HOBBIT Link Discovery Benchmarks at Ontology Matching 2017

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Abstract. We address the problem of benchmarking ontology matching and link discovery frameworks at large scale. In particular, we aim to ensure that the benchmarks generate comparable results for the various systems and approaches. Our solution lies in implementing our benchmarks into the HOBBIT benchmarking platform, which provide means for the unified benchmarking of Big Linked Data solutions.

The HOBBIT platform serves as a framework for benchmarking Big Linked Data systems. Benchmarks that focus on the evaluation of the quality of a system using single consecutive requests can be run on the platform as well as benchmarks aiming at efficiency, e.g., by generating a lot of parallel requests leading to a high workload. Especially for the latter case, the platform supports the handling of Big Linked Data to make sure that even for high-performance systems a maximum load can be generated. The HOBBIT project[1] that designs and develops the HOBBIT platform aims at two goals: firstly, it offers an open-source evaluation platform that can be downloaded and executed locally. Secondly, it offers an online instance of the platform for a) running public challenges and b) making sure that even people without the required infrastructure are able to run the benchmarks they are interested in.

The platform, as well as the benchmarks that are designed and implemented in HOBBIT are modelled as actors with which the platform interacts. The following use cases are supported by the platform:

- *Benchmark a System:* the user selects the benchmark to test his system with. The platform loads the appropriate configuration parameters for the benchmark, as well as the list of available systems for this benchmark. The user configures the benchmark and selects one of the available systems to benchmark.
- *Show and Compare Benchmark Results*: the user can view the results of a single benchmark run or select multiple, e.g., to compare several systems that have been evaluated with the same benchmark.
- *Add a System:* the user adds the system that he wants to benchmark in the platform by providing a docker image of his system and a system adapter which serves as a proxy between the benchmark and the system.

The platform can be separated into two parts. The first part comprises platform components that are always running. The second part contains all components that belong

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[1] http://project-hobbit.eu

to a certain experiment, i.e., the benchmark components as well as the benchmarked system. Figure 1 shows the layout of the HOBBIT platform components and how the different parts interact for the Linking and Spatial Benchmarks that are introduced in HOBBIT Link Discovery Track.[2] Below we provide a brief overview of the operation of the platform in the case of Spatial and Linking Benchmarks.[3]
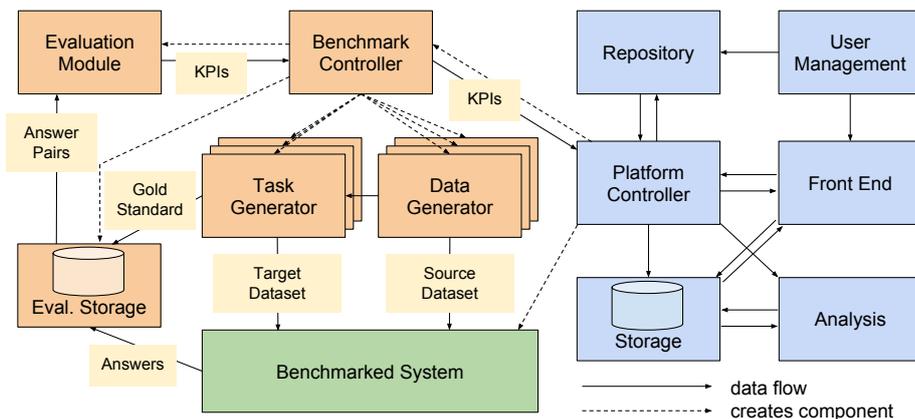

Fig. 1: Interaction of the components for the Linking and Spatial Benchmarks

The *Platform Controller* makes sure that the benchmark chosen by the user can be started and ensures that all nodes of the cluster are available. It communicates with the system to be benchmarked, ensures that it is working properly and generates the benchmark controller that is responsible for producing the data and task generators as well as the evaluation storage. The *Data Generator* produces the source dataset that is sent to the *Benchmarked System*, and the target dataset as well as the Gold Standard which are sent to the *Task Generator*. The *Task Generator* sends the target dataset to the *Benchmarked System* and forwards the Gold Standard to the *Evaluation Storage*. When the system finishes its task, it sends the answers to the *Evaluation Storage*. The *Evaluation Module* receives the system and the Gold Standard answers and returns the Key Performance Indicators for the experiment.

References

1. Tzanina Saveta, Irini Fundulaki, and Giorgos Flouris. Deliverable 4.1.1, first version of the linking benchmark. 2017.

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[2] http://oaei.ontologymatching.org/2017/

[3] A detailed presentation of the orchestration of the different components can be found in [1]