Reviewer’s report

Title: Archetype Relational Mapping - An openEHR Persistence Solution

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Reviewer: Georgy Kopanitsa

Reviewer’s report:

The paper Archetype Relational Mapping – An openEHR Persistence Solution discusses an important subject: development of a solution that will map openEHR archetypes to a relational database. This solution can facilitate the development of archetype based systems and will bring the adoption of the openEHR specification onto a new level. The paper provides very detailed description of the solution, however, I think that the structure of the paper is suboptimal. Especially the methods and results sections. I would advise reorganizing them, as the result section? Especially the very beginning of the section, contains much that should be in the methods section.

The other point of improvement for this paper would be a comparison of the provided solution with a state of the art mapping solutions if there are any. And also the benefits of the solution should be better emphasized.

Also please improve the language. There some phrases that are hard to read.

Major Compulsory Revisions

Line 37: Healthcare data is too complicated, flexible, and changeable to capture a universal, comprehensive and stable schema of information, which is the foundation of the whole EHR architecture.

You say that the openEHR approach provides means to avoid this. Could you please describe in more details how your solution tackles this problem,

When the do117 main information model changes, the relational database designed using the old domain information 118 model is outdated and must be redesigned.

Line 131. An underpinning principle of openEHR is the use of archetypes and templates.
Please provide more information about templates and their role in the openEHR specification. You talk about this later. But I think you should talk more about them in the introduction

Line 179 Define mappings between generalized archetypes and specialized
archetypes to facilitate the data...

How do you define the mapping between archetypes? I think your paper is missing a figure where you can show all the archetypes and their relationships. You have a DB scheme. I think a figure that will show the archetype structure and corresponding DB data fields will improve the paper.

Line 181. For EHR systems, it is impossible to define so many concepts once, and hard to maintain if new concepts are coming out continuously.

Can you quantify the problem? How many archetypes require a revision a year for example in your clinic? You also state in discussion that your method faces a versioning issues. Could you describe a possible solutions.

Line 186. Then the data stored in the generalized archetype can be queried with specialized archetypes, and vice versa, using the mappings.

I think you don’t store data in archetypes. It is more about archetype instances. Please reformulate this.

Line 239. To explore the performance of the ARM approach... I think that you’d rather placed this in the methods section

Minor essential revisions

Archetype preparation

Line 151. Archetype preparation. I think you should use another term, like modeling, or definition.

Line 175. Collection data types such as CLUSTER, ITEM_TREE, ITEM_LIST, and archetype slots. I would not call these elements or reference model “data types”. Data structures is a better term

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests