



TRENDS: Trento Dataspaces Ontology editing & mapping

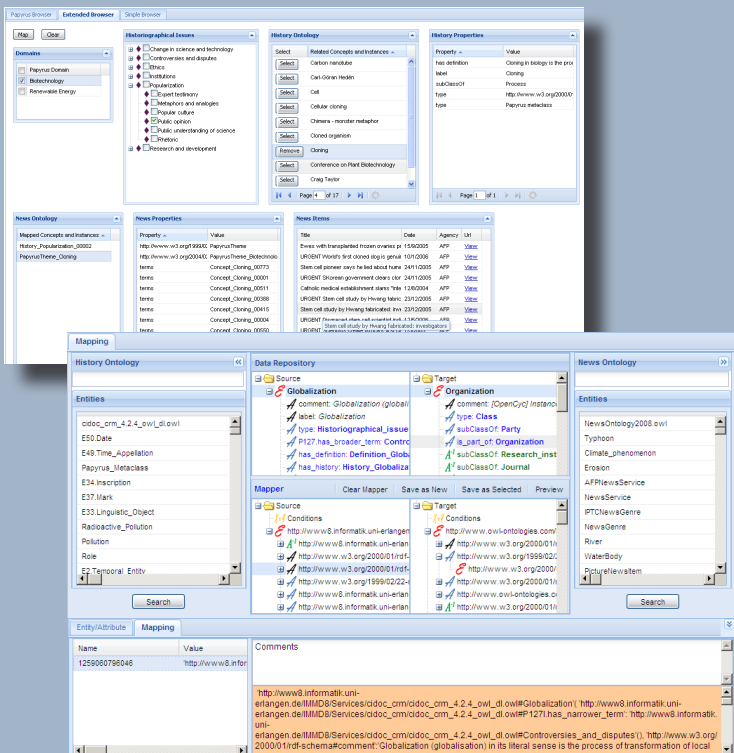
OVERVIEW

TRENDS is an application dedicated to the management of heterogeneous data. Access to the data is provided through a graphical interface.

TRENDS covers two aspects of data management: the integration by means of mappings, and the management of the semantic evolution that can occur on the data. The first is done through mappings between diverse data structures, like the history and the news ontologies in the Papyrus example. It allows operations like create, delete, and edit of classes, instances and their attributes, and enables any other kind of transformation. The module is also supporting some keyword searching and data browsing functionality that is needed for performing the tasks of evolution management and mapping generation. The generated mappings can be saved in the data repository alongside the data. TRENDS allows also the specification of some special relationships among entities, that determine evolution relationships among them, allowing that way the modelling of how some real world entity or concept has evolved over time.

INNOVATION

Managing mappings and evolution is a well-known research problem that has attracted major attention from academics and industry players alike. Although there are many works that deal with schema and data evolution, for instance through temporal data models, TRENDS introduces new solutions to fill the gaps that existing solutions leave open. In particular, it sees evolution not at the data level, but at the semantic and conceptual level. It does not model changing in the data structures themselves but in terms of their meaning and the real world entity they represent. A second innovation is the fact that data modelling and mappings are based on the notion of the entity, and not on the data structure. This allows modelling and mappings



to be independent of the heterogeneous data structures users naturally use to model the same real world artifacts. Third, the mappings defined in TRENDS are queries that are independent of the schema of the sources, thus, they can be easily used for schemaless data. This allows the creation of mappings that manage in a uniform way data and metadata.

BUSINESS IMPACT

Modern information systems have moved away from monolithic architectures that manage all the tasks in an integrated and tightly coupled environment, and have become groups of highly specialised and interoperable tools. TRENDS comes to fulfil the role of one such tool. It deals with the problem of interoperability across highly diverse sources, with highly heterogeneous and partially overlapping context. It allows businesses and applications to cope with the different data models, structures and goals that their applications have been built upon. TRENDS enables this through a Dataspace model. Furthermore, it allows the modelling of data evolution, in ways that existing technical solutions either do not support at all, or support in a very limited degree.

INTEROPERABILITY

TRENDS is a standalone application built upon a data repository, which for the moment is a triple store. The modified data in the repository can be accessed by other applications using the standard repository API, provided that they respect the storage schema that TRENDS has chosen to implement. The GUI is built using the GWT library, thus, it can be easily extended or allow intercommunication with other GWT tools.