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## Collaborative Approaches towards Interoperable, Secure Medical Data Sharing

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# Challenges towards the Application of AI in Healthcare

How can we achieve harmonized data structures?



How can we define consistent (broad) consent and governance policies?



How can we objectively measure and optimize data quality?



How can we securely implement ML training and application?



Routine Clinical Data

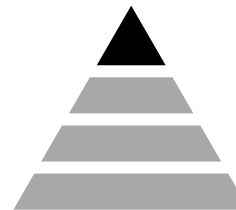
Patient Consent

Governance of data access

Structured Clinical Datasets

Training of ML Models

Application of AI in Healthcare



# The German Medical Informatics Initiative (MII)

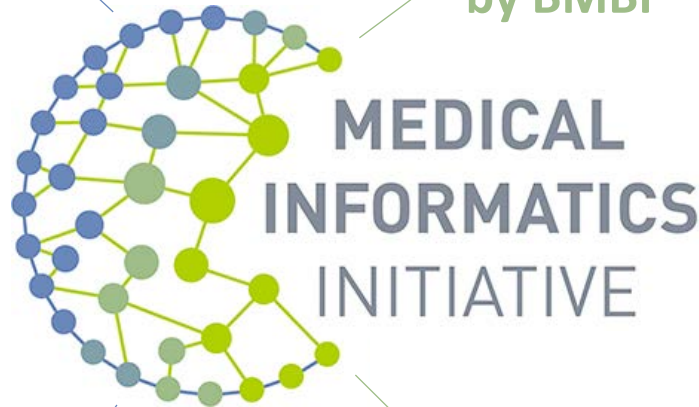
Nationwide Coverage of all University Hospitals

Foster re-use of routine clinical data

160 M€ funding by BMBF



Demonstrate utility through clinical use cases



Strengthen Medical Informatics as a discipline

Long-term perspective

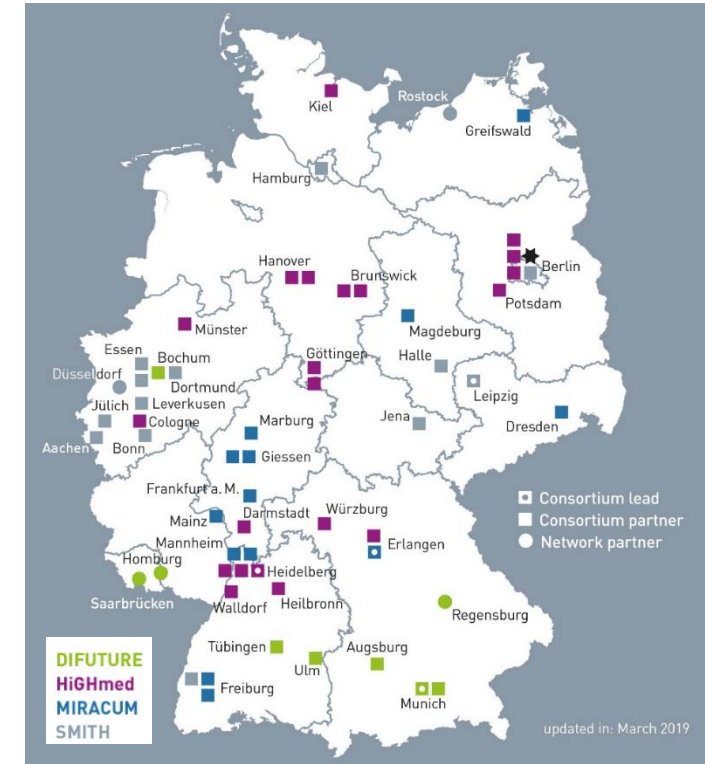
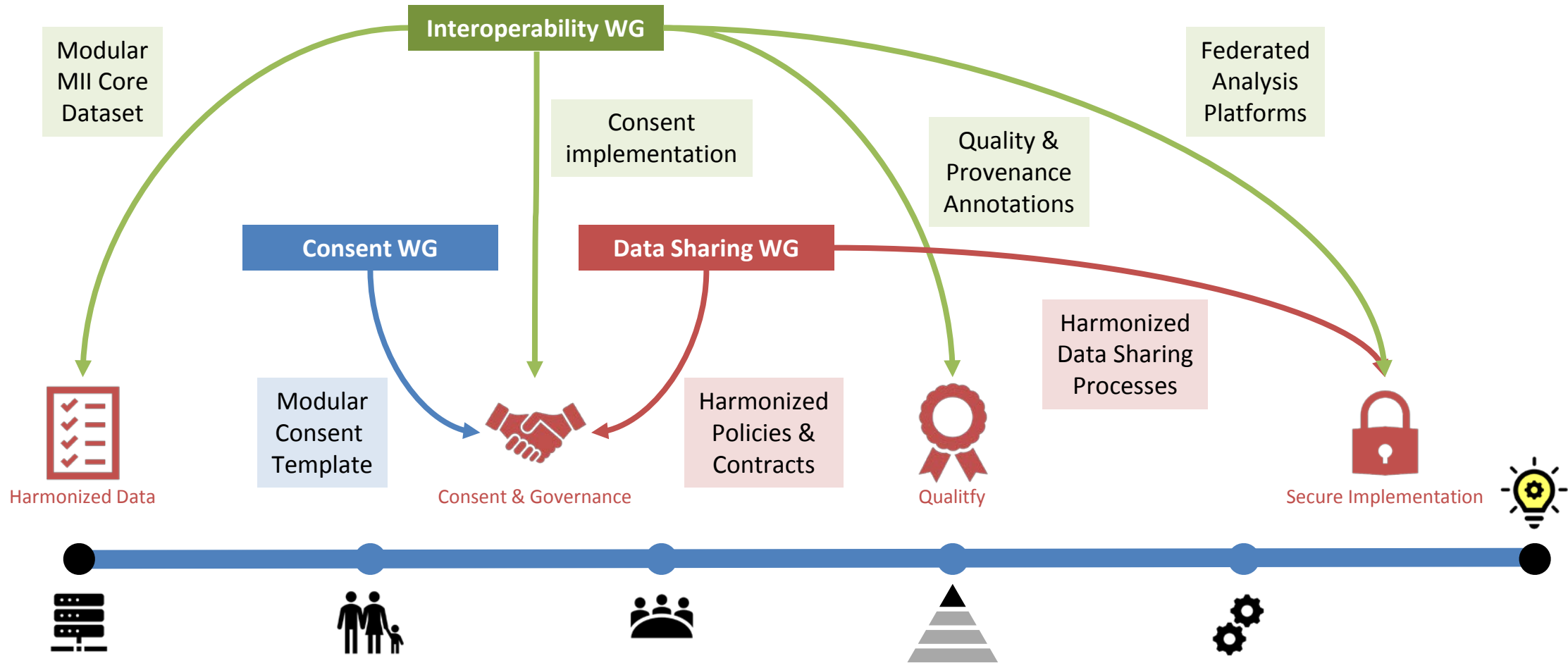


Image source: <http://www.medizinformatik-initiative.de/en/node/5>



# Collaborative solutions through MII Working Groups



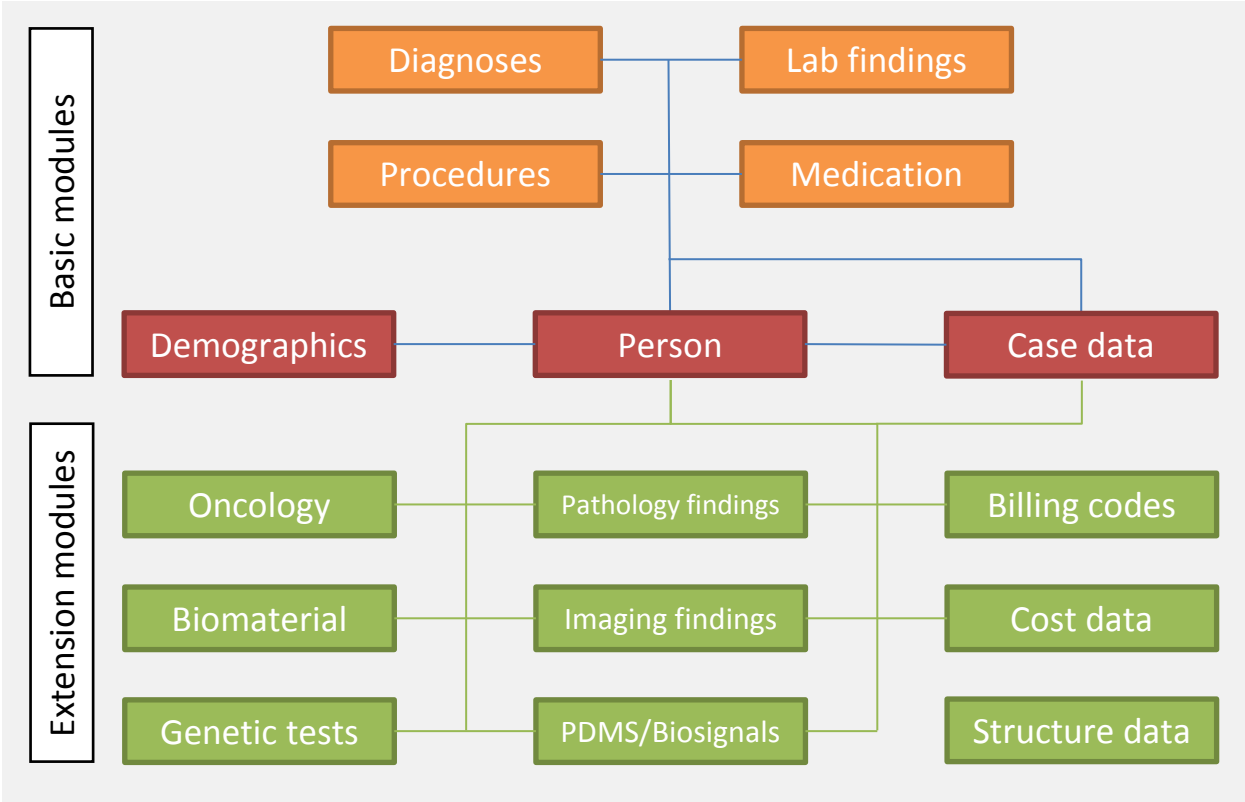
# Interoperability WG

# MII Modular Core Dataset

Data structures based on HL7 FHIR Standard



Semantic annotation based on international terminologies



Collaborative tools for requirements specification and data modelling



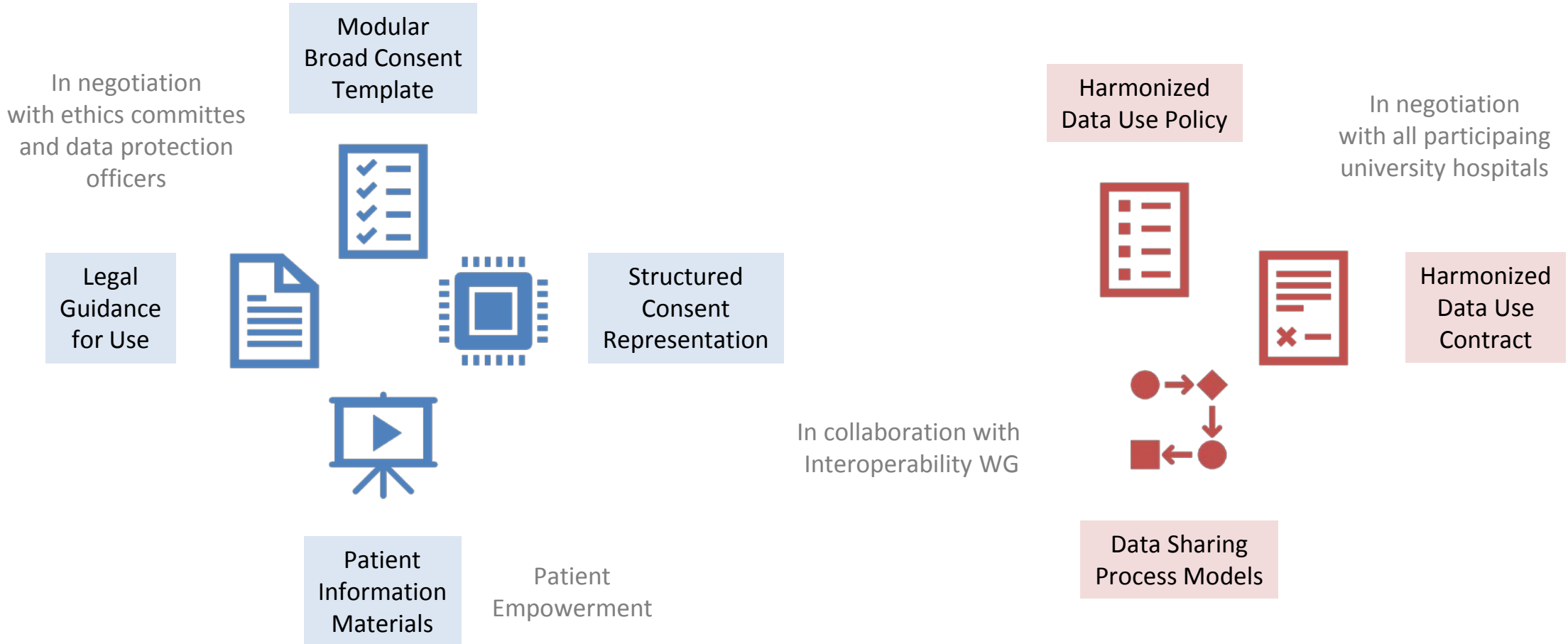
Open governance processes and balloting



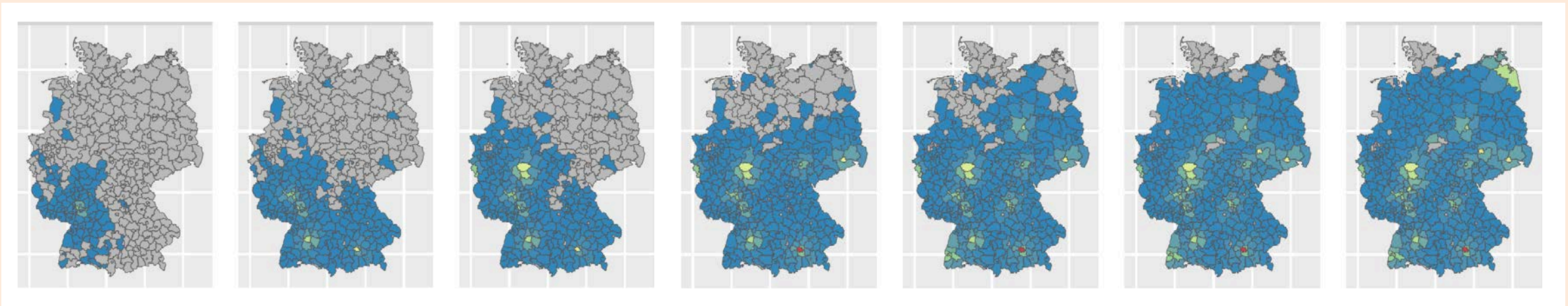
# Consent WG

# Data Sharing WG

# Harmonized Consent & Governance



# Demonstrator Study: Iterative approach, harvesting low-hanging fruit



(09/2018 - 03/2019)



# Patient Participation: they want to donate, and they place trust in academia

Representative phone survey carried out by FORSA in 08/2019 (1,006 German participants) for TMF e.V.

Consent to data donation for medical research



**79%**  
agree

46% fully agree  
33% agree  
13% disagree  
7% strongly disagree

Source: TMF e.V. 2019 | Data base: 1006 respondents aged 18 and older in Germany

With whom would Germans share their health data?



**97%**  
support public research

97% Scientists at universities and public research institutions  
17% Scientists from industry and private companies

Source: TMF e.V. 2019 | Data base: 793 respondents who would agree to their personal health data being made available for medical research





# Conclusions & Outlook: How we should approach Medical Data Sharing for AI

