Section Sciences et Ingénierie de l'environnement
Design Project 2018 (semestre de printemps)

Proposition n°2

Development of GIS application to improve client database for municipal services in Shkodra, Albania

Encadrant externe

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Project description

Albania has recently succeed territorial reform, reducing the number of municipalities from more than 360 to 61. This reorganization required from the new, bigger, municipalities to reorganize all the public management services and in particular waste services. This new organization is also an opportunity to extend and improve the service in all the areas of the countries, where no or very bad service was provided before.

Planning and financing public services requires basic data on clients (families, business), including address and GPS position. The lack of such data is a key limitation for the planning of public services and for the tax and billing system, necessary to insure the financial sustainability of the service. Implementing a billing system is very challenging for the municipalities, when there is no updated register of population.

Shkodra Municipality is providing a lot of effort to develop a census of the building, families and business, with a team of workers going in the field to get information and then enter it in a GIS database. On another hand, new GIS data are now available for Albania too, in particular property register (buildings), business register and road network which are not used for the moment in the public services.

Dldp Program, an SDC Project managed by Helvetas- Swiss Intercooperation, has also developed and introduced in the Municipality the "one stop shop" (OSS) system, which

provides a single point of contact between the citizen and the Municipal administration for any request for administrative services. This OSS system could also be used to verify and improve the data at each contact between citizen and administration.

Design Project developed in 2017i has shown that, despite these efforts, a lot of building where not registered (cf next figure) and that business databases have no clear position, are not connected with GPS database. In other area of the municipalities, census where not provided and situation is worst. Part of the “red” not registered building may have been missed during the census or can be public buildings, in construction, in ruins or only seasonally occupied, but this information should also appears in the Municipal database, as it can be useful for the tax definition and services planning. Position of the business (like shop, cafés and restaurants) should also be introduced in the GIS database in order to plan the service efficiently.

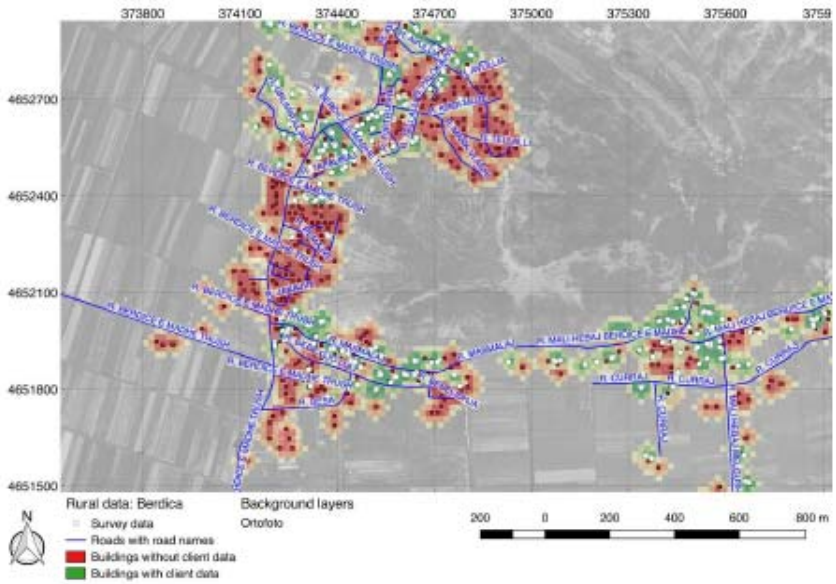

Figure 7: Survey data in the North of Berdice

Table 3b shows similar survey coverage per building as for Ana e Malit. However, the survey is currently in process of completion and the numbers are bound to change.

	Survey Points	No survey points	Total
Population	4’286	5’283	9’569
Percentage	44.8 %	55.2 %	100 %

(a) Population

	Survey Points	No survey points	Total
Buildings	763	2’067	2’830
Percentage	26.9 %	73.1 %	100 %

(b) Buildings

Table 3: Survey coverage in Berdice: indicators

Developing a tool that would help the municipality’s employees to control and improve the available information of each building and fee payments directly in the field, through smartphone or tablet, as well as in each contact with the citizen in the public offices, would improve a lot the Municipal services efficiency.

Such tool could be then extended in the other Municipalities of the country as well as in other countries.

Objectives

The Objectives of the project are the following:

1. Develop a tool for smartphone, based on ArcGIS tools, in order to allows to provide in the field the following possibilities :

1. To see which building has no information (red), in a map
2. To see and control what are the information of each building
3. To see which the status of payment: no bill, non-paid bills and dates for each household and business
4. To introduce or improve the information of each building, apartment, household, business
5. To introduce information about fee payment.

2. Adapt the tool to be used in the municipal office (one stop shop), in order to allows to provide in the office the following possibilities :
    6. To see and control what are the available information of each citizen and business, in relation with a GIS position
    7. To introduce or improve the information of each household, business, building, apartment
    8. To see which the status of payment: no bill, non-paid bills and dates for each household and business
    9. To introduce information about fee payment.
    10. To see which building has no information (red), in a map
3. Provide a user manual

Tasks description

The Municipality has access to the property register, which is not accurate. It seems that the Municipality has access to a list of citizens, distributed per area. It is not known how accurate this list is. The GIS layers on existing buildings and roads exist, based on recent satellite images, and seems to be much more complete and accurate.

First phase is to

- Analyze the existing structures of the Household and Business data and of the billing system data (using the results of the two 2017 design Projects)
- Specify, in collaboration with CSD GIS and waste experts, the output and functionalities of the tool to be developed. Propose a model of databases and additional information if necessary, in discussion with CSD, the Municipality and dldp team.
- Define 2 pilot zones for testing the tools

Second phase :

- Elaborate the tool for Android, based on data from OpenStreetMap (OSM) and ArcGIS Online
- Test the tool, show gaps and difficulties, present propositions and road map for the implementation of the system at the municipal level or in the national level (other Municipalities).
- Elaborate a training document (user manual) in order to explain to Municipal employees and other service providers how to use the tool.

The project will be based on a real present data and situation of Shkodra, Albania. Data will be provided by the municipality and CSD, with the support of the dldp Project, an SDC Project managed by Helvetas- Swiss Intercooperation developed with the technical support of CSD.

Skype meeting as well as one mission and workshop in Albania by the students, will be organized during the project.

Miscellaneous

Students should develop they knowledge and experience in the fields of

- Client database and billing system for public services
- Using GIS, OSM and databases for public services in low income countries.
- Collaborate with nice partners of different culture

French and English are needed. Report and discussion will be delivered in English. As a pre-requisite, students should have taken the “SIG” course taught by François Golay.

F. Schmidt / 3.12.2017

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[i] Patricia Zundritsch and Cyril Wendl, “Use of GIS to improve client database for waste service in Albania”