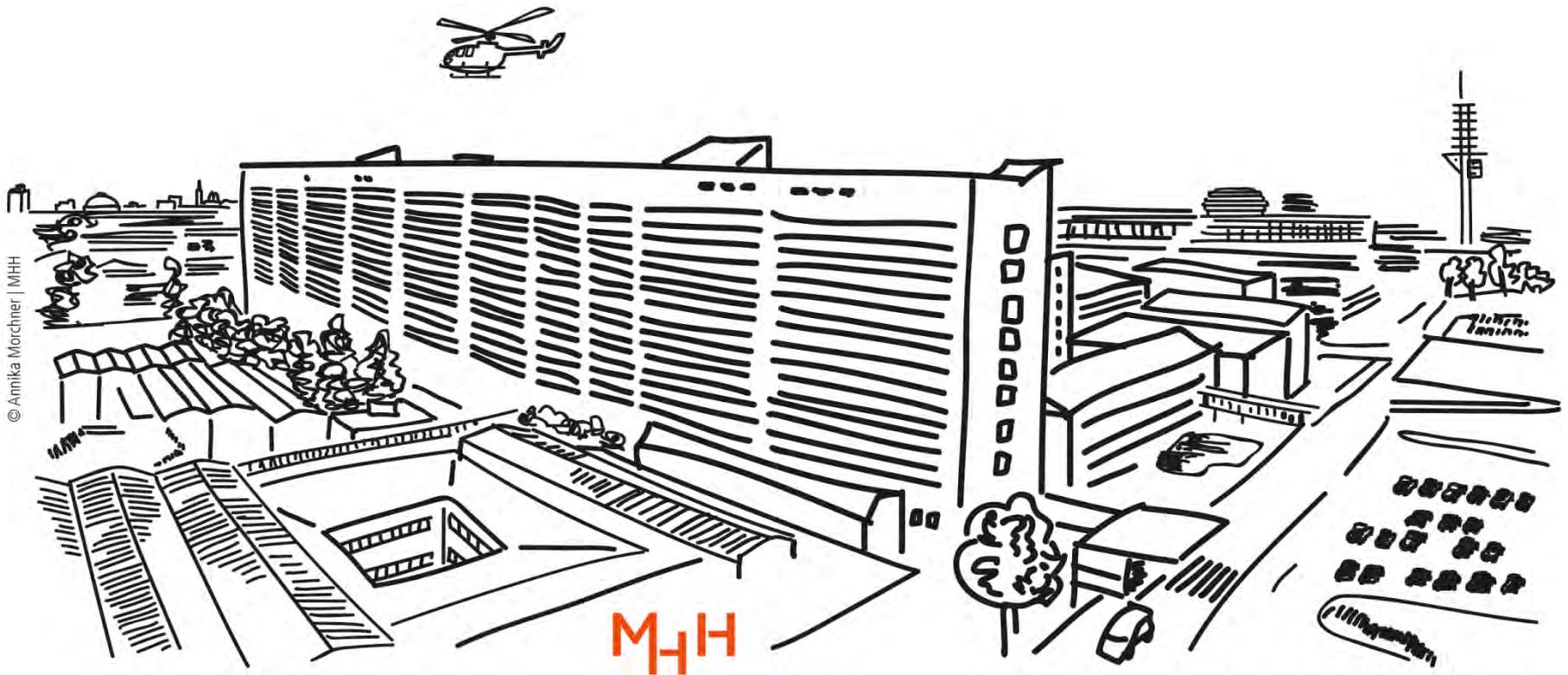


# Management of bio sample related data in the oncological context of the Hannover Medical School (MHH)

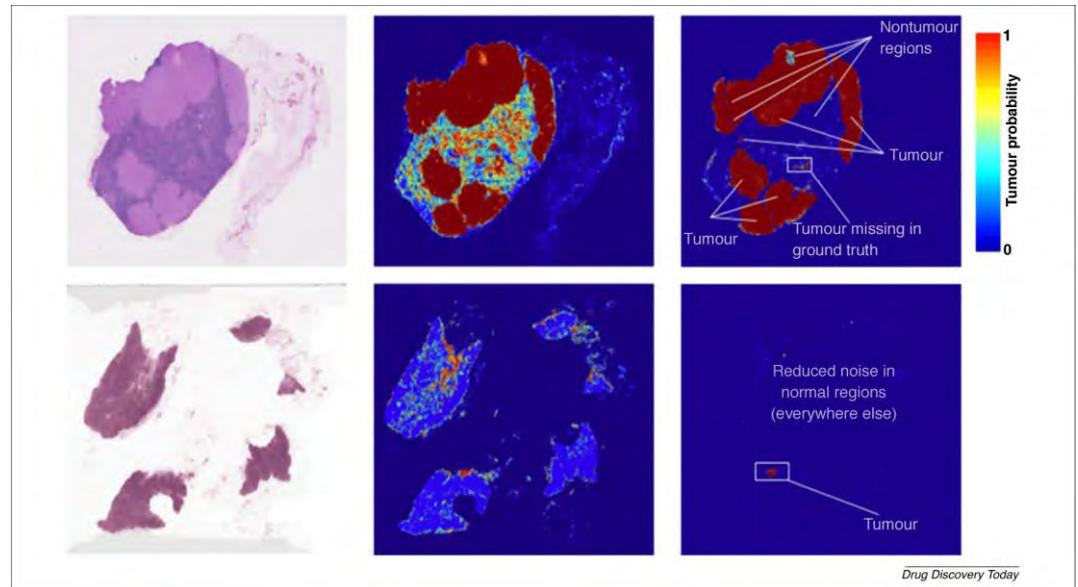
Markus Kersting  
([kersting.markus@mh-hannover.de](mailto:kersting.markus@mh-hannover.de))

8. Nationales Biobanken-Symposium Berlin, 04.12.2019



# What's ahead?

- Motivation
- Goal
- Big picture
- Conclusion



*Google's deep learning tumor prediction heat map*

<https://emerj.com/ai-sector-overviews/deep-learning-in-oncology/>

# CCCN

## Comprehensive Cancer Center Niedersachsen (lower saxony)

- 2 main sites
  - Universitätsmedizin Göttingen (UMG) and
  - Medizinische Hochschule Hannover (MHH)
- 30.000 oncological patients per year
- 12 associated partners (hospitals)
- 8 million people (habitants) in supply area
- About 1.600 patients in clinical studies in 2018
- About 500 scientific papers in oncology in 2018



>>> Central biobank needed for application



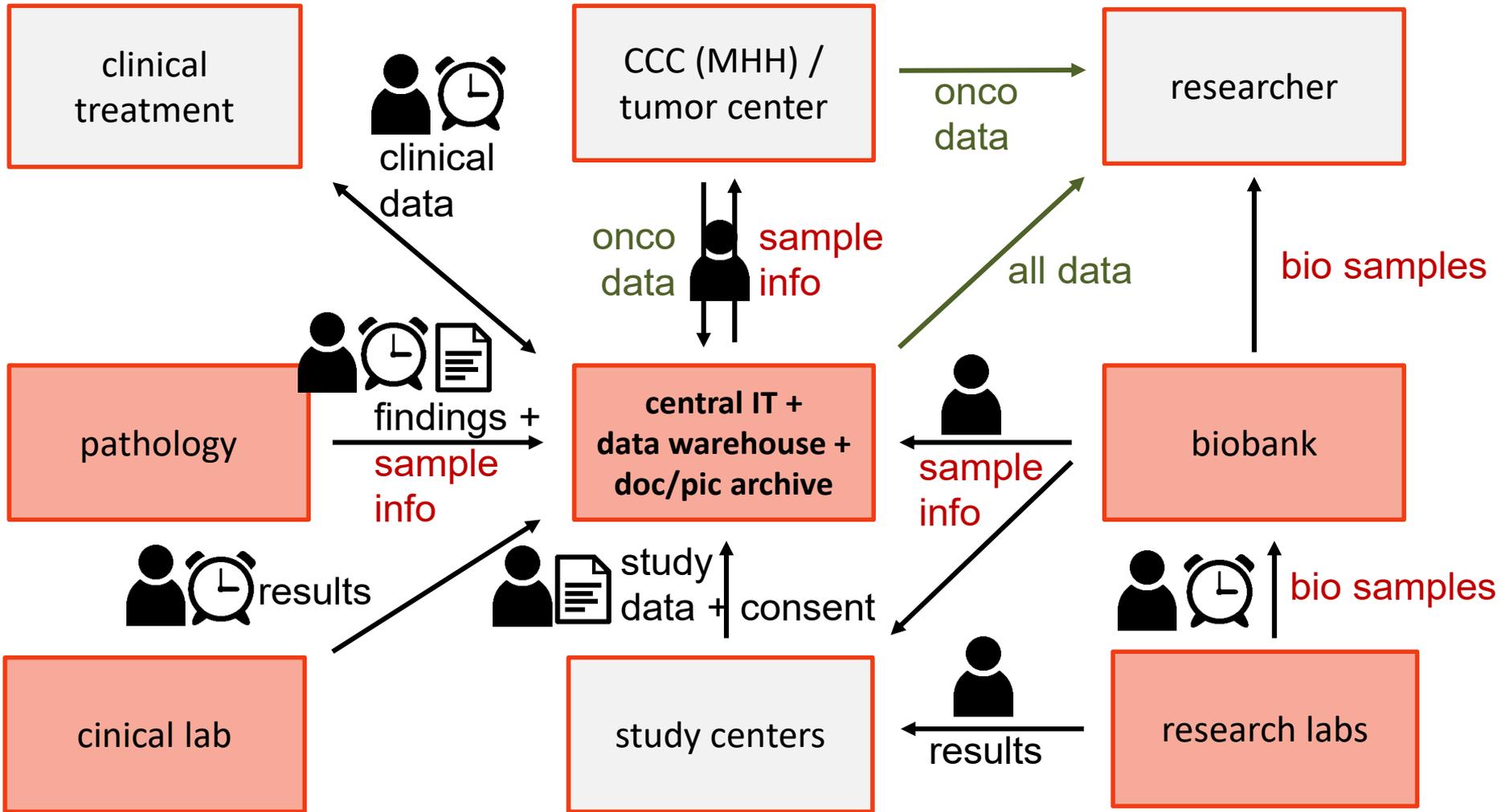
# GOAL



Management of all  
oncological data  
linked to bio samples  
at the MHH

- Short term
  - Get it up & running
  - Meet CCC application requirements
- Long term
  - **F** indable: Google can do that for us later
  - **A** ccesible: We can do that if we WANT
  - **I** nteroperable: 😏 ... MHH first!
  - **R** e-use: let's try this first!  
Avoid redundance and double data entry,  
e. g. one time capture of TNM state!

# stakeholder, units & data (inhouse only)



unstructured



time-critical



patient scope

MHH

Hannover Medical School

# Findings & Conclusions



- **Central IT coordination is essential**
- **Agile IT change management is needed**
- CCC is an **additional IT context** (compared to existing „clinic, administration & research“)  
> **responsibilities have to be clarified**
- **Minimal data set for bio samples to deploy**  
via data warehouse & communication server
  - Patient-ID, collection date, sample type, sample location (top level)
- **Structured findings in pathology** needed (e.g. coded TNM, ICD-O etc.)
- **Structured findings can be deployed using existing HL7** (Health Level 7)  
infrastructure e.g. using encapsulated FHIR (Fast Healthcare Interoperability Resources)
- 3 data dimensions can help **categorizing data use cases**:
  - **Patient scope vs. global scope** (across projects, clinics ...)
  - **Time horizon** for data access (short/critical or not)
  - **Structured vs. unstructured data**
- In the long run **EVERY data is research data**

# What's next?



- CCC application
- Deploy basic bio sample storage infos via HL7/FHIR
- Establish structured e-consent deployment
- Improve central electronical study register
- Integrate all oncological data into DWH für re-use
- Harmonize with Universitätsmedizin Göttingen (UMG)
- Re-Use ONCOSTar-Queries from UMG in MHH
- Re-Use (FHIR-)resources from GBA (German Biobank Alliance)

Last thought:

**„Medical research needs structured, validated data. Maybe artificial intelligence (AI) can help a lot in supporting clinicals and study personal to ease structured data capture and verification.“**

# FHIR-Zangenbowle

e.g. <http://fhir.germanbiobanknode.de/fhir/CodeSystem/GbaSampleMaterialType>

End

