A web application for landslide inventory using data-driven SVG

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Overview

- Help municipalities with inventory of landslides for the landslide map of Serchio basin (Tuscany – Italy)
- Using simple, lightweight web application client-side [SVG-only]
- Using ‘GDI-Light’ setup server-side [open standards, open source]
Italian official landslide maps

- Responsibility for publishing placed:
  - sometimes at central authority level (e.g., Regions)
  - sometimes at local authorities level (Autorita’ di Bacino)
- Local municipalities play an important “part in the middle”: they inventory landslide events
Current update process

Field:
- Signalisation of landslide phenomenon
- Verification

Municipality X:
- Sketch landslide on paper map
- Send sketch by post

Autorità di Bacino del Fiume Serchio (AdB):
- Input in GIS sketch layer
- Print sketch layer
- Update official landslide map
Future update process

Field
- signalisation of landslide phenomenon
- verification using PDA

Municipality X
- input landslide through WWW application

Autorità di Bacino del Fiume Serchio (AdB)
- GIS sketch layer input
- updated official landslide map
Inventory application requirements

- speed up & simplify the process
- with the limited possibilities of the municipalities in mind:
  - (very) small, in size and manpower
  - located in sometimes inaccessible sites
  - no GIS capabilities
  - only limited bandwidth for web access
- light-weight webbased client-side
- all bussiness logic server-side
**GDI LIGHT**

- lightweight Geo-Data infrastructure based on Open Standards and Open Source software
- testbed/playing ground at ITC
- server-side focus on MySQL, Java, opensource OGC services
- client-side focus on SVG
- first result was “RIMapper”
  - used as starting point
serverside setup using RIMapper

- MySQL DB with OGC SFS support
- stores all features as objects with OGC geometry
serverside setup using RIMapper

- simple XML map configuration files to define map layout and interactivity
serverside setup using RIMapper

- Java servlets to deliver SVG output (=application)

makeSVG

XML2SVG

parseXML
simplest XML configuration...

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
<!DOCTYPE RIM PUBLIC ""../RIM.dtd">
<RIM TYPE="SVG_STANDALONE" DB="adb" UN="adb" PW="latini">
  <TITLE>A map</TITLE>
  <AUTHOR>By me</AUTHOR>
  <HEADER>
    <STYLES>
      <FRAGMENT DBID="default" NAME="defSVGRoot" TYPE="SVG_ROOT"/>
      <STYLE DBID="default" NAME="defArea" TYPE="CSS"/>
    </STYLES>
    <FRAGMENT DBID="default" NAME="defInit" TYPE="ECMASCRIPT"/>
  </HEADER>
  <LAYERS>
    <LAYER/>
    <FOOTER/>
  </LAYERS>
</RIM>
```
..adding data-driven colours

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
<!DOCTYPE RIM PUBLIC "",./RIM.GC>
<RIM TYPE="SVG_STANDALONE" DB="adb" UN="adb" PW="latini">
  <HEADER/>
  <STYLES>
    <FRAGMENT DBID="default" NAME="defSVGRoot" TYPE="SVG_ROOT"/>
    <STYLE DBID="default" NAME="defArea" TYPE="CSS"/>
    <STYLE DBID="default" NAME="defInit" TYPE="ECMASCRIPT"/>
  </STYLES>
  <LAYER DBID="default" NAME="frame" STYLE="colo re" ATTRIBS="colo re, sigle"/>
</RIM>
```
...adding interactivity
resulting application
resulting application
resulting application
conclusions and further work

- only first step towards “Landslide Web Map” for AdB
- improvements planned are:
  - tiling (only load data needed) and client-side caching
  - more appropriate map backgrounds
  - vertex-level editing