

A Bootstrapping Architecture for Integration of Relational Databases to the Semantic Web

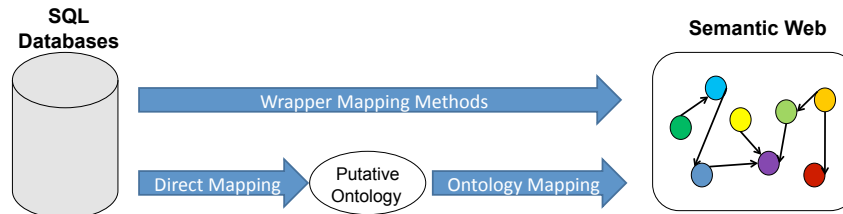


Juan F. Sequeda, Syed Hamid Tirmizi, Daniel P. Miranker
Department of Computer Sciences, The University of Texas at Austin

Motivation

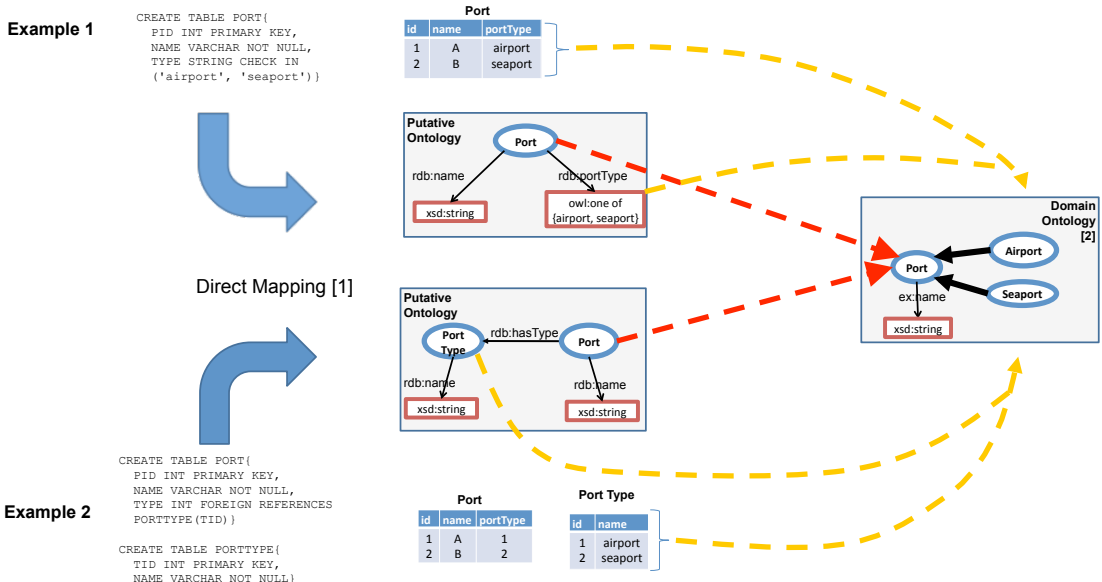
Due to the fact that the majority of the data on the web resides in SQL databases, much of the success of the Semantic Web hinges on developing methods for making relational databases accessible to the Semantic Web. Existing approaches comprise wrapper-based mapping systems that involve much programming and knowledge of the domain semantics. Since few existing web sites employ personnel familiar with knowledge-based systems and their implementation, we consider that it is imperative to offer an easy and automatic way to allow SQL databases to be accessible on the Semantic Web.

Direct Mapping of SQL Databases Results in Ontology to Ontology Mapping



Direct Mapping means to use the SQL schema to create a putative OWL ontology and use it to represent the data in RDF. This is an easy way to get started, but is limited to the amount of domain semantics actually encoded in the SQL schema. Contemporary databases derived from model driven architectural process do explicitly encode a domain model in the SQL schema. Legacy databases and ad-hoc development methods typically result in minimal explicit encoding of domain semantic. In either case, direct mapping does not solve the problem. We propose a second step that refines the putative ontology by adding more semantics through ontology mapping and database content analysis through machine learning techniques. This way, we shift the relational database-to-ontology problem to an ontology-to-ontology mapping problem.

Examples



Proposed Deployment Architecture

