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FROM THE LAB
TO THE CUSTOMERS:
HOW TO TURN
INNOVATIONS INTO
PRODUCTS AND PROFIT

INTRODUCTION

It's very interesting when someone from the commercial side, such as myself, has the opportunity to interact with people coming from the university and government side. There is a link between these two groups, or three groups, in Croatia, but not as strong as it could be, or hopefully will be in the future.

Today I'm going to speak a little bit about a very broad topic: From the Lab to the Customers: How to Turn Innovations into Products and Profit. When I chose this topic, I thought it'd sound pretty interesting. When I sat down to begin my presentation a week later, I realized it was very encompassing, and I could hopefully, or someone could write a book on this topic.

So, what I have done, rather, is to break the presentation down into three main parts. First is generating the idea, talking about how that process can take place, how do you come up with an innovative idea or an innovative product. Then I'll talk very briefly about planning the business, and finally about launching the product.

And, as we go through this presentation, I'm going to use a company called Dok-Ing d.o.o. as an illustrative example. Dok-Ing was a portfolio company in the venture capital fund that I used to be the director of.

Very briefly to give you some context about myself. There are some data up there, but I was the director of the SEAF Croatia investment Fund. We are a venture capital fund, I should say, established in 1997. That fund has made seventeen investments in Croatia, not only in innovative companies, but also in other sectors, but I would say that five of the seventeen investments were what we could consider as innovative companies.

GENERATING THE IDEA

The company I would be profiling in my presentation, again, is called Dok-Ing. Dok-Ing is a Croatian company

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and one of the largest land mine removal companies in Croatia. Unfortunately, that is a problem that Croatia has. But, it provides a competitive advantage, quite frankly, for this company, because this company was able to develop its products in a very real world setting. In addition to land mine removal services, taking land mines out, the company also manufactures several different types of land mine removal devices, including the MV-4, which is a world class, 5-ton, remote controlled mechanized demining machine that has been sold and exported throughout the world. This machine is a product of five years of innovation and development. Last year it won an award, as being the top demining product in its class. That was based on the World Bank study out of Geneva. Since that came out about fourteen months ago, these guys have really been accelerating their sales, it's been very, very exciting. Also, to put in a bit of context, my fund invested in Dok-Ing in January 1998. The company had two employees and less than \$100,000 in revenue. These were two guys that literally were in the garage, the shed behind the founders' house tinkering with this product. Today the company has about 122 employees. It did over \$6 million in revenue last year.

This is a picture of the MV-4. This is the machine, their mark key machine, they do make other demining equipment. This whole product was developed, designed in Croatia. They do buy the engine from a British firm, and buy the hydraulics from a German firm. Everything else is made in Croatia, and assembled here, including the electronics which are quite sophisticated on the machine.

Dok-Ing also received the Croatia Chamber of Commerce award for most successful innovation for that machine, back in 2001 (Picture 1).

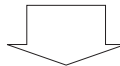
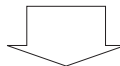
Picture 1

In 2001, Dok-Ing received the Croatian Chamber of Commerce award for most successful innovation for the MV-4 Mini Flail de-mining machine



Let's talk more in detail about generating the idea from (Table 1). Where the good ideas come from? Well, clearly, previous experience of the entrepreneurs, or of the innovators. You also get quite a few ideas that come out of research labs at the university. You also get a lot that come out of military research, not necessarily in Croatia, but in other countries, certainly the United States. Government sponsored projects are big breeding grounds for ideas. And then corporate setting companies need to create an environment that fosters innovation and creativity. But, companies obviously are great innovators, well, existing companies.

Table 1
 Generating the idea



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| <ul style="list-style-type: none"> • Entrepreneurial initiative ✓ Working independently or in conjunction with a government, university, or corporate entity ✓ Use the garage, back yard, or kitchen sink! ✓ Nights and weekends - the 20 hour work day! | <ul style="list-style-type: none"> • University or government support ✓ Lab time and access to advanced facilities ✓ Student participation ✓ Research and Development grants ✓ Administrative support ✓ Legal advice ✓ Accounting advice ✓ Preferential treatment regarding local innovative companies bidding for government contracts ✓ Must be made accessible to innovators in a clear and transparent manner ✓ Must allow innovator to maintain legal and economic rights to all or most of innovation! | <ul style="list-style-type: none"> • In - House Corporate Development ✓ Allocation of financial and operational resources to the project ✓ Often need a more senior level employee to "champion" the project ✓ An indication of financial gain must be evident! ✓ Incentivize the employee(s) to make the project a success ✓ Create an atmosphere that fosters an innovative environment ➤ Example: IBM "Research Fellows" program |
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How do you develop this idea? Well, with the university or government support, you can give lab time and access to advanced facilities to companies. That's quite clear. Student participation. What do I mean by this? I went to university in the United States. I was a business student, but many of my friends were engineers. Almost all of them, if not all of them, at some point during their university career were working with companies that were working in conjunction with the university on some type of research project. And that was usually something they would do in the weekends or the evenings to make a bit of extra money, but it also gave them real world practical experience, and the projects they were working on were quite advanced. Research and development grants. These are key part of real grass roots innovation projects. Venture capitalists don't like to invest in pure ideas, they like to invest in products that are a bit more developed, markets that are a bit more developed, so what you really need is a some kind of grant financing to work on these really base idea projects. You can also offer administrative support, legal advice, accounting advice. Legal advice is key especially when we talk about intellectual property rights and intellectual property protection.

Next point: preferential treatment regarding local innovative companies bidding for government contracts. This is a very key issue. Our company Dok-Ing, I'll talk about that in a minute, they would not have got into the level where they are today if they had not received some preferential treatment in getting contracts from the Croatian government and from the Croatian Mine Action Center because they were a Croatian company. These kinds of advice and assistance must be made accessible to innovators in a clear and transparent manner. The innovator must also be allowed to maintain legal and economic rights to all or most of innovations. I have an example here of Marc Andreessen. Marc Andreessen was a 19-year-old computer programmer at the University of Illinois in 1995. He was paid 5 dollars an hour to develop data base for tracking students and their schedules. Instead of doing that he was goofing around writing a program for the Mosaic, which was the first graphical interface web browser. The university did legally have a right to the ownership of that program. They did take it over and they licensed it for \$22 million to a company called Spyglass, and Mr. Andreessen got nothing. Luckily, the story has a happy ending because he was contacted by a venture capitalist named Jim Clark, and they went out and wrote a Netscape web browser and started a company Netscape. Now, he is

luckily a very wealthy man. But at the time, he was very disappointed because his innovation, his program was taken from him.

In-House Corporate Development - how does this potentially work? Clearly the company has to allocate financial and operational resources to the project. They often need a more senior level employee to “champion” the project in the company. They probably also need this within the government’s or university grant setting situation. I know dr. Salomon¹ is very, very active in working with innovative companies through BICRO, and clearly it’s important that he or one of his staff champions these projects and pushes them through. An indication of financial aim must be evident. Let’s be honest, if it is an interesting intellectual process, that’s great, but really we need to be funding up projects or ideas that have commercial applications, can eventually become commercially viable opportunities. Incentivize the employees to make the project a success. The people who are doing this work need to feel like if this works out, they are going to, frankly, make money. That’s what motivates a lot of entrepreneurs and a lot of innovators, and they need to see that there is an opportunity for them to gain, if they are successful, in the future. And finally, to create an atmosphere that fosters an innovative environment. An example here is the IBM “Research Fellows” program. IBM has huge men of resources, of course, but they have about, I think about a 150 designated research fellows. These are employees that are similar to tenured professors. They cannot be fired. They are given budgets and small stuffs and their whole job at IBM is to think of new ideas and new innovations for IBM, for their customers.

Another way of generating the idea is entrepreneurial initiative. Here, these people are usually working independently, perhaps in conjunction with a government, university, or corporate entity, but they are primarily working on independent basis. They are using the garage, the back yard, or the kitchen sink as their development area, so to speak. Nights and weekends are very important - 20 hour work day. I know several people who have full time jobs, and evening and weekends they are trying to develop new ideas, new businesses. This is one of the key ways that innovations are developed.

Going back to this company of Dok-Ing. The example here: in 1996, the innovator and entrepreneur, Vjekoslav Majetić, who, by the way, is this gentleman on the left with the moustache (Picture 2). He wanted to apply his engineering skills to solving a significant problem for

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Picture 2

In 1996, the innovator and entrepreneur, Vjekoslav Majetić, wanted to apply his engineering skills to solving a significant problem for Croatia: Landmines. Although Mr. Majetić's initial motivation was humanitarian, he has built an innovative company that has also been a commercial success.



You'll probably recognize the gentleman in the middle as President Mesić, president of Croatia. We'll see him again. One thing I love about Mr. Majetić, SEAF's partner, and I work with him for several years, is his ability to promote himself and the company. I'm not quite sure if it's himself or the company that's more prevalent. As you can see in this picture, he's on very, very good job of doing that. From the company's earliest days in demining, it received significant assistance in the form of information, access, and testing ground from the Croatian Mine Action Center, as well as the United Nations and NATO, in developing its products and ensuring the highest technical standards and quality. I think there has been a lot of talk about this triple helix model at the conference. This isn't exactly triple helix, but I think you can absolutely say that this company developed this product in conjunction with the government.

As I mentioned earlier, they were given preferential treatment on receiving initial contracts. CROMAC also bought two versions of their early prototype models, which were good land mine removal devices, but there was also, they were trying to be helped out by CROMAC towards developing their company.

I love this quote: “Without a map, any road will take you there... (But where do you want to go?)”. You’ve got an idea, or you’ve got an innovation, or you’ve got a small company, you need to have a plan to go with it. For an innovation to be successful commercially, an innovator must prepare a business plan. This plan is necessary whether a company, a new company is planned, or if the innovation is part of a new project within an existing company. The business plan is usually an internal document. So often people think: Oh, a business plan, that’s what I need for the bank. You need a business plan for yourself. And the business plan is not just about the economics, but it’s also about the production, the research and the development. And if the innovation is within a university or government setting, my opinion is they should look for a commercial partner to whom the innovation can be licensed or a joint-venture formed. So, if you have some very interesting technology, a patented product, something that is commercially viable, perhaps the best way to take it out of the lab, if it’s truly coming from a university setting or a research setting, is to license it off to a commercial company. So, you’re sharing the profits, but now you’ve allowed a commercial company to take it to market. There are different views on that, and different ways of making it work, but I think this is a very viable method.

Elements of a business plan (Table 2) includes, first of all, executive summary. That’s just a summary of what’s contained in a document. Then, description of the business. A discussion on the research and development that has taken place and will take place. You need to have a sales, marketing plan. You need also to discuss business development and the partners you’re going to work with. You need to have a very detailed section on management, who is going to manage the company. Financial projections and explanations of those projections are key. And you can be anywhere from 2-50 pages long. Shorter is usually better, quite frankly. 10, I would say if somebody asks me what’s a really nice size of a business plan, I would say 10, but it can vary. The biggest reason for failure that I see amongst innovators is that they also try to be business managers. Sometimes that works. With Dok-Ing it did work. With company like Microsoft it worked, if you consider them innovative. But often times these gentlemen are very good in a lab, but not such good business managers. They should just seek professional managers to assist them.

Table 2
 Elements of business plan
 and financing the business

Elements of business plan	Sources of financing
• Executive Summary	• Out of pocket (self - financing)
• Business description	• Friends, family, and “Angel” investors
• Research and Development	• Government grants or credits
• Sales, marketing, business development and partners	• Bank loans
• Management	• Venture capital
• Financial projects and explanation	• Cooperation with a corporate partner
• Can be anywhere from 2 - 50 pages long	

How do you finance it? Out of pocket financing is key. Friends, family, “angel” investors. “Angles” are wealthy individuals who would often venture in initial projects to start up. Government grants or credits, bank loans, venture capital or cooperation with a corporate partner.

Going back to Dok-Ing. In January 1998, the SEAF Croatia venture capital fund became a minority partner in Dok-Ing. We also assisted Dok-Ing in developing their business plan, and provided the necessary initial financing to achieve the plan. I love the Dok-Ing corporate logo, by the way. It’s very frightening.

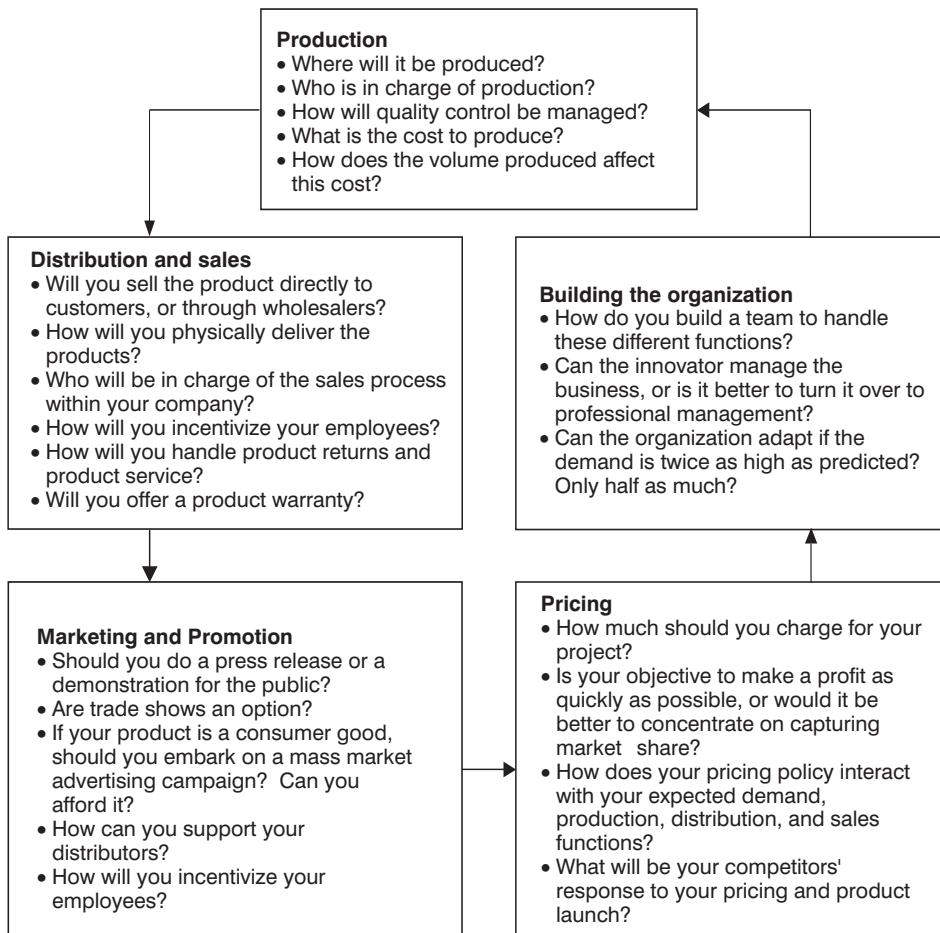
LAUNCHING THE PRODUCT

The main elements of launching the product (production, pricing, distribution and sales, marketing and promotion, building the organization) are presented in Table 3. A lot of questions here, actually, as opposed to specific steps to take. We need to think about production, where it will be produced? Who is in charge of production? How you are going to manage quality control? What’s the cost of production? And how does the volume produced affect this cost of production?

Distribution of sales: Will you sell the product directly to customers, or through wholesalers? How will you physically deliver the products? Who will be in charge of the sales process? Incentivizing your employees. You need to pay these people to make the sales take place. How will you handle product returns and service? How about offering a warranty?

Marketing and promotion: Should you do a press release or a demonstration for the public? Are trade shows an option? If it’s a consumer product, should you embark on a mass market advertising campaign? Can you afford that? It’s very expensive. How can you support your distributors?

Table 3
Elements of launching the product



And again, how will you incentivize your employees? You'll see this on every side. People need to be incentivized to make a commercially viable project successful.

Pricing: How much should you charge for your product? Is your objective to make a profit as quickly as possible, or would it be better to concentrate on capturing market share? How does your pricing policy interact with your expected demand, production, distribution and sales functions? What will be your competitors' response to your pricing and product launch? This point is often neglected, especially from entrepreneurs.

Building and organization: How do you build a team to handle these different functions? Can the innovator manage the business, or is it better to turn it over to professional management? Can the organization adapt if the demand is twice as high as predicted? What if it is only

half as much as predicted? How are you going to handle those different scenarios?

And again, looking back at Dok-Ing. Here, the company initially produced their equipment in the garage of the founder. They later moved to a small production facility in 1999. In 2002, so just last year, they moved to a 10,000 meter facility, and they can produced up to 25 of these machines a year. These machines, by the way, cost about a quarter of a million EUR a piece.

Yes, and here we go, following that example. Because of the highly specialized nature of their equipment, Dok-Ing sells most of their products directly to end users. To date, the company has sold machines to companies in Ireland, Sweden, Switzerland, South Africa, Israel and Croatia. These machines are on the fields now in Croatia and in Bosnia. They are in Iraq, they're in Africa, and they're in South East Asia. A very, very successful innovative Croatian company.

And finally, the company does have a small advertising budget, and thus tries to maximize all promotional opportunities, as well as attend trade fairs, conduct on-site product demonstrations, and direct mail campaigns. I mentioned that Mr. Majetić is a great promoter. And he's done a good job for him in this market world.

FOOTNOTE

¹ Director of the Business-innovation centre of Croatia (BICRO).