Rel-ID Requirements Specification

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1. Executive Summary

1.1 Project Overview

“Rel-ID” is a module that solves relation identification tasks and that is intended for use in question answering applications. It can be used by researchers as well as in applications for consumers. It's possible uses are highly versatile as it can be easily integrated into architectures of larger systems or used as a stand-alone application.

1.2 Purpose and Scope of this Specification

The purpose of this specification is to give a general overview of what is going to be implemented in the development of the module. It serves as a guideline to help the developers and their mentor to be sure about the scope of the project.

2. Product/Service Description

2.1 Product Context

The idea for Rel-ID stems from the need to implement relation extraction as a module in a QA pipeline of an architecture proposed by Andreas Both, Dennis Diefenbach, Kuldeep Singh, Saedeeh Shekarpour, Didier Cherix, and Christoph Lange in [1]. For a general overview of this system consider the diagram on page 4 of this document.
The module is self-contained and is thus also going to be usable independently of this original context either as part of different architectures or just on it's own.

2.2 User Characteristics

As part of a complete QA system the module can be used by anybody whereas direct use of Rel-ID might be of interest for researchers.

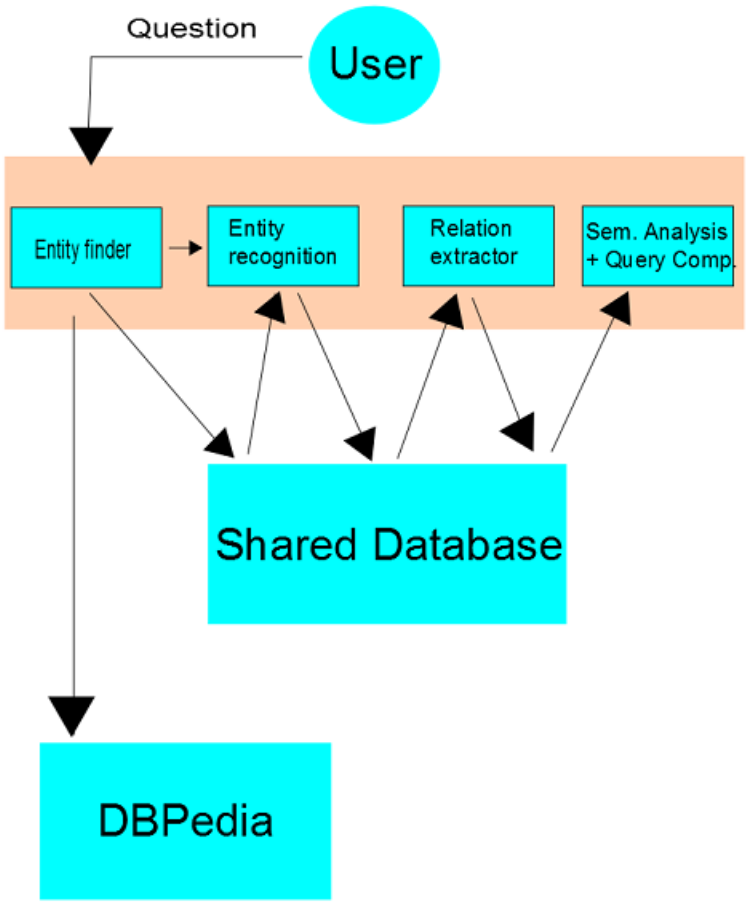
[1]: “Qanary – A Methodology for Vocabulary-driven Open Question Answering Systems”, Andreas Both, Dennis Diefenbach, Kuldeep Singh, Saedeeh Shekarpour, Didier Cherix, and Christoph Lange

2.3 Assumptions

Since our system is limited to fetching answers from a single knowledge base, i.e. DBpedia, it is assumed that this database provides a sufficient number of relations so that matching is possible with most queries. If it is impossible for the module to generate a relation matching for the given query, the user will receive a notification about this as an output.

2.5 Dependencies

The relation extractor depends on input in a particular format, which has been decided to be RDF. For the use as a full QA system the relation extractor interacts with the other modules which are shown in the use case diagram.



Most importantly, the system will rely on the entities extracted from the input queries to deduce relation matchings from our knowledge base with high probability.

3. Requirements

3.1 Functional Requirements

Req#	**Requirement**	**Priority**	**Date Rvwd**	**SME Reviewed / Approved**
Rel-Func-ID1	The module should correctly identify possible relations in input queries.	1	12.05.16	Kenklies, Ouko, Seume
Rel-Func-ID2	Relations should be extracted from a RDF formated knowledge base. DBpedia is used as a knowledge base.	1	12.05.16	Kenklies, Ouko, Seume
Rel-Func-ID3	The module should return matchings between substrings of queries and relations from the knowledge base.	1	12.05.16	Kenklies, Ouko, Seume
Rel-Func-ID4	The module has to provide a method for reducing the number of possible relations among which to search.	2	12.05.16	Kenklies, Ouko, Seume
Rel-Func-ID5	The module provides a user interface for browsers for the case of independent use as a web service.The input is fetched for the component via an available web interface or a call.	3	12.05.16	Kenklies, Ouko, Seume

3.2 Non-functional Requirements

Req#	Requirement	Type of requirement	Priority	Date Rvwd	SME Reviewed / Approved
Rel-Non-Func-ID1	The user interface for the browser should be self-explanatory if possible. Explanations regarding the format of the returned relation matchings should be given.	Usability requirement	1	12.05.16	Kenklies, Ouko, Seume
Rel-Non-Func-ID2	The module should have efficient run time.	Performance requirement	1	12.05.16	Kenklies, Ouko, Seume
Rel-Non-Func-ID3	The module should provide high values of precision and recall for finding relations. Precision and recall need to be calculated based on a given benchmark.	Performance requirement	1	12.05.16	Kenklies, Ouko, Seume
Rel-Non-Func-ID4	The module should be able to process one query by one user at a time.	Capacity requirement	2	12.05.16	Kenklies, Ouko, Seume