



gismap

GIS applications in Africa: Kenya and Somaliland

**Giuliano RAMAT, Antonio FALCIANO, Maurizio FODERÀ,
Alessio PUCCINI**

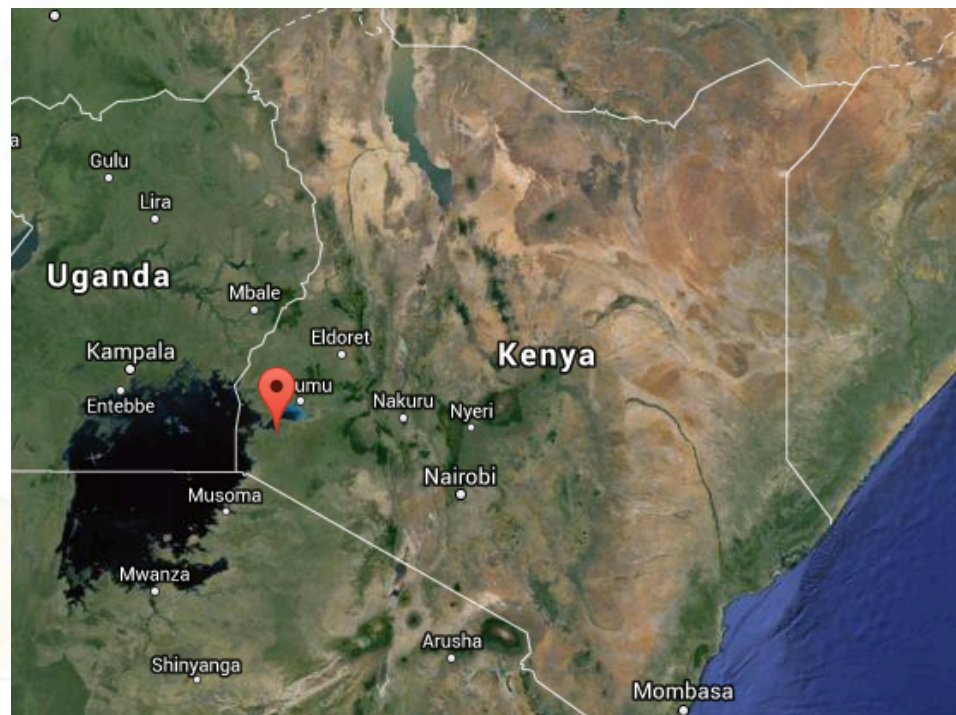
www.gismap.it ; gismap@gismap.it

Governance and institutional Capacity Building Training



Terre Solidali

WIRE HILLS FOREST: a sustainable management program



CEFA
the seed of
solidarity

OBJECTIVE

**.. can be translated in
local languages**

... OPEN free access



**.. can be replicated in
similar close environments**

**... is easy to use and
update regularly**

ACTIVITIES

1

Staff Training

2

Field data collection

**Dedicated Gvsig
portable extension**

3

Data Development

Check and process DataBase and scanning & image rectification

4

Open Data

Download and harmonize available open data

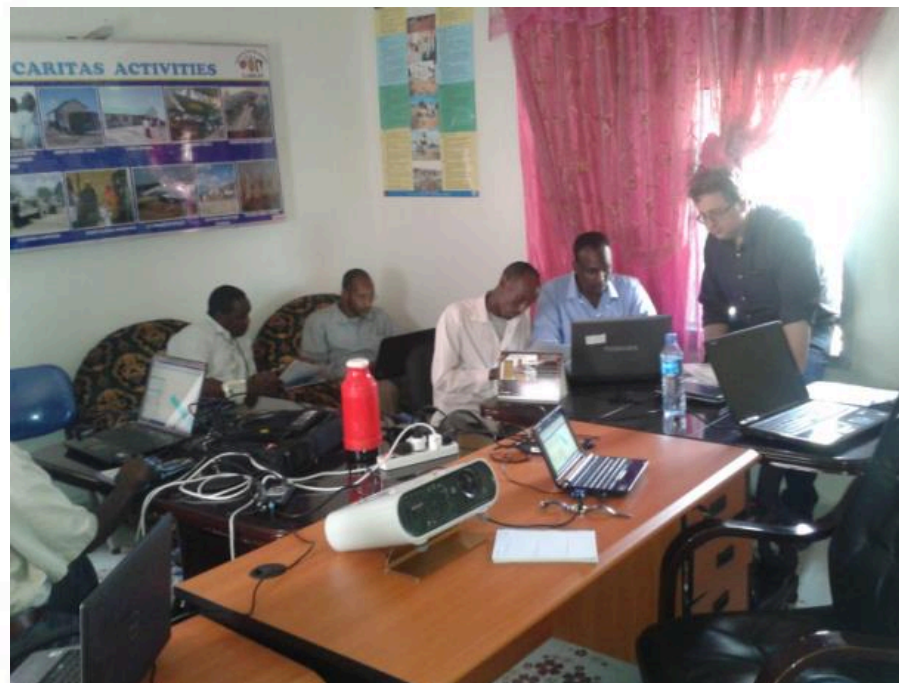
5

Remote sensing Data

Digitize and upload data derived from remote sensing

1. GPS/GIS TRAINING

Remote training - Kenya



Field training - Somaliland

2. FIELD DATA COLLECTION

Dedicated gvSIG portable version

Wire Forest

SURVEY INFO

PLOT NO. PLOT RADIUS (MT)

SURVEYOR DATE (DD/MM/YYYY)

PLOT PROPERTIES

SOIL EROSION: ☐ Low ☐ Medium ☐ High FELLING-CUTTING: ☐ Not ☐ Old ☐ Recent

GRAZING: ☐ Low ☐ Medium ☐ High CROWN COVER: ☐ Open ☐ Moderate ☐ Close

FOREST AREA: ☐ Natural forest ☐ Plantation NUMBER OF TREE SPECIES:

TREES PROPERTIES

TYPE	TREE SPECIES	FREQUENCY	AVERAGE HEIGHT	AVERAGE DBH
INDIGENOUS	Anjago			
	Rhus natalensis			
	Annona spp			
	Combretum spp			
	Euclea divinorum			
	Ficus spp			
	Teclea nobilis			
	Terminalia spp			
	Vitex spp			
	Croton macro			
Others (.....)				
COMMERCIAL	Pinus Patula			
	Pinus Radiator			
	Eucalyptus spp			
	Cupressus lusitanica			
	Callitris robusta			
	Gravellia robusta			
Others (.....)				

NOTES

Wire Forest survey

Wire Forest

☐ Selected ☐ Select ☐ Always Zoom ☐ Fixed Scale

Survey info

Plot No. 1 Plot radius [m] 13

Surveyor Giuliano Ramat Date (dd/MM/yyyy) 05/08/2013

Photo path C:\WireForest_photos\1.png

Plot properties

Soil erosion Low Felling/Cutting No

Grazing Low Crown cover Open

Forest area Natural forest No. of tree species 2

1 /3000

Easy to fill data entry
Customized and easy-to-fill
data entry form

2. FIELD DATA COLLECTION

Dedicated gvSIG portable version



AUTOMATION OF MUNICIPAL FINANCE

AMF PHASE III

INSTITUTIONALISATION OF FINANCIAL & INFORMATION

MANAGEMENT TOOLS IN SOMALIA



Polygon ID (Office only) _____ Surveyor: G1 ☐ G2 ☐ Date ____/____/____

Plot no. _____ Built ☐ Not built ☐ City : *Gabiley* District: *Gabiley*

Building: Private House ☐ Public Institution ☐ Commercial Activities ☐

Building description: only for Public Institution or Commercial Activities (hospital, university, hotel, shop, private school...) _____

Photo No. _____ Apartment floor _____ out of _____

Wall material: Cement ☐ Brick ☐ Stone ☐ Wood ☐ Earth ☐ Other ☐ _____

Roof material: Iron ☐ Wood ☐ Cement ☐ Earth ☐ Other ☐ _____

Name of the person interviewed _____

Telephone no. _____ Ownership: Rent ☐ Owner ☐ Since year: _____

Number of families living inside the house: one ☐ two ☐

Number of persons living in the house – fam1

Total	Total Male	Total Female	Total <18	Male <18	Male <18 go to school	Female <18	Female <18 go to school

Number of persons living in the house – fam2 (if present)

Total	Total Male	Total Female	Total <18	Male <18	Male <18 go to school	Female <18	Female <18 go to school

Mains electricity	Piped water	Road Access	Improved Sanitation
YES ☐ NOT ☐	YES ☐ NOT ☐	YES ☐ NOT ☐	YES ☐ NOT ☐

Main activity of head of family: Teacher ☐ Farmer ☐ Barber ☐ Tailor ☐ Watchman ☐

Broker ☐ Manager ☐ Shop keeper ☐ Soldier ☐ Doctor ☐ Executive Director ☐ Secretary ☐

Carpenter ☐ Midwife ☐ Principal ☐ Driver ☐ Sheppard ☐ Other ☐ _____




Terre Solidaali

gismap

Building Cadastre of Gabiley

Residents info

Person interviewed _____ Owner _____

Phone No. _____ Head of the family job *Barber*

Ownership _____ Since year *0*

No. of families *2*

Family 1 Family 2

	Male	Female	Total
All	<i>1</i>	<i>2</i>	<i>3</i>
Under 18	<i>1</i>	<i>4</i>	<i>5</i>
Students Under 18	<i>0</i>	<i>1</i>	

1 / 43

2. FIELD DATA COLLECTION

**Getting information of sample
vegetation plots in the Wire Hill Forest**



**High precision geometric data collection
with differential GPS of Gabiley
buildings**

3. DATA DEVELOPMENT: check DB and elaboration

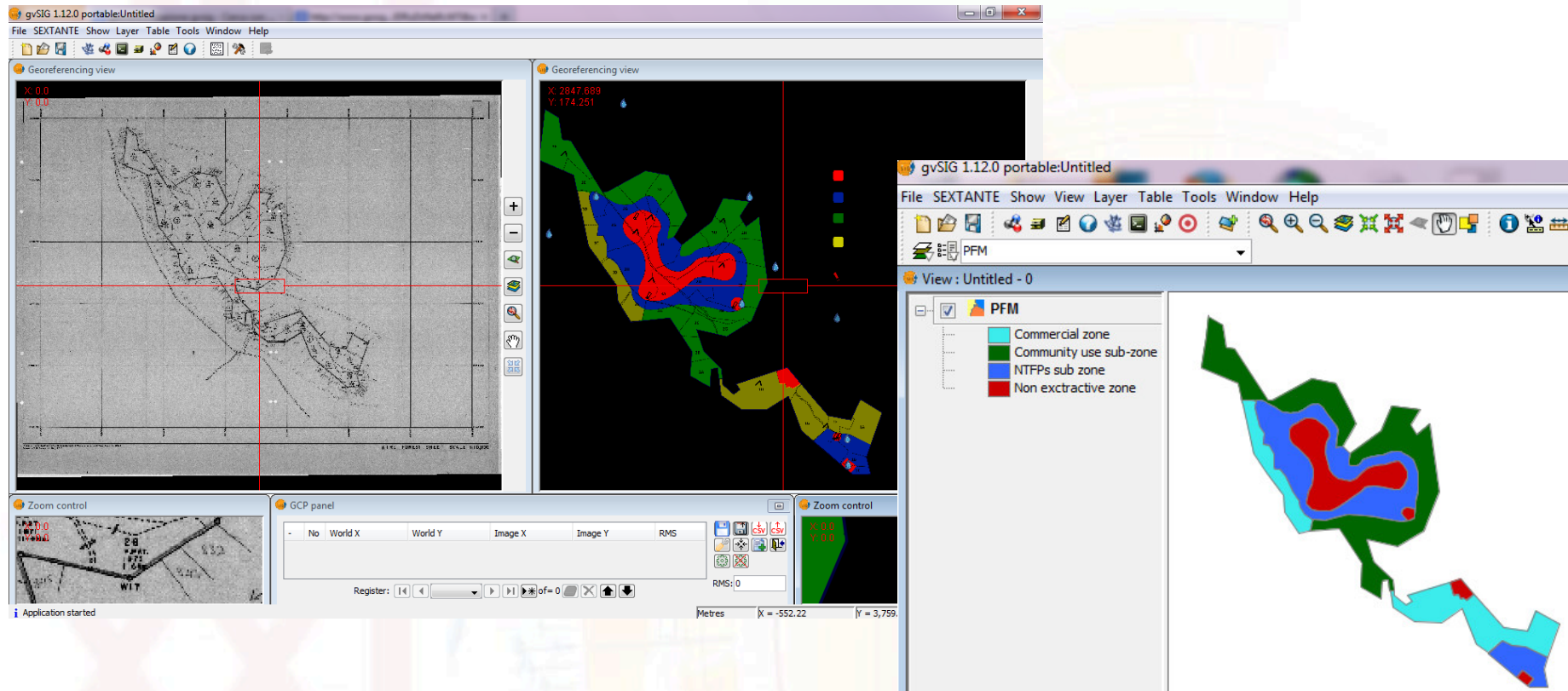
Somaliland



Kenya



3. DATA DEVELOPMENT: georeferencing maps



4. OPEN DATA: download and elaboration

Idrography:

<http://hydrosheds.cr.usgs.gov/>

Digital elevation model:

<http://asterweb.jpl.nasa.gov>

<http://srtm.csi.cgiar.org>

Socio economics data:

<http://data.worldbank.org/country>

Administrative limits:

<http://www.gadm.org/country>



4. OPEN DATA: download and elaboration

Idrography:

<http://hydrosheds.cr.usgs.gov/>

Digital elevation model:

<http://asterweb.jpl.nasa.gov>

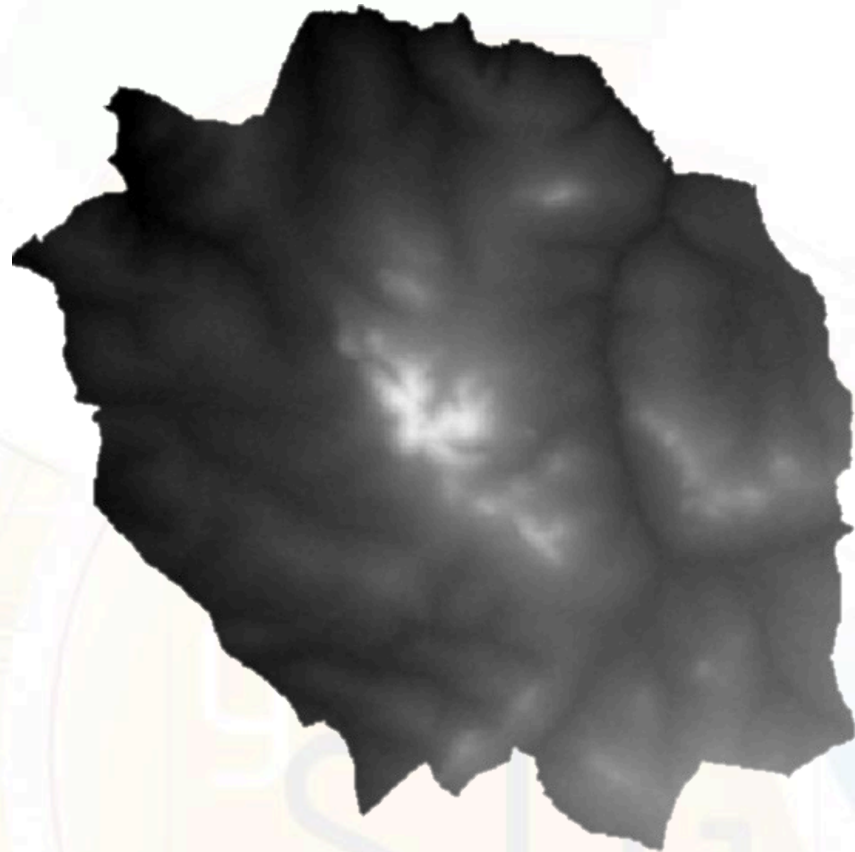
<http://srtm.csi.cgiar.org>

Socio economics data:

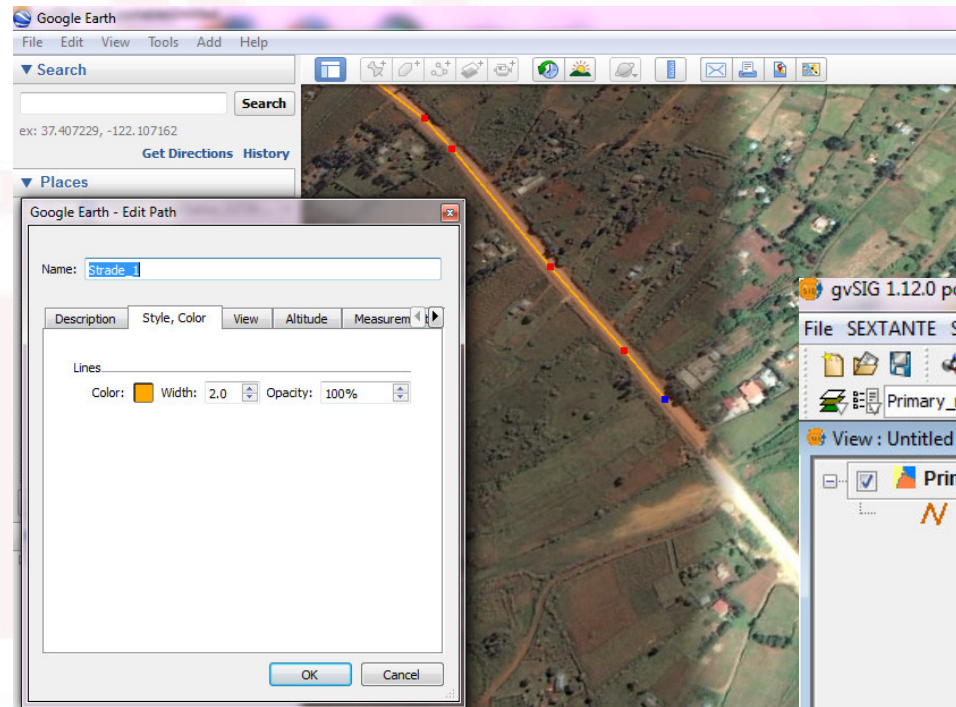
<http://data.worldbank.org/country>

Administrative limits:

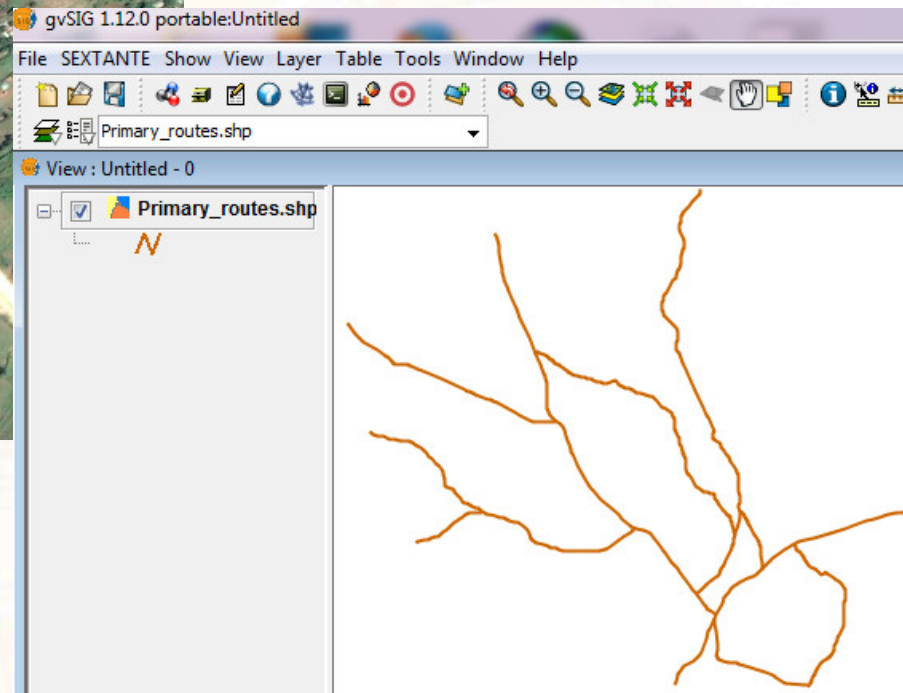
<http://www.gadm.org/country>



5. REMOTE SENSING DATA: digitize and upload data



Example:
roads of Wire Hills Forest zone



Google Earth

THE WEB GIS ARCHITECTURE

Server



PostgreSQL

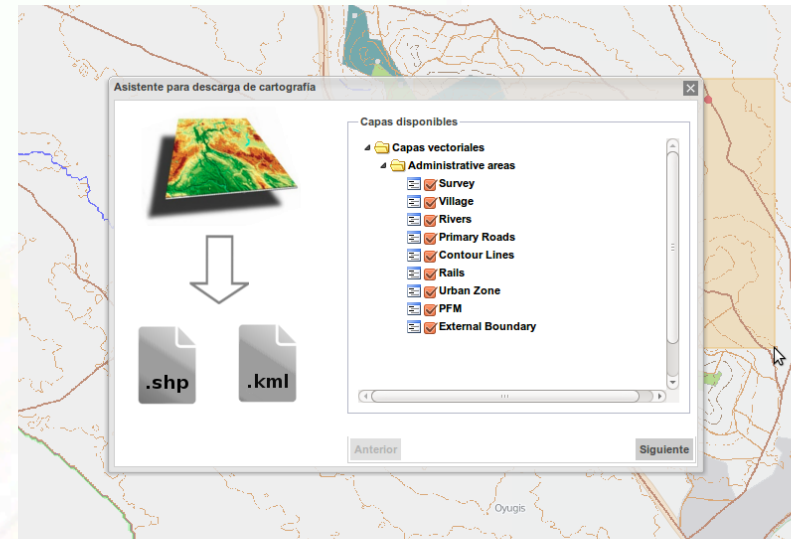


Client

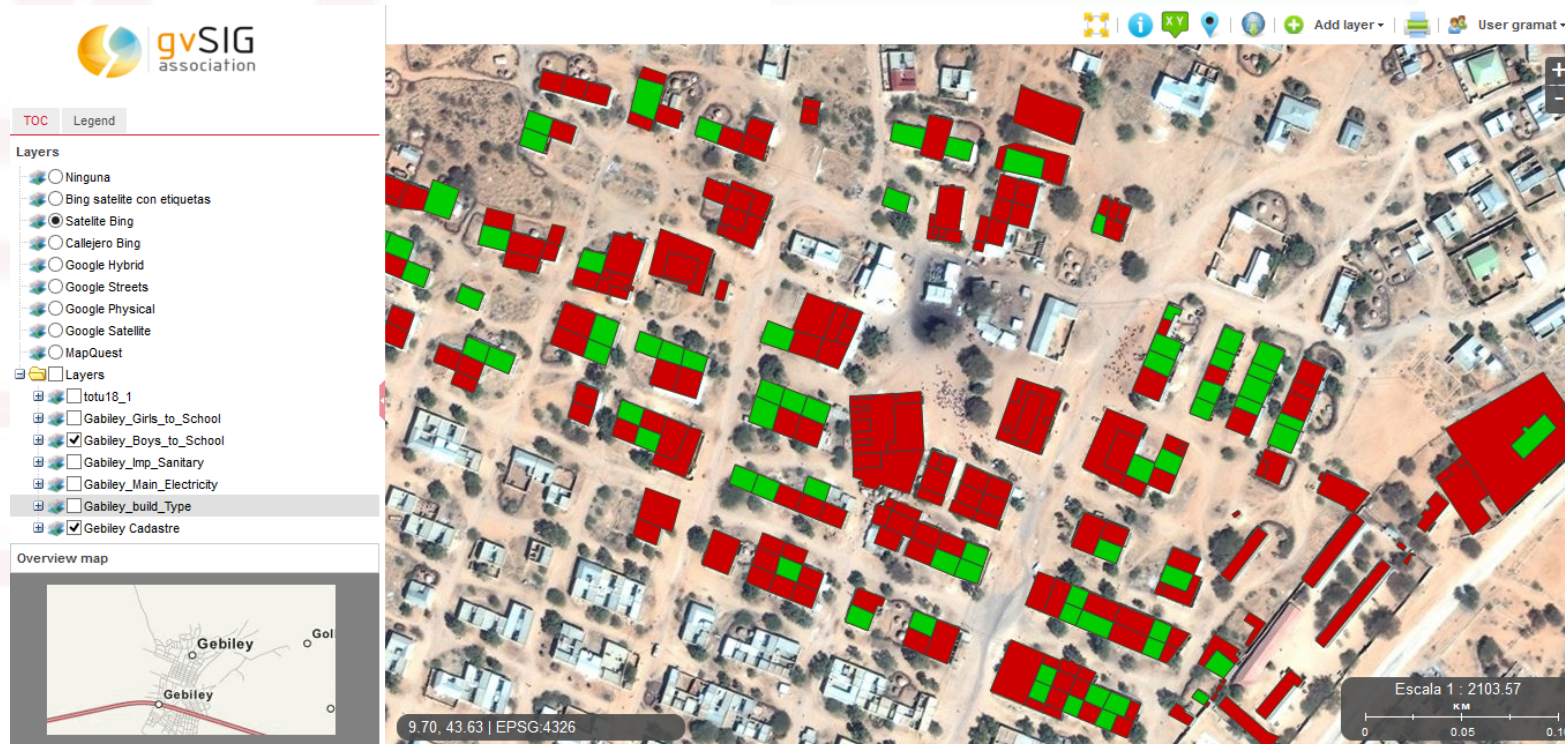


THE WEB GIS: functionalities

- Choose layers to display
- Load layers
- Edit symbols and label
- Zoom/pan
- Identify, search, query features
- Measure
- Print layout



THE WEB GIS: functionalities



THE WEB GIS: functionalities



The screenshot shows the gvSIG web application interface. On the left, there is a 'Layers' panel with a list of layers including Google Hybrid, Google Streets, Google Physical, Google Satellite, MapQuest, Administrative area, Survey, Village, Trails, SPP frequency, Rivers, Primary roads, Contour lines, Boundary, Urban zone, PFM, and Digital Elevation Model. The 'Survey' layer is selected. Below the layers panel is an 'Overview map' showing a larger geographical context. The main map area displays a detailed view of the selected area. A 'Layer info' window is open, showing the attributes and values for the 'Survey' layer.

ATTRIBUTE	VALUE
plot_no	10
plot_rad	13
date	2013-10-24
photo_path	null
soil_eros	L
fell_cutt	Recent
grazing	M
crown_cov	Moderate
for_area	Natural forest
no_treespp	8
spp1_name	Anjago
spp1_freq	7
spp1_heig	2.7

At the bottom of the interface, the URL https://geoportal-asoc.scolab.es/geoportal/?app_id=4# is displayed, along with the coordinates -0.47, 34.71 | EPSG:4326.

RESULTS

KENYA

29 plots survey (Ø 13 m)

73% natural regeneration

72% open crown cover
28% moderate crown cover
75% intensive grazing

SOMALILAND

30 field survey days

Almost 800 polygons created
(± 20% total)

717 private building
27 public building
151 commercial building



Strategies for the
21st Century

10 international
gvSIG
Conference

3-5
December
2014

Gracias