



RIT2021 Newsletter

December 2020

Dear partners and stakeholders,

The year of 2020 is coming to an end and we can look back to a most unusual and laborious year. To run a development programme itself is challenging, as many new paths are to be trodden and things done for the first time. It has been a time of trial that has taught us a lot and forced us to take steps we probably would not have taken. At least not in this high pace and moreover on a global plan.

After all we are still on track and making progress in the project. We also got some favourable winds in our sail as the Swedish government decided to invest 90 million SEK in Esrange Space Centre and SmallSatExpress. Congratulations to SSC and the entire space region as we are all winners!

Also the fact that [Luleå University of Technology has been selected European University](#) will strengthen our space region. A collaboration between five European universities has been granted five million euros to increase student mobility in Europe and the focus of the collaboration is education in space.

Get up to date on other important news within RIT2021. If we have missed anything, please let us know and we'll include it in the next newsletter. We hope you enjoy the reading!

RIT2021 - a driving force for regional development

The aerospace industry in the north of Sweden is booming and many international companies within this area are now looking at Northern Sweden as their next strategic move. These words can be read in [an article](#) written by "Invest in Norrbotten", who support and coordinate companies planning to establish or expand business in Norrbotten. Furthermore, the County of Norrbotten has highlighted the same theme [in their pod](#), and RIT2021 is in focus in both these media features as an important driving force to strengthen the ecosystem around space.

We can already see how the number of recruitment ads is increasing and you can read more about this on our homepage where we gather [career opportunities](#) within aerospace in our region. For the moment we have around 15-20 new positions which is a strong sign of where we are heading. These new jobs are found at LTU, SSC, IRF, EISCAT, ISAR Aerospace and Rocket Factory (RFA). SSC is also planning to employ a record number of students for the summer season when they need to catch up with both rocket and balloon campaigns that have been postponed due to the corona pandemic.

We are also very glad to announce that one of our new start-ups in Kiruna, [ACTAS Space](#), is helping newcomers to find an apartment in Kiruna. Thanks to them this important step goes so much faster so please get in touch with them whenever needed.

All-time-high interest in Space Innovation Forum



Space Innovation Forum 11 focused on business opportunities within satellite data.

We're proud to share with you that we had more interest than ever as the space conference went online and attracted over 150 stakeholders from industry, academia, policymaking, venture capital and start-ups. The theme this time was business opportunities within satellite data, with keynote speakers providing a range of perspectives from product development, to applications and funding new ventures. A key take-away from the conference is the need to gain a wider understanding amongst regional actors that the potential of satellite data is not only in space, but to create services and solutions in our everyday lives.

Josef Aschbacher, who recently was appointed the new GD at European Space Agency, was one of the speakers and he said:

"Space Innovation Forum is a fantastic initiative – opportunities to gather the community in this way, keeping them connected and up to date is something we encourage and would like to see more of."

Read more about the event [here](#) or check out all the presentations [here](#).

Space Innovation Forum LinkedIn group – *Join now!*



A LinkedIn group has been launched to provide a digital channel for participants to network and connect with each other. The group is open to anyone with an interest in the space sector in Northern Sweden and will also serve as a noticeboard for news and tips from and by the Space Innovation Forum community. Welcome to post news that can be of interest for the group.

Our next Space Innovation Forum

The next Space Innovation Forum will be online on March 17-18, this time focusing on what is needed to build an attractive space region, how to secure external investment for growth and to support the existing processes. The event will take place during two mornings (09.00-12.00). The first day we will have presentations and panel discussions and the second day a workshop to set out a roadmap for our continued work about attractiveness towards growth in the space industry. You can participate in both sessions or chose either of them.

R&D projects within RIT2021

Applied research presents unique synergies for both industry and academia, creating not just new applications of technology but also career opportunities and knowledge exchange. Thus far, RIT2021 has successfully launched 14 such joint collaborations between Luleå University of Technology and aerospace industry partners since 2015. For the moment we have seven innovation projects running in the programme and we plan to start at least one more. We also have the great pleasure to present a new key person at Luleå University of Technology, Rene Laufer who is chaired professor of [onboard space systems](#). Rene started his work at Space Campus in Kiruna this autumn and we will see much more of him and his team in the future. Read more about [his thoughts of Esrange becoming a launch site for satellites](#) and what it means for the university. We wish Rene welcome to our team!



Professor Rene Laufer, Tayebah Taheri (postdoc SSC), Christo Dordlofva (Postdoc GKN Aerospace) and Didunoluwa Obilanade (PhD student GKN Aerospace) and Avijit Banerjee (Postdoc OHB Sweden).

In our previous newsletter we presented some of our new PhD student and postdocs very briefly and now they are all up and running. Tayebe Taheri is working on a project called [ICEQREME](#) - Interference Control and Estimation with a high-Quality Radio Environment Map of Esrange Space Centre. From here, SSC operates the world's largest civilian satellite ground stations, acting as a hub in a global network of ground stations. Christo Dordlofva and Didun Obilanade is working together on a project called [DYKAM](#) which is about improving how engineers design for additive manufacturing (AM) in order to enhance performance and reduce time to market for rocket engines components. Christo was previously a PhD in RIT and RIT2021 and through his work, LTU and GKN Aerospace have already proven to leverage research results of high quality within areas of great importance for competitiveness. Avijit Banerjee is working on [navigation around small bodies](#) (asteroids and debris) in space together with OHB Sweden.

Testbed Space

The development of advanced space testing at Space Campus in Kiruna and make it available to the user community has lately been focusing on validation, market analysis and business development on the IRF side and development and implementation on the LTU side.

IRF Spacelab has produced a [promotion video](#) which was launched for the first time at the Space Investment Day, mentioned further down in this newsletter. In addition there is a brand [new website about IRF Spacelab](#) with all the facilities available and a contact page for booking. IRF has taken a big step opening up and going from planning to action.



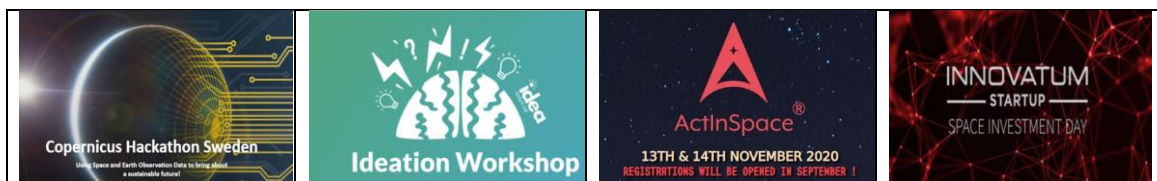
The new website for SpaceLab is published.

On the LTU side four labs are planned to be available for collaboration with external partners. The Nano Satellite Lab, already in place since 2018, offers facilities to design, develop, assemble and test space systems onboard different types of small spacecraft. A friction-less table constructed and built by LTU in collaboration with regional suppliers offers two independent robotic platforms for experiments and technology demonstrations with more software and hardware interfaces to be added to both platforms in the next step. LTU is also involving students in research and development, for example a Master thesis examining solar panel dynamics is about to start. There are already several ongoing collaborations with external partners (we spoke about some in the previous newsletter) with the most recent one being Beyond Atlas. In this case to jointly build and launch a 3U CubeSat with electric propulsion, X-band communication, and star navigation for future space exploration missions. Students, incoming PhD and PostDoc will do theses, dissertations and research work on this project starting in January.

Three other labs are already running (Asteroid Engineering Lab) or under development (Rocket Propulsion Lab, Space Avionics Lab) and will include facilities for research on asteroids and comets, liquid and hybrid engines and propulsion as well as satellite systems. A couple of vacuum chambers will be installed together with a 3D printer and other relevant equipment. An updated homepage with all details will be published during 2021.

Innovation and business development

LTU Business and Arctic Business, our two main regional engines to strengthen the innovation support system, have been working hard on providing events to stimulate the growth in the space business. Many of these are competitions organised in collaborations with others such as ESA and the two sister space incubators in Sweden, Innovatum in Trollhättan and IUC in Uppsala. By using space data or technologies the participants have created new innovative solutions, often used outside the space sector.



Four events to stimulate business and strengthen the space ecosystem.

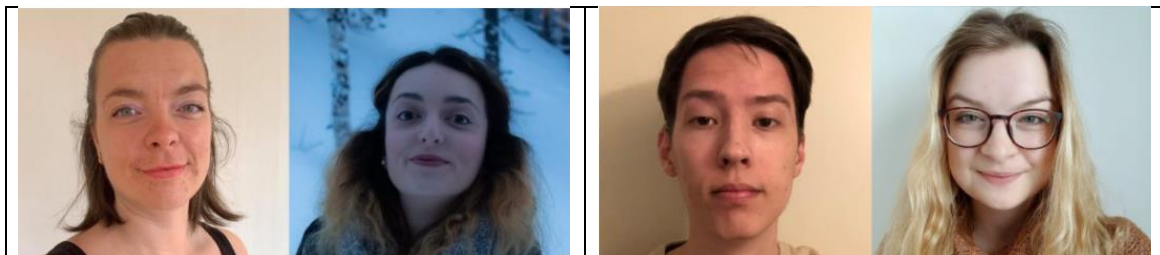
First out was the Copernicus Hackathon closely followed by an ideation workshop, Act in Space and finally Space Investment day. The outcome has been most fruitful.

We are glad to congratulate [the student team eSat at LTU who won a top 5 placement](#), amongst 300 contributions, in the Venture Cup's Ideation competition regional finals. They will now advance to the national final and we will support them as they progress towards commercialization. The idea is to make prototyping satellites much smaller, allowing them to be launched more often and for less money, which makes space more accessible to universities and their students, smaller companies, and the public.

ESA BIC Sweden has accepted two additional regional space start-ups to enter their team this autumn and we are very glad to welcome to our space community. More details about this can be found [here](#) in the near future and we will follow up with further presentations in our next newsletter.

The new SME programme "Business development for Aerospace", to stimulate business between the established aerospace industry and regional companies, has just ended its first round. We are planning for a second, this time focusing on downstream. Companies suited to make business out of satellite data will be our target group this time, so please spread the word to those who might be interested.

[LTU Space students has been awarded idea developer diploma](#) for their projects on new innovations and research results. The students participated in LTU Business Summer, a programme aiming to give extra growth to new innovations and at the same time give university students valuable work experience and contacts. This year three of four students in the space team were female and we are proud about reaching such a strong figure, as the space business still is heavily male dominated. As innovative teams often are about openness and diversity, we are aiming for 50/50 within our project which might not be that far away, after all.



Emma Axebrink, Ioana Simona Risca, Oskar Havo och Theresia Hestad var de fyra LTU studenter som fick chansen att utveckla affärsidéer inom rymd under Space Innovation Forum 2020.

Aerospace Cluster Sweden

The work within the northern node of Aerospace Cluster Sweden (ACS) is slowly progressing despite challenges due to the Corona pandemic. There is also a distinct inertia in getting the business started between the established industry and new companies that want to enter this area. Historically, the space business in Europe has often been locked into so-called economic geo returns to the member states and it has not been beneficial to regional growth. This need to be changed as the regional space sector is experiencing strong growth with new ongoing international establishments. The sector needs subcontractors in manufacturing, construction, transport, IT, project management, staffing, etc. When the ecosystem is working well, we get a strong win-win opportunity – regional companies can seize the new business and learn about an unfamiliar market. Meanwhile, the established aerospace community benefits from local subcontractors and collaborations.

The LTU students' teams are good role models and paving the way by involving for them new regional suppliers in different rocket, satellite and balloon projects. For examples Nybergs

Mekaniska Verkstad, producing mechanical components for a rocket motor to the RAVEN team and OFAB, performing CNC milling components to the ASTER team that will fly on a REXUS rocket.



Three balloons with IRF infrared sensors were launched from Esrange Space Centre outside Kiruna. Photo: SSC

Another successful collaboration was when [IRF reached out for the mining related company LKAB KIMIT](#), experts in explosives, as they needed support during balloon born experiments launched from Esrange Space Centre in August. A total of three blasts were carried out at the mining area in Mertainen within a time frame of ten hours. In parallel, three of IRF's experiments on three different balloons took off, with the aim to improve infrasound detection capabilities of meteoroid entries and other atmospheric phenomena. Hopefully, this is just the start of further collaboration between two of our absolute strongest sectors in the region.



Three events to stimulate business and strengthen the space ecosystem.

During this autumn we have supported three events to stimulate the strengthening of the aerospace ecosystem. The first was [a workshop to "sharpen" ACS strategy](#) to provide optimal support for growth in the aerospace industry.

The second was "[LiftOff Kiruna](#)" arranged by LTU students. This is the largest and most exciting space themed job fair in Sweden, with the aim to bring the space industry to students, and to provide the employers with the opportunity to meet top talent. The Swedish astronaut Christer Fuglesang contributed with valuable advice for the upcoming career and impressively many from the established space sector showed up to present and network: SSC, IRF, EISCAT, OHB Sweden, GKN Aerospace, ESA, ISAR Aerospace, RFA, ACTAS Space, ESA BIC Swede, LTU Business and Venture Cup.

Finally, [a seminar about SAAB's capabilities and future solutions for civil aerospace](#) took place where a couple of showcases were presented to trigger interesting discussion items in the time to come. The aerospace business is wide, including both space and aeronautics, so collaboration within the whole span is crucial to stimulate knowledge transfer and retain competitiveness.

Looking back, summarizing what we have achieved together during RIT2021 makes me proud. It is often easy to miss the progress as you struggle with long-term challenges. I suppose that

newsletters like this, are there to remind us and give us energy and motivation to carry on. In parallel, we are working in a most interesting area, predicted a great growth and lots of opportunities, so let's keep up the good work! I look forward with confidence to our next step together. Before entering our last year within RIT2021 we should take a well-deserved break and enjoy leisure and relaxation. Thank you All for your tireless commitment and for being such an engaged team!

Johanna Bergström Roos and the RIT2021 team
Project manager RIT 2021
LTU Business

**RIT2021 is an initiative to drive growth and strengthen northern Sweden's position within the rapidly growing space sector. RIT2021 is a close partnership between academia, private sector and the public sector with a total budget of 5.6 million Euro. Between 2019 and 2021, RIT2021 is supporting a wide range of actions aimed at streamlining innovation and collaboration in the space sector. The project works within four major themes, including: R&D projects, commercialization (Testbed Space), innovation management (Innovation Ecosystem) and cluster development (Aerospace Cluster Sweden). RIT2021 is an EU-funded regional development project initiated by Luleå University of Technology, LTU Business, Swedish Institute for Space Physics, and Arctic Business, with support from OHB Sweden, SSC, GKN Aerospace, Region Norrbotten, Kiruna municipality, Luleå municipality, Sparbanken Nord and EU. [Learn more about RIT2021 at www.ritspace.se](http://www.ritspace.se)*



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