Case Studies

4 Craft Services

Andrea Horch
Maximilien Kintz
IAT der Universität Stuttgart

openXchange Project

The project openXchange deals with the development and improvement of IT support in active property damage claim management. The project's goal is to simplify the associated processes by offering better and more integrated IT support.

One very important task in this field is to improve the communication between the insurance companies and their partners, such as craftsmen, regulators, or technical experts.

As of today, there is no adequate standard for the communication between the insurance companies and the mentioned partners. Therefore the openXchange project extended existing standards and, when needed created new ones.

One special problem is the description of the craft service offered by crafts companies, which insurance companies can look for when searching craftsmen for repairing specific damage. For this purpose the openXchange team indentified USDL as an adequate and easy to use tool for describing the crafts services and using the USDL description of crafts services in a search engine.

The Roles of Services and Service Description in Craft Services

In Germany, craft services are regulated by the German Crafts Code, which lists all craft service categories, their admission requirements as well as defines other craft service related rules (http://bundesrecht.juris.de/hwo/). In the state of the art analysis conducted at the beginning of the openXchange project (http://www.openxchange-projekt.de/) we identified several problems specific to craft services classification and search:

- craft services are a large field consisting in many subcategories, some of which are overlapping (for example in that they seek to repair the same damaged objects or depend on each other);
- when customers are looking for craftsmen, they in many cases do not know which categories or keywords they should give into the search en-

gine to find the appropriate answer, and cannot ensure that they found all the services they actually need;

- additionally, craftsmen are confronted with the problem to decide on which internet platforms and search engines they should register their services. Adding and updating their data in the heterogeneous environment of today's internet platforms is a highly time consuming task. Craftsmen usually do not know which platforms offer the higher benefits in terms of possible new customer contacts and contracts.

The solution for these problems is standardizing the description of crafts services. A standard crafts service description ensures the consistent description of crafts services and the recoverability of a once created service description.

As part of our project, we built up an ontology describing crafts services, possible damaged objects and the relationships between each craft service category and object type in a standardized way.

Because we needed a description language for craft services, we chose to use the USDL for describing theses services and using these descriptions in a crafts search engine. USDL had the advantage of being an already well established and specified service description language, which made our task easier. The following sections will present the approach of the team and its experience by using USDL for these purposes.

Use Case: openXchange crafts search

One of the supporting IT tools created in openXchange is a crafts service search engine for insurance companies (see **Fehler! Verweisquelle konnte nicht gefunden werden.**). The search engine is an ontology-based web service with the ability to understand semantic input of the searcher: the user does not need to distinguish between search criteria and can simply enter, for example, a specific service he needs, an object that has been damaged and should be repaired or a ZIP code in the same text field. The query is sent to the web service in a specific XML format. The output of the web service uses another specific XML format to encapsulate the descriptions of the matching craft services. Each craft service returned is described using the XML serialization of USDL.
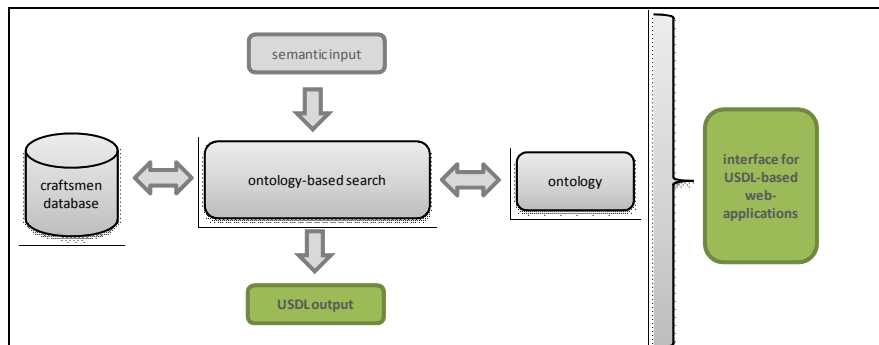
Figure 1: Current structure of the openXchange crafts search

The crafts search engine uses an ontology for understanding the semantic input of the searcher. "Understanding" in this case means identifying what kind of input the searcher sent (address, company name, crafts category, damaged item, etc.) or if there are synonym items for the query keywords the engine can search for in the crafts database, where the crafts data is stored. After finding the matches in the database, the search engine returns the results as USDL descriptions of the matching craftsmen companies.

The automatic conversion of the database results into USDL descriptions is done by the search engine by filling the data of each result dataset into a previously manually generated general USDL crafts service description (an example is shown on **Fehler! Verweisquelle konnte nicht gefunden werden.**).

```
[…]
<Service xmi:id="ServiceWrapper_8732241">
    <ServiceElements xmi:id="Service_29245520">
      <Guid>bdcb0674-9d90-479f-8fb7-92b6e6142fe0</Guid>
      <Version>1.0</Version>
      <Name>Sanitär Rataplan GmbH</Name>
      <PublicationTime   xsi:type="foundation:AbsolutePointInTime"
xmi:id="AbsolutePointInTime_32657640">
  […]
```

Figure 2: Part of the XML serialization of the USDL description of a craft service

Experiences

Integrating USDL in our service turned out to be quite easy. The most difficult part of the work consisted in the description of a dummy craft service using all attributes that were needed in our use case (capabilities, certificates, basic pricing information and of courses general information such as contact data and postal address). Once this dummy service had been described with the USDL editor, we

used the XML serialization of this USDL description and integrated it as an example output format in our web service.

Although USDL can be used to store service descriptions and can be directly searched, in the crafts service case we use it mainly as a way to transfer service descriptions between the search service and the users.

We also used USDL to describe our crafts services search itself, as our search engine itself consists in a service that could be traded on an online service marketplace. In this case, USDL provided a way to describe of search engine capabilities and its technical specifications.

Conclusion and Future Work

Our work has shown that creating an interface for a search engine to USDL-based web applications is very easy. When USDL becomes a better recognized standard for the description of services, for reasons of consistency and interaction it will become necessary to be able to convert the description of services like craft services to USDL. The project openXchange found an easy way for doing this conversion by using a general description for a special type of service.
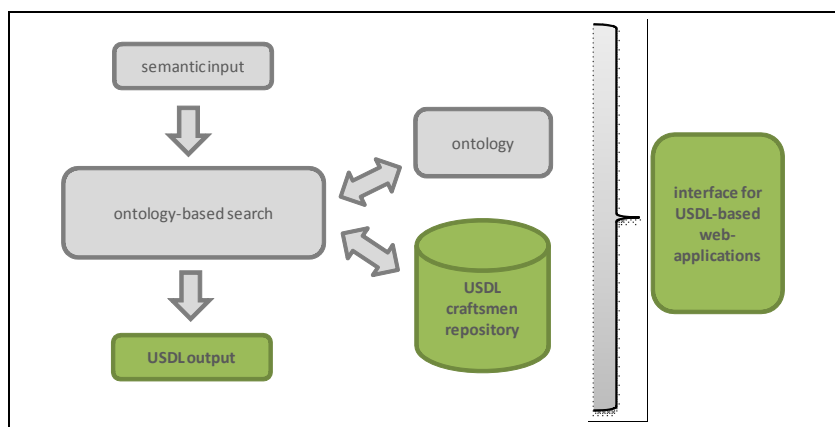
Figure 3: Future structure of the openXchange crafts search

A further improvement of our craft services search engine would be storing the craftsmen data directly in a USDL repository, as shown on Figure 3. Creating a USDL repository as base of a search engine is a very interesting task for future work and further evaluation of USDL.