

WE LINK RESEARCH AND HEALTHCARE!

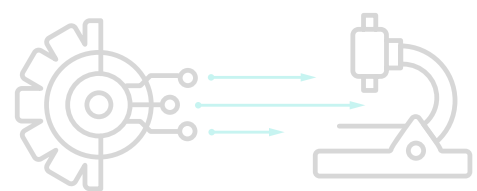
SMITH. SMART MEDICAL TECHNOLOGY FOR HEALTHCARE.



Big data in clinical information systems has enormous potential for tomorrow's healthcare. The re-use, aggregation and analysis of medical data from routine care will drive the development of new and improved treatments, medicines and technologies. This is the goal of SMITH.

Through our work, we aim to link research and healthcare in a targeted and privacy-compliant manner. To this end, we have established central technological interfaces at the participating university medical centres within our national partner network. In close cooperation with the German Network of University Medicine (NUM), we are developing these further in the current funding period.

The so-called data integration centres process the health data generated in everyday clinical practice and make the data available in standardised form for medical research. The IT solutions developed have been tested and proven on the basis of clinical and methodological use cases. This has enabled us to develop mobile applications in the fields of intensive care and infectious diseases, which are now in clinical use.



All our work is based on the informed consent of patients, who make a significant contribution to improving medical care by providing their data.

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SMITH is one of four consortia in the Medical Informatics Initiative (MII). The consortium is funded by the German Federal Ministry of Education and Research (BMBF) with more than 4 million euros for the consolidation and extension phase (2023 - 2026).
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THE MEDICAL INFORMATICS INITIATIVE A GROWING NETWORK

Since 2018, the Medical Informatics Initiative (MII) has been building interoperable data infrastructures at university hospitals. Routine medical data from patient care is to be digitally networked nationwide and made available for medical research. In the four consortia DIFUTURE, HiGHmed, MIRACUM and SMITH, all university hospitals in Germany are working together with research institutions, companies, health insurance

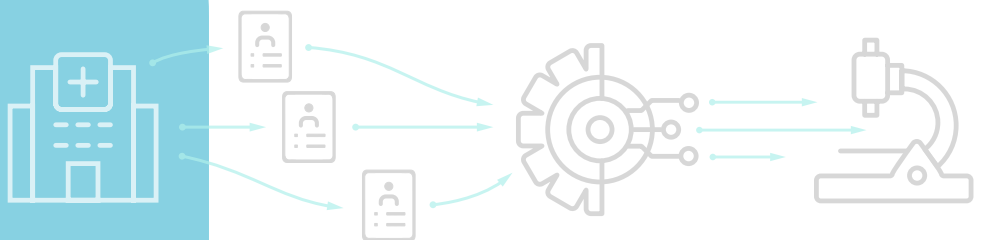
companies and patient representatives to develop the necessary framework conditions. In the current consolidation and extension phase (2023 - 2026), the focus is on expanded cooperation between the university hospitals and cooperation with new partners, especially from regional health care. The consolidation and extension phase is funded by the BMBF with around 200 million euros.

NEW SERVICES FOR MEDICAL RESEARCH

THE FUNCTIONALITY OF THE DATA INTEGRATION CENTRES



The Data Integration Centres, initially established at university hospitals as part of the Medical Informatics Initiative (MII), create the conditions for secure and privacy-compliant access to high-quality data from routine healthcare. Based on a variety of legal and organisational measures, medical data are centrally consolidated in one place, harmonised, and made available for further use in research and analysis projects. Research results are also fed back into healthcare through the Data Integration Centres. The Data Integration Centres are networked nationwide to enable cross-location projects to be carried out according to uniform national standards.

The role of the Data Integration Centres goes beyond networking. They are also service providers for clinical researchers, offering advice on data use in compliance with data protection regulations, possible data analyses and quality-assured data management. In the past, patient data often had to be collected from local systems in a time-consuming process, but the Data Integration Centres now make research much easier. An important component of this infrastructure is the German Portal for Medical Research Data (FDPG). It is intended to serve not only MII partners but all researchers as a central point of contact when they want to use data and biospecimens from the participating sites.



During the development and networking phase of the MII (2018 - 2022), SMITH was able to establish seven Data Integration Centres at the university medical locations of Aachen, Bonn, Essen, Halle, Hamburg, Jena and Leipzig, and to anchor them permanently in their organisational structure. The partners Düsseldorf University Hospital, Rostock University Medical Center and Ruhr University Bochum are currently in the process of establishing a Data Integration Center. In the current funding period (2023 - 2026), SMITH will further expand the already established data infrastructures in close cooperation with the German Network of University Medicine (NUM) and test them in use cases in cooperation with the DIFURE, HiGHmed and MIRACUM consortia.

AT A GLANCE SERVICES OF THE DATA INTEGRATION CENTRES

-  Establish IT procedures to process medical data and make it available in a standardised form
-  Manage project-related data access and provision based on patient consent and pseudonymisation procedures
-  Process data use requests and obtain peer review from a Data Use and Access Committee
-  Participation in the design and implementation of research projects to ensure legally, ethically, and technically optimal data use

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FROM THEORY TO PRACTICE

METHODOLOGICAL AND CLINICAL USE CASES

We demonstrate the functionality of our Data Integration Centres through practical use cases. Together with our partners, but also with the DIFUTURE, HiGHmed and MIRACUM consortia as well as new partners from research, regional care and industry, we want to demonstrate the possibilities of digital services and infrastructures in healthcare. The ASIC, HELP and PheP Use Cases have been implemented within SMITH on a consortium basis. With the consolidation and extension phase, the BMBF is increasingly promoting networking within the Medical Informatics Initiative through cross-consortium use cases.

SMITH USE CASE ASIC (01.01.2018 – 31.12.2023)

Algorithmic Surveillance in Intensive Care

With ASIC, SMITH is promoting the improvement of patient care through the use of existing routine clinical data. One example of this is the treatment of patients with acute respiratory distress syndrome (ARDS). The ASIC App acts as an early warning system, alerting healthcare professionals to potential ARDS.

SMITH USE CASE HELP (01.01.2018 – 30.06.2023)

Guideline-based Use of Antibiotics in Infectious Medicine

The aim of HELP is to support clinicians in regular and intensive care units in making decisions about infectious diseases. The HELP App provides information on antibiotic diagnosis and therapy for staphylococcal bloodstream infections. Results from HELP will feed into the consortium-wide use case RISK PRINCIPE from 2023..



USE CASE POLAR (01.02.2020 – 31.12.2022)

Detection of health risks with polymedication

The POLAR Use Case has made a significant contribution to improved medication management. In the cross-consortium use case, led by SMITH, automated methods were developed to capture personal medication data from routine care as well as drug prescriptions from pharmacies. POLAR continues in the INTERPOLAR Use Case.



USE CASE PHEP (01.01.2018 – 31.05.2023)

Data platform to support clinical evaluation projects

In the methodological use case, SMITH is developing innovative ways to automatically extract medical information from electronic patient records. PheP also provides a platform for distributed analysis. The current body of knowledge from PheP will be continued and extended in the cross-consortium use case GeMTeX.



USE CASE INTERPOLAR (01.01.2023 – 31.12.2026)

Reduction in clinically relevant drug interactions

The INTERPOLAR Use Case is based on the cross-consortium POLAR Use Case. While POLAR has focused on the early detection of adverse drug interactions, INTERPOLAR applies the results to clinical practice. The aim is to reduce the workload of ward pharmacists and provide more targeted care for patients. The four MII consortia and other partners from academia and healthcare are involved in INTERPOLAR. SMITH is leading the use case, which involves a network of 20 partners.



USE CASE GEMTEX (01.06.2023 – 31.08.2026)

Automated indexing of medical texts for research

GeMTeX uses the knowledge and preliminary work from SMITH's own Use Case PheP. The aim is to make medical texts from patient care available for research in an anonymised form. For this purpose, a large collection of German medical texts from daily patient care will be created. GeMTeX is a cross-consortium use case led by SMITH, bringing together 17 partners from academia, IT and healthcare.

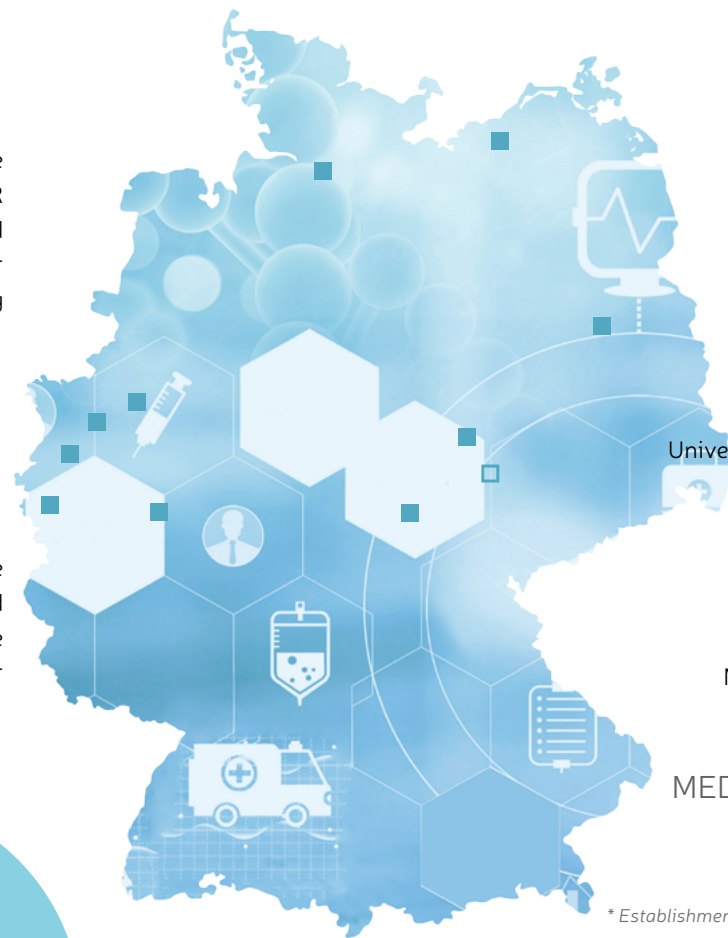
DIGITAL HUB DISTANCE (01.07.2021 – 30.06.2025)

Targeted Prevention and Therapy after Intensive Medical Treatment

As part of the Medical Informatics Initiative (MII), the BMBF is funding six Digital Hubs (2021 - 2025). Their task is to transfer the preliminary work of the MII to all areas of the healthcare system in pilot projects. DISTANCE is developing artificial intelligence methods to better predict the course of disease after intensive care and to provide more targeted therapy. The planned PICOS App will accompany patients in outpatient aftercare. SMITH supports DISTANCE in project coordination.

OUR PARTNER NETWORK

CONSOLIDATION AND EXTENSION PHASE 2023 – 2026



CONSORTIUM MANAGEMENT

Leipzig University, SMITH Office

CONSORTIUM PARTNERS

University Hospital RWTH Aachen *
Ruhr University Bochum *
University Hospital Bonn *
Düsseldorf University Hospital *
Essen University Hospital *
University Medicine Halle *
University Medical Center Hamburg-Eppendorf *
Jena University Hospital *
University of Leipzig Medical Center *
Rostock University Medical Center *

ASSOCIATED PARTNER

Martin-Luther-University Halle-Wittenberg

COORDINATION OFFICE MEDICAL INFORMATICS INITIATIVE

TMF e. V. Office Berlin

* Establishment and expansion of a Data Integration Centre at the site

During the development and networking phase (2018 - 2022), we were also supported by:

Averbis GmbH | Bayer AG | Jülich Research Center | Fraunhofer Institute for Software and Systems Engineering ISST | Friedrich Schiller University Jena | ID Information und Dokumentation im Gesundheitswesen GmbH & Co. KGaA | März Internetwork Services AG | RWTH Aachen University

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