Migration of a thematic mapping application using Java GIS Toolskits
Cartography
The Art
Thematic cartography
Map types

- Zone maps (choropleth maps)
- Symbol maps
  - Character symbols
  - Oriented symbols
  - Multiple symbols
  - Pie and bar charts
  - Multiple charts
- Line maps
- Flow maps
Thematic Cartography
Zone maps

Population Density
Inhabitants per km²

Density Choro

Inhabitants per km²

[Legend]

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Symbol maps: Character maps

POPULATION, 1990, per district
Relative increase since 1970

Character Symbols

Relative increase 1970-1990
13 [1,40]
3 Below 8%
4 From 8% to 16%
1 From 16% to 24%
2 From 24% to 32%
2 Above 32%

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Symbol maps: Circle symbol

Agglomération de Lausanne
Personnes ayant l’allemand comme langue maternelle, en 2000

Minimum: Etoile-Orjuzaz (7 personnes)
Maximum: Lausanne (5385 personnes)

Germanophones

Source: Office fédéral de la statistique, 2000

Christian Kaiser - 2 février 2006
Institut de géographie, Université de Lausanne
Thematic Cartography
Symbol maps: Histogram chart

Population age-group
Population Census 1990

Age Bars

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Symbol maps: Bar chart

Evolution of the population
Population Census 1850...1990

Population Histogram

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Symbol Maps: Multiple Charts

Population age-group
Population Census 1990

Juxtaposed Bars

MapSource: CH:Thema

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Symbol maps: Pie chart

Swiss Federal Vote on the entry to EEE (6.12.1992)
Repartition of the votes

Vote Pie

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Symbol maps: Oriented Symbols

Daily migrants per district
Arrows pointing to origin

Migrants Districts

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Symbol maps: Multiple symbols

Population increase between 1850 and 1990, by district

Overlaid Symbols

1850
1990

CartHEMA

Geography Institute, University of Lausanne
Swiss Federal Statistical Office

MicroGIS SA | Rue des Jordils 40 | CH-1025 St-Sulpice | T + 4121 691 77 17 | http://www.microgis.ch | © January 2006
Thematic Cartography
Symbol maps: Multiple charts

Population by age-group and sex
Population Census 1990

Age Histogram

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Line maps

Rhône width in Valais
(imaginary)

Line Map

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
Thematic Cartography
Flow maps

DAILY MIGRATORY FLUXES
Communes of Valais, 1980

Flow Map

Population 1990

25000
20000
15000
10000
5000
250
18

0 10 km

Geography Institute, University of Lausanne
Swiss Federal Statistical Office
CarThema 4.0.3
In Action: Choosing a map type
Presentation Title

CarThema 4.0.3
In Action: Scripting
CarThema 4.0.3
In Action: The result ready for export
CarThema
A little historical overview

- Started in the middle the 90‘s at UNIL / Geographic institute
- Written in Pascal
- Using its own “Application Framework” / Widget Toolkit
- The last release early 2000
- Based on Mac OS 8
Cartographic Workflow
Map Production at the BFS

**Process of Map Production at BFSO**

- **FreeHand™**
  - Import of base data
  - Creation, verification, and compilation of geometric data (vectors)
  - Georeferencing of data
  - Export of data/sets

- **CartThema™**
  - Data import & verification
  - Linking of geometric and thematic data
  - Automatic compilation of thematic maps
  - Export in Illustrator format

- **Excel™**
  - Preparation & tabulation of thematic data
  - Provision of attribute data for geometries

- **GIS**
  - Spatio data in vector format

- **Photoshop™**
  - Other sources

- **FreeHand™**
  - Final graphic touch to all thematic maps
  - Rendering in cartographic layout
  - Presentation

- **Illustrator**
  - Thematic base map (vector data)

- **Access™**
  - EPS, SWF, PDF

- **Fireworks™**
  - GIF, PNG, JPEG
What do we need?
Features of CarThema 4.x

- Sophisticated Thematic Mapping
- Reader / Writer
  - Geometry data (BNA format; Didger, MapMaker)
  - Attribute data (proprietary ASCII-File; SPSS™, SAS™ or StatView™, Excel)
- Scripting
- Postscript output
- Customer specific GUI
- Swiss projection
“J” CarThema Architecture

GUI (CarThema Menu Commands / Dialogs)

Scripting Component

Geometrical Data Component
Statistical Data Component
Thematic Mapping Component
Layout Component
Postscript Component

Java2 platform
CarThema Project

Our Constraints

- 1:1 Feature migration
- User Specific GUI
- Time
- Budget
- Developer resources and experience
What we like to do?
Looking into the future

- Solve the task and make the customer happy
- Making moderate modernizations
- Not reinvent the wheel
- Delivering more than the customer expects and asked for
  - Future possibilities for integration into SDI infrastructure / OGC standards
  - Provide an open source application for
    - providing profound thematic mapping capabilities to the community
    - external enhancements in future (more map types)
<table>
<thead>
<tr>
<th>?</th>
<th>FMAP</th>
<th>geotools</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWING</td>
<td>SWING</td>
<td>SWT</td>
</tr>
<tr>
<td>„Workbench“</td>
<td>ADAMI</td>
<td>eclipse/RCP</td>
</tr>
<tr>
<td>OpenJUMP</td>
<td>gvSIG</td>
<td>uDig</td>
</tr>
</tbody>
</table>
CarThema
Conclusion

- platform independent
- more users
- more interesting algorithm from external contributors
- platform for the development to create new types of thematic maps (UNIL)

- BUT what platform to use?
Contact information:

- Pierre Dessmontent: pierre.dessemontet@microgis.ch
- Andreas Meissner: andreas.meissner@microgis.ch
- Olivier Hertz: olivier.ertz@heig-vd.ch