#Section 7 Technical issues: internet, web services infrastructure and applications

Chapter 17 **Visualizing geographical names databases**

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17.1 Introduction

After the geographical names information has been gathered in the field, this information must be stored in databases and prepared for publication and dissemination. If maps are the method used for publication and dissemination, very likely the content of the databases will be imported into other systems, like Geographical Information Systems (GIS). With GIS geographical names data can be integrated with other geospatial data relevant for the target map.

Concerning the publication and dissemination of geographical names data through the internet we have learned in chapter 'Web services and applications - open source options vs commercial options: criteria for selection' that several technologies can be used: using a simple website or through web services and applications.

In this chapter, the focus will be put on the publication and dissemination of geographical names data using the Google Earth and Google Maps application. Alternatives might be Bing Maps or Yahoo Maps [1].

It is worth noting that other applications can be used free of charge without any commercial interest. Most often 'OpenStreetMap (OSM)' is used to publish a map which shows data collected by others in a geographical context [2].

17.2 The Google Earth/Maps applications

Google Earth is a virtual globe, map and geographical information programme provided by Google in 2004. It maps the Earth by the superimposition of images obtained from satellite imagery, aerial photography and geographical information system (GIS) onto a 3D globe. It was originally available with three different licences, but has since been reduced to just two: Google Earth (a free version with limited function) and Google Earth Pro, which is now free and is intended for commercial use [3].

Google Maps is a Web-based service that provides detailed information about geographical regions and sites around the world. In addition to conventional road maps, Google Maps offers aerial and satellite views of many places. In some cities, Google Maps offers street views comprising photographs taken from vehicles. Google Maps offers several services as part of the larger Web application (e.g. a route planner). The Google Maps application programme interface (API) makes it possible for Web site administrators to embed Google Maps into a proprietary site such as a real estate guide or community service page. The API defines the correct way for a developer to write a programme that requests services from an operating system (OS) or from other applications.

Google Earth and Google Maps (API) also allow users to create and import geospatial data – including geographical names – from a variety of different sources.

In several toponymic training courses organized by UNGEGN the geographical names information which had been gathered in the field, was first of all stored in a database before it was further processed. Usually, the data was imported into a database and then into a GIS to demonstrate how to display names together with geospatial data, e.g. on a satellite image or by using Google Earth or other applications.

The following figure 17-1 shows geographical names gathered within the fieldwork in Madagascar (2013) and displayed in a GIS, here using the proprietary product ESRI ArcGIS and OSM data as background map layer:

Figure 17-1 "OSM Map data", Displaying fieldwork results of the Madagascar UNGEGN toponymy course with ESRI ArcGIS integrating the geographical names data with free OSM data for Madagascar (2013)

If the geographical names data attribute table within the GIS will be displayed further using the Google Earth or Google Maps application the table has to be exported in a file that can be understood by the Google applications. At least, a so-called CSV-file has to be created. A CSV is a

comma separated values file, which allows data to be stored in a table-structured format. CSV files can be used with any spreadsheet programme, such as Microsoft Excel, Open Office Calc, or Google Spreadsheets.

The general default file type for spatial data in Google Earth and Google Maps is KML (Keyhole Markup Language) or KMZ (a compressed or "zipped" KML file). KML files are text-based and employ coding tags like those used for XML or HTML programming. Google Earth processes KML files in a way that is similar to how web browsers process HTML and XML files. KML syntax tells applications like Google Earth and Google Maps how to display geographical features such as points, lines, images, polygons, and models. Each location included in a KML file must have longitude and latitude coordinates assigned to it. The following figure 17-2 shows an example from the fieldwork data of Madagascar (2013) displayed with Google Earth.

Other data can make the view more specific, such as tilt, heading, and/or altitude. Some KML files, like placemarks (i.e. one can mark one's own places on the map in Google Earth), ground overlays, paths, and polygons can be created directly in Google Earth and Google Maps. More complex KML elements must be created "by hand" using a text editor and require knowledge of KML tagging.

All GIS software – proprietary or open source – allows for the export of a so-called shapefile from the GIS and conversion of it directly to a KML file. Otherwise open source tools (like Shape2Earth as shown in figure 17-3) exist to convert the shapefile into a KML file. When a CSV or shapefile is saved with a .kml or .kmz extension,

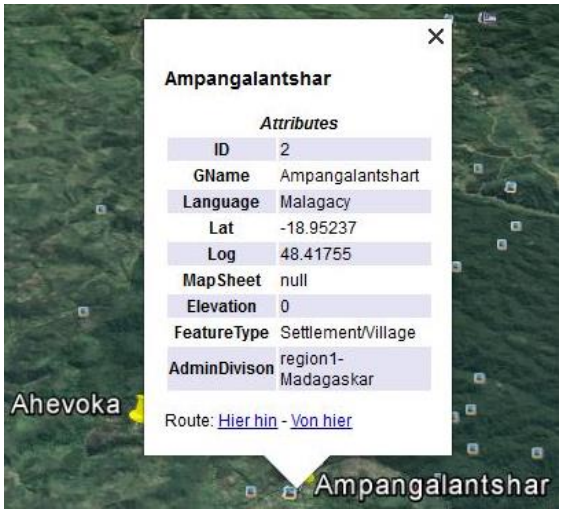

Figure 17-2 "Image © CNES/Astrium", "© Google", "Image Landsat", "Image © 2016 Digital Globe", displaying fieldwork results of the UNGEGN Madagascar toponymy course (2013) with the Google Earth application

applications like Google Earth/Maps, Bing Maps, Yahoo Maps and all the others know how to display it.

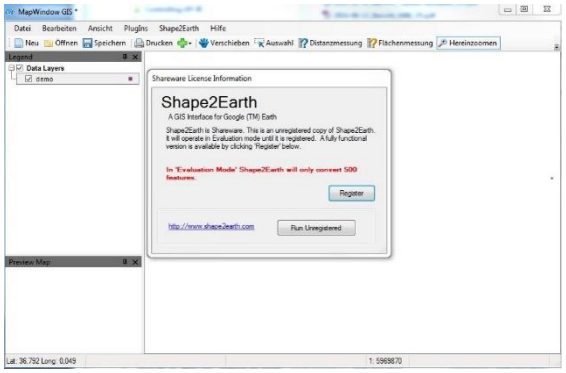

Figure 17-3 Open Source software "Shape2Earth", http://shape2earth.com/

KML files can be used for a wide variety of applications. One may placemark one's home, school or favourite destination; plan or document a trip; map natural resources and scientific datasets – and – visualize geographical names data retrieved from the fieldwork through the internet [4].

The disadvantage of using the Google Earth application is that users are required to download and install the application software on their own computers. If the application has been installed the geographical names data can be displayed using the ortho-imagery of Google Earth as a background layer (see figure 17-2). This data view can either be demonstrated to people as an internal view or shared with other communities.

The same applies for the Google Maps application, but the advantage with this application is that no download and installation of software is needed on the computer. The Google Maps application just requires an existing Google-eMail account. "Maps-user" have to register in order to be able to import their own geographical names data using Google Maps (comprising maps and ortho-imagery) as the background layer.

The following figure 17-4 shows an example from the fieldwork data of Madagascar (2013) and displayed with Google Maps:

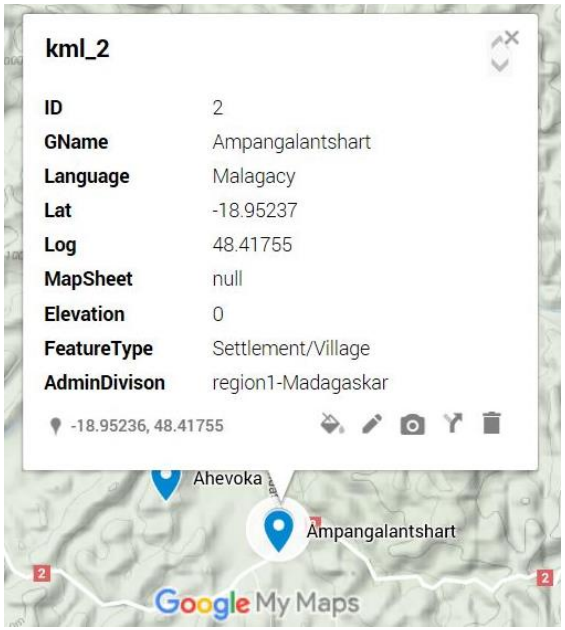

Figure 17-3 "Map data ©2015 Google", Fieldwork results of the UNGEGN Madagascar toponymy course (2013) using the relief map of the Google Maps application, <iframesrc="https://www.google.com/maps/d/embed?mid=14QOZeQaogJHVZLb3GEDGoqSezX4" width="640" height="480"></iframe>

The following figure 17-5 shows another example from the fieldwork data of Indonesia (2012) displayed with Google Maps.

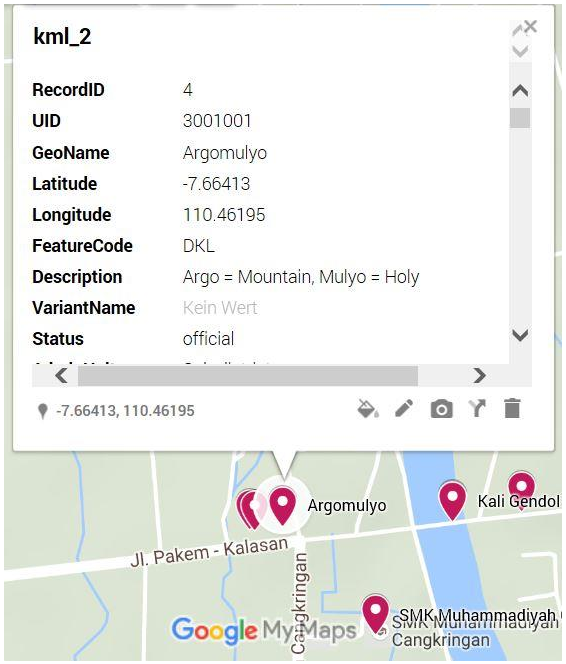

Figure 17-4 "Map data ©2015 Google", Fieldwork results of the 4th UNGEGN toponymy course in Indonesia (2012) using the background map of the Google Maps application, <iframe src="https://www.google.com/maps/d/embed?mid=14QOZeQaogJHVZLb3GEDGoqSezX4" width="640" height="480"></iframe>

The fieldwork results of Indonesia had been initially stored in a Microsoft Access database (figure 17-6), exported as CSV – including all toponymic attributes – and then imported into Google Maps (figure 17-5). The MS Access database is advantageous for maintaining and managing the geographical names information. For its publication and visualization with Google Maps a simple CSV or KML would be sufficient.

GN_object

RecordID	UID	Name	Latitude	Longitude
3	3000999	Yogyakarta	-7,78	110,36
4	3001001	Argomulyo	-7,66413	110,46195
5	3002229	Cangkringan	-7,66419	110,46143
6	3003987	Kali Gendol	-7,66405	110,46465
7	4559983	Jembatan Gendol	-7,66406	110,46465
8	7689912	Mesjid Nur Rohman	-7,6639	110,46574
9	4599723	SMK Muhammadiyah Cangkrigan	-7,66584	110,46342
10	6910036	Majasem	-7,78619	110,48973

Figure 17-5 – Fieldwork results of the 4th UNGEGN toponymy course in Indonesia (2012) stored in a MS Access DB

The data views created with the Google Maps application can be accessed by other people or communities only by invitation of the “Maps-user” (author) who created the views. However, all views created with Google Earth and Maps can generally be shared (published) as “open views” to everybody in accordance with the Google license conditions.

Figure 17-7 "Map data ©2015 Google", "Personal" data views of the author showing the fieldwork results from Indonesia (2012) and Madagascar (2013). This view is restricted and can be shared with other people only on invitation by the author. Although it is rendered with German language toponymy it will be displayed in other languages according to the language indicated by the

operating system of the computer. <iframe src="https://www.google.com/maps/d/embed?mid=14QOZeQaogJHVZLb3GEDGoqSezX4" width="640" height="480"></iframe>

In a nutshell, with the Google Maps application fieldwork results can be quickly and easily displayed without the need to use any database software or GIS tool. This is interesting for those organizations that would like to show fieldwork results to other people or communities without using a database software and GIS tools. However, it is worth noting that the Google Earth and Maps applications cannot provide a substitute for the solid management of a national names programme.

17.3 References

[1] Top Free Mapping Apps, http://www.appappeal.com/apps/mapping, last accessed 09/2016

[2] Publish something based on OSM and own data, http://wiki.openstreetmap.org/wiki/License/Use_Cases#Case_3:_I_want_to_publish_something_based_on_OSM_and_my_own_data, last accessed 09/2016

[3] Google Earth, https://www.google.com/earth/, last accessed 09/2016

[4] Generate a KML file (see http://code.google.com/apis/kml/articles/csvtokml.html for a possible solution). You can then open that up in Google Maps by storing it online and linking to it from Google Maps as described at http://code.google.com/apis/kml/documentation/whatiskml.html, last accessed 09/2016 for both URLs