

STAR:chart framework

Since 2001, we have been investigating how Semantic Web technologies can improve the development and the user experience of Web applications. In particular, we conceived, designed and developed a framework to build knowledge-intensive information portals - called **SOIP-F** (Semantic Organization Information Portal Framework) - by employing ontologies and other Semantic Web technologies. The results of our research were published within the scientific community and successfully deployed in several occasions (like the projects **COCOON** and **NeP4B**).

During the last few years, we refined and enriched the framework, both on the conceptual side and on the technical side. The current result is the **STAR:chart framework**, which, preserving the basic principles of SOIP-F and building on that experience, is an improved tool to help data managers to disclose their information sources by generating - in an easy and semi-automated way - a (Web) application to search and navigate across resources.

STAR:dust and STAR:ship ontologies

The STAR:chart framework has two main underlying ontologies, namely STAR:dust and STAR:ship.

The **STAR:dust** ontology is a conceptual model aimed at designing and specifying the navigation, that Web users undertake while surfing through resources. It provides a thorough conceptualization that can be used as **application ontology** (in a Model-driven Architecture approach) by the STAR:chart framework, which is a software tool that supports the navigation and the presentation of resources.

Therefore, the STAR:dust conceptual model specifies the **navigation and presentation semantics**. The resulting ontology, however, is not useful per se, but it is used to strongly decouple the editing of contents from their visualization. For example, once we have a domain ontology which describes the information contained in the data source, the data manager can "design" the information visualization by **mapping** between the domain ontology and the STAR:dust ontology. Finally, at runtime STAR:chart, taking as input both the domain knowledge and the mappings, makes lever on the STAR:dust ontology and produces a way to present and navigate across contents.

The **STAR:ship** ontology, on the other side, is the conceptual model that defines the **structure of a Web application** in terms of pages, widgets and related artifacts. Modeling a high-level description of a Web site under various dimensions (i.e., structure, composition, navigation, layout and personalization) is not a new idea. The STAR:ship ontology, as a consequence, builds on the long-term research and know-how in Web engineering; in particular, our

conceptual model takes inspiration from the well-known and industrially-exploited WebML language, from which it borrows the concepts of area, page, unit and link.

At runtime, apart from the mapping definition, the framework needs a **sitemap specification**, i.e. an abstraction of the Web site which contains all the elements that make the framework manage efficiently users' requests. The sitemap is at a lower level of abstraction with regards to the data mapping, it is the artifact needed at runtime.

Case studies

Service-Finder Portal

We successfully employed the STAR:chart framework in the **Service-Finder project** to build the interface for searching and browsing of services. The result is publicly accessible at <http://demo.service-finder.eu>

NeP4B truckload exchange

STAR:chart was also used in developing the truckload exchange system that lets logistic operators to search in demands and offers. For confidentiality reasons of the real logistic operators involved, the public portal available at <http://seip.cefriel.it/truckload-exchange> is only a demonstrative application with faked data.

Publications

Irene Celino, Dario Cerizza, Francesco Corcoglioniti, Alberto Guarino, Andrea Turati and Emanuele Della Valle: "**STAR:chart - Preserving Data Semantics in Web-based Applications**" In Proceedings of the 12th Business Information Systems Conference (BIS 2009), Lecture Notes in Business Information Processing (LNBIP), Springer, volume 21, pages 97-108, Poznan, Poland, April 2009. [[paper](#)][[presentation](#)]