MARTIN
Hello everyone, my name is Martin Balaban and I'm part of the European Chip skill Academy Student Ambassador programme. Today I'm very happy to welcome you at my first interview with expert.

Today we will be talking about semiconductors, the Czech Semiconductor Centre and opportunities for students in this field. Today's guest is Jana Drbohlavová who is involved in Czech Semiconductor Centre and Brno University of Technology. Her work connects research, education and the development of semiconductor ecosystem in Czech Republic and across Europe.

Hello.

JANA
Hello Martin.

MARTIN
Could you briefly introduce yourself and your journey in semiconductor field?

JANA
Okay, so I started to work at Brno University of Technology in 2008 after my graduation in physical chemistry, so maybe by surprise I'm not electrical engineer and I gradually moved to electrochemistry through my research at the Faculty of Electrical Engineering and Communication Technologies at Department of Microelectronics where I usually worked in laboratory on the development of sensors which is quite complex work and through this. I also moved to the European Commission in 2017 where I worked as seconded national expert at the Directorate General of Research and Innovation, and again it was the work on the research of materials, sensors and gradually we moved to the preparation of the European Chips Act.

MARTIN
Thank you, that's very interesting. But nowadays you don't learn any lectures, you don't do research anymore, you work in Czech Semiconductor Centre, is it right?

JANA
That's right, I am the coordinator of this project and Deputy Director of this centre.

MARTIN
Okay, but our listeners probably don't know what Czech Semiconductor Centre is actually. Could you explain or describe some activities of this project, what's happening in the Czech Semiconductor Centre?

JANA
We are a competence centre for chips and semiconductor technologies among other 29 competence centres in Europe. All centres were launched in early 2025.

Our centre started to work in March last year, so we are currently here for over one year. Our role is to help mainly Czech companies and other subjects, it means academia and other public entities, to navigate in the complex environment of the semiconductor technologies, and mainly to help them to reach the pilot lines and design platform which are the main collaborators within this ecosystem in Europe. Again, it's launched through the first pillar of the European Chips Act, so we are kind of breakthroughs and navigators in the Czech Republic.

MARTIN
Okay, that's activities of Czech Semiconductor Centre, but could you also explain how this network works on the European level? Do all European centres do the same or something different?

JANA

More or less, yes. We are doing all of us the same, so we are helping companies to facilitate their prototyping, the design of the chips, the validation of the technology. We are also helping them in navigating to finance instruments, which means first chips fund and other also funding opportunities at the national level.

And we are also providing the education and training, not only for the students at universities, but also for employers of various companies. And of course, the strength of this ecosystem is complementarity of our main strong capabilities and know-how.

MARTIN
Okay, thank you. You mentioned Czech companies, because our listeners will probably from across the entire Europe. Could you mention some Czech companies and what they are doing in the Czech Republic?

JANA
I will start maybe from other point, from the Czech National Semiconductor Cluster, which is a strong partner of the consortium and currently this cluster is bringing together over 50 entities. This is not a small number regarding the size of the Czech Republic. And these entities are either from industry or academia.

And if we start here in South Moravian region and Brno, we have to start with the companies like Thermo Fisher Scientific, Nenovision, Tescan, Delong Instruments and so on. Why these? Because they are providers of the electron microscopy and the strength of these companies is so famous that they are fabricating every third electron microscope globally.

This is one of our backgrounds already of the centre. And there are of course other companies which are strong in the maybe fabless and design part of this semiconductor value chain. I can mention Codasip, I can mention many others, but I don't know if we have time to mention all of them.

MARTIN
Yes, of course we have. It's nice to mention the Czech Republic is very strong in chip production. For example, Brno is very strong in electron microscopy development and manufacturing.

But do we have some companies in Czechia who actually manufacture chips like themselves?

JANA
Of course we do. One of them is Onsemi in Rožnov Pod Radhoštěm. This is the area close to Slovakia border.

And this company has very long tradition, over 70 years, because it's built on the previous company Tesla in Rožnov. And currently they are manufacturing the chips which are based on silicon, but they are of course preparing the launch of new fabrication line which will be focused on silicon carbide.

MARTIN
Yes, that's a different material for chip production. And I also heard that that's one of the strengths of Czechia and the Czech semiconductor centre itself, that Czechia is not, for example, specialised for manufacturing with high-end processors like in Taiwan, but we have these other focusses. Is it right?

Yeah, and for example, do you know what are the strengths of the other competent centres around us, for example, in Germany and Slovakia?

JANA
Of course. When you mention Slovakia, they have strong focus on power electronics, so their competent centres are mainly based on the whole background in this area. The other centres are, for example, more focused on, for example, advanced packaging and heterogeneous integration, which also which also goes hand-in-hand with the pilot lines in these countries.

We have currently five pilot lines in Europe. We have, you can see here, some of them are on the leaflets. So we have the pilot line phase in France, which is focused on 7 and 10 nanometre technology for a fully depleted silicon on insulator.

We have the APECS pilot line in Germany, which is focused on heterogeneous integration and advanced packaging. Then there is a wide bandgap pilot line. There is a pilot line PIXEurope, which is focused on photonic integrated circuit.

And did I mention all of them or I forgot one?

MARTIN
I'm not sure. We didn't mention Poland and Austria because I just mentioned our two neighbours. So is something interesting in these countries as well?

JANA
Yeah, in Poland they are part of wide bandgap semiconductor pilot lines and the main coordinator is STMicro in Italy. And I think other countries are part of the consortium. Unfortunately, the Czech Republic is currently not yet the part of any pilot line consortium, but we are working on the preparation of our own pilot line.

But this is maybe not the topic for this podcast. We will talk about it at other opportunity.

MARTIN
Yeah, that's great. And I believe that Czech Republic will be also included in pilot lines very soon. I think it would be very nice if you can explain some real example what the Czech Semiconductor Centre do, because all what you mentioned was pretty general.

And could you give some very easy example how can a Czech Semiconductor Centre help someone, for example students or to some company owners or someone only interested who would like, for example, help or work in this field? Something very specific that could even students from other countries really explain what we do here.

JANA
For students, we are providing various types of courses, such as advanced courses, challenge-based learning, hands-on training, and so on. We also try to target female students because, as we know, there are not too many girls in this field, in this sector. So we organise, for example, the summer schools, which is specifically for girls.

Last year, the topic was the well-being of plants, and I believe this is something interesting for students because they can fabricate a sensor for measuring the humidity of the plants, they can understand what is the design behind, and they have also 3D printing technologies involved, so this is quite complex. But also, we are trying to get students involved in the research projects, not only through Chips Joint Undertaking the partnership, which is also funding the competence centre, but also through national projects. We connect them with the industrial partners, I mentioned already Thermo Fisher Scientific here in Brno, but there are others, like Honeywell, they are also in Brno, and many other partners within the clusters, Czech Semiconductor Cluster.

And our quite new offer is to provide the short, advanced courses with the micro-certificate, micro-credential. This is highly recommended within Europe, because not all students can get the knowledge within their student programme, but they can also complement the background and knowledge by getting this micro-certificate.

MARTIN
How long are these short courses?

JANA
From 25 to 50 hours in a week, we try to keep it concise, but still there are some requirements, and also the content of the courses, which sometimes needs the work at the clean rooms, requires this time to take action.

MARTIN
Yeah, that's great, I believe that it's manageable for students to find time for these courses. That was from the point of a student, but for example, company owners or company management can also contact you, if they are interested in joining, or for example, some collaboration.

JANA
Definitely, this is why we are here. There are some small companies, which need, for example, boosting their business, so they are looking for investors. And that's why we have Innovation Agency JIC in the consortium, which is exactly here for this purpose.

They are helping the clients to navigate to various funding opportunities. They are also mentoring them how to get ready for investors, and they are really explaining all opportunities. We have also offered for young entrepreneurs, which are maybe still among the students, not only at the Brno University of Technology or Czech Technical University Prague, which are the main consortium partners of our centre, but also for all students from the Czech Republic.

We are organising Entrepreneurship Academy. One is launched here in Brno, one is in Prague, but they are all open to the students. And here, in eight sessions for four hours, the students can learn how to launch the startup, what is the best commercialisation way for them, and so on.

MARTIN
Thank you, that could be really helpful for students from Prague or from Brno, they can join this. From my perspective, it's awesome that you help all these parts, even from the financial and development part, not only from technical and the development. That's awesome.

But let's talk about the future a little bit. Could you, for example, tell something about the future of Czech Semiconductor Centre, some next steps you wait for, for example, for this year, and then we'll move to future of other parts.

JANA
Okay, so for this year, we would like to tune our catalogue of services, which we will put soon online on our website. And we would like to, of course, provide those services which are according to client needs. So we are still in the phase of continuous mapping our future customers, our clients, what are their needs, if there are any specific needs regarding the pilot lines, regarding the design platform, if there are needs from the training perspective, and so on.

And this is not only the work of the Czech Semiconductor Centre, but of course, we are strongly collaborating with governmental bodies such as Ministry of Education, Youth and Sport, with Ministry of Industry and Trade, and with, for example, agency CzechInvest.

MARTIN
Okay, that were next steps for Czech Semiconductor Centre. Now I would like to talk about the challenges for semiconductor field. I'm very interested in challenges for Czech Republic, but also for the whole Europe.

So what are, from your perspective, the challenges for like next 5 or 10 years?

JANA

I will maybe ask if you know about the Czech National Semiconductor Strategy. Because this strategy actually set the objectives to overcome these challenges. And of course, we are talking about the talents in the Czech Republic.

The strategy said that we need over 9,000 talents and experts in the field of semiconductor technologies by 2030 in the Czech Republic.

MARTIN
Only in Czech Republic?

JANA
Only in the Czech Republic. Oh. It's quite a big number, right?

And we also need to help to raise new companies in the Czech Republic so that we are competitive with other parts of Europe. We also need to help to boost the export of companies, and so on, and so on. So it's quite complex.

And the Czech Semiconductor Centre is part of this action items within the implementation of the strategy. And we are gradually getting there by every step to deliver what we promised.

MARTIN
Yeah, I believe that this talent acquisition is a very big topic, not only for the Czech Republic, but also for all Europe. And I believe that means that the future for technical students is very bright in the semiconductor field. Do you agree?

JANA
I wouldn't say better, because I think there are so many opportunities for students, not only from the Faculties of Electrical Engineering, but also from other faculties. For example, you are from the Faculty of Mechanical Engineering, right? And you see, there is this interdisciplinary approach.

We need experts from many different fields, from chemistry, from material point of view, and so on.

MARTIN
Yeah, that's right. I'm from the Faculty of Mechanical Engineering, but I studied physics there. So it's quite connected to chips.

But this interview is mainly about you. So one of the most personal questions I have here is, what do you enjoy the most about working in the semiconductor field? Something particular in that, or it's like you generally like it, or maybe you don't like it.

JANA
Of course, I like it. I wouldn't do this work if I don't like it. It's very creative.

I think from my role as a coordinator, I have opportunity to speak with people and to engage with different sectors, to understand what are the relationships between academia and industry, to help them connect together for the efficient work. Because previously, it was quite tough to set this partnership between industry and academia. And now I see that we are getting better and better.

And this is also our role to set this collaboration. Last year, we succeeded in the preparation of the big national project, which is called Semiconductors for All. BUT, Brno University of Technology, is coordinator of this project.

And it is exactly the fruitful collaboration between industry and academia.

MARTIN

That's great. I'm proud of our university that it has this coordination role in so many projects. For example, some more questions for our student listeners.

The next one is about PhD. Do you have PhD?

JANA
Yes, I have PhD.

MARTIN
And would you recommend it to the students? They are, for example, in their final years, or would you say it's necessary for career in semiconductors?

JANA
I would say it's absolutely necessary if you are thinking to do the research career. Like a researcher in the lab, it's a very great opportunity to get PhD. And I don't think it is quite unusual now to get PhD from abroad.

So I also recommend to students to travel, to choose the right university, right research lab, and to go for this PhD path. My personal experience is PhD en cotutelle, which means the part of the PhD was done here at BUT and part in France at the University Claude-Bernard-Lyon. And for other part of the work, the PhD is of course not necessary, because you can work as the expert in the laboratory for some technology where the PhD is not necessary.

You can also work in the company in different position, which doesn't require the doctorate.

MARTIN
Yes, it's nice to mention that these career paths are very variable. And semiconductor field is not only about your design. And you can be part of the semiconductor field and do the chemistry, the material science and many other fields.

But you mentioned the industry and the companies. For example, in Brno, it's quite often that students are involved in some internship programmes during their studies. What's your opinion on that?

Is it helpful from your point of view? Or does it take time from studying? Did you have some internship during your studies?

JANA
Me personally, I didn't have internship, but during my work as a science ambassador, I would say, thanks God it exists, because it's an excellent opportunity for students to understand real world problems. And for example, what I know from Thermo Fisher Scientific, I'm mentioning it for the third time, I mean, I think today. They didn't pay us, but we like Thermo Fisher Scientific.

I think they are providing the kind of internship, which also, how to say, they are forcing students to work at school in the same time. And they are quite flexible in their work engagement, which means the student has to finish all exams, pass all courses, which are necessary. But then during, for example, summer period, they have more time and they can work flexibly there.

And this is not just work like they are helping to somebody. They have their own project they need to solve, which is quite challenging under supervision, of course. But this is something where the student is getting the best valuable experiences.

MARTIN
Yes, I totally agree, because I have personal experience with this kind of internship. And I also think that the long term internships where you just don't help with like moving stuff and cleaning or something that are super helpful. And it also helped me during my study.

One last question to your PhD, because I'm very interested in nowadays, your job is more like a management role, like coordination. Do you think that PhD was helpful for you even that when you moved from a lab and from a lecture hall to your office here and to communicating with all these partners?

JANA
My PhD gave me a great background in the area of thin film technology and also the semiconductors, because I was working with semiconducting materials. And I think this was very useful for me to build on it and gradually move to this management and project coordinating roles. And I have to mention again, my work in the commission was something which gave me unusual experiences, because imagine you are the person working in the laboratory, and you are jumping to the environment of legislation and regulation and very complex environment.

And thanks to this work, I was able to build the connection to the European partners and we can use this contact further in the centre.

MARTIN
Yeah, that's great. I'm happy that it worked for you, it's challenging move from lab to office. And let's move to the few closing questions.

One is quite creative. What would you tell to your younger self at the beginning of your career? Imagine that you meet here yourself at your first year of university, would you tell something to yourself or do you have some motto you would like to share?

JANA
I would maybe still do the same, encouraging myself in overcoming challenges and barriers, because as I said, it is interdisciplinary field and nobody can know everything. So I think it is good to ask people for help. This is what I did and the colleagues were very nice and helpful and they were patient with explanation, teaching me various quantum physics and so on.

So, yeah, I think being courageous, being sustainable and patient and like this you can reach your dreams.

MARTIN
Yeah, that's super. My last question intended was what would be your key message to students? But I really liked what you mentioned is to ask people, because even from my experience, everyone I met from university, from research centres here or from companies, they are very, very friendly, very open to discuss whatever you want.

And it can really help to guide your career from my point, because I'm in my last year of university, so I'm really thinking about getting it. But do you have some other key message or do you agree with this one?

JANA
I agree with you to engage with people who can mentor you, who can help you to grow, like, for example, your student ecosystem SPICE and also the mentors at faculties at the Research Institute. And definitely what I recommend again is to travel, go for these experiences abroad and don't be worried. Everything is manageable.

Even you are like lost in the language, knowledge, everything will be fine after a while.

MARTIN
Okay, thank you very much. Once again, thank you to accept the invitation and that will be all from us today.

JANA
Thank you as well. It was a pleasure to give you a talk and I wish you a lot of success in your work.