

SE²A Newsletter 12/2020



Dear members and friends of the cluster SE²A,

as 2020 draws to a close, we look back on a successful and eventful second year of SE²A.

After the last major face-to-face event, the SE²A PhD event in Burg Warberg in March, the entire Cluster of Excellence found ways and means to virtually exchange ideas, work together and stay in touch.

Despite all obstacles, the cluster members not only managed to keep our goals firmly in view, but also to engage in new forms of communication and everyday work. Although a certain routine has been established, all of us are looking forward to meeting each other again in person soon.

For now, let's have a look at the previous and upcoming months of the Cluster of Excellence SE²A in this newsletter.

We wish you a peaceful christmas break and look with confidence into 2021!

With best regards,

Prof. Dr.-Ing. Jens Friedrichs
(Spokesperson SE²A)

Dr. Doris Pester
(SE²A-Managing-Director)

The SE²A-newsletter will be published three times per year. For further information please visit our website: www.tu-braunschweig.de/se2a

// LATEST NEWS



November 2020

Game based learning booth set up at Hannover Airport

With this new dialogue format, the Cluster of Excellence SE²A would like to bring the current research priorities for future aviation systems closer to a broad audience and future passengers. In exchange, participants can playfully learn about our research and anonymously report their personal preferences to the cluster's researchers.

This booth, developed in cooperation with the Braunschweig start-up BeSu.Solutions, allows insights into user behavior and acceptance for future flight concepts as well as the economic acceptance of future technologies. In a fictitious situation, the participants deal with questions such as: "How important is sustainable mobility for me?" or "Which changes in terms of flight time and costs would I accept in order to fly more sustainably and less loudly?"

Initially set up in a test phase at the NFF, the display was able to move to its actual destination in Terminal A at Hannover Airport on November 16th.

How important is sustainable aviation for you?

For those who don't want to wait for a visit at Hannover Airport:

We invite you to book your virtual flight of the future - [online in the App](#)

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	sample	sample	
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November 2020

Major upgrade of the SE²A Intranet

The recent release version now includes detailed tracking of work packages. Enabling precise project management, you can now easily manage each deliverable by also considering successfully finished work packages. To keep an overview, we have implemented Gantt diagrams, where you now can find a visual status summary of your project. In addition, we fully integrated the process of "modification" to easily set up new deliverables within the intranet.

[Find out more soon](#)



SE²A

Sustainable and Energy-Efficient Aviation

Cluster of Excellence

SYMPOSIUM

27th to 28th October 2020

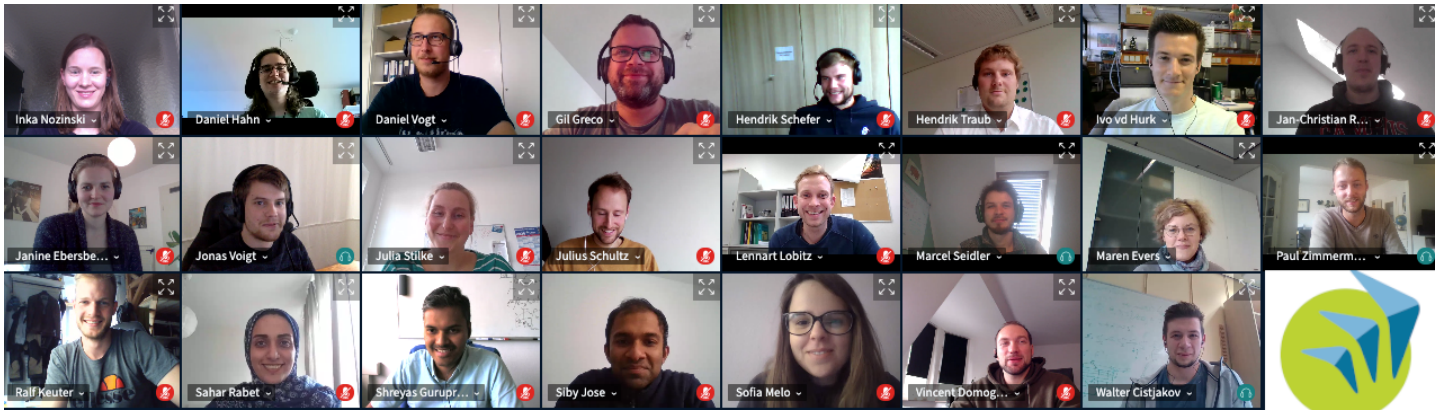
October 2020

Triple Event in SE²A – this year successfully in online format

International speakers including from MIT, Delft University of Technology, RWTH Aachen and cooperation partners together with representatives from SE²A strengthened the knowledge transfer and networking of the Cluster. The first day of the [Symposium](#) was divided into two main sessions: "Aircraft Design" and "Technological Requirements/ Technology Assessment“ in which the participants were highly involved in the discussions.

On the second day of the symposium, the exchange was intensified in the closed [workshop](#) "Accelerating the path towards carbon-free aviation". Scientists from SE²A discussed current issues with representatives from international partner institutions e.g. TU Delft, Cranfield University and ONERA (Office national d'études et de recherches aérospatiales; the French equivalent of the German Aerospace Center).

This intensive brainstorming was concluded by the [scientific advisory board meeting](#) with top-class representatives from industry, science and politics. [read more](#)



September 2020

First SE²A Summer School for doctoral researchers

From September 29th – October 1st the SE²A doctoral researchers had the opportunity to attend the first SE²A Summer School.

Main focus of the programme was the topic of scientific publications.

In different workshops and presentations, the doctoral researchers dealt with aspects of scientific writing and presentations as well as sharing scientific findings with the interested public. On the last day of the summer school some of SE²A's Principal Investigators were available to share their experiences concerning scientific publications. Digital networking activities concluded the programme.

We would like to thank everyone being involved in realising the workshop under currently difficult conditions. We are looking forward to soon meeting again in person.

// RESEARCH

The Cluster of Excellence "Sustainable and Energy-Efficient Aviation" is an interdisciplinary research center with the purpose of investigating technologies for a sustainable and eco-friendly air transport system. Scientists from aerospace, electrical, energy and chemical engineering are working on the reduction of emissions and noise, as well as recycling and life-cycle concepts for airframes and improvements in air traffic management. Technische Universität Braunschweig, the German Aerospace Center (DLR), Leibniz University Hannover (LUH), the Braunschweig University of Art (HBK) and the National Metrology Institute of Germany (PTB) have joined forces in this extraordinary scientific undertaking. The Cluster organisation is structured in three Integrated Cluster Areas (ICAs) reflecting the mission-critical research demands and following a coherent and coordinated roadmap. The three ICAs resulting from our assessment of critical research demand are:

ICA A: Assessment of the Air Transport

System

The goal of this cluster area is the development of comprehensive criteria and metrics for sustainable air transport that can serve as a basis for decision-making and future scenarios.

[more](#)



ICA B: Flight Physics and Vehicle Systems

This cluster area takes an in-depth look at technologies that have the potential to significantly reduce the power required from the propulsion system.

[more](#)



ICA C: Energy Storage and Conversion

Even with major advances in aircraft drag and propulsion efficiency, carbon emissions can only be reduced, while carbon-free aviation requires new concepts for the energy supply. The cluster looks at advanced lithium-sulfur chemistry for solid-state batteries as well as load bearing batteries.

[more](#)



Research project on Scientific careers started in September

The Cluster of Excellence SE²A participates in the highly collaborative research project at Leibniz Universität Hannover led by Prof. Eva Barlösius and PD Dr. Axel Philipps. „Scientific and research-related careers in the subjects of the clusters of excellence – reducing gender and family barriers“ (2020-2024) aims to show typical scientific and research-related careers, identify gender and family specific barriers and develop proposals for their reduction as well as promote young talents in science and research & development.

After delays due to the corona pandemic, the project was able to start in September.



// ABOUT THE CLUSTER



Improving air traffic with business administration and mathematics - Dr. Imke Joormann and her junior research group conduct research in the SE²A Cluster of Excellence

In order to understand how different areas of air traffic are interrelated and to gain an overview of the effects of individual measures, Dr. Imke Joormann and her team are conducting research using a System Dynamics approach. This business management method simulates dynamic-complex situations and enables their analysis, for example, with regard to the use of electric aircraft on short-range flights.

At the same time, the group is researching on how the future composition of aircraft fleets can be optimized.

However, the practical relevance of complex models poses problems for mathematics: If mathematical programs cannot provide such complicated solutions, the team is faced with the task of optimizing the solution process using various approaches.

The junior research group "[Overall System Evaluation](#)" consists of the mathematician [Dr. Imke Joormann](#), [Jan-Christian Resch](#), with mathematical background and [Chetan Talwar](#) with business administration background.

The group is supported by the Chair of Production and Logistics and the Institute for Mathematical Optimization. Find the full article [here](#)

// PROJECT ANNOUNCEMENT

New Research project "SCENAIR-2050" will start in January

The Braunschweig University of Art (HBK) project entitled "Scenarios for Air Transport System in alternative 2050 environments (SCENAIR-2050)" aims to provide a multi-criteria decision support for evaluating and optimizing future technologies developed within SE²A. Detailed information about the project under the lead of Prof. Dr. Gerhard Glatzel and Dr. Mehdi Mozuni will be published in the upcoming newsletter.

// EVENT ANNOUNCEMENT



Summer School
for doctoral researchers

SE²A Summer School for doctoral researchers September 6-10, 2021|Braunschweig

Please save the date! From September 6th – 10th, 2021 the SE²A doctoral researchers will have the opportunity to attend the second SE²A Summer School.



SE²A Sustainable and
Energy-Efficient Aviation
Cluster of Excellence

CONFERENCE

October 2021

SE²A Cluster of Excellence Conference October 2021|Braunschweig

Please make a note! After a successful symposium this year, the fruitful scientific exchange will continue at the SE²A Cluster of Excellence Conference in October 2021: External speakers, SE²A researchers and guests will have again the opportunity to exchange their ideas, discuss approaches, and network.

Contact

Technische Universität Braunschweig
Sustainable and Energy-Efficient Aviation
Hermann-Blenk-Str. 42
38108 Braunschweig

Imprint

SE²A - Sustainable and Energy- Efficient
Aviation
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