Individualized Toponomy in Ubiquitous Cartography

- Individualization of name selection in modern cartography -

Training course on Toponomy, Vienna 2006
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Content

1 Contemporary Aspects in Cartography

2 Technical and Typographic Characteristics

3 Individualized Selections

4 Discussion

International Cartographic Association (ICA)

- Durban (2003)
  Commission on Ubiquitous Mapping

- Tokio (2004)
  UbiMap Conference

- Vienna (2005)
  LBS & TeleCartography Conference

- Tokio (2006)

General Aim

“Customised / adaptive” cartographic information transmission...

...depending on user situation...
...independent from place and time.

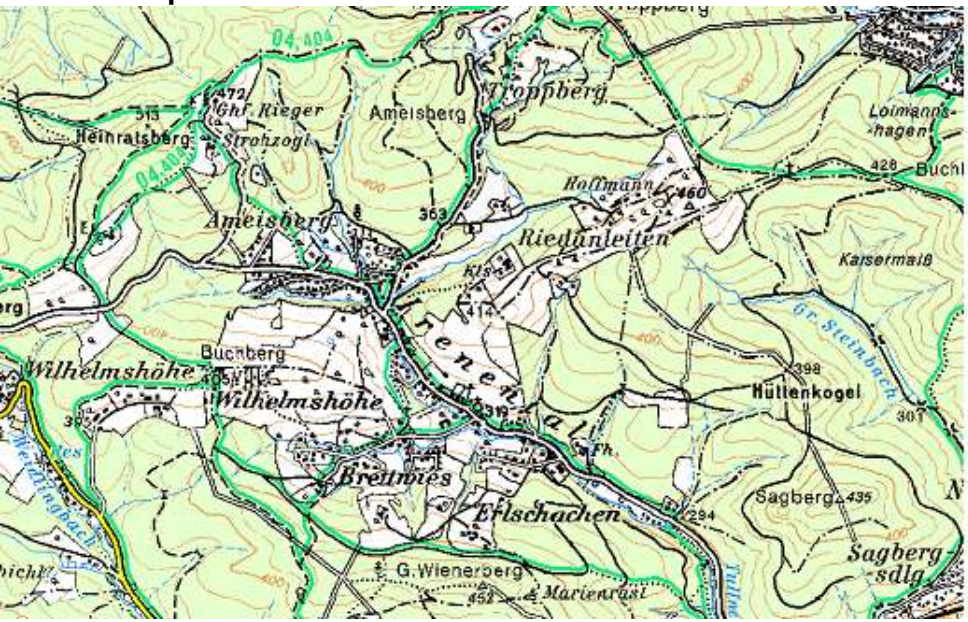
Starting Point

- Internet Cartography
- Mobile Internet / TeleCartography
- Map-based LBS
- Navigation Systems

Interface Resolution

- dramatic reduction of information carriers
- minimum sizes for map semiotic on digital interfaces

Paper
1200dpi

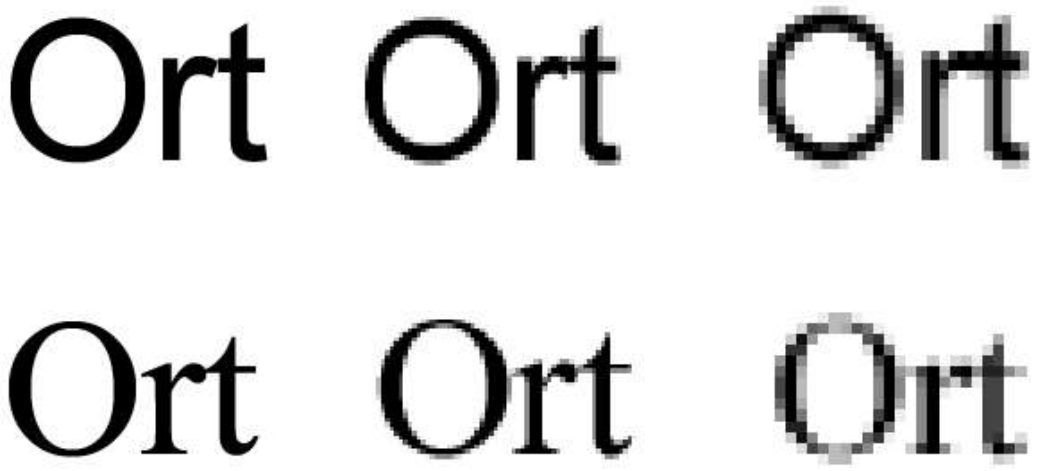


Screen
1024x768px

Small Display
160x120px (?)

Typographic conclusion

- variety of usable fonts is reduced
- sans-serif font seem to be appropriate on low resolutions (small displays)
- solutions (?)
  enlarging of fonts or adapted visualisation



Derivative Demands

- Personalising
- Individualising
- User-dependent adaptation
- Situation-dependent adaptation

>> “customised map” instead of “predefined map”

Individualisation/Personalisation

of

- the user interface

- the presentation form / visualisation

- the content

Individualisation/Personalisation

of the user interface:

- client-based preferences

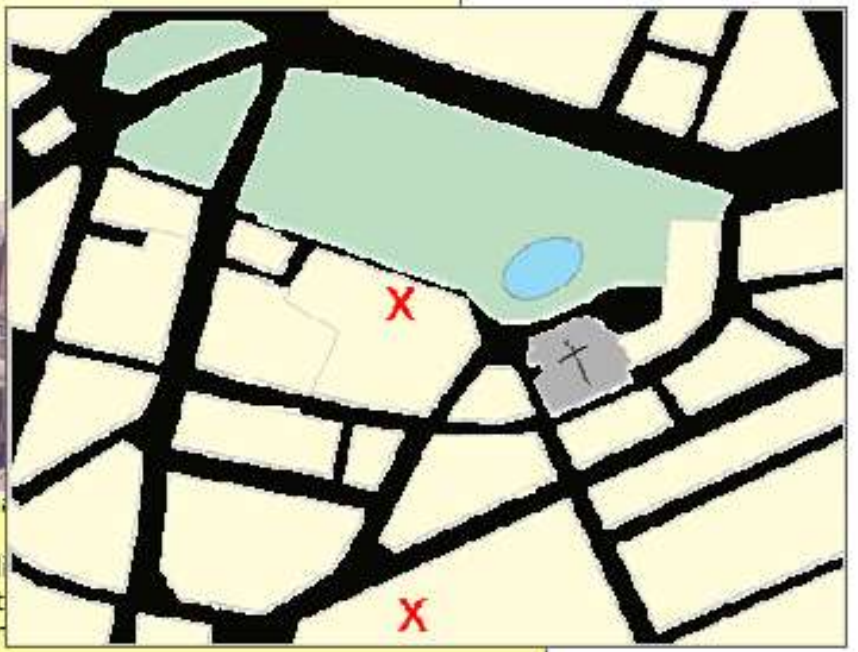
- hard- and software adaptations
- interface design
- functionality design

Individualisation/Personalisation

of the presentation form / visualisation:

- the coding of spatial related content

- Fahrstuhl Erdgeschoß
- NW 50m
- NO 25m
- NNO 250m
- WNW 25m
- NNO 120m
- Stiege



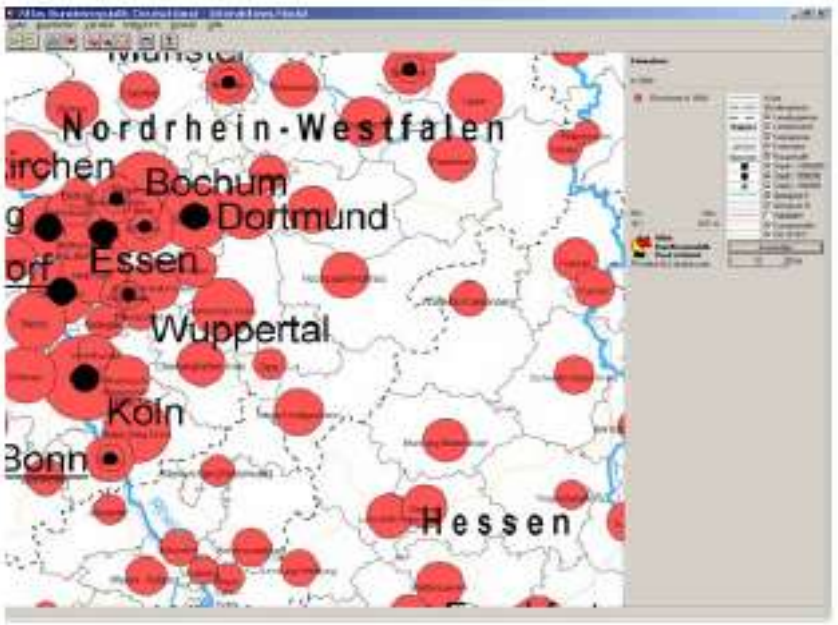
- Verlassen Sie das Gebäude durch den Haupteing
- Gehen Sie schräg rechts in die Gasse
- Biegen Sie bei der zweiten Gelegenheit links in d
- Biegen Sie bei der ersten Gelegenheit nach recht
- Überqueren Sie einen Innenhof um im zweiten In durch eine Tür einen Stiegenaufgang finden
- Folgen Sie den Stiegen und wenden Sie sich unmittelbar danach nach links in einen Gang

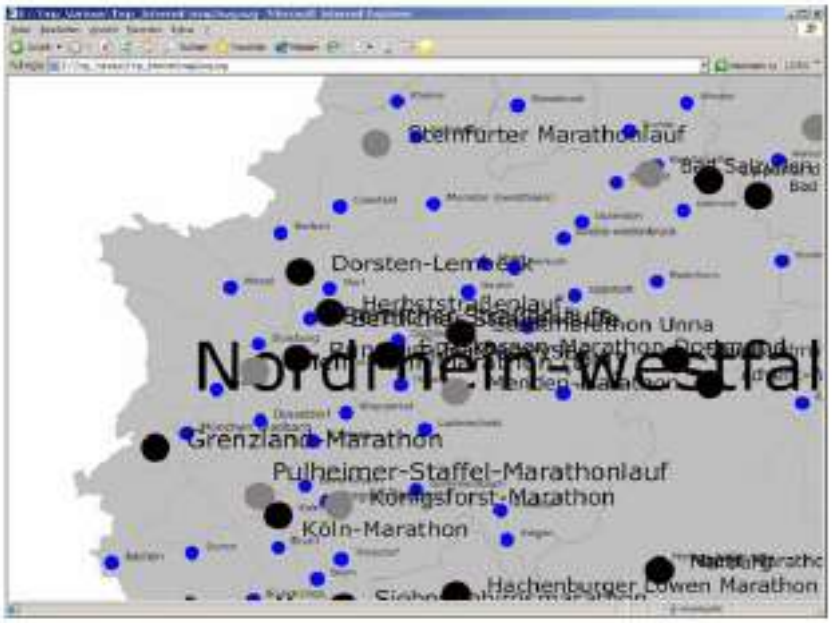
Folgen Sie den Gang bis sie zu einer Halle / Eingangsbereich gelangen

Individualisation/Personalisation

of the cartographic symbolisation:

- depending on visualisation method
- restricted influence on graphical variables





Individualisation/Personalisation

of map content:

- various aspects of selection

Selection of map elements

= function of

- scale / format / resolution
- aim / map-use
- graphical variable of symbolisation
- graphical density
- meaning of elements
- design

- always with immanent conditions of
  - perception
  - efficiency (expressiveness, effectiveness)

including syntactic, semantic and pragmatic dimensions

Selection (2)

Syntactic-

Semantic Dimension

Cartographic “design”

Selection (4)

Semantic problem

exact definition of villages/settlements and their meaning

Methodical problem

selection following cartographic principles

Technical problem

positioning and labelling processes

Selection of settlements

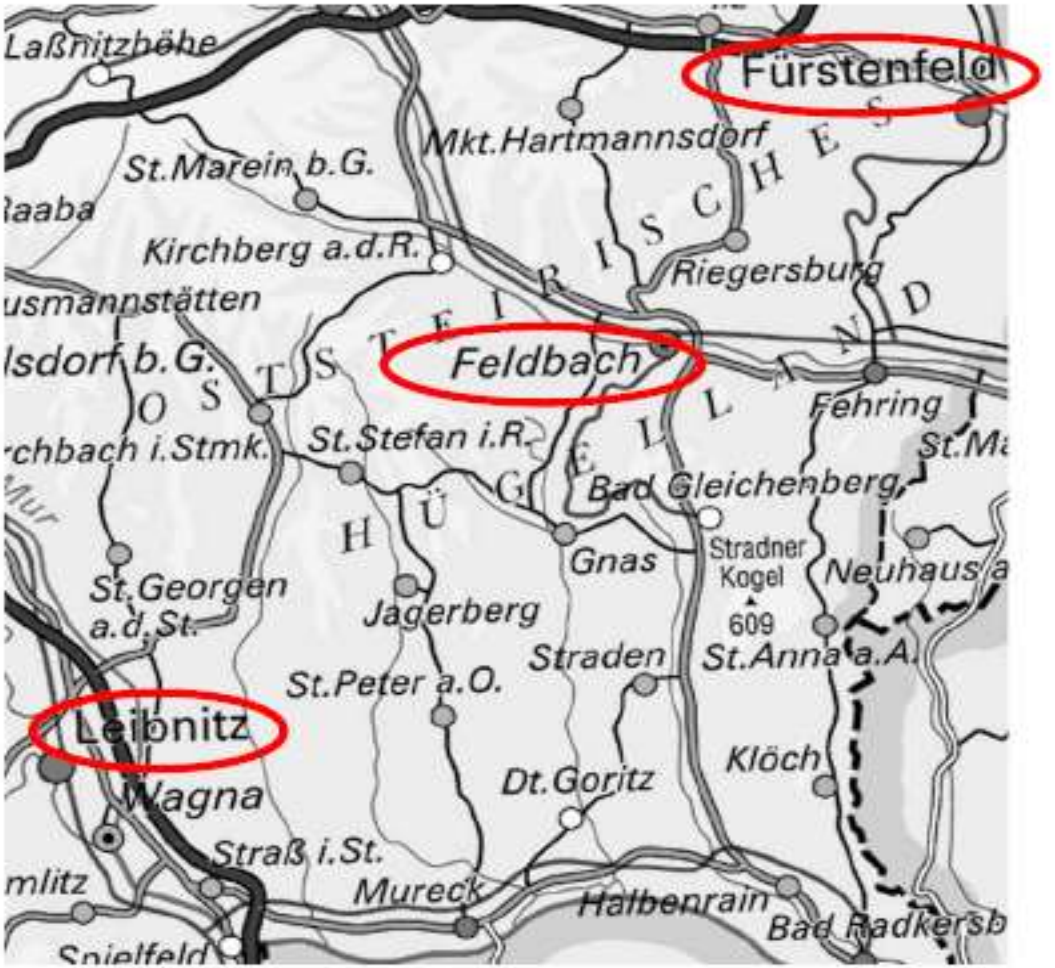
following aspects of

- quantity
- quality
- graphics/content design

>> “reverse engineering”

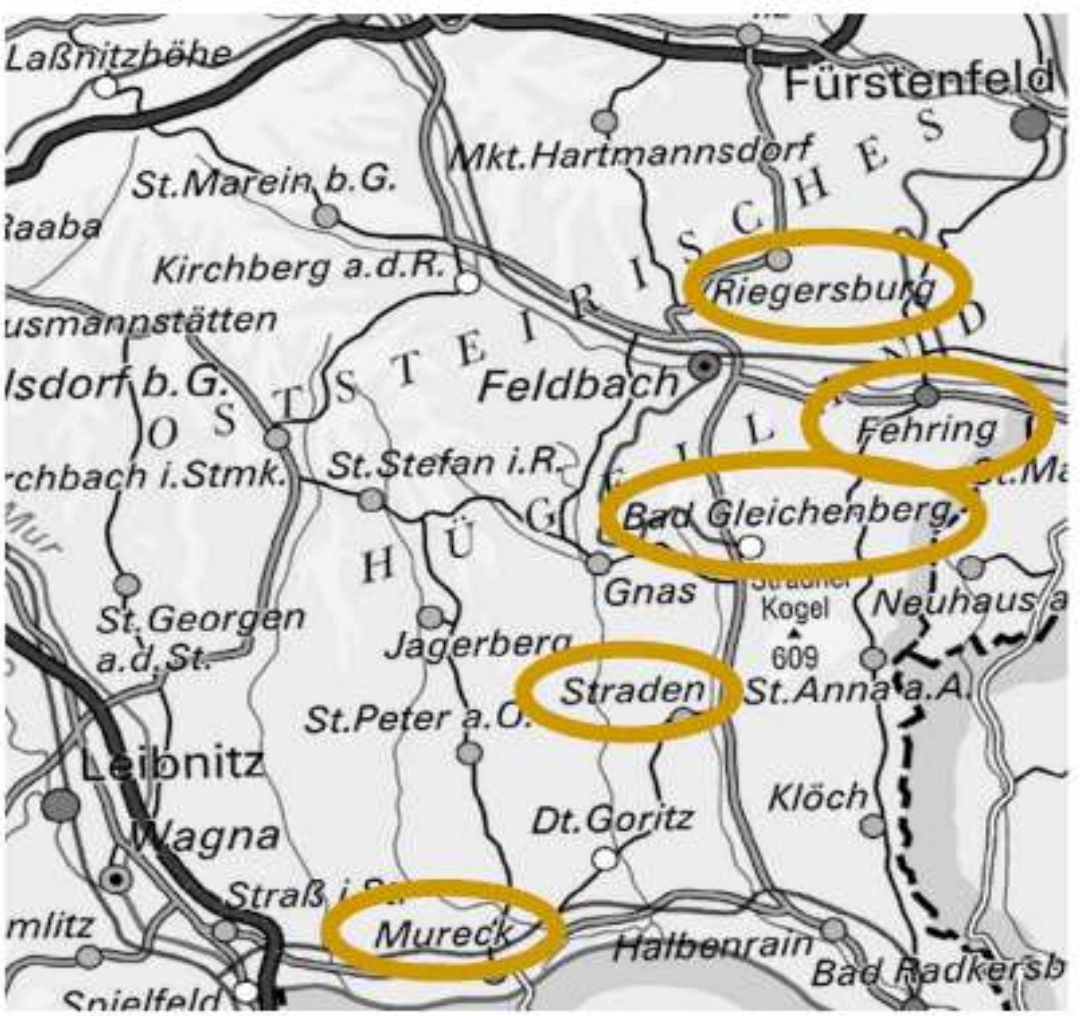
Quantitative criteria

- size of settlement



Qualitative criteria

- settlement specifics



Graphical criteria

- “filling” empty areas

User knowledge

- creating a new variable: user-knowledge

- is it possible to implement individual knowledge/preferences of the user?

- example: use case “settlement”

Procedure

- analysis of possibilities for user-classification/modelling

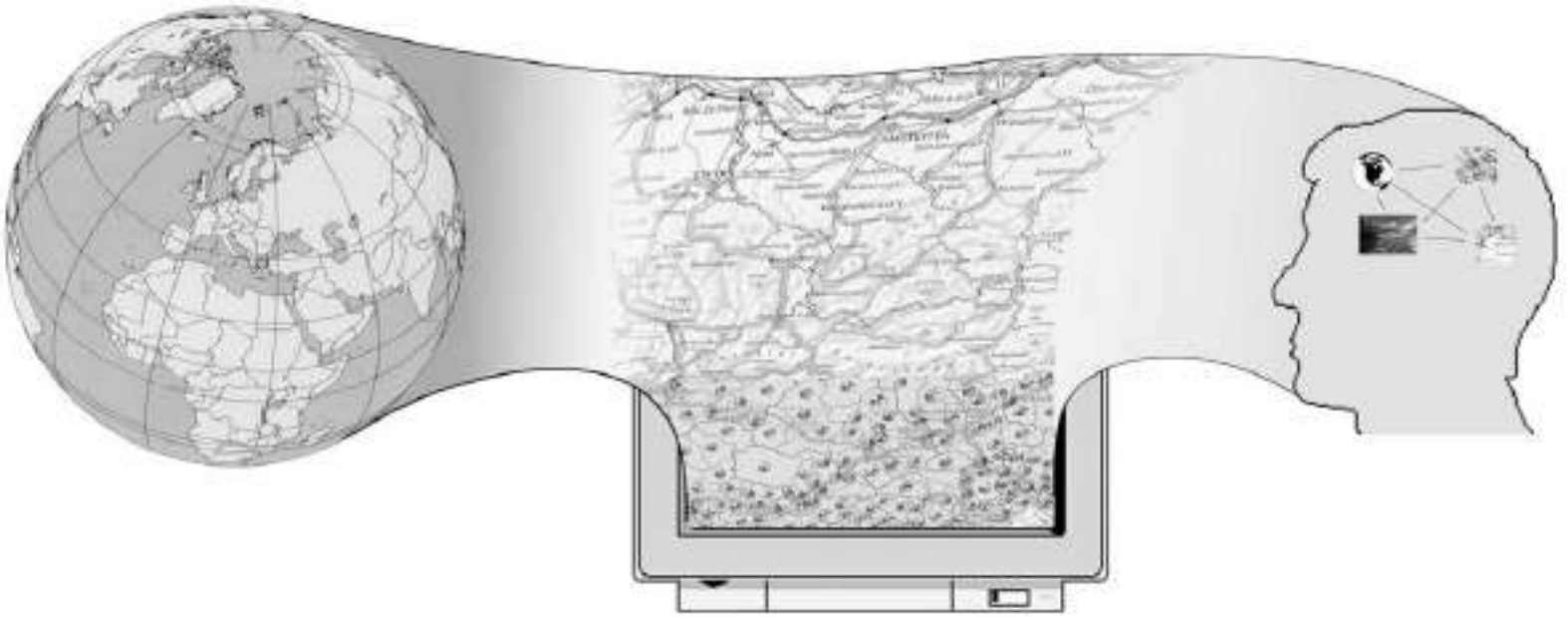
- definition of the main important determining aspects of cartographic selection

- linkage possibilities

- usability testing

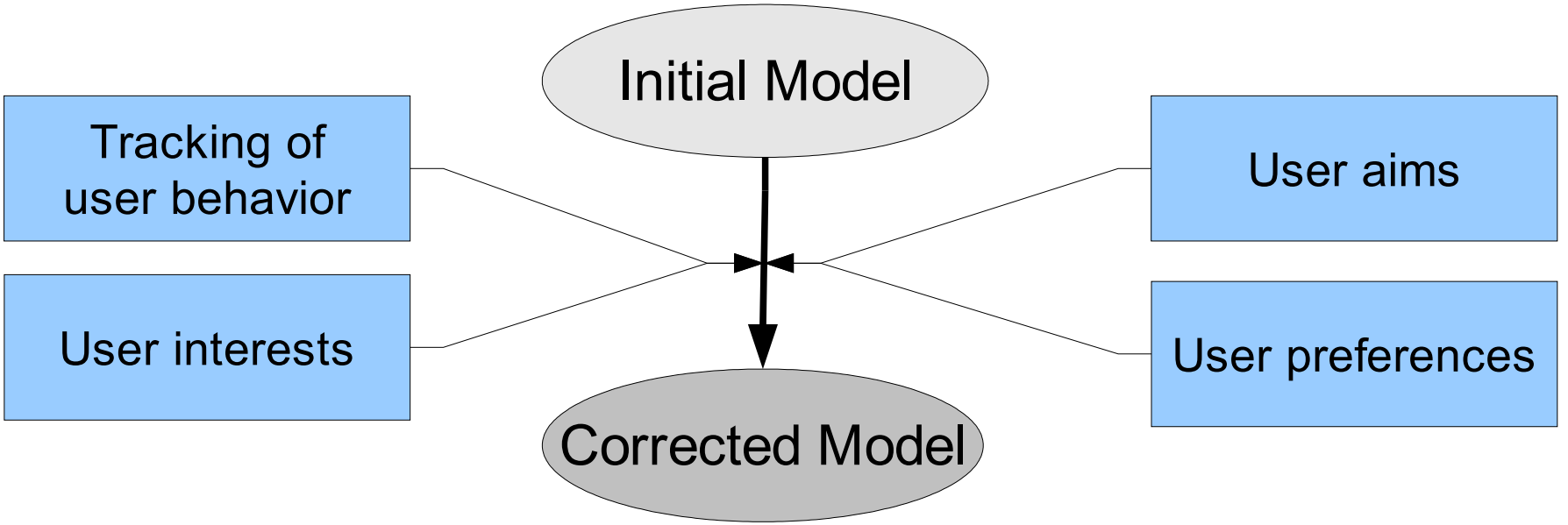
Reason for user modeling

Improvement of cartographic information transmission as a whole



Methods

- **GUMS** (General User Modelling Shell, Finin 1989)
- **CDM** (Categorising, Describing, Modeling; Bushey 1999)
- **Statistical Methods** (Zuckerman & Albrecht 2001)
- **Adaptive Hypermedia** (Koch 2001)



Structuring

- hierarchical order

- creation of hierarchies based on
  quantitative and qualitative aspects
  influence of user-oriented preferences
  (using results of user-modeling)

- “gravitation model”
  effect = importance / distance

Individualised Selection (6)

Example

(Matter, Gartner, Cartwright 2003)

Individualisation of map content

may result in
- a different base of reference for various users
- difficulties in user-community communication

- additional informations beyond traditional cartographic modeling

Core competence of cartography

-a most efficient transmission of spatial related content-

leads to following questions:

> is “adaptive” transmission more efficient?

> is an “adaptive” map feasible?

> is an “adaptive” map desirable?