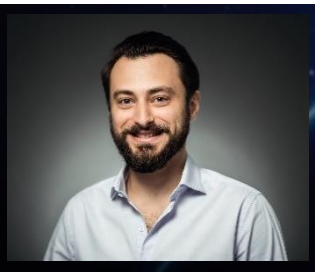
INTERVIEW

with Itamar Sivan, CEO of Quantum Machines, a partner in multiple QuantERA-funded projects

By Sylwia Kostka, QuantERA Coordinator



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Itamar Sivan

Itamar Sivan, CEO of Quantum Machines, is a quantum physicist who began his journey in the field working in Oxford on his masters thesis concerning quantum optics. Then, during his PhD at the Weizmann Institute in Israel where he focused on quantum electronics, he decided to take a step further.

Together with Yonatan Cohen, the CTO of QM, he saw the huge entrepreneurial potential in research and decided to set up a programme that would expose it to the world of entrepreneurship and start-ups.

How did you manage to bridge the gap between the science and business?

We dealt with both entrepreneurs and academics for many years. Bridging industry on the one side and quantum science on the other was a very natural process.

Was it difficult to establish your own company?

Usually, setting up a company is difficult. If you want to do something big with the company, there are many challenges on the way. I mean, setting up and growing a company is very challenging.

What was your driving force?

It was a kind of transition that we went through on the personal level. ***As the QM founders we went from academic science research to the understanding that we can perhaps do something greater by setting up a company. A company can change the world, so we decided to do that!***
And it is a kind of coincidence that when we decided to set up a start-up, we also realised that quantum computing is becoming an industry field. So then it was very obvious for us that we should set up a company in quantum computing that would help to accelerate the realisation of useful quantum.

QM merged two fields: HPC (high-performance computing) and quantum. Do you know any other company that has done this, or are you the pioneers?

I.S.: *I don't know if there are other companies that really focus on combining these two, but it is true* ***that we understood very quickly that HPC is the natural place for quantum computing, certainly for the next few years, and for the long run as well. In order to make a big impact with quantum computers you should put it in.*** *It is a natural place, where the users can benefit from, but also where you can get benefit from the users. And I think that HPC users are definitely the ones that can benefit from quantum computers, but they can also contribute to quantum computers. Their knowledge of how to use HPCs can actually leverage the advancement. It seems so obvious, but it's not.*

How did you hear about QuantERA and why did the company decide to join the QuantERA call?

I would start by emphasising that we believe that QuantERA was extremely significant in our development, not only in the technology aspect, but for the company in many regards. And we are highly appreciative of the QuantERA programme.

Is that mainly due to financial help, or rather the cooperation you have?

So, coming back to your question, how did it start. It all started with an e-mail by a professor from Austria. He informed us that his group had created a consortium for QuantERA and they wished us to join. Back then QM did not even have customers. Once we enrolled in the

project it helped us to form strong bonds with the academics that were part of the consortium. They in fact became our first customers, our early adopters. It evoked a snow-ball effect extending the range of the company. ***Joining the QuantERA project was the turning point for Quantum Machines.*** *And even before it was granted, it had brought us a lot of success.*

This is why I believe that QuantERA can be extremely significant in the development of the company. And it goes far beyond the grant. Funding is important, obviously, but it is only a fraction of the advantage. QuantERA is the glue that connects multiple scientists interested in different aspects of research. This glue brings people together. Someone may be interested in collaboration, but if there is no glue, there is no framework to proceed, then liaison doesn't really happen.

Let me give you an example. In the QuantERA II Call we are involved in more projects, one of which is conducted with a company called QDevil, located in Denmark. Actually, we ended up merging with QDevil. Quantum Machines acquired QDevil a few months ago, which is also another very important turning point in the company's life.

Being parts of the same project has definitely contributed to this acquisition. It opened the channel. It has reinforced the collaboration. So as a company, we owe a lot to QuantERA.

Do you have any recommendations concerning the future of QuantERA?

I.S.: ***QuantERA should proceed! It is very important in the development of academic research, as well as companies' development.***

If I had to recommend anything, I would suggest focusing on cooperation. Maybe it is already the case, but ***I would recommend that the proposals could be evaluated with reference to their contribution to the development of cooperations.*** *One thing is to assess the contribution to science and technology and the project's expected impact: Is it disruptive or not? Is it innovative or not? Is it multidisciplinary or not? But there's another metric, which I believe may be hard to quantify, but which is essential because it refers to collaboration. As it is said: the whole is bigger than the sum of the parts. Israel is a part of Europe's scientific programmes. These types of collaborations strengthen both the countries and the unity they constitute. There is massive competition between different continents. We are facing a quantum race with China and the USA as strong, self-contained players. If we wish to leverage Europe's impact, we need to combine researchers from different countries from Europe and beyond.*

Collaboration is an engine. The impact of the unity is more powerful than the impact that its individual parts could achieve separately. If all parts are active players engaged in a mutual undertaking, if they strive for building something, then they can achieve a lot.

However, if a partner is not really committed then we cannot call it collaboration. It's all about the framework, the glue that brings people together. QuantERA could be more focused on research, on developments of the companies and actively push towards the cooperation.

Also, it would be perfect if there was a mechanism in QuantERA that would allow scientists to build a real construction, but without the overhead.

I'm not an expert in the mechanisms of QuantERA, and actually, our financial department deals with the duties. However, sometimes we have to prepare a document that requires the engagement of two people working on it around the clock for a month. But again, we are a start-up, so we favour partnerships and quality of science that will result in something more than the brand. For us, saving time is crucial. I put this in my calculation whether some efforts make sense or not.

I think that budgets are most time consuming. Building a budget for a couple of years ahead always concerns unknown elements. And then trying to figure out what instrument will be necessary in one year or two years – – this is very difficult.

I really appreciate Israel's Innovation Authority, and I have very good relationships with them, but there is an overhead for getting a dollar, sometimes. It's not cost effective.

It was fantastic to hear all that. Thank you very much.

It was just another opportunity to thank you, because I really appreciate QuantERA and I think it's very impactful for the quantum community and the quantum industry that is forming in Europe. I hope this will continue for many years.

QUANTERA

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