Enabling Personalized Interventions (EPI)

Project Goal
- "The overall aim of this project is to explore the use and effectiveness of data driven development of scientific algorithms, supporting personalized self- and joint management during medical interventions / treatments."
- "The key objective is to use data science promoting health practically with data from various sources to formulate lifestyle advice, prevention, diagnostics, and treatment tailored to the individual, and to provide personalized, effective, real-time feedback via a concept referred in this proposal as a digital health twin."

Research questions:
1. Dynamically Analyzing Interventions based on Small Groups: how can we determine, based on as little data as possible, whether an intervention does or does not work for a small group or even an individual patient?
2. Dynamically Personalizing the Group: how can we identify effective intervention strategies and optimize personalization strategies applicable for different patient and lifestyle profiles via dynamic (on-line) clustering of patients? Can those clusters be adapted as new data about patients and results of interventions come in and as other data may be removed or modified?
3. Data and Algorithm Distribution: what are the consequences of a distributed, multi-platform, multi-domain, multi-data-source big data infrastructure on the machine learning algorithms and what are potential consequences on performance?
4. Adaptive health leading to optimized intervention: how can we enhance self-/joint management by dynamically integrating updated models generated from machine learning from various data sources in state of the art health support systems that based on personal health records, knowledge of health modes and effective interventions?
5. Regulatory constraints and data governance: how can we create scalable solutions that meet legal requirements and consent of medical necessity-based access to data for allowed data processing and preventing breaches of these rules by embedded compliance, providing evidence trails and transparency, thus building trust in a sensitive big data sharing infrastructure?
6. Infrastructure: how can the various requirements from the use-cases be implemented using a single functional ICT-infrastructure architecture?

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Automated regulatory constraints and data governance for Healthcare

Use Case
- 70b. Children data
- Diffuse Intracranial Pseudotumor (DIPG)
- Missing automated way to manage Consent & compliance

Objective
- Open authorization and governance solution
- Automating regulatory constraints
- Preventing breaches by embedded compliance
- Able to trace back any decision

Current work
- What is the state of the art for consent management in healthcare?
- Capture the current consent management framework in the Princess Maxima research center

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