maps as an important part of the internet-presentation of a large town

example: Hamburg

city and state Hamburg
department of public works
surveying authority
Dipl.-Ing. Ekkehard Matthias
contents

- general requirements of the customers in Hamburg
- generalization: yes - displacement on demand: no
- resulting digital basic maps of Hamburg
- workflow of map production nowadays with the idea of multiple usage
- modular construction of „smart digital edition“
- citymap in the internet now
- next steps: conversion from public to private (commercialization) und model of „situations of life“
customers

- power suppliers: digital data and paper maps
- administration of Hamburg: digital data for orientation and presentation within combination of thematic data; paper maps in special designs and other services
- tourists and citizens of Hamburg: paper maps and cheap digital data
requirements of these customers on digital and paper maps (examples)

- coloured and with a lot of contents with a plus of registers for full orientation
- only „black and white“ because they want to add own themes
- the whole area on one sheet of paper
- all details readable
- special icons/colours for the presentation of one theme („my own map“)
- special icons/colours for the presentation of a different theme
- special ground plan which is optimized for the application of a special case (1:20000 vs. 1:60000)
- one ground plan for all cases because of the need of interoperability of the different themes
- finished yesterday
conclusions for producing maps

- the only possibility to get a solution is to use digital vector data
- all components have to be realized in a modular construction
- integrative basic-geometry for various scales and themes. That means to use some ground plans of several scales instead of only one ground plan (to avoid of problems of generalization)
- data output possible as conventional (printed) maps, raster data and simple digital products (within software)
generalization: yes
displacement on demand: no

- generalisation - especially displacement - is a strange problem. 1990 we had no solution „on demand“.
- but the customers wanted both: maps in the scale 1:20000 (planning details) as well as in 1:50000 (show the result as an overview) are necessary.
- so: if we have to show the same themes in both scales we have to use the same groundplan without rdisplacement of contents.

- our solution:
  - define scale-ranges for customer-groups.
  - create only one groundplan for a scale-range with displacement, widen and other generalization-steps so hard that we can reduce up to 1:75000, but also so soft that we can enlarge up to 1:10000.
  - within this scale-range no displacement or geometric simplification.
generalization: yes
displacement on demand: no

- this might work for the groundplan but not for the whole text (like streetnames)
- so we decided to create two text-sets: one for scale range 1:10000 to 1:30000 and another one for 1:35000 to 1:75000

- leaving out details and change of colours and symbols will be possible on demand.
resulting digital base maps of Hamburg

- DBM
- DCM
- DRM

Degree of generalisation vs. scale:

- 1 : 500, 1 000, 5 000, 10 000, 20 000, 60 000, 100 000, 300 000, 600 000
Digital Base Map
- DBM -

- "catastral map"
- territory of the city and state of Hamburg (755 km²)
- model 1 : 1 000
- range 1 : 500 to 1 : 10000
- 2,5 GByte
- 150 codes
- finished: 1997
- update: permanent
“city map"
Hamburg + communities in the neighborhood (more than 2400 km²)
model 1:20000
range 1:10000 to 1:60000
150 MByte
260 codes
status: 1999, update yearly
Digital Regional Map - DRM -

- "general map"
- Hamburg + minimum 50 km in each direction
- model 1 : 150 000
- range 1:100000 to 1:300000
- 150 MByte
- 200 codes
- status: 1999, update yearly

2000-09-23
workflow of map production in the mind of multiple usage

the base:
1 dataset (e.g. DCM)

DCM (sicad)

the way:
apogee

citra

the aims:
- paper maps standard ed. (>100)
- spec. ed. for various customers
- dig. raster data (tiff, jpg...)
- different dig. vector data (dxf, shape...)
- dig. describing data (schedules...)
The workflow of map production in the past involved:

- CGM
- Plotfile
- Plot (paper)
- PDF
- RIP
- Film
- Offsetprinting (paper)
- CGM
- TIFF
- (Raster-data)

- Each product has its own way
- With different parameter-sets (colour, width...)
- Proofs (plots) are not obliging
workflow of map production today

- APOGEE-concept (AGFA)
- one way for all products
- one parameter-set for all kinds of output
modular construction of „smart digital edition“

there are many applications, which mostly depend on the same or similar parts:

If we create a modular constructed digital edition you can use it in different ways
### modules of „smart digital edition“

<table>
<thead>
<tr>
<th>basic maps</th>
<th>themes</th>
<th>software</th>
<th>registers</th>
<th>databases</th>
<th>tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBM</td>
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<td>Import</td>
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<tr>
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<td>Houseno.</td>
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<td>Toolbox</td>
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<td>other (f.e. APM)</td>
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2000-09-23
digital raster base maps of Hamburg
themes

- vectordata as overlay:
  - administrative boundaries
  - buslines
  - buildingblocks

- themes of the different users / customers
basic maps and themes

- raster data in different scales as a background for orientation
- vectordata as a kind of presentation of the themes
software

- handling of the system:
  - presentate (change scales, zoom,...)
  - show vectordata
  - measure distances and areas
  - print
  - export to other applications
- with „windows-feeling“ (for intuitive handling without extensive training)
example for register

- show in the map
- geo-request
  (doubleclick)
- geo-request
  (rectangle)
- in several categories
example for semi opened database

- alphanumeric data of the customer
- data im/export
- connection with the maps
- geographic and alphanumeric searching and presentation
for all citizens: a town-plan on cd-rom

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interactive town-plan with database
presentation-system for administration

- basic maps
  - DBM
  - DM5
  - DCM
  - DRM
- themes
  - Streetdata
  - Building-blocks
- software
  - VISOR
  - Small VISOR
  - Streets et.al.
- registers
  - Parcels
  - Houseno.
  - Opened database
- databases
  - Semi-opened database
- tools
  - Import
  - Toolbox
  - GPS
  - Multimedia

2000-09-23
bridge-control-program with multimedia support (film, photo, sound)

search and find

check statistic
for specialists of soil assessment

basic maps:
DBM
DM5
DCM
DRM

themes:
Streetdata
Building-blocks
Buslines, administr. boundaries
Small VISOR

software:
VISOR
Houseno.

registers:
Parcels

databases:
Opened database
Assessment database
Semi-opened database

tools:
Import
Toolbox
GPS

other (f.e. APM)
search and find

statistic + filter

support for all, who have to do with real estate

overview
modular construction of „smart digital edition“

- maps are only one thing users need.
- so maps are also only one part of the smart digital edition.
- cartographers and surveyors have to care about the other items too!!!
- thats our understanding of map-production (within databases, applications and multimedia-components up to distribution and sales)
- and we also did this in the case of internet
www.hamburg.de in general

Today hamburg.de is a presentation of the Hamburg-administration with touristical issues, political issues and much more.

The citymap is available from each site,

Special applications with maps are the `direct citizen info-system` and `traffic-info region hamburg`
citymap in the internet

- direct citizen info-system:
  - since 1997 in production within maps
  - no interactive version, only for presentation of one point
DiBIS® – Direkter Bürger-Informations-Service

Hier befindet sich die gesuchte Dienststelle

© Amt für Geoinformation und Vermessung
citymap in the internet

- **direct citizen info-system:**
  - since 1997 in production within maps
  - non-interactiv map-component, only for presentation of singular points

- **in april 99 an additional citymap-application was launched:**
  - interactive application on separate server
Ziel 2: Service für Bürger und Touristen

different window sizes

several scales
for all citizens:
citymap in the internet

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citymap in the internet

- **direct citizen info-system:**
  - since 1997 in production within maps
  - non-interactiv version, only for presentation of one point

- **april 99 has launched an additional Citymap-application:**
  - interactive application on separate server
  - based on „smart digital edition“ too
  - sales „cross-selling“products like papermaps and CD-ROM
Ziel 2: Service für Bürger und Touristen
Bestellformular

an das
Amt für Geoinformation und Vermessung
Sachsenkamp 4
20097 Hamburg

Name
Vornname
Straße
Postleitzahl
Ort
Telefon
E-Mail-Adresse

Folgende Produkte können per Internet bestellt werden:

<table>
<thead>
<tr>
<th>Produkt</th>
<th>Preis</th>
<th>Anzahl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stadtkarte von Hamburg, CD-ROM 3. Auflage</td>
<td>98,00 DM**</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>50,11 EUR**</td>
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<tr>
<td>Satellitenbildkarte von Hamburg, Maßstab 1 : 60 000 gerollt</td>
<td>29,50 DM**</td>
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<tr>
<td></td>
<td>15,08 EUR**</td>
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</tr>
<tr>
<td>Straßenverkehrskarte von Hamburg, Blatt Innenstadt</td>
<td>12,00 DM**</td>
<td>0</td>
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<tr>
<td></td>
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citymap in the internet

- **direct citizen info-system:**
  - since 1997 in production within maps
  - non-interactiv version, only for presentation of one point

- **April 99 has launched an additional citymap-application:**
  - interactive application on separate server
  - sales „cross-selling“ products like papermaps and CD-ROM

- **Since April 00 more user-friendly:**
  - German letters like ä, ö, ü and ß can be written correct or incorrect
  - shortenings like str. for street can be done
citymap in the internet

statistic:
sites per month

no. 2 in hamburg.de
frequency per hour

main office-hours
days of the week

main office-days

sun | mon | tue | wed | thu | fri | sat

2000-09-23
citymap in the internet

- the statistic shows:

  - usage is emphasizing 400% per year / about 1000% in 1,5 years
  - there is much more professional than private usage
  - the number of sites can be divided in *moves into the citymap-url* and *moves within the citymap*. So we can say: each user clicks 4 times into the map (search in register, change scale, change windowsize, scroll)
  - very fast application (less than 5 seconds for site-presentation)
next steps: conversion from public to private (commercialization)

- begin of public-private-partnership in April 2000
- members: city and state Hamburg and several banking houses
- executing company: SNetLine
next steps: 3 columns of contents

services of administration
like hamburg.de until now

commercial offers
(shops, e-commerce)

column of citizens
(organisations, honorary institutions, „email for all“)
next steps: 3 columns of contents

- There are many contents offered by many different suppliers --> often it is difficult to find a special content (e.g. by search-engines)

- Hamburg made 2 decisions:
  - a) Modell of „situations of life“ and
  - b) Georeferenced contents
a) „situations of life“

Example: marriage

through the keywords of „situation of life“ you will have a full access to all contents you need in the special situation.
a) „situations of life“

- planned are:
- marriage
- birth
- death
- removal
- accident
- and about 15 more
b) georeferenced contents

- All contents are georeferenced (point-coordinates)
- And can have one or more „area of delivery“

- Each user can put in his geo-position
- And can define his own areas what he is interested in

- User-position/area and contents can be clipped
conclusion

- internet-mapping has a „big future“ and one day we will earn more money than it costs because there is an
  - increase of use (we think in the future more than 50% of searching in hamburg.de will be made via map-support)
  - increase of cross-selling products and sales
maps are important but only **one** thing users need.

- thats our understanding of **map-production** (modular construction within databases, applications and multimedia-components) up to distribution and sales

- cartographers and surveyors have to care about the other items too!!!
solutions for our customers:
thank you for your attention