



gvSIG Mobile 0.3 and gvSIG Mini tutorial

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Introduction

This tutorial has been done for the FOSS4G 2010

You can access it from

<http://bit.ly/gvm-foss4g-2010>

In this tutorial we will learn how to use gvSIG Mobile and gvSIG Mini.

gvSIG Mobile is a mobile GIS that can handle SHP, GML, KML, GPX, ECW, WMS and WFS. It can edit vector data and its attributes.

gvSIG Mini is a WMS and tiles viewer that let you find your position over OSM or any other tile system and to search for addresses and points of interest.

The first part will talk about gvSIG Mobile and will last 1 hour. This tutorial includes the resolution of 2 use cases, "Trap installation and supervising" and "Forestry incidence reporting".

Later Alberto will show you how to use gvSIG Mini.

Trap installation and supervision

Use case



We have to monitor the activity of some foreign insects that are destroying the trees of a region in Spain. We need to know in which parts of the region there are those insects and which parts are bug free. The size of the infestation is also important to determine if it should be considered a plague or not. We also want to know how the infestation affects other insects of the region.

Proposed solution

Hundreds of traps will be distributed inside the region with different baits to capture several species of insects. Every week the traps will be collected, counted and replaced. This data will be collected by forest engineers on PDAs with gvSIG Mobile and later stored on a central GIS.

Forestry incidence reporting

Use Case

We need to inspect a big forest periodically to detect possible causes of fire or other threats to prevent it. Also we need to detect any existing damages to repair it.

Proposed solution

A forest engineer will patrol every day in a sector of the forest and will record incidences on a PDA. Later he will drop this data at the office.

Also fire hydrants will be visited every week to keep it in perfect conditions as well as heat sensors.

The tutorial

We are going to use gvSIG Mobile to fill this data:

Incidences

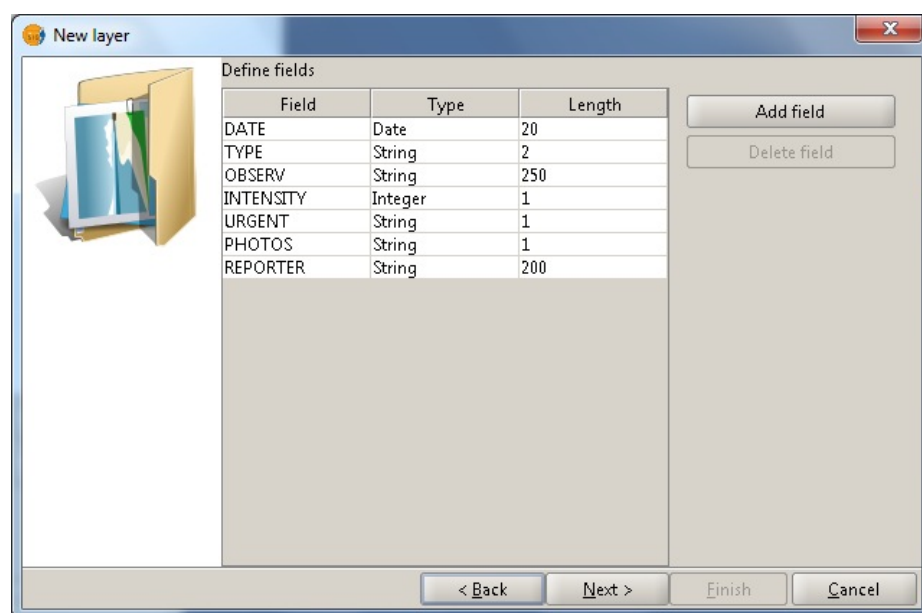
DATE: Date of the incidence detection TYPE: Garbage, Burned area, Hunters, Plague, Flood, Illegal Settlement, dry vegetation OBSERV: Free text INTENSITY: Fom 0 to 5 the importance of the incidence URGENT: Requires immediate action PHOTOS: Included photographs REPORTER: Person who created this incidence

We won't explain hot to maintain the fire hydrants and sensors because is very similar to the previous use case.

Create the empty shapefile

Create an empty shapefile in gvSIG desktop as before. Type is polygon and name is "incidences".

The fields are those shown at the image



Save the shapefile and close gvSIG

Create the custom form

The elements and its attributes are displayed here.

```
<panel
    background="#ffffff"
    columns="2"
    height="300"
    weightx="1"
    width="200">

    <label
        colspan="2"
        font="16 bold"
        foreground="#003fb7"
        text="Incidence Reporting"/>

    <label
        text="Date"/>

    <textfield
        property="featureAttribute=DATE"
        weightx="1"/>

    <label
        text="Type"/>

    <combobox
        property="featureAttribute=TYPE">

        <choice name="GB" text="Garbage"/>
        <choice name="BU" text="Burned area"/>
        <choice name="HU" text="Hunters"/>
        <choice name="PL" text="Plague"/>
        <choice name="FL" text="Flood"/>
        <choice name="SE" text="Illegal Settlement"/>
        <choice name="DR" text="Dry Vegetation"/>
    </combobox>

    <label
        colspan="2"
        text="Observations"/>

    <textarea
        colspan="2"
        property="featureAttribute=OBSERV"/>

    <checkbox
        colspan="2"
        foreground="#ff232b"
        property="featureAttribute=URGENT;nonChkValue=N;chkValue=Y"
        text="Immediate action required"/>

    <label
        text="Intensity (0-5)"/>

    <spinbox
        property="featureAttribute=INTENSITY"/>

    <checkbox
        colspan="2"
        property="featureAttribute=PHOTOS;nonChkValue=N;chkValue=Y"
        text="Photos taken"/>

    <label
        colspan="2"
        text="Reporter"/>

    <textfield
        colspan="2"
        property="featureAttribute=REPORTER"/>

</panel>
```

Prepare the PDA

Copy the shapefile and the custom form to the SD card and insert it on the PDA.

Storing the incidences

- Go into the forest with the PDA with GPS activated.

- Open the shapefile and assign to that layer the form as we did in the other use case. Turn on editing for this layer.
- Optionally set a thematic map to display, using different colors, every type of incidence. To do this
- If any incidence is found use the create polygon to draw the affected area. You can use the automatic addition of vertexes with GPS while moving around the area.
- Use the info tool to fill in the form

- **When the route has been completed, turn off editing and go back to office.**

The tutorial

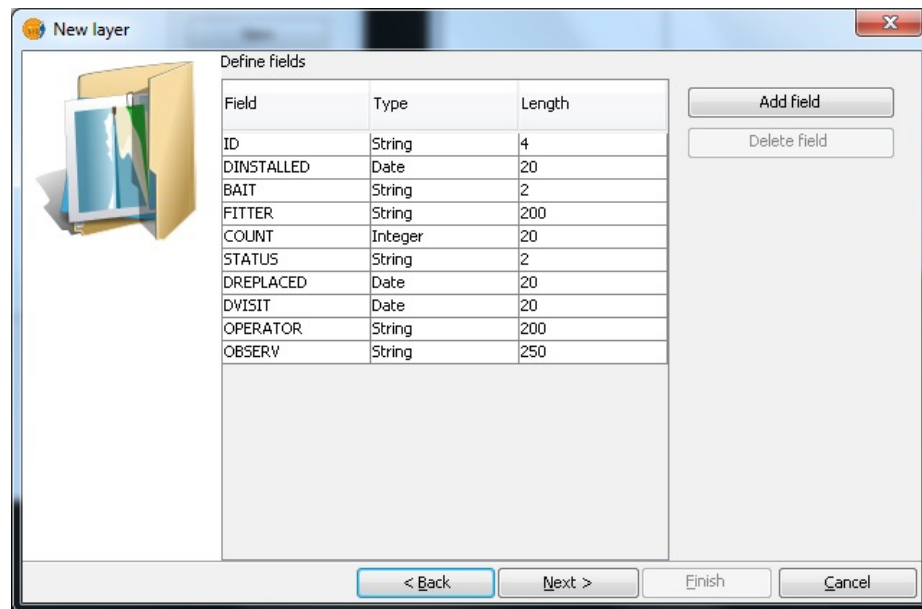
We will use gvSIG to create an empty shapefile with these attributes:

- ID: Identification code
- DINSTALLED: Date of first installation
- BAIT: Type of bait (also insect family)
- FITTER: Person who did the first installation
- COUNT: Number of insects counted on last visit
- STATUS: Status of the trap the day of the last visit
- DREPLACED: Date of the last replacement
- DVISIT: Date of the last visit
- OPERATOR: Person who did the last supervision
- OBSERV: Free text

Then we will create two custom forms, one for the installation and the other for the supervision.

Create the shapefile

- Open gvSIG desktop
- New view
- Open view
- View / new layer / new SHP
- Name: "traps" Type: Point
- Add fields as in the image



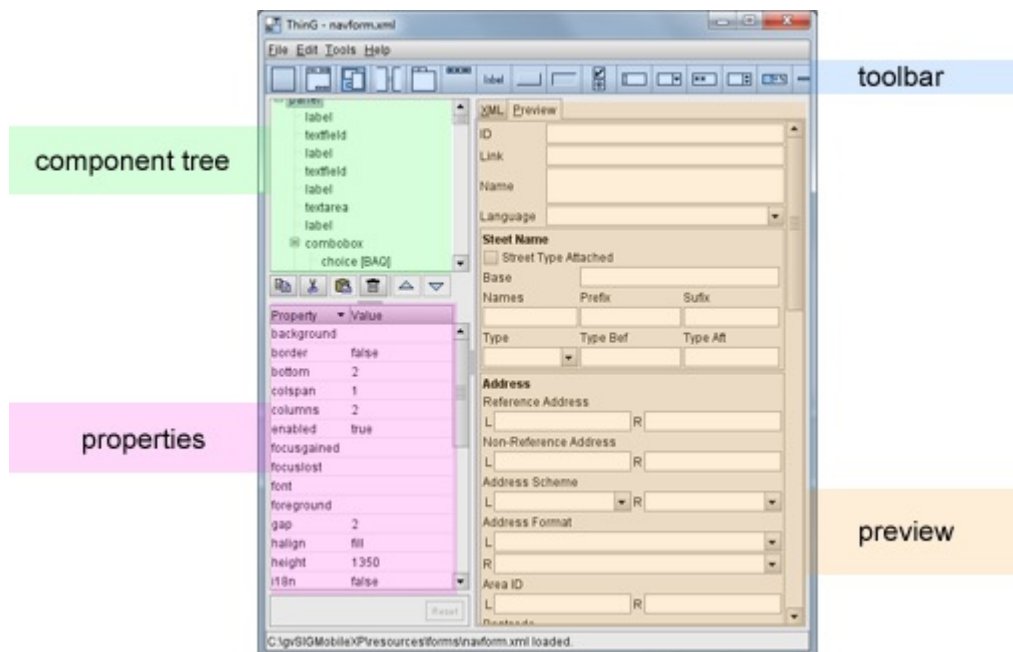
- Save it with name "traps"
- Now we right click on the layer "traps" and select "finish editing"
- Close gvSIG desktop

Create the trap installation form

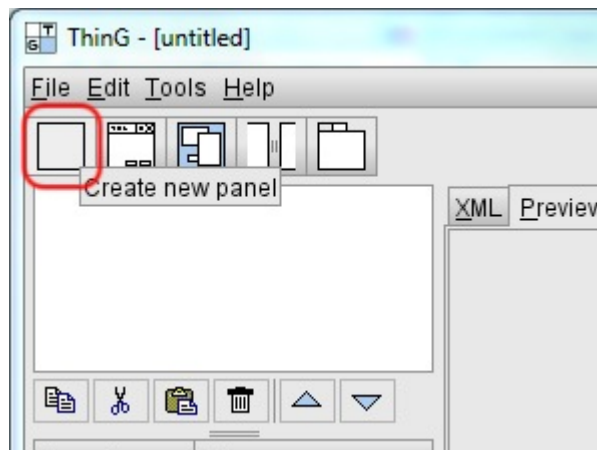
Custom forms are made with thinlet, a free XUL format to define forms in XML. You can create it directly using XML or with the free editor ThinG.

You can download ThinG from <http://thing.sourceforge.net/>

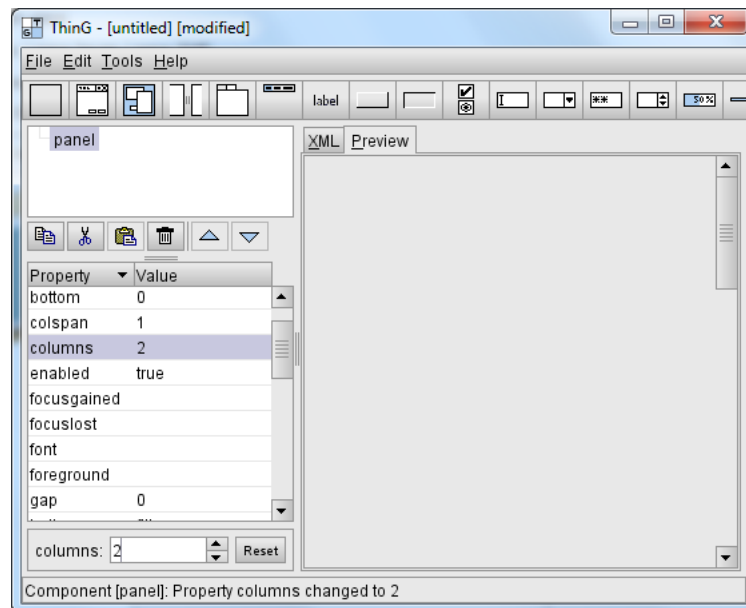
- Open ThinG



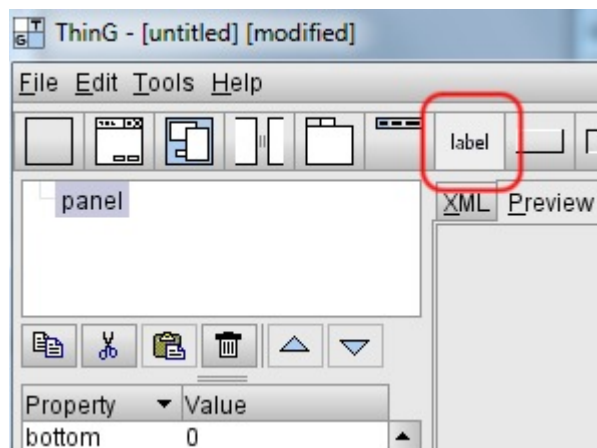
- Create a new panel



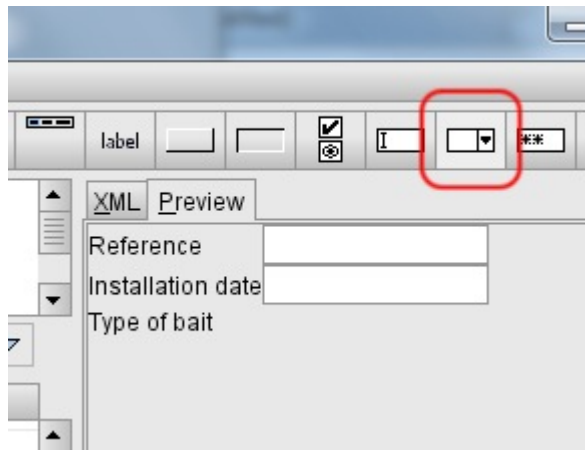
- Set width to: 220
- Set height to: 200
- Set columns to: 2



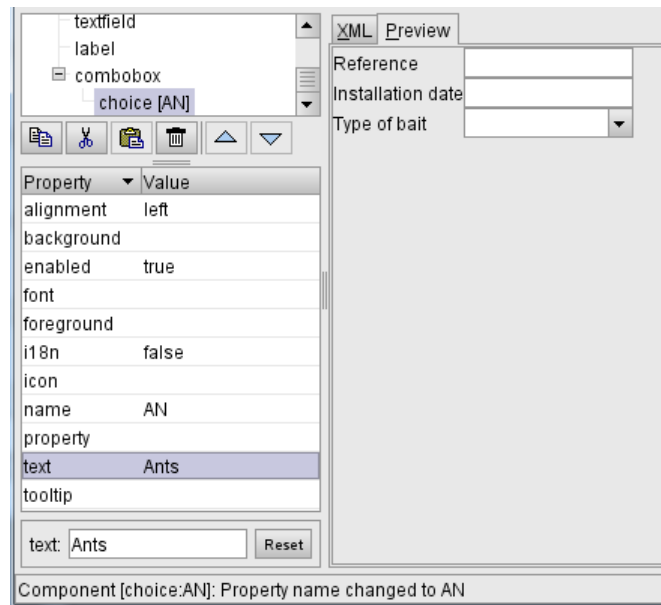
- Create a new label



- Set text to: Reference
- Click on the panel and create a new textfield
- Set weightx to: 1
- Set the property to: featureAttribute=ID
- Create a new label [text: Installation date]
- Create a new textfield [property: featureAttribute=DINSTALLED]
- Create a new label [text: Type of bait]
- Create a new combobox [property: featureAttribute=BAIT]

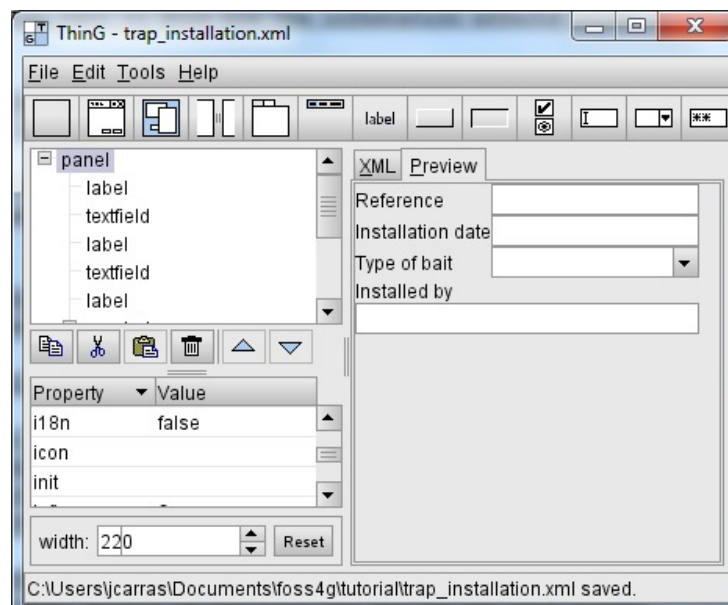


- Select the combobox and create new choice [name: AN, text: Ants]



- Select the combobox and create new choice [name: BE, text: Beetles]
- Select the combobox and create new choice [name: FL, text: Flies]
- Create a new label [text: Installed by, colspan: 2]
- Create a new textfield [property: featureAttribute=FITTER, colspan: 2]

We have completed the form. It should look like this



If so, save it as "trap_installation.xml" in the same folder as "traps.shp".

Create the trap maintenance form

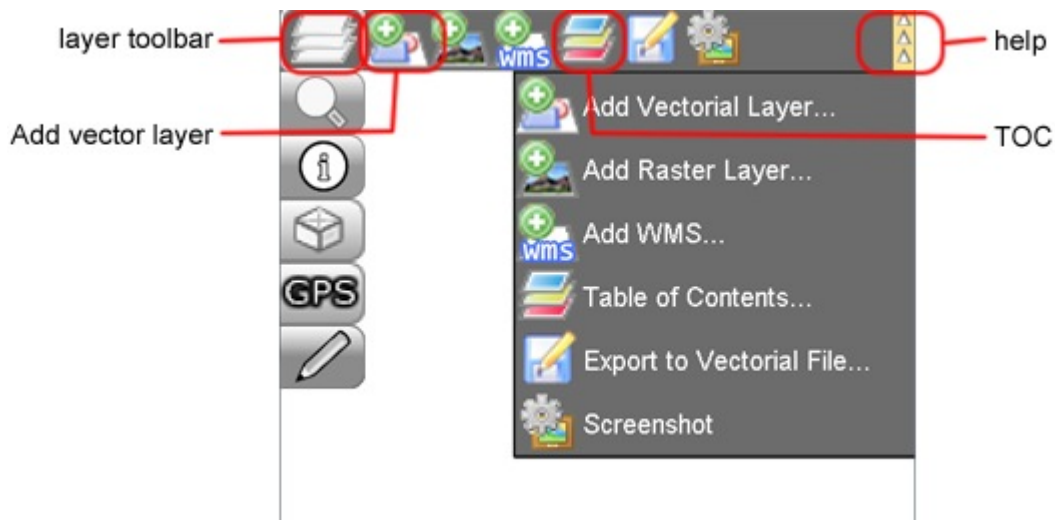
Proceed like before creating this structure:

- panel [width: 220, columns: 2]
 - label [text: Reference]
 - textfield [property: featureAttribute=ID;modifiable=false, weightx: 1]
 - label [text: Type of bait]
 - combobox [property: featureAttribute=BAIT;modifiable=false]
 - choice [name: AN, text: Ants]
 - choice [name: BE, text: Beetles]
 - choice [name: FL, text: Flies]
 - label [text: N. Catch]
 - spinbox [property: featureAttribute=COUNT]
 - label [text: Status]
 - combobox [property: featureAttribute=STATUS]
 - choice [name: GO, text: Good]
 - choice [name: OK, text: Wear out]
 - choice [name: BR, text: Broken]
 - choice [name: DS, text: Dissapeared]
 - label [text: Visited on]
 - textbox [property: featureAttribute=DVISIT]
 - label [text: Replaced on]
 - textbox [property: featureAttribute=DREPLACED]
 - label [text: Inspected by, colspan: 2]
 - textfield [property: featureAttribute=OPERATOR, colspan: 2]
 - label [text: Observations, colspan: 2]
 - textarea [property: featureAttribute=OBSERV, colspan: 2]

Save the form as "trap_maintenance.xml"

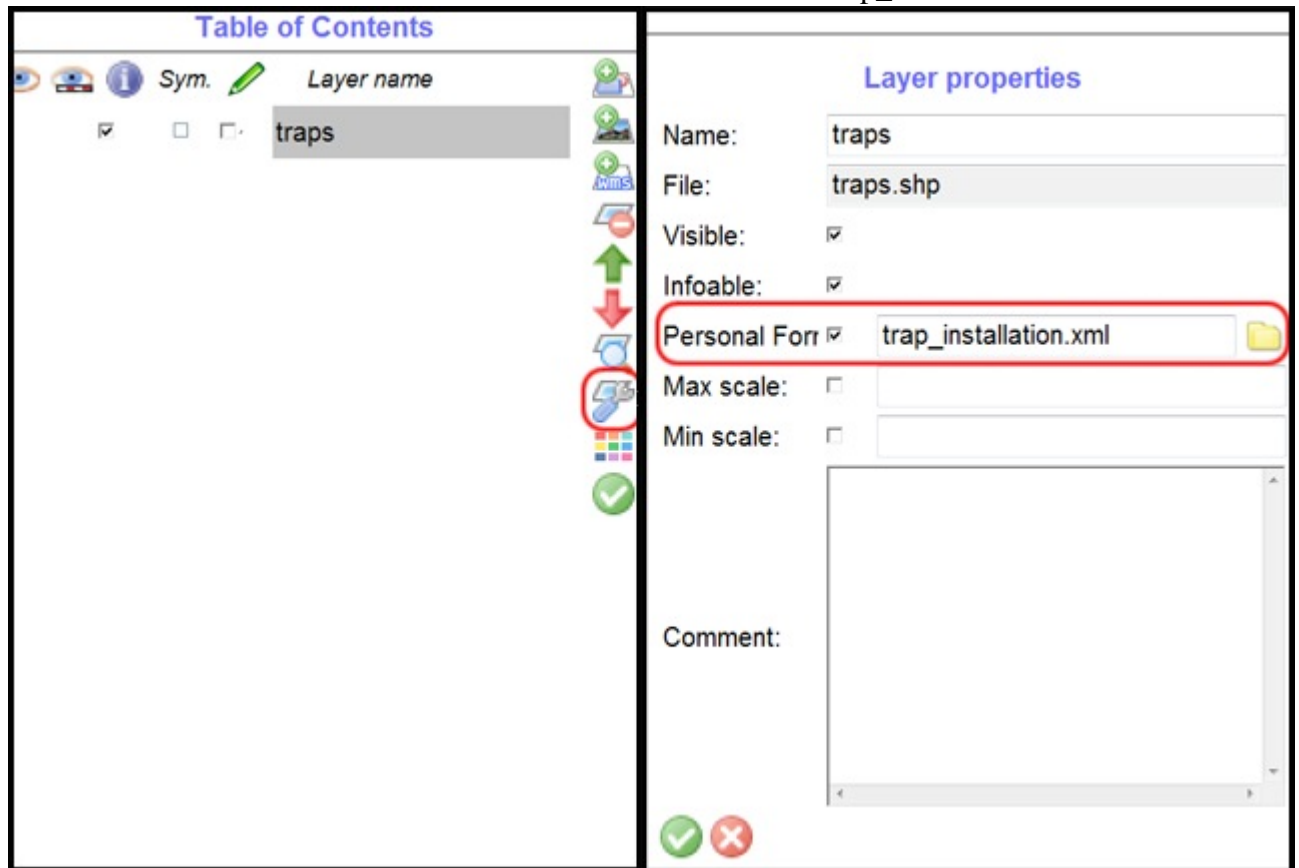
Prepare the PDA

- Create a folder called "traps" on the root of an SD Card
- Copy the shapefile (3 files), trap_installation.xml and trap_maintenance in that folder
- Copy other interesting map files for reference like an ECW file with a detailed photo of the terrain.
- Extract the card and insert it on the PDA
- Open gvSIG Mobile
- Load the traps shapefile (and optionally other shapefiles or ECW)



- Bind the trap_installation form to the layer
 - Open the TOC

- Select the layer
- Open the properties
- Check custom form and use the filechooser to select the trap_installation.xml

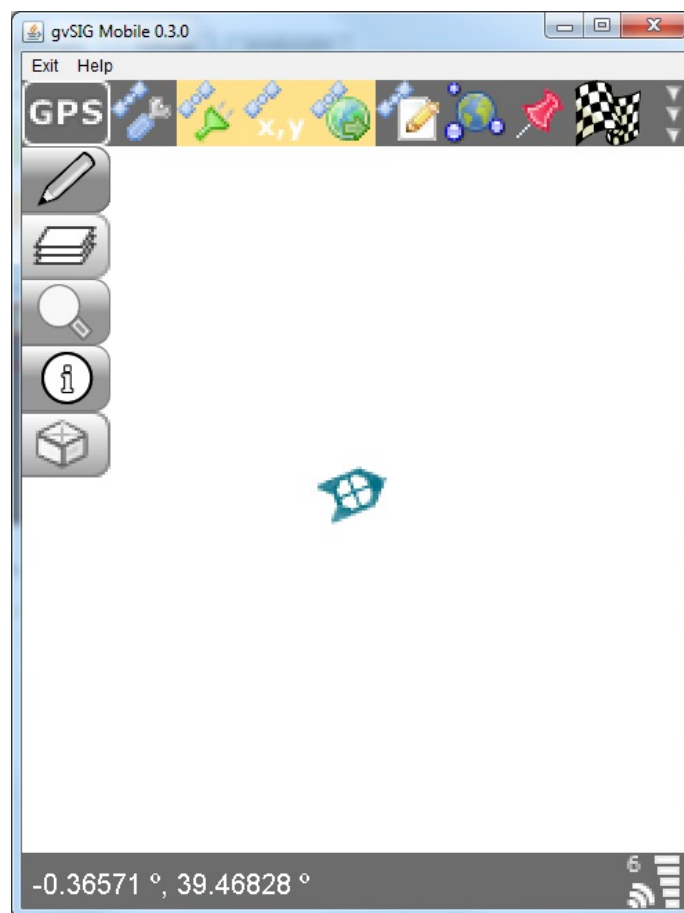


- Accept all dialogs

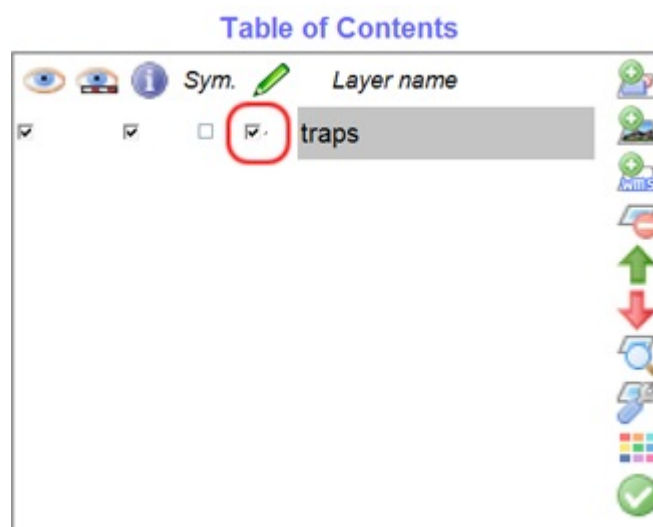
Now we have all we need to store the position of the traps

Install the traps

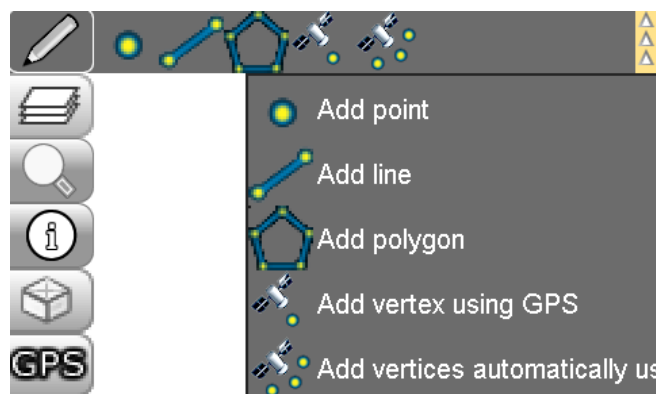
- Now we go out with a lot of traps and gvSIG Mobile.
- First we turn on GPS



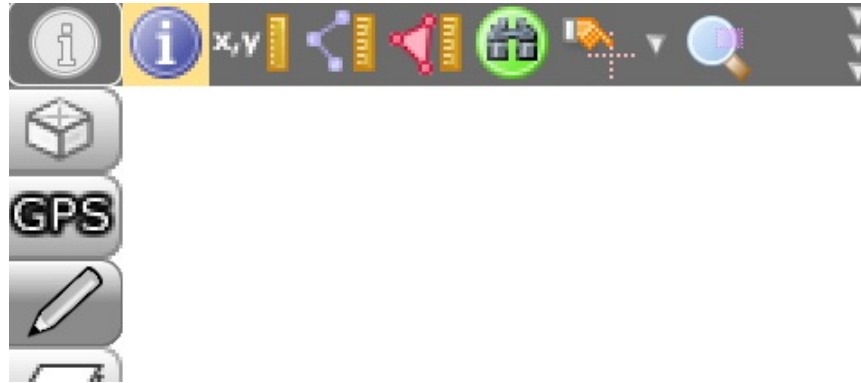
- Set the layer for editing



- When we find a good place, we install the trap
- Create a new point over the trap using "Add point" or "Create new point using GPS"



- Select the info tool and click over the new point



- The custom form appears, fill it and accept

Reference	0001
Installation date	20100905
Type of bait	Beetles
Installed by	Javi Carrasco

save cancel

- We just installed our first trap, and stored it on the SHP. Now go on until all traps are installed
- When all traps are installed turn editing off and go back to office
- Now is time to backup this data, to store it on a spatial database is usually the best option. You can do it easily with gvSIG desktop.

Review the traps

- Starting with a blank project in gvSIG load the shapefile with all the traps created and any other base maps you can use
- Set "trap_maintenance.xml" as the custom form for the traps layer
- Turn on editing for the traps layer
- Use the GPS to drive to the closer trap on the map
- Count the insects and repair or replace the trap
- Select the info tool and click over the trap
- Fill all the fields and move to the following trap until all the traps are reviewed

A screenshot of a software window titled "Trap Data Entry" with a standard Windows-style title bar (minimize, maximize, close buttons). The window contains a form with the following fields and values:

Reference	0001
Type of bait	Beetles
N. catch	3
Status	Broken
Visited on	20100907
Replaced on	20100907
Inspected by	JC1
Observations	The trap burned

At the bottom right of the window, there are two buttons: a green "save" button with a checkmark icon and a red "cancel" button with an 'X' icon.

- When all the traps are reviewed turn off editing and go back to office
- At the office store the new data into the database

End of use case