

Last Night a DJ saved My Life

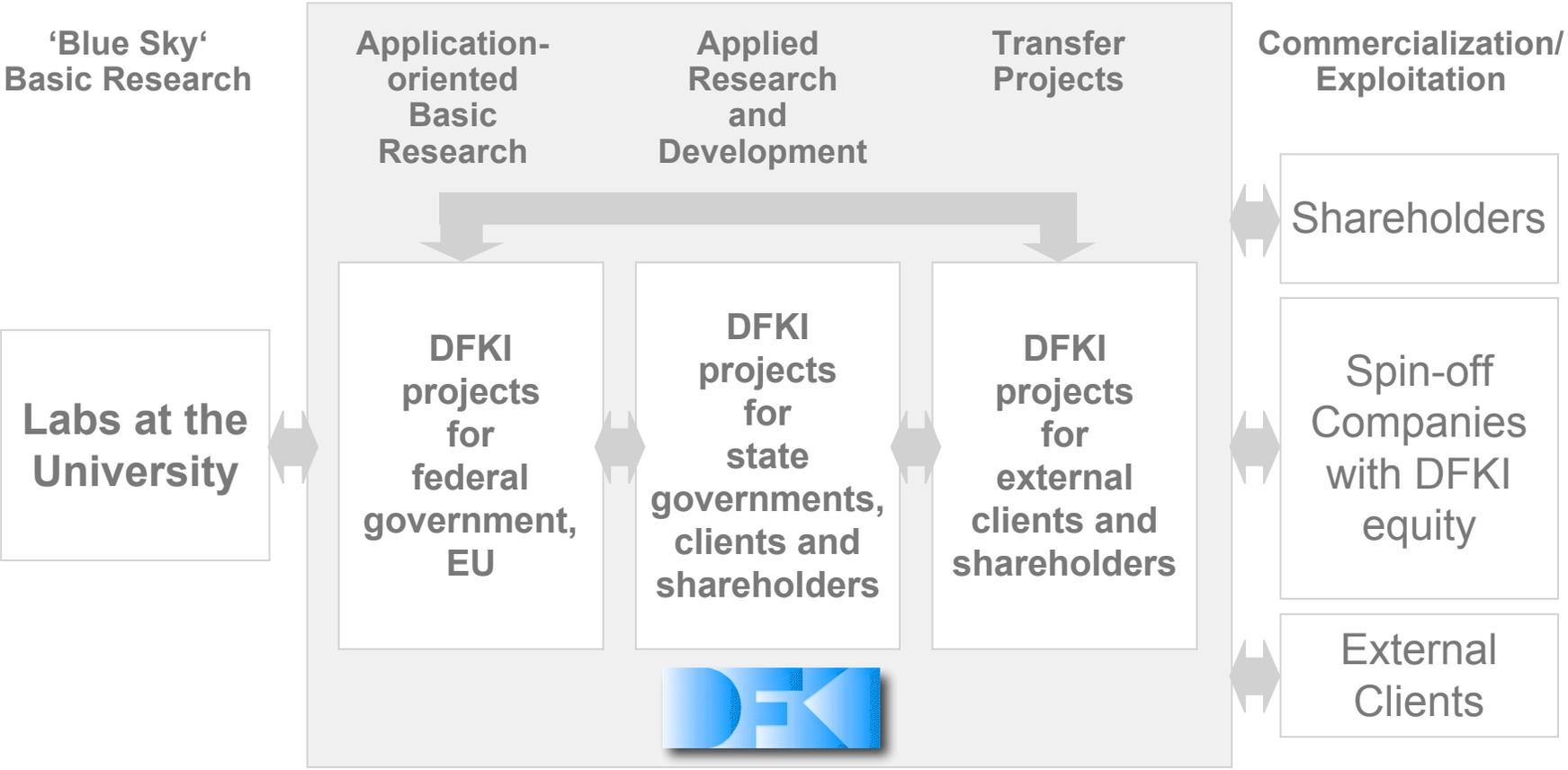
Music 2.0 and Digital Identity

Stephan Baumann
Competence Center Computational Culture (C4)
German Research Center for AI (DFKI)

DFKI Shareholders



DFKI Innovation Cycle



DFKI produced 41 start-ups and about 1200 jobs

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | <p>DFKI received the German Spin-Off Award in 2004</p>  | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Knowledge Management Research Team



Post Docs



PhD Students



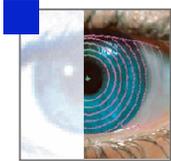
Software Engineers



Research Topics



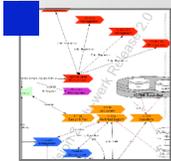
Multimedia Information Retrieval



Visual Information Retrieval



Information Visualization



Knowledge Representation



Agile Knowledge Workflows



Document Understanding

Competence Centers



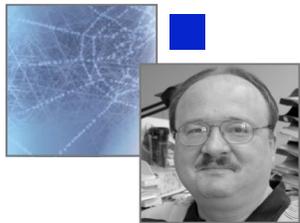
Virtual Office of the Future

Dr. Harald Holz



Computational Culture

Dr. Stephan Baumann



Semantic Web

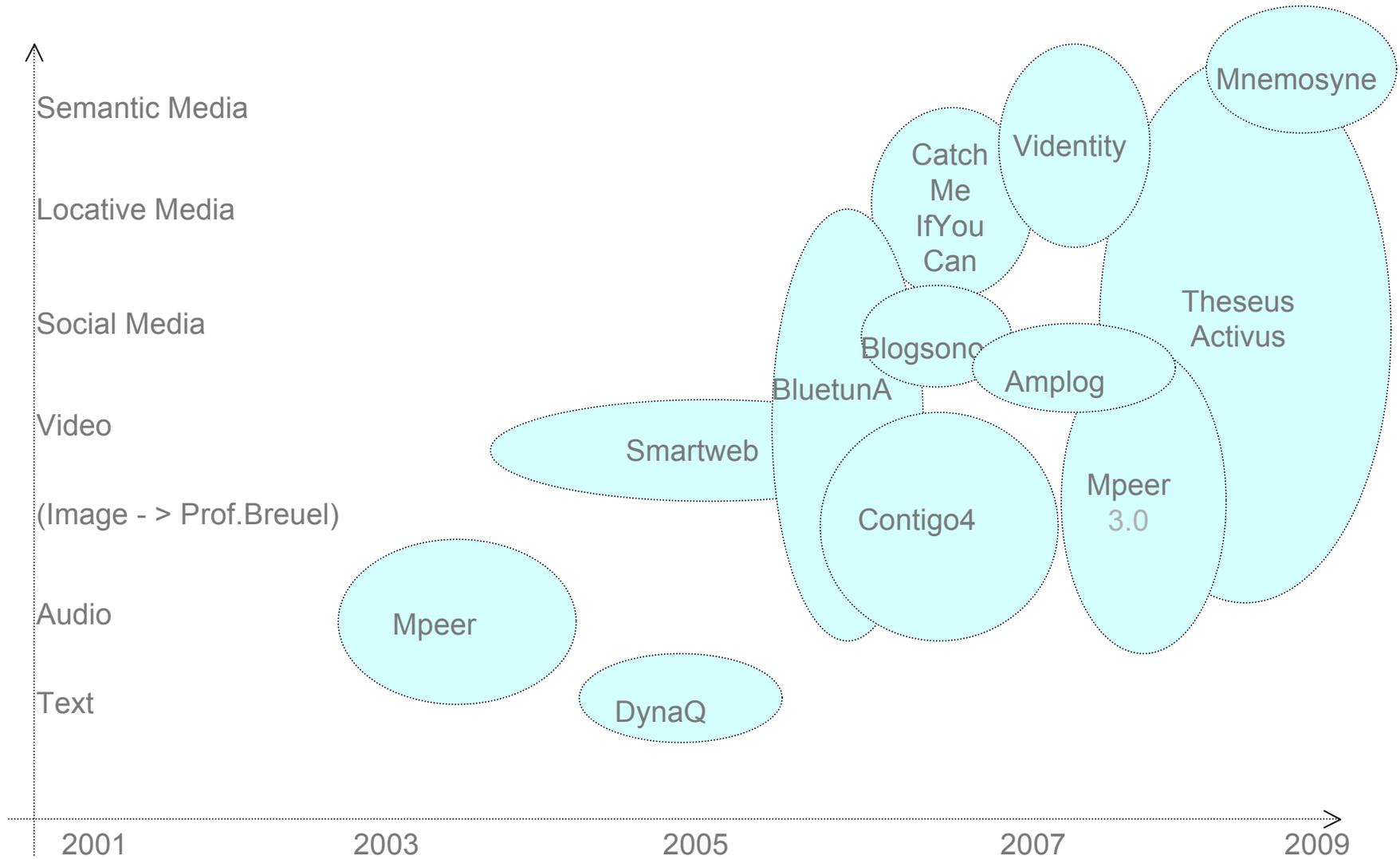
Michael Sintek



C4: Competence Center Computational Culture

- Funded projects
 - *MPEER*: Music recommendation
 - *Smartweb*: MPEG7 media ontology
 - *Amplog*: Weblog aggregation
 - *Contigo4*: Music video recommendation
 - *Theseus Activus*: Social software, Recommendation, SNA
- Student projects
 - *BluetunA*: Ad-hoc networks for music recommendation
 - *CatchMelfYouCan*: Pervasive Games
 - *Videntity*: Digital identity, RSS Web2.0 aggregation
 - *Blogsono*: Visualization of German Top100 Blogs
 - *MPEER3.0*: Social and Contentbased Music Recommender
- Submitted projects
 - *Mnemosyne*: Cultural Tagging for Online Museums

C4: Music Retrieval, Multimedia, Any Media ...



↑

Semantic Media

Locative Media

Social Media

Video

(Image -> Prof. Breuel)

Audio

Text

2001

2003

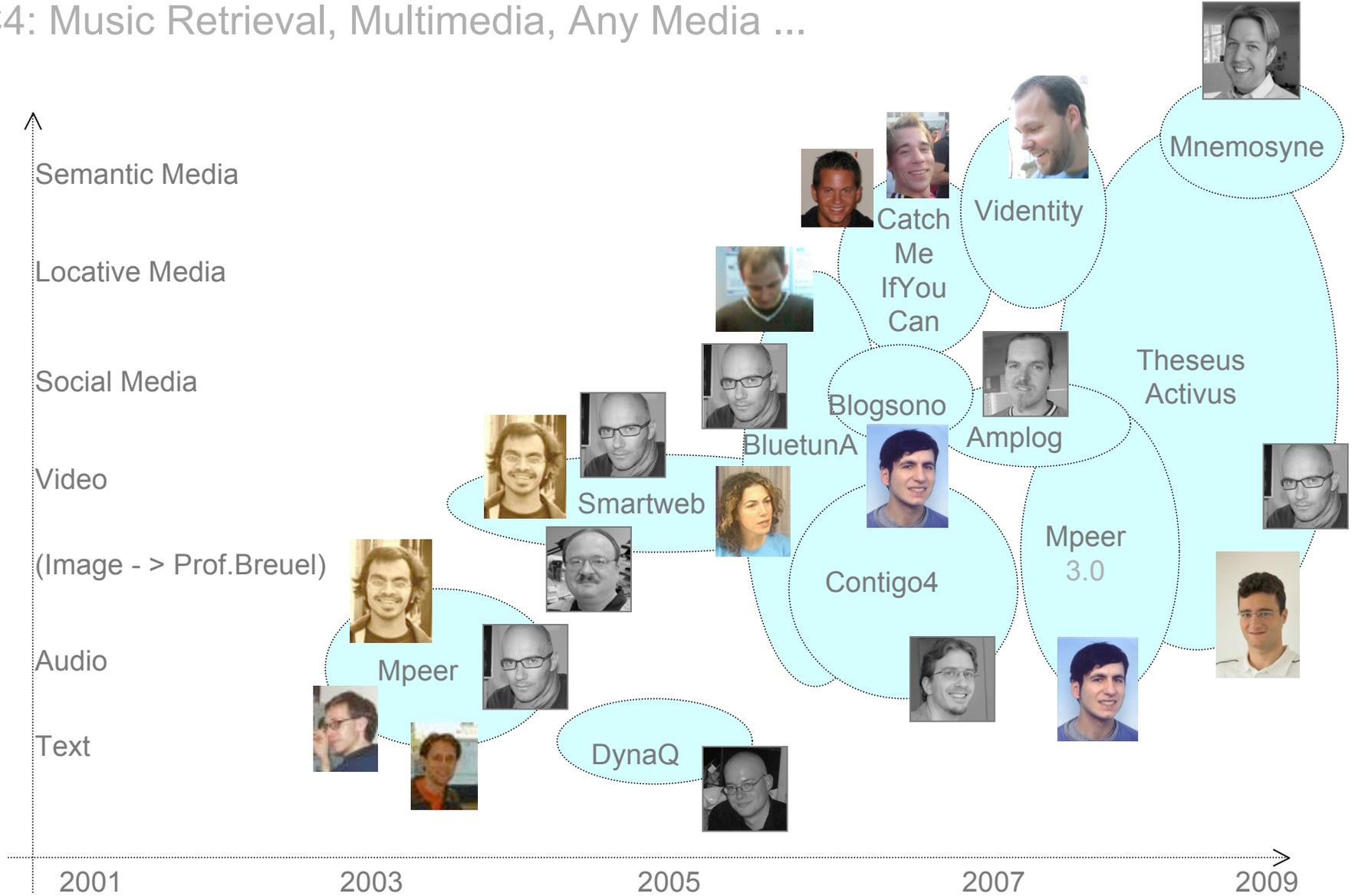
2005

2007

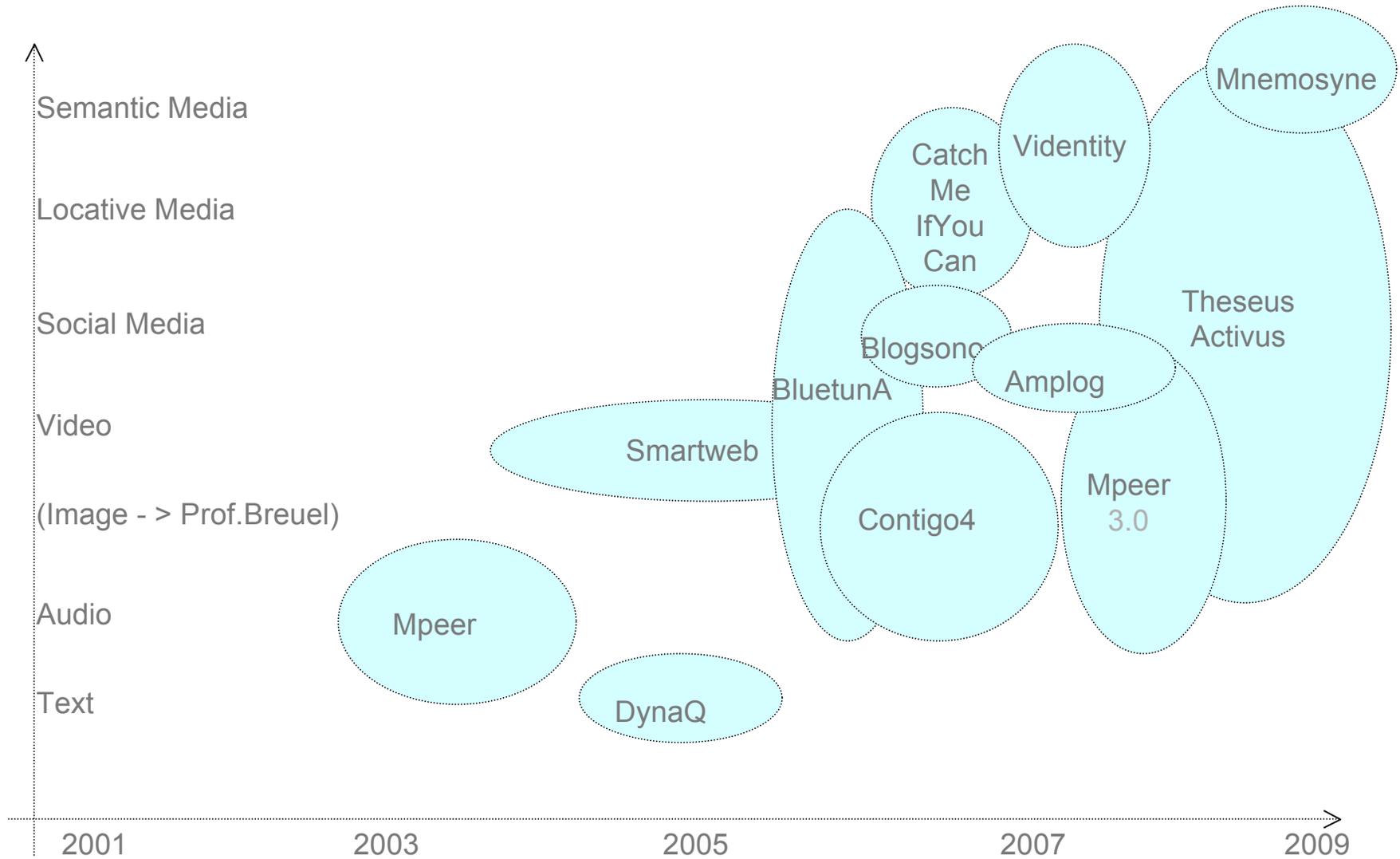
2009

→

C4: Music Retrieval, Multimedia, Any Media ...



C4: Music Retrieval, Multimedia, Any Media ...



↑

Semantic Media

Locative Media

Social Media

Video

(Image -> Prof. Breuel)

Audio

Text

2001

2003

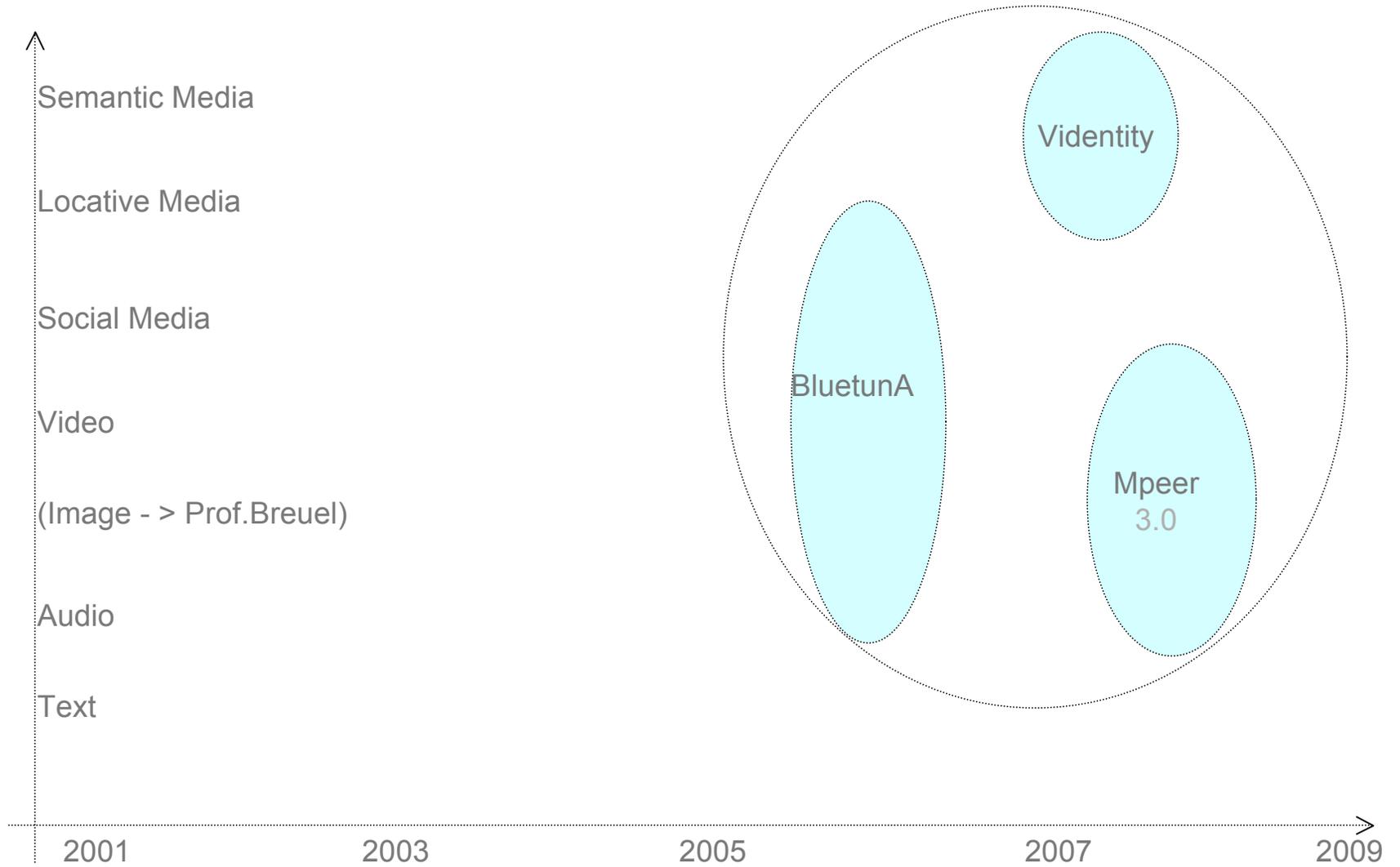
2005

2007

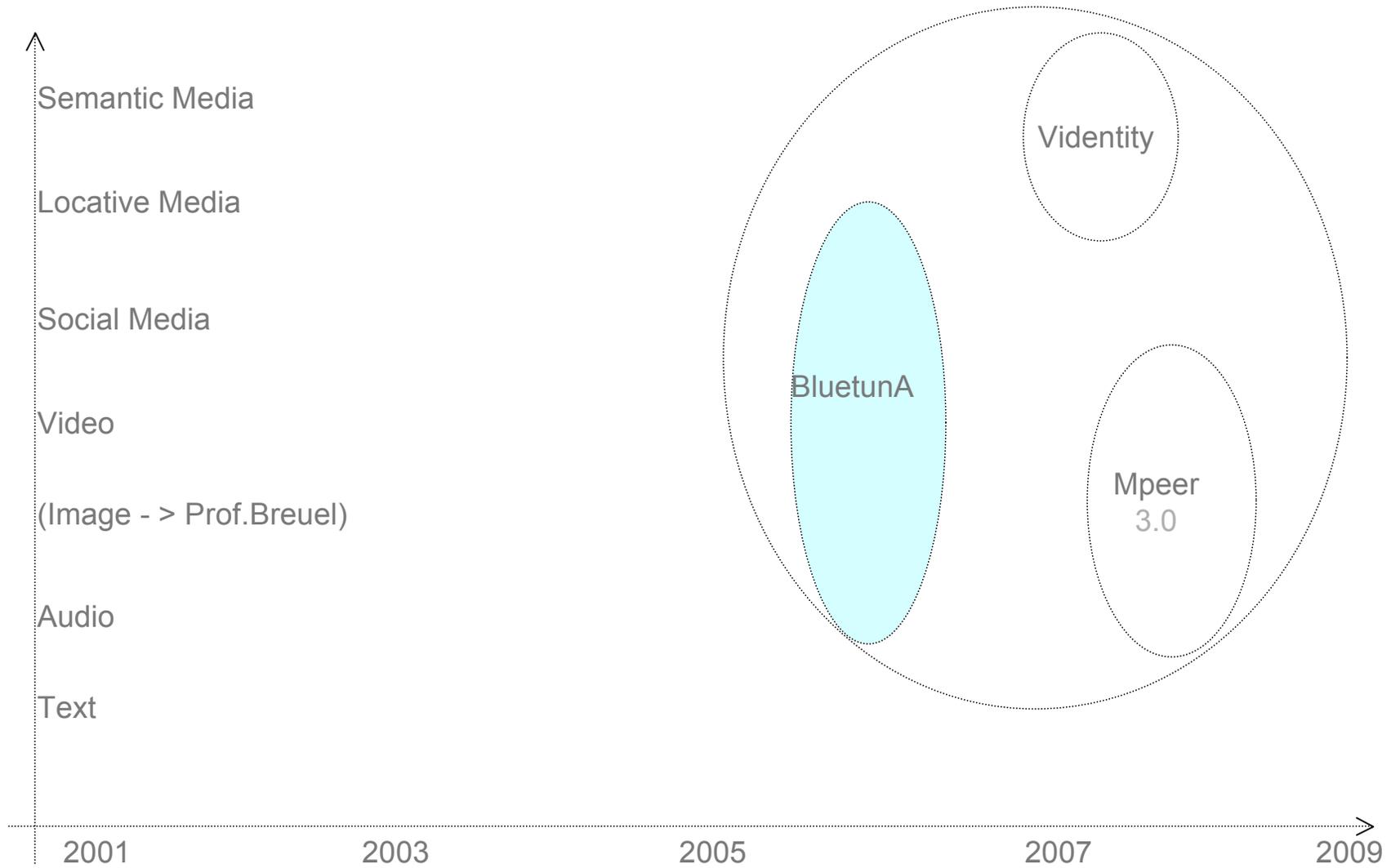
2009

→

C4: Music Retrieval, Multimedia, Any Media ...

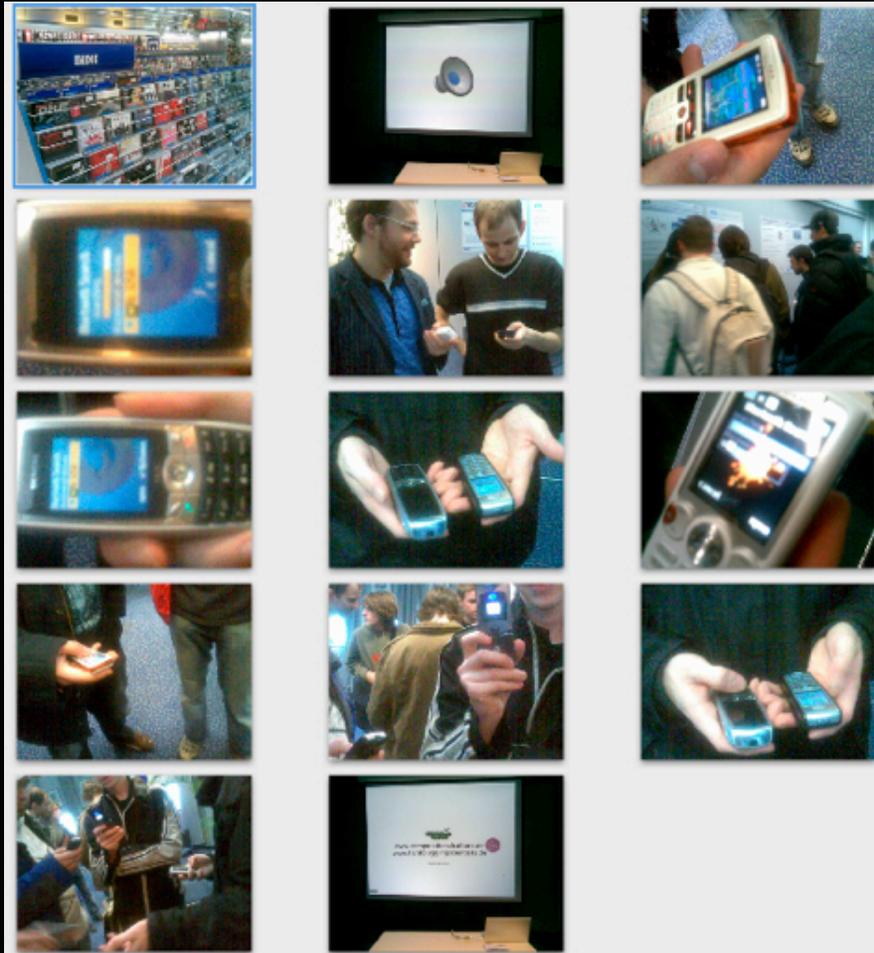


C4: Music Retrieval, Multimedia, Any Media ...





bluetuna.opendfki.de



(1) Download application

(2) Set up profile
by ID3tags (automatic)
by last.fm (connect)
by offer&seek
by flickr (connect)

(3) Search for people
match of profiles

(4) Limits
server XOR client mode
8 connections in parallel

BluetunA-on-the-go

My Files

Katie Melua - Piece By Piece - On
The Road Again

Katie Melua - Piece By Piece - Piece
By Piece

Katie Melua - Piece By Piece - Shy
Boy

Madonna - Confessions on a Dance
Floor - Future Lovers

options

back

Favourites

Katie Melua

Madonna

Skunk Anansie

Wir sind Helden

Marcy Playground

Poe

Faithless

The Verve

update from files

delete

select

cancel

Profile: light

Charts - Users at Last.fm

http://www.last.fm/user/baumann/charts?charttype=overall&subtype=artist

last.fm the social music revolution

Users Music Listen Charts Tools Help

baumann My Dashboard 0 new preferences logout

Music Search

Overview Charts Journal Groups Friends Neighbours Events Tags

THIS WEEK'S NEW MUSIC CHOICES

Your very own hit parade.

View your listening habits in all their weekly, monthly, or yearly glory!

Show me: overall charts for artists

Top Artists

| | | |
|----|--------------------------------|-----|
| 1 | Ralph Myerz | 169 |
| 2 | Phoenix | 143 |
| 3 | Bo Kaspers Orkester | 82 |
| 4 | Cuebism | 76 |
| 5 | Zero 7 | 57 |
| 6 | Wir sind Helden | 49 |
| 7 | Herbert | 47 |
| 8 | Donavon Frankenreiter | 45 |
| 9 | St. Germain | 38 |
| 10 | Peter Licht | 33 |
| 11 | Mocky | 30 |
| 12 | Coolio | 20 |
| 13 | Saint Etienne | 17 |
| 14 | Sting | 16 |
| 15 | Foolcut | 15 |
| 16 | The James Taylor Quartet | 14 |
| 17 | The Brand New Heavies | 12 |
| 17 | US3 | 12 |
| 19 | Snax | 11 |
| 20 | Ralph Myerz And Th Jack Herren | 10 |
| 20 | agf + delay | 10 |
| 22 | Buckshot LeFonque | 9 |
| 23 | The Gibbon Brothers | 8 |

Featured stations

Play Neighbour Radio

Play Recommendations

current setting: 100%

More stations (2)

About Me

baumann User Germany

Registered: 1 Aug 2005

Tracks played: 1215

www.torpedolove.de

Edit my details...

Tags

You haven't tagged any music. Learn more...

Groups

2063music

See all 1 group...

Shoutbox

Post to shoutbox

Your shoutbox is empty.

Friends

pixelfrenzy

heimwege

020200

misscaro

See all 4 friends...

Neighbours

gabyu

ds.serving-sys.com gelesen

Profile: last.fm import

My Files

- Katie Melua - Piece By Piece - On The Road Again
- Katie Melua - Piece By Piece - Piece By Piece
- Katie Melua - Piece By Piece - Shy Boy
- Madonna - Confessions on a Dance Floor - Future Lovers

options

back

Favourites

- Katie Melua
- Madonna
- Skunk Anansie
- Wir sind Helden
- Marcy Playground
- Poe
- Faithless
- The Verve

update from files

delete

select

cancel

Bluetooth Search

find server(s)

open

back

Cruel Intentions/

- 06 - Kristen Barry - Ordinary Life.mp3
- 07 - Marcy Playground - Comin Up From Behind.mp3
- 08 - Skunk Anansie - Secretly.mp3
- 11 - Faithless - Addictive.mp3
- The Verve - Bitter Sweet Symphony.mp3
- ler.jpg

add

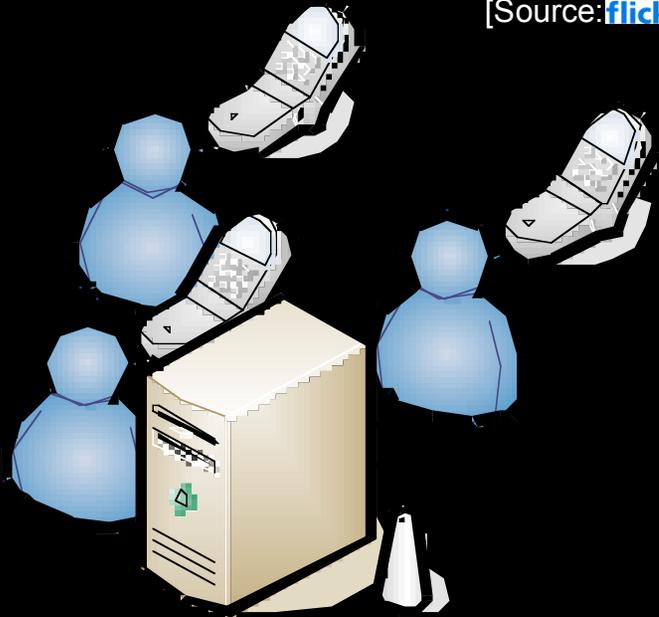
open

select

cancel



[Source: [flickr](#)]



(1) Download application

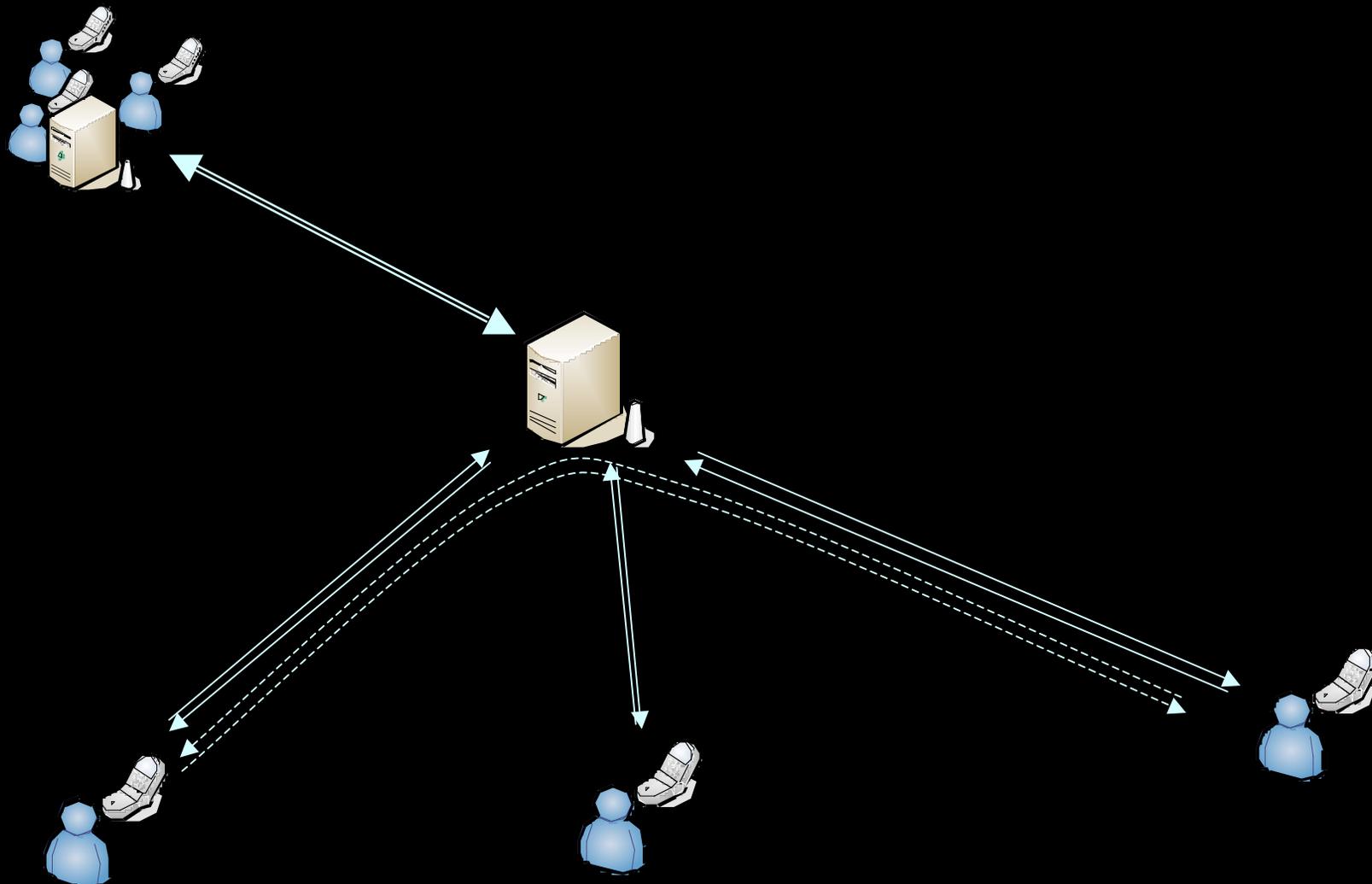
(2) Set up profile
by ID3tags (automatic)
by last.fm (connect)
by offer&seek
by flickr (connect)

(3) Search for people
match of profiles

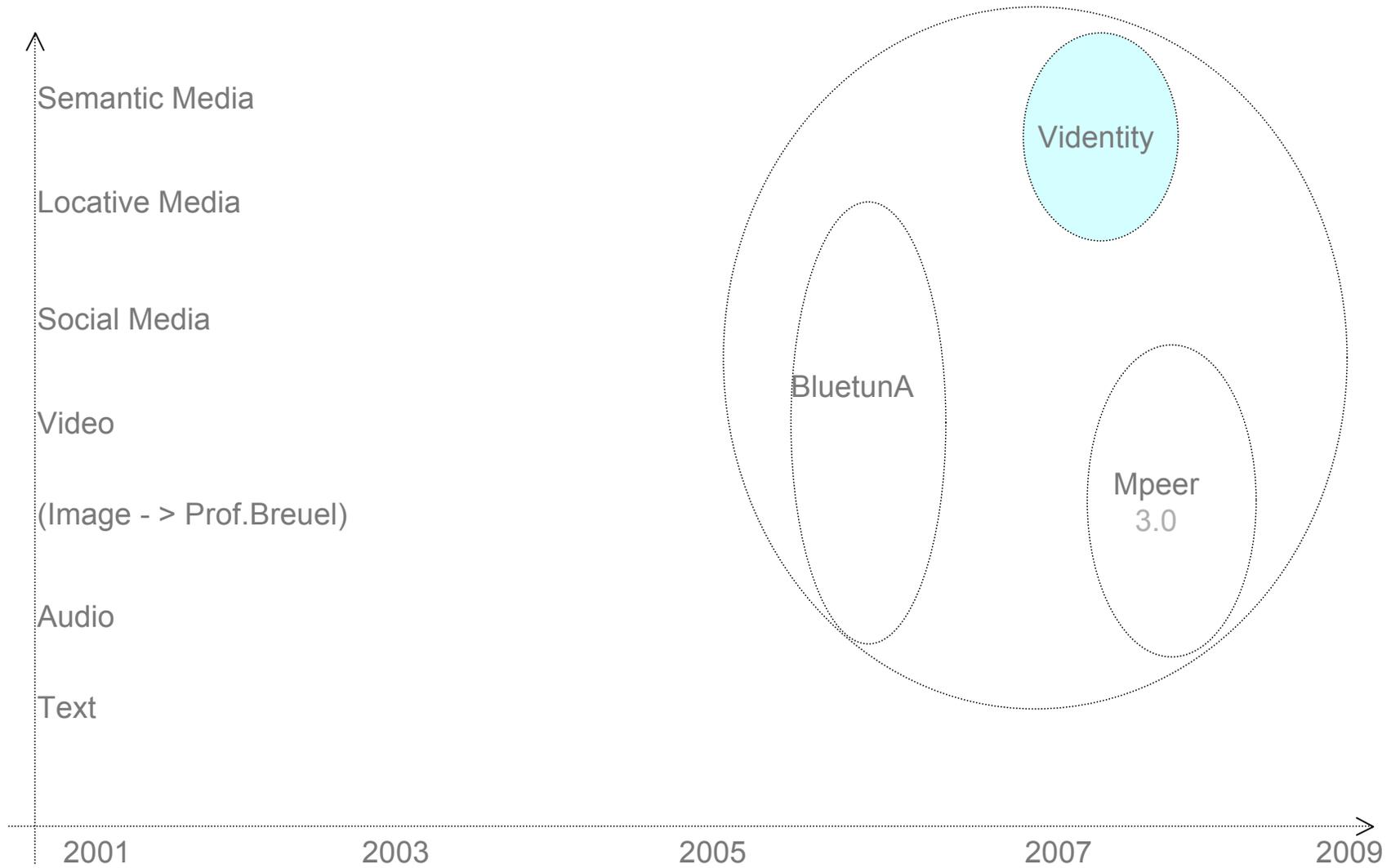
(4) Benefit
server AND client mode
unlimited connections

BluetunA-hotspot

World-wide BluetunA community?



C4: Music Retrieval, Multimedia, Any Media ...



Welcome Tobi - who are you?

Add: | [logout](#)

Your Accounts (5): | [view as: map timeline iCa](#)

Your collected Items: 262 - 262 are valid

14.09.2006

22.06.2007

All Unknowns gelterswoog erlebnistag [src](#) läd [align](#) [img](#) badesse see [width](#) preisen fahrrad sommer fahrradbörse bikes vogelwoogstr [strong](#) städt gelände schnupperworkshops sportverein [href](#) mal sport association bowling players pokertunler planet mathefete männerbalett highlight waschmühle sommertag juhu beckengröße studis issn wesch fundstück sehr dank nacht target left title lange bericht mittwoch abend cuballbre bild tanzveranstaltung quellen kultur kurzfilmprogramm wochenmarkt museum tour dugi otok asta-sommerfest asta juni indierock drugs sexy boogle beatclub ragga-jungle-night freeze sommerfete thirsty

All Vagues samstag uhr stadt tag info poker sonntag [kramladen](#) donnerstag eintritt eur beginn uni mashup rss design arzt kammgarn freitag ajax whoami campus amazon underground da blog id identity2.0 openid weitere interesse zimmer uni-kl [esa](#) api wohnheim datenschutz rails screencast verein nlp handy homezone o2 profile apotheke schule books information magazin linklist private spiele lrb bliergarten knelpe restaurant art light musik geotagging viamartin ai ruby aggregator madrid barcelona jumping fallas coffe spain valencia fastnacht robōxotica cocktail cotton club welle erdball singing snowman room2 munich mainstation newyearseve2006 traunstein aussiereunion saltmine christmas2006 [robōxotica](#) [cocktails](#) kicker tunier vandalism

All Locations wertstoffhof babarossahalle sportgemeinde barbarossahalle fruchthalle jugendzentrum musikschiule Innenstadt

All Languages [german](#)

All Artists the john butler trio peeping tom bloc party arctic monkeys kaiser chiefs the subways blink-182 billy talent joo kraus the streets john lee hooker

All Geos [kaiserslautern](#) ludwig europa freibad kuba japanische sants-montjuïc aschbacherhof neuhausen



Welcome Tobi - who are you?

Add: | [logout](#)

Your Accounts (5):

view as: [map](#) [timeline](#) [iCal](#)

Your Lastfm - TobiTobes - Items: 324 - 150 are valid [edit](#) [delete](#)

24.12.2006

11.06.2007

All Vagues *live*

All Artists [peeping tom](#) [bloc party](#) [arctic monkeys](#) [kaiser chiefs](#) [the subways](#) [blink-182](#) [billy talent](#) [joo kraus](#) [the streets](#) [john lee hooker](#) [battles](#) [maria mckee](#) [the chemical brothers](#) [the hives](#) [h-blockx](#) [mo horizons](#) [moby](#) [the smiths](#) [red hot chill](#) [peppers](#) [the presidents of the united states of america](#) [the raconteurs](#) [tori amos](#) [buena vista social club](#) [pixies](#) [coldplay](#) [pulp](#) [zwan](#) [no fun at all](#) [st. germain](#) [aphex twin](#) [big bad voodoo daddy](#) [the john butler trio](#) [röyksopp](#) [therapy?](#) [cake](#) [pearl jam](#) [genesis](#) [ryan adams](#) [bassic](#)

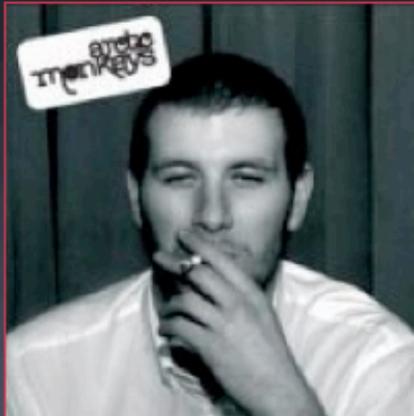


Welcome Tobi - who are you?

Add:        | [logout](#)

Your Accounts (5):     

view as: [map](#) [timeline](#) [iCal](#)



Mardy Bum - 14:00 03.06.2007

Arctic Monkeys

Whatever People Say I Am, That's What I'm Not

All Links

http://www.last.fm/music/arctic+monkeys/_/mardy+bum

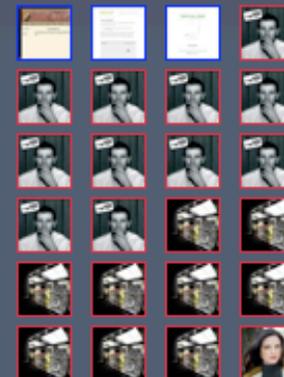
All Artists [arctic monkeys](#)

related items

- via Artists:



- via Items after:

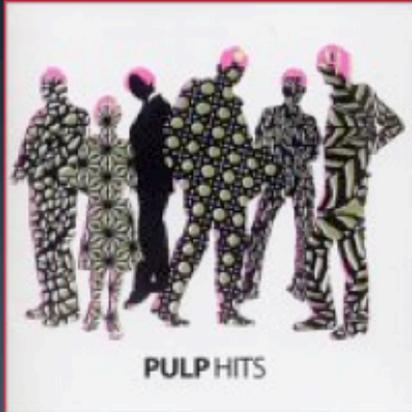


Welcome Tobi - who are you?

Your Accounts (5):     

Add:        | [logout](#)

view as: [map](#) [timeline](#) [iCal](#)



This Is Hardcore - 13:00 24.12.2006

Pulp
Hits

All Links http://www.last.fm/music/pulp/_/this+is+hardcore

All Artists [pulp](#)

related items

- via Artists:



- via Items after:

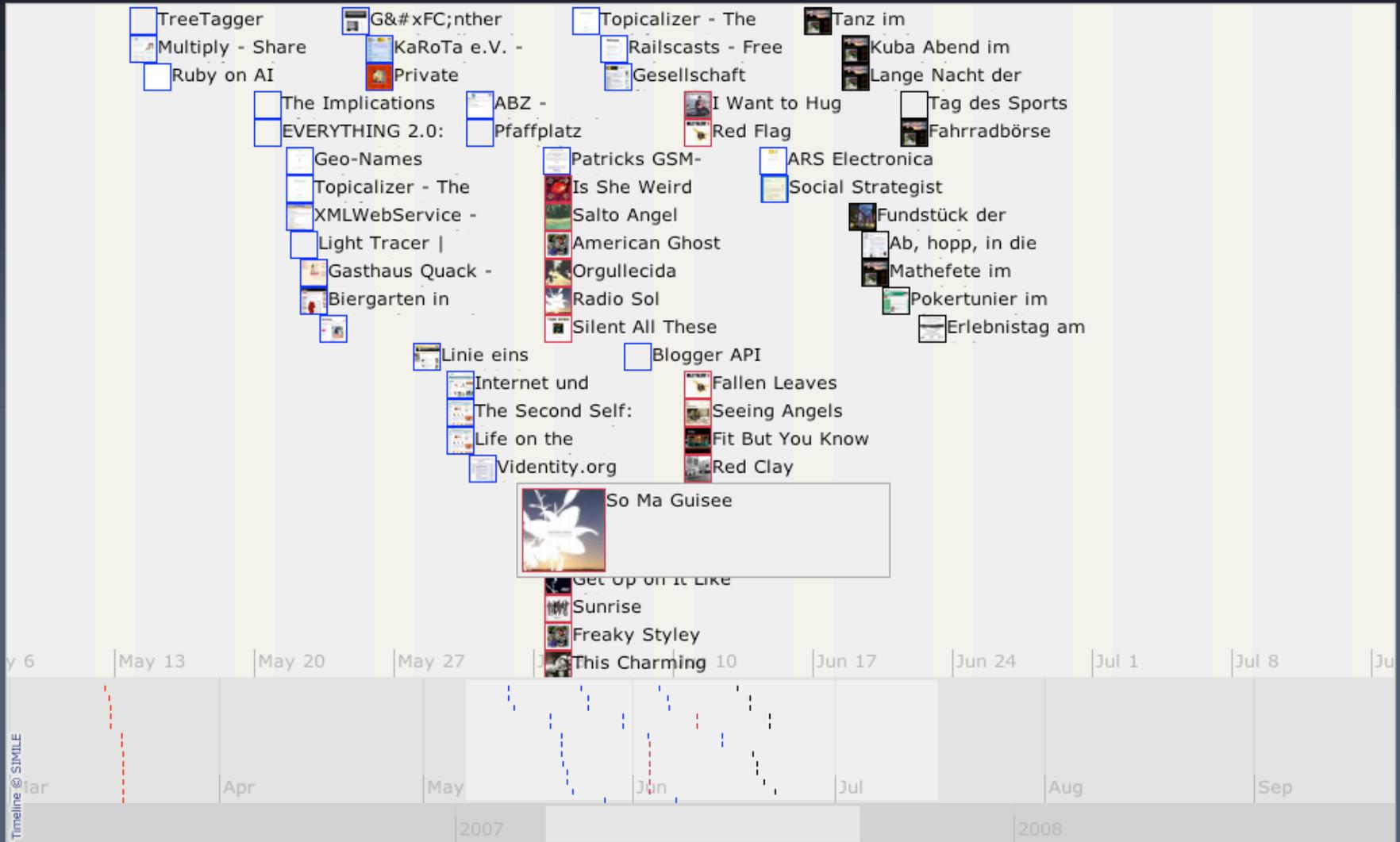


Welcome Tobi - who are you?

Your Accounts (5):     

Add:        | [logout](#)

view as: [map](#) [timeline](#) [iCal](#)



Welcome Tobi - who are you?

Your Accounts (5):     

Add:       | [logout](#)

view as: [map](#) [timeline](#) [iCal](#)



Welcome **Stephan** - *who are you?*

Add: | [logout](#)

Your Accounts (4):



Matthew Herbert in Mannheim 2006 - 15:49 11.10.2006 Incredible live show of matthew herbert

• **Notes:**

- [matthew](#)
- [herbert](#)
- [live](#)
- [2006](#)
- [torpedo](#)
- [love](#)
- [loves](#)
- [you](#)

• **Locations:**

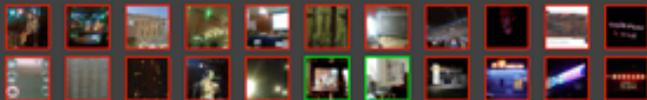
- [mannheim](#)

• **Links:**

- <http://www.youtube.com/?v=gunSFkiZYvg>

Relations

• via Notes:

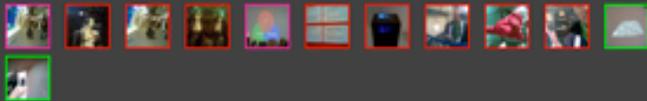


• via Locations:

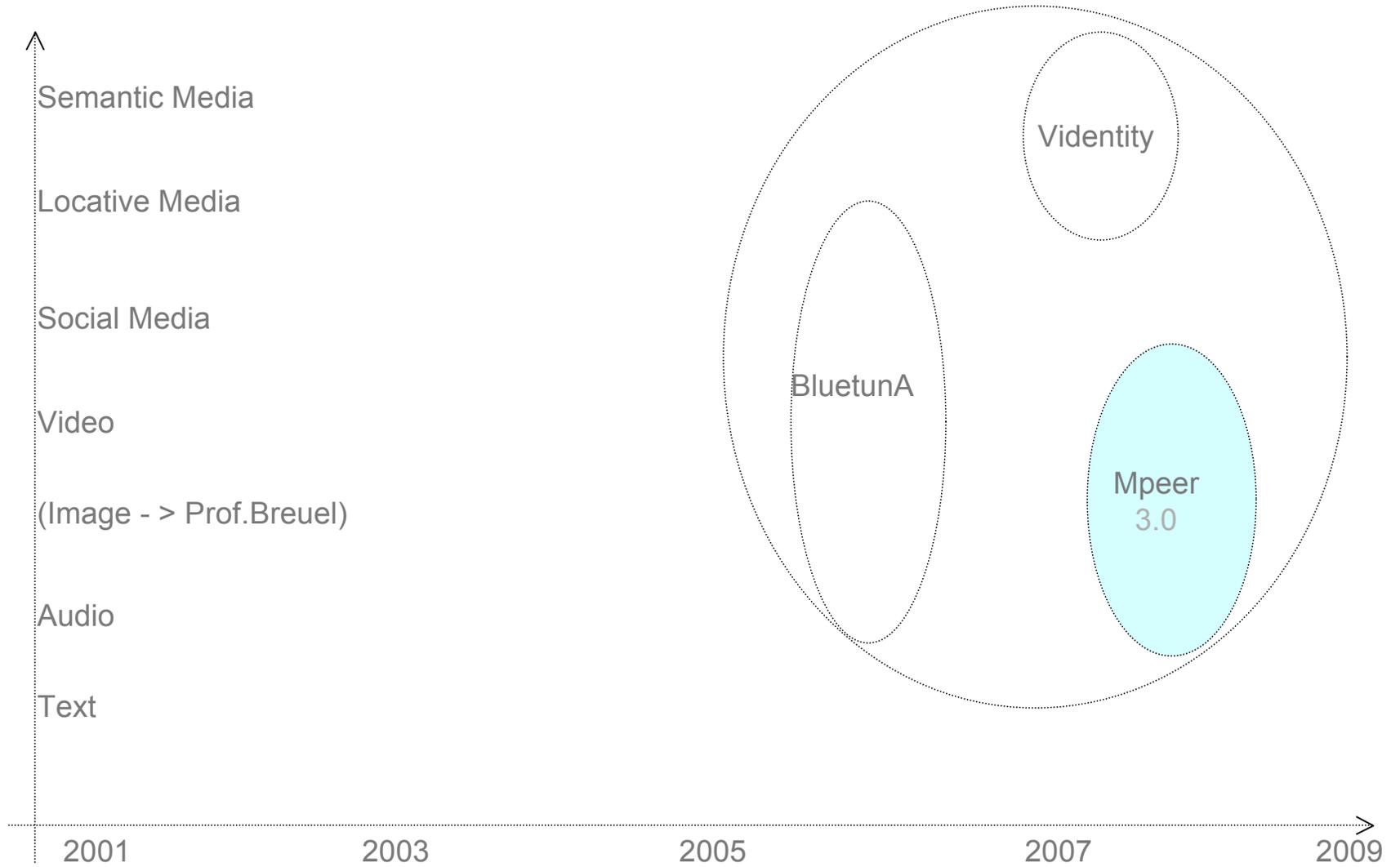


• via Items after:

• via Items before:



C4: Music Retrieval, Multimedia, Any Media ...





Last night a deejay saved my life
Last night a deejay saved my life, yeah
'Cause I was sittin there bored to death
And in just one breathe he said
You got get up, you got get up, you got get down girl
You know you drive me crazy, baby
You got me turnin to another man

Called you on the phone no ones home
Baby, why you leave me all alone
And if it wasn't for the music
I don't know what I'd do, yeah

Last night a deejay saved my life
Last night a deejay saved my life from a broken heart
Last night a deejay saved my life
Last night a deejay saved my life with a song
You know I hopped into my car, didn't get very far, no
Because I had you on my mind, why be so unkind
You got your women all around, all around this town
But I was trapped in love with you and I didn't know what to do
But when I turned on my radio
I found out all I needed to know
Check it out
Last night a deejay saved my live
Last night a deejay saved my life from a broken heart
Last night a deejay saved my life
Last night a deejay saved my life with a song

Hey, listen up to your local deejay
You better hear what he's got to say

There's not a problem that I can't fix
'Cause I can do it in the mix
And if your man gives you trouble
Just move out on a double
And you don't let it trouble your brain
'Cause away goes trouble down the drain
Said away goes trouble down the drain

Well, alright

Dub time

Last night a deejay saved my life

There's not a problem that I can't fix
'Cause I can do it in the mix
'Cause I can do it in the mix
In the mix, in the mix, ...

MPEER 3.0: Open research questions

- Starting point: “Goose bumps”, “music and quality of life”

Reviews

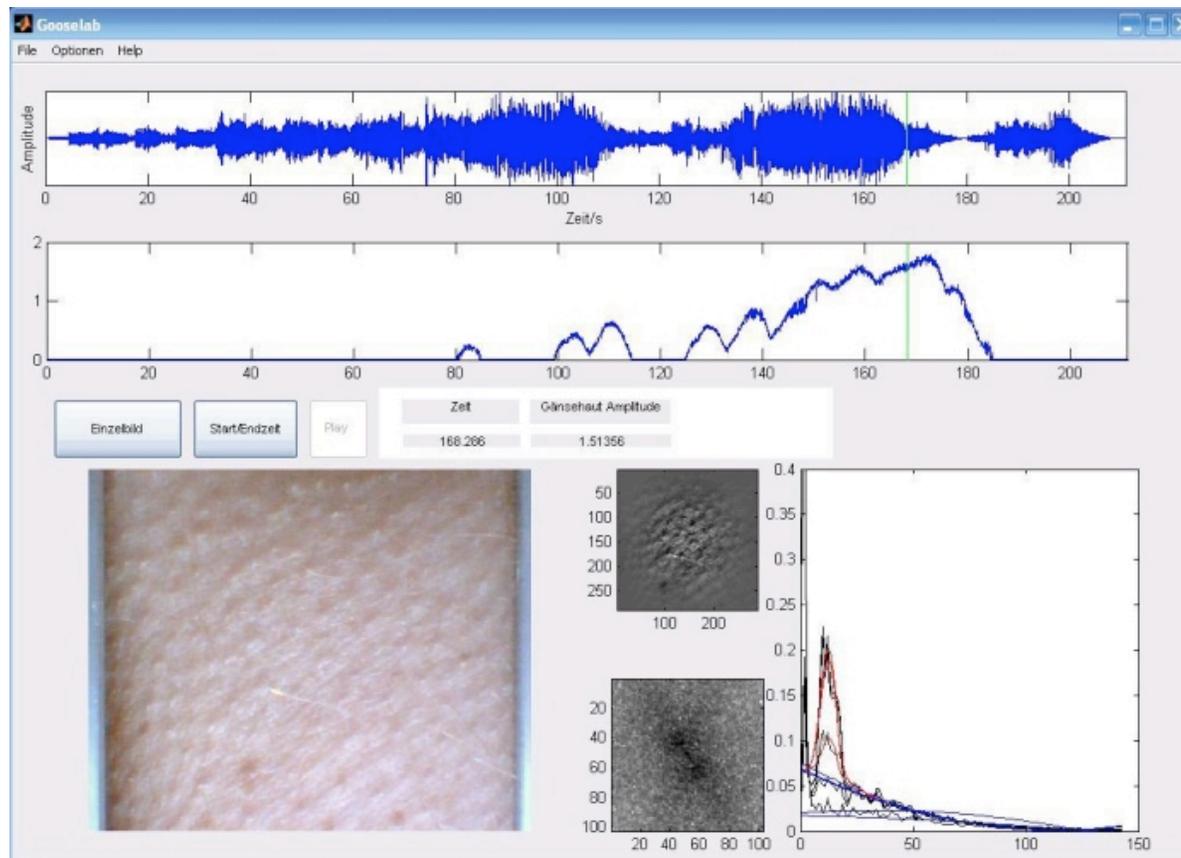
All Music Guide

Riot on an Empty Street ends a long period of inactivity for Kings of Convenience. During their three-year layoff [Erlend Øye](#) could be found making solo records and DJing while Eirik Glambek Boe was finishing his psychology degree. Luckily for fans of beautiful vocals and thoughtful indie pop, they decided to get back together. What this band is all about is the sound of Boe and Øye's voices blended together in harmony. Their first album (in both incarnations) erred on the side of consistency. Here the band seems to have learned the all-important lesson of pace and variety. The arrangements are fuller too with pianos, strings, the occasional electric guitar, and lovely guest vocals on two tracks from [Broken Social Scene](#) member [Leslie Feist](#). Not to say that they have gone crazy with change. They still stick pretty closely to the acoustic guitars and vocals path, and the tone of the album is autumnal and restrained as before. They have just added more songs like the gently driving "Misread," the lilting waltz "Stay Out of Trouble," and the downright peppy "I'd Rather Dance With You." Øye's side trip into electronica only rears its head on the non-electronic but modern-sounding "Love Is No Big Truth." No matter what the song, though, when their tender, fragile voices harmonize it can be breathtaking. And heartbreaking. The moment in "Surprise Ice" when Eirik is joined by Erlend will **raise goose bumps**. There are many others like that on *Riot*, and they are what sells the record. If you sort of liked the first record but wished it was more interesting, that it had more punch of both the sonic and emotional variety, then your wishes have come true. *Tim Sendra*

- User studies about affection, emotional reaction to music?
- Relations to the music objects and the listening modes?
 - Content-based analysis (ISMIR, etc.)
 - Context-aware (Web2.0 feeds, Pervasive Computing)
 - Identity, psychogram, etc. (new research issue for us!)

Quantitative evaluation? Potential research cooperations?

- ☆ Prof. Kaernbach /University of Kiel
 - Quantitative methods: Optical recordings of goosebumps
 - Goosecam ©



MPEER 3.0: Design issues

- Technical design: Integration and alignment of our existing modules
 - *BluetunA*: awareness of physical context 
 - *Videntity*: awareness of public “self-reflection” 
 - *MPEER3.0*:
 - Using existing content-based MIR techniques
 - Working again on lyrics 
 - Working on mood 
- GOAL: Highly personalized music recommender beyond Music 2.0
- FUNDING?! ... Just in case you know somebody with deep pockets...

Story #1: „a short episode of my evolving musical identity“

- 1) 2002: my first ISMIR at IRCAM!
- 2) 2003: invited MIR Research at IRCAM
- 3) Buying Hotel Costes Vol.1 at FNAC
- 4) 2005: Buying Hotel Costes Vol.8
- 5) The Think Twice Tune of Ralph Myerz got me in ...
- 6) Buying Ralph Myerz at Amazon
- 7) Googling Ralph Myerz
- 8) Exploring the official Website
- 9) Spotting the next concert and venue
- 10) Checking friends in Oslo
- 11) Booking tickets
- 12) Booking airplane
- 13) 2006: Visiting gig
- 14) Taking images
- 15) Uploading images to Flickr with tags
- 16) Writing a blog posting
- 17) Writing a forum posting with link
- 18) Norwegian and belgian traffic comes in
- 19) Receiving an email of „el presidente“
- 20) Chatting about fandom
- 21) Receiving the exclusive promo DVD

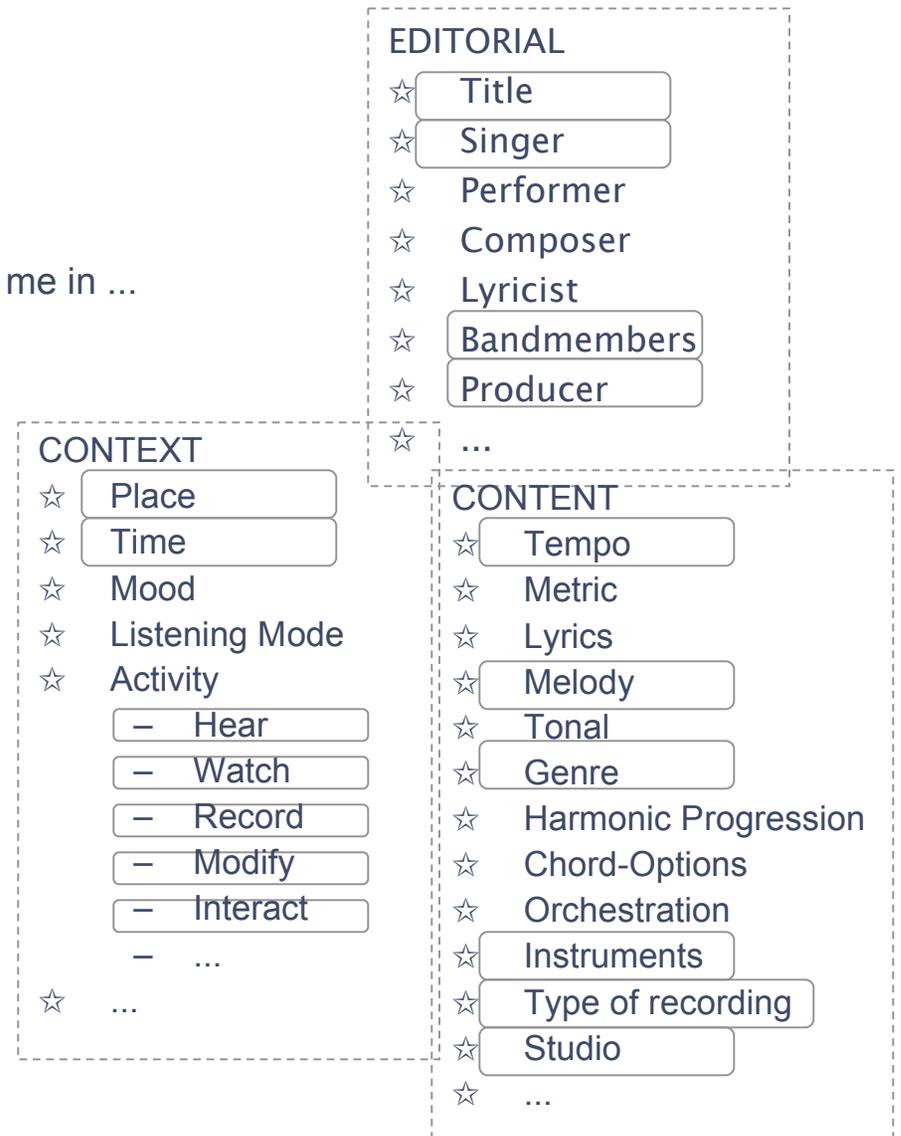


Transition ↓ 4 years!



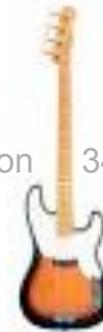
Semantics of context, content, ...

- 1) 2002: my first ISMIR at IRCAM!
- 2) 2003: invited MIR Research at IRCAM
- 3) Buying Hotel Costes Vol.1 at FNAC
- 4) 2005: Buying Hotel Costes Vol.8
- 5) The Think Twice Tune of Ralph Myerz got me in ...
- 6) Buying Ralph Myerz at Amazon
- 7) Googling Ralph Myerz
- 8) Exploring the official Website
- 9) Spotting the next concert and venue
- 10) Checking friends in Oslo
- 11) Booking tickets
- 12) Booking airplane
- 13) 2006: Visiting gig
- 14) Taking images
- 15) Uploading images to Flickr with tags
- 16) Writing a blog posting
- 17) Writing a forum posting with link
- 18) Norwegian and belgian traffic comes in
- 19) Receiving an email of „el presidente“
- 20) Chatting about fandom
- 21) Receiving the exclusive promo DVD



Story #2: „a long episode of my evolving musical identity“

- ☆ 1972 Organ lessons, experiences with music notation and fun
- ☆ 1977 - 1981 Self-taught piano player
- ☆ 1982 - 1993 Cover bands, Soul Funk Jazz, Level42, Chic, Commodores
- ☆ 1994 Frustration, the keyboard player as a sideman phenomenon
- ☆ 1997 - 2005 Several projects, HipHop, Lounge, Jazz, leisure time only
- ☆ 2005 Bass lessons
- ☆ The Sting 57 Precision Re-Issue
- ☆ Buying a used bass at Ebay
- ☆ Annual Music School Concert for the proud parents/kids
- ☆ Leadsheet „Nur ein Wort“ / Wir-sind-Helden
- ☆ Buying the CD
- ☆ Playing a cover version live
- ☆ 2006 Meeting: Wir-sind-Helden at an openhouse event

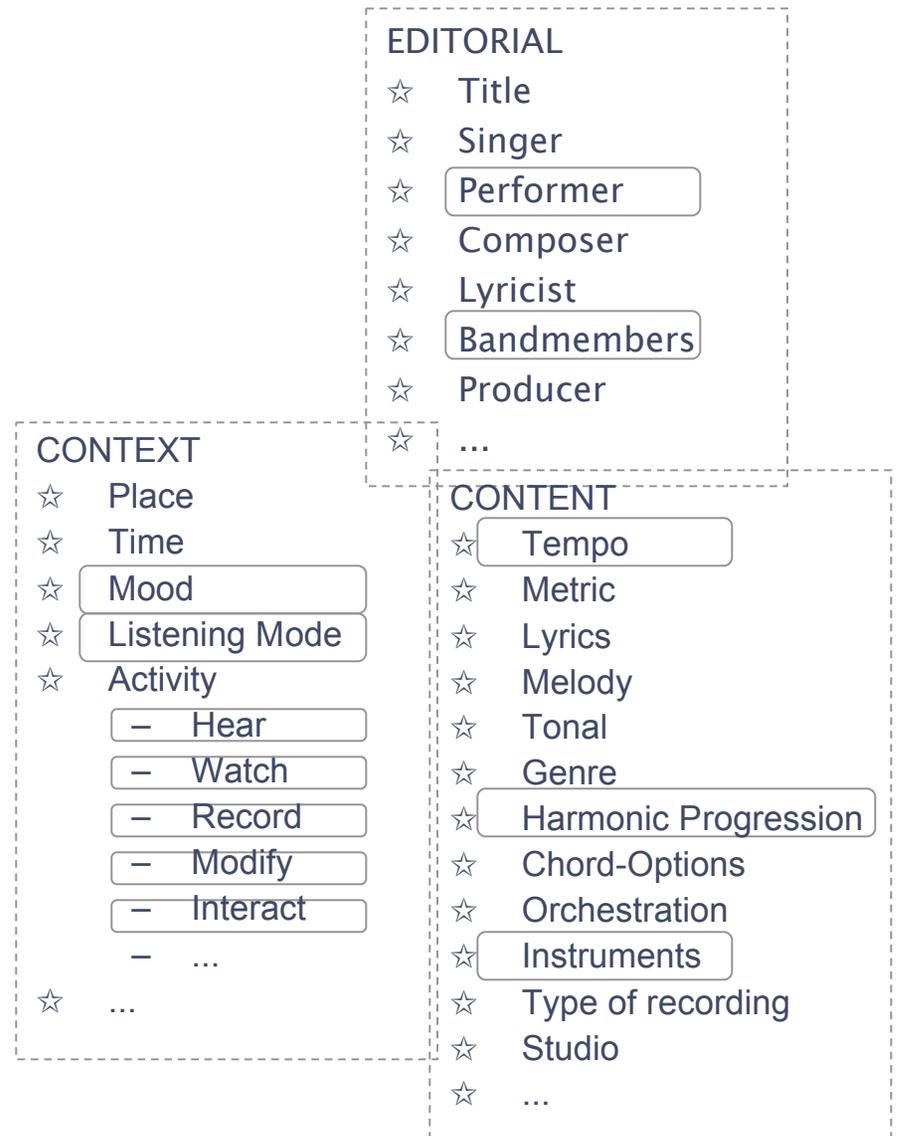


Transition 34 years

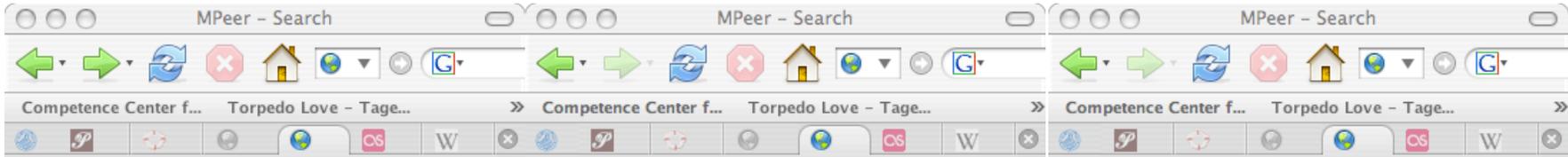


Semantics of context, content, ...

- ☆ 1972 Organ lessons, experiences with music notation and fun
- ☆ 1977 - 1981 Self-taught piano player
- ☆ 1982 - 1993 Cover bands, Soul Funk Jazz, Level42, Chic, Commodores
- ☆ 1994 Frustration, the keyboard player as a sidekick phenom
- ☆ 1997 - 2005 Several projects, HipHop, Lounge, Jazz, leisure time only
- ☆ 2005 Bass lessons
- ☆ The Sting 57 Precision Re-Issue
- ☆ Buying a used bass at EBAY
- ☆ Annual Music School Concert for the proud parents/kids
- ☆ Leadsheet „Nur ein Wort“ / Wir sind Helden
- ☆ Buying the CD
- ☆ Playing a cover version live
- ☆ 2006 Meeting: Wir sind Helden at an openhouse event



MIR Ph.D: Artificial Listening Systems [Baumann 2002-2005]



Profile Logout

Search by **artist**

incognito

Search

Click [here](#) to view the albums of this artist



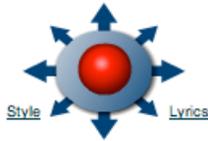
+ CD at [amazon](#) for EUR \$17.98

Profile Logout

Search by **song**

Still A Friend Of Min

Sound



+ CD at [amazon](#) for EUR \$14.98

Click on "Name" field to select a song.

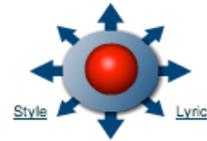
| Name | Audio |
|------------------------------------|--------------------------|
| 1. Still A Friend Of Mine (Acapel) | Listen 🎵 |
| 2. Givin' It Up | Listen 🎵 |
| 3. Better Days | Listen 🎵 |
| 4. Inversions | Listen 🎵 |
| 5. Do Right | Listen 🎵 |
| 6. Thinking 'Bout Tomorrow | Listen 🎵 |
| 7. Talkin' Loud | Listen 🎵 |
| 8. Pieces Of Dreams | Listen 🎵 |
| 9. Positivity | Listen 🎵 |
| 10. Where Do We Go From Here | Listen 🎵 |
| 11. Smiling Faces | Listen 🎵 |
| 12. Still A Friend Of Mine | Listen 🎵 |

Profile Logout

Search by **song**

Still A Friend Of Min

Sound

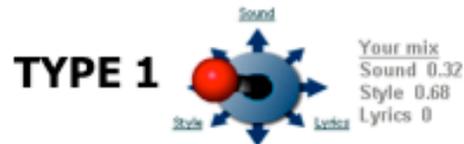


Your mix
Sound 0.41
Style 0.31
Lyrics 0.27

SimilarMusicMixer recommends

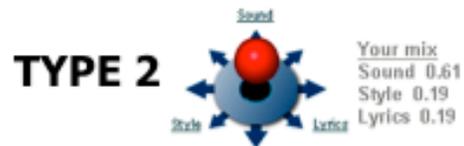
0. Still A Friend Of Mine (Acapel)
1. Still A Friend of Mine (Bluey')
2. Always There (Masters At Work)
3. Talkin' Loud
4. Thinking 'Bout Tomorrow
5. Do Right

MIR Ph.D: Ecological Evaluation / Findings [Baumann et al 2004]



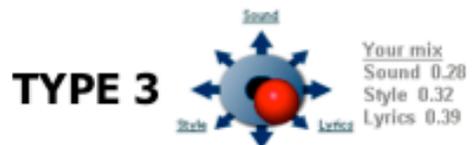
"I am not interested in lyrics in general, because my English is too bad to understand something" (remark: German native-speaker)

"I know all these recommendations from title, I don't have to listen to it, which saves my time"



"The sound similarity is really impressive, on its own it is able to deliver songs I did not know before which fit my taste"

"After a while I got used to this and played around just like browsing into music"



"I used the lyric facet to get more interesting results beyond the mainstream"

"by adding a lyrics a bit, the results get more interesting"

MIR State of the Art 2006: Extract of final MIREX2006 poster [Stephen Downie et. al]

MIREX Results

| Audio Onset Detection | |
|------------------------|----------------|
| Participant | Avg. F-Measure |
| A. Röbel (3) | 0.788 |
| A. Röbel (2) | 0.780 |
| A. Röbel (1) | 0.777 |
| Du, Li & Liu | 0.762 |
| P. Brossier (hfc) | 0.734 |
| S. Dixon (sf) | 0.726 |
| P. Brossier (dual) | 0.724 |
| P. Brossier (complex) | 0.721 |
| S. Dixon (rcd) | 0.716 |
| S. Dixon (cd) | 0.710 |
| P. Brossier (specdiff) | 0.707 |
| S. Dixon (wpd) | 0.685 |
| S. Dixon (nwpd) | 0.620 |

| Audio Tempo Extraction | |
|--------------------------------------|---------|
| Participant | P-Score |
| A. Klapuri | 0.806 |
| Davies & Plumbley | 0.776 |
| Alonso, David & Richard (2) | 0.724 |
| Alonso, David & Richard (1) | 0.693 |
| D. P. W. Ellis | 0.673 |
| Antonopoulos, Pikrakis & Theodoridis | 0.669 |
| P. Brossier | 0.628 |

| Audio Cover Song Identification | |
|---------------------------------|------------|
| Participant | Avg. Perf. |
| D. P. W. Ellis | 2.306 |
| K. Lee (1) | 1.106 |
| K. Lee (2) | 0.951 |
| Sailer & Dressler | 0.639 |
| Lidy & Rauber | 0.451 |
| K. West (likely) | 0.354 |
| T. Pohle | 0.351 |
| K. West (trans) | 0.309 |

| Audio Beat Tracking | |
|---------------------|--------------|
| Participant | Avg. P-Score |
| S. Dixon | 0.407 |
| D. P. W. Ellis | 0.401 |
| A. Klapuri | 0.395 |
| Davies & Plumbley | 0.394 |
| P. Brossier | 0.391 |

| Audio Melody Extraction (ADC 2004 Dataset) | |
|--|------------------|
| Participant | Overall Accuracy |
| K. Dressler | 82.50% |
| Ryynänen & Klapuri | 77.30% |
| Poliner & Ellis | 71.90% |
| Sutton, Vincent, Plumbley & Bello | 58.20% |
| P. Brossier | 49.60% |

| Audio Melody Extraction (MIREX 2005 Dataset) | |
|--|------------------|
| Participant | Overall Accuracy |
| K. Dressler | 73.20% |
| Ryynänen & Klapuri | 67.90% |
| Poliner & Ellis | 63.00% |
| Sutton, Vincent, Plumbley & Bello | 53.70% |
| P. Brossier | 31.90% |

| Audio Music Similarity and Retrieval | |
|--------------------------------------|-----------------|
| Participant | Avg. Fine Score |
| E. Pampalk | 0.430 |
| T. Pohle | 0.423 |
| V. Soares | 0.404 |
| Lidy & Rauber | 0.393 |
| K. West (trans) | 0.372 |
| K. West (likely) | 0.339 |

| Symbolic Melodic Similarity (RISM Collection) | | |
|---|-------|---------|
| Participant | ADR | Binary* |
| Typke, Wiering & Veltkamp | 0.715 | 0.733 |
| Ferraro & Hanna | 0.707 | 0.744 |
| Frieler & Müllensiefen (2) | 0.670 | 0.711 |
| A. L. Uitdenbogerd | 0.577 | 0.717 |
| Frieler & Müllensiefen (3) | 0.555 | 0.650 |
| Lemström, Mikkilä, Mäkinen & Ukkonen (2) | 0.541 | 0.422 |
| Lemström, Mikkilä, Mäkinen & Ukkonen (1) | 0.268 | 0.283 |
| Frieler & Müllensiefen (1) | 0.000 | 0.333 |

| Symbolic Melodic Similarity (Karaoke Collection) | | |
|--|-------|---------|
| Participant | ADR | Binary* |
| Typke, Wiering & Veltkamp | 0.819 | 0.440 |
| A. L. Uitdenbogerd | 0.378 | 0.407 |
| Ferraro & Hanna | 0.150 | 0.347 |
| Lemström, Mikkilä, Mäkinen & Ukkonen (2) | 0.000 | 0.293 |
| Lemström, Mikkilä, Mäkinen & Ukkonen (1) | 0.000 | 0.233 |

| Symbolic Melodic Similarity (Mixed Polyphonic Collection) | | |
|---|-------|---------|
| Participant | ADR | Binary* |
| Typke, Wiering & Veltkamp | 0.784 | 0.833 |
| A. L. Uitdenbogerd | 0.587 | 0.628 |
| Ferraro & Hanna | 0.218 | 0.483 |
| Lemström, Mikkilä, Mäkinen & Ukkonen (1) | 0.070 | 0.267 |
| Lemström, Mikkilä, Mäkinen & Ukkonen (2) | 0.000 | 0.272 |

* Binary*: Binary Relevance Judgment (Not Similar=0, Somewhat Similar=1, Very Similar=1)

| Query-by-Singing/Humming (Task 1) | |
|--------------------------------------|-------|
| Participant | MRR |
| Wu & Li (1) | 0.926 |
| Wu & Li (2) | 0.900 |
| Jang & Lee | 0.883 |
| López & Rocamora | 0.800 |
| Lemström, Mikkilä, Mäkinen & Ukkonen | 0.688 |
| C. Sailer (ear) | 0.568 |
| Typke, Wiering & Veltkamp (2) | 0.390 |
| C. Sailer (warp) | 0.348 |
| A. L. Uitdenbogerd (2) | 0.288 |
| C. Sailer (midi) | 0.283 |
| Ferraro & Hanna | 0.218 |
| A. L. Uitdenbogerd (1) | 0.205 |
| Typke, Wiering & Veltkamp (1) | 0.196 |

| Query-by-Singing/Humming (Task 2) | |
|--------------------------------------|----------------|
| Participant | Mean Precision |
| Jang & Lee | 0.926 |
| Lemström, Mikkilä, Mäkinen & Ukkonen | 0.722 |
| C. Sailer (midi) | 0.649 |
| C. Sailer (ear) | 0.587 |
| Typke, Wiering & Veltkamp (1) | 0.468 |
| C. Sailer (warp) | 0.415 |
| Typke, Wiering & Veltkamp (2) | 0.401 |
| Ferraro & Hanna | 0.309 |
| A. L. Uitdenbogerd (2) | 0.238 |
| A. L. Uitdenbogerd (1) | 0.163 |

| Score Following | |
|-----------------|-----------------|
| Participant | Total Precision |
| Cont & Schwarz | 82.90% |
| M. Puckette | 29.75% |

These songs raise „goose bumps“ ... It works for me!

1 Artist: Fotos / Title: Viele
„Trigger“: GERMAN LYRICS?



These songs raise „goose bumps“ ... It works for me!

2 Artist: John Legend / Title: P.D.A

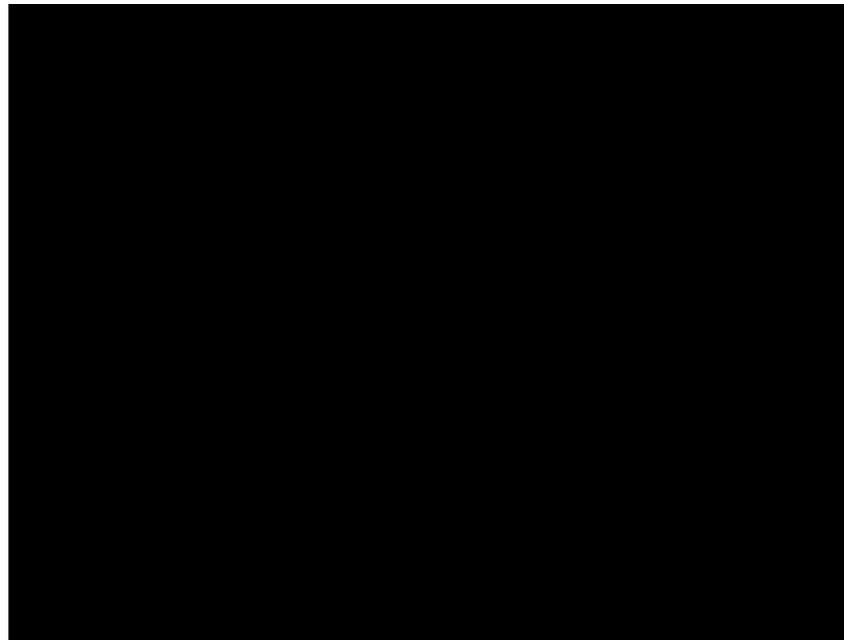
„Trigger“: PIANO (TIMBRE/VOICING) + VOICE + RHYTHM + LYRICS?



These songs raise „goose bumps“ ... It works for me!

3 Artist: Pink / Title: Dear Mr.President

„Trigger“: VISUAL FEED + AUDIENCE REACTION + LYRICS?





www.computationalculture.org

[stephan\(dot\)baumann\(at\)dfki\(dot\)de](mailto:stephan(dot)baumann(at)dfki(dot)de)

Thanks to all the contributors ...