

## Dear partners and stakeholders,

It was a great pleasure to see so many of you here in Kiruna during Space Innovation Forum. To finally meet in person again, to share important information and get the opportunity to discuss around the same table. These are things we cannot take for granted anymore and therefore they become extra valuable.

So many important steps have been taken the last years and it is obvious that our space region is developing according to plan and that we are keeping pace with the rapid development of the entire global space arena. The testing of new micro launchers at Esrange Space Centre and space components at IRF SpaceLab and all the labs at Luleå University of Technology (LTU) has taken off properly and picked up speed. SSC's SmallSat Express will launch their first satellites in the end of 2022 and various customers are standing in line waiting for take-off. Space research at IRF and LTU is growing with several new positions needed to be staffed shortly and applications to our space education programmes at Space Campus are as high as ever. We have developed our way of collaborating, not least through the RIT project, and we can see that new business ideas evolve into start-ups and that regional enterprises get more and more involved in the space community. It looks very promising, and we are all part of this journey. Let's keep up the good job!

## RIT by numbers!



At our latest forum we concluded some of the results from the RIT projects so far. If you missed this occasion, you get a second chance [here](#).

## Great interest in Space Innovation Forum



The thirteenth Space Innovation Forum was held in Kiruna on December 1-2 and attracted over a hundred visitors from academia, space companies, enabling organizations and the public sector. As Sweden and its northernmost space region is on the verge of providing unique launching capabilities on European ground, the event focused on the theme “Access to space”.

Philip Pålsson, heavily involved in the RIT project, works as a business strategist at the Swedish Space Corporation, who owns and operates Esrange Space Centre:

– Esrange Space Centre is the most versatile space centre in the world. We offer access to a vast, unpopulated impact and recovery area and the infrastructure required for safe launches and advanced testing. We are building a new spaceport for orbital launches and introducing our launch service SmallSat Express, which will be ready to launch satellites up to 1500 kg from 2022. It’s great to see the strong interest in our region and space centre, including that of ArianeWorks and the European Space Agency, says Philip.

Read more about the forum [here](#) and get access to all presentations [here](#).

The next Space Innovation Forum is tentatively scheduled for September 2022. The date depends on the outcome of funding applications that are pending, and the project management team is currently working hard to secure funds for organizing future Space Innovation Forums.

## R&D projects within RIT2021



Dr. Christobal Nieto receiving his diploma from [René Laufer](#), Chaired Professor in Space Systems at Space Campus, LTU in Kiruna.



Since last newsletter we are glad to congratulate one more of our PhD students to his doctoral degrees. [Chris Nieto](#) has spent five years researching about “**Development of high-performance Avionics for the satellites of the future**”. His research is not connected to a specific space company, rather the whole space community. Read more [here](#).

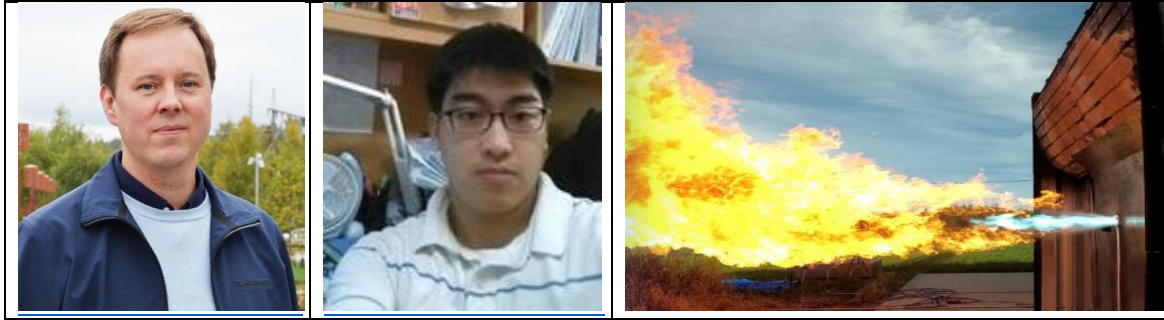


Professor [Marta-Lena Antti](#) and Professor [Anna Öhrwall Rönnbäck](#) have coordinated the work package of all our R&D projects since the start with great commitment and experience. Since a couple of months, their team has been reinforced by [Erik Nyberg](#), who we all know as a former LTU PhD student heavily involved in RIT and the Graduate School of Space Technology. Erik is now employed as a postdoc at LTU, still focusing on tribology (friction and wear) in space. We are glad to have Erik onboard the projects team and give him our warm welcome!

### **Welcome to Isar Aerospace who joined RIT2021!**

In our last newsletter we wrote about new rocket manufacturers settling down in Kiruna, strengthening the attraction of our space region and helping us build a critical mass. We made a special mention of our friends at [ISAR Aerospace](#) who are testing and developing their two-stage launch vehicle Spectrum at Esrange Space Centre. Since then, Isar Aerospace has joined RIT2021 through two new R&D projects together with LTU: “[The green corridor to space](#)”. They will develop and build a second rocket engine test rig at Esrange Space Centre, with capacity to simulate close-to-realistic conditions for launch vehicles. The rig will provide unique opportunities to improve the performance of rocket engines and serve as a facility for testing sustainable rocket propellants.

– Isar Aerospace is dedicated to developing modern and sustainable rocketry. Entering a partnership with the regional space development program RIT2021 and initiating a major research collaboration together with Luleå university of Technology helps us reach this target, says Josef Fleischmann, Co-founder, and Chief Operating Officer at Isar Aerospace.



[Alexis Bohlin](#), researcher in laser diagnostics and [Jihyoung Cha](#), postdoc, both at LTU, are involved in the collaboration with Isar Aerospace. They are also two new members of RIT2021, and we wish them a warm welcome to the RIT family!

For the moment we have eight R&D projects ongoing within RIT 2021 and they are all connected to SSC, OHB Sweden, GKN Aerospace and Isar Aerospace. For a planned follow-up of the project, we are preparing for two additional R&D projects so all in total it will be ten. [Here](#) you can read more about the ongoing work and new projects will be presented when (if) we get the follow-up.

## Great interest in our space region

The interest in what we are doing within our space region is increasing and this is evident in many ways. Not least by the broad and growing participation in the space region's activities, but also by external actors' curiosity about all things that are going on. They come from various fields to take part of and learn more about our way of working. Swedish television came to talk to us about space in general and how we could help bring the subject into the classrooms in school. We helped by supporting the recording of eight episodes at Space Campus and the space high school in Kiruna in May 2021. The full series is available for streaming in Swedish on UR's website and was also broadcasted on TV in October 2021.



[Click and watch the series.](#)

We have also been contacted by [SpaceWatch.Global](#), a digital magazine and portal for those interested in space and the far-reaching impact that space development has. The team behind this digital magazine is comprised of a dynamic mix of space geeks, tech junkies, space policy experts, regional space specialists and passionate writers that fully believe that space should be used for humanity; that it enables knowledge and enriches societies. I got the pleasure of being interviewed on November 30 and you can listen to the episode [here](#). I will also be part of this team as the Swedish host for Space Café Sweden and have our first broadcast in Q2 2022. This will be a great opportunity to invite interesting people from our space community so please spread the word and contact me with suggestions on relevant people to interview.





Another example is when we earlier got contacted by Ken Coates, Canada Research Chair in regional innovation and Carina Holroyd, associate professor of political studies, both at University of Saskatchewan. They were interested in how we work with innovation with the objective to see if they could learn from us. And, of course, the interest on our side was to learn from them. You can read more [here](#).

## Are you following our flow on LinkedIn?



This LinkedIn Group is created to stimulate the conversation and information flow between all of us, while waiting to meet again in person. There is so much going on and I know that a newsletter like this is covering just a fraction of all the good work being done. Therefore please feel welcome to use this channel and share interesting news, post new job opportunities, search for new partners etc.

## Testbed Space



The work package within the project focusing on testbeds at Space Campus has got a new work package leader since Olle Norberg became the general director of IRF. His name is [Axel Hagermann](#) and he is a professor in atmospheric science at LTU in Kiruna. A warm welcome to our team Axel!  
During the past year, LTU has employed several researchers who need lab environments of the type that RIT2021 is developing. This means more experts on site at Spacecampus, and a lab environment developed towards synergies and collaboration with external partners.

All LTU Labs at Kiruna Space Campus are presented on [an interim website](#) where you can read more about all the labs open for collaboration with external stakeholders: Nano Satellite Lab, Asteroid Engineering Lab, Planetary Ices Lab, Rocket Propulsion Lab, Space Avionics Lab, Student, electronics, and telecom labs as well as an optical bench.





IRF Spacelab has already got [their website](#) up and running, with all facilities described as well as an informative [promotion video](#).

You can also follow [a webinar about SpaceLab](#) performed on Juni 30 by Bertrand Bocquet at IRF.

## Innovation and business development



LTU Business and Arctic Business, our two main regional engines to strengthen the innovation support system, are working on including more actors within innovation and business support to strengthen the ecosystem further.

The team is now lead by Jonas Hjelm at LTU Business who is our latest recruitment in the RIT team. Warmly welcome Jonas!

A new collaboration between LTU Business and Invest in Norrbotten resulted in an analysis of the business opportunities within the space region. The result is compiled it into an interesting prospect for all space actors in the region to use. This study was briefly presented at space Innovation forum by Lisa Ek and Niklas Grönberg, Strategy Experts at LTU Business. If you are interested in the full prospect contact [Mox Murugan](#), COO and Investment Management at Invest in Norrbotten.



Take a look at a shorter conclusion of the project "Opportunities in the northern Swedish Space Industry" [here](#).



The Ecosystem around the space community is relying on many different functions that are crucial to get the whole machinery in balance. Very seldom innovation and growth happen around one isolated person or company. Many more players are needed and to visualise this we have made a graphic production - [Hey change maker!](#) - to visualise how everything is linked together. Enjoy the ride and please use this short video whenever you need.

Times flies and we have been working together within the RIT project for more than six years now. We are approaching an end, so we have sent in an application to Tillväxtverket for a follow-up. We are happy and proud to say that all our project participants want to continue working together and we have managed to attract the co-funding needed for the next step. Now we are waiting for the other 50% to be decided by Tillväxtverket in the beginning of April, and we will keep you posted when we know more.

In parallel we have also applied for funding to perform a pre study with the objective of identifying the next common step for the collaboration within our space region. We will know in January if we can go on with these plans and hopefully many of you will be involved in interviews and workshops. In addition, LTU Business who is one of the driving forces in strengthening our space region, got the trust from and assignment of Business Region Göteborg to make a survey of the space industry in their region (Västra Götaland). A collaboration between different space regions in the country is very gratifying and will strengthen Sweden as a space nation.

Finally, it is a pleasure to sum up and look back at things we have achieved since the last newsletter in June. A project like ours is not only about doing things right but doing the right things and finding the right timing. And it is about taking new steps together and pave new roads for others, perhaps the next generation. We are working in a development programme where we often do new things for the very first time. Under these circumstances it is impressing to see how often things go right. Good job to all of us! We wish you All a nice and well deserved Christmas vacation. It will be very exciting to see what the future has to offer.

All the best!

*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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