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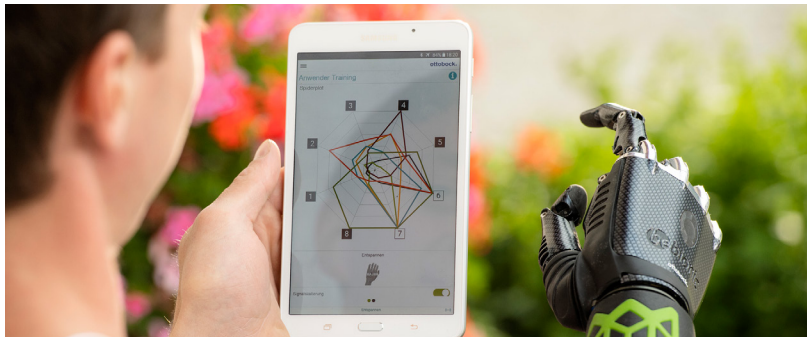
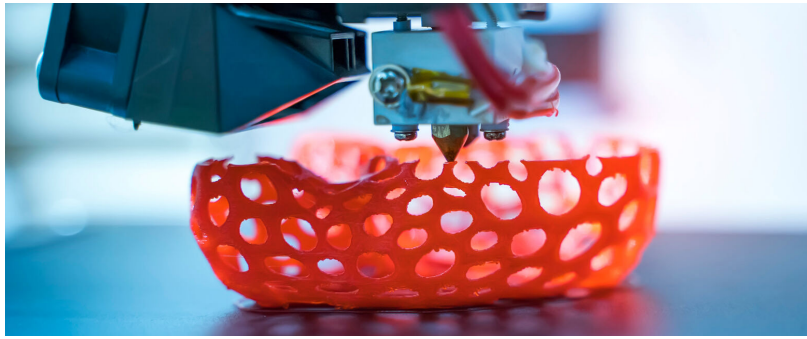




HealthTech in Berlin-Brandenburg's innovation ecosystem

A spotlight on cross-sector technologies

THE GERMAN CAPITAL REGION

excellence in life sciences & healthcare

Cross-sector Technologies in the Berlin-Brandenburg HealthTech Ecosystem

In the following, this overview introduces cross-sector technologies in the health sector that stand out in the Berlin-Brandenburg region and highlights representative ecosystem actors. The examples presented are selected based on outstanding research projects and notable industry players based in the capital region. They serve as illustrations of the broader innovation landscape.

Why Berlin-Brandenburg?

The Berlin-Brandenburg region stands out as a dynamic and integrated ecosystem for HealthTech innovation. It brings together:

- A dense network of more than 40 **research institutions** and **universities** (e.g., Charité, Fraunhofer, Hasso-Plattner-Institute)
- A vibrant **startup and industrial landscape** with global players and agile SMEs
- A strong **healthcare infrastructure** with over 140 hospitals and numerous specialized care facilities
- Access to **public and private funding**, including EU, federal and regional innovation programs
- A collaborative culture that fosters **cross-sector partnerships** between science, industry, and healthcare providers

This unique combination makes the region a prime location for international companies and researchers looking to develop, test, and scale HealthTech solutions.

Introduction

Berlin-Brandenburg has emerged as one of Europe’s most vibrant regions for health innovation. With its unique concentration of research institutions, hospitals, startups, and global industry leaders, the region offers fertile ground for developing, testing, and scaling cutting-edge solutions in healthcare.

Rooted in a strong tradition of medical technology, the region is home to renowned manufacturers such as Biotronik, Fiagon or Berlin Heart, exemplifying high-quality medical products. This industrial foundation is now evolving into new technological frontiers. Advances in AI, automation and connectivity are transforming how healthcare is delivered and experienced.

This report highlights selected technological fields shaping the bandwidth of health solutions. HealthTech here refers to technological solutions and medical devices, whether portable or stationary, that combine hardware and software components to enhance diagnostics, treatment, care delivery, and/or patient outcomes.

It is important to note that this report presents only a selection of examples from the Berlin-Brandenburg ecosystem and cannot reflect its full scientific and industrial breadth. It invites national and international investors, innovators, talents, and researchers to further explore a location where science meets entrepreneurship and where ideas become impactful solutions for the health challenges of today and tomorrow.

1. Artificial Intelligence (AI)

Artificial Intelligence is transforming healthcare by enabling predictive diagnostics, personalized treatment, workflow automation, and real-time data analysis. Key subfields include machine learning, natural language processing, and computer vision.

Berlin-Brandenburg plays a leading role in AI-driven healthcare innovation. The region combines strong academic institutions, cutting-edge clinical research, and a dynamic startup ecosystem supported by incubators, accelerators, and networks. With the **#ai_berlin Hub**, the capital region offers a unique platform for AI innovators that provides guidance, visibility, and opportunities to engage with Berlin's vibrant AI community.

Testing and Experimentation Facility for Health AI and Robotics (TEF-Health)

TEF-Health is an EU-funded initiative coordinated by Charité – Universitätsmedizin Berlin with a funding budget of 60 million EUR. It supports EU-based startups and SMEs in safely and efficiently integrating AI into medical devices and accelerating their path to market.

Further insights:
AI Berlin

Application examples

- **Radiology and pathology diagnostics:** Detection of anomalies in medical images for (early) disease detection
- **Natural Language Processing (NLP) and Speech Recognition:** Writing and speech-to-text solutions for automated medical documentation
- **Data analytics in patient care:** Analyses of large datasets for process optimization and forecasting of disease progression
- **Clinical decision support:** Evidence-based recommendations for diagnosis and treatment planning

Research organizations (excerpt)

- Berlin Institute for the Foundations of Learning and Data (BIFOLD)
- Berlin University of Applied Sciences and Technology (BHT)
- Brandenburg University of Technology Cottbus-Senftenberg
- Charité – Universitätsmedizin Berlin
- Fraunhofer Institutes:
  FOKUS, HHI, IESE, MEVIS, ZDD
- Freie Universität Berlin
- German Research Center for Artificial Intelligence (DFKI)
- Hasso Plattner Institute (HPI)
- Humboldt Universität zu Berlin
- Technische Universität Berlin

Industry Players (examples)
Aignostics
AI-powered pathology diagnostics (spin-off from Charité)
mediaire
AI-supported MRI diagnostics
Noah Labs
AI-based early detection of cardiac decompensation
Recare
AI-driven streamlining of hospital discharge management
Oracle Health
Clinical Digital Assistant (voice-enabled EHR support)

Newly established Institute for Artificial Intelligence in Medicine (IKIM) at Charité

The IKIM, established in November 2025, connects computer science with medicine and basic research in close collaboration with BIFOLD. It aims to reliably bring AI solutions into clinical care, demonstrate their benefits through evidence, and embed them in everyday practice. Under the leadership of Prof. Alexander Meyer, the institute is also developing a Charité-wide AI strategy and implementation guidelines with a focus on explainable AI methods.

2. Robotics

Medical robotics is rapidly advancing healthcare by improving patient mobility, safety, operational efficiency and accuracy. In Berlin-Brandenburg, this field benefits from a strong foundation in engineering, clinical collaboration, and applied research, where expertise spans from sensor-based rehabilitation devices to autonomous service robots. These technologies have an enormous potential to assist in care facilities and automate clinical workflows in the near future.

Industry Players (examples)
pi4_robotics
Service robots (nursing assistant) and lab automation solutions
Sphaira Medical
Autonomous vehicles for easy intra-hospital patient transport
Bearcover
AI- and radar-based monitoring and fall detection in nursing homes

Application examples

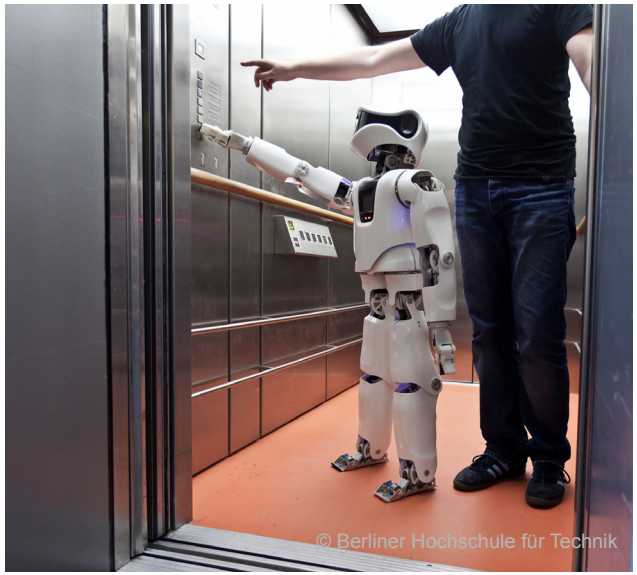
- **Mobility support and training**: Support of physical therapy in rehabilitation as well as mobility support for care givers (e.g. exoskeletons)
- **Monitoring and assistance in care facilities**: Patient monitoring, fall prevention and general support in care routines
- **Clinical logistics and automation**: Assistance with transport, disinfection, and workflow optimization in care environments

Research organizations (excerpt)

- Berlin University of Applied Sciences and Technology (BHT)
- Brandenburg University of Technology
- Charité – Navigation and Robotics Laboratory
- Fraunhofer Institutes IPK, HHI
- Technische Universität Berlin – Robotics and Biology Lab

Berlin's House of Robotics

Berlin's robotics landscape took a major leap forward with the opening of the 'Haus der Robotik' on 15 July 2025. Located at the Berlin University of Applied Sciences and Technology (BHT), the center brings together state-of-the-art labs from the Humanoid Robotics program with a focus on human-robot interaction, soft robotics, and industrial exoskeletons. As a public-facing innovation hub, it fosters exchange between academia, industry, and society, and offers insights into the future of automation for the public.



Further insights:
Manufacturing industries Berlin

3. Immersive Technologies (XR, AR, VR)

Immersive technologies — encompassing Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), collectively known as Extended Reality (XR) — are transforming healthcare by enabling new forms of interaction, simulation, and therapy. These technologies are increasingly integrated with AI, IoT, and 5G infrastructures to deliver real-time, location-independent experiences.

As an established media and creative industries hub, Berlin-Brandenburg combines strong narrative and content production capabilities with a thriving tech startup scene and a dense network of research institutions. This makes the region particularly well-positioned to lead in immersive software development for healthcare. XR research and development is driven by renowned institutes and universities, often in collaboration with the HealthTech industry.

Industry Players (examples)
Non Nocere
XR-based training and simulation for medical staff
data experts
XR solutions for surgical therapy planning and patient education
neomento
VR therapy for mental health (e.g. anxiety, addiction)
XRBB e.V.
Non-profit association for immersive technology innovators in Berlin-Brandenburg

Application examples

- **Medical training and simulation**: Realistic, risk-free environments for surgical training, anatomy education, and emergency response practice
- **Therapeutic interventions**: Cognitive therapy, pain management and rehabilitation training in immersive environments
- **Patient engagement**: Visualization of complex conditions supporting patients' understanding of medical conditions and treatments

Research organizations (excerpt)

- Charité - Experimental Surgery Lab
- Fraunhofer Institutes: HHI, MEVIS
- Technische Universität Berlin – REALITAETENLABOR

Experimental Surgery Lab at Charité

The Experimental Surgery Lab at Charité – Universitätsmedizin Berlin focuses on cutting-edge research in transplantation, regenerative medicine, digital surgery, and oncology. The team develops innovative therapies such as bioartificial organs, machine perfusion technologies, and mixed reality tools for surgical practice. Their interdisciplinary approach bridges clinical medicine with advanced technologies.

4. Surgical Innovations

Berlin-Brandenburg is a thriving center for surgical innovation, driven by a strong network of university hospitals, research institutions, and MedTech startups. The region is home to pioneering developments in minimally invasive surgery and surgical navigation systems. These innovations aim to improve precision, reduce recovery times, and enhance patient safety.

Industry Players (examples)
B.Braun
Equipment and therapy systems for minimally invasive surgery (Berlin: Cardiovascular interventions)
Biotronik
Cardiovascular medical technology for therapy, diagnostics and remote monitoring
Caresyntax
AI-powered, vendor-neutral platform for surgical operation and planning
Fiagon
Surgical navigation systems for ENT and spine
Olympus Surgical Technologies Europe
Competence center of Olympus for system solutions for minimally invasive surgery and endoscopy
Novanta (W.O.M. World of Medicine)
Equipment for minimal invasive surgery incl. camera systems and insufflators

Application examples

- **Surgical navigation systems**: Real-time imaging and instrument tracking systems for higher accuracy and less invasive operations
- **Minimally invasive surgery**: Advancements in laparoscopic and endoscopic techniques across disciplines such as general surgery, gynecology, and cardiology
- **Smart surgical tools**: Improved workflows and decision-making during procedures through integration of AI and robotics

Research organizations (excerpt)

- Berlin University of Applied Sciences and Technology (BHT) - Lab for Autonomous Surgery
- Charité - Experimental Surgery Lab & Navigation and Robotics Laboratory
- Fraunhofer Institutes: HHI, IPK, MEVIS
- Technische Universität Berlin

5. Additive Manufacturing

Additive Manufacturing (AM), or 3D printing, is transforming healthcare by enabling customized implants, prosthetics, devices, and bioprinted tissues. Unlike subtractive methods, AM builds objects layer by layer from digital models — offering design freedom, personalization, fast prototyping, and reduced material use.

Berlin-Brandenburg is a leading European hub for AM in life sciences. Driving this is the **AMBER** network (Additive Manufacturing Berlin-Brandenburg) that promotes collaboration and knowledge exchange between academia and industry. At its core are 12 research projects, six of them focused on life sciences, advancing innovation in personalized implants, bioprinting, and medical device design.

Industry Players (examples)
Formlabs
Manufacturer of 3D printers, specialized in SLA and SLS technologies
MGA Mobility|Medical goes Additive
Cross-sector industry network with a focus on AM applications in mobility and healthcare
PhantomX (an IBA company)
Patient-specific medical phantoms for diagnostic imaging systems validation
xolo
Volumetric 3D printing based on xolography for medical applications and optics

Application examples

- **Customized medical devices**: Patient-specific designs based on medical image processing and 3D scanning
- **Support in medical devices manufacturing**: Faster iteration and innovation in medical device design through rapid prototyping
- **Surgical Planning and Training**: 3D-printed anatomical models assist preoperative planning and training of surgeons
- **Bioprinting and Tissue Engineering**: Current advances in research on printed living cells for regenerative medicine

Research organizations (excerpt)

- Center for Hybrid Electric Systems Cottbus (chesco) at B-TU Cottbus
- Charité – Universitätsmedizin Berlin
- Fraunhofer Institute for Production Systems and Design Technology (IPK)
- Helmholtz-Zentrum Hereon-Institute of Active Polymers (Teltow)
- Technical University of Berlin (Chair MTAP)
- Werner-von-Siemens Centre

HealthTech projects within AMBER

- **AMVAD**: Patient-specific geometries for cannulas of high-risk cardiac devices
- **AVATAR**: Bioprinted, patient-specific tumor models for cancer research
- **Perfusion System**: Automated perfusion system for cultivation of 3D-printed, vascularized organ models
- **perKunSt**: Development of personalized, biodegradable stents for cardiac therapy
- **Personalised MRI-3D-Printing**: Hydrogel-based 3D printing system for personalized MRI phantoms
- **ProAStra Dental**: Highly automated, software-supported production chain for new dental prosthesis

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6. Sensor Technologies and Wearables

Sensor technologies and wearable devices are transforming healthcare in the capital region and beyond by enabling continuous, real-time monitoring of physiological and biochemical parameters. Wearables, ranging from smartwatches and biosensor patches to sensor-integrated textiles, are increasingly powered by AI, IoT, and cloud-based analytics, making healthcare more proactive and patient-centered.

Industry Players (examples)
DiaMonTech
Quantum cascade laser sensor for blood glucose monitoring
eemagine Medical Imaging Solutions
Neurotechnology and medical imaging solutions with advanced sensor technologies
Hologic
Advanced sensor technologies for high-accuracy diagnostics (focus women's health)
Jenoptik
Photonics-based solutions, e.g. for sensor integration, optical components and laser systems
Ottobock
Intelligent sensor-equipped prosthetics, orthotics, exoskeletons and neuromodulation textiles

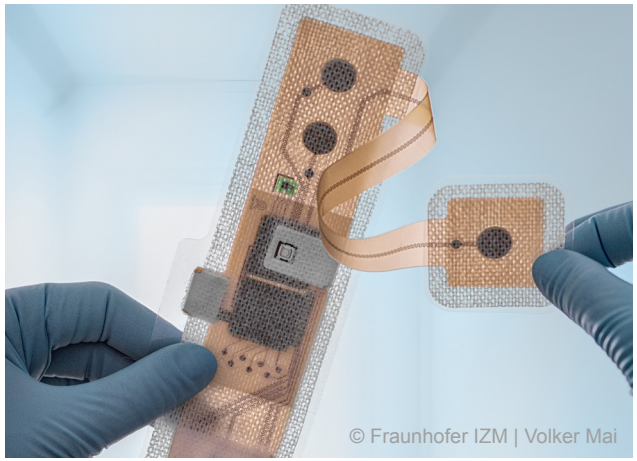
Further insights:
Photonics Cluster Berlin-Brandenburg

Application examples

- **Health Monitoring**: Continuous tracking of vital signs for early disease detection and chronic disease management in in-patient care and at home
- **Rehabilitation and Mobility**: Active gait analysis and neuromuscular feedback by wearable solutions and ambient assistive devices
- **Mental Health and Stress Monitoring**: Mobile and continuous assessment of emotional states by modern sensor technology

Research organizations (excerpt)

- Berlin Institute of Health (BIH) at Charité
- Berlin University of Applied Sciences and Technology (BHT)
- Brandenburg University of Applied Sciences: THB
- Charité – Universitätsmedizin Berlin
- Ferdinand-Braun-Institut (FBH)
- Fraunhofer Institutes: FOKUS, HHI, IPMS, IZM
- iCampus Cottbus at B-TU Cottbus
- Leibnitz Institute for High Performance Microelectronics
- Technische Universität Berlin – Chair of Sensor and Actuator Systems



7. Quantum Technologies – Future Prospects

Quantum technologies, spanning quantum computing, sensing, and communication, are redefining the boundaries of what is possible in medicine. By leveraging phenomena such as superposition, entanglement, and tunneling, these technologies offer new capabilities in diagnostics, drug discovery, and secure data handling.

Berlin-Brandenburg is positioning itself as a European hotspot for quantum innovation with an outstanding research landscape. Initiatives such as **Berlin Quantum**, supported by 25 million Euro in state funding, unite leading universities, research institutes, and industry actors. While most advancements are still in the research phase, the field is rapidly evolving, and many breakthroughs are expected to move into real-world applications soon.

Application examples

- **Quantum Sensing for Diagnostics**: Detection of biomarkers with ultra-high sensitivity, enabling cutting-edge non-invasive diagnostics
- **Secure Data Transmission**: Potential of quantum key distribution (QKD) for ultra-secure transmission of sensitive medical data
- **Quantum Computing**: Potential of quantum algorithms to outperform classical ones in analyzing genomic and clinical data for tailored treatment options

Further insights:

Photonics Cluster Berlin-Brandenburg

Research organizations (excerpt)

- Brandenburg University of Technology
- Charité – Universitätsmedizin Berlin
- Deutsches Elektronen-Synchrotron DESY (Helmholtz Institute)
- Ferdinand-Braun-Institute (FBH)
- Fraunhofer Institutes: FOKUS, HHI, IZM
- Freie Universität Berlin - Dahlem Center for Complex Quantum Systems
- Humboldt Universität zu Berlin
- Joint Lab "Integrated Nonlinear Quantum Optics"
- Max Delbrück Center
- Physikalisch-Technische Bundesanstalt (PTB)
- Technische Universität Berlin
- Zuse Institute Berlin

Berlin's Center for Biomagnetic Brain Research

On October 20, 2025, Charité and PTB launched a pioneering center for biomagnetic brain research using optically pumped magnetometers (OPMs). These quantum sensors allow high-resolution, real-time brain activity measurement at room temperature. The center aims to improve diagnostics for neurological disorders like Parkinson's, epilepsy, and schizophrenia through advanced quantum-based magnetoencephalography.

QuantumCardiology-AI

The research project, launched in November 2025 by Humboldt-Universität zu Berlin and MSB Medical School Berlin, pioneers the fusion of quantum sensor technology and artificial intelligence to revolutionize heart diagnostics. Led by Prof. Niels Wessel, the initiative uses deep learning to detect subtle patterns in the heart's magnetic field, enabling earlier and more precise identification of cardiovascular diseases. Based on thousands of magnetocardiography datasets, the project aims to deliver non-invasive, near real-time diagnostics and invites collaboration from clinics, industry, and research.

Outlook

The HealthTech ecosystem in Berlin-Brandenburg is as diverse as it is dynamic. Its strength lies not only in individual technological excellence, but in the **interdisciplinary collaboration** across sectors. Innovations in the described key technology areas are increasingly converging to create integrated solutions for diagnostics, treatment, and care.

What makes the region truly exceptional is its **cross-industry innovation landscape**. HealthTech here is shaped by impulses from telecommunications (e.g. 5G/6G infrastructure), creative industries (e.g. gamification and design thinking), FashionTech (e.g. smart textiles for monitoring), energy systems (e.g. sustainable hospital technologies), mobility (e.g. vital signs monitoring in cars) and more. These sectors contribute technologies and mindsets that are rapidly finding application in medical contexts.

Berlin-Brandenburg offers a unique setting where **science, industry, and creativity** interact for fruitful collaboration. For international investors, researchers, and entrepreneurs, the region is not only a place to discover innovation, but also a place with high potential to shape the future of healthcare.

Further information and resources

As the central platform for the region's healthcare and life sciences sector, the Cluster HealthCapital Berlin-Brandenburg plays a key role in connecting stakeholders, accelerating innovation, and strengthening the international visibility of the regional HealthTech ecosystem.

- Life Sciences Directory Berlin-Brandenburg
- Life Sciences Report Berlin-Brandenburg
- Publications of the Cluster HealthCapital
- The Digital Health Ecosystem Berlin-Brandenburg
- Newsletter subscription: German & English
- LinkedIn Channel Cluster HealthCapital
- Business Location Service Berlin
- Startup Map Berlin-Brandenburg

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HealthCapital
BERLIN BRANDENBURG

Joint cluster management for a strong healthcare region

The **Healthcare Industry Cluster Berlin-Brandenburg – HealthCapital** supports and connects stakeholders from business, science and healthcare in the German capital region. The task of the cluster management is to implement the Healthcare Region Master Plan of the state governments of Berlin and Brandenburg and to further develop the region internationally as a leading center for the healthcare industry and life sciences. The joint cluster management is the responsibility of Berlin Partner for Business and Technology and the Economic Development Agency Brandenburg.

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