TopBraid, a Multi-user Environment for distributed authoring of Ontologies

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Abstract:

In our demo we explore how creation of large Semantic Web ontologies can be distributed across teams of people with the varying levels of ontology development expertise and a range of domain knowledge. We have used W3C Semantic Web standards, RDF/S and OWL, and a commercially available triple store to build a multi-user web-accessible system that supports working practices of collaborative authoring. The resulting software is an outgrowth of two efforts. First, the tooling platform we have built for a series of hands-on Semantic Web training classes. Second, our work with NASA on the development of COVE (Collaborative Ontology Viewing Environment) used by teams of domain experts to review and modify large ontologies.

Overview:

TopBraid is a multi-user environment for distributed authoring of ontologies. We have repeatedly come across a requirement to distribute the work of populating ontologies with instance data. Usually the requirement comes as a question "How can I deploy simple web forms to my team, so that they can each contribute data?" TopBraid has been built to respond to these needs.

Rather than being a full-featured ontology editor, TopBraid's focus is on enabling groups of people to collaborate on building individual ontologies, as well as collections of interrelated semantic models. The environment anticipates and supports a range of users – from the expert modelers to users who have little (or no) understanding of semantic modeling, but can contribute deep knowledge in one or more of the domains that must be represented in the ontologies.

Key features include:

- File management

  Ability to select and merge multiple files. Provenance of ontologies is tracked and shown to the users. The tool supports modularity of ontology architectures.

- Access Control

  Ability to control ownership and access to files. Access rights to view, edit and manage files are assigned at the user or group level.

- Dynamically generated entry forms

Easy web access for entry of instance data. Users can select one or more ontologies (or a subset of classes from an ontology), add instance data and download their work as one or more OWL files.

- Roundtrip interface with ontology editors

  Ontologies created with other tools (such as Protégé 2000) can be uploaded. Ontologies modified in the TopBraid can be downloaded (saved as) rdf or owl files.

- Bulk data entry

  Data import capabilities and multi-line entry forms speed up data entry.

- Dynamic hierarchies

  Ability to generate tree hierarchy not just based on the class membership, but any transitive relationship selected by the user.

- Editing of classes and properties

  Ability to make simple changes to ontology schemas without having to export into ontology editor.

- Assistance in merging and mapping ontologies

  Ability to compare side by side instances of classes from different ontologies. Finding similarly named classes and properties across ontologies.

- Thin client

  No installs or downloads are necessary. Simple, easy to use, web browser based user interface.

- Ontology bundles

  TopBraid is being distributed with a sample set of pre-built ontologies.

A more detailed look at the representative features:

Each user can create what we are calling "datasets". The datasets are ontologies that hold instance data. They can be based on one or more "schema" ontologies. These ontologies are imported into TopBraid by specifying their url or uploading a file. A dataset can include other merged datasets created by this user or one of his colleagues.

The following two screenshots show a process of creating a dataset.
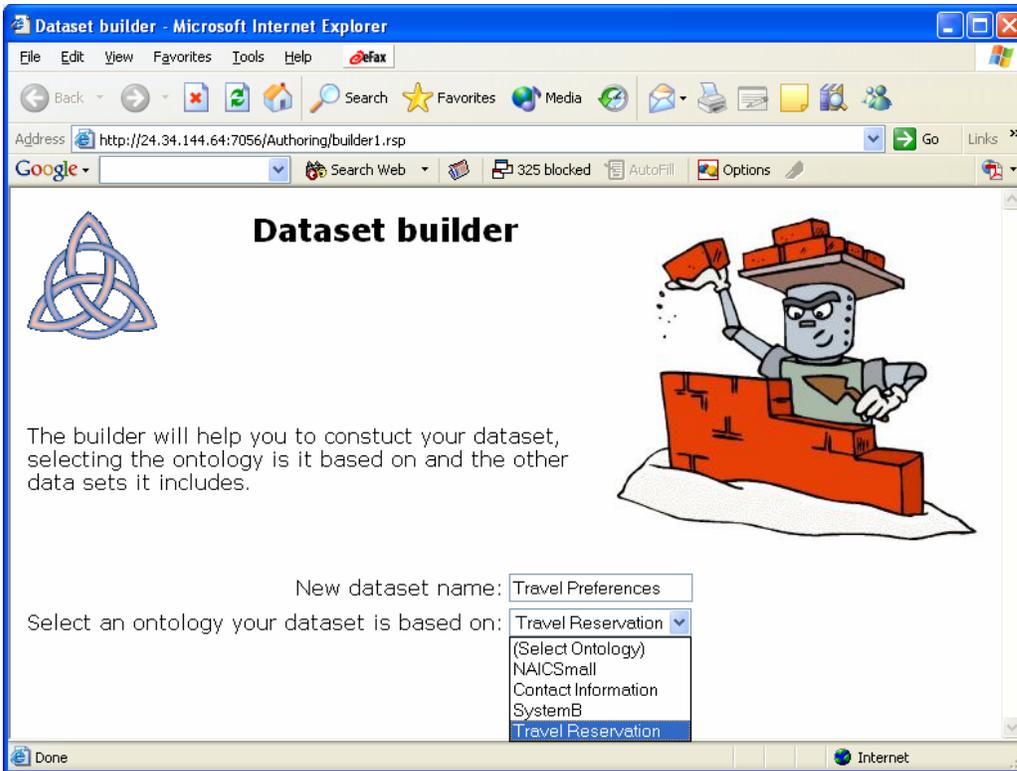
Figure 1: Building dataset - step 1
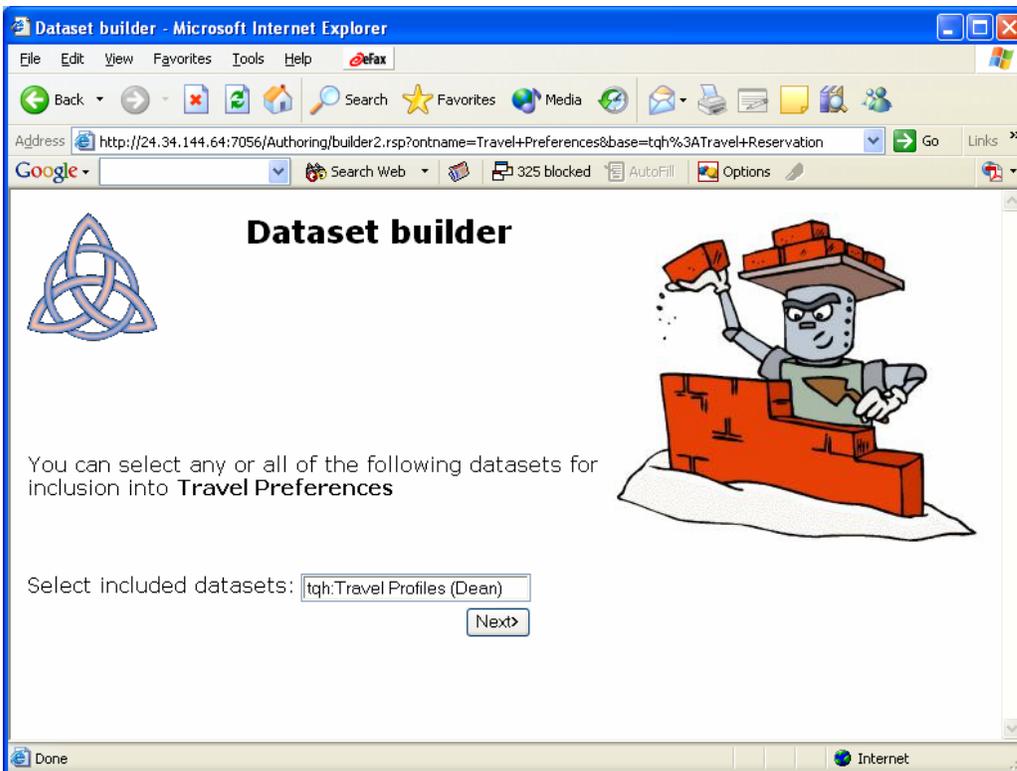
Figure 2: Building dataset - step 2

The user can work with the dataset – view and edit it. He can specify the access rights other users have for this dataset. He can also download the dataset by saving it as an OWL file. The screenshots below show users working with the datasets
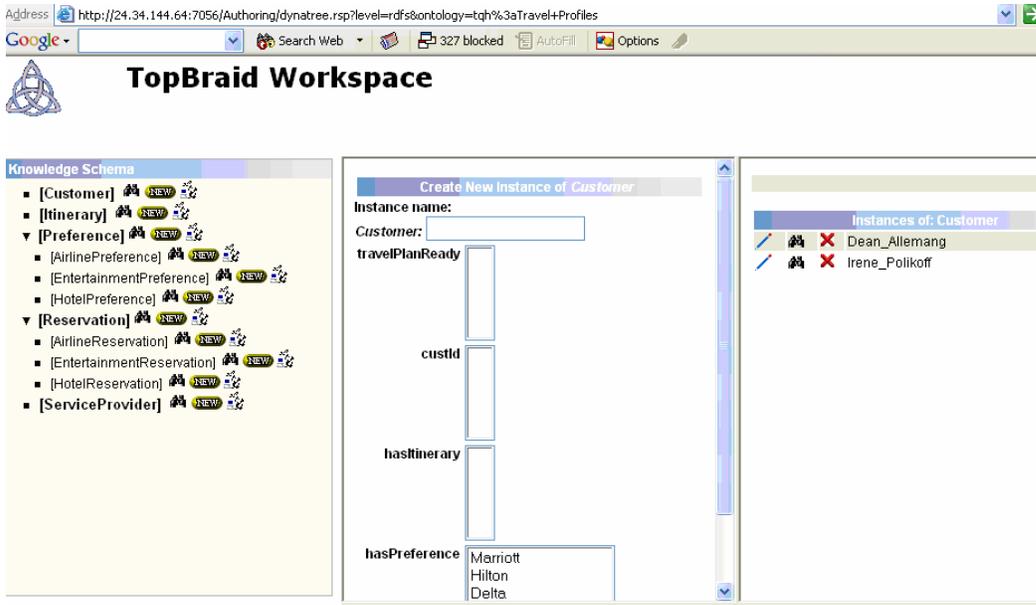
Figure 3: Entering new instances
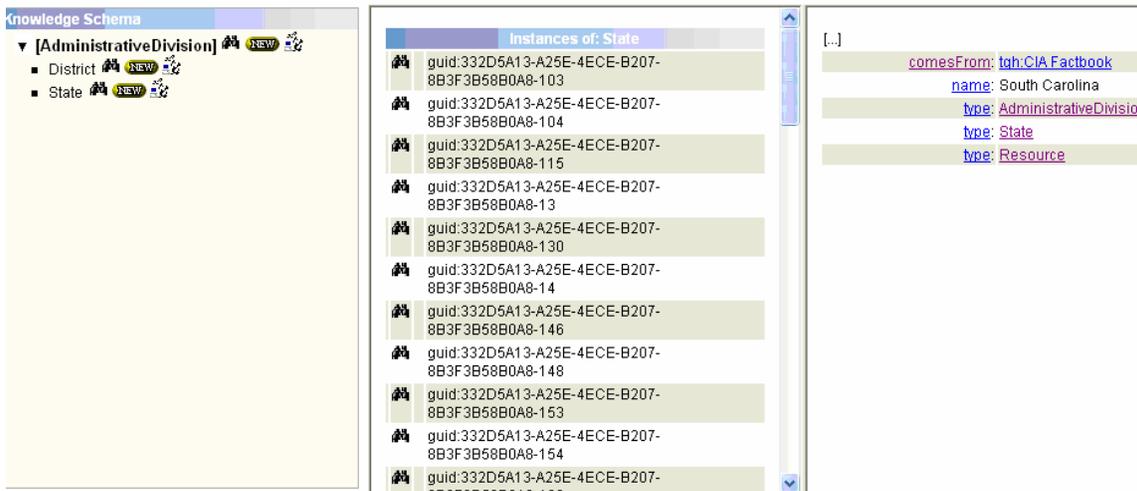
Figure 4: Reviewing the instances

Availability of TopBraid:

Alpha version of the TopBraid is being released in 3Q 2004. It is available for free download at www.topquadrant.com. Beta version is planned for 4Q 2004. Release 1.0 will be available in 2005.