

CampusMapper

a light-weight internet mapping tool
using MySQL, Tomcat and SVG

<http://geoserver.itc.nl/campusmapper/>

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Outline



Where CampusMapper came from

- GDI^{LIGHT}
- RIMapper
- Wireless Campus LBS

What CampusMapper is

- Demo (or DIY @ geoserver.itc.nl/campusmapper)

Where CampusMapper is going to

- RIMapperWMS...?

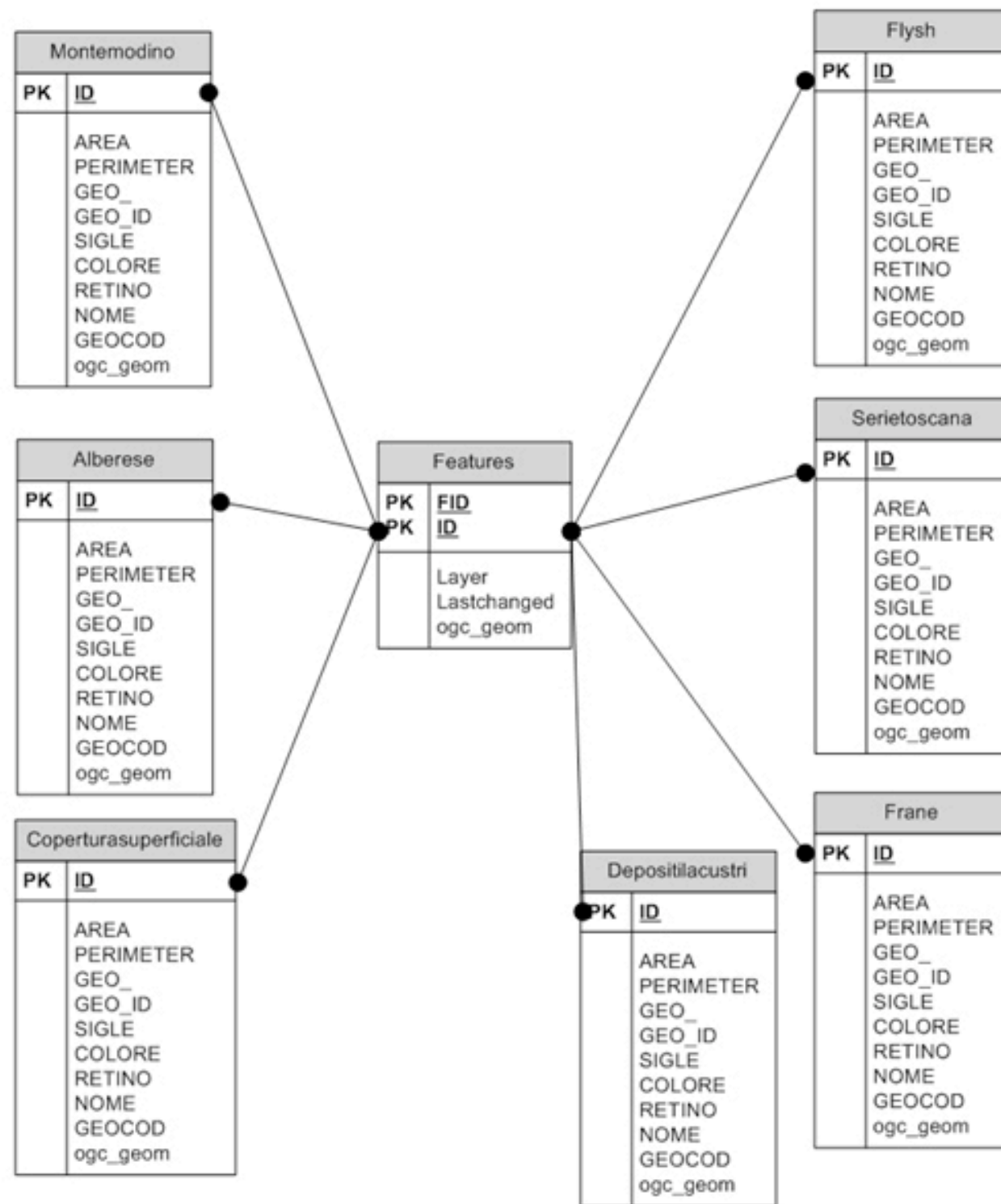
GD|LIGHT



- Lightweight Geo-Data Infrastructure based on open standards/open source software
- testbed/playing ground at ITC
 - for research: PhD & MSc work, projects
- server-side focus on MySQL/PostGIS, Java, open source OWS services
- client-side focus on SVG

➔ first project was “RIMapper”

RIMapper - DB



MySQL/PostGIS DB with OGC SFS support stores all features as objects with OGC geometry

RIMapper - config



Montemodino
PK ID
AREA PERIMETER
GEO_ID
SIGLE
COLORE
RETINO
NOME
GEOCOD
ogc_geom

Flysh
PK ID
AREA PERIMETER
GEO_ID
SIGLE
COLORE
RETINO

Aberesse
PK ID
AREA PERIMETER
GEO_ID
SIGLE
COLORE
RETINO
NOME
GEOCOD
ogc_geom

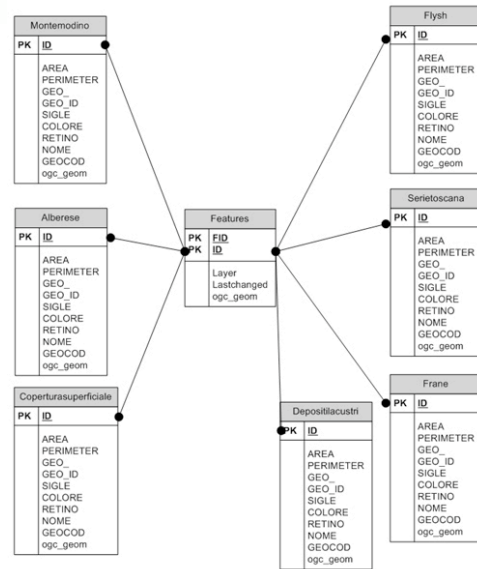
Coperturasuperficial
PK ID
AREA PERIMETER
GEO_ID
SIGLE
COLORE
RETINO
NOME
GEOCOD
ogc_geom

XML - configuration

```
<?xml version="1.0" encoding="iso-8859-1"?>
<!DOCTYPE RIM PUBLIC "" "/RIMapper/XML/RIM.dtd">
<RIM TYPE="SVG_STANDALONE" DB="rimapper" UN="un" PW="pw">
<HEADER>
  <FRAGMENT DBID="default" NAME="root" TYPE="SVG_ROOT"/>
  <STYLES>
    <STYLE DBID="default" NAME="defPoint" TYPE="CSS"/>
    <STYLE DBID="default" NAME="defLine" TYPE="CSS"/>
    <STYLE DBID="default" NAME="defArea" TYPE="CSS"/>
  </STYLES>
  <FRAGMENT DBID="default" NAME="init" TYPE="ECMASCRIPT"/>
  <FRAGMENT DBID="default" NAME="show" TYPE="ECMASCRIPT"/>
</HEADER>
<LAYERS>
  <LAYER DBID="default" NAME="ward" STYLETYPE="single"
    STYLE="defLine" />
  <LAYER DBID="default" NAME="river" STYLETYPE="single"
    STYLE="defArea" >
    <ACTION TYPE="simple" NAME="showRIM" SCOPE="feature"
      EVENT="onclick" PARAMS="evt, ', 'id"/>
  </LAYER>
  <LAYER DBID="default" NAME="roads" STYLETYPE="single"
    STYLE="defArea" ATTRIBS="type" />
  <LAYER DBID="default" NAME="build" STYLETYPE="single"
    STYLE="defArea" />
</LAYERS>
<FOOTER/>
</RIM>
```

simple XML map configuration files to define map layout and interactivity

RIMapper - app

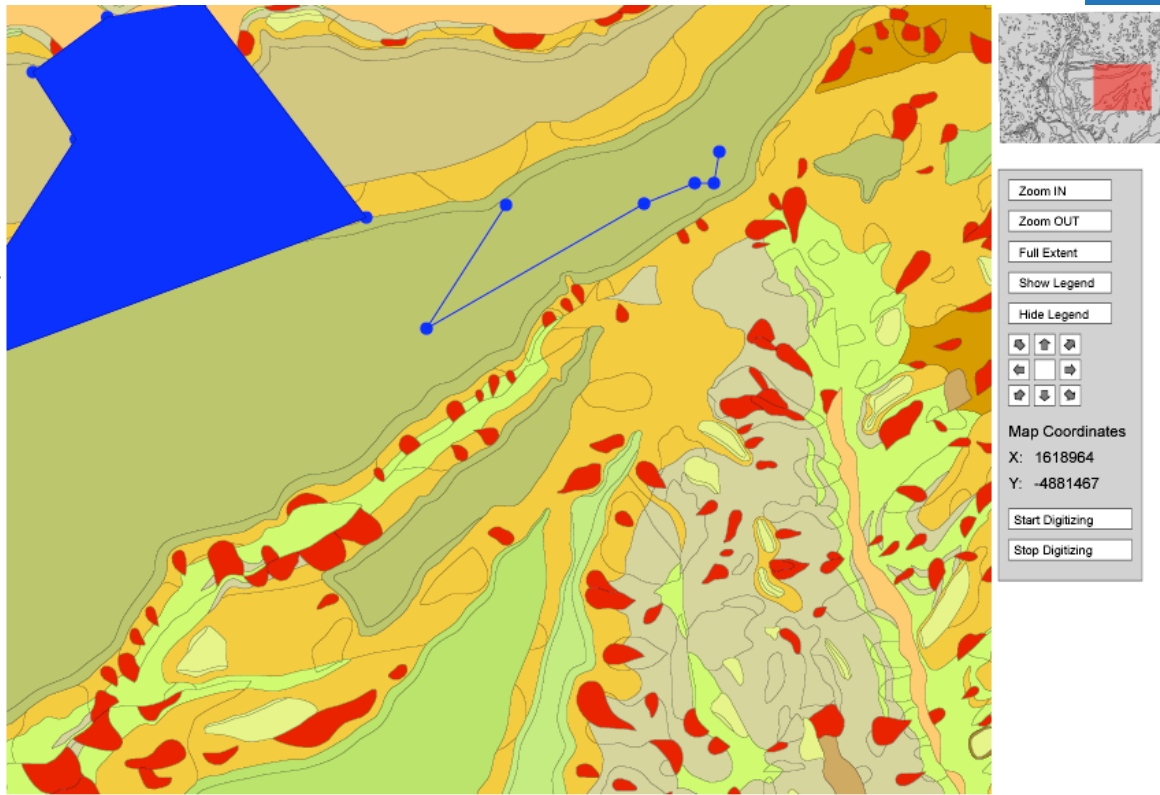


Java servlets to deliver SVG output (=application)

makeSVG

XML2SVG

parseXML



```

XML - configuration
<?xml version="1.0" encoding="iso-8859-1" ?>
<!DOCTYPE RIM PUBLIC "" "/RIMapper/XML/RIM.dtd">
<RIM TYPE="SVG_STANDALONE" DB="rimapper" UN="un" PW="pw">
<HEADER>
<FRAGMENT DBID="default" NAME="root" TYPE="SVG_ROOT"/>
<STYLES>
<STYLE DBID="default" NAME="defPoint" TYPE="CSS"/>
<STYLE DBID="default" NAME="defLine" TYPE="CSS"/>
<STYLE DBID="default" NAME="defArea" TYPE="CSS"/>
</STYLES>
<FRAGMENT DBID="default" NAME="init" TYPE="ECMASCRIPT"/>
<FRAGMENT DBID="default" NAME="show" TYPE="ECMASCRIPT"/>
</HEADER>
<LAYERS>
<LAYER DBID="default" NAME="ward" STYLETYPE="single"
STYLE="defLine"/>
<LAYER DBID="default" NAME="river" STYLETYPE="single"
STYLE="defArea">
<ACTION TYPE="simple" NAME="showRIM" SCOPE="feature"
EVENT="onclick" PARAMS="evt, ", "id"/>
</LAYER>
<LAYER DBID="default" NAME="roads" STYLETYPE="single"
STYLE="defArea" ATTRIBS="type"/>
<LAYER DBID="default" NAME="build" STYLETYPE="single"
STYLE="defArea"/>
</LAYERS>
</RIM>
    
```

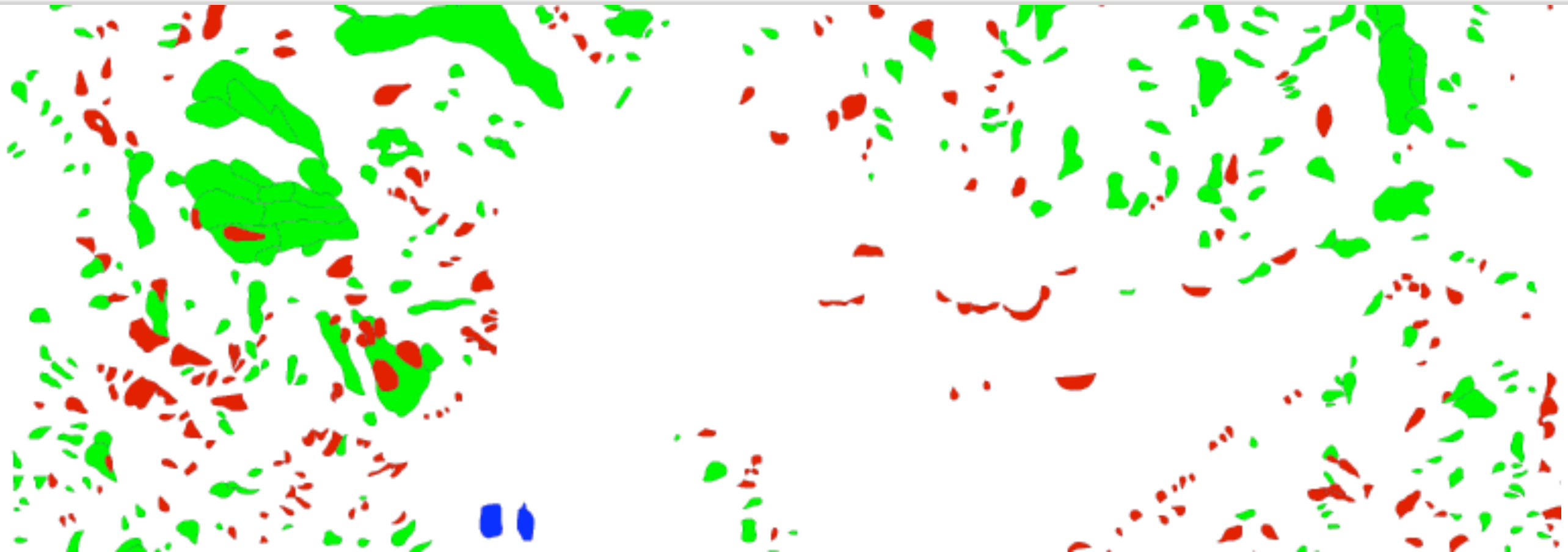


simplest XML configuration...

```
AdBsimple.xml
1 <?xml version="1.0" encoding="iso-8859-1"?>
2 <!DOCTYPE RIM PUBLIC "" "" ../RIM.dtd">
3 <RIM TYPE="SVG_STANDALONE" DB="adb" UN="adb" PW="latini">
4   <TITLE>A map</TITLE>
5   <AUTHOR>By me</AUTHOR>
6   <HEADER>
7     <STYLES>
8       <FRAGMENT DBID="default" NAME="defSVGRoot" TYPE="SVG_ROOT"/>
9       <STYLE DBID="default" NAME="defArea" TYPE="CSS"/>
10    </STYLES>
11    <FRAGMENT DBID="default" NAME="defInit" TYPE="ECMASCRIPT"/>
12  </HEADER>
13  <LAYERS>
14    <LAYER DBID="default" NAME="frane" STYLETYPE="single" STYLE="defArea" ATTRIBS="colore, sigle"/>
15  </LAYERS>
16  <FOOTER/>
17 </RIM>
18
```

..adding data-driven colours

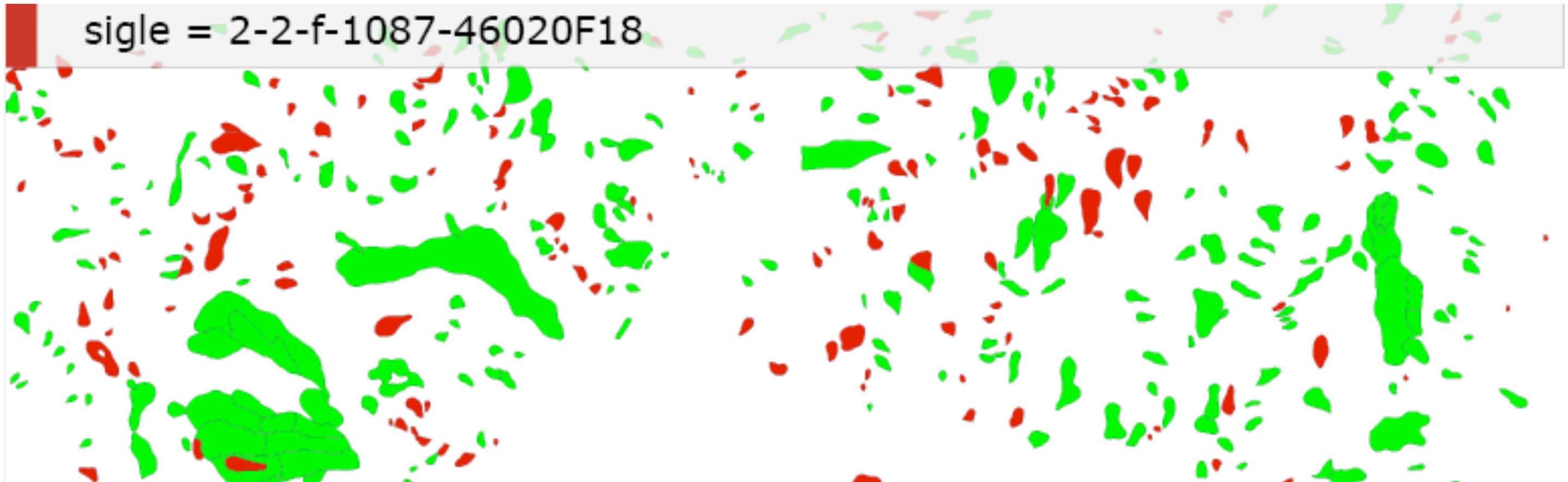
```
AdBcolore.xml
1 <?xml version="1.0" encoding="iso-8859-1"?>
2 <!DOCTYPE RIM PUBLIC "" "" ../RIM.dtd">
3 <RIM TYPE="SVG_STANDALONE" DB="adb" UN="adb" PW="latini">
4   <HEADER>
5     <STYLES>
6       <FRAGMENT DBID="default" NAME="defSVGroot" TYPE="SVG_ROOT"/>
7       <STYLE DBID="default" NAME="defArea" TYPE="CSS"/>
8       <STYLE DBID="none" NAME="franecolore1" TYPE="CSS"><![CDATA[fill:rgb(225,0,0); stroke-width:0.323; stroke:rgb
9       <STYLE DBID="none" NAME="franecolore2" TYPE="CSS"><![CDATA[fill:rgb(0,255,0); stroke-width:0.323; stroke:rgb
10      <STYLE DBID="none" NAME="franecolored" TYPE="CSS"><![CDATA[fill:rgb(0,0,255); stroke-width:0.323; stroke:rgb
11    </STYLES>
12    <FRAGMENT DBID="default" NAME="defInit" TYPE="ECMASCRIPT"/>
13  </HEADER>
14  <LAYERS>
15    <LAYER DBID="default" NAME="frane" STYLETYPE="chorochromatic" STYLE="colore" ATTRIBS="colore, sigle">
16    </LAYER>
17  </LAYERS>
18  <FOOTER/>
19 </RIM>
20
```



...adding interactivity

```
AdBcoloreClick.xml
1 <?xml version="1.0" encoding="iso-8859-1"?>
2 <!DOCTYPE RIM PUBLIC "" "" ../RIM.dtd">
3 <RIM TYPE="SVG_STANDALONE" DB="adb" UN="adb" PW="latini">
4   <HEADER>
5     <STYLES>
6       <FRAGMENT DBID="default" NAME="defSVGroot" TYPE="SVG_ROOT"/>
7       <STYLE DBID="default" NAME="defArea" TYPE="CSS"/>
8       <STYLE DBID="none" NAME="franecolore1" TYPE="CSS"><![CDATA[fill:rgb(225,0,0); stroke-width:0.323; stroke:rgb
9       <STYLE DBID="none" NAME="franecolore2" TYPE="CSS"><![CDATA[fill:rgb(0,255,0); stroke-width:0.323; stroke:rgb
10      <STYLE DBID="none" NAME="franecolored" TYPE="CSS"><![CDATA[fill:rgb(0,0,255); stroke-width:0.323; stroke:rgb
11    </STYLES>
12    <FRAGMENT DBID="default" NAME="defInitPlusRIMmessage" TYPE="ECMASCRIPT"/>
13    <FRAGMENT DBID="default" NAME="showRIMData" TYPE="ECMASCRIPT"/>
14  </HEADER>
15  <LAYERS>
16    <LAYER DBID="default" NAME="frane" STYLETYPE="chorochromatic" STYLE="colore" ATTRIBS="colore, sigle">
17      <ACTION TYPE="simple" NAME="showRIMData" SCOPE="feature" EVENT="onclick" PARAMS="evt, 'rim', 'sigle'"/>
18    </LAYER>
19  </LAYERS>
20 </RIM>
```

sigle = 2-2-f-1087-46020F18



Wireless campus University of Twente

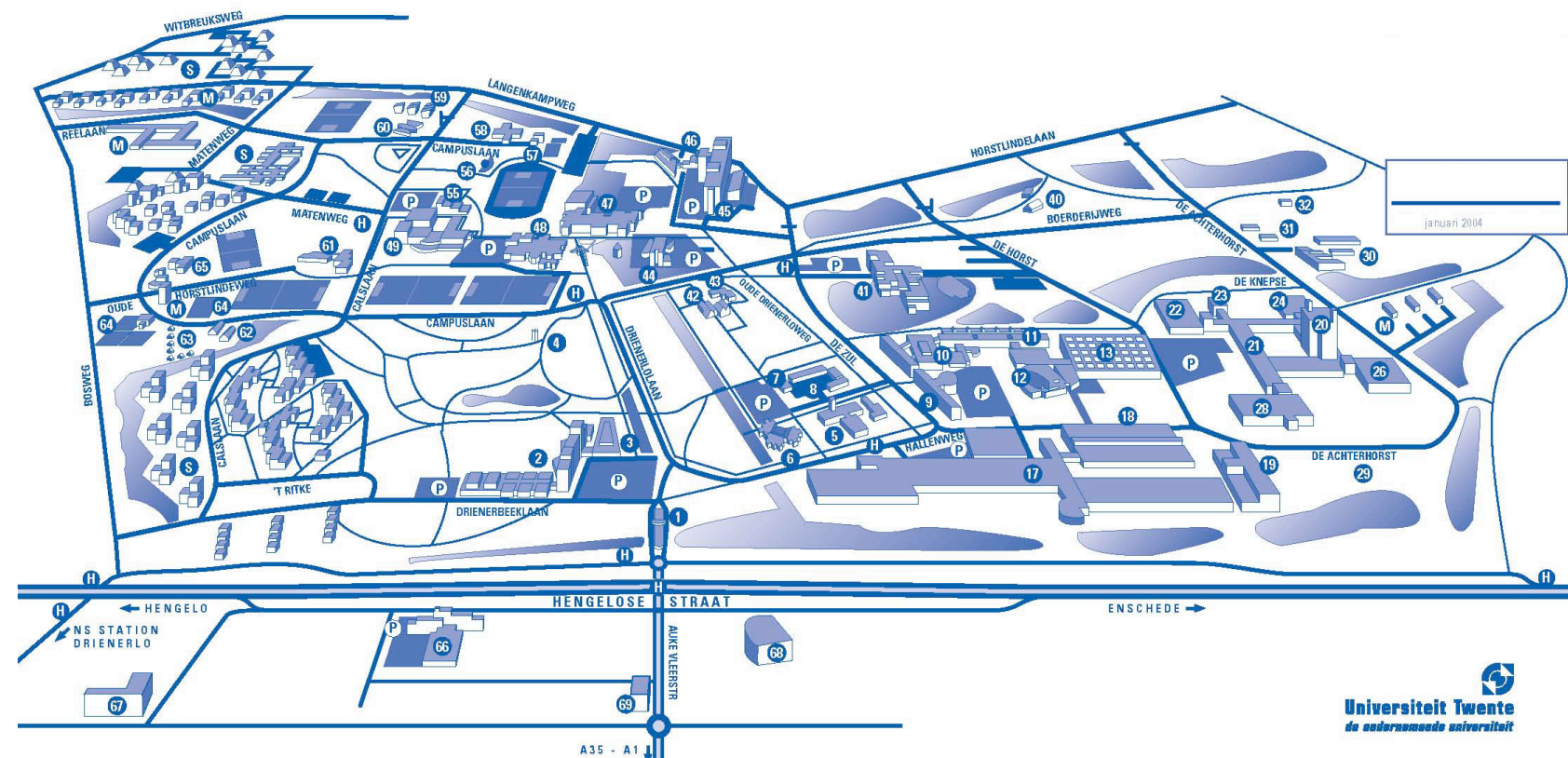


Europe's largest uniform hotspot

- 140 ha campus (covered in- and outdoors)
+ Enschede city centre (outdoors)
- 650+ individual access points

every-day “working LAN” based on WiFi

testbed for wireless and mobile applications



Wireless Campus Location Based Services



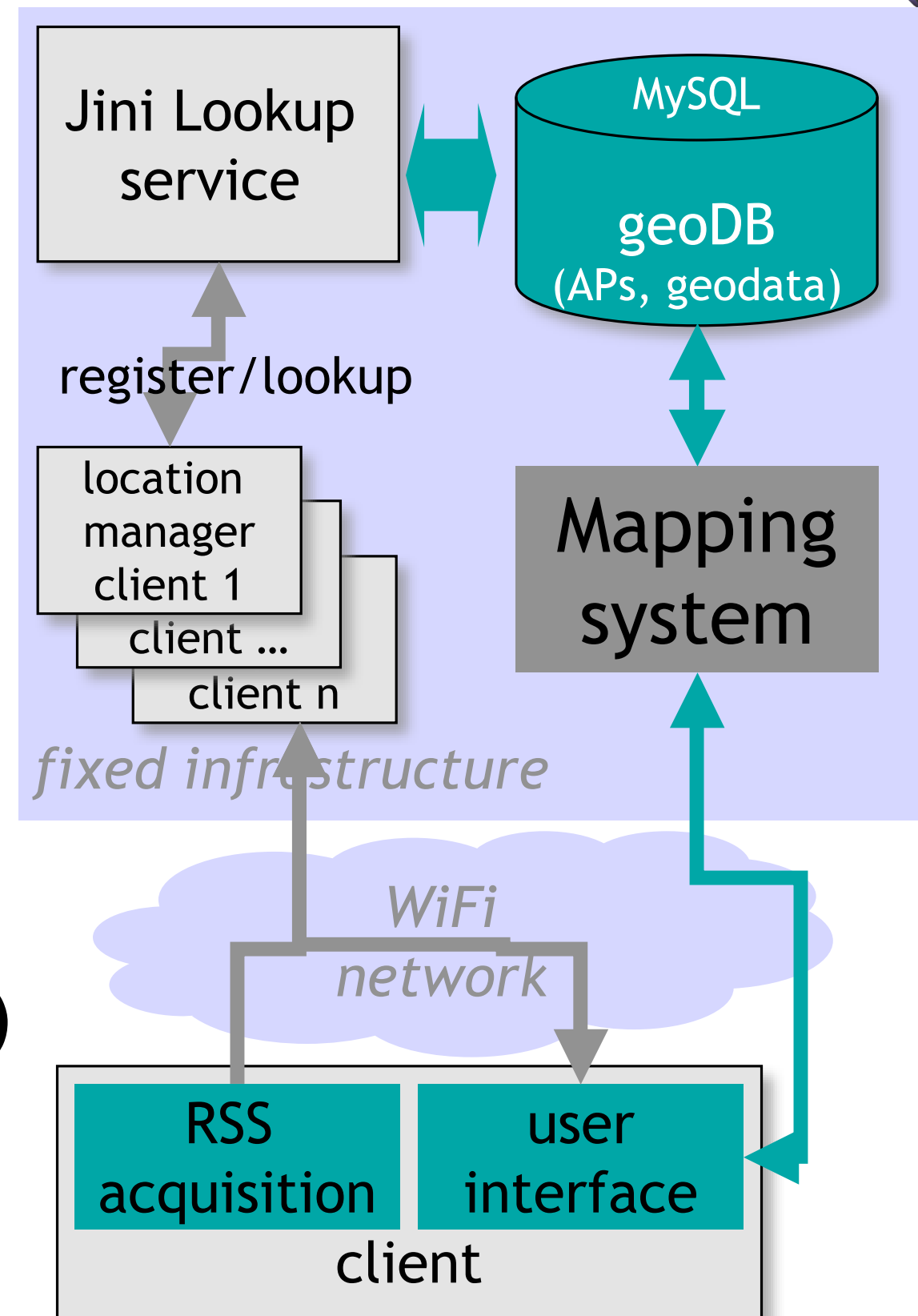
- informal co-operation between ITC & UTwente
- driven by research projects + UT IT-dept
+ **SVGopen2005 conference**
- set up *infrastructure* necessary for LBS
- combines input from several research projects with practical application of techniques
- Wireless Campus LBS is intended *to serve as a testbed for* research as well as *to benefit from* research outcomes
- to provide useful *working services* for the UT campus population

FLAVOUR prototype: architecture

Friendly Location-aware conference Assistant with priVacy Observant architectURe



- Location Managers
 - Jini based (Java network-centric services)
 - provides client with location
 - registers with:
- Jini Lookup Services:
 - 'pull' (find others, locate resources)
 - 'push' (communicate with others, conference messages)
- Client application
- Mapping System



FLAVOUR prototype: interface



The screenshot displays the FLAVOUR prototype interface with three overlapping windows:

- SVG Viewer: test.svgz**: A window showing a technical drawing of a building floor plan with several green and blue dots overlaid on it. The status bar at the bottom indicates dimensions: w: 437.0, h: 275.0, and the text "Done.".
- PlanetaMess...**: A window with a "Profile" menu and "Contacts" and "Accounts" tabs. The "Contacts" tab is active, showing a list with "Online" and "Offline" sections. Under "Offline", there are two entries: "admin" (with a person icon) and "george" (with a flower icon). There are also "+" and "id" icons at the bottom.
- FF Plugin**: A chat window with a tab labeled "admin:admin". The chat area contains a message: "admin: The next session starts in 5 minutes." At the bottom, there are "Close" and "Send" buttons.

From Flavour to CampusMapper



- Mapping system based on RIMapper
- Added features extraction in DB - based on bounding boxes
- The system seemed useful for more than Wifi localization:
 - basis for quickly and easily customised maps of the campus
- ➔ CampusMapper pilot
 - DHTML interface generates GET/POST requests
 - JavaBeans store user/session settings



Choose File no file selected

load

Building:

- Zilverling
- Citadel
- Waijer

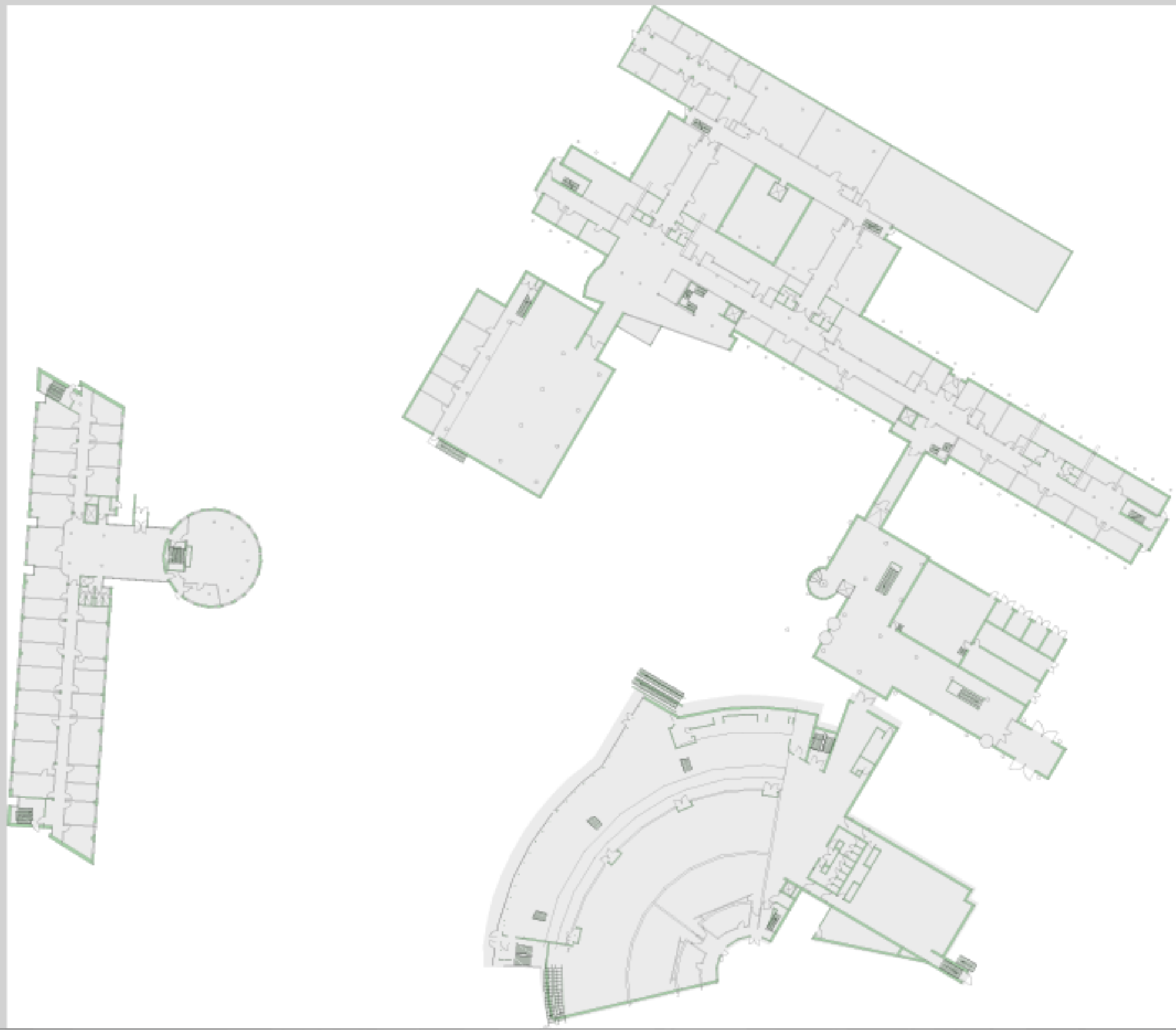
Building Level:

Ground floor

Layer:

- level footprint
- solid walls
- partitions
- stairs

Make Map





http://localhost:8080/CampusMapper/Campus.html

Google



Choose File

no file selected

load

Building:

- Zilverling
- Citadel
- Waaijer

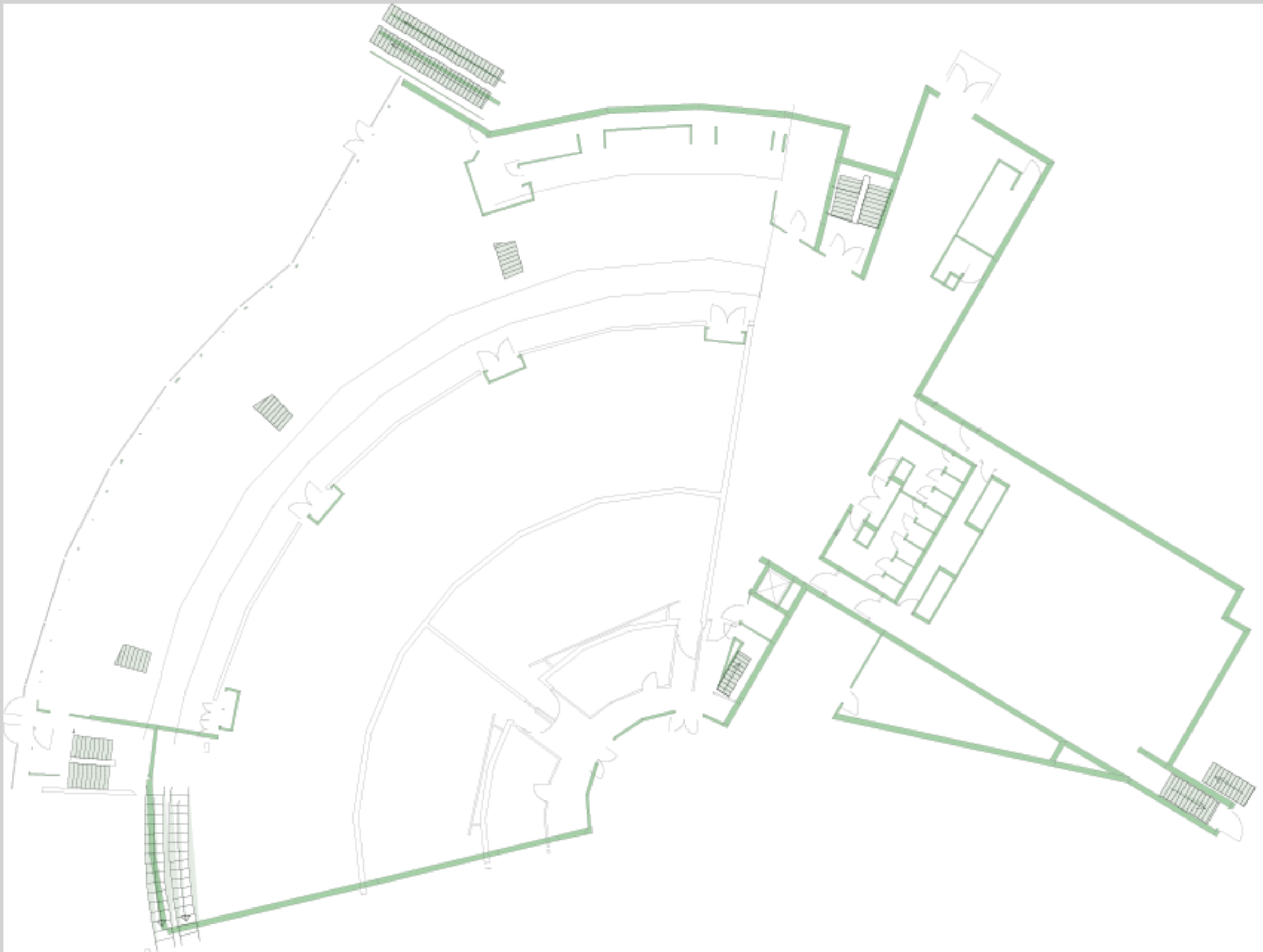
Building Level:

Ground floor

Layer:

- level footprint
- solid walls
- partitions
- stairs

Make Map



Building:

Zilverling
Citadel
Waaier

Building Level:

Floor 4

Layer:

- level footprint
- solid walls
- partitions
- stairs

Make Map



Future: towards RIMapperWMS...?

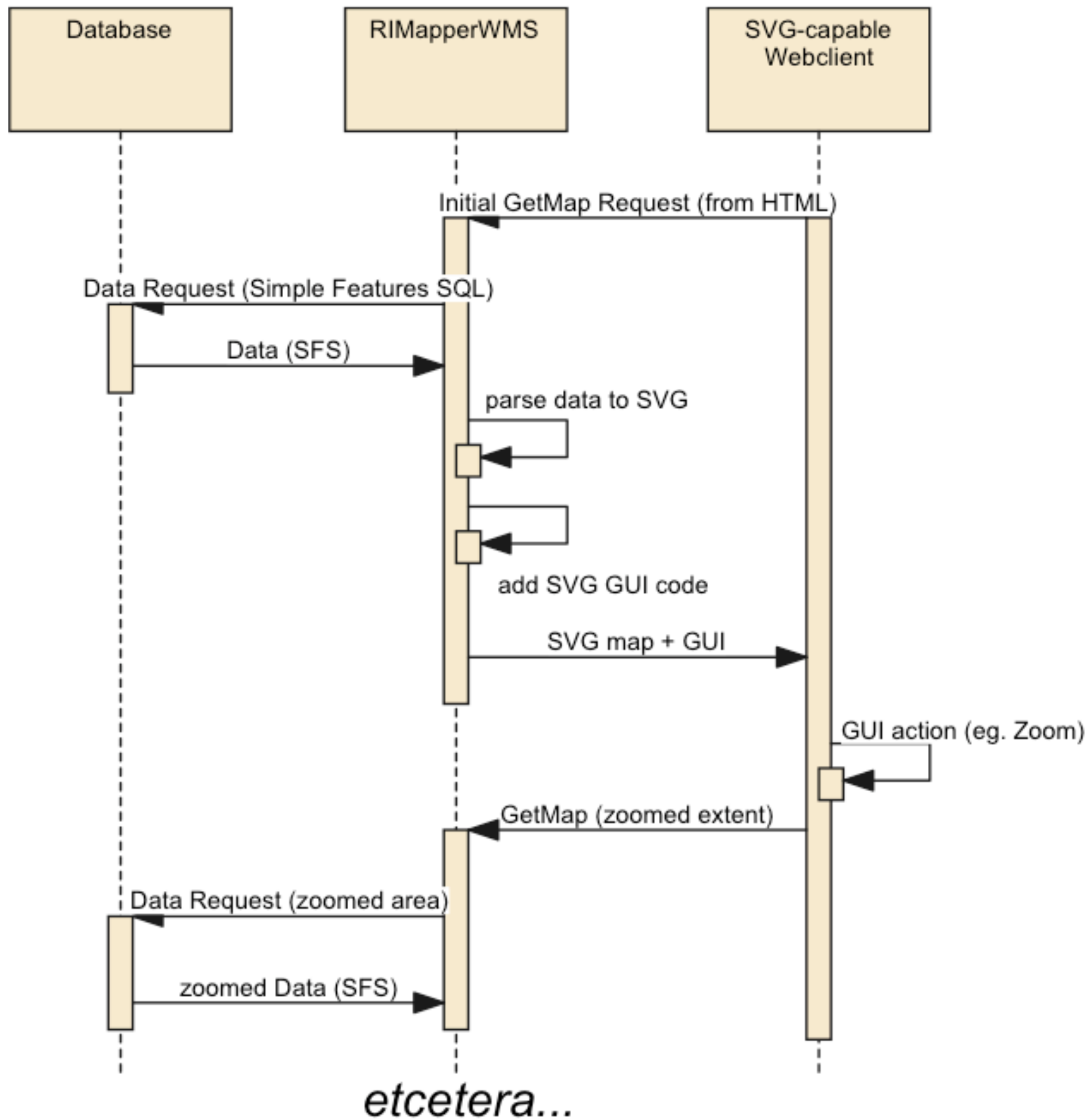


Many WMS available, some with (limited) SVG output

All use SVG as 'graphics format' only

SVG also can provide application logic

- simple WMS conformant interface to the data
- data includes built-in client-side GUI
- GUI handles the map interaction and generates further requests



Questions...?

Answers...?



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<http://geoserver.itc.nl/campusmapper/>

