

DISASTER RISK MANAGEMENT IS ALSO A SPACE FOR COOPERATION BETWEEN SCIENCE AND PRACTICE

Hydrology and expertise in the field of catastrophic risks or climate resilience. The connection between technology transfer and science and practice was explained in an interview by Milan Kalaš. The founder of the successful KAJO company will also explain the specifics of the cooperation between research and companies in the areas he has been working on for many years.

How would you define the company KAJO s.r.o. in connection with the cooperation of science and practice? What is your main mission?

KAJO started from my need to address certain activities that did not fit into my work at the Joint Research Centre (JRC) of the European Commission. My work has always been on the edge between science and practical application. Being at the JRC exposed me to high science, but I wanted to see the practical application of my research rather than another published paper. Suddenly, I had more activities that were not in line with the mandate of JRC, so I decided to start the company. Then we got our first Horizon project, and the whole story started. By the way, KAJO has a much longer history. It was a company of my grandfather, producing wooden sports equipment like skis and hockey sticks (later known as Sulov).

KAJO Services bridges the gap between scientific research and real-world applications by combining cutting-edge technology with academic advancements in environmental monitoring, disaster risk management, and climate resilience. Our mission is to ensure that state-of-the-art research, data analytics, modeling, and artificial intelligence are translated into practical, scalable solutions for public and private entities, policymakers, and communities.

What is the solution to bridging this gap?

We have realized that bridging this gap is not just about technology—it's also about communication. Scientific evidence and innovations are only truly impactful if they are understood and embraced by the general public. That's why we have expanded our focus to include tools and services that improve the communication of complex environmental data, helping people grasp risks better and make informed decisions. By doing so, we ensure that the benefits of scientific progress extend beyond experts and institutions, empowering society as a whole. For example, when we work on climate adaptation measures, these should not only be effective in reducing the negative impacts of climate change but should also come from and be accepted by the community.



What kinds of experts does your team consist of?

The KAJO team is highly interdisciplinary, bringing together experts in meteorology, hydrology, disaster risk management, climate risk assessment, geospatial analysis, software, and web development. Our diversity in expertise allows us to tackle complex challenges from multiple perspectives, ensuring that our solutions are both scientifically robust and practically applicable. Our team is also highly international; at the moment, we have 6 nationalities living in 5 countries. We operate in a remote-first environment, enabling collaboration across borders and even time zones. This setup fosters independence, creativity, and flexibility, allowing each team member to contribute their expertise while benefiting from a dynamic exchange of ideas.

One aspect I am particularly proud of, especially as a science and information technology consultancy, is our strong gender balance. This is not a result of any internal policy; instead, we believe in offering equal opportunities to everyone and giving them the space to excel in their ways. So far, this has naturally nurtured our diverse and balanced team, where different strengths and perspectives come together like ingredients in a delicate dish.

What is the composition of your team?

The composition of our team and the workstyle is strongly influenced by my work experience. I was very lucky and I met very influential people at different stages of my career. At the university, it was my PhD mentor who managed to push my hidden talents and gave me all the support and freedom I needed. Then, I had a very similar experience when I started as a young kid working as a national expert at the JRC in the team of international experts working on the development of the first operational European Flood warning system. My supervisor was wise and brave enough to give us the freedom to fly. We took this opportunity and developed a solution that is still unique. I am sure it was not always easy to cope with this bunch of crazy characters. It was similar to my colleagues because at JRC, I had a chance to work with excellent people and was somehow compatible. We were a super-efficient team.

This is the experience I am trying to bring to KAJO. We are trying to select people who are excellent in what they do, but similarly, we make an effort to select people who fit well in the team and are pleasant to work with. ;)

For me, it is fantastic to find a person who is somehow mentally compatible and is filling the missing piece of my thinking. :) That is super rare, and it is a real gift. ;)

Please describe the focus of the simON project from your side, especially the participation with TU Košice.

simON is a startup born from our successful collaboration with the Slovak Space Office, stemming from our role as a mentoring organization in their SpacePort incubator. During this program, one of the participating teams was exploring VR applications, which immediately resonated with our work in extreme event management. Since disasters such as floods, wildfires, or severe storms are rare and difficult to train for, VR/XR technologies provide an ideal platform for immersive training, emergency planning, and decision-making support.



Presentation of KAJO's application of immersive technologies in disaster risk management during the GOBEYOND project. Source: Archive M.K.

What started as an incubator project quickly evolved into a long-term collaboration, and today, the simON team is fully integrated into KAJO Services' activities. Initially based in Košice at the TECHNICOM University Incubator, simON benefited from proximity to TUKE, gaining access to mentorship, cutting-edge technology, and an innovation-driven environment. For us at KAJO, this was an ideal setup—having a young and ambitious team embedded in a university setting allowed them to grow in an ecosystem that fostered both academic and entrepreneurial development.

Now, simON continues to play a key role in our broader vision, enhancing KAJO's capabilities in immersive technologies for disaster risk reduction, crisis management, and also climate adaptation. We are also continuously exploring new venues and business opportunities.

What other projects and activities do you work on with Slovak and foreign universities? Please describe the form of your participation.

In our projects and consultancy activities we are collaborating with more than 50 universities in Europe, Africa, and China. With some universities, it is a one-time or a single project collaboration without any intense interaction. On the other hand, with some, we have a very intense and long-

term collaboration. With the universities of Barcelona, Bologna, and Reading we have many projects and I would consider them to be our core team of collaborators. Slovak universities (as my alma mater where I have a lot of friends) and some of our colleagues are also affiliated there. Through our projects, we also made very strong ties with UNIZA and TUKE. We also have colleagues affiliated with the University of Prešov.

A common aspect of these collaborations is the excellent people and friends we have there. This might be a particularity of KAJO which was absent in the early years in the Slovak eco-system and we did not have any links to Slovak entities. Only during the COVID pandemic when I was forced to stay in Slovakia for a longer time, I got to know some people, and we started talking and planning activities together. This has resulted in the first project to organize hackathons on urban mobility in Žilina and Košice. This was the triggering moment for all follow-up projects with Slovak entities. We started inviting other Slovak partners and also used cities and regions as pilots for our activities.

Can you tell me something about the CLIMAAX project?

It is a project where we are developing a harmonized and openly available methodology to assess climate risks across Europe. In Climaax we have Žilina City as one of the pilots, where KAJO developed a method for assessing heatwaves. MEDEWSA project is focusing on Early Warnings and together with the Slovak Hydrometeorological Institute, we are developing impact-based early warnings in Košice region. In Medewsa we collaborate with high-level institutions like the World Meteorological Organization and the tools we are developing aim to contribute to the global initiative of the United Nations called Early Warnings for All. In the RETIME project, we have the highest representation of Slovak partners together with KAJO which is also the Žilina Self-governing region and the University of Žilina. The latest one we have with the Prešov Self-governing region is the Pathway2resilience project, where we assist the Prešov Region in improving its climate resilience.

What other projects would you like to mention?

I would also like to mention our last project (at the time of this interview), which is extremely ambitious and aims to revolutionize the way we model climate and predict weather. WeatherGenerator is coordinated by ECWMF (the institution that is behind most of the weather predictions we use every day), and together with 16 top-level organizations, including meteorological, supercomputing, and AI organizations in Europe, we aim to revolutionize the use of AI in earth process modeling as part of EU's Destination Earth.

Another project worth mentioning is Albatross, which focuses on climate adaptation in sub-Saharan Africa. We are designing new climate services and innovative climate-adaptation measures in Kenya, Tanzania, Madagascar, South Africa, and Ghana.

It is often said that the worlds of entrepreneurs and scientists are different. As part of your practice, you try to combine them. How do you do it? Is there any know-how for this?

It is often said that scientists and entrepreneurs operate in different worlds—one driven by discovery and academic rigor, the other by practical application and market needs. At KAJO, we (try to) bring these worlds together, ensuring that cutting-edge scientific research doesn't just remain in publications but is transformed into real-world solutions that create tangible impact.

For me, EU projects have a fantastic added value to bring various stakeholders together. We use this opportunity at KAJO to trigger a dialogue and co-design our solutions involving scientists, decision-makers, and industry experts from the very beginning, ensuring that research outcomes align with operational needs. Being in the middle between science and entrepreneurship, we are focusing on finding the right balance between those two worlds. We often act as translators between scientific and business professionals speaking very different languages.

The project environment gives our team the freedom to explore innovations in a strongly collaborative atmosphere and helps us to develop skills and tools to effectively communicate project findings.

Is that the most important thing in today's world?

Sure. The process of communicating science to the general public and bringing project outcomes to life is anything but straightforward—especially in today's world, where misinformation spreads faster than facts, and society often clings to simple and comfortable lies rather than complex realities. This challenge is particularly evident in climate science, disaster risk management, and environmental policies, where scientific findings are often met with skepticism or resistance. The rise of social media, selective news consumption, and politically charged discussions around climate change have only made this process harder. In many cases, even when scientific evidence is clear and well-documented, the way it is communicated determines whether it will be accepted or ignored.

In our work, we've realized that simply presenting data is not enough—we need to engage, visualize, and make information relatable. This is why we've expanded our focus to include tools and services that improve science communication, whether through interactive platforms, immersive technologies like VR/XR, or more engaging storytelling techniques.

If we want scientific progress to lead to real-world change, we need to go beyond traditional academic dissemination and meet people where they are—whether it's through digital media, community engagement, or decision-support tools that help policymakers turn data into action. Bridging the gap between scientific reality and public perception is one of the biggest challenges of our time.

What is the current situation regarding cooperation between science and practice in the field of environmental protection and climate change, especially about changes in policies and legislation within the EU and especially the USA?

The cooperation between science and practice in environmental protection and climate change is evolving rapidly, driven by increasing climate risks, policy shifts, and technological advancements like the rise of AI. However, significant gaps remain between scientific innovation and real-world implementation. While research in climate modeling, risk assessment, and adaptation strategies has advanced significantly, turning these findings into practical, scalable solutions still requires stronger industry-academic collaboration and more streamlined policy frameworks. These policy frameworks (like climate adaptation strategies) are often implemented in a very weird way only because regions are obliged to do so. Results are often very generic and do not reflect the real needs, challenges, or scientific evidence. The main difference between the EU and the US, I see, is in the way innovations are driven.

How is it in the case of the European Union?

In the EU, the integration of science into practice is largely driven by policy initiatives like the European Green Deal, Destination Earth, and various Horizon Europe projects. All our R&D activities are funded under the Horizon Europe and Destination Earth programs (e.g., CLIMAAX, MedEWSa, and WeatherGenerator). After the project's lifetime, it is not easy to bring the results into real life or business because we often lack the funding for the last mile of development before we can reach the market. We don't have any support from national or EU funding. The EU has recognized this problem and is slowly introducing tools and services to address it, but not at a sufficient level. At the national level, it is missing completely.

So is it different in the US?

Yes. The USA has a more market-driven approach, with strong private sector involvement in climate solutions, risk modeling, and early warning systems. However, the policy landscape in the USA is more fragmented, with differences at federal, state, and municipal levels creating challenges for standardizing climate adaptation strategies. I have friendly companies that are doing similar activities as KAJO, and they got access to large investments in their first years, allowing them to go straight to the market, although solutions are often less solid in terms of science integration, transparency of methods, and results.

What is the future of university technology transfer in this area? (In areas that your company deals with).

Technology transfer from universities to real-world applications is something that should be straightforward but often isn't—especially in areas like climate science, disaster risk management, and AI-driven environmental modeling. I've seen firsthand how many brilliant research ideas never make it past the academic paper stage simply because there isn't a structured mechanism to bring them into widespread use.

At KAJO, we work with top European universities and research institutions, and the pattern is often the same—scientists develop incredible methodologies, but there's no clear pathway to operational deployment.

One of the biggest hurdles is the “last mile” of development, where research has reached a high level of maturity but isn't quite ready for the market. EU funding heavily supports research and development, but once a project ends, we are often left with no resources to finalize, commercialize, or operationalize our work.

We've faced this challenge in several projects. For example, in the OPerandum project, we developed a knowledge platform about nature-based solutions for climate adaptation. It is designed to guide through the process of selection and implantation of adaptation measures in a user-defined location. It's an ambitious effort with a high level of innovation, but making this tool truly accessible and commercially exploitable is a real challenge. In the projects we are trying to push to co-develop solutions with researchers from the very beginning, ensuring that what we build is both scientifically sound and deployable in real-world settings, but the project outcomes always need the last refactoring to meet the market needs and this is where I see room for improvements. On one hand, it can be addressed by the funding authority which should dedicate the budget to the exploitation of the solutions with business potential. On the

other hand, dedicated innovation hubs and technology transfer at universities could play a significant role in facilitating this process as well.

As a test, we are trying to work together with the Center for Technology Transfer of the University of Žilina to create realistic business plans for our exploitable results of the RETIME project.

What is the major obstacles for Slovak institutions and companies in highly innovative international projects?

I think that one of the main obstacles is the lack of institutional support for co-financing requirements. Many cutting-edge projects require a significant level of co-funding, which can be a deal-breaker for Slovak participants. KAJO experienced this challenge firsthand when we had to step out of a very prestigious high-performance computing project simply because we couldn't secure the required 50% co-financing at the time. What made the situation even more frustrating was that all other participating organizations from different countries received institutional or national support covering at least the co-financing requirement, and in most cases, even more than that—to ensure their participation and to support their country's representation in the consortium.

In Slovakia, unfortunately, such mechanisms do not exist in the same structured way. While other countries actively invest in supporting their research institutions, universities, and innovative companies to be part of major international initiatives, Slovak entities often have to rely entirely on their own financial resources. This puts them at a significant disadvantage, making it much harder for Slovak organizations to engage in top-tier, high-impact projects.

Compare cooperation with Slovak and foreign universities. In what ways have ours improved compared to the past, and in what ways should they catch up with the rest of the „Western“ world?

When KAJO started, our collaborations were almost exclusively international. It wasn't that we deliberately avoided working with Slovak universities—it just wasn't part of our ecosystem at the time. However, over the past few years, this has changed significantly, and today we have strong partnerships with Slovak institutions like UNIZA, TUKE, and the University of Prešov. The biggest shift I've noticed is that Slovak universities are now much more engaged in international projects, particularly through Horizon Europe.

This has brought them closer to top-tier European institutions and has led to higher-quality research collaborations. The level of expertise has always been there, but now there are more opportunities to put it to use in real-world projects.

That said, there are still significant differences compared to top universities in Western Europe. One of the key gaps is industry collaboration. In places like Barcelona, Bologna, or Reading—where we have long-term partnerships—universities have well-developed tech transfer offices that actively facilitate partnerships with businesses. They act as intermediaries, helping research teams navigate commercialization, access funding, and connect with industry partners. Many of our partner organizations are successful university spin-offs.

One of the biggest takeaways from working with Slovak institutions is that success is often about the people, not the institutions themselves. Our collaborations work best when we find individuals—whether

researchers, professors, or policymakers—who are forward-thinking, motivated, and willing to break out of the rigid structures that sometimes hold back innovation. That’s why I strongly believe that personal relationships and shared vision matter more than formal institutional structures.

What I still see as a big problem is the internal competition among the universities and in general, the typical Slovak habit of being jealous about others’ success. I am not saying this is not happening abroad, but it is so much less prominent. We seem to be having difficulties giving credits and promoting each other’s work. I would maybe expect having more visibility and eventually more requests for business collaboration in our home country rather than abroad, but this is not happening.

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HOW THE ECOSYSTEM IN SLOVAKIA COULD IMPROVE:

1. Develop stronger tech transfer mechanisms—so that research findings don’t stay in papers but actually get used.
2. Reduce bureaucratic hurdles in funding innovation—to make research more agile and responsive to real-world needs.
3. Encourage a startup mentality in researchers—helping them see the market potential of their work and providing support to turn research into products or services.

MILAN KALAŠ

Milan Kalaš is a hydrologist and expert in disaster risk management and climate resilience, originally from Bytča, Slovakia. He studied at the Slovak University of Technology in Bratislava, specializing in hydrology and water management, where he also earned his doctoral degree.

Since 2003, he has been living and working in Italy, where he is a researcher and freelance consultant at the Joint Research Centre of the European Commission. In 2012, he founded KAJO, initially as a small consultancy to support his independent activities. Over the years, KAJO has grown into a respected player in disaster risk management, climate adaptation, and environmental technology, collaborating with leading international institutions. Beyond his professional work, Milan is a father of two boys, balancing his passion for science and innovation with family life.