

# An Ontology-based Semantic Design of the Survey Questionnaires

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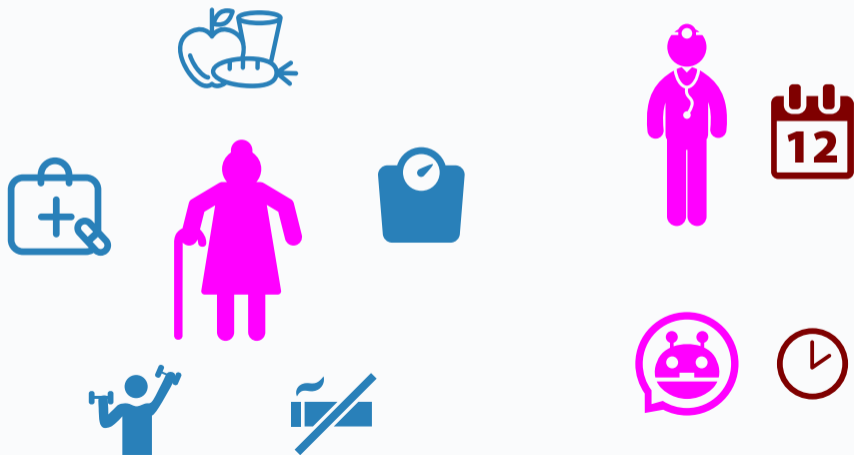
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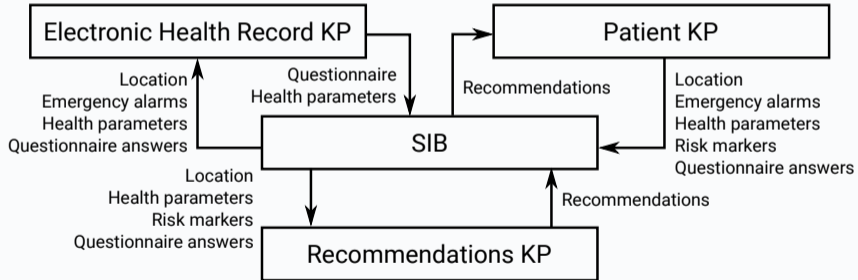
# Motivation. A system for hypertension management in remote patients

Use of personalized digital assistant may increase the adherence to the treatment among remote hypertensive patients



# Motivation. A system for hypertension management (cont.)

The system is developed on the top of Smart-M3 platform. Therefore, the data should be represented in ontology-based machine-processible form



A crucial part of the data is obtained from the patient by means of questionnaires...

Develop the ontological representation of custom questionnaires, taking into account

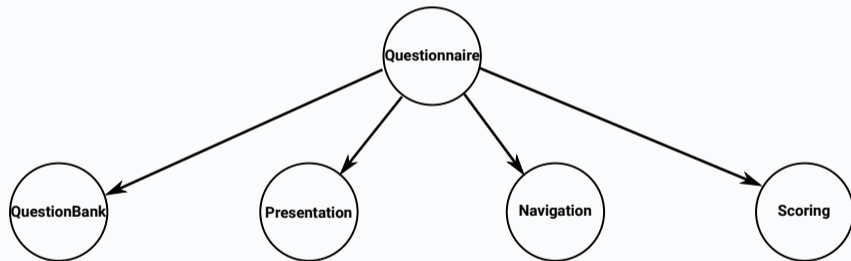
- the most of the variety of question types and possibilities of combining them;
- different options of visual representation of questions of specified type;
- files can be attached to the answers;
- answer scoring;
- question sequencing and branching.

# Benefits of semantic representation of questionnaires and responses

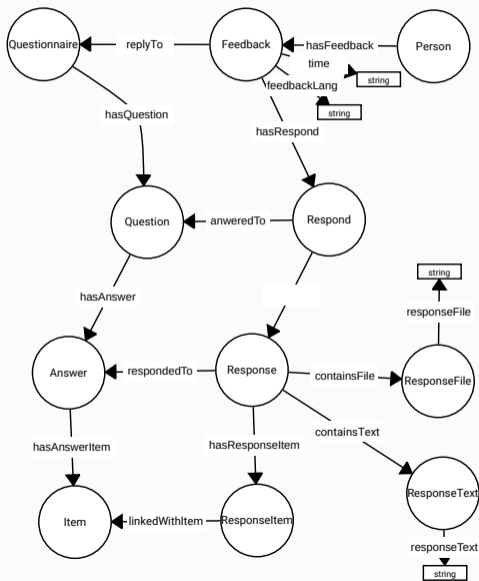
- Possibility of linking of the specified answers with the problem domain ontology entities for further knowledge reasoning.
- Possibility of creating hooks for certain answers by means of notification mechanism provided by the smart space platform.
- Possibility of constructing personalized questionnaires from the questions obtained from different, and even, distributed sources based on the previous knowledge about the responder needs.
- Possibility of reconstructing questionnaires dynamically based on the continuous analysis of the accumulated response.



# Top-level entities of the questionnaire ontology

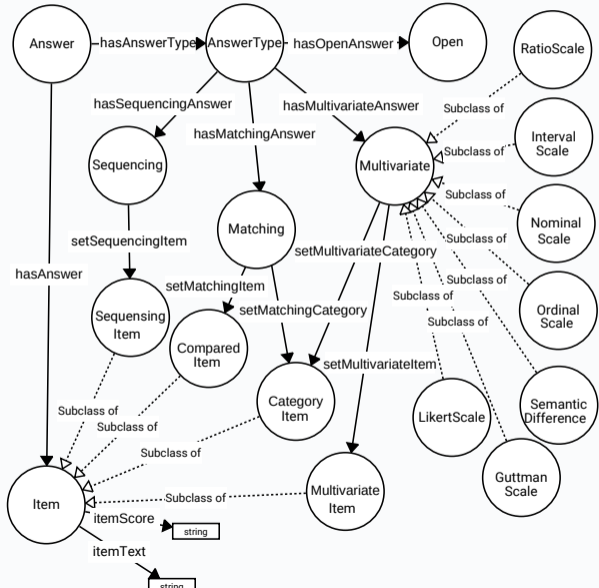


# Responses are linked with questions and selected answers

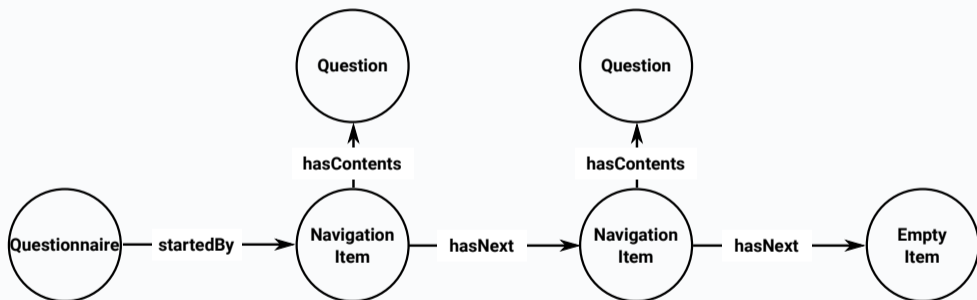




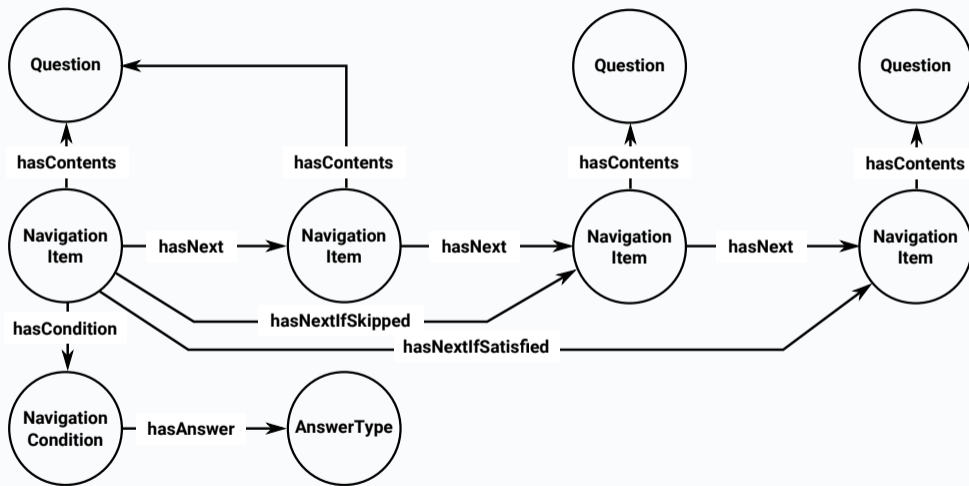
# Answer types



# Modelling a sequence of questions with no branching



# Modelling a sequence of questions with conditional branching and skipping



1. The ontology part has been developed for representing the questionnaires in SIB semantic storage.
2. The ontology (in simplified form) has been used in the prototype of the smart space-based service intended for assistance in medical emergencies.
3. Within the service for assistance in medical emergencies the mobile app has been developed to provide the patients with the questionnaire-based health state audit (initially for Android OS, then, during the Sailfish hackaton, — for Sailfish OS).

Thank you for your attention!



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