



IQM

WWW.MEETIQM.COM

Das Potenzial von Quanten Computing in Deutschland

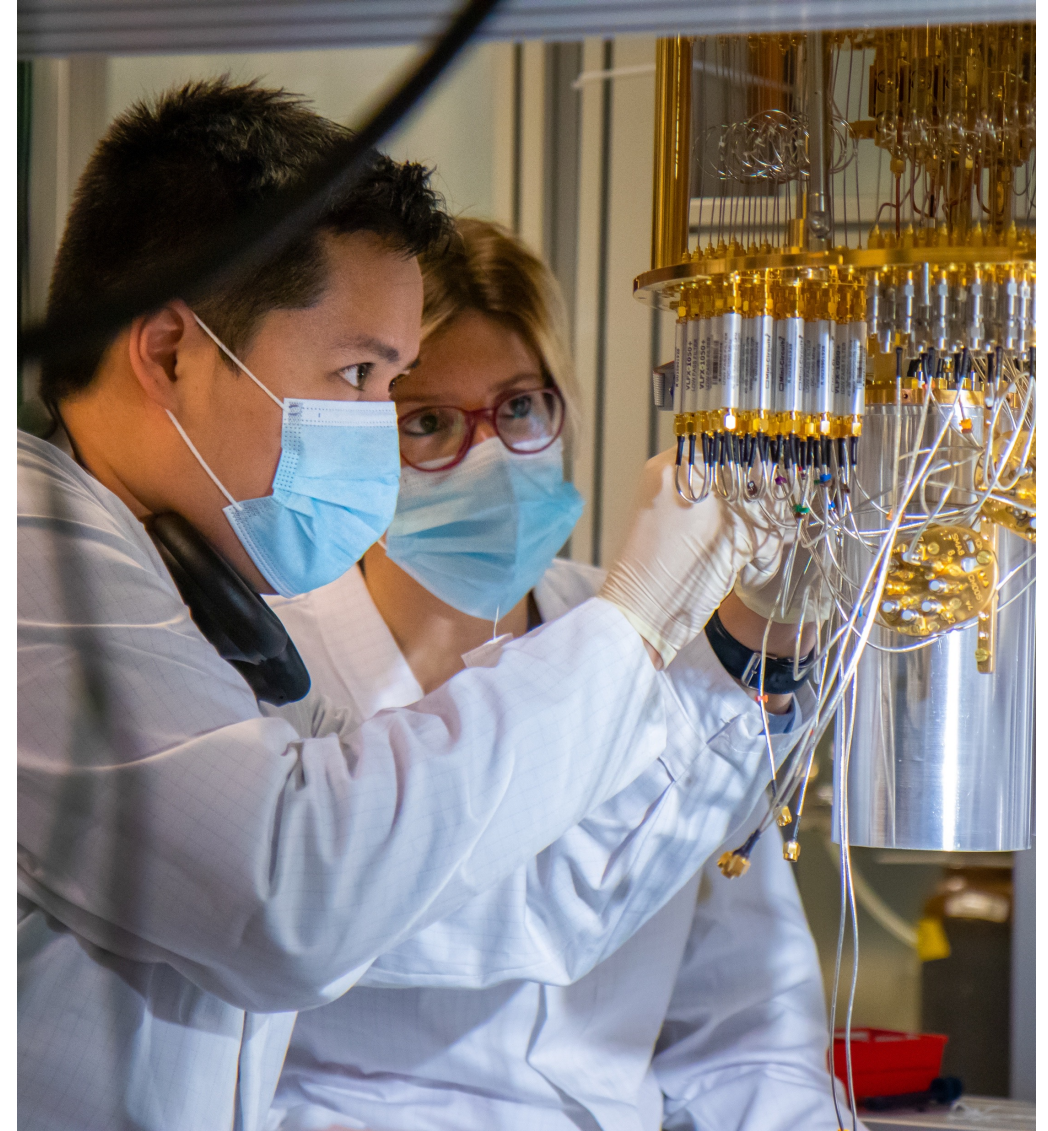
Dr. Jan Goetz, CEO

Peter Eder, Head of Operations Germany

IQM in brief

Quantum-computer scale-up

- Providing quantum computers based on superconducting technology
 - One deal already sealed
 - Now looking for innovation partnerships
- DeepTech Scale Up, > 100 people strong
- Secured > M70 EUR funding
- Co-design approach for application-specific quantum computers



Vision

What if, ...

... we could reduce CO2 emission by building better airplanes, more efficient data centers, or modeling carbon capture processes?

... we could improve mobility by developing better batteries, traffic optimization, or supply chain management?

... we could improve global wellbeing by developing new medical treatments, functional materials, or predicting financial crashes?

... we had Co-Design Quantum Computers to enable all this?

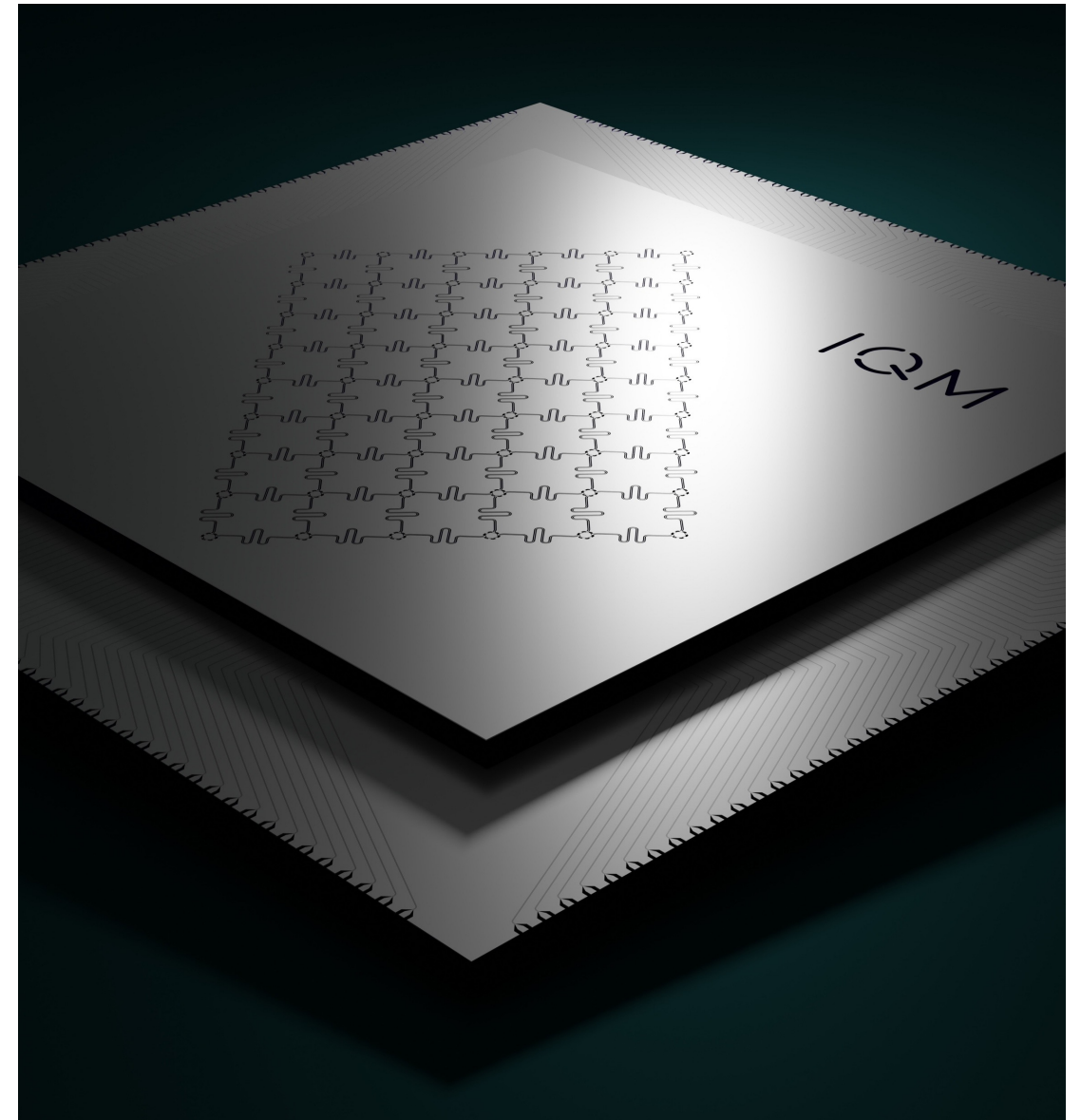


The opportunity

Quantum computing will disrupt all major industries and **create completely new markets**. Who leads now, will benefit for decades.

In Germany and Europe massive private and public investments are being made, creating a market now.

Promising applications bring early adopters in the best position to scale together with the new markets. Germany has a strong potential to benefit from quantum computing.



IQM

Mission & Strategy



Provide value of technology for early adopters

FOUNDATION

Commercialize early quantum computers for research and education

to create ecosystems and to build technological and business capabilities required for quantum advantage

ADVANTAGE

Enable special-purpose quantum advantage for key customers

to kickstart the spread of useful quantum computing and accelerate its benefits through co-design

DISRUPTION

Provide full quantum advantage for everyone

to advance the world to a new technological era with quantum computing

We build world-leading quantum computers for the wellbeing of humankind, now and for the future

⚙️ COLLABORATION

🤝 TRUST

🌟 AMBITION

Founding team

Performance, trust, complement:
Decades of experience together

Quantum computing since 2001
Scientists at heart, doers at mind
Surrounded by experienced advisors
Sharing values for a common mission



DEEPTECH CHALLENGE

Transformation & Leadership

Scaling & Delivery

Technology solutions

Constant innovation

FOUNDER

Jan Goetz, CEO
[“40 under 40 in Germany” \(Capital\)](#)

Juha Vartiainen, COO
[Europe’s fastest growing scale-up \(Sifted\)](#)

Kuan Tan, CTO
[Kaute Entrepreneur award 2021](#)

Mikko Möttönen, Chief Scientist
[Innovation professor of the year 2021](#)

PERSONAL JOURNEY

From a sky-rocketing scientist to leading figure of deeptech startups

From industrial R&D leader to boosting one of the fastest scale-ups in Europe with steady growth

From world-class scientist to awarded tech leader, reaching all milestones

From renown scientist to thought-leading innovation professor with disruptive ideas

Our superpower

One of the world's strongest teams of quantum experts

The New York Times

*The Next Tech Talent Shortage:
Quantum Computing Researchers*

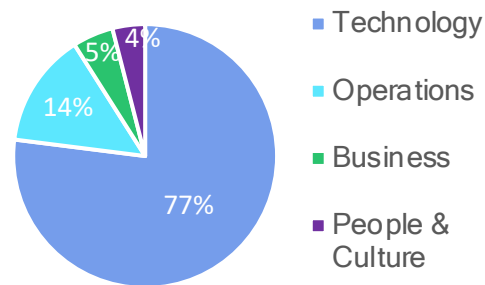


We have collectively published over 700 scientific articles with more than 30,000 citations (IQM h-index: 81).

We have more than 50 PhDs, 5 professor-equivalent scientists and currently educate 10 PhD candidates.

We attracted talent from (among others):

- Europe, US, Asia, Australia
- Intel, Microsoft, Rigetti
- TU Delft, ETH Zurich, MIT, U Maryland



Collaboration

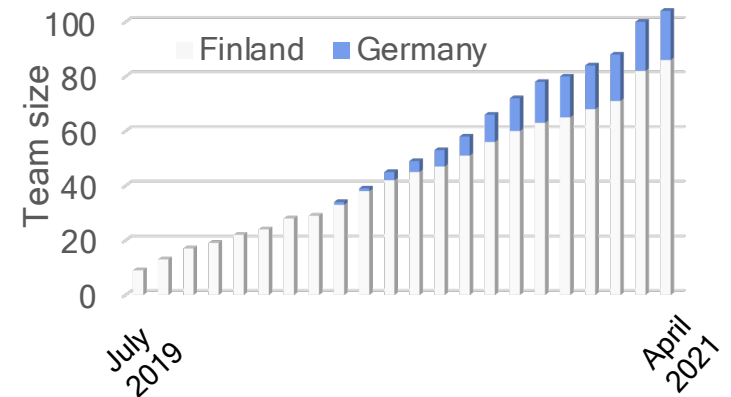
We create synergies by working in cross-functional teams together

Trust

We openly address our challenges and find realistic solutions

Ambition

Our goal is to leapfrog IBM & Google and win globally



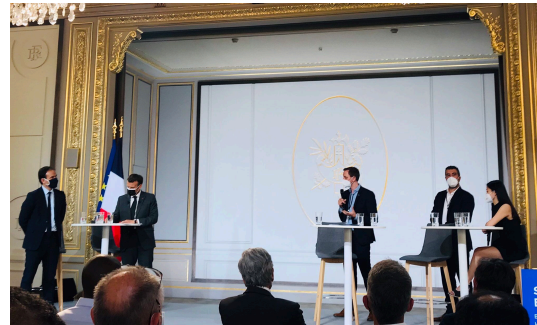
Recognized by global decision makers

IQM is contributing to policies and global quantum strategies

"Helsinki is a hot-spot for quantum computing"
Jake Taylor, former assistant Director for Quantum Information Science at White House



German Minister for Research and Education Ms. Anja Karliczek meeting IQM team - CEO Dr. Jan Goetz, and Prof. Solano (September 2020).



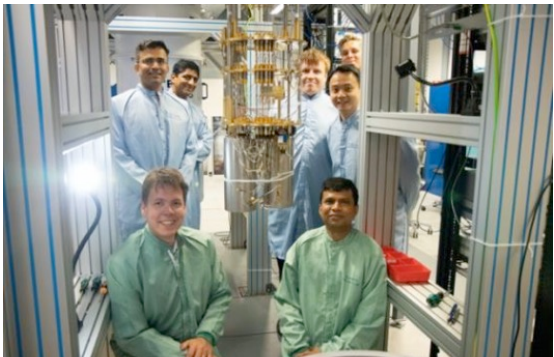
IQM CEO Jan Goetz presents the Scale-UP Europe initiative to Emmanuel Macron in the Elysee Palace.



IQM team visiting Bavarian Ministry of Economic Affairs (2020).

Founding member of [Scale-Up Europe](#).

Founding member of the European quantum industry consortium ([QuIC](#))



Hon. Ambassador of India to Finland and Estonia, Mr. Kumar with the IQM team, visiting IQM lab in Espoo, Finland.



CEO of IQM Dr. Jan Goetz meeting EU commissioner Carlos Moedas in Brussels (November 2019).

IQM also hosted the ambassadors of Israel, Germany, and France.



Finland's Minister of Economic Affairs Mr. Mika Lintilä, CEO of VTT Mr. Antti Vasara, with Jan Goetz.

Member of the German Federal Economic Senate ([Bundeswirtschafts senat](#)).

IQM Quantum computers

IQM supports research organizations and companies in quantum readiness

Products: Research systems & HPC accelerators.

Value proposition:

- Direct system access for customers to create skills, tech sovereignty, and research results
- Our systems have better specs and we can deliver faster than competition
- Large corporates do not or cannot deliver on-prem systems
- Most startups do not have the institutional know-how and delivery capabilities for system sales

Potential for scaling:

- Transition from B2G to B2B, thus creating better defined sales processes.
- Selling to suppliers of supercomputers (e.g. Atos) to scale
- more efficient deals in terms of customer acquisition and system costs
- Potential for consulting: Quantum readiness programs

Possible deals
(avg deal size: €30m)

Israel
Germany
France
Spain
Euro HPC
private HPC

First customer case

IQM is building Finland's first quantum computer with VTT

The goal of the 20.7M EUR project is to deliver a more powerful quantum processing unit to reach 50-qubits by 2023.

2021	2022	2023
EDUCATION 05-QUBIT QPU	RESEARCH 20-QUBIT QPU	BENCHMARK 50-QUBIT QPU

“We are excited to say that the hard work of our teams from VTT and IQM is paying off, and we are on track to demonstrate the first stage of the project - a functioning 5-qubit quantum computer - by the end of 2021,” says Dr. Antti Vasara, CEO of VTT, June 15th 2021.

<https://www.vttresearch.com/en/news-and-ideas/building-finlands-first-quantum-computer-underway-and-schedule-vtt>

IQM HPC accelerators

Create HPC integration to set standards

Atos is going to install quantum accelerators by 2023. As part of the Atos Scaler program, IQM is a preferred hardware partner for Atos.

IQM’s strategy is to provide HPC solutions for a broad customer base.

<p>ASSUMPTION</p> <p>Quantum accelerators work like AI accelerators provided by Nvidia’s GPUs. These accelerators are used in HPC centers where interfaces and industry standards will be defined.</p>	<p>GOAL</p> <p>Extend sales to private clients in HPC or to suppliers of HPC infrastructure.</p>
<p>STATUS</p> <p>IQM is one of the few companies globally building a unique institutional knowledge base in HPC integration.</p>	<p>ACTIVITIES</p> <p>Interface development to integrate quantum computers to HPC centers (LRZ & CSC). Strong partnership with Atos.</p>



Atos @Atos · Mar 16

We jointly propose an offer in open innovation via #AtosScaler developing @meetIQM with Atos Quantum Learning Machine. Learn more today at their talk at the #QuantumBusinessEuropeEvent on HPC expertise and cooperation for quantum hardware.



TECHNOLOGY NEWS APRIL 8, 2021 / 4:16 PM / UPDATED 2 DAYS AGO

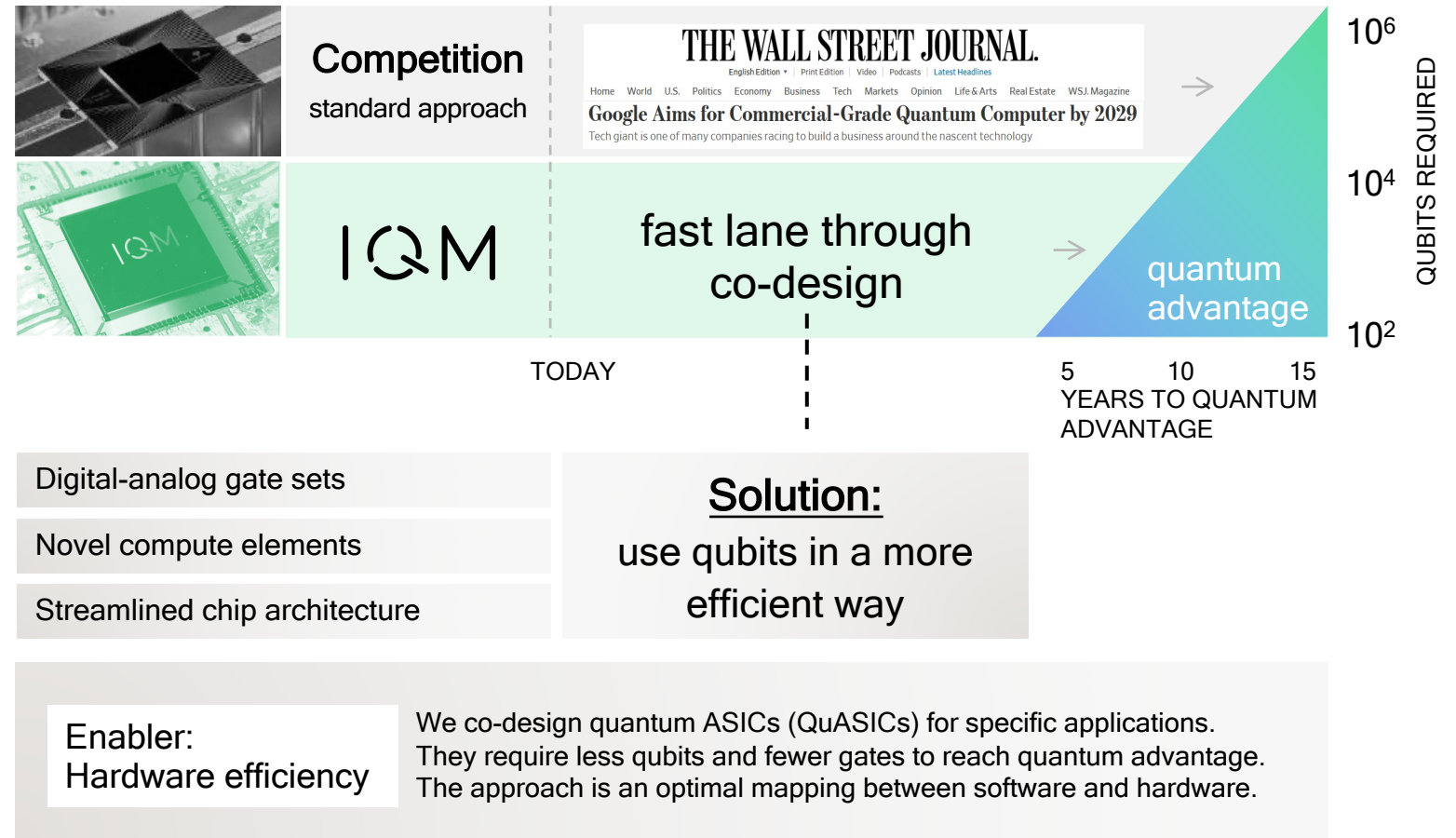
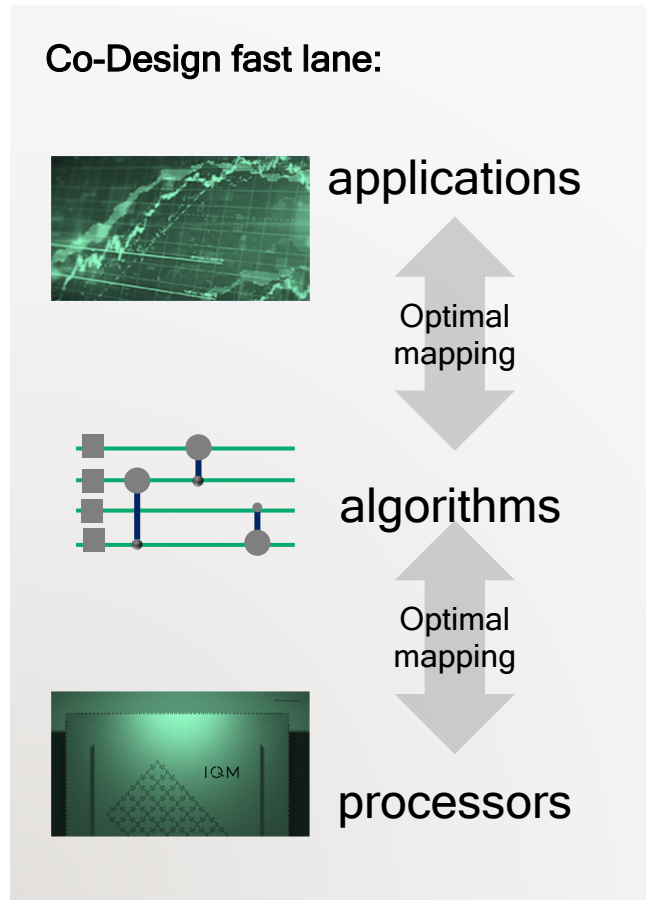
U.S. adds Chinese supercomputing entities to economic blacklist

By David Shepardson 2 MIN READ

WASHINGTON (Reuters) -The U.S. Commerce Department said Thursday it was adding seven Chinese supercomputing entities to a U.S. economic blacklist for assisting Chinese military efforts.

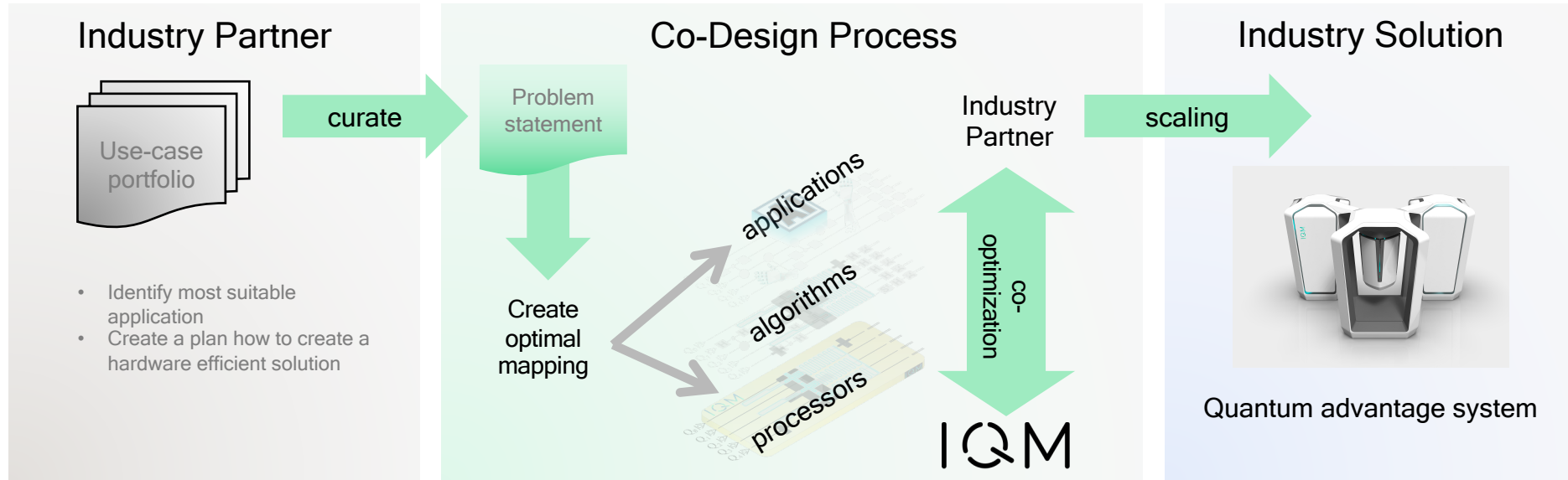
IQM's fast lane

We offer early market access in selected verticals for you



Go to market for co-design:

Innovation partnerships with thought-leading early adopters and market leaders



IQM is currently investigating several use-cases for co-design:

Pharma: Imaging in NMR

USP: Enhance image quality in magnetic resonance imaging (MRI)

Target clients: Siemens Healthineers, Bayer, GE, and others.

Chemistry: Material Design

USP: Dynamical mean-field theory (DMFT) for molecular simulations

Target clients: BASF, Covestro, Schrödinger, and others.

Finance: Derivative pricing

USP: Novel algorithm for derivative pricing of European options.

Target clients: JP Morgan, Goldman Sachs, BBVA, and others.

Multiphysics: Differential equations

USP: Quantum-computing neural-network differential-equation solver

Target clients: BMW, Volkswagen, Ansys, and others

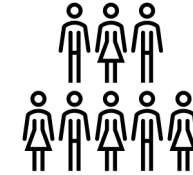
Logistics & control: Optimization

USP: Novel hardware architectures to enhance performance of quantum approximate optimization algorithm

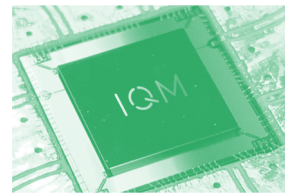
Target clients: VW, BMW, Airbus, and others.

Activities in Germany

- Growing the team to 40 experts by end of 2022 (20 today)



- Co-Design activities



IQM

fast lane through
co-design



quantum
advantage

- R&D collaborations with leading industrial and academic players



- Contribute to German ecosystem



Selected projects in Germany

- DAQC project: Explore digital analog approach (Infineon, LRZ, FUB, ParityQC)
- QLindA: Reinforcement Learning (Siemens, OTH Regensburg, Fraunhofer)
- Scalable cryogenic control electronics (in review)
- Quantum Accelerator for ecascale system (in review)
- Education/Training systems (in preparation)

Thank you!

