RIMapperWMS
TimeMapper

Performance optimisation of SVG-SMIL moving objects animation

SVG Open
CAMbridge, MA (17 October 2011)

ITC – University of Twente,
Faculty of Geo-Information Science and Earth Observation
Barend Köbben <kobben@itc.nl>
real-world phenomena are *dynamic*
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we need tools to visualise and disseminate them dynamically
our goal:

vector animated maps
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vector animated maps

from spatio-temporal data
to a format suitable for internet dissemination
our goal:

vector animated maps automatically and directly from spatio-temporal data to a format suitable for internet dissemination
automatically and directly

from standardised data sources (SDI nodes)
automatically and directly in a geo-webservice environment (WMS)
RIMapperWMS

spatial database back-end (postGIS):
spatial and attribute data
Web Mapping Service configuration
RIMapperWMS

spatial database back-end (postGIS):
  spatial and attribute data
  Web Mapping Service configuration

server application (Java):
  responds to WMS compliant requests
  provides output in SVG
visualisation:
2009: TimeMapper prototype
**TIMEMAPPER**

- **External WMS’s**
  - Mapserver, Geoserver, etc...

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**gu.js**

JavaScript for standard WMS gui:
- zoom pan, etc...
- layers on/off
- identify

(from RIMapperWMS)

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**anim.js**

JavaScript for animation:
- speed- and timeslider
- time legends

(re)generation of SMIL attributes
- begin / end / dur

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**TimeMapper Servlets**

- WMSGetMap, WMSGetCapabilities,
- MakeSVG, MakeGUI, DBConn, etc...

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**SVG file**

```xml
<svg id="completeEnv">
  <scripts>
  ...
  </scripts>
  ...
  standard gui svg elements ...
  ...
  anim gui elements ...
  ...
  </svg>
  <image src="external WMS layers"/>
  <svg static SVG layer/>
  <svg animated SVG layer/>
</svg>
```
RIMapperWMS + TimeMapper

integrating animation generation and simple GUI
RIMapperWMS + TimeMapper

overcoming performance issues
Adressing performance issues:

- complete rewrite of animation generation code, (with limited freedom):
  - must still fit the “paradigm” of direct automatic generation from data => separate objects must remain separate
- basic animation (not the full GUI) must work in all browsers (that support SMIL)
- integrated in RIMapperWMS:
  - works great for “normal” use cases
  => further tests for “pushing it to the limit”
All test done on MacBook Pro
2.6 GHZ, 8 Gb memory
Mac OSX 10.6.8

Opera 9 & 11
FireFox 7
= ones that support
setCurrentTime()

Timings in milliseconds, as average of 10 attempts
two strategies:
- animate objects of x & y
- animateMotion of the path
<table>
<thead>
<tr>
<th>Test Scenario</th>
<th>Tool</th>
<th>Browser</th>
<th>Startup Time (ms)</th>
<th>Change Timescale (ms)</th>
<th>Responsiveness Slider</th>
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<tbody>
<tr>
<td>TimeMapper original tests</td>
<td>Animate X&amp;Y</td>
<td>Opera 9</td>
<td>middle (1999-2003)</td>
<td>12430</td>
<td>32450</td>
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</tbody>
</table>

n/a** = TomCat server application Out of Memory / n/a = Browser unresponsive
Creation Times
from request to start of animation

milliseonds

A
B
C
D

original / Opera 9
Animate X&Y / Opera 11
Animate X&Y / FireFox 7
AnimateMotion / Opera 11
AnimateMotion / FireFox
Time Scale Change Times
from start to end of DOM manipulation

milliseconds

original / Opera 9
Animate X&Y / Opera 11
Animate X&Y / FireFox 7
AnimateMotion / Opera 11
AnimateMotion / FireFox
Questions?

http://kartoweb.itc.nl/RIMapper/
kobben@itc.nl