Changing the World With 3D Printed Electronics

Amit Dror

An Interview with Amit Dror,
Chief Executive Officer, Nano Dimension Ltd.

EDITORS' NOTE *Amit Dror is Co-Founder of Nano Dimension Ltd. and Chief Executive Officer and director since August 2014. Previously, Dror co-founded Eternegy Ltd. in 2010 and served as its Chief Executive Officer and a director from 2010 to 2013. He also co-founded the Milk & Honey Distillery Ltd. in 2012. Over the course of his career, Dror has developed vast experience in project, account and sales management while serving in a variety of roles with ECI Telecom Ltd., Comverse Technology, Inc., Eternegy Ltd. and Milk & Honey Distillery Ltd. He has a background in technology management, software, business development, fundraising and complex project execution. Dror is a graduate of the Merage Institute.*

COMPANY BRIEF *Nano Dimension Ltd. (nano-di.com), through its subsidiaries, operates as an additive electronics provider. The company offers the DragonFly Pro precision system for additive manufacturing of printed electronics. It also develops conductive and dielectric inks, as well as provides Switch software which is an enabler to turn electronic product ideas into reality by 3D printing them. The company was founded in 2012 and is headquartered in Ness Ziona, Israel.*

What was your vision in creating Nano Dimension and how has the company evolved?

Initially, we were extremely excited about the whole concept of printing and were looking for something new within that field. As funny as it sounds, we thought most everything had already been invented. Then we had the idea to connect the world of 3D printing with the huge world of electronics manufacturing. The initial idea was to provide a solution for electronics engineers that allowed them to use a desktop 3D printer to print their designs in-house.

We realized that there is an issue when engineers have to wait weeks to get a printed design back. So our concept actually answered all the criteria – the need was there and it was a huge market. We thought it was a concept we should pursue.

After going through a bit of a roller coaster ride with our first customers, we realized it was not about the desktop unit. It was about changing electronics production. Only a few years after that initial idea, we created the industrial machine.

So today, it is still about multilayered PCBs, but it is also about sensors, antennas, capacitors, and altogether changing the way electronics are made.

When did you know that this concept was going to work?

As an entrepreneur who has been through more than one roller coaster ride, I always believed we were going to get there, but there were times when I had to convince myself that it would work.

It's great to look at it now when we are selling tens of machines to top Fortune 500 customers and the most important companies on the planet. The peak reward for me was to have gained recognition by the State of Florida and NASA to have something that we created go into space. That means a lot to me.

You mentioned working with Fortune 500 and other large institutions. Is Nano Dimension focused on specific industries?

The world of electronics is not just about a specific industry. Obviously, it includes the world of consumer products which are everywhere. Aerospace is also big as is automotive as cars become smart. It is also important with medical devices. There isn't really any industry where this does not provide some kind of a solution.

Having said that, there are the early birds and the low-hanging fruit that we are dealing with right now, which are mostly aerospace, defense and research institutes. The market and the possibilities are pretty big, even just for those customers coming over and buying one or two machines or to learn the technology and, obviously, when they later take it to production.

Is the technology easily understood or do you still need to educate the market?

There is definitely a process of educating the market for 3D printed electronics. Having said that, they already know about 3D printing. They have been expecting it, but we have to work with our customers and help them with the right recipes.

There is a concept called "design for additive," which addresses how to make a design suitable for a specific type of technology. There is education necessary in this area.

With how quickly technology changes, is the product continually evolving?

We look at this technology as something kind of profound and basic. I would like to use the example of print again. The books you and I read as kids were produced by machines using the same technology that was used for hundreds of years and that was print. The motherboards that are used in computers are called printed circuit boards. But once the print industry turned digital and we started using inkjet and similar technologies, the change was profound.

I think what we are doing is literally creating a disruptive change with how electronics are made. So, do we need to be on top of it? Sure, because competition is going to step up and meet us. We want to be first and maintain the barrier.

Being the first company that is taking electronics manufacturing from the traditional method, that hasn't changed for almost 100 years, and turning it into digital – I think that is a very disruptive change.

As with most disruptive technologies, were you told it would not be possible to accomplish what you have done?

Yes. I am not an electronics engineer, and I don't have significant background in chemistry. When we started this project, lots of very smart people told me that it was not achievable. They were the experts and they gave me good reasons to understand why I was wasting money and time.

I didn't listen to them. Obviously, we ran into all the issues those experts came up with, but we managed to solve them and move on.

As a public company, is it difficult to find a balance between the short-term, quarter-to-quarter pressures and making long-term investments for the future?

On the one hand, being a disruptive, bleeding-edge tech company and being public is challenging. On the other hand, it forces the company to be accurate, to be clear, and to work like a grown-up.

There are some upsides to being public, and yet it is not easy. But I think that at this stage, having started sales and being deeply into growth and selling more machines means we are on the right path.

As a company founded and headquartered in Israel, how have you structured your international efforts in order to reach new markets?

We are essentially an Israeli company, but we have a subsidiary, Nano Dimension USA, to make sure that we can operate properly in the U.S. Nano Dimension is a supplier to the Department of Defense, with a CAGE number and the relevant credentials. This definitely helped us in the U.S.

Likewise, we have to be able to operate in Japan, Korea, China and the Asia-Pacific region as well, so we established Nano Dimension Hong Kong.

We initially set up headquarters in the main regions in order to operate and then collaborate with Tier 1 value-added resellers. As a startup, you can't do everything all by yourself. We are working with a network of Tier 1 resellers, about 20 of them worldwide, and that is how we distribute our products. We try to leverage the fact that nobody else offers a similar solution to ours and we are trying to attract the right partners and leverage our expansion.

Having run entrepreneurial ventures before, did you already have relationships that you could reach out to for attracting talent?

It happens that Israel, and specifically the area around the Weizmann Institute where we are located, is a place that some call the Mecca of 3D printing and inkjet technology because of the companies that were raised in that small tech park. The decision to establish Nano Dimension in that specific park was not a random decision.

Some of the co-founders of Nano Dimension had the contacts we needed in order to establish a strong team to begin with and gradually, as we started growing, this will still be a great location from which to attract the right people.

Israel is known as Startup Nation and as a major entrepreneurial hub. What do you attribute that to and what has made Israel a place with such a deep entrepreneurial spirit?

Well, there is the saying that necessity is the mother of all inventions, and I think that, in the case of the land of Israel, the necessity speaks for itself starting with how the country was established and moving forward with different types of inventions.

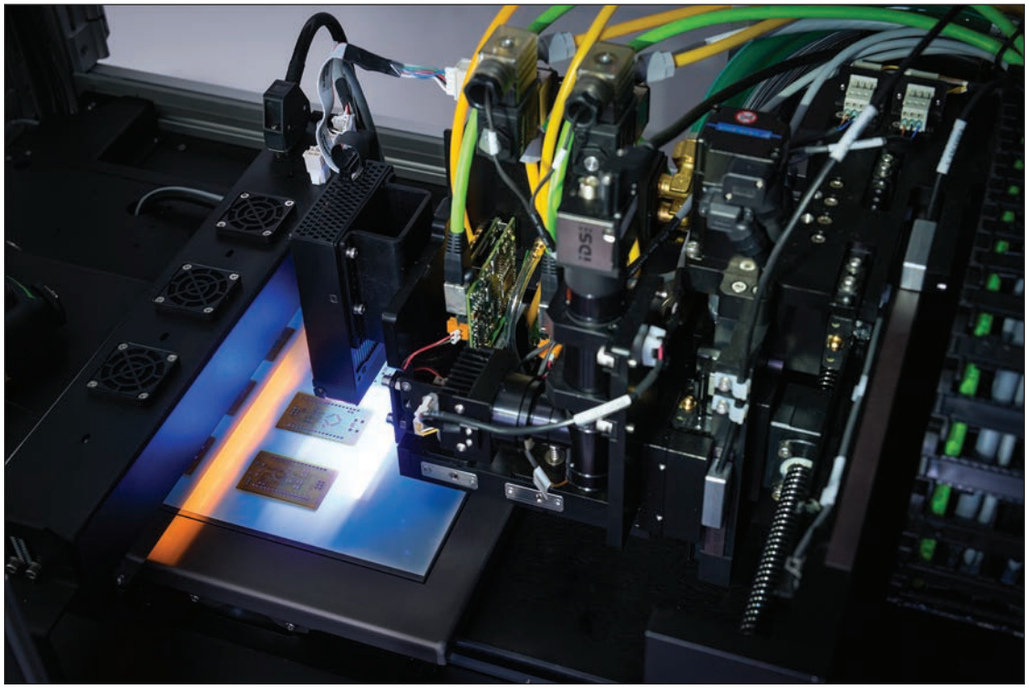
We recently had a reseller coming over to visit us at our headquarters in Israel. It was just around the Independence Day of Israel, so we ordered falafel for the whole company. Suddenly, a siren went off and everyone moved into the shelter next to the office and continued eating their pita and falafel in the shelter. The reseller wanted to know what was going on and we told him it was a missile warning. He was pretty concerned about it, but we told him the Iron Dome system would take care of it and eventually he relaxed.

The Nano Dimension DragonFly Pro 3D Printer (above); 3D printing (lower left)

My point is that the Israeli people have encapsulated two things: first, the necessity and the fact that we work to overcome it and practice innovation; and second, we are more accustomed to being at risk, which also makes us more comfortable with taking risk.

As an entrepreneur, is it more about developing the idea and then moving onto the next idea or do you also enjoy running the business?

I've started three companies in my life, and I have been involved with the initiation of another one. The level of involvement with each of the previous ones was a few years. With Nano Dimension, it has been almost six years now.



I obviously enjoy following my passions, but each company was really in a different field of activity: solar energy, whiskey, 3D printing. I do follow my passion, but I have never given up on something before I felt that I had come to the point where it can take off.

Is it important to build a purpose-driven company?

Purpose is very important to me. I find it hard to be passionate about something I don't believe in. Knowing that what we are doing is really going to help humanity, because you can really make things that are going to take us to the next level, is important.

I do not underestimate the fact that there are people who are investing money in the company. On the contrary, we are trying to do everything to help them also benefit and be a part of it. But as a tech company that is extremely innovative with disruptive technology, you really want the leaders to be passionate about what they are doing, and I definitely am.

Where do you see Nano Dimension in five years?

I think the most important thing for me would be to look around the room at all the things with electronics and to know that there is Nano Dimension inside each one of them. The impact of being at that stage would also mean that the company has done well.

Have you been able to take moments to celebrate some of the wins or are you always thinking about what is next?

I think I have changed over the years. When I was a little younger, I was so focused on doing what I was doing that I didn't take these moments. Today, I find them extremely important. Not only do I try to have these moments now, but I also encourage everyone to find those moments to appreciate what they have accomplished. ●