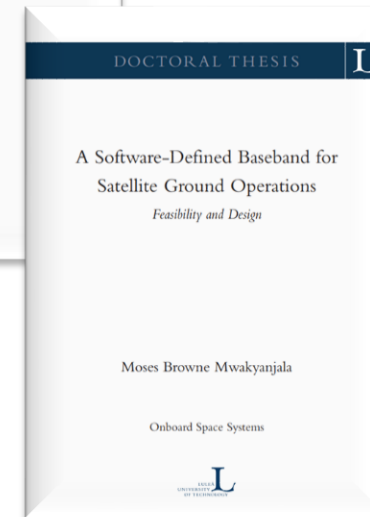
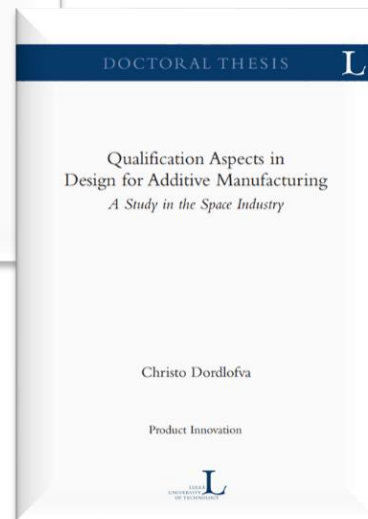
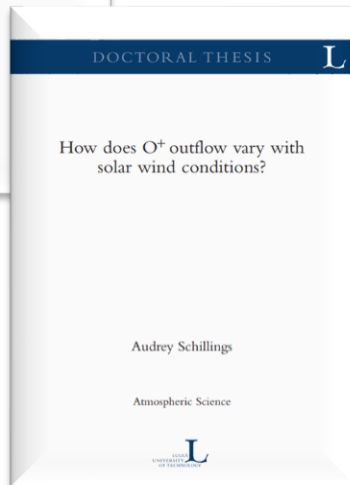
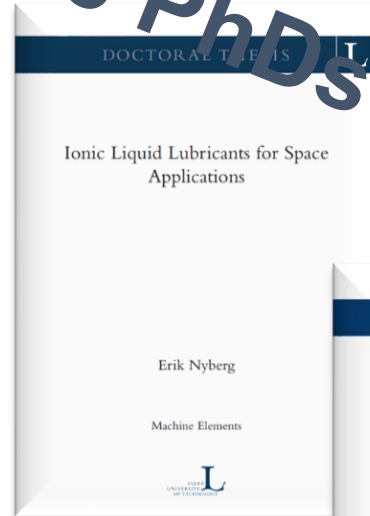
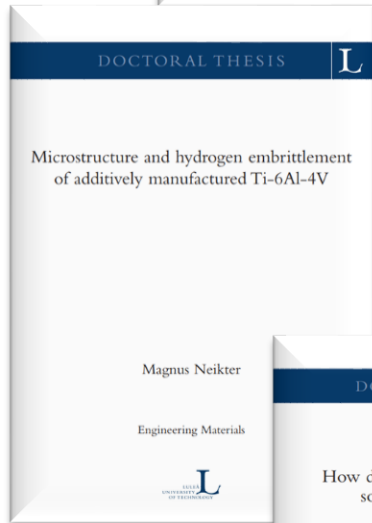
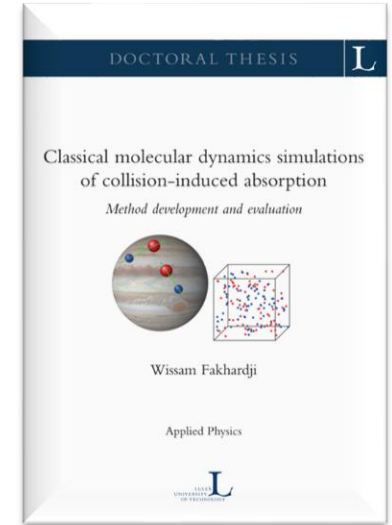
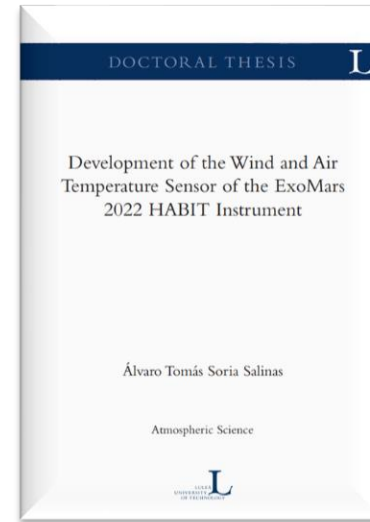
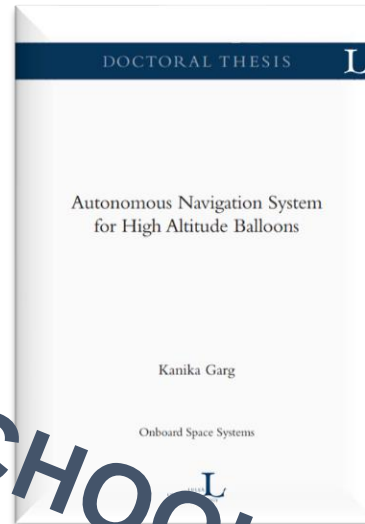
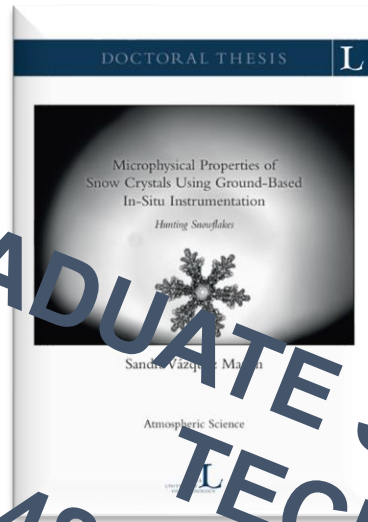
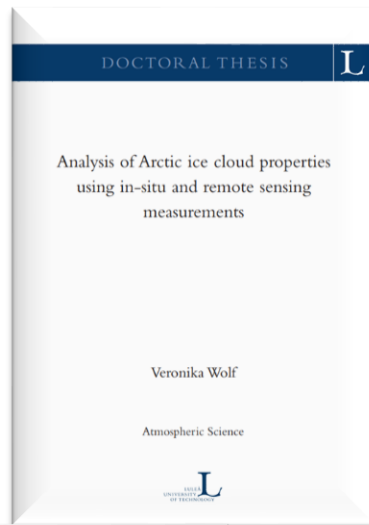
**Marta-Lena Antti & Anna Öhrwall Rönnbäck,
Luleå University of Technology**

12 PhD dissertations

5 of them since last SIF in September 2020



GRADUATE SCHOOL OF SPACE
TECHNOLOGY
48 PhDs since 2002!!



2 new innovation PhD students and 5 postdocs

SINCE 2019-2020



Emil Edin
Engineering
Materials



Avijit Banerjee
Robotics and Artificial
Intelligence



Tayebah Taheri
Signal Processing



Lisa Larsson
Product Innovation



Didun Obilanade
Product Innovation

Akeem Akinwekomi
Engineering Materials



Christo Dordlofva
Product Innovation

Jiyoung Cha
Onboard Space Systems

Sustainability

NEW PhD-COURSE DEVELOPED, DURATION APRIL-MAY

Industry and academia together, applied course

Still open for registration!!

- 14.00-15.45 ~~Sustainability from the Swedish space industries perspective~~ – Introduced by **Johanna Bergström Roos**, LTU Business, Space Campus Kiruna, project manager RIT2021 (Rymd för Innovation & Tillväxt)
 - 14.05 **SSC – Stefan Gustafsson**, Senior Vice President, Strategy & Sustainable Business
 - 14.35 **GKN Aerospace – Johanna Nylander** (PhD), Method Development Product Cost & Sustainability, R&T Center, GKN Aerospace Engine System
 - 15.05 **BREAK** appr. 10 min
 - 15.15 **Saab – Patrik Johansson**, Climate Strategist
- 15.45-16.25 **On the UNDP SDG goals from a global space perspective** – **Peter Martinez** (prel calling in from Colorado)

SESSION 2: April 27, 8.30-10: Perspectives on sustainability in Aerospace and the SDGs

- Using European Research Programs (Clean Sky and more) to accelerate the sustainable transformation in aerospace – professor **Ola Isaksson**, Chalmers
- SDGs: a long term perspective – professor **Dag Avango**, LTU

SESSION 3: May 3, 12.30-14.30: Creative and innovative sustainability workshops

- “Sustainable Aerospace 2050” (based on the SDG assessment): participants work with their own project challenges, share their work and inspire each other – with professors **René Laufer**, **Anna Öhrwall Rönnbäck**, assistant professor **Lisa Larsson**, LTU

SESSION 4: May 10, 12.30-14: Seminar on Sustainability in Engineering Design

- Sustainability in Engineering Design and Measurement Approaches – professor **Sophie Hallstedt**, BTH

PhD/industry course: Sustainability for Aerospace Applications

Document title: COURSE PM

Version: 1.0

Author: Anna Öhrwall Rönnbäck, Luleå University of Technology (LTU)



Sustainability for Aerospace Applications (4 hp)

PhD Course (2021), 4 HEC (4 higher education credits)

Industrial participants in the aerospace industry (diploma course)



Duration

April 20-May 31, 2021. Subscription no later than April 16, 2021 at

<https://kunskapsformedlingen.se/en/courses/sustainability-for-aerospace-applications/>

Course objectives

The objective of this course is to increase awareness about sustainability issues in the participant's own and other participants' ongoing R&D/R&I projects, and to improve the participant's ability to address these issues in their own work.

By raising sustainability issues in the participant's current project, and by reflecting upon them in groups with other course participants, teachers and guest lecturers, the course objective is that the participant achieves deeper insights about sustainability aspects, in order to improve management of and communication about sustainability issues in the current project, the research work, and, especially for industrial participants, in their organizations.



We are now members in SARC

SWEDISH AERO-~~NAUTICS~~-SPACE RESEARCH CENTER

Network for aerospace research in Sweden

Synergies between graduate schools

Joint courses:

Sustainability

Product Innovation for Aerospace Application



WP 2 - Testbed space

**Olle Norberg,
Luleå University of Technology**

WP2 – Testbed Space, current status

- ✓ We are making the test facilities of IRF and LTU easily available to both internal and external users.
- ✓ We will have web sites that clearly shows what is available – the [IRF SpaceLab web site](#) is already on-line!
- ✓ We will have clear and transparent processes to bring in external users to the labs.
- ✓ We will continuously improve and add to our capabilities to test and verify.
- ✓ Working with startups, we will enable new services and create new business.

Labs at LTU, examples of resources

- Nanosatellite Lab
- Asteroid Engineering Lab
- Space Avionics Lab
- Planetary Ices Lab
- Atmospheric Science Lab
- Rocket Propulsion Lab
- Student lab
- Robotics Lab
- EMC Lab
- AI Lab
- Tribology Lab
- Engineering Materials Lab
- Space Innovation Lab
- ... and more

Clean room, large TVAC (May-21), shaker, ...
TVAC for “dirty environments”, solar sim, ...
Ground station, friction-free table for ADCS, ...
Range of thermal & mechanical test equipment
Range of test equipment
Work in progress: hybrid and liquid test stands
Soldering stations, mechanical w/s, 3D-printers

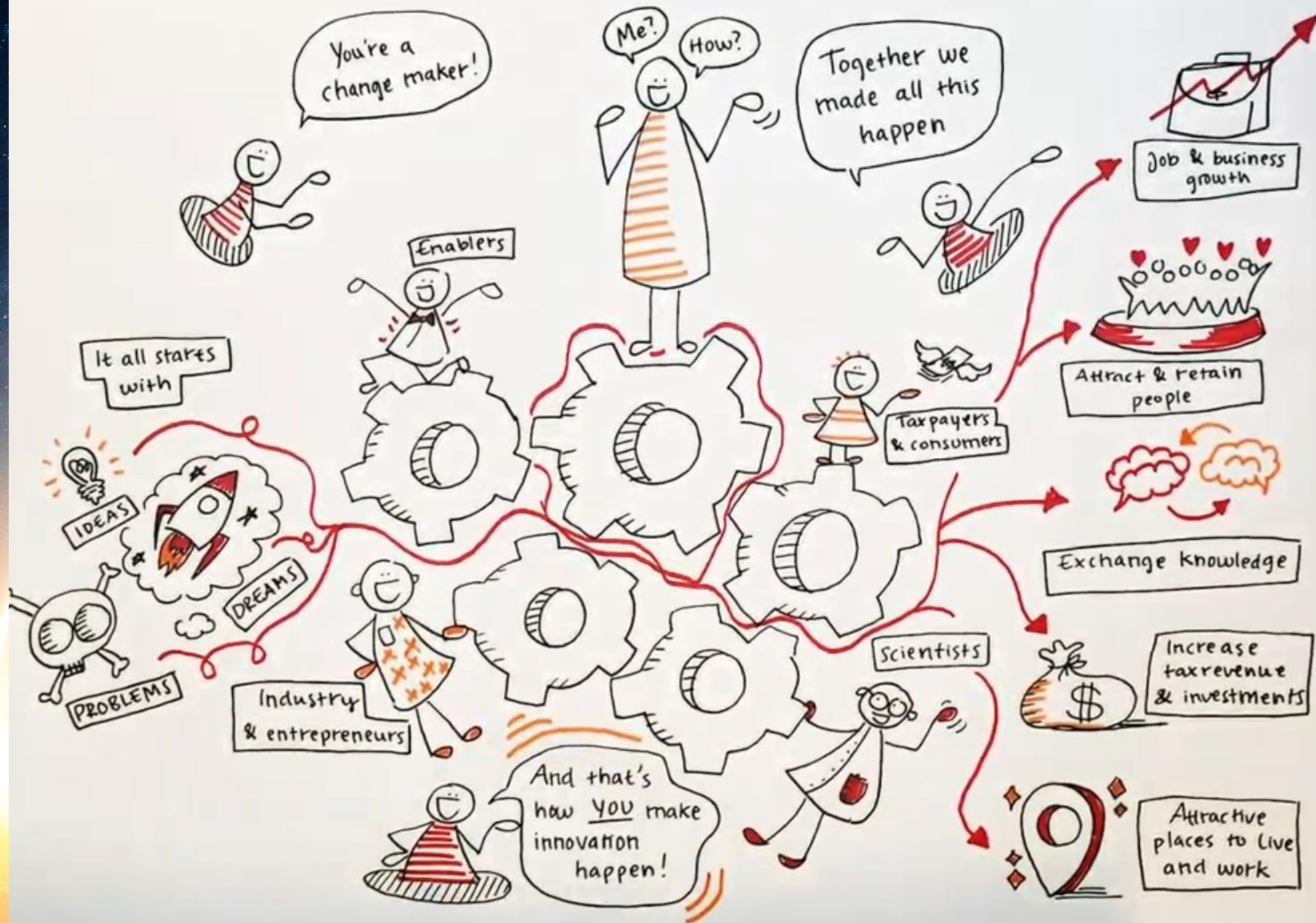
A photograph of the Aurora Borealis (Northern Lights) over a body of water at night. The sky is dark blue with numerous stars. The aurora displays vibrant green and blue light patterns, including a large, bright green arc and a smaller, more intense green patch. The lights are reflected on the calm water surface below. The text is overlaid on the upper half of the image.

WP 3 - Innovation support

**Emil Svanberg,
RiSE**

WP 3 – Innovation Support





WP3 Activities -- Target Groups -- Results



RESEARCH



EDUCATION



STARTUPS



SME'S

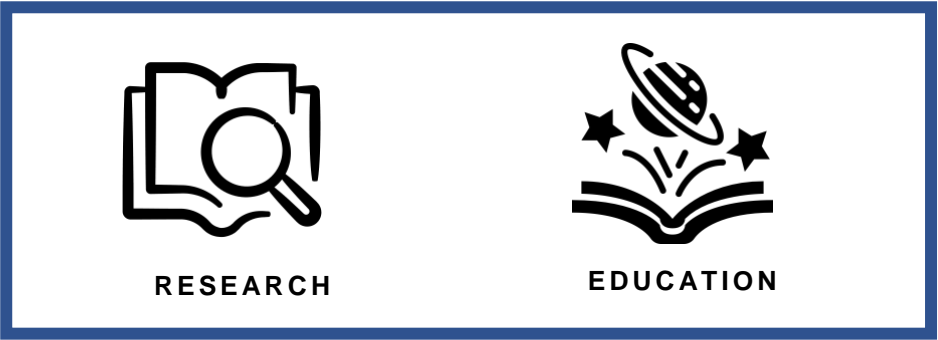


CORPORATES

WP3 Activities -- Target Groups -- Results

Early-stage innovation support


University Innovation Support (General)
 Masters education curriculum
 Graduate School of Space Technology
 Space Campus Innovation Workshops
 Innovation contests / Hackathons




WP3 Activities -- Target Groups -- Results

Space Innovation Summer


Students working on business projects
 Attract and retain talent
 Business development, pre-incubation




RESEARCH



EDUCATION



STARTUPS



SME'S



WP3 Activities -- Target Groups -- Results

Arctic Business and the ESA-BIC

Startup funding
 Business support and coaching
 Building teams



RESEARCH



EDUCATION



STARTUPS



SME'S



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Sol-ionics – Widefind – Gemometrics – Centropy – PASQ
 Arctic Space Technologies – REMOS Space Systems
 Porkchop – Conifer AI

WP3 Activities -- Target Groups -- Results

Business Development Program

Helping SMEs break the space barrier
 Market insights and opportunities
 Building business development skills
 Business opportunities, connect to corporates



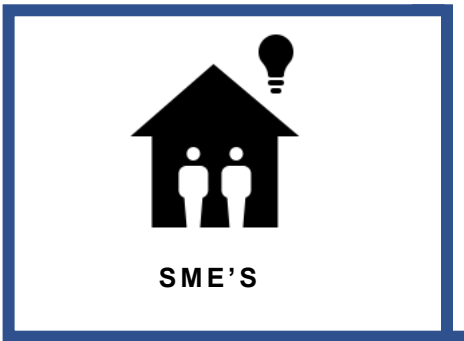
RESEARCH



EDUCATION



STARTUPS



SME'S



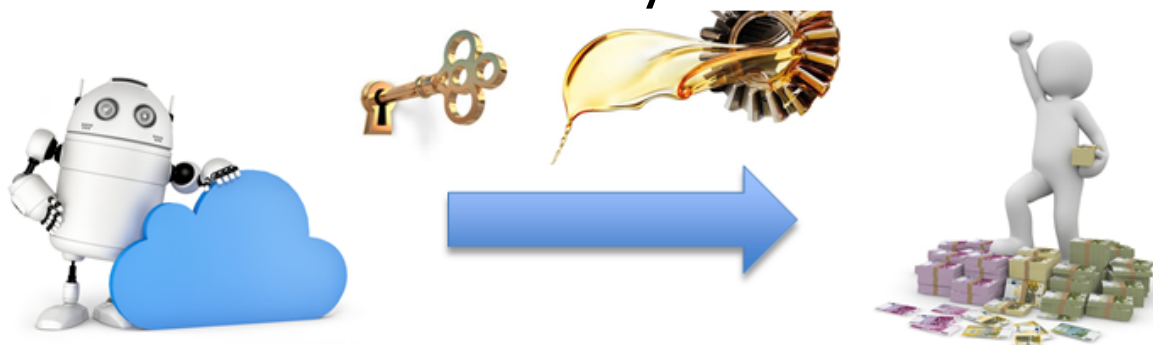
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WP 4 - Aerospace Cluster Sweden

**Olle Persson,
Luleå University of Technology**

Aerospace Cluster Sweden

The Gateway into the Swedish Aerospace Business



- Approximately 50 members
- 3 cluster nodes
 - Linköping (East)
 - Trollhättan (West)
 - Kiruna (North)

Cluster with the goal to increase the business in the Aviation and Space arena

Focus on Small and Medium-sized Enterprises (SME)

Member of EACP
(European Aerospace Cluster Partnership)

- 43 clusters from
- 18 countries

Contacts - The Gateway into the Swedish Aerospace Business



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www.aerospaceclustersweden.com



Whats up...

- EACP Virtual B2B Aerospace Applications & Technologies, 8-10 juni (Save the Date)
- SME development program, starting in march, How to use satellite data
- SMF Flyg.
- ACS Film