

RP 12 - Evaluation and proposal system for current and relevant literature at the PoC

Research question

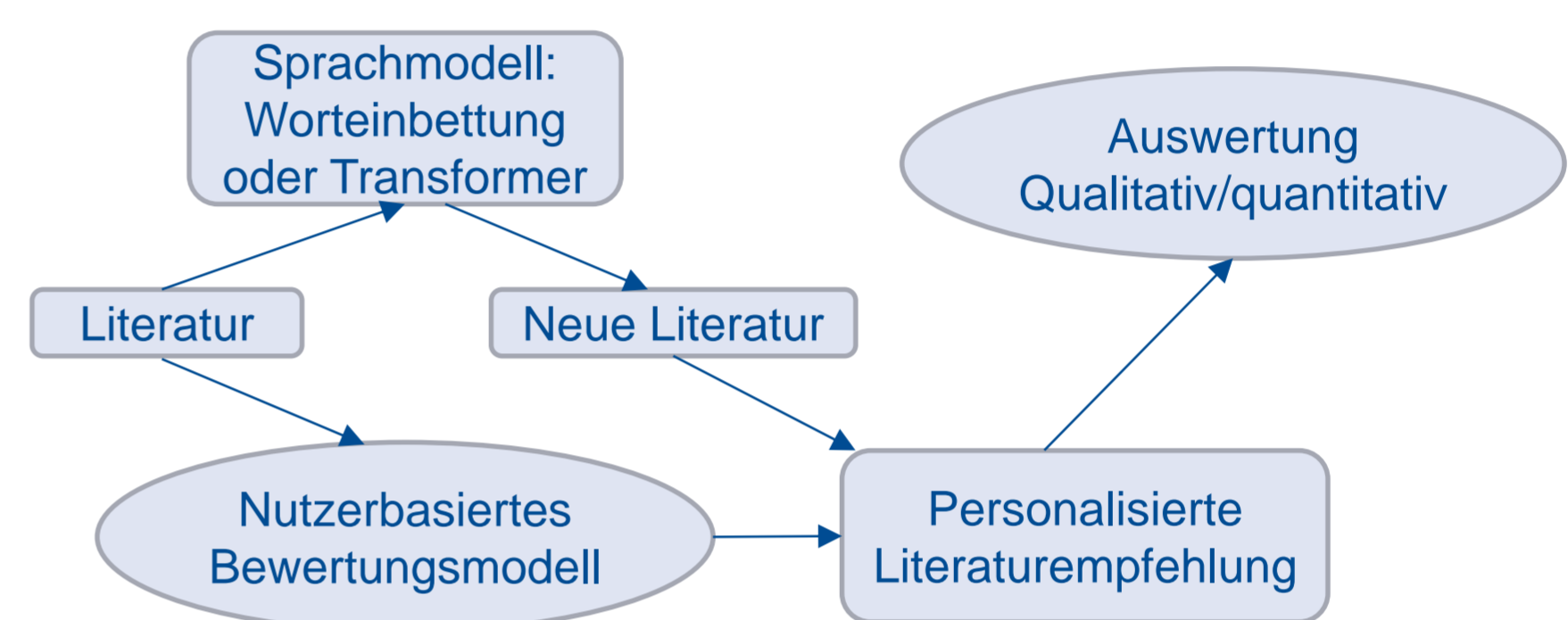
- Guidelines on melanoma of the skin [1] are regularly updated [2].
- Is a suggestion system for current personalised literature recommendations possible?
- What criteria does a rating system for literature recommendations on skin melanoma need?
- How can such a system be evaluated quantitatively and qualitatively?
- Can word embeddings and transform architectures improve these systems?
- Can the context modelling from the dissertation project FP9 be used for literature recommendations?

Solution approach

- Development of a personalised evaluation model for literature recommendation
- Development of a machine learning model for the assessment model
- Learning-to-rank models for literature recommendation
- Evaluation of word embeddings and transformer architectures for literature recommendation
- Evaluation of the recommendation quantitatively based on an old and new guideline. Training based on the old guideline, comparison with the extensions of the new guideline
- Expert analysis of the literature recommendation - qualitative
- Developing Ship-App for literature recommendation
- Use of terminology from dissertation project FP2
- Evaluation of the context modelling Dissertation project FP9 for the literature recommendation

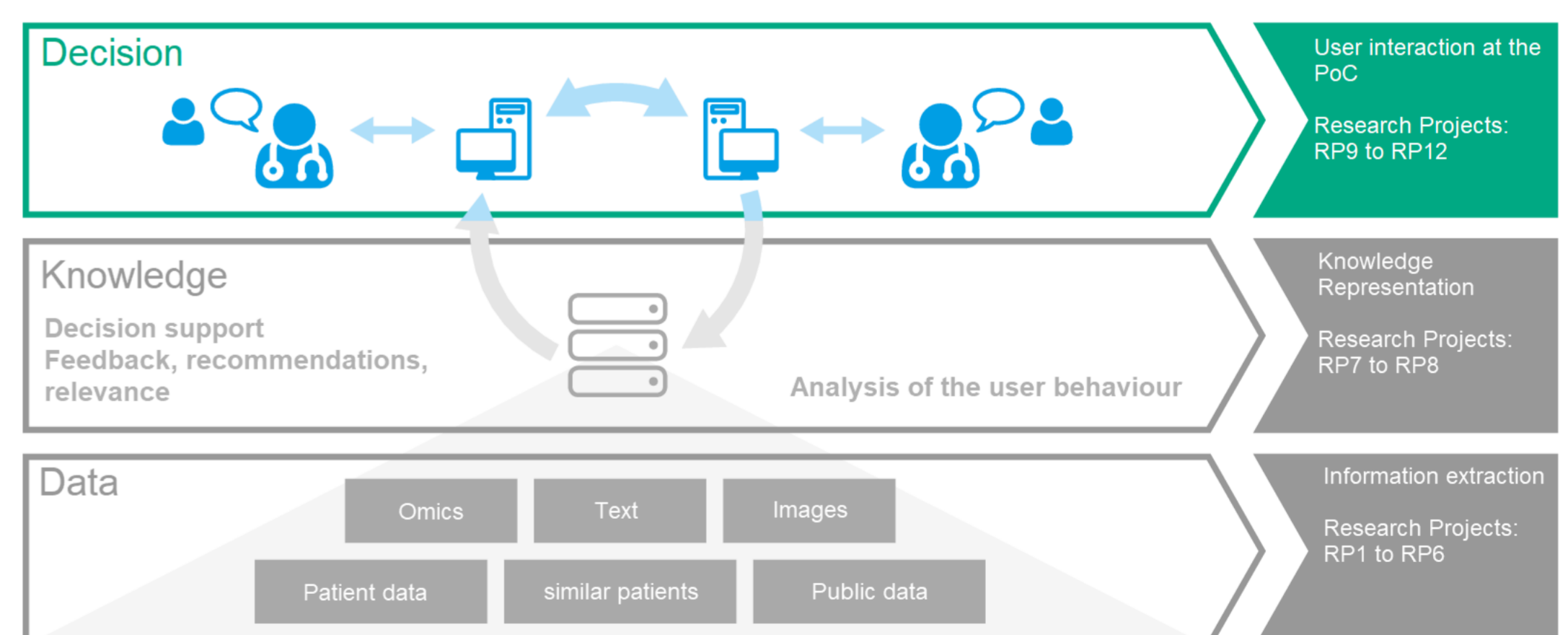
State of the art

- Technology Assisted Reviews in Empirical Medicine [3], Challenge for the literature ranking within the CLEF competition 2017-2019
- Update recommendations for clinical guidelines [5], [6] - currently limited to a few diseases and based on vector space models
- Rating systems for literature [4] - currently no implementation available



Integration

- Literature recommendation system at the point of care as SHIP app
- Transferability to other diseases can be tested
- Use of context modelling Dissertation project FP9
- Use of the terminology of the dissertation project FP2



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Literatur

1. Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF. S3-Leitlinie "Diagnostik, Therapie und Nachsorge des Melanoms". Langfassung; 30.04.2018.
2. Becker M, Neugebauer EAM, Eikermann M. Partial updating of clinical practice guidelines often makes more sense than full updating: a systematic review on methods and the development of an updating procedure. *J Clin Epidemiol*. 2014;67:33–45. doi:10.1016/j.jclinepi.2013.06.021.
3. Evangelos Kanoulas, Dan Leslie Li, Leif Azzopardi, René Spijker. CLEF 2018 Technologically Assisted Reviews in Empirical Medicine Overview. In: Workshop Notes of the CLEF 2018, <http://ceur-ws.org/Vol-2125/>
4. Wang H, Qiu Y, Jiang J, Zhang J, Yuan J. Leveraging Word Embeddings and Semantic Enrichment for Automatic Clinical Evidence Grading. In: Unknown, editor. The 2018 6th International Conference; 3/12/2018 - 3/14/2018; Chengdu, China. New York, New York: The Association for Computing Machinery; 2018. p. 133–137. doi:10.1145/3194480.3194492.
5. Iruetaguena A, Garcia Adeva JJ, Pikatza JM, Segundo U, Buenestado D, Barrena R. Automatic retrieval of current evidence to support update of bibliography in clinical guidelines. *Expert Systems with Applications*. 2013;40:2081–91. doi:10.1016/j.eswa.2012.10.015.
6. Reinders R, Teije A ten, Huang Z. Finding Evidence for Updates in Medical Guidelines. In: Verdier C, editor. International Conference on Health Informatics; 1/12/2015 - 1/15/2015; Lisbon, Portugal. S.I.: SCITEPRESS; 2015. p. 91–102. doi:10.5220/0005219900910102.