Improving the Online Visibility of Touristic Service Providers by Using Semantic Annotations

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Abstract. The vast majority of people use the Internet to search for various products and services including those touristic. Now more than ever it becomes critical for touristic businesses to have a strong online presence. In order to achieve this goal it is however essential that multiple communication channels and technologies are properly used. In particular having semantic annotations on the website that can be understood by search engines is extremely important. In this paper we present our ongoing effort on using Linked Data technologies to improve the online visibility of touristic service providers from Innsbruck and its surroundings. We show which technologies are relevant, how they can be applied in our real world pilot and we measure the impact of using such technologies.

1 Introduction

Having a good online marketing strategy results into higher online visibility and ultimately into increased sales. In order to achieve this goal it is however essential that multiple communication channels (e.g. social media channels, website, blog, etc.) and technologies are properly used. In particular having semantic annotations on the website that can be understood by search engines is extremely important as it boosts the online visibility and increases the chances that the website is in the search engines' results to a relevant query. In one of our recent studies [1], we analyzed more than 2000 touristic service providers, namely hotels and hotels chains in Austria, on how they use Web technologies, including Linked Data and semantic annotations. Our study shows that most touristic service providers nearly fail completely to use such technologies, either by not using them at all or by using them only minimally and mostly inappropriately. In contrast, intermediaries such as booking engines (e.g. booking.com, hrs.de) are using these technologies nearly perfectly. As part of our project pilot with Tourismusverband Innsbruck (TVb)[1], the touristic association of touristic

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[1] http://www.innsbruck.info/

service providers located in the city of Innsbruck and its surroundings, we are showing that using multiple communication channels and the latest Web technologies, including Linked Data and semantic annotations, brings concrete, measurable benefits in terms on online visibility. In this paper we present our ongoing effort on using these technologies to improve the TVb online visibility. In the pilot we are annotating the content of the TVb website using schema.org annotations. We provide annotations for hotels, restaurants, cafes and events, and we are also building a Linked Open Data dataset which includes and integrates these annotations. The remainder of this paper is structured as follows: Sect. 2 presents more details about our approach, in terms of overall architecture and technologies used. Finally, Sect. 3 provides preliminary results on how the usage of our proposed solution has impacted the TVB online visibility, discusses future work and concludes the paper.

2   Approach

In our approach we use schema.org to create annotations. schema.org is an approach supported by the main search engines i.e. Bing, Google, Yahoo!, Yandex. schema.org is the major initiative that webmasters can use to markup their pages in ways recognized by major search providers. schema.org is a very large vocabulary counting hundreds of terms from multiple domains (the full specification of schema.org is available at https://schema.org/docs/full.html). Of course not all of the schema.org terms are relevant for the tourism domain. For the TVb website in particular the relevant schema.org terms are those that belong to the categories Hotels, Food and Drink Establishments, Events, Trips, Place of Interest and News. Most of the content on the TVb website is pulled from an external data source provider, namely feratel media technologies AG[2]. More precisely this includes: Hotels, Apartments, Camping, Restaurants, Bars or Pubs, Cafes, Events and Sightseeing. Table 1 shows the mappings between content types coming from feratel to those in schema.org.

   In terms of implementation, in order to inject the semantic annotations into the TVb website, we have extended the integration of the TVb website and the feratel system. The integration is implemented as a Typo3[3] extension plugin, referred as seo_feratel in Fig. 1. TVb web site is built using the Typo3 content management system, and the Typo3 extensions seo_feratel is responsible for periodically getting content from feratel and shown it into the Typo3 website.

   The plugin is actually using a html template to structure the content - Hotels, Restaurants, etc. In order to insert annotations according to schema.org into the TVb website we extended the HTML template as shown in Fig. 1. Using the modified HTML template, we insert annotations inside the HTML tags for the following types:

1. Hotels, Apartments and Campings using the following properties: Name, Email, URL, Map, PostalAddress (including streetAddress, addressCountry, postalCode, addressLocality, telephone and faxNumber).

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[2] http://www.feratel.at/
[3] http://typo3.org/

Table 1. Mapping feratel content to schema.org for the TVb website

| No.	Concept in feratel	Type in schema.org
1	Hotel	schema:Hotel (rdfs:subClassOf schema:LodgingBusiness)
2	Apartment	schema:LodgingBusiness (rdfs:subClassOf schema:LocalBusiness)
3	Camping	schema:LodgingBusiness (rdfs:subClassOf schema:LocalBusiness)
4	Restaurant	schema:Restaurant (rdfs:subClassOf schema:FoodEstablishment)
5	Bar, Pub	schema:BarOrPub (rdfs:subClassOf schema:FoodEstablishment)
6	Cafe	schema:CafeOrCoffeeShop (rdfs:subClassOf schema:FoodEstablishment)
7	Event	schema:Event (rdfs:subClassOf schema:Thing)
8	Sightseeing	schema:TouristAttraction (rdfs:subClassOf schema:Place)
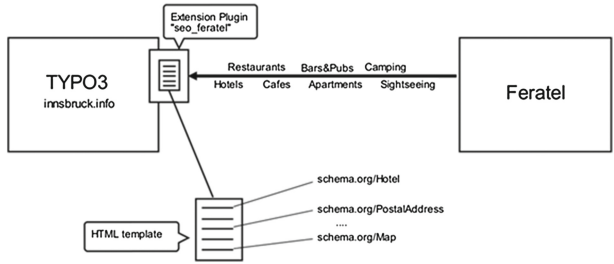
Fig. 1. TVb website feratel integration - HTML template modified to insert schema.org annotations

2. Restaurants, Cafes, Bars and Pubs, and Sightseeing using the following properties: Name, Map, PostalAddress (including streetAddress, addressCountry, postalCode, addressLocality, telephone and faxNumber).

The automatic creation of semantic annotations, on the fly according to schema.org, is complemented by a knowledge engineering effort we are carrying on in order to improve the quality of annotations. We are creating Linked Open Data dataset which includes and integrates annotations of touristic service providers such Hotels, Restaurants, Cafes, etc. The dataset is available at http://loi.sti2.at/openrdf-workbench/repositories/STI/summary and contains annotations of about 100 touristic service providers in Innsbruck and its surroundings.

3   Evaluation, Conclusions and Future Work

We have performed a preliminary evaluation in order to measure the impact of having deployed semantic annotations according to schema.org on the TVb

Fig. 2. Comparison of visitors before deployment and the same period of previous year.

Fig. 3. Comparison of visitors after deployment and the same period of previous year.

website. As evaluation criteria we use the number of the website visitors for a period of 40 days before and after deployment of the annotations i.e. Jan 20, 2014. We compare the number of visitors in this time interval with the numbers of visitors during the same time interval a year ago. We use Google Analytics to obtain these numbers.

First we compare the period before the deployment of annotations (Dec 11, 2013–Jan 19, 2014) with the same period of the previous year (Dec 11, 2012 Jan 19, 2013). As is shown in Fig. 2, there is an increase of 16.96 % visitors, meaning that TVb was able to increase the number of visitors with 16.96 % without using semantic annotations. Comparing also the period after deployment (Jan 20, 2014–Feb 28, 2014) with the same period of the previous year (Jan 20, 2013–Feb 28, 2013), we can observe an increase of 25.59 % visitors (see Fig. 3). If the increase of visitors without annotations was of 16.96 %, the increase of visitors with annotations is of 25.59 %. The difference of 8.63 % on the number of visitors may be caused by annotating the content. We also evaluated the impact of annotations on sub-pages of TVb website presenting individual hotels, restaurants and sightseeing. An average increase of 5 % in visitors was observed on the sub-pages after the deployment of the annotations.

As part of our current and future work we are developing a schema.org annotations plugin which is able to insert annotations not at the destination (e.g. the TVb website or other touristic service providers websites) but rather at the source (e.g. feratel). We are also in the process of extending the loi.sti2.at LOD dataset by curating and including annotated content about more touristic service providers.

Reference

1. Stavrakantonakis, I., Toma, I., Fensel, A., Fensel, D.: Hotel websites, web 2.0, web 3.0 and online direct marketing: the case of austria. In: 21th International Conference on Information and Communication Technologies in Travel and Tourism (ENTER2014). Springer, Heidelberg (2014)