A Taxonomy for Describing Transinstitutional Information System Architectures in Health Care

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Abstract. This work aims at systematizing knowledge about transinstitutional health information systems in distributed cooperative health care environments. We present work in progress regarding the development of a taxonomy describing transinstitutional information system architectures in health care. The presented taxonomy depicts the main architecture aspects and is meant to contribute to better understanding, analysis and development of inter-organizational information system architectures in health care. Based on the defined taxonomy and a planned outstanding literature review in order to identify existing implemented architectures we will derive different architecture types and explore the interrelations between the architecture types and architecture characteristics in our further work. Simultaneously the taxonomy will be checked for applicability and completeness by the planned literature review.

Keywords. transinstitutional health information systems, information system architecture.

1. Introduction

The vast variety of institution-related and cross-institutional information systems in health care makes the analytical examination of information system architectures such as in-depth analysis, assessments and comparisons of different architectures often difficult. In order to contribute to the systematization of knowledge about transinstitutional information system architectures in cooperative health care environments it could be desirable to rely on a consistent taxonomy for systematic description of transinstitutional health information system architectures. Some aspects of information system architectures in particular in sensor-enhanced information systems have been discussed e.g. in Error! Reference source not found. and Error! Reference source not found. However a comprehensive taxonomy comprising different architecture aspects could not be found in the literature.

The objective of this work is to present a proposal for a taxonomy describing transinstitutional information system architectures in health care and to point out some possibilities for further work based on the described taxonomy.

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2. Methods

In order to identify the relevant content of taxonomy of transinstitutional information system architectures in health care different classification and description frameworks of information system architectures in general and in health care in particular have been analyzed. The architecture layers and characteristics related to cross-institutional facets have been derived and clustered. After this examination the taxonomy consisting of five axes, multiple categories for each axis and characteristic values for each category has been specified.

3. Taxonomy of transinstitutional information system architectures in health care

The proposed taxonomy consists of five axes: strategy (S), organization (O), application system (AS), integration (IG) and infrastructure (IT). Each axis describes the architecture from a different perspective in following categories: **S-axis**: national eHealth strategy, objectives, strategic information management plan and financing. **O-axis**: type of health system, participating actors, supported inter-organizational tasks and functions, governing body and ownership, responsibility for data storage and maintenance, centralization of architecture responsibilities, geographical reach. **AS-axis**: inter-organizational application systems, types of data, communication patterns between application systems. **IG-axis**: types of integration, applied standards, integration technologies, integration model. **IT-axis**: centralization of physical data storage, physical components. The full version of the taxonomy contains also a number of the characteristic values for each category. Exemplary given for the strategy axis within the category national eHealth strategy: not existent, draft version existent, partly implemented, full implemented or other.

4. Discussion and outlook

The proposed taxonomy can be used for further analysis of cross-institutional information system architectures in health care. In the next months we are going to conduct a literature review in order to identify and systematize existing information system architectures in cooperative health care environments using the introduced taxonomy and to identify different types of architectures. The derived architecture types will contribute to better understanding of the existing relationships and influences between the different architecture characteristics and will also provide an instrument which can be used when interpreting, evaluating and establishing sustainable and stable inter-organizational information system architectures in health care.

References
