Smart graphics: Overview of lecture content, rules & conditions

Lecture „Smart Graphics”

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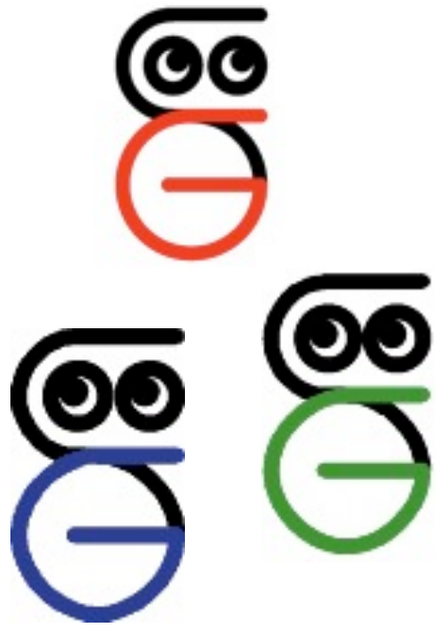


Topics Today

- The term “Smart Graphics”
- Topics of the lecture
- Exercises
- Conditions for getting the certificate
- Useful resources

2008

2009

2010

2004

2005

2006

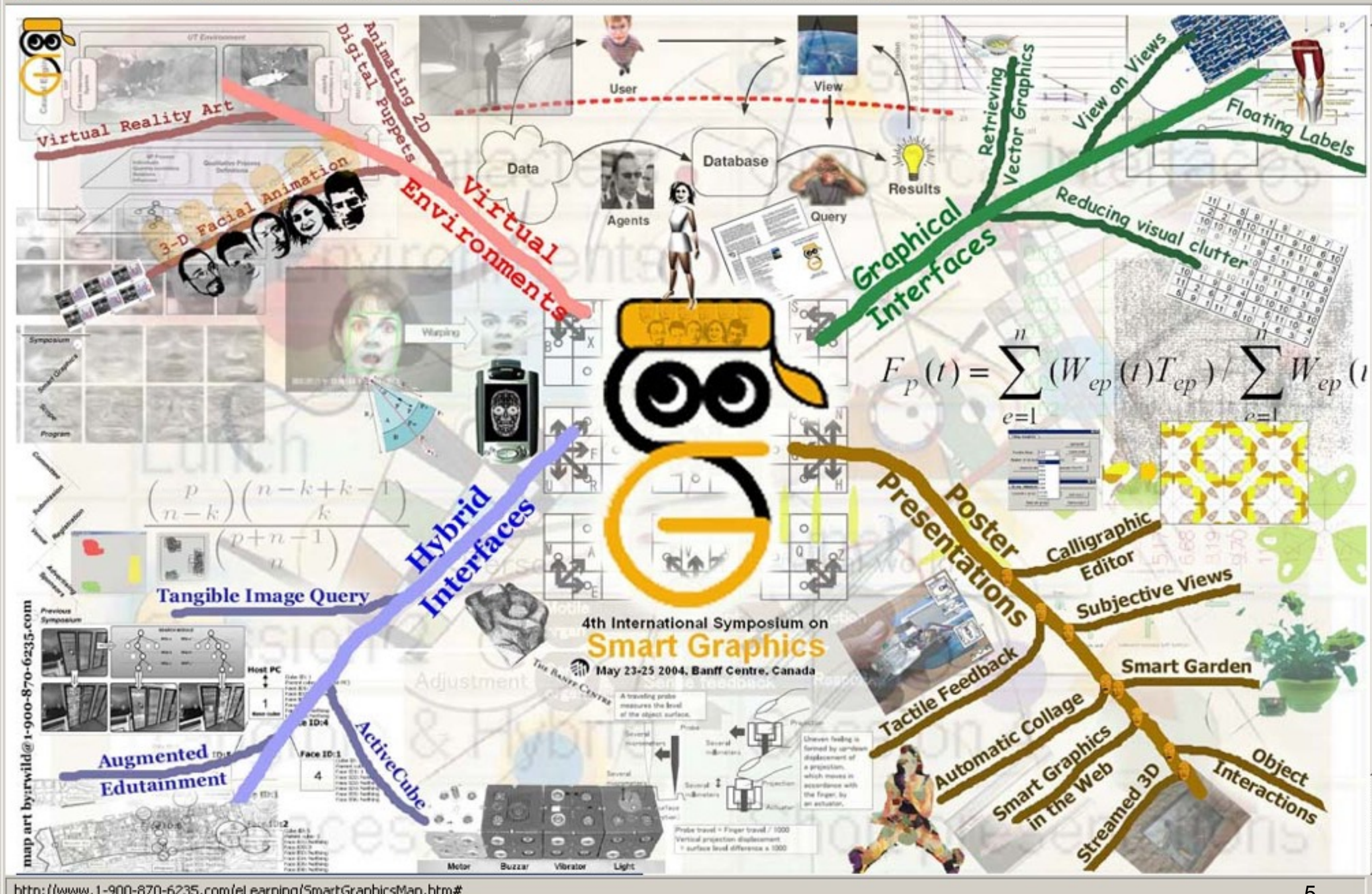
2007

2000

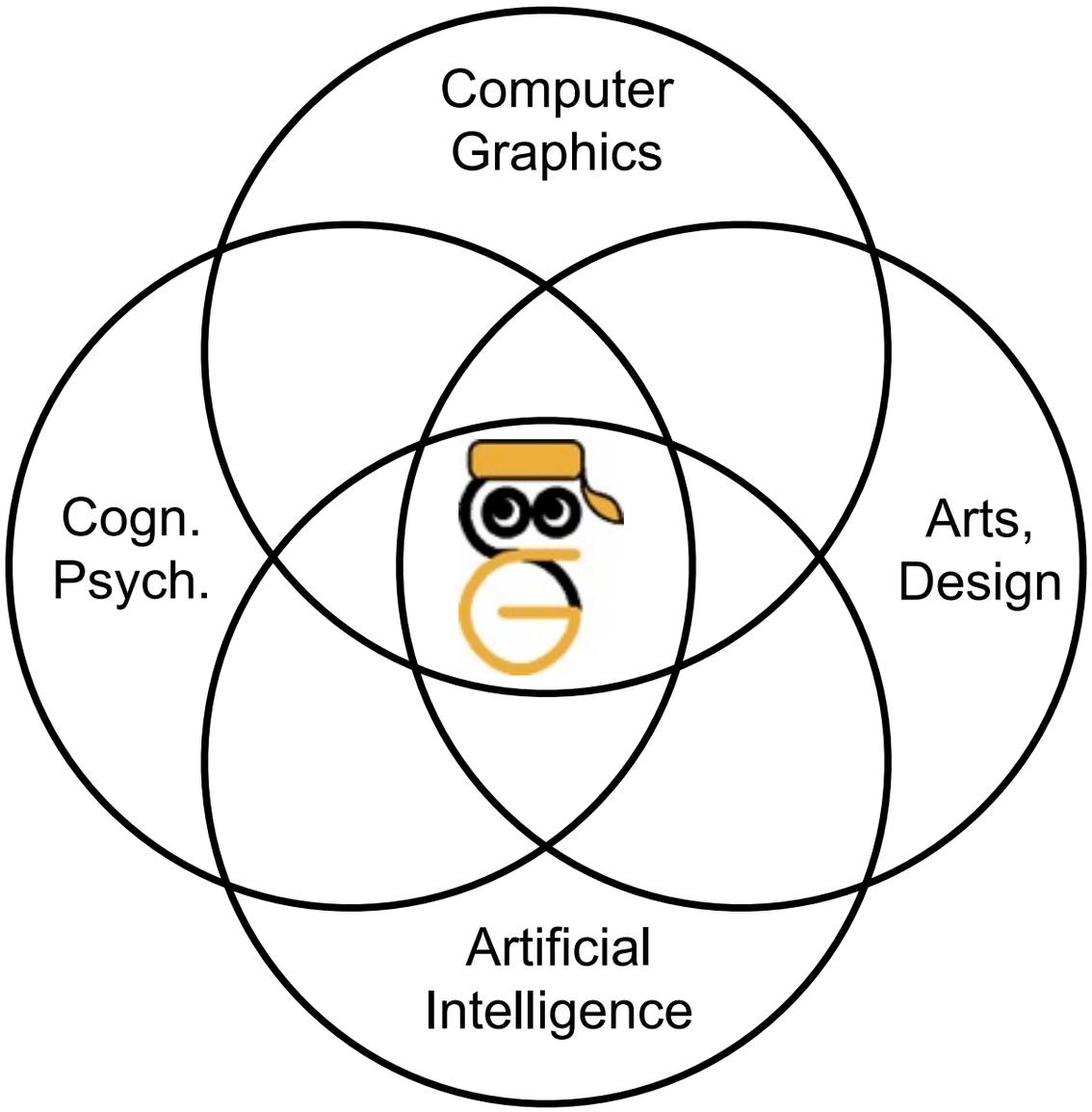
2001

2002

2003


Virtual Reality Art
Animating 2D Digital Puppets
3-D Facial Animation
Virtual Environments
User
View
Data
Database
Agents
Query
Results
Retrieving Vector Graphics
View on Views
Floating Labels
Reducing visual clutter
Graphical Interfaces
Hybrid Interfaces
Tangible Image Query
Augmented Edutainment
ActiveCube
Host PC
Face ID:1
Face ID:4
Motor
Buzzar
Vibrator
Light
4th International Symposium on
Smart Graphics
May 23-25 2004, Banff Centre, Canada
Poster Presentations
Calligraphic Editor
Subjective Views
Smart Garden
Tactile Feedback
Automatic Collage
Smart Graphics in the Web
Streamed 3D
Object Interactions
map art by:rwild@1-900-870-6235.com

Goal: 4 disciplines talking to each other



- Designers have produced graphics forever
- Psychologists tell us how humans perceive and process
- AI provides the tools to use this knowledge
- Computer Graphics provides the medium

Examples of Smart Graphics

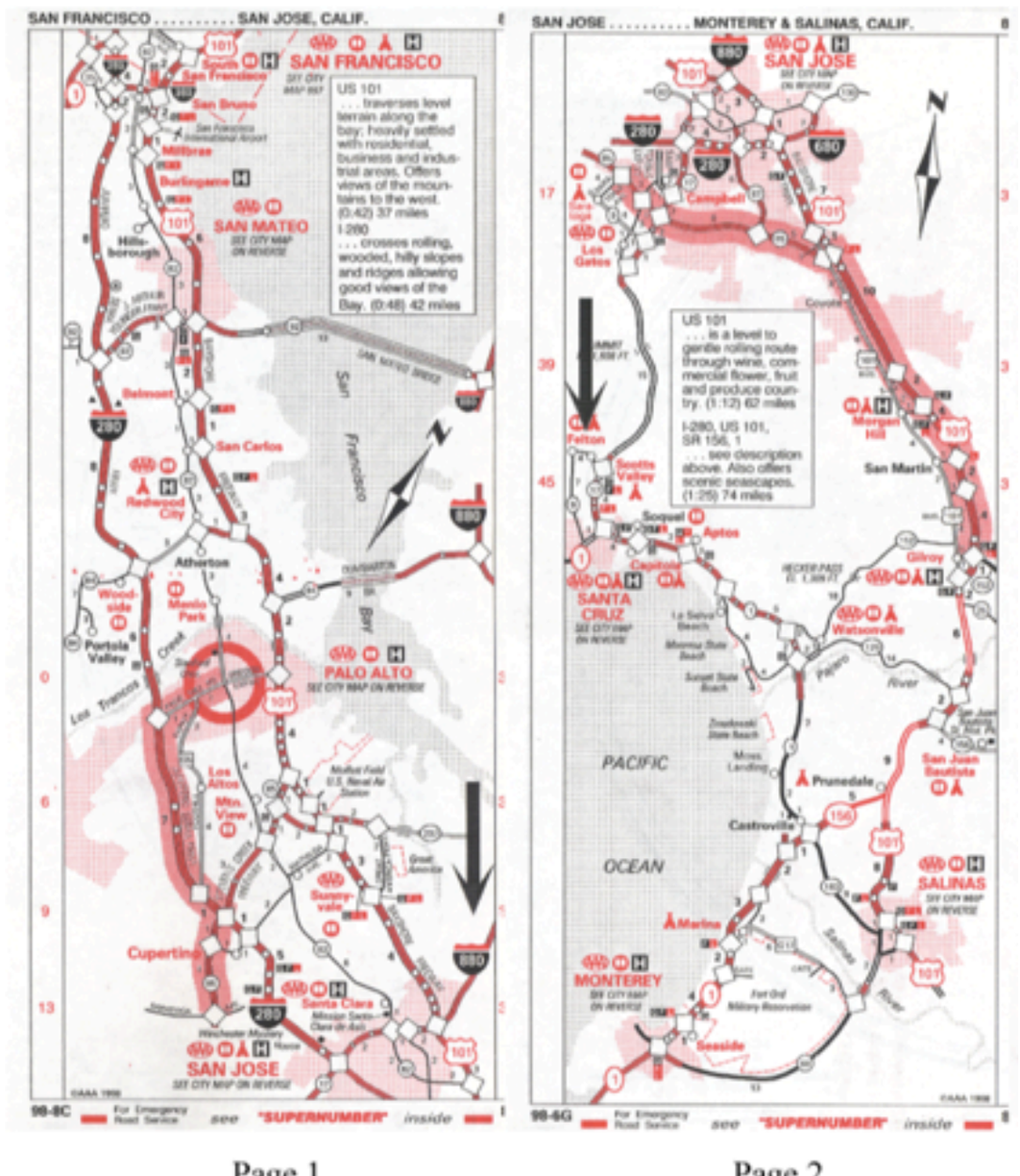
Mapmaker
(Agrawalla & Stolte, SG 2000)

- Ziel ist die automatische Generierung von Wegskizzen
- Berücksichtigung von Designregeln
- Gute Verständlichkeit und Handhabbarkeit

Motivation

- Statisches Kartenmaterial

(a)



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(b)

Motivation

- Schlechtes dynamisches Kartenmaterial

(a)

(b)

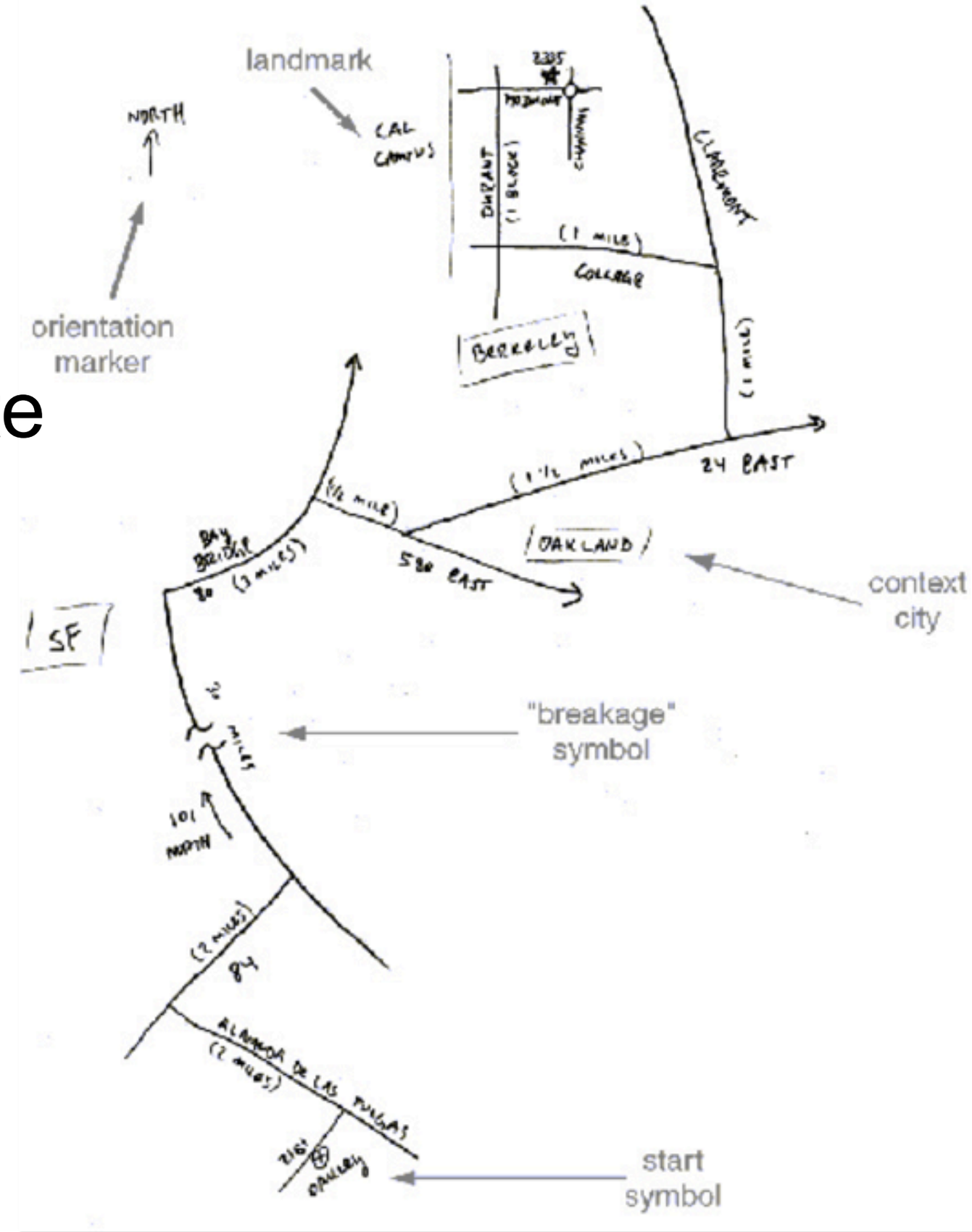
MapBlast

Vorbild

- Handgezeichnete Wegskizzen

Vorteile:

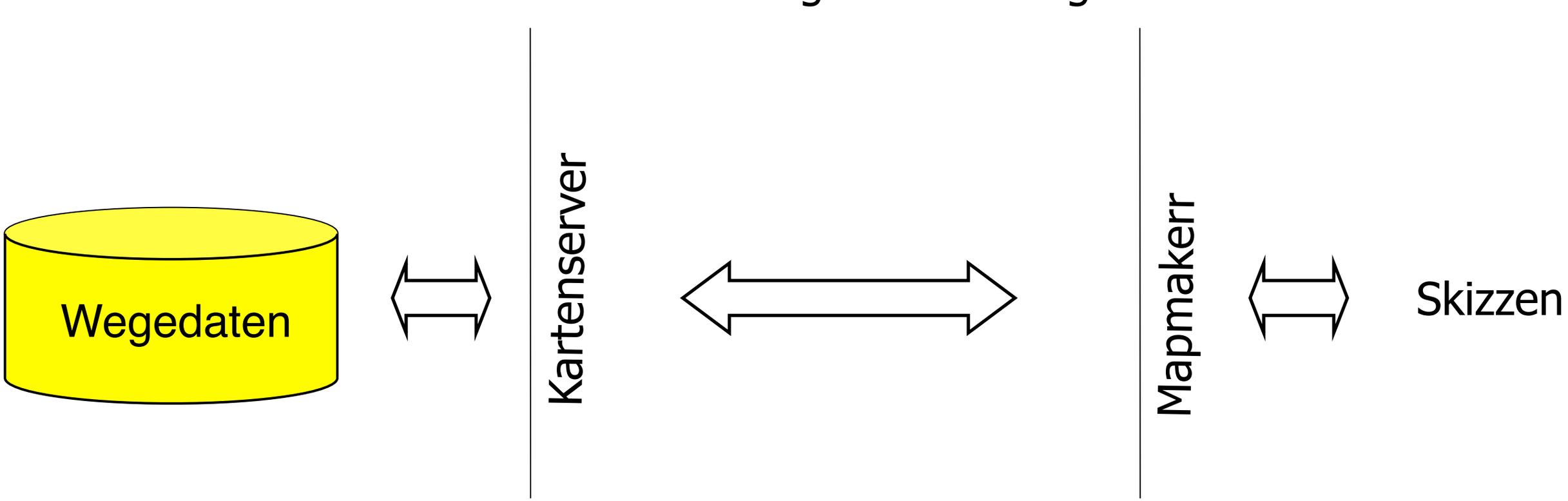
- Auswahl der Details
- Intelligente Skalierung



Designkriterien für Karten

- Lesbarkeit
- Prägnanz
- Vollständigkeit
- Verfügbarkeit

Skizzengenerierung

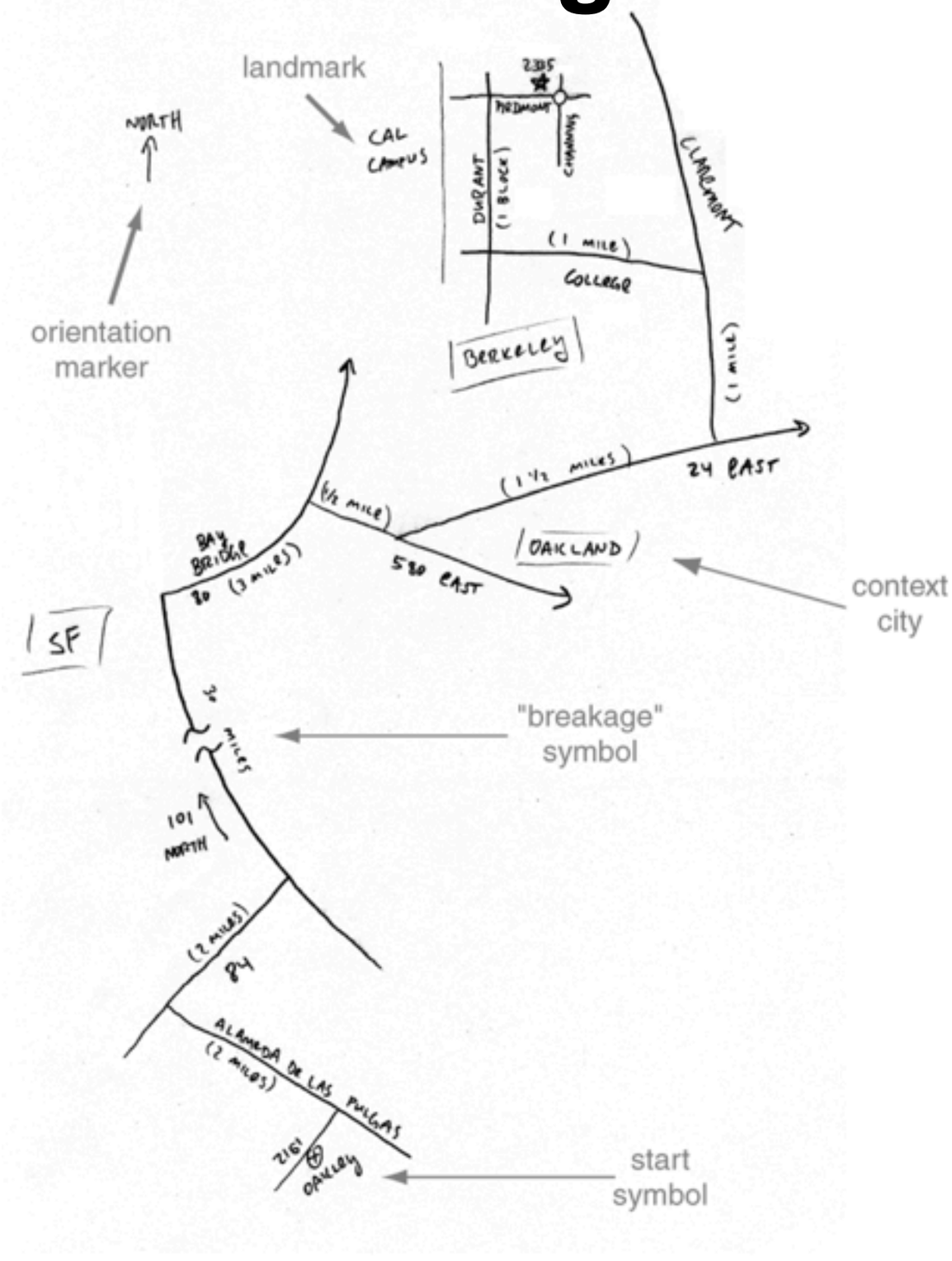


Generierungsschritte

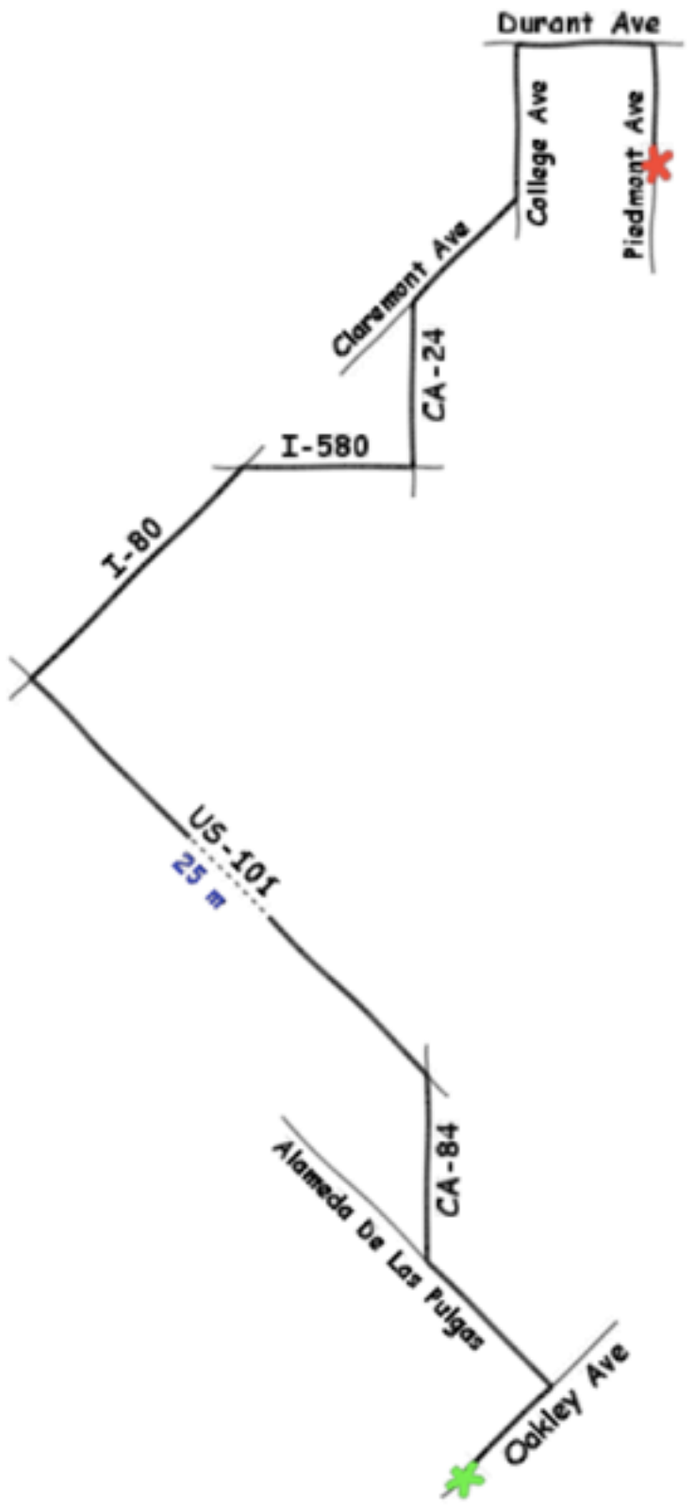
- Plazierung der Wegstrecken
- Plazierung von Bezeichnern
- Hinzufügen von Hilfselementen
- Realisieren des „handgezeichneten“ Stils der Wegskizze

- Kriterium:
  - Längenverhältnisse müssen erhalten bleiben

Generierungsresultat



(a) Hand-Drawn Map



(b) System Generated Map

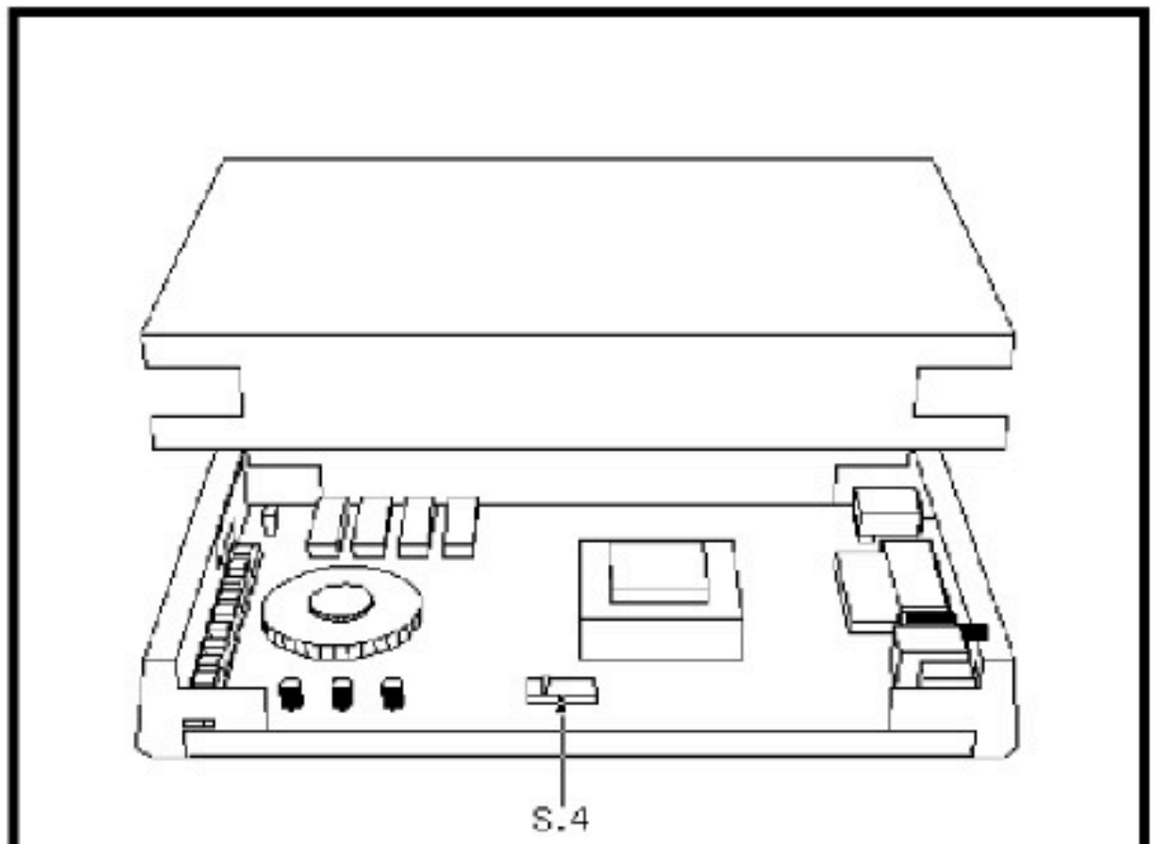
Planbasierter Graphikdesigner

(André & Rist 1995)

- Generiert funktionelle Graphiken ausgehend von einem Präsentationsziel
- Benutzt allgemeine Designregeln und Wissen über die Domäne
- Realisiert Graphiken mithilfe gängiger Illustrationstechniken

Beispiel aus WIP

Set the code switch S.4 to R in order to set for reception. Connect the plug of the telephone. Press the on/off switch in order to turn on the modem. The LED L.11 lights up after turning on the modem.



About the lecture & exercises

3 main parts of the lecture

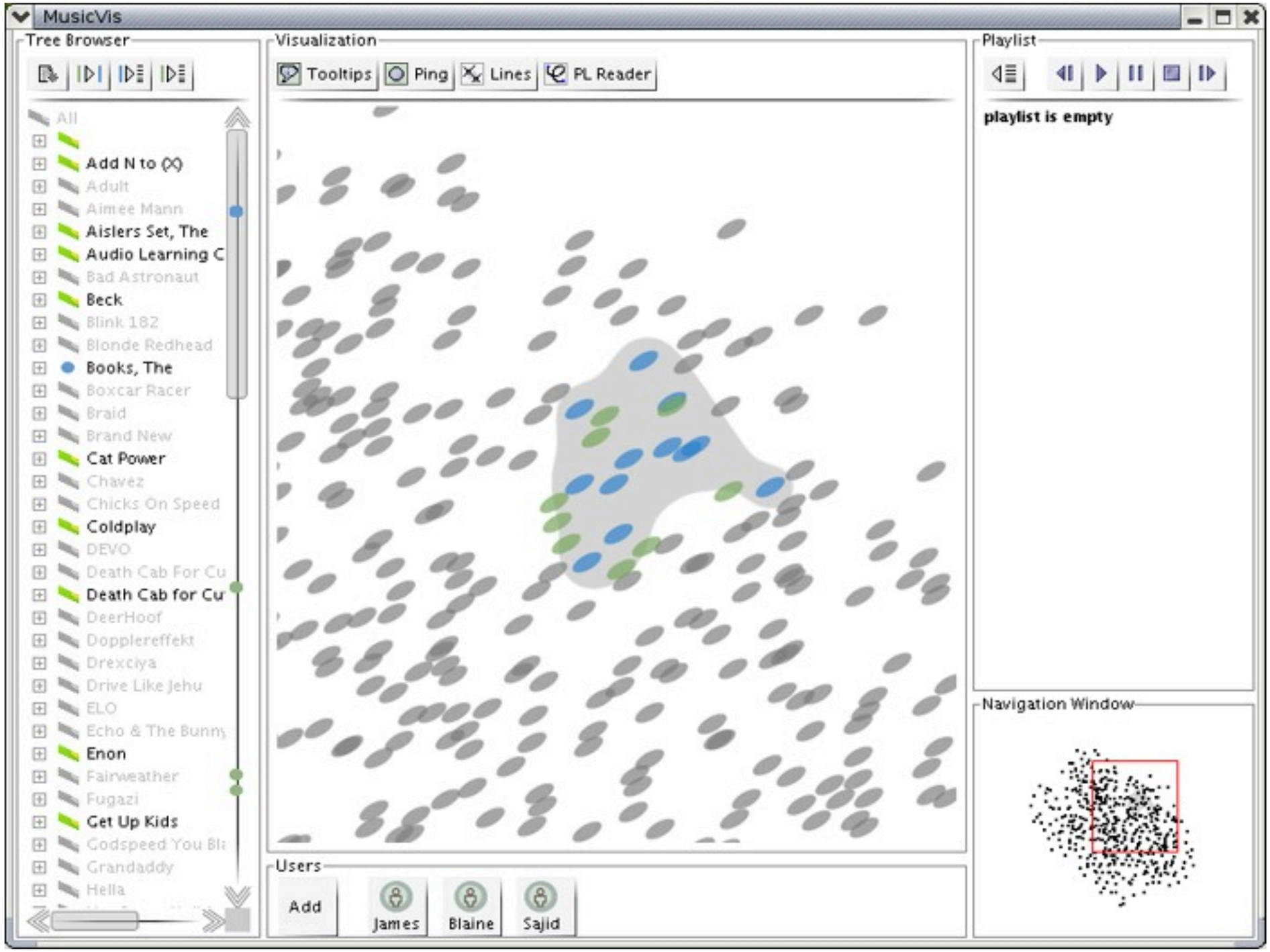
- Motivations
  - –Graphics & psychology
  - –Graphics & arts & design
  - –Graphics & communication
- Methods
  - –A collection of AI tools and formalisms
  - –How they can be applied to graphics
- Milestones
  - –Examples from various fields

Exercises

- One major class project (possibly in infoviz)
  - Base concept, design criteria
  - Choice of tools
  - Implementation of a working demo
  - Documentation in the form of a research paper
- Groups of 2-4 students
- Held after the semester in a 1 week block
- Final presentation at the end
  - Short talk explaining what and how
  - Demo of the implementation
  - Will be open to the public

Example student project: MusicVis

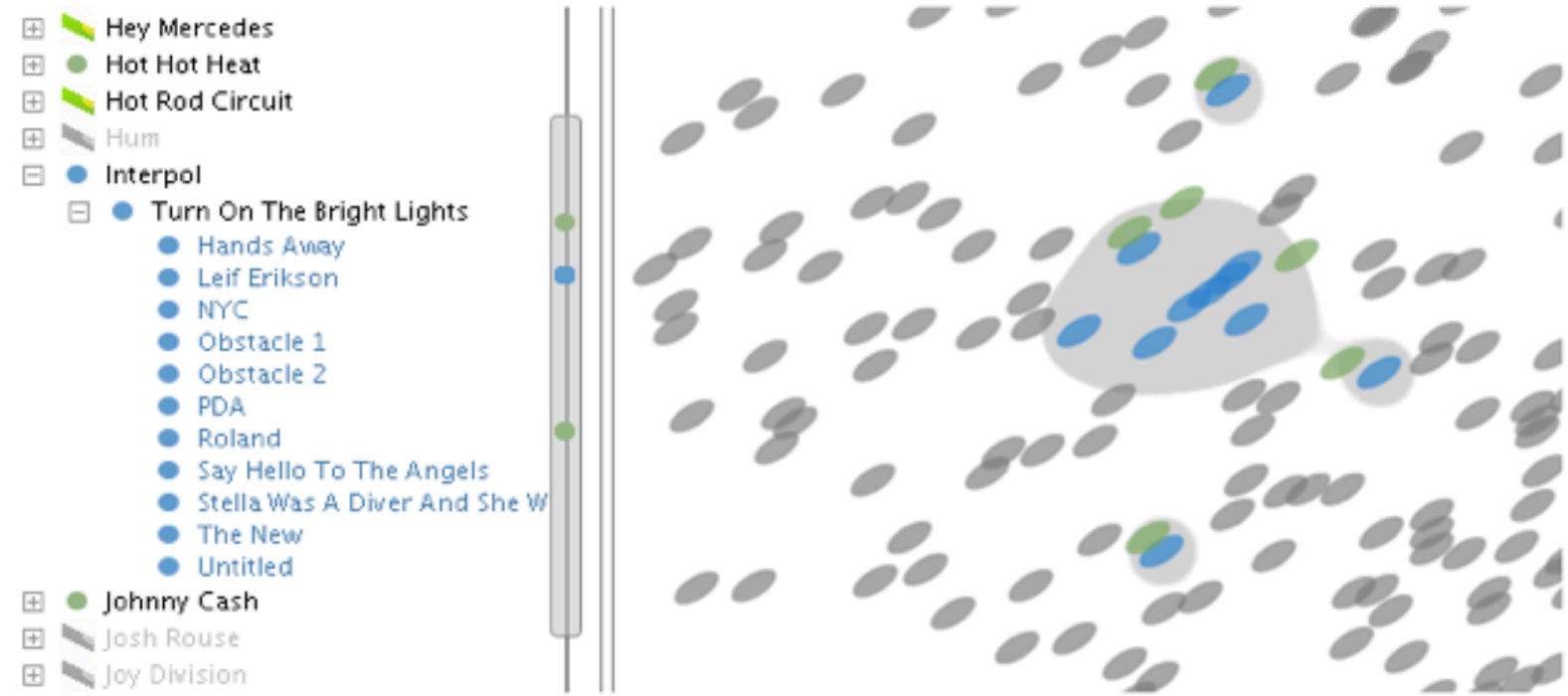
(Blaine Boman, James Pak, Sajid Sadi, Columbia University)

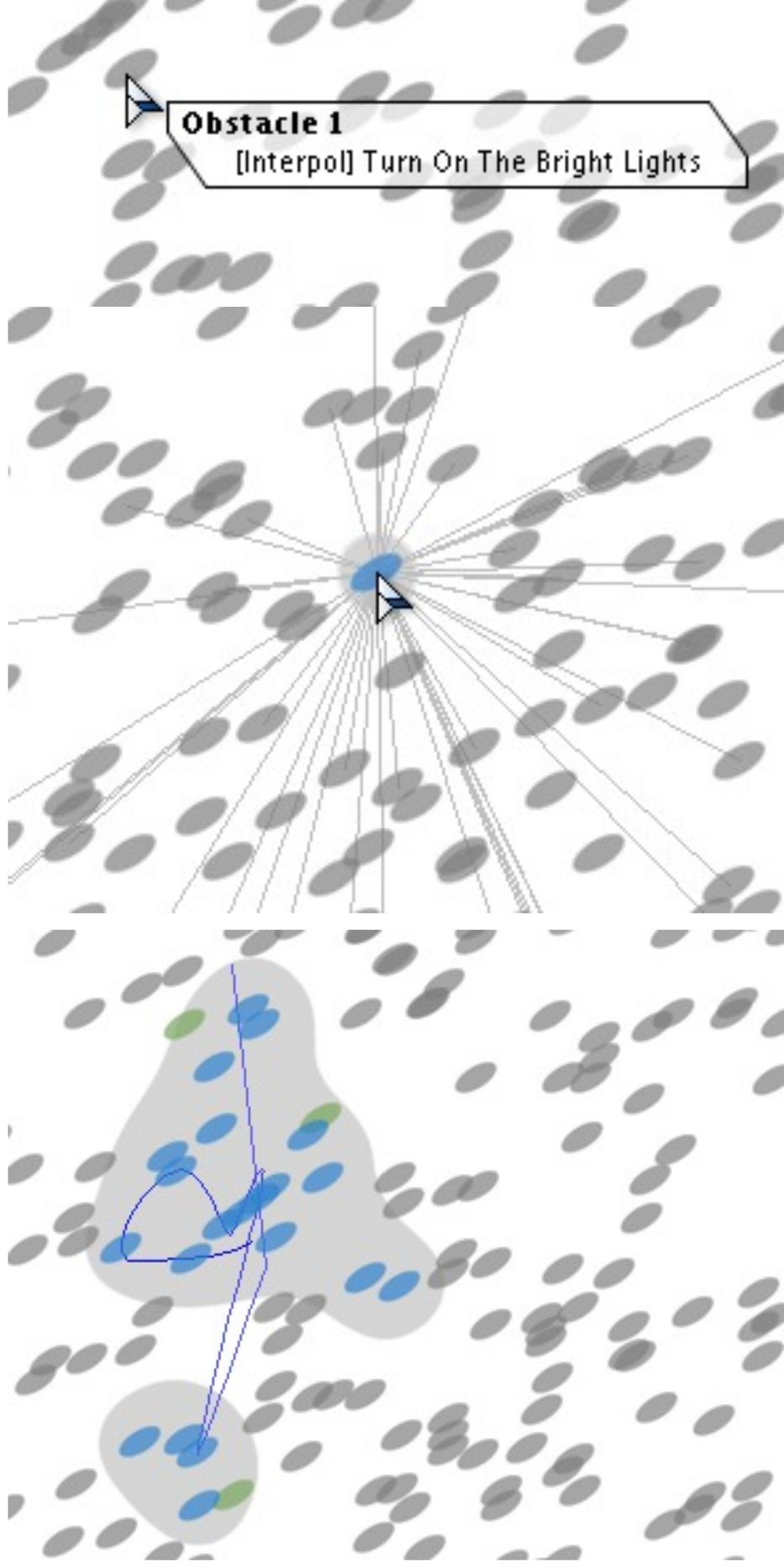


MusicVis (cont‘d)

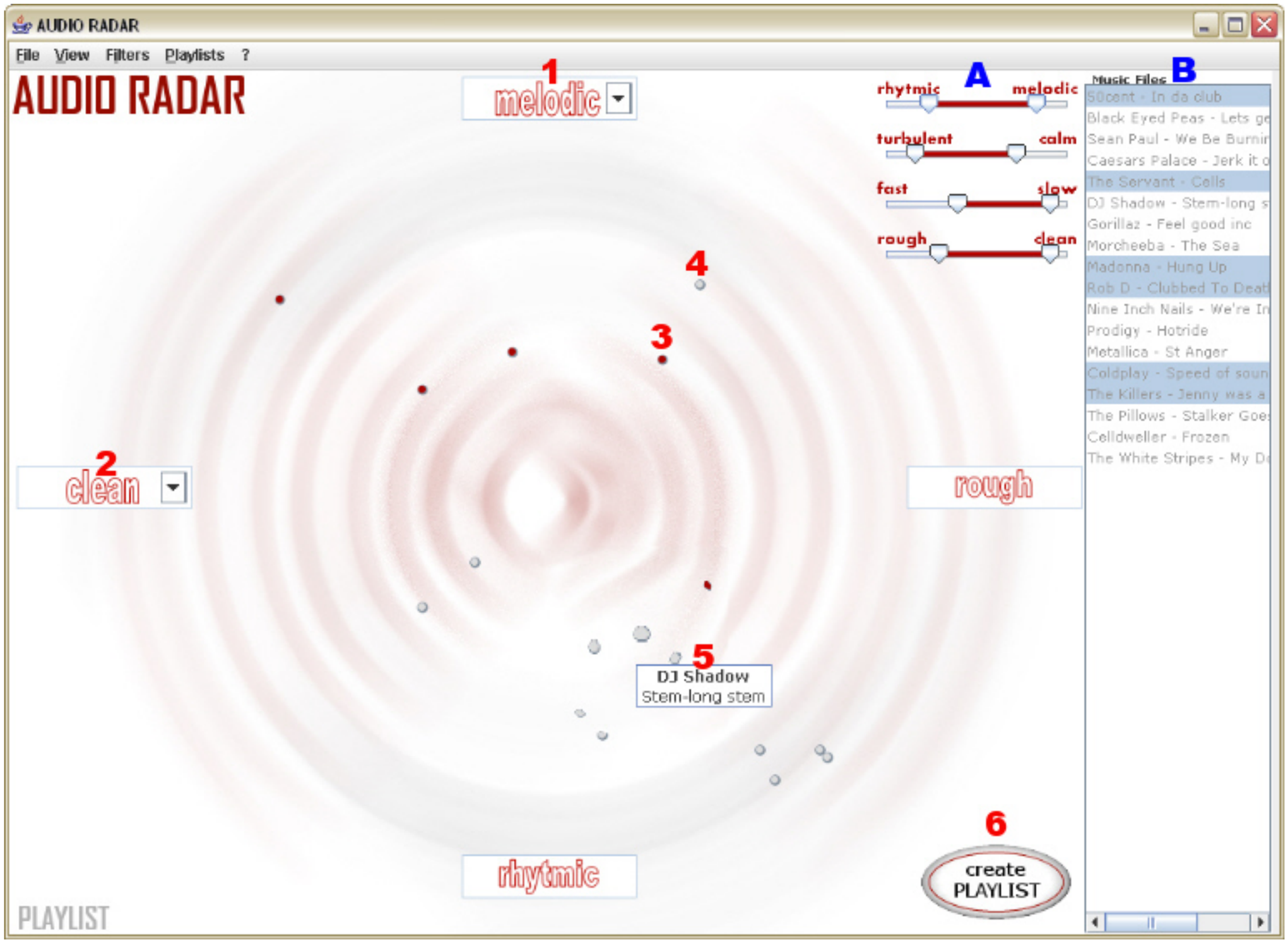
- Visualization of MP3s in a starfield and a tree (coordinated displays)
- Mouse interaction with this visualization
- System learns which songs..
  - –have been played closely together
  - –are in the same playlist
- Formalism: Markov Model
  - –Prediction of next song based on history

- http://www1.cs.columbia.edu/~paley/spring03/assignments/HWFINAL/bgb10/


Hey Mercedes
Hot Hot Heat
Hot Rod Circuit
Hum
Interpol
Turn On The Bright Lights
Hands Away
Leif Erikson
NYC
Obstacle 1
Obstacle 2
PDA
Roland
Say Hello To The Angels
Stella Was A Diver And She W
The New
Untitled
Johnny Cash
Josh Rouse
Joy Division


Obstacle 1
[Interpol] Turn On The Bright Lights

LMU Example (2005): Audio Radar



Some useful links

- http://www.smartgraphics.org/
- http://www.cogsys.wiai.uni-bamberg.de/teaching/overview.html
- http://www.cs.umd.edu/class/spring2005/cmsc838s
- http://wbpaley.com/brad/speaking.html