Podcast Episode #16 – Developing with a hardware engineering company, with Karoly Molnar of ProDSP Technologies, Hungary

RAW TRANSCRIPT OF INTERVIEW

Balint: I am glad to bring you Károly Molnár, CEO of ProDSP Technologies. Thanks Károly for joining this episode.

Károly: Hi! Thank you for inviting me.

Balint: I really appreciate it. I have known Károly since we were young, at the University, so quite some time now. We followed separate paths but few years ago we reconnected and since then I have helped them with some business development as well and I think they are a great team, doing very well, serving their clients. Károly, first, you founded and currently run your company, a small company, which is already self-sustaining, which is called ProDSP Technologies. Can you tell us about this venture, your motivation for co-founding it and why you like being an entrepreneur?

Károly: Yes, sure. So we were basically university students and we were first doing our PhD careers in Budapest, Hungary, in the Technical University and after some time working together we realised that our path is more in the industrial field so we, four of us, colleagues, founded Pro DSP in 2006. Since then we are building this company which is I would say a hardware engineering company meaning we are an engineering, consulting and design house. We are fifteen engineers right now, with some trainees and some other staff so I would say twenty people. Our main office is in Budapest and we are doing lot of interesting stuff relating the hardware start-up scene but to tell you the whole picture, we have other business models also. Our main two fields are industrial automation mostly in automotive sector which is pretty strong in Hungary and our second, also very strong branch is related to hardware start-ups.

Balint: Ok, it sounds interesting, these two branches. So basically your motivation was that you were working at the university and you had this idea for this company. With other colleagues you started the company, right?

Károly: Yes, but it would be too ideal like that. In reality what happened is that the projects and the project ideas found us. It is more like that. Not like we were sitting in a closed room and we came up with this idea but the world was knocking on the door. We started to be involved in more and more projects, and as they tended to be successful and we had lot of fun with it, after a while we understood that we should follow this path. We should do only the industrial projects, which gave us more confidence and success. So that was our main motivation and we learned how to work together, these four guys and we felt that this team is strong enough to go and live on

its own in the world and this is true since then, it is 10 years and we are still going strong like that.

Balint: So you like being an entrepreneur because you have success in the projects but also it has its „fun" factor.

Károly: Yes, definitely! You know when I was a kid, I was playing a lot with these strategic games, like civilisation etc. and after a while I realised that to be an entrepreneur, I think, is similar of playing this strategic game but even more interesting because basically the rules are so wide and there are so many solutions that you can do. That is really interesting and adventurous task. Of course sometimes difficult but it really gives you a lot of fun factors. Of course there are up and down but still I feel that it is very interesting to be an entrepreneur, to guide your own company.

Balint: I see. We kind of talked about, or you talked about the steps of founding so you mentioned that at the university some projects found you and you found these interesting, you started working on some of these projects, you had success and then you started even more projects and slowly you started the company. Can you tell us more specifically the steps of founding? When did you see that now this is the moment, when we have to found the company? How did you do that, also regarding financially?

Károly: This is simple. Basically it is not so romantic. When you have to invoice something then you have to be a legal entity to issue an invoice. That is the point when in practice you have to have a company. But if you are not just looking at the legal sense then I would say the point is to form a company, when everybody is ready, I mean all the participants, in our case four of us. Everybody is ready to take part in this project, in this work 100%. Meaning there are no other big projects for those guys, they are working full-time during the day, no other jobs, no academic goals.

Balint: Distractions?

Károly: Yes, distractions but I would not offend anyone, talking about academic distractions, but of course from our point of view now it is like that. I think you have to get that point when you are confident, this is what you want to do 100%, full time, with your life. That is the point to found a company and make it official and do it.

Balint: Regarding the challenges that you encountered what were these main challenges and how did you overcome them?

Károly: The main challenge is of course, the financial challenge is at the beginning you do not have really huge amount of money. It is a challenge that you have to decide how to pay bills of the company. Our solution was that we borrowed, collected, bringing our own money to it, but of course small money, just really small amount we are talking about, just to make the thing going forth for a couple of months and then from the early beginning we started to finance the whole company from our income

that we invoiced for customers. Of course we had to ask for advance payment and lot of help from our customers at the beginning but it was running as a self-sustaining company from the beginning. And to tell you the truth in the first months or I could say a years, it was not profitable so we were not buying new cars or anything. We were going low profile but in our field with this consulting work and subcontractor, kind of development work, this is realistic and you can build a business case or plan based on this model. So it can be self-sustaining meaning it will not grow really fast and the founders have to endure such a long period of not really getting rewarded financially and you can not hire at the very fast pace, new guys, new people, new developers but at upside there is no real risk of losing someone else' money. That is the choice we made, it means you are growing slow but I prefer to say we are growing organically, slow but we always find the next small bit how to grow. Not just accelerating like a classical start-up would do.

Balint: Yes because you are helping other start-ups to get off the ground, to take off. Regarding the founding situation in Hungary, how does it look like or even more generally if you have information in Central Europe for start-ups because yours, let's say, is a kind of special case, might be a special case. But are there other start-ups who are boot-strapping so using their own sources, friends, family and so on or are there ones that are venture capital-backed or have angel investing?

Károly: The start-up scene in Budapest is quite lively in these last years, there is something like a buzz and also in the last one or two years I would say also hardware start-ups started to emerge and following the global trend. But of course it is not a huge start-up market but there was this EU founded Jeremie program which made lot of resources available for start-ups and most of it went to start-up companies. And it really gave the industrial push forward. Right now I would say like 10 VC firms are around so it is possible to find funding for hardware start-ups and we have seen lot of start-ups getting financing here in Hungary. But to tell you the truth, to give you a global comparison, I am not into the funding of start-ups so I would pass on that.

Balint: Ok. Regarding your own revenue you said that, at the beginning at least you were into industrial automation and hardware start-ups, so how do you see it, what is the main source of your revenue? I think it is interesting to know.

Károly: Yes, that is very interesting topic to know. So we have two sources of revenue. One is the engineering hours. Our engineers are working on the projects of other start-ups or bigger industrial companies and we charge by the engineering hours, so that is pretty straightforward. The other source is that we do considerable amount of manufacturing, small to middle size of series manufacturing, also prototypes and we get revenue from producing those equipment and devices, instruments, all the hardwares that is designed by us. In lot of cases our customers also order the manufacturing from us. Of course we are not manufacturing it in our office here but we have a huge, web of reliable subcontractor that we can lay on and we provide manufacturing services, then we provide the actual hardware. That it the other source of the revenue.

Balint: You mentioned that you have, as I said these two sources, so industrial automation and hardware start-up. Regarding the projects which one is present more strongly in your whole portfolio and what are some typical projects that clients approach you with, especially the hardware start-up aspect?

Károly: If we look at the number of projects it is something like equal, these two parts, but if you look at the revenue numbers... so it is not like that there is an average project. Those projects that are paid by the hours we can say averages them. But when we manufacture there are sometimes big outliers meaning from some device 500 is needed and then the revenue on that one project is a huge number but maybe the margin is not so huge but as we are producing a lot of stuff of course this distorts these numbers. If I am talking about the number of projects then it is equal for hardware start-up and industrial automation but we get as a revenue more from industrial automation because sometimes a lot of equipment is ordered and then the numbers are huge.

Balint: They look better.

Károly: They look better. But also answering your second question regarding the hardware start-ups. we provide different services. It is like a menu you can choose from. Sometimes the start-up founders are not really technical guys, they have an idea about what they want to do, they have a strong business idea, they have feedback and concept but sometimes they just do not have any clue about the real technical problems underlying. They assume that if you can buy stuff from a retail store then probably you can do it with a little twist or something. Some of them that is the level where they are at. So in this part we are helping them to really specify the technical product, to have a final specification. We discuss, talk a lot with them and together we reach the point when we find what is possible and what is realistic, what can be done in what time, how many months needed, how much money is needed. So we also provide a project management aspect. Somehow, even I would say, we educate them a little bit, we help them to understand the process of developing a hardware product because this is a little bit idealistic in most of our customers. Sometimes they have a strong engineering background, they do not need all these, they have a good specification, they know what they want to do and they just want us to do some concrete development work, what is specified. They control the whole product aspect and we just do the development aspect.

We also provide prototyping services, meaning that we can realise the prototype we designed or even if not an „in-house" engineer designed it, we also can make prototypes. We do testing and then also design for manufacturing. Sometimes it happens that the start-up customer comes to us when they have a prototype already or more typical that they have a proof of concept and we have to make a prototype from it but it also happens that they already have a prototype we just have to redesign it for manufacture and then help them to do the whole manufacturing process.

Balint: So you create two types of prototypes: the looks-like and also the works-like, right? So not only the works-like.

Károly: Ok, let's go into a little bit detail in there. So if you are looking at the hardware product development process there is the development phase when you already know what you want, so you have a proof of concept, basically in your mind there is a rough idea how it will look like and what it will do. During the development there are two prototypes going parallel. One is the works-like prototype, the other is the looks-like prototype. Works-like prototype is doing the actual task that the prototype should do but it does not look like it, it is much bigger, not a small device but maybe a lot of printed circuit-boards spread out on a table but you can develop the functionality there. This task is our classical role, the engineering role to develop a product. First phase of developing a product is developing a prototype, that is a real engineering part. But in parallel, the looks-like prototype which is another aspect, very important for start-ups. They have to work a lot to have a product that actually has the feeling, regarding the material, the colours, the whole functionality, user experience. And that has to be done separately but of course it is interconnected somewhere but it can go in parallel to reduce time of work-like prototype. So we are originally not doing this part but as we are in the last few years have a lot of works in start-ups, we have very good partners who are designers, that have the skill-set and experience to design and help the manufacture of the looks-like prototypes. Right now we are also offering this as a service but in reality we are co-operating in this with other, small, Hungarian firms and we have pretty good relationship and good experience working together.

Let me just point out that there is a third prototype which is called the engineering prototype. This is a very important step in the whole design process when the works-like prototype and the looks-like prototype are merged together and there is one prototype that should be looking like what we want and should be working like how we want. Of course it will not be perfect but that is the point when the two worlds converge and from that point you can focus on the manufacturing aspect of product development.

Balint: This is why it is good and interesting that you work with, as you said, some design firms because the two work together so at one point during the creation of the engineering prototype, the two merge, so even before ideally you should communicate quite well with each other to be able to arrive to such a merged scenario, without too many issues coming up.

Károly: Exactly. The point is here if you are a start-up and want to design your product normally you would have two separate teams for these two tasks. If they do not know each other, they still need to know how to work together. And there is no standardised way of communicating, there is no one good way to do it so this is not just trivial for everybody but you have to have a real hands-on experience with those two teams and they have to be able to communicate and they have to evolve. So if you are bringing two separate teams and your are managing them, it is your task to facilitate the communication. Our added value here is that we can bring our design team to this, meaning that it is already proven and there are experience, personal relationships that make it much easier and you do not need to organise all this communica-

tion and communication issues. That is why it is easier, that you choose those teams that have already experience working together.

Balint: Ok. Now switching a little bit gears in this conversation, do you have some people that you look at for sources of inspiration in your down moments, or even when you are up, more inspiration in your field or outside of your field?

Károly: Not one particular but of course in this connected world we are connected by social networks like LinkedIn, Facebook, Twitter etc., you always converge to some source of inspiration and there are lot of industrial leaders that are good example but I do not really like to make an icon of anybody. Of course there is lot of people who are really put on a high ground but this source of inspiration can come from middle guys also. I am reading lot of Twitter feeds of people working at this hardware start-up scene. Basically that is it. There is no one big example.

Balint: You follow these Twitter feeds globally or more locally of the people?

Károly: Of course globally, yes, that is the whole point. Of course we are located in Central Europe but as long as we are on the internet basically it is the same so of course now we are focusing on more like of international contacts. Of course in this field US dominance is still very strong so most of the thought-leaders and strong opinion leaders are from the US. I think we should look at venture capital firms that are investing in hardware, so you can look at Bolt venture capital firm or HAX, there are lot of good material and lots of intelligent and straightforward people blogging there, which can create a great source of information and also inspiration.

Balint: Awesome! Károly, now I think it is time to switch to the so called ultrafast round of questions. So I am gonna ask four questions and it would be great if you could answer these relatively short. First question: if you could time travel like in the Back to the Future movie to the time when you were in your early twenties, what notes would you take back from now in order to give yourself?

Károly: So if you are twenty years old you have a lot of freetime, meaning you should not waste it. You do not feel like it but you have a lot of freetime so make the best out of it. Other thing is that if you feel that something in your life is not moving forward, it is not advancing then you just have to move on. Because even a bad decision is better than no decision.

Balint: That is a good point. I like that. And later, you know, you iterate on that so if there was a kind of bad decision, not fatal, but a bad decision you can change on that to create a better future for you.

Károly: Yes, you can always learn from bad decisions but you can not learn if you are just stuck, staying always at the same place and moving in circles. You do not learn anything from that but if you step out and maybe it is a bad move at least you know that it was a bad so you have to choose something else. But if you just wait at the same position, you do not learn anything.

Balint: The second question if you had to name one or two books which ones had the biggest impact on your carrier or your life?

Károly: I came up with one book because it really made a huge impact on me when I read this book in 2005. It is „The Pragmatic Programmer: From Journeyman to Master". It is written by Andrew Hunt and David Thomas, programming book for software developers but it is not just about programmer development. It really gives you a clean mind-set, a way of thinking that really struck me first that wow, these guys are so clearly making sense that from that point it was really defining for me.

Balint: Ok. The programming book.

Károly: Yes, The Pragmatic Programmer". Have you ever heard about it?

Balint: No, but I will look it up for sure.

Károly: The Pragmatic Programmer, but you get it by name, right?

Balint: Yes, great. So it is rather a technical book but it is also good for other things as well, not only for technical things?

Károly: Actually it is for software developers so if you are not into programming then it will not make much sense for you but if you are a software developer then it will give you more than just a little bit better programming skills. Because it teaches you how to think about these problems.

Balint: I see, very good. Third question is that I am fascinated by habits and how these can help us to reach our goals, or simply positively affect our life. My question is: what habits do you have that help you in your daily work or your personal life?

Károly: I picked two which are the most important. My first important thing is that I use the zero-inbox technic for emails, meaning that my inbox is always empty and I process emails in a very fast way and I use multiple inboxes in my mailing system. So it is the „getting things done" approach actually, GTD a very well known word, a very well known of school of time management. The zero-inbox technic really made a huge impact on my efficiency. I do not get overloaded by emails which are the main form of communication.

Balint: But how do you get it down to zero? So once you get 10-20-50 emails per day or even more, do you prioritise these or you automatically send them into the respective box?

Károly: Yes, there are multiple technics. The first is that most of them are filtered and some can be automatically forwarded to the folder it belongs so it is done automatically. The others which are needed human intervention from me, I allocate some definite time to process my inbox then I sit down and what I only do is processing the

emails. What I actually do is I look at one email at the time and decide if I can respond or finalise this email in two minutes. If yes, I do it right now, I reply right now, or forward or archive it if I am not interested in it. But if I expect more than two minutes then I flag it, put labels on it, I put different kind of priority flags on and put it in the folder that is the to be processed today, or to be processed this week etc. Then I go over on all emails until they are cleaned out. Sometimes it needs lot of time like one hour, I would say daily or two times one hour daily but then after this inbox processing period, I leave my inbox and I focus on the actual tasks that are defined. It is a little bit more complicated than that but very short I can summarise like this.

Balint: You said that there is one more technic that you use.

Károly: Yes, the other is the Pomodoro technic which is a very nice time-framing technic that makes use of 25-minute time blocks and you must not be interrupted and you are focusing on the one task for 25 minutes. Then you have 5 minutes break then another 25 minutes active focusing period is used. So what I do is e.g. I always in the morning have one, it is called 25-minute pomodoro time block to process all my emails and the next pomodoro I will do one task that is not an email but whatever I have to do and for 25 minutes I focus only on that. After 25 minutes I have 5 minutes break and I choose another 25-minute task. This really helps you to make use of your time. Typical situation is that you have a very limited time and you have lot of stuff to do and it is very easy to get lost in the lot of tasks. But in this way with these 25-minute blocks you tend to choose the most important to do and it pretty much ensures that you will focus on the important tasks.

Balint: I also kind of use it but I just have to use it more consistently.

Károly: So you know it?

Balint: Yes, I know it but to get the full benefit I need to use it more consistently like how you do it, similarly.

Károly: Yes, I am doing it for years, actually. I have some experience now and little tricks how to do it personally. It really gives me much more time productivity. Absolutely feel better at the end of the day if I did a lot of pomodoros. If I did just one or two I really feel that the day is wasted because there were too many distractions and I was not strong enough to defend my work time.

Balint: I like that. The last question is that in your work because you work across borders, if you had to pick one or two critical cultural difference, which ones you wish you knew before and how did you overcome those issues?

Károly: Yes, so we work with Chinese manufacturers. It was a challenge to learn how we should communicate with them effectively and how to make ourselves clear. Because at the beginning we assumed that basically we are thinking along the same lines of thinking and we have similar background, both of us are engineers but after some discussions it turned out that the Chinese colleagues are having different mind-

set, they have different focus on what is important and what is not. So at the end it was a lot of misunderstanding and lot of repeated calls, emails and after a while the solution was to have really painstakingly detailed documentation. It has to be returned and illustrated by drawings, photographs even videos. E.g. Once the solution was that we asked them to measure something on a device that was used in China. It was really difficult to explain what to do. And after some iterations they came up with the good solution that they made a video of how they are measuring it so the instruments, what is connected to where, what is written on the display and that is how we understood what they did differently that we asked. First it seemed really I would have never believed that we need these details but after a while I understood that is the way it should go.

Balint: So you called technology, videos, to clarify these differences. Ok, very good. So to close off if you listeners would like to reach out to Károly, to follow him and ask some questions, Károly, how are you best reachable by emails or by social media, or by both?

Károly: By email definitely. Our website is prodsp.hu is available and by email you can always reach me at molnar@prodsp.hu

Balint: Ok, sounds very good. So thank you Károly. I really appreciate it.

Károly: That was great, thank you for inviting me.