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## Press Release

**Interview with Dr. Reinhard Ploss and Professor Jürgen Mlynek**

### **“Building a quantum computing industry in Europe”**

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For the third time, the international quantum technology community will come together at the World of Quantum in Munich (June 24 to 27, 2025). The exhibitors include the European Quantum Flagship Initiative and the industry association QUTAC, two heavyweights from research and application. In this interview, QUTAC representative Dr. Reinhard Ploss and Professor Jürgen Mlynek, Chairman of the Strategic Advisory Board of the Flagship Initiative, talk about current trends and developments in this young technology field.

**Dr. Ploss, Professor Mlynek, would you please briefly introduce your organizations and your role within them?**

**Professor Jürgen Mlynek:** I am Chairman of the Strategic Advisory Board of the European Quantum Flagship Initiative. The EU's flagship initiative, which was launched in 2018, has a budget of one billion euros over ten years – and the clear intention of not only researching the basics, but also addressing the interface to commercial application. Our aim is to prepare the ground for a new industrial sector with future-proof jobs. Primarily, we support projects in which consortia from science and the private sector work together. Members of the Strategic Advisory Board include leading experts from science and industry. Essentially, it is the initiative's supervisory board. It advises the EU Commission on the strategic and technical policy framework, which serves as a basis for orientation for the entire European quantum ecosystem.

**Dr. Reinhard Ploss:** QUTAC was established in 2021 as part of the innovation dialog initiated by the then German Chancellor Angela Merkel. I am one of the founders and represent the association externally, which includes 14 of the

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largest companies in Germany and Europe. Our basic idea was that, in addition to hardware and software development for quantum computing, application expertise will also be essential. In pilot projects, QUTAC member companies are testing which issues quantum computing is suitable for, where it will be superior to today's high-performance computers and how thinking and algorithms need to change in order to fully exploit its potential. Our members are looking at this for their respective industries and examining the impact on their business models, market opportunities and the disruptive potential of quantum computing. Of course, there is no quantum computer that is powerful enough yet, but we want to be able to get started when the time comes and not just start thinking about what, how and with whom.

**There is a wide variety of approaches to quantum computing. What does the physicist have to say about this flourishing landscape of ideas?**

**Mlynek:** I'm torn. The variety of possibilities for realizing qubits is fascinating: platforms based on semiconductors, superconductors, neutral atoms, ions or photons are in the running. This is exciting from a scientific point of view. At the same time, this diversity shows that there are still no obvious winners. Some approaches – superconductors, ions and neutral atoms – are promising. However, we must always bear in mind that resources are limited. Does it therefore make sense to promote all platforms and include new approaches in the funding? Or should we focus on just two or three platforms and join forces to work towards market maturity? This would require broad consortia in which large companies also participate and share the financial risks. Or to put it positively: seize the opportunities in this future market. In the USA today, quantum computing spin-offs from top universities are receiving hundreds of millions of dollars. China is pursuing strategic funding approaches with enormous state support. We have a strong scientific basis in Europe. Large-scale public-private partnerships may now be needed to develop a quantum computing industry in the EU. Funded projects and startups cannot achieve the necessary scaling on their own. To stay with your image: instead of letting a thousand flowers bloom, we should perhaps plant the two strongest shoots, fertilize them and let them flourish. We need to get out of the labs and into the world of professional

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engineering, miniaturized designs and reliable manufacturing processes. The world of Reinhard Ploss...

**Ploss:** ...QUTAC has taken this view from the outset. Of course, a better idea may always come along. But it is about industrialization of the quantum computer and corresponding learning curves: in order to master quantum systems with a high number of logical, functional qubits, a level of precision in production is required that startups would have difficulty achieving. Whoever completes this learning curve most effectively wins the race to market maturity. I therefore agree that we should focus on one or two approaches and start scaling. This will cost a significant amount of money and is no longer a startup issue. US company Nvidia recently founded a Quantum Center and is investing ten-digit sums of money. We have to face up to this competition if we want to build a quantum computing industry in Europe. This also applies to software, as developments in hardware, software and middleware as well as applications in this area run almost synchronously.

#### **How challenging is this synchronicity for industrial users?**

**Ploss:** It is still more about the approach than about specific practical solutions to problems. Our members are investigating how they need to ask different questions in order to make optimum use of the performance of quantum computers. The hardware platform is of secondary importance for the time being. More important is the realization that new approaches are needed for computing with quantum computers. Incidentally, this rethink has led to us achieving better results today with conventional high-performance computers. Nevertheless, one gap remains: there is a lack of players in Europe who integrate the excellent hardware components developed to date into quantum computer systems. There is also a lack of political framework conditions for this. Instead of encouraging risk-taking, we have a culture of saying no. The federal system and the structure of the EU also mean that too many particular interests are served instead of moving decisively in one direction. In addition, there are no commitments from the state, industry and science to buy quantum computers as soon as they come onto the market.

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**Mlynek:** To pick up here: in the US, there are companies with hardware, internet and software backgrounds for whom it is obvious to build their own quantum computers, develop software and use it. They also have the means to take risks. We don't have these players in Europe. We have no big "system makers", just "system takers". There are component manufacturers, but no corresponding manufacturers who could build quantum computers, apart from a few startups. However, their funding rounds are in the double-digit million range, while high triple-digit million amounts of cash flow in the USA. This makes a big difference in the future scaling. To counteract this, we need innovation ecosystems and more venture capital. Because we need to move from room-filling laboratory setups to chip integration as quickly as possible.

**Why is it nevertheless so important to investigate the potential impact of quantum computing on today's business models now?**

**Ploss:** It is becoming clear what quantum computers can achieve, be it in pharmacy, chemistry, finance, logistics, production or transport planning. Wherever complex solutions with many variables are required, they are superior to today's hardware. That is why our industry must be "quantum-ready" as soon as the technology is available. If we aren't, others will win the race or we will have to rely on players who gradually acquire our industry expertise in the course of solving problems. This process is already underway in digitalization. Providers of digital platforms are acquiring expertise with which they can penetrate the core business of sectors for which they were previously only IT service providers. Anyone who knows how to use quantum computers at the right time has an advantage.

**Professor Mlynek, you have deep insights into research. Are there approaches with disruptive potential?**

**Mlynek:** The quantum computer is disruptive enough in itself. It is the approach in quantum technologies that is triggering a real paradigm shift. Quantum sensor technology increases sensitivity, quantum communication increases security in communication – quantum computing, on the other hand, is a completely

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different way of calculating. We therefore need to get to work quickly and pool our limited resources. I see the planned reorganization of German research policy as a promising approach to ensuring that the state acts in a more focused manner and provides targeted support for promising platforms. As I said, it's about learning curves in engineering. We do not achieve market maturity in the research laboratory. Politicians must now make resources available for this – also with a view to technological sovereignty and European security architecture. A coalition of the willing is needed.

**Ploss:** I absolutely agree with Mr. Mlynek. We need to think more consistently, act in a more focused way and channel resources into engineering. This requires the courage to focus on individual platforms and to stop promoting others. The ambition to make everyone happy is not compatible with the goal of asserting ourselves in global competition.

**Are we talking about research factories?**

**Ploss:** Not a research factory, but an implementation industry in which European consortia form and quickly start building quantum computers. There are many initiatives and companies in Spain, France, the Netherlands, Scandinavia and Germany that come into question. What counts is manufacturing expertise and speed.

**In the form of a public-private partnership?**

**Mlynek:** Neither the industry nor the state can do it alone. If no company is prepared to take the risk, the state cannot fix it. Conversely, we are talking about sums that even large companies cannot simply put at risk. We don't have a computer industry – and the bar is too high for us to cross it from a standing start. The state must therefore provide support in the first stages, for example through public contracts.

**Be honest: did you expect faster technological and economic progress when you launched your initiatives?**

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**Mlynek:** It was a good, courageous decision in Brussels to launch the Quantum Flagship Initiative and distribute the budget across all fields in quantum technologies. When I look back at the progress made in recent years, the achievements in Europe are quite impressive. But things are moving faster in the US and China. They act in a more strategic, focused and pragmatic manner, while the EU still too often focuses on the internal balancing of interests of the member states, with corresponding frictional losses. We are absolutely on an equal scientific footing. But there is a lack of implementation on a large scale.

**Ploss:** It is possible – as you have indicated – that the new global political situation is creating a new dynamic. Very large sums of money are involved in increasing the sovereignty of Germany and Europe in security matters. Quantum computing is important in terms of digital sovereignty and efficient infrastructure. In other words, a coalition of the willing here too.

**The third World of Quantum takes place at the end of June. What role does the trade fair play and how do you assess its benefits for the quantum community?**

**Ploss:** This fair helps immensely. It is an important platform where the most important players come together and continue the necessary discussions. Our discussion has shown that we are currently in a phase of opinion-forming in order to align our actions more strategically. The World of Quantum shows that our topic is by no means to be shelved, but that we have made good progress – and want to make further progress.

**Mlynek:** Exactly. The World of Quantum is a showcase for what we have already achieved in science and in business – and what we can achieve together. We are a highly innovative future field with prospects. If we manage to join forces, we can build a successful European quantum industry. The course must now be set for this. The trade fair comes at the right time. It is a platform for continuing the strategic debate and bringing stakeholders together.

*You can find this press release including images for download at the [World of Quantum newsroom](#).*

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**About World of Quantum**

The international trade fair World of Quantum is the world's largest platform for scientists, companies, investors and users to network and shape the future of quantum technology together. From computing and cryptography, sensor technology and imaging to communication and medicine - the trade fair offers a comprehensive overview of the broad spectrum of quantum technology topics, provides information on the latest research results and presents current and future applications. Strong partners from politics, industry and research support the World of Quantum, which is organized every two years by Messe München. The third edition will take place in Munich from June 24 to 27, 2025, in parallel with Laser World of Photonics, the World of Photonics Congress and automatica.

[world-of-quantum.com](https://www.world-of-quantum.com)

**About Messe München**

As one of the world's leading trade fair organizers, Messe München presents the world of tomorrow at its about 90 trade fairs worldwide. These include twelve of the world's leading trade fairs such as bauma, BAU, IFAT and electronica. Messe München's portfolio comprises trade fairs for capital and consumer goods, as well as for new technologies. Together with its subsidiaries, it organizes trade fairs in China, India, Brazil, South Africa, Turkey, Singapore, Vietnam, Hong Kong, Thailand, and the U.S. With a network of more than 15 affiliated companies and almost 70 representations worldwide, Messe München is active in more than 130 countries. The more than 150 events held annually attract around 50,000 exhibitors and around three million visitors in Germany and abroad.