



# INTERNATIONAL NETWORKS AND GROWING INNOVATION

## ECSEL'S IMPACT IN LATVIA AND THE NETHERLANDS

by RONALD DEKKER AND KASPARS OZOLS

*Over the course of ten calls, ECSEL Joint Undertaking has driven 64 projects with over 2100 participations and 3.4 billion euros in RDI costs. From digital healthcare to automotive data sharing, these have generated innovations that touch upon almost all aspects of daily life in Europe. But what exactly does ECSEL's impact look like and what does it mean in terms of manufacturing culture and collaboration? Two participants from opposite corners of Europe share their views.*



## READYING THE TECHNOLOGY

Founded in 1960 within the framework of the Latvian Academy of Sciences, the Institute of Electronics and Computer Science (EDI) is now a state research institute conducting fundamental and applied research into areas such as extremely precise event timing, remote sensing and space data processing, robotics and machine perception, signal processing and embedded intelligence, smart sensors and IoT. It's also a long-time participant in ECSEL's larger basis, having been part of the ARTEMIS programme that was merged into ECSEL in 2014.

"To cut a long story short, Latvia found success with ARTEMIS so we decided to commit to ECSEL too," explains Dr. Kaspars Ozols, Deputy Director of Development at EDI. "We already had quite a lot of partners from the ARTEMIS programme at that point and we went to a few brokerage and face-to-face meetings to find more and to start writing project proposals. At the moment, we have eight ongoing ECSEL projects, although it's a bit early to comment on the results because we've completed only one. But two more are finishing this year: I-MECH<sup>1</sup> and AutoDrive<sup>2</sup>."

For its various projects, EDI's focus has been on developing its proof-of-concept prototype systems, which are around TRL 4-5 and can be further developed into market-ready products after the project. In the I-MECH project, this means low-latency, real-time wireless sensors with a wireless charging functionality; in the AutoDrive project, it corresponds to a fail-aware, fail-safe, fail-operational vehicle-to-X communication device for cars to enable wireless communication between cars and infrastructure such as traffic lights. "ECSEL's Research and Innovation Action platform is great for this because you receive all the requirements and specifications from leading industrial companies in Europe, as well as ideas for the architecture," says Kaspars. "You can really shape the content into something which is needed in industry, which we did in both projects."

In Latvia, we have a specific programme that allows you to do the feasibility study, market analysis and commercialisation plan, supported by European structural funds.

When the experts see that there is definitely market potential, they give additional funding to bring technology to TRLs 6, 7 and 8. This makes it much more interesting for big companies and SMEs to buy and adapt it. ECSEL is perfect for us as a starting point for validating proof-of-concepts in order to enter this next phase."

## A CULTURE OF INNOVATION

For EDI, the long-term goal is to foster the development of a knowledge-based economy in Latvia. From this perspective, the eight projects still in progress are already showing highly promising results: between 2011 and 2018, Latvia's innovation performance on 27 criteria rose by 17.7% of the EU average. According to the European Innovation Scoreboard, this makes Latvia the third fastest growing innovator on the continent.

"In 2015, my feeling was that most of Latvia's needs were satisfied by buying things. If something was not on the market, we just had to wait until somebody else developed it," Kaspars notes. "I knew that this needed to change, and Latvia in general thought the same. ECSEL was and still is a great instrument for creating new technology and generating this innovation. Since joining this environment, the culture of Latvia has changed somehow. Programmes have been developed and we have demonstrators and prototypes which can be commercialised. This is what has and will facilitate Latvia's rise on the scoreboard."

Critically, ECSEL's impact has the potential for a snowball effect in Latvia: a self-perpetuating cycle of funding and innovation. "Latvia isn't the worst country in Europe for expenditures on R&D, but the share of GDP going into the sciences is very low," Kaspars says. "Countries like Sweden or Germany are spending about 3% on science, but it's around 0.6% for Latvia right now. ECSEL is therefore crucial for the scientific community as we can receive additional funding or contract research projects and strategically develop ourselves, attract new employees and build up knowledge capacities. Thanks to ECSEL and our nine projects, we were able to recruit many more researchers and extend our

scientific knowledge in new research areas. I hope that our national authorities will see this and act on it too!"

## THE NEXT LINK IN THE CHAIN

Almost a thousand kilometres away, the Netherlands holds the dual title of Europe's fourth biggest innovator and its seventh fastest growing. Thanks to this established presence in international R&D, Dr. Ronald Dekker of Philips and Delft University of Technology is well-positioned to discuss longer-term impacts. "I was invited by somebody else at Philips to join the ENIAC/ECSEL project INCITE in 2013. I was not into European projects at that point – actually, I thought it was a lot of rubbish! But then I had a very good experience and really saw how it works when you bring a large group of people together."

Most crucially for Ronald, there's more to ECSEL than funding: it's also about doing things collectively that otherwise wouldn't be possible. "One way or the other, I got involved in writing a proposal for ECSEL – a call for pilot lines, the InForMed project," he continues. "This was really the umbrella to which we connected all subsequent projects. It got a lot of attention, including a demonstration in the European Parliament, and evolved into the POSITION project. Around that time, we also developed the vision of an open technology platform, which we are now advocating for in the Health.E Lighthouse, and the Moore4Medical project for this took off on 1 June 2020."

In a nutshell, INCITE is about concepts for smart catheters, InForMed is for the infrastructure to manufacture them and POSITION is about bringing technology platforms to a higher TRL: a chain of projects that build on one another for maximum impact. As a result, Philips has become one of the leading manufacturers of smart catheters for coronary applications worldwide.

"When we started INCITE, Philips was not doing smart catheters," Ronald notes. "But we had the vision that catheters would become important to us. Three years later, I arrived

at work one morning and, lo and behold, [Philips CEO] Frans van Houten announced that we had acquired Volcano, then a leading manufacturer of smart catheters. In a research organisation, they don't tell you every business move in advance. Yet through these three projects, we were able to step into this new market seamlessly. That's the thing I'm most proud of."

## BEYOND THE PROJECTS

With its vast consortia – typically between 50 and 70 partners per project – it's no surprise that another big impact of ECSEL is the creation of durable networks and ecosystems. "ECSEL is like a culture dish," says Ronald. "You see all kinds of microorganisms, by which I mean collaborations that transcend the project itself. There's something more than just the technology, it's an environment in which collaborations and ecosystems can grow. Time and time again, I've seen new working relations that were not anticipated but which are very fruitful."

From InForMed, for example, we have two start-ups. One is a fast-growing company called Salvia<sup>3</sup>, which is making an implant to treat chronic migraine. The other is BI<sup>4</sup>/OND, which works on organ-on-a-chip devices. Many years after InForMed, they still use its network extensively. You create an ecosystem and part of it survives or even grows. This is very satisfying to see."

Close cooperation over borders is one of ECSEL's most important ingredients as well as one of its biggest impacts. This is what allows its technological results to be disseminated to all corners of the continent and increases Europe's competitiveness on a global scale. "For me," concludes Ronald, "ECSEL is like oil in a machine – without it, the machine doesn't run. One example is how you can connect to technology suppliers and potential users. Take our technology platform for smart catheters. We hope that other catheter manufacturers are going to use it, but if we just say, 'hey, we have a nice technology platform for you', they'll close the door on us. If we can say, 'I have a technology platform that we can develop together and I can also bring in some funding', the door stays open."

*"ECSEL is like oil in a machine – without it, the machine doesn't run"*

<sup>1</sup> I-MECH - Intelligent Motion Control Platform for Smart Mechatronic Systems (GA. 737453) <https://www.i-mech.eu/>

<sup>2</sup> AutoDrive - Advancing fail-aware, fail-safe, and fail-operational electronic components, systems, and architectures for highly and fully automated driving to make future mobility safer, more efficient, affordable, and end-user acceptable (GA. 737469) <https://autodrive-project.eu/>

<sup>3</sup> <https://www.salvianeuro.com>

<sup>4</sup> <https://www.gobiond.com>