MAGNOLIA
QUANTUM SENSING

We develop and deliver the world's first **high-field optical quantum magnetometer for MRI**

Unlocking a new era of accuracy, efficiency, and global accessibility in advanced medical imaging

Challenge

MRI scanners are the most powerful diagnostics tools in modern medicine, but they are limited at the core, by imperfections in the magnetic field.

The results are very high patient costs due to:

- Reduced image quality
- Long scanning times

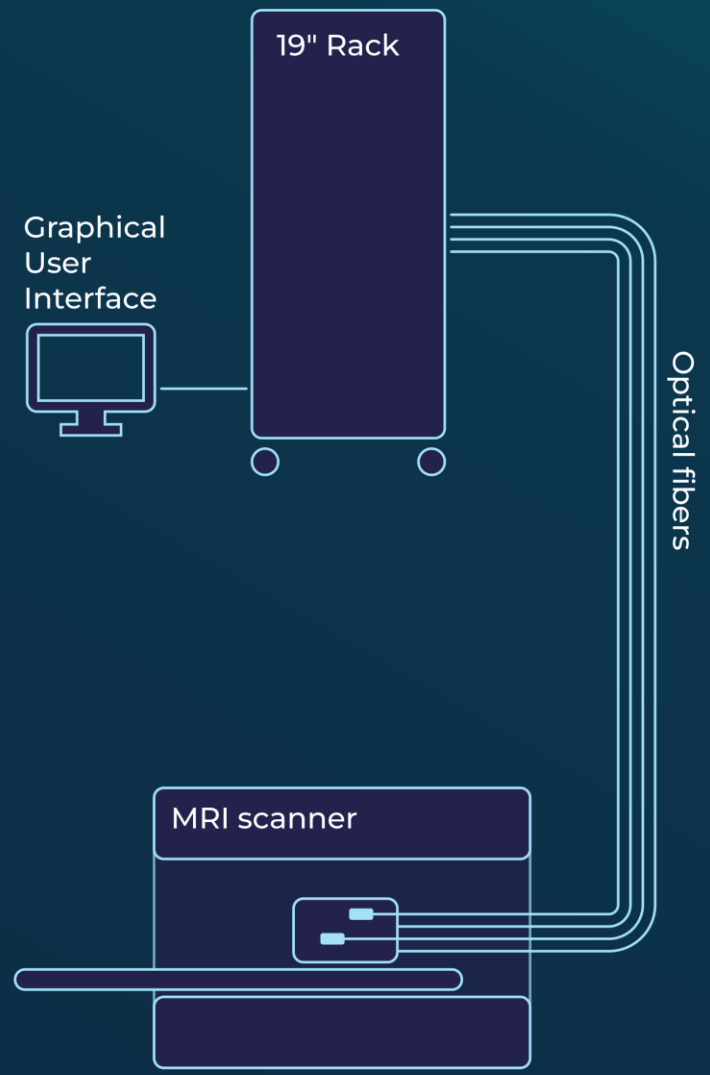
Annual global MRI scanning costs are estimated to be around 30 B€

Solution

Our novel **EXAAQ* probes** are the ideal solution for optically measuring the magnetic field in MRI scanners to

- Improve image quality, by using measurements in post-processing
- Unlock scans that are up to 3 times faster

Our system is designed for seamless integration into today's MRI systems, ensuring immediate compatibility without major modifications



*EXtreme Angular-momentum Absorption-spectroscopy Quantum
2 patents filed

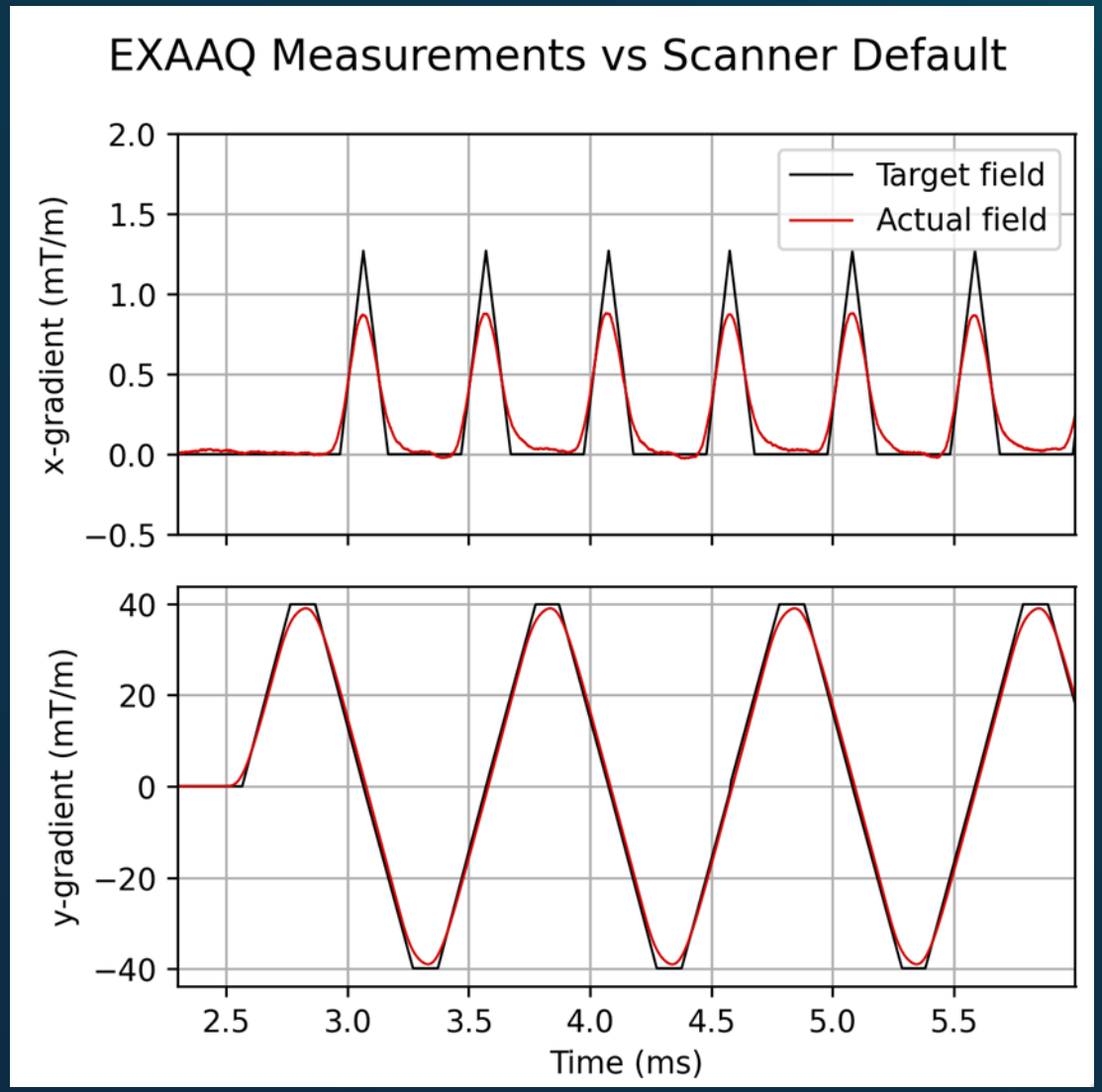
Prototype

- Full 19-inch rack integration
- Sensitivity better than 1 part-per-million

- Easy, invisible, and safe installation of 4 probes
- No electromagnetic interference with scanner

Proof of Concept

- Prototype delivers robust and consistent performance
- Sensor measurement fidelity has been **validated** against an independent MRI calibration scan
- Measurements, presented here, shows how the **actual field**, measured by the EXAAQ probes, deviates significantly from the **target field** that the MRI scanner is trying to create



New **unpublished** results

Competition

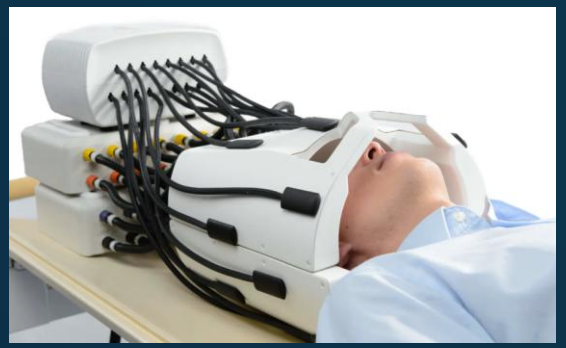
Swiss-based Skope, owned by Canon Medical System, is the only other player in the market, supplying **NMR probes** for field monitoring in MRI:

- Electromagnetic interference constraints and complicates integration in MRI scanner
- Pulsed measurements limit applications, and complicates workflow

Therefore, their product portfolio has become very expensive and addresses only a narrow range of applications. Their technology remains niche and is only used for very high-end research.

Skope product examples

Clip-on Camera: DIY integration



- Requires complex physical modification of MRI equipment to work
- Limited applications due to pulsed measurements
- Price: ~330,000 €

NeuroCam 3T: Integrated solution

- Limited use:
  - Brain scanning
  - Siemens scanners
  - 3 T
- Limited applications due to pulsed measurements
- Price: ~540,000 €

Comparison of MRI Operation

		No monitoring (Current practice)	NMR-monitoring	EXAAQ-monitoring
Simplified MRI design				
Calibration free				
Optimized image quality				
Accelerated scanning	Spirals			
	Strong gradients			
	Continuous readout			

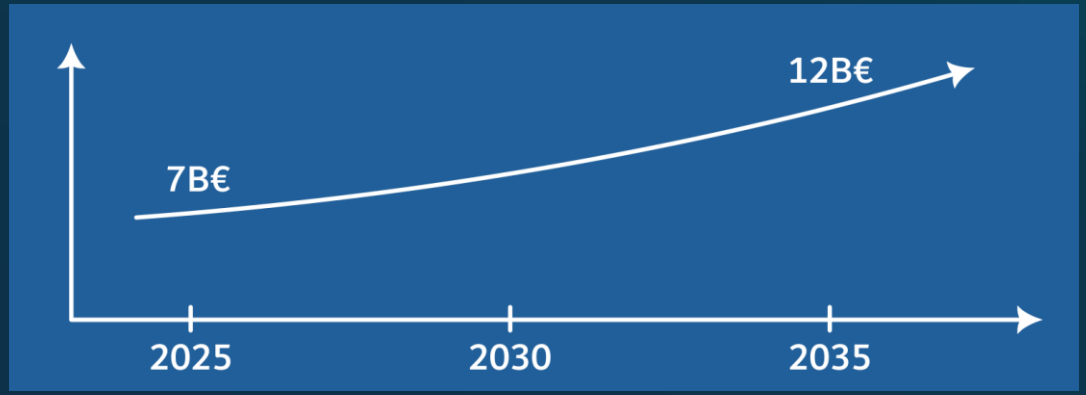
MRI Market

Total addressable market:	30 B€
➢ Scans pr. year:	100 M
➢ Price pr. scan:	300 €
Hardware market size:	7 B€
➢ MRI scanners globally:	50.000
➢ Annual installations:	6.000
➢ CAGR:	6.5 %

Staffing and running costs are the bottleneck!

- ➢ Opportunity for significantly reduced scan-time is ~15 B€

MRI hardware market



MRI Research – the *perfect* starting point

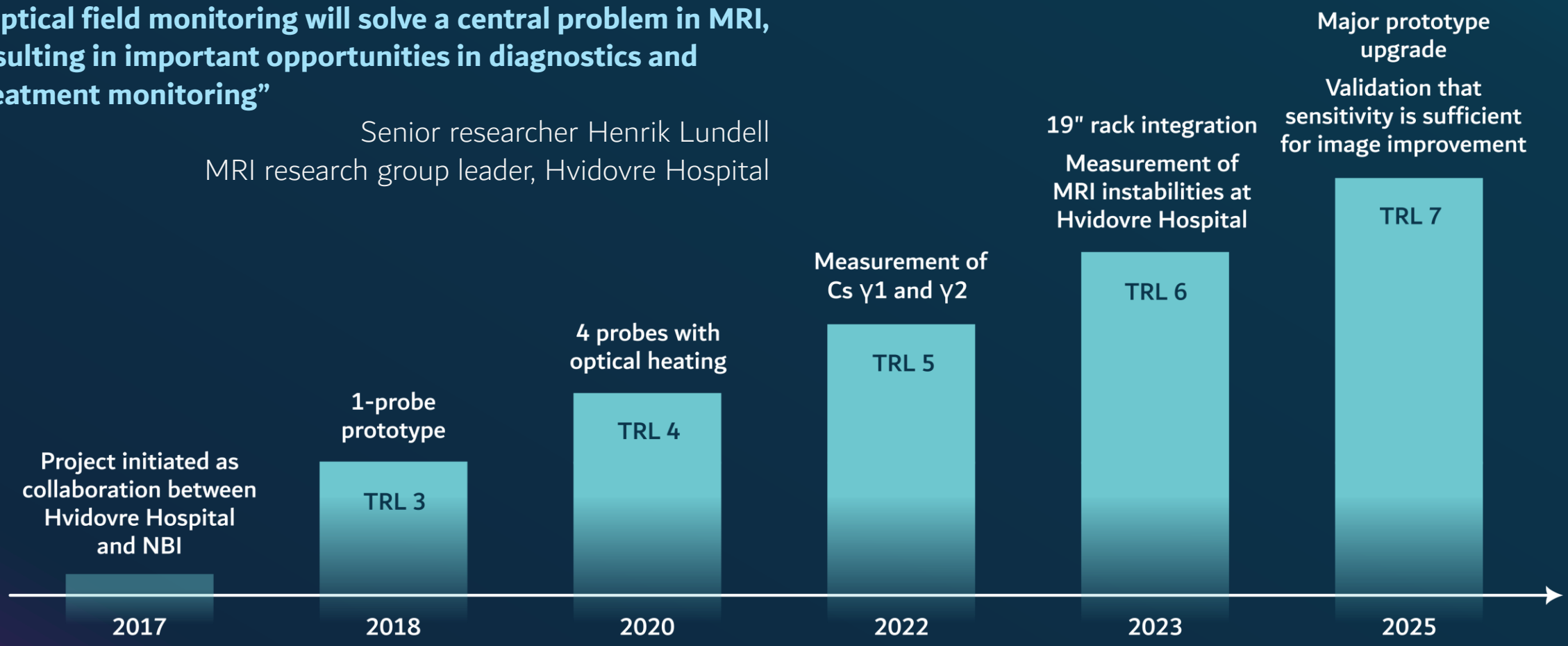
Scanners globally:	2.000
Addressable market:	100 M€

- ➢ Strong early revenue
- ➢ Important customer feedback
- ➢ No need for regulatory approval
- ➢ Data for clinical validation

Milestones 2017-2025

”Optical field monitoring will solve a central problem in MRI, resulting in important opportunities in diagnostics and treatment monitoring”

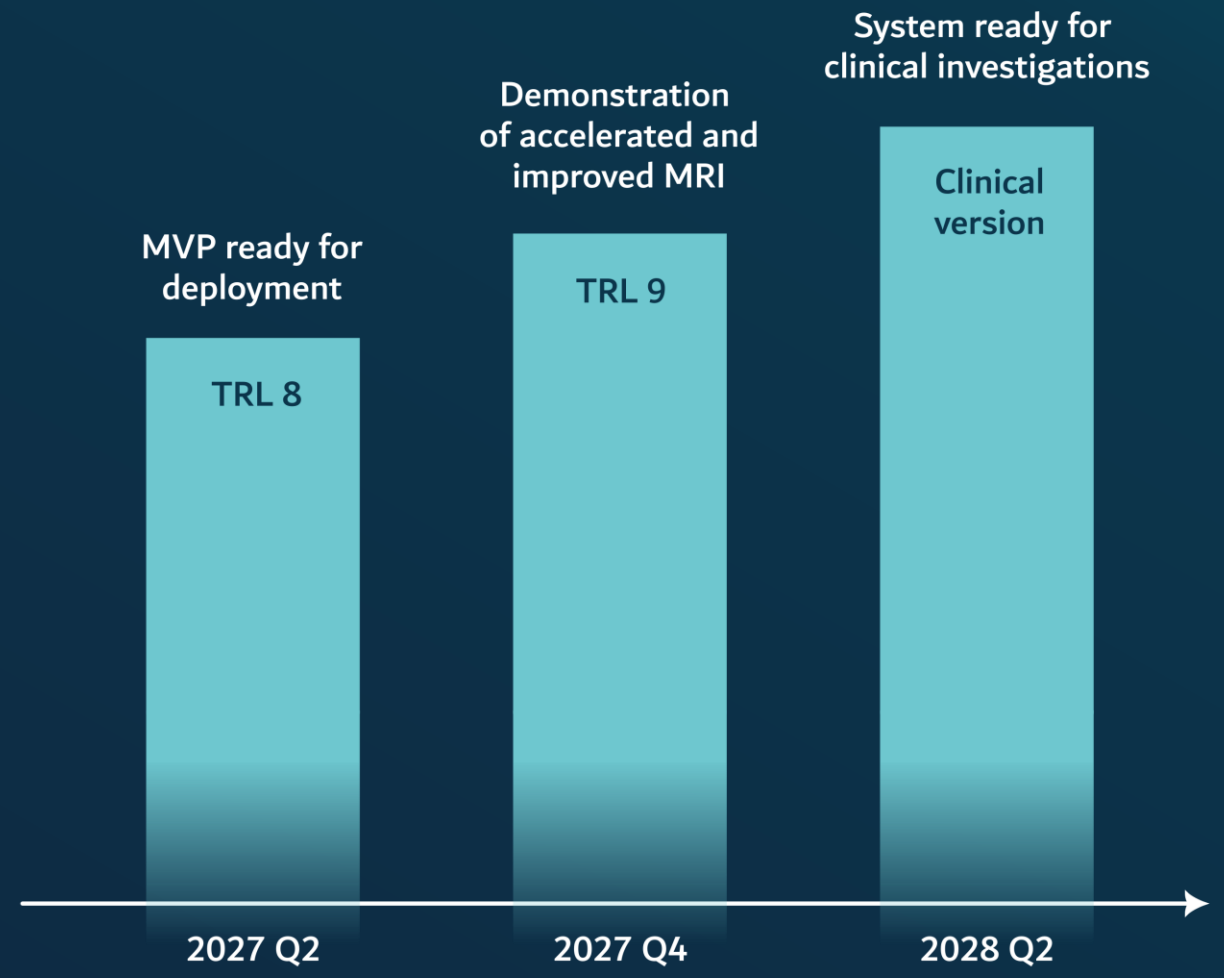
Senior researcher Henrik Lundell
MRI research group leader, Hvidovre Hospital



Roadmap

With the prototype now in use at Hvidovre Hospital, we want to

- Develop our MVP
- Generate initial revenue and commercial traction by 2027
- Demonstrate significant proof-of-concept in MR imaging
- Gather user feedback and data for medical approval



Testimonials

We have interactions with leading experts and organization from all over the World. All have reached out to us based on publications or conference presentations and have expressed a wish for a commercially available EXAAQ system.

"When such a field camera becomes available with sufficient sensing accuracy at an affordable price, we can imagine interesting applications for reduced cost, high speed, high quality and high precision MRI"

Dr. Ewald Rößl, R&D Leader, Imaging Innovation, Philips

"We would use the EXAAQ probes to improve our laminar fMRI, diffusion imaging, and pTx pulse design"

Professor Chris Rodgers, University of Cambridge

"That measurements are continuous seems particularly useful, as I know that this is a limitation of the Skope system"

Director Christopher Wiggins, INM-ICF Forschungszentrum Jülich

"Pushing gradient coils to the limit often results in unstable behavior. Optical field monitoring would be highly advantageous"

Head of MRI Torben Lund, CFIN, Aarhus University

"Measuring small respiration-induced field variations with EXAAQ probes would be of great benefit in spinal cord imaging"

Professor Julien Cohen-Adad, Polytechnique Montréal

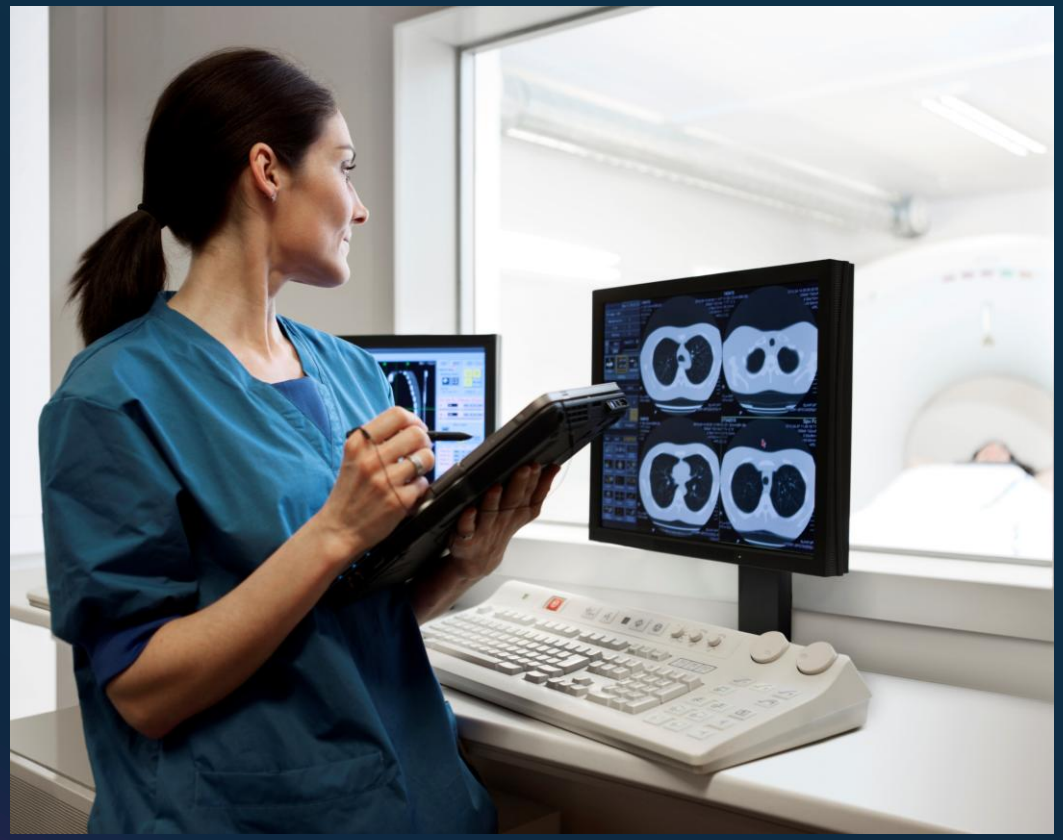
"This new technology is truly disruptive, and could be very beneficial in our work on fMRI with non-cartesian k-space sampling"

Professor Benedikt Poser, Maastricht University

Vision

We envision a future where MRI is guided by patient outcomes rather than cost constraints, allowing the technology to be used to its full potential for rapid, early, and highly accurate diagnosis.

Impact



With direct field measurements, we will redefine how MRI works – unlocking a new era of accuracy, efficiency, and global accessibility in medical imaging

- Scan time reduced to 33 %. Fewer repeat scans and a more comfortable and efficient experience for patients
- Costs reduced to 50 %. Broader global MRI adoption, lower referral threshold, and earlier diagnoses.

Team

Hans Stærkind, CEO

PhD, Quantum Optics/MRI, NBI/DRCMR

Business Development, Technology, Applications

EXAAQ technology development, MRI applications exploration, and business development since 2017

Asger Pedersen

MSc, Physics, Tokyo Tech

Technology, Production, R&D, Supply Chain

R&D project management in optics and semiconductor industry since 2019

Kristin Engel

PhD Fellow, MRI, DTU/DRCMR

Applications, User Experience, Marketing

Ultra-high field MRI engineering research since 2023, first research user of the EXAAQ prototype

Susanne Stærkind

MSc, Political Science, UCPH

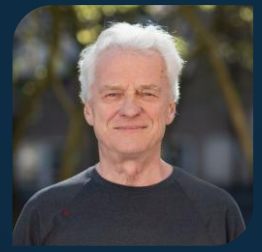
Administration, Organization, Communication

Work environment, organizational processes, negotiations, and legal interpretations in healthcare sector since 2018

Jörg Müller

Assoc. Professor, NBI

R&D Advisor



Eugene Polzik

Professor, NBI
Director, CBQS

Quantum Advisor

Kurt Stokbro

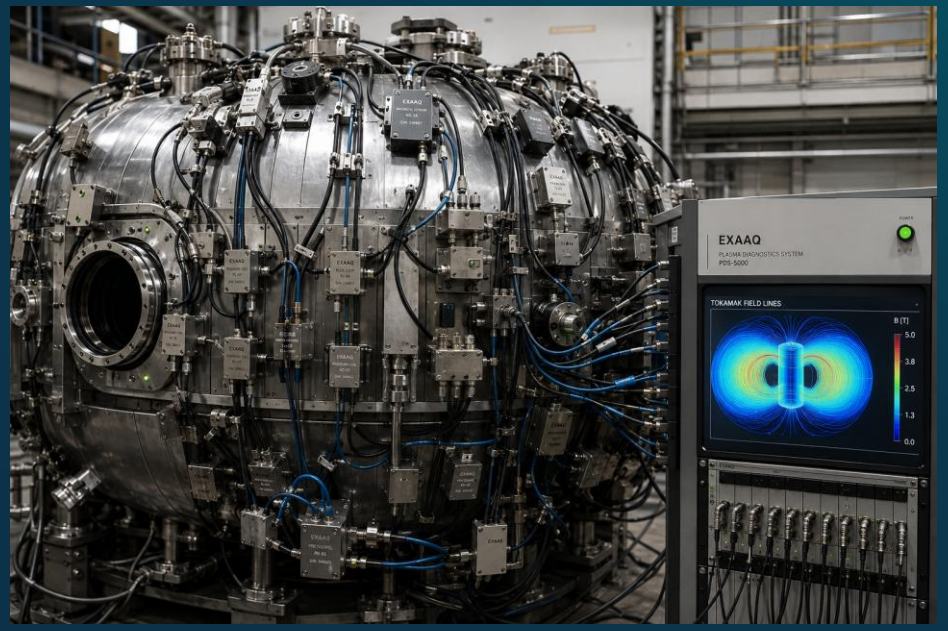
Serial Entrepreneur

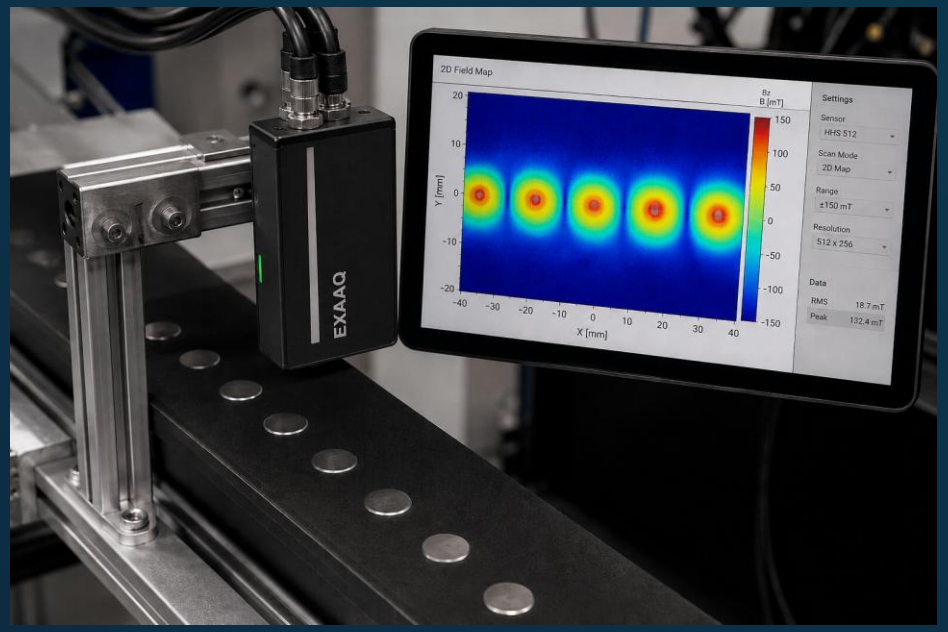
Investor
Business Advisor

Future Opportunities

Optical sensing of high magnetic fields is a new technology with important applications in many different fields, including

- Field monitoring in fusion energy
- Characterization of magnets for electric motors and generators





Example visualizations

Investment Opportunity

We are currently looking for pre-seed funding of 1.5 M€ to

- Transition the academic prototype to an MVP
- Complete first 2 sales
- Perform full demonstration of sensor data integrated in MRI workflow resulting in improved and accelerated MRI
- Develop clinical version: Higher sensitivity, better user interface, and lower footprint.

Reach out to Hans Stærkind

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- Mobile: +45 5057 4438