UNIVERSITÄT DUISBURG ESSEN

Offen im Denken

WisPerMed

Wissens- und datenbasierte Personalisierung von Medizin am Point of Care

Fachhochschule Dortmund

University of Applied Sciences and Arts

Context Modeling and Mapping of Guidelines and SOPs

State of the art

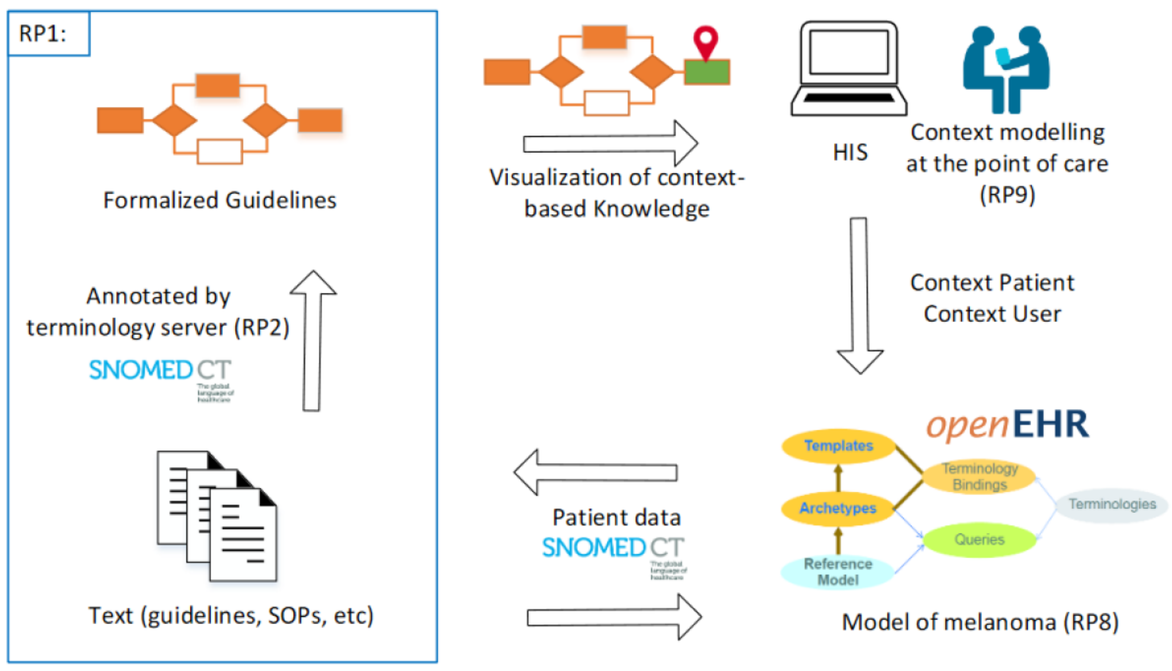
- Guideline-based knowledge is provided in unstructured, textual form [1]
- Previous guideline modeling and mapping procedures do not consider the specific patient or user context
- Relevant guideline information, which fits the context of the patient, but also of the user (physician), has to be searched for and compared with internal hospital standards
  → Requires time-consuming searches by physicians [2]

Research question

- How can decision support for the next treatment step be determined from a hospital-specific standard operating procedures (SOP) considering patient context and user experience for a clear and personalized presentation?

Solution approach

- Identify relevant information in a guideline/SOP document
- Using formalized and annotated information to create a contextual model which includes the patient's position in the treatment pathway
- Development of a relevance model to take the user context into account (context-related definition of the relevance threshold)



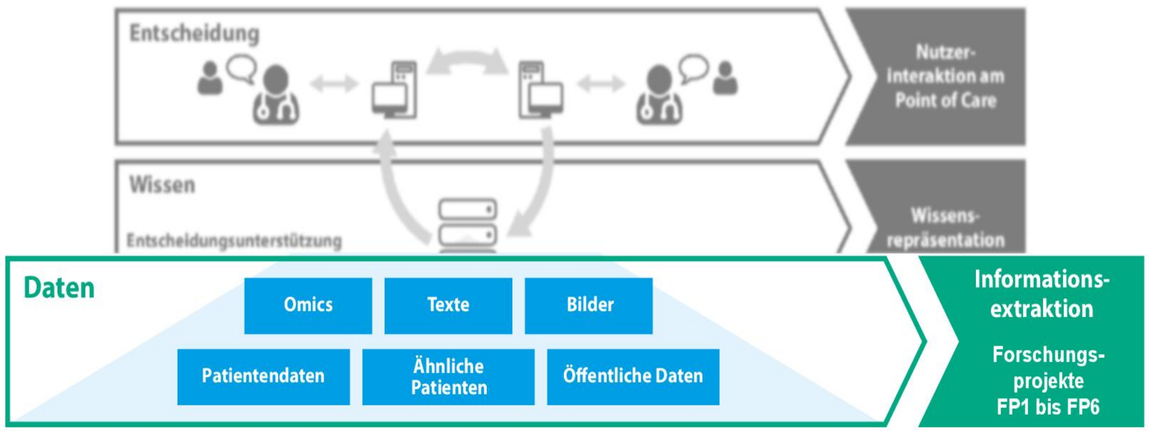
Solution approach

Preliminary results

- Guideline-based context-sensitive Business Process Model And Notation (BPMN) modeling for malignant melanoma patient treatment was performed and validated with dermatooncologists
- Fast Healthcare Interoperability Resource (FHIR) resources are assigned to modeled decision points to enable patient context sensitively

Collaborations in the Research Training Group

- Investigation of the user-specific level of knowledge (with two other WisPerMed projects "User interaction at the PoC" and "Context-sensitive, personalized search at the PoC")
- Interdisciplinary Working Group
  "From (Multimodal) Knowledge Sources to Information Processing Model – Using the Think Aloud Method to Uncover Healthcare Practitioner's Needs"
- Interdisciplinary Working Group
  "Determination of Data Quality of Structured EHR Data Including Semi-structured and Unstructured Data"



Integration in the overall Research Training Group WisPerMed

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References

1. Vandvik PO, Brandt L, Alonso-Coello P, et al. Creating clinical practice guidelines we can trust, use, and share: a new era is imminent. Chest. 2013 Aug; 144(2): 381–389. doi: 10.1378/chest.13-0746.
2. Becker M, Kasper S, Böckmann B, Jöckel KH, Virchow I. Natural language processing of German clinical colorectal cancer notes for guideline-based treatment evaluation. Int J Med Inform. 2019 Jul; 127:141-146. doi: 10.1016/j.ijmedinf.2019.04.022.