

# RESEARCH NEWS

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**Fraunhofer at DMEA 2025**

## **AI, Robotics and Connected Data Spaces — Practical Solutions for Digital Healthcare**

**To unlock the potential of digital solutions for uses in healthcare, the solutions need to be suitable for real-world practice and fit seamlessly into existing processes and workflows. That is the only way they can ease the burden on healthcare workers. At the same time, the field needs trustworthy AI systems that ensure secure exchanges of sensitive health data — across different sectors, without data protection and privacy risks and with full control for patients. Eight Fraunhofer institutes will be jointly presenting solutions to these challenges at the DMEA 2025 trade show, held in Berlin from April 8 to 10, 2025. The researchers will be present at Booth D-109 in Hall 2.2, where they will use exhibits and demonstrators to provide exciting glimpses of the health IT of the future and will also be available to talk with attendees.**

With its interdisciplinary approaches to research and solutions geared toward real-world needs, the Fraunhofer-Gesellschaft is a key point of contact for pioneering technologies in healthcare. From AI-supported diagnostics to connected health data spaces and assistive robots, Fraunhofer is making the digital transformation efficient, secure and suitable for day-to-day practice.

### **Trustworthy AI models for greater transparency in medical decisions**

Artificial intelligence (AI) is increasingly being used in diagnostic and therapeutic applications, but there is skepticism toward “black box” models, which are not transparent. At the DMEA event, the Fraunhofer Institute for Cognitive Systems IKS will be showcasing trustworthy AI models that use ECG data or medical images to arrive at solid insights. These models not only ensure greater transparency in medical decisions but also provide predictions that can be interpreted.

Also at the DMEA, the Fraunhofer Institute for Digital Medicine MEVIS will be presenting its solutions for risk assessment and decision-making support. One exhibit will show how AI can be combined with clinical data to develop image-based digital biomarkers and thus improve diagnosis.

Another exhibit will be demonstrated by the Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS. The institute has devised a doctor’s letter generator,

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based on generative language models, that shows how AI can streamline time-consuming but essential medical documentation. This solution makes it possible to generate doctor's letters automatically from structured and unstructured medical data sources.

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**Robots in nursing: Multifunctional assistance systems free up staff for other tasks**

In the future, robots may play a crucial role in healthcare, not just for transporting materials but also in documentation and diagnostics. The Fraunhofer Institute for Manufacturing Engineering and Automation IPA will be present at DMEA, demonstrating a multifunctional robot assistant as a solution that combines various tasks involved in nursing, allowing for cost-effective use. Fraunhofer MEVIS designs and integrates AI-supported assistance systems, such as the voice- and touch-controlled nursing assistant LUKAS and features for sensor-based monitoring of heart disease.

**Personalized patient treatment through interactive data analysis**

Personalized patient treatment is based in part on combining a wide range of different patient data for decision-making and on assembling and analyzing cohorts. The Fraunhofer Institute for Computer Graphics Research IGD develops tools for interactive visual data analysis in close coordination with clinical partners. The Anylytics analytics dashboard supports self-service analysis functions in both medical and pharmaceutical research. The Fraunhofer researchers will be at the joint booth to present the results of projects in the fields of rheumatology, nephrology and chronic inflammatory bowel disease.

**Federated data spaces for connected care**

Health data is often isolated in different systems, so important information can be lost between hospitals, medical practices and transitional or long-term care facilities. The Fraunhofer Institute for Software and Systems Engineering ISST develops concepts, architectures, prototypes and components of federated and interoperable health data spaces. Data space projects focusing on infrastructure, data use, services and applications will be presented at DMEA.

**More transparency and control over health data**

Electronic patient records are intended to facilitate access to medical data, but many patients have a hard time understanding the big picture when it comes to their health data and putting that information to work for them. Fraunhofer IGD and the National Research Center for Applied Cybersecurity ATHENE have teamed up to work on secure, interactive platforms that enable intuitive and understandable access to medical data. This allows patients to view their health information in a visual format, decide which items to release and prepare their data in a format that members of their care team will

understand. The experts are scheduled to present these interactive new options and explain the underlying approach to data security at Booth D-109 in Hall 2.2.

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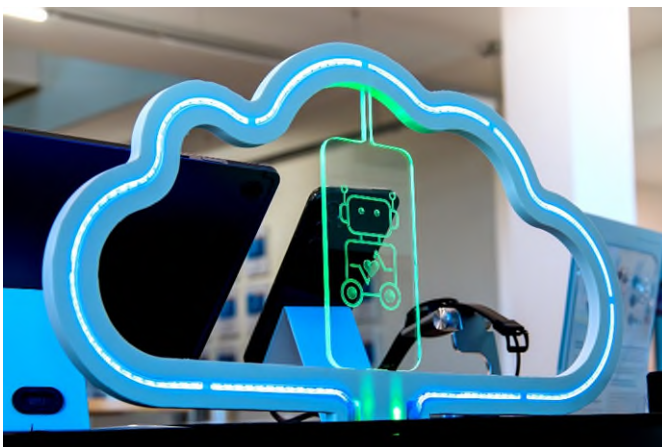
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### Digital healthcare for rural areas

The Fraunhofer Center for Digital Diagnostics ZDD plans to show how digital healthcare can be improved in rural areas. Their Neighborhood Diagnostics exhibit offers an interactive demonstration of project goals and simulates different scenarios involving people's health. It shows how health data is collected via smartphones and wearables and then transferred to treating providers once it is released. The exhibit also illustrates how the ecosystem uses the aggregated health data to better gauge patients' overall health and support physicians as they decide which treatment avenue to pursue. Beyond that, the SODIAPH project shows how data breaches in digital patient paths within a hospital setting occur and where effective measures can be implemented to achieve direct improvements in data consistency.

In this context, contactless collection of vital signs is becoming an increasingly important part of telehealth and occupational health management. At the DMEA, Fraunhofer IGD is scheduled to present its CareCam and Guardio technologies, which enable continuous and discreet health monitoring, both at home and in emergency situations. CareCam logs vital signs such as pulse, breathing and posture and homes in on subtle changes in facial expression and blinking behavior to detect stress. Guardio can turn a smartphone into a mobile ECG device.

Further information: <https://www.fraunhofer.de/en/events/fraunhofer-at-trade-fairs/2025/dmea.html>



**Fig. 1** Fraunhofer ZDD shows smart medical technology using the Neighborhood Diagnostics project exhibit: revolutionizing healthcare through connected data spaces.

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