Metadata navigation

An interaction design approach
RDF and the real world

Translating Semantic Web into business value

“How does it solve our problems?”

RDF is a powerful, dynamic way to describe data

But how do we present the data to the user?

What about search? navigation? exploration?
Aduna

2000: Developers of Sesame
   A fast and scalable RDF database

2008: Focus on marketability
   Cutting-edge technology
   But with a simple and appealing interface
   AutoFocus, AutoFocus Server, Vound Intella

Core business: Metadata Navigation & Search
Navigation and Search

What are the problems?
The navigation problem

Too many options!

Deep hierarchies!
The search problem

Zero results!

Google a pretty girl somewhere near eindhoven with a nice smile, blond hair, some modesty and a hyper-rich dad - did not match any documents.

Suggestions:
- Make sure all words are spelled correctly.
- Try different keywords.
- Try more general keywords.
- Try fewer keywords.

Millions of hits!

Google desperate teenagers

SpunkyHomeSchool: Desperate Teenagers
Desperate Teenagers. Monday, October 23, 2006. Mom and dad, you've given me everything to live with, but nothing to live for. ...

MySpace.com: Desperate Teenagers. 33 - Female - Fairview...
MySpace profile for Desperate Teenagers with pictures, videos, personal blog, interests, information about me and more.

YouTube: Le Générique de Desperate Teenagers (saison 2 partie 1)
Voici en exclusivité le générique de la série "Desperate Teenagers" (saison 2). ... Category: Film & Animation. Tags: desperate teenagers générique...
Improvements

Faceted Navigation

Cluster Map visualization
Faceted Navigation

“Facet” = meta-data element
- Title, date, author, language, size, location

Facets have values
- Author is ‘A. S. Tanenbaum’

Facet values are related
- Author ‘A. S. Tanenbaum’ is connected to title ‘Structured Computer Organization’

Faceted Navigation
- Choose a facet value, and see related facets and values
How it works...

Multiple views on data
Drill down mechanism
Show all options
Suggests what to search
Preview number of docs
Avoid over- and under-specification

Facet: type
Values: hierarchical structure
Number of docs per value
I don’t know the exact search query
  Too few keywords = too many results
  Too many keywords = too few results

Usual solution
  Keep trying different subsets of keywords

Better solution
  Go deep and broad at the same time!
  Showing the ANDs and ORs in one overview
  See the structural relations in your data
How it works...

'bart' AND 'web information systems' AND NOT 'guest lecture'

'guest lecture' AND 'web information systems' AND NOT 'bart'
Interaction design
My job

Make this work (even) better
  Interaction design

Usability
  Find problems with the current software

Usefulness
  Invent new ways to interact with the Cluster Map, and better ways to do Faceted Navigation
Interaction design cycle

- Ideation
- Concept validation
- Detailed design
- Paper prototyping
- Think-aloud testing
- Functional prototyping
- More think-aloud testing
- Reflection
- Implementation
Interaction design cycle

**Ideation**
- Concept validation

**Detailed design**

**Paper prototyping**

**Think-aloud testing**
- Functional prototyping
- More think-aloud testing

**Reflection**

**Implementation**

This is the stuff that you will do in your assignment!
Example: what about zooming in the Cluster Map?

How? There are millions of ways you could build this!

Goal: come up rough sketches of several nice ideas

Sketches are like pseudo-code

You first get a rough idea, then iterate
Examples:
Concept validation

Think of a scenario in which your idea would be useful
  Draw it like a comic strip

Test the scenario with users
  Do they find the scenario relevant?
  Do they like the solution?
  Why (not)?

Goal: find the best idea
  In your assignment, you will choose the best idea yourself
Example of outcome:

Users have mixed feelings about the usefulness of zooming: 2 users find it useful, 2 others “cool” but cumbersome, and the remaining 6 do not find it a useful addition. Some users (3) think they will lose overview, and some (4) think that the zooming will not work for bigger clusters that will never fit entirely on their screens.

However, 8 users are able to come up with a (downgraded) version of the zooming functionality that they would find useful.
Detailed design

Goal: Get the design right

Wireframe versions of your interface
  Black-and-white version of your interface
  Don’t bother about the “looks”
  Get the functional details right

Annotate designs so that others understand
Example:

New menu with actions possible on current selection

Popup buttons for zooming actions
Paper prototyping

Goal: make a paper version of the interface
Will be used in testing

Cut out and make extra copies of dynamic parts
They will be moved around and/or scribbled on

Make “fake data” for testing
Tip: constrain your test to a fixed set of questions and anticipate the steps your user will take
Example:
Think-aloud testing

Let users perform a set of tasks using the interface
   Ask them to “think-aloud”, so you can detect problems
   Don’t help them, unless they are stuck

You “play computer”
   User uses finger as mouse, pencil as keyboard
   You move stuff around based on their actions

Make notes of problems
   Use video if possible, but this is not necessary
Example:
After the test...

Write up problems that you found

With 2-4 users, you should find at least 10 problems
20-30 is more common!

Iterate on your designs

Improve functionality users didn’t understand
It is possible that you even get entirely new ideas at this stage

In your assignment, describing the problems is enough
Functional Prototype & testing

Build a functional prototype
Adobe Flash or MS Visual Basic are excellent tools for this
This will help you find out the right timings and aesthetics

Don’t worry about technical stuff
Fake the back-end
Use a scenario, so that you can anticipate every move the user makes

This takes a lot of time!
Fortunately, you don’t have to do this
Reflection & Implementation

Document your findings

- This is a summary of the final design
- Link your recommendations to real user data
- I’m usually very detailed, because the developers have to understand every detail

And then it’s time to implement your changes!
Your assignment

Metadata navigation, the next level!
We’re pretty cool...

Nice search tool
Use metadata and visualization for better search and navigation

...but we’re not very “semantic”!

We use metadata as properties
Not as links between entities
The problem in more detail

We can navigate multiple sources in a single “domain”
Entities (e.g. “files”, “e-mails”) with properties (e.g. “author”, “size”)

What if we have several domains?
For instance “customers” and “products”
Each domain has properties
The domains are linked (“purchase” links customer and product)

How can we navigate and search metadata in these linked domains?
A set of customers is linked to a set of products
If you have one set, you can “jump” to the related set
Actually, you can jump back and forth
This way you can answer interesting questions

Examples

/Facet (http://slashfacet.semanticweb.org)
Freebase Parallax (http://mqlx.com/~/david/parallax)
Your job

Design this functionality!

Scenario

Simple RDF data structure
Some basic questions you should be able to answer with your interface

Use interaction design techniques
Prototype and test a solution
Assignment

Big chain of supermarkets

RDF database

on which basic SPARQL queries can be performed

holds customer and product information

Your job

design an interface

help managers gain complex but intuitive access
Simple RDF data structure

Schema (RDFS)

Customer
- hasName
- hasJob
- residence

Purchase
- makes
- onDateTime

Product
- consistsOf
- costs
-品牌形象

Instance (RDF)

Customer
cust187
- hasName
- hasJob
- residence

Purchase
- makes
- onDateTime: 2008-10-14T17:33:23

Product
- prod911
- costs
- section
- productType
- Amstel

Bart
- student
- 24

Eindhoven
- alcohol
- beer
Example questions

Management is planning marketing campaign targeted to students. What products do students buy most? (answer: Golden Power, Oreo’s, Milner cheese and Home Bakery bread)

Re-stocking the stores seems to be a problem later at night. Which section has most purchases after 7pm? (answer: microwave/oven meals)

It’s “candy week”; all candy is sold with 10% discount. To what age groups should the ad campaign be targeted? (answer: 20-29, 30-39, and 60-69)

*(see assignment for more...)*
Subtasks

Ideation (3h)
  Sketches

Detailed Design (4h)
  Wireframes

Paper prototyping (3h)
  Cut-out wireframes ready for testing

Testing (4h)
  10+ problems

Reflection (4h)
  Summary document

(see assignment and these slides for more info...)
A warning!

This can take months, you have to do it in hours
  Make sure you show an understanding of the task
  Stealing ideas from existing tools is allowed, just make appropriate references

Extra work will be rewarded!
  Best results may be elaborated upon in a special final assignment for this course
  These shall be presented to Aduna
  Who knows what else...
For more information

AutoFocus 5.0
can be downloaded from www.aduna-software.com

Assignment
please mail me at bart@aduna-software.com

Jobs @ Aduna
check www.aduna-software.com/home/careers/