Prof. Dr. Hans-Ulrich Prokosch
Chair of Medical Informatics,
Friedrich-Alexander-University Erlangen-Nürnberg
CIO of Erlangen University Hospital

MEDICAL INFORMATICS IN RESEARCH AND CARE IN UNIVERSITY MEDICINE

Prokosch  Acker  Neumaier  Binder  Boeker
We are exemplary for scaling up to nationwide data integration

We are large!

- eight University Hospitals and Medical Faculties
- two Universities of Applied Science
- one SME
- across five German States
- associated with four German Health Research Networks (Lung, Cardiovascular and Infectious Diseases, Oncology)
We are exemplary for scaling up to nationwide data integration

We are large!

- eight University Hospitals and Medical Faculties
- comprising ¼ of all German University Hospitals
- handling clinical and research data of more than 10 Mio. patients
We are exemplary for scaling up to nationwide data integration

We are large!

- eight University Hospitals and Medical Faculties
- comprising ¼ of all German University Hospitals
- handling clinical and research data of more than 10 Mio. patients
- covering a large patient catchment area

Map was generated based on in-patient data loaded into the eight MIRACUM DIC.
We are active, organized and transparent

- > 120 users of the Confluence collaboration platform
- > 60 jour fixe meetings of the steering board and working groups (online and person-to-person)
- > 20 MIRACUM team training Webinars
- Active participation in all NSG working group workshops with full online documentation for all team members
We have already strengthened Medical Informatics

Conceptual Phase
• seven new biomedical informatics professorships
  • three have already been filled

Networking and development phase
• commitment for six more biomedical informatics professorships
We bring disciplines together
Medical Informatics ReusAble eCo-system of Open source Linkable and Interoperable software tools – X

- pragmatic
- modular
- reusable
- open source
- interoperable
- federated
**MIRACOLIX ecosystem**

**Medical Informatics Reusable eCo-system**

of **Open source Linkable and Interoperable software tools** – X

- pragmatic
- modular
- reusable
- open source
- interoperable
- federated

<table>
<thead>
<tr>
<th>TALEND ETL</th>
<th>i2b2</th>
<th>ii2b2</th>
<th>RELMA</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainzel-liste</td>
<td>Molgenis</td>
<td>OMOP</td>
<td>gICS</td>
<td>oAuth</td>
</tr>
<tr>
<td>tranSMART</td>
<td>...</td>
<td>...</td>
<td>XNAT</td>
<td>FHIR</td>
</tr>
<tr>
<td>iRODS / CKAN</td>
<td>IHE</td>
<td>cBioportal</td>
<td>ARX</td>
<td>...</td>
</tr>
</tbody>
</table>
We quickly got off the ground
We quickly got off the ground
We quickly got off the ground

Federated data integration centers based on MIRACOLIX 0.9

Bring the analysis to the data

Erlangen
Frankfurt
Freiburg
Gießen

R-Script
SQL-Statement

Magdeburg
Mainz
Mannheim
Marburg
Federated data integration centers based on MIRACOLIX 0.9

Bring the analysis to the data

Two clinical research questions:

- Stroke / Thrombectomy Analysis of Guideline Adherence
- Colorectal Cancer Analysis of Treatment Patterns
We quickly got off the ground

Federated data integration centers based on MIRACOLIX 0.9

Bring the analysis to the data

Regional differences in thrombectomy rates: Secondary use of billing codes in the MIRACUM (Medical Informatics for Research and Care in University Medicine) Consortium


Two clinical research questions:

- Stroke / Thrombectomy
  Analysis of Guideline Adherence

- Colorectal Cancer
  Analysis of Treatment Patterns

to be submitted to:

Marburg
We quickly got off the ground

Federated data integration centers based on MIRACOLIX 0.9

Bring the analysis to the data

aggregated results

Two clinical research questions:

- Stroke / Thrombectomy Analysis of Guideline Adherence
- Colorectal Cancer Analysis of Treatment Patterns
We cooperate with other consortia

Federated data integration centers based on MIRACOLIX 0.9

Bring the analysis to the data
MIRACUM use cases enhancing research and care proving the value

**Alerting in Care**
- IT Support for Patient Recruitment
- Medical Informatics / Clinical Trials

**From Data to Knowledge**
- Clinico-molecular Predictive Knowledge Tool
- Biostatistics / Prediction Models / Med. Inf.

**From Knowledge to Action**
- Support for Molecular Tumor Boards
- Bioinformatics / Medical Informatics / Precision Medicine
MIRACUM use cases enhancing research and care proving the value

Alerting in Care
- IT Support for Patient Recruitment
- Medical Informatics / Clinical Trials

From Data to Knowledge
- Clinico-molecular Predictive Knowledge Tool
- Biostatistics / Prediction Models / Med. Inf.

From Knowledge to Action
- Support for Molecular Tumor Boards
- Bioinformatics / Medical Informatics / Precision Medicine
The team

Thank you very much for your attention
The team and cooperation partners / scientific advisors


Thank you very much for your attention