



Evaluating a Thesaurus Browser for an Audio-Visual Archive

Veronique Malaisé, Lora Aroyo, Hennie Brugman,
Luit Gazendam, Annemiek de Jong, Cristian Negru,
Guus Schreiber
l.m.aroyo@cs.vu.nl



Broadcast Archives: Challenges

BEELD EN GELUID

- Completely *digital production line* for archiving and indexing of audio-visual material
- Demand for *openness of the archive* to other professionals and general public
- Involvement of *external people* in the archiving process
- Trend towards *multilingual indexing and search* activities



Project context: Supporting Indexing of A/V material

BEELD EN GELUID

- Current situation:
 - mainly manual
 - not feasible for large-scale digital archiving
 - Context documents for programs
- Can we generate candidate annotations?

DAL DER ZUCHTEN

donderdag 1 september 2005, 23.00 – 23.52 uur,
Nederland 3

Herhaling: zondag 18 juni 2006, 13.10 - 14.05 uur,
Nederland 3



[Reageer op de uitzending](#)

[Relevante links](#)

[Bekijk stream](#)

Ergens in een kleine vallei, verscholen tussen besneeuwde bergtoppen van de Spaanse Pyreneeën, ligt het boerendorpje Plan. Elke oudste zoon erft er zijn ouderlijk huis, het land, het vee en de verantwoordelijkheid de eeuwenoude manier van leven in stand te houden. Het werk is zwaar en de winters zijn koud, maar daar klagen ze niet over. Het werkelijke probleem van de mannen uit Plan is, dat er nauwelijks huwbare vrouwen zijn. Al tientallen jaren zoeken de jonge vrouwen uit het dorp hun heil honderden kilometers verderop, in de moderne wereld. De mannen blijven alleen achter, mét de erfenis, maar zonder vrouw en nageslacht.



CHOICE project



- Two foci:
 - Use context documents to generate candidate annotations – for a semi-automatic indexing process
[Gazendam et al., 2006, SWAAM Workshop @ WWW'06]
 - Create a new environment for the documentalists
 - Manual look-up for indexing terms in documents is current practice
 - First step: Browser for the in-house thesaurus
 - Status:
 - Project duration: 4 years
 - Results from 1st year
 - Researches in Sound & Vision



Outline

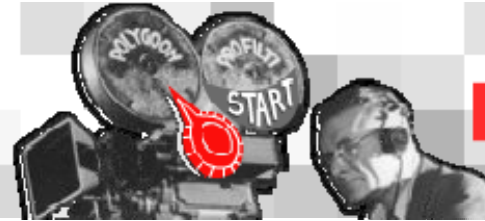


BEELD EN GELUID

- Thesaurus browser goals
- Evaluation setting
- Results 1st evaluation study
- Thesaurus browser (improved version)
- Results 2nd evaluation study
- Discussion and future work



Indexing-Process Characteristics



BEELD EN GELUID



- **Own annotation template**
 - typically specialization of Dublin Core
- **In-house thesaurus** available
- **Multiple people involved**
 - annotations by Sound & Vision and by broadcast companies
- *Our experience: key role for evaluation studies*
 - dramatic changes of the existing business process of the archive



Research Goals for Evaluation Studies



- **General:** gain insight into the *indexing process* of documentalists
- **Specific:** study factors that influence efficiency of *finding indexing terms*
- **Social:** making stakeholders (indexers) aware of *future plans*



Pilot Project: Browser for In-house Thesaurus

BEELD EN GELUID

- **Browser of GTAA**
 - General Thesaurus Audio-visual Archives
- **GTAA**
 - used for selecting *indexing terms* of A/V material
 - has *multiple hierarchies*: topic, place, people,
 - has *development team* which provides regularly updated releases



Requirements

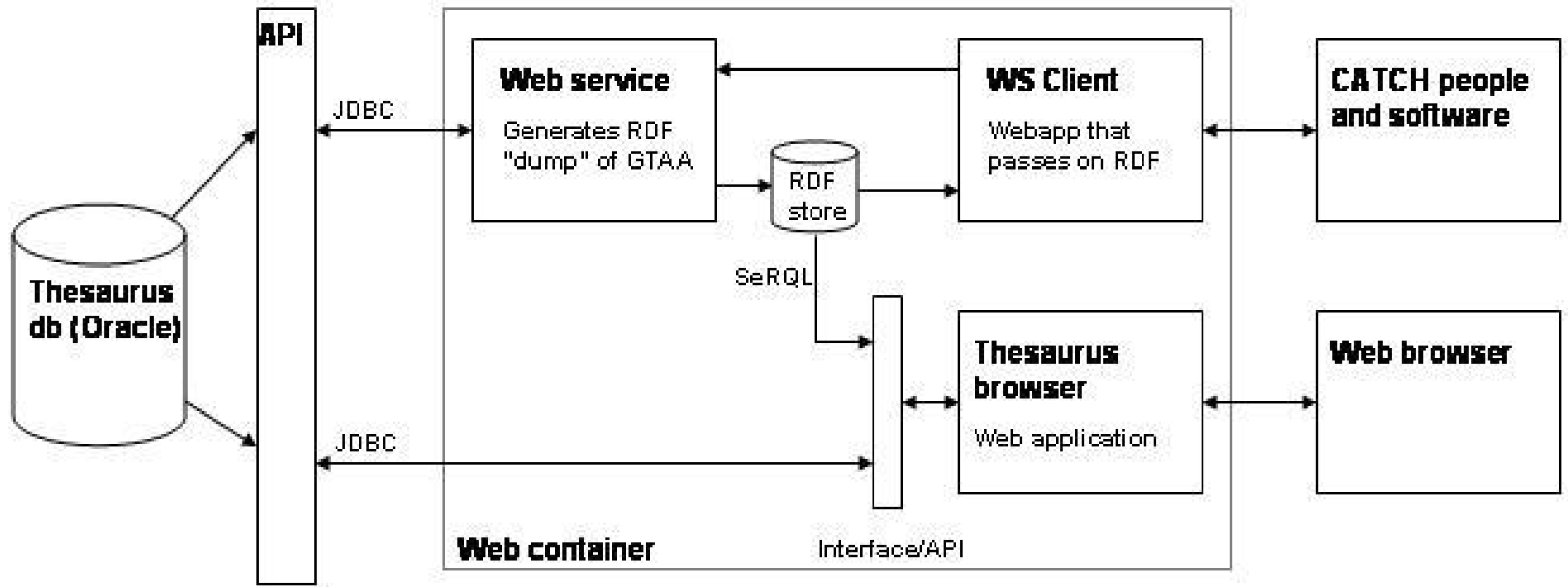
- available inside and outside of Sound & Vision
- interaction with latest *updates* in a database
- display and exploit *structure of thesaurus* in an *intuitive* way
- accessible through *open standards*

From Requirements to Design



- GTAA browser available through standard web interface
- Browser works on RDF format
- Architecture should ensure that the thesaurus database can be rendered as RDF
- Functionality of the interface corresponds to the way in which documentalists search for terms

Technical Architecture



GTAA Browser



- **Tabbed access** to the different thesaurus facets
- Hierarchical display of the **BT/NT relationship** between terms
- Hierarchical display of the **Categories**
- Display of all **information related** to a term (other than BT/NT) in a separate panel
- **Alphabetical** display of terms
- Autocompletion and alphabetical **search**



Onderwerpen

Genres

Personen

Namen

Makers

Geografische Namen

Zoeken

 Case sensitive

amsterdam

Filter

 Spelling

In Huidige As

Selekteer

 Synoniemen

Rubrieken

[11 communicatie en media](#)

- ⊕ (2) [01 levensbeschouwing](#)
- ⊕ (6) [02 maatschappij](#)
- ⊕ (5) [04 ruimtelijke omgeving](#)
- ⊕ (34) [05 economie](#)
- ⊕ (6) [06 gezondheid](#)
- ⊕ (6) [07 opvoeding en onderwijs](#)
- ⊕ (9) [08 wetenschap](#)
- ⊕ (31) [09 techniek](#)
- ⊕ (6) [10 verkeer en vervoer](#)
- ⊖ (406) [11 communicatie en media](#)
 - (96) [11.00 communicatie en media - a](#)
 - (37) [11.01 communicatietransport](#)
 - (168) [11.02 massacommunicatie en -](#)
 - (31) [11.03 informatievoorziening ove](#)
 - (74) [11.04 audiovisuele en elektronis](#)
- ⊕ (90) [12 kunst en cultuur](#)
- ⊕ (9) [13 sport en vrijetijdsbesteding](#)
- ⊕ (10) [14 natuur en milieu](#)
- ⊕ (4) [15 aardrijkskunde](#)
- ⊕ (19) [03 bestuur en geschiedenis](#)

Termen in Rubrieken

[ICT](#)
[II](#)
[aanplakbiljetten](#)
[abonneeradio](#)
[abonneetelevisie](#)
[actualiteitenprogrammas](#)
[advertenties](#)
[affiches](#)
[akkoorden](#)
[aktes](#)
[alarmnummers](#)
[alfabetten](#)
[amateurfilms](#)
[amateuropnamen](#)

◀ 1 2 3 4 5 6 7 8 9 10 ▶

Term Info

affiches

Used for:

[aanplakbiljetten](#)
[posters](#)

Related terms:

[reclame](#)
[grafische kunsten](#)
[pamfletten](#)

Boom

- ⊖ [publicaties](#)
 - [advertenties](#)
 - [affiches](#)
 - [boeken](#)
 - [columns](#)
 - [kranten](#)
 - ⊕ [naslagwerken](#)
 - [recensies](#)
 - [strips](#)
 - ⊕ [tijdschriften](#)
 - [websites](#)

Browser Interface

BEELD EN GELUID

Onderwerpen

Genres

Personen

Namen

Makers

Geografische Namen

Zoeken

Case sensitive

amsterdam

Filter

Spelling

In Huidige As

Selekteer

Synoniemen

Genres

a b c d e f g h i j k l m n o p q r s t u v w x y z

[Amerikaanse western](#)

[absolute film](#)

[abstracte film](#)

[actiefilm](#)

[actualiteiten](#)

[actualité](#)

[actuele informatie](#)

[agenda](#)

[amateuropname](#)

[amusement](#)

[animatie](#)

[anti-oorlogsfilm](#)

[antropologische film](#)

[autobiografie](#)

[avant-garde](#)



Term Info

animatie

Used for:

[abstracte film](#)

[live action](#)

[mixed media](#)

Related terms:

[experimentele film](#)

[jeugdfilm](#)

Scope note: Productie waarbij een illusie van bewegend beeld tot stand wordt gebracht bij bewegingloze objecten (foto's, tekeningen, poppen, cut-outs) door middel van beeld-voor-beeld opname en andere animatietechnieken.

Example: Voorbeeld: Villa Achterwerk: De familie crème de la crème; Films door Norman McLaren, Karel Zeman, Lotte Reiniger

Boom

- animatie
 - [computeranimatie](#)
 - [klei-animatie](#)
 - [poppenfilm](#)
 - [tekenfilm](#)

Alphabetical display of terms
from other facets

Browser Interface

BEELD EN GELUID

BEELD EN GELUID

GTAA Web Browser (VERSION AUGUST 3 2006)

Onderwerpen

Genres

Personen

Namen

Makers

Geografische Namen

Zoeken

Case sensitive

Filter

Spelling

In

Selekteer

Synoniemen

Personen

* [1](#) [a](#) [b](#) [c](#) [d](#) [e](#) [f](#) [g](#) [h](#) [i](#) [k](#) [l](#) [m](#) [n](#) [o](#) [p](#) [r](#) [s](#) [t](#) [u](#) [v](#) [w](#) [x](#) [y](#) [z](#) [ö](#) [ü](#)

[ga](#) [gb](#) [gh](#) [gi](#) [gj](#) [gm](#) [go](#) [ga](#) [gs](#) [gv](#) [gy](#) [gä](#) [gü](#)

[Gaaq, A. vd](#)

[Gaaq, Hein vd](#)

[Gaaq, J. van der](#)

[Gaaq, Lotti van der](#)

[Gaaq, Mitchell van der](#)

[Gaaq, O. van der](#)

[Gaaq, Paul van der](#)

[Gaaq, W. vd](#)

[Gaaikema, Seth](#)

[Gaakeer, Gonny](#)

[Gaal, Annemarie van](#)

[Gaal, Louis van](#)

[Gaal, Rob van](#)

[Galen, Ad van](#)

[Galen, G.H. van](#)

[|<](#) [<<](#) [<](#) 1 2 3 4 5 6 7 8 9 10 [>](#) [>>](#) [|>](#)

Term Info

Gaaq, W. vd

Linked terms:

[Wisconsin](#)

Scope note: Occupation: hoogleraar
University of Wisconsin

Evaluation Metrics & Goals



Phases/Metrics	Goals
Acquaintance Phase	
# problems	learnability
total time spent	learnability
Indexing Phase	
# problems	effectiveness
# times used alphabetical search	efficiency
# times used hierarchy search	efficiency
# times used filter search	efficiency
# steps	efficiency
# resulting index terms	overall success factor
# steps per index term	efficiency
total time on search	efficiency
total time spent	effectiveness / efficiency

Experimental Setup



- Users from S&V (5/6) and BC (4/1)
- Procedure:
 - Introduction of browser and experiment
 - Directed acquaintance phase (10-20 min)
 - Viewing news item (2 min)
 - Golden standard: 12 index terms
 - Index news item with thesaurus browser and context documents, mimic daily work situation (20-40 min)
 - Fill in a questionnaires



Questionnaires



- 50 questions on a seven-point Likert scale
 - Overall interface
 - Search and browsing
 - Subject facet
 - Additional functionalities
- 8 open questions
- 10 questions about personal characteristics

Evaluation study I: Results

BEELD EN GELUID

Stage/Metric	Subjects									
	S1	S2	S3	S4	S5	S6	S7	S8	S9	Avrg
#problems	3	4	5	4	3	2	3	4	5	3,67
total time spent	11	19	22	19	20	14	15	20	18	18
#problems	3	4	4	2	3	2	3	2	3	2,89
#alphabetical s.	8	9	7	6	7	4	7	9	6	7
#hierarchy s.	1	2	0	1	0	5	1	1	1	1,33
#filter search	2	2	2	2	1	1	1	1	1	1,44
#steps	47	30	22	29	31	28	35	37	40	33,22
#resulting index terms	9	10	8	4	9	6	8	5	7	7,33
#steps per index term	5.22	3.00	2.75	7.25	3.44	4.67	4.38	7.40	5.71	4.87
total time on search	29	24	18	21	20	12	18	10	13	18
total time spent	38	33	29	30	31	20	25	19	22	27

Evaluation Study I: Qualitative Analysis



- Number of selected terms was lower for S&V documentalists
 - 1-3 terms vs. 5+
- S&V documentalists found more terms of Golden Standard
 - 8 vs. 6.5 (out of 12)
- Browser more helpful for thesaurus novices
 - = BC documentalists
- Problems mainly with
 - details of search functions
 - screen update



Browser v.2: Changes



- Multi-facet search
- Alphabetical and hierarchical search made more prominent
- Inclusion of synonym facilities
 - external general resource used
- Improving of autocompletion
- Improved screen update strategy
 - dependencies between panes



Evaluation study II: Results

BEELD EN GELUID

Stage/Metric	Subjects							
	S10	S11	S12	S13	S14	S15	S16	Average
#problems	1	3	3	4	3	0	1	2.14
total time spent	29	24	26	16	26	33	22	25
#problems	1	2	2	1	3	2	3	2.00
#alphabetical search	7	9	9	12	6	9	5	8.14
#hierarchy search	4	1	0	2	1	1	2	1.57
#filter search	2	2	0	0	5	0	0	1.29
#steps	26	25	28	28	37	18	10	24.57
#resulting index terms	6	7	6	7	5	9	6	6.57
#steps per index term	4.33	3.57	4.67	4.00	7.40	2.00	1.67	3.74
total time on search	12	9	19	14	10	10	15	13
total time spent	15	12	22	19	13	14	18	16



Evaluation Study II: Qualitative Analysis



- Decrease in number of problems
(2.14 vs. 3.67)
 - Indicates higher level of effectiveness
- Time used for acquaintance phase
(25 min vs. 18 min)
 - Explanation: guidelines were more elaborate and complexity of search increased



Evaluation Studies I, II: Aggregated Results



Question group	Average score 1=lowest, 7=highest	
	Study 1	Study 2
General browser functionalities	4.79	5.26
Subject-facet functionalities	4.64	5.10
Search functionality	4.82	4.87
Browse functionality	5.02	4.57



Discussion



- Documentalists were most comfortable with “known” functionality
 - **alphabetical search**
- **Category-based search** was hardly used
- Despite problems documentalists wanted to **start using the browser in daily work**
 - S&V has integration plan
- Next pilot will integrate **NLP functionality** for generating candidate index terms from context documents



CHOICE project website:

<http://ems01.mpi.nl/CHOICE/>

GTAA Browser demo:

<http://ems01.mpi.nl:8080/GTAABrowser/>

CATCH program overview of projects:

<http://ems01.mpi.nl/catchdemos/pilots.html>

CATCH program overview of demos:

http://www.nwo.nl/nwohome.nsf/pages/NWOP_6CCC3L

**Free University Amsterdam
Computer Science Faculty**