

Application to filter semantic searches for the development of a complex template database at Darmstadt University.

Abstract

The IT departments of larger companies are typically entrusted with the task of providing staff with access to templates in the form of documents, graphics and InDesign modules. A key aspect of such assignments is quality control, in order to ensure that all employees use the most up-to-date template versions. An additional aspect is the simple accessibility of the template components in question. This seemingly easy task quickly becomes increasingly difficult as the degree of freedom concerning color variations, and such things as department-specific logos, is increased.

In search of a solution to exacting requirements

Darmstadt University's corporate design allows all departments and faculties to use an individual logo. These logo versions are available in 11 different colors and are offered in the file formats indd, png, jpg, gif, tiff, eps, wmf, bmp for the various applications. Due to the abundance of color variations and file formats, the employees theoretically have access to nearly 3,500 logos for use in their publications. As there are also templates for various print products, a solution aimed at quickly finding the appropriate templates was urgently needed. An additional requirement in providing these templates involved the implementation of an authorization concept to encompass all security aspects, so that only those templates would be offered to users who hold the authorization to use them. Furthermore, a text describing how individual template components are to be used must be offered to experts at various levels.

In addition to searching and finding templates, additional requirements were to be dealt with concerning specific issues: Which templates were used to create the resulting print media? Which photos have already been used? Are there further print media covering the same topic?

A file system was seen as an inadequate means to implement these requirements. It would also be impractical to make use of Typo3, the central university CMS, due to the complexity of the searches. This led to the choice of k-infinity, a specialist software for semantic networks. It has already been used for the publication databases within Darmstadt University.

Semantic technologies at Darmstadt University

Semantic technologies are an important tool for developing structured knowledge, for linking all types of content sources and making them available for evaluation. Knowledge is thereby developed through a network of topical terms, which, in themselves, are interrelated. The academic environment poses a special challenge for semantic knowledge development as its topic environments are often heterogenic and expand rapidly. The essential question is:

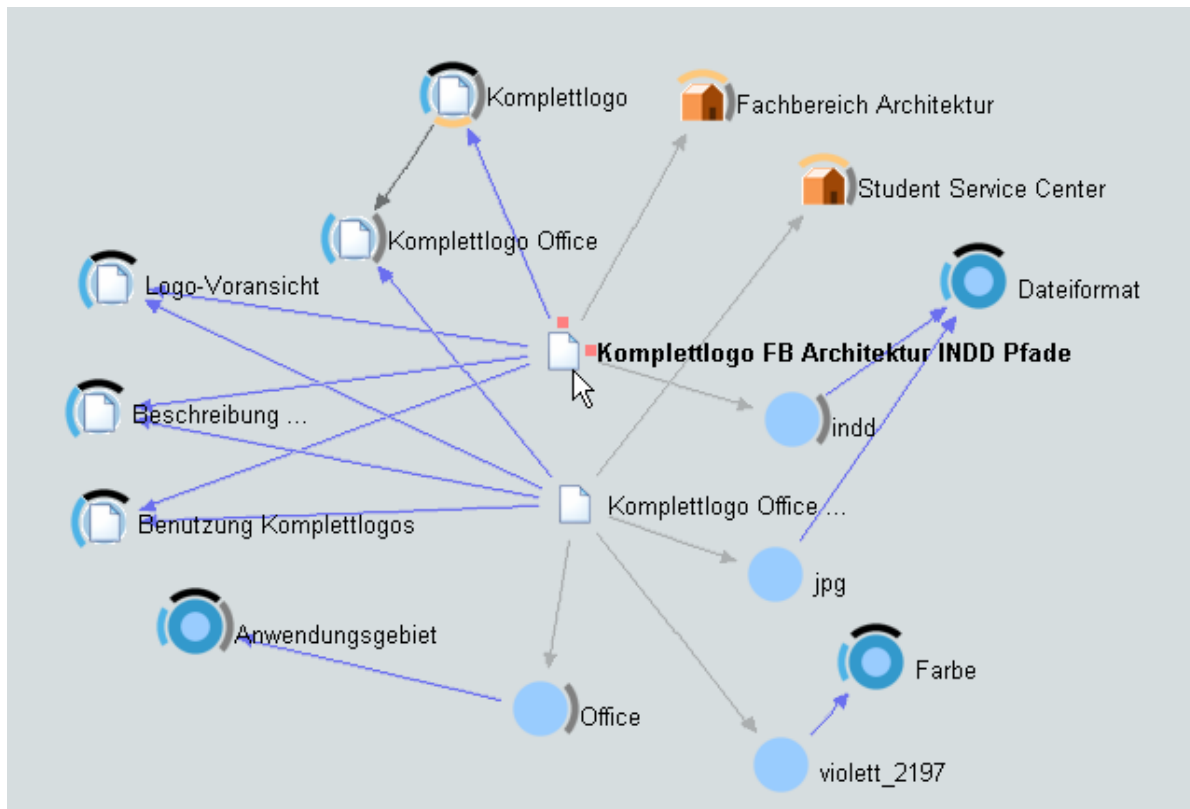
Which topics are the focus of students and university staff and how can access to the required data be provided in a structured manner?

Darmstadt University has access to topic network comprising more than 200,000 terms that thematically link lectures, final papers, professional articles and internal publications, allowing these to be evaluated. In addition, the entire university structure is stored in semantic objects. Employees and students are linked to their faculties and publications. The evaluation of semantic relationships between topics, publications and persons will provide the university with the opportunity to build an expert database in the future.

An integrative solution, incorporating the existing publication database, was considered the most practical method of providing a centralized source for templates, since use could be made of both the existing semantic technology and the linked person database.

Implementation

Access to the templates was realized via an independent web portal since the user interface and the authorization concept imposed requirements that differed substantially from the existing publication portal. The original data from the file system had to be resolved entirely into semantic objects as it would otherwise not have been possible to carry out the filtered searches that enable an evaluation of that data. In addition to the publications formats, both colors and file formats were stored as independent semantic objects. Specific organization templates are linked with the organizational units and are thus accessible only to their members only. It was nevertheless considered desirable that all university staff be able to see previews of all templates of the other departments. Even if no direct download is permitted here, a glance over the horizon and a constructive exchange of ideas is promoted by providing contact details for the person responsible.



Picture 1: View of the k-infinity backend with object relationships and object types of the template portal. File formats, colors, and application areas are stored as individual object types and can be semantically evaluated via their relationships to the template object.

Brief Normalfaltung Abteilung Präsidium - Hochschulrat DOT

Brief Normalfaltung

Attribute A*

Datei upload (pdf, doc, etc) + ▼ ✕ ▼ 📄 🔗 📄

Dateiformat + ▼ ✕ ▼

erstellt + ▼ ✕

Freigabe für nicht registrierte U + ▼ ✕ ▼

Freigabe für registrierte h_da-U + ▼ ✕ ▼

geändert + ▼ ✕

Name + ▼ ✕ ▼ ⋮

Vorlage + ▼ ✕ ▼ 📄 🔗 📄

Relationen R*

CD-Dokument ist für Orga-Ein + ▼ ✕

hat Dateiformat + ▼ ✕

Erweiterungen E* +

Benutzung Brief Normalfaltung 📄 🔗 📄

Beschreibung Brief Normalfaltung 📄 🔗 📄

Picture 2: Representation of a letter draft in the back end. A non-editable pdf is provided as preview in the front end. The basic authorization settings forbid access by guests. Due to the relationship with the organizational unit “Presidium”, the actual template in the dot format is accessible only to the staff of this organizational unit. The extensions “Use” and “Description” contain texts explaining the template’s use and can be brought up on screen in the front end.

h_da
HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES

Corporate Design Zugriffssystem

Start

Benutzer: Böving, Roland
Profil: anzeigen
CD Level 1 (Mitarbeiter)

Arbeitsmodus: Ansicht CD Elemente
 Mit Downloadrecht Alle

Dokumente mit Downloadrecht
Start & Einführung
 Vorlagen nach Typ
 Vorlagen nach Abteilung
 Beispiele (finale Exemplare)
 Info
Impressum & Kontakt

Schnellfilter -> Kommunikationsmittel (Vorlagen)

Fachbereiche	Art	Farbe	Dateityp
Alle	Alle	Alle	Alle
IT Dienste und Anwendungen	Aushang Bescheinigungen Brieffschaft Dokumentationsvorlagen Einladung		doc dot pdf ppt xls

Schnellfilter -> Basiselemente (Farben, Schriften, Logos)

Suchergebnisse

Suche nach „“ < 1 / 2 >

Semantische Suche

- Brief Normalfaltung Abteilung IT Dienste und Anwendungen DOT
- Dokumentationsvorlage akademisch 1.0 DOT
- Einladung Vorlage 1.0 DOT
- Hobbit Startseite Beispiel 1.0 PPT
- Hobbit Startseite Farbtabelle 1.0 XLS
- in Vorbereitung
- Kurzmitteilung Vorlage 1.0 DOT
- Lageplan Darmstadt PDF
- Lageplan Dieburg PDF
- Mastervorlage PowerPoint-Präsentation

Verlauf
 Start & Einführung
 Vorlage Aushang hoch
Abteilung IT Dienste und Anwendungen DOT
 Brief Normalfaltung Abteilung IT Dienste und Anwendungen DOT

Picture 3: View of the web portal for corporate design templates of Darmstadt University. After logging in, users are offered only those templates relevant to them. All proposed search options are built on a semantic foundation.

Start

Benutzer
 Böving, Roland
 Profil: anzeigen
 CD Level 1 (Mitarbeiter)
 Abmelden

Arbeitsmodus
 Ansicht CD Elemente
 Mit Downloadrecht Alle

Dokumente mit Downloadrecht
 Start & Einführung
 Vorlagen nach Typ
 Vorlagen nach Abteilung
 Beispiele (finale Exemplare)
 Info
 Impressum & Kontakt

Schnellfilter -> Kommunikationsmittel (Vorlagen)

Schnellfilter -> Basiselemente (Farben, Schriften, Logos)

Fachbereiche	Art	Farbe	Dateityp
Alle	Alle	Alle	Alle
IT Dienste und Anwendungen	Hauschrift HDA Office / DIN Logo	blau_1169	bmp
	Schriftenprogramm	blau_8190	eps
		gelb_1051	gif
		grün_2048	jpg
		grün_8079	lzw-tif

Suchergebnisse

Suche nach „“

Semantische Suche

- Bildmarke Brief h_da (allgemein) WMF blau (8190) ****
- Bildmarke Office Abteilung IT Dienste und Anwendungen PNG blau (8190) ****
- Bildmarke Print h_da (allgemein) EPS blau (8190) ****
- Komplettlogo Office Abteilung IT Dienste und Anwendungen JPG blau (8190) ****
- Komplettlogo Office Abteilung IT Dienste und Anwendungen PNG blau (8190) ****
- Komplettlogo Office h_da (allgemein) JPG blau (8190) ****
- Komplettlogo Print Abteilung IT Dienste und Anwendungen EPS blau (8190) ****
- Komplettlogo Print Abteilung IT Dienste und Anwendungen EPS blau (8190) [englisch] ****
- Komplettlogo Print Abteilung IT Dienste und Anwendungen LZW-TIF blau (8190) ****
- Komplettlogo Print Abteilung IT Dienste und Anwendungen TIF blau (8190) ****
- Komplettlogo Print h_da (allgemein) EPS blau (8190) ****
- Komplettlogo Print h_da (allgemein) LZW-TIF blau (8190) ****
- Komplettlogo Print h_da (allgemein) TIF blau (8190) ****
- Screenlogo Web Abteilung IT Dienste und Anwendungen GIF blau (8190) ****

Picture 4: Approach 1 > Use of a quick filter for logos with aim of finding all available templates in the color blue_8190. The result displays a list of logo variants in the corresponding color and many different file formats. Setting the filter to a file type will further limit the resulting set.

CD Level 1 (Mitarbeiter)
 Abmelden

Arbeitsmodus
 Ansicht CD Elemente
 Mit Downloadrecht Alle

Alle Dokumente
 Start & Einführung
 Vorlagen nach Typ
 Vorlagen nach Abteilung
 Abteilungen
 Fachbereiche
 Fachbereich Architektur
 Fachbereich Bauingenieurwes
 Fachbereich Chemie- und Biote
 Fachbereich Elektrotechnik und
 Fachbereich Gesellschaftswis
 Fachbereich Gestaltung
 Fachbereich Informatik
 Fachbereich Maschinenbau un
Fachbereich Mathematik und
 Fachbereich Media
 Fachbereich Wirtschaft
 Forschungsgruppen / -institute
 Beispiele (finale Exemplare)
 Info
 Impressum & Kontakt





Fachbereiche
Fachbereich Mathematik und Naturwissenschaften

Beschäftigte | Kommunikationsmittel | **Basiselemente**

Durchsuchen:

Kategorie	Farbe	Vorlage	Abteilung
Bildmarke	■	Bildmarke Print h_da (allgemein) EPS schwarz (0111)	
Bildmarke	■	Bildmarke Office FB Mathematik und Naturwissenschaften PNG blau (8190)	Fachbereich Mathematik und Naturwissenschaften
Bildmarke	■	Bildmarke Office FB Mathematik und Naturwissenschaften PNG violett (8108)	Fachbereich Mathematik und Naturwissenschaften
Bildmarke	■	Bildmarke Print h_da (allgemein) EPS grün (8079)	
Bildmarke	■	Bildmarke Print h_da (allgemein) EPS orange (9901)	
Bildmarke	■	Bildmarke Brief h_da (allgemein) WMF orange (2081)	
Bildmarke	■	Bildmarke Print h_da (allgemein) EPS rot (5005)	

Picture 5: Approach 2 > Searching hierarchy levels. The templates are categorized by communication media (actual templates) and base elements (logo etc.). The specific templates are displayed in a long alphabetical list that is color coded and searchable.

Fachbereiche			
Fachbereich Mathematik und Naturwissenschaften			
Beschäftigte	Kommunikationsmittel	Basiselemente	
Durchsuchen:		<input type="text" value="kom grün jpg"/>	
Komplettlogo Office		Komplettlogo Office FB Mathematik und Naturwissenschaften JPG grün (2048)	Fachbereich Mathematik und Naturwissenschaften
Komplettlogo Office		Komplettlogo Office FB Mathematik und Naturwissenschaften JPG grün (8079)	Fachbereich Mathematik und Naturwissenschaften
Komplettlogo Office		Komplettlogo Office h_da (allgemein) JPG grün (2048)	
Komplettlogo Office		Komplettlogo Office h_da (allgemein) JPG grün (8079)	


Picture 6: Reducing the solution set. Entering short descriptions of the desired template will reduce the resulting set.

Schnellfilter -> Kommunikationsmittel (Vorlagen)

Schnellfilter -> Basiselemente (Farben, Schriften, Logos)





















Suche

Starten















Suchergebnisse 

Suche nach „brief“ < 1 / 2 >

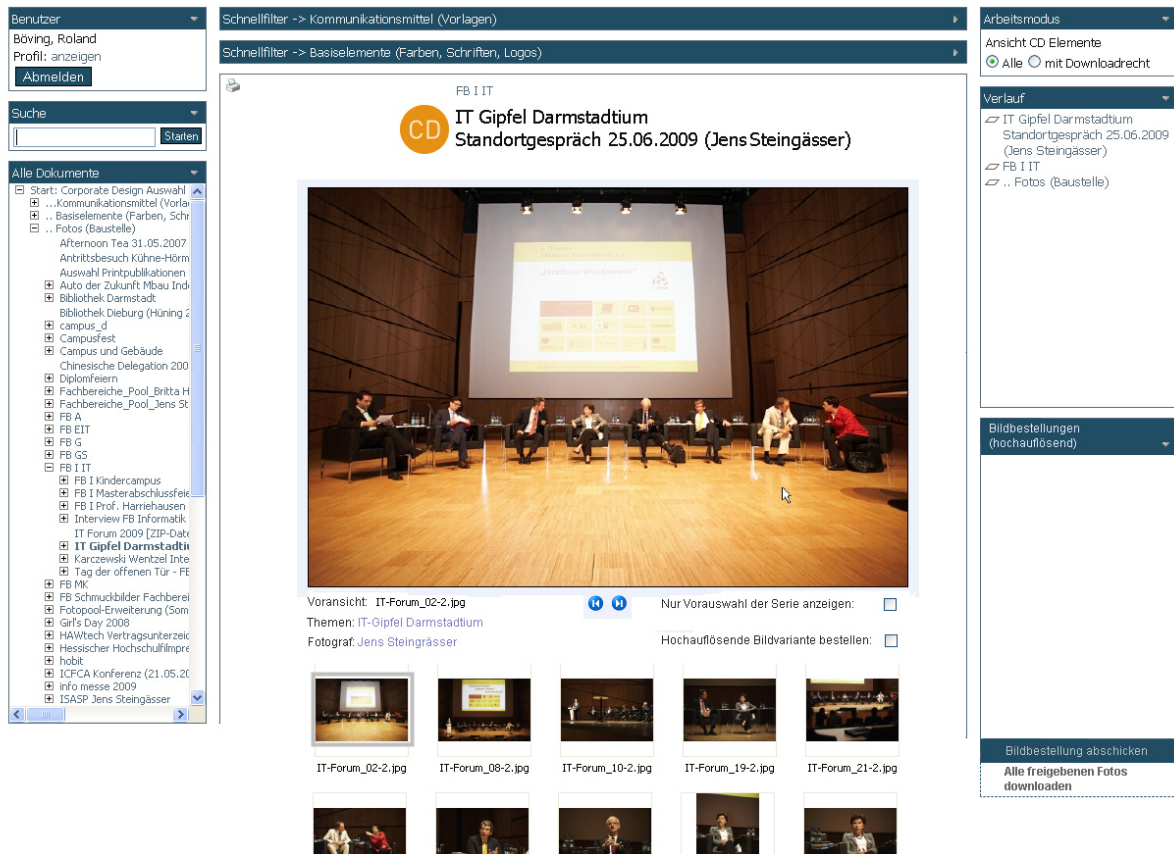
Semantische Suche

-  Bildmarke Brief h_da (allgemein) WMF blau (1169) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF blau (8190) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF gelb (1051) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF grün (2048) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF grün (8079) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF orange (2081) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF orange (9901) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF rot (5005) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF schwarz (0111) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF violett (2197) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF violett (8108) ■■■■
-  Bildmarke Brief h_da (allgemein) WMF weiß (1111) ■■■■
-  Brief Normalfaltung ■■■■
-  Brief Normalfaltung Abteilung IT Dienste und Anwendungen DOT ■■■■
-  Briefschaft ■■■■
-  Komplettlogo Brief ■■■■
-  Komplettlogo Brief Abteilung IT Dienste und Anwendungen WMF schwarz (0111) ■■■■
-  Komplettlogo Brief h_da (allgemein) WMF schwarz (0111) ■■■■
-  Kurzmarke Brief Institut ZFE WMF schwarz (0111) ■■■■
-  Präsidentenbrief ■■■■

Verlauf

-  Level 2 Bildplakat A3 LGO
-  Vorlage 1.0 INDD
-  Fachbereich Mathematik u Naturwissenschaften
-  Banner Hobit (Optotechnik und Bildverarbeitung / Informationswissenschaft)
-  Vorlage 1.0 PS
-  Level 2 Flyer 6seitig Vorla
-  1.0 INDD (CS3)
-  IT Dienste und Anwendung
-  Start & Einführung
-  Vorlage Aushang hoch
-  Abteilung IT Dienste und Anwendungen DOT
-  Brief Normalfaltung Abteilu
-  IT Dienste und Anwendung
-  NOT

Picture 7: Solution 3 > Using the search input. The search is a combination of a *string* search and a semantic search. Synonyms facilitate finding templates with designations that are overly academic.



Picture 8: Integrated university picture database with more than 40,000 photo objects. In the future, high resolution photos will be available for ordering via a shop system. Persons and events are in many cases semantically linked and can be evaluated using search criteria.

Result

The requirements for the template access system at Darmstadt University were successfully implemented and are now accessible to 1,100 employees. This is a practical example of the usefulness of semantic methodologies. At the same time, a majority of the staff confirmed that the application was user-friendly. The next steps include the implementation of additional workflow functions and upload possibilities for new template variants.