

“The Voluntary Contribution of Citizens in Cadastre – Crowdsourcing in Cadastre”



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VGI and Land Administration – New Trends

- Navigation – Leisure time
- Crisis Management (hurricane & earthquake)
- Slum Mapping
- Climate change impact Mapping
- ...
- Land Administration ?



Is land administration between the fields that can flourish with the aid of VGI?

Can legal principles and strict regulations be bypassed?

Can sensitive personal information be trusted to volunteers?

Is accuracy the most important part of a cadastral survey and how can be achieved?

The Hellenic Cadastre – Procedures

The AAA Cadastral procedure in Greece:

- Property owners submit declarations to the Cadastral Offices. Owners are expected to recognize their properties on air/ortho photos.
- Interim cadastral tables and diagrams are formed by the Cadastral Surveyors.
- Suspension of interim cadastral data at the Cadastral Survey Offices - Objections submission.
- Amendment of cadastral data.
- Operation of the Cadastral Office.

The Hellenic Cadastre – Progress and Statistics

- The Hellenic Cadastre project **started in 1995**.
- It affects an area of:
~132.000 km² and ~ 37.200.000 property rights.
- Progress achieved:
 - Completed until 2012:** ~ 8.400 km² (6.4% of the total) and ~ 6.800.000 property rights (17%).
 - Total Cost = ~ 340M € (approx. ~ 70 € / right).
 - Under Compilation:** ~ 3.100 km² and ~ 7.500.000 rights.
 - Aprox. Cost = {212M € + VAT} for the Survey + {42M € + VAT} for the registered rights.
 - Remaining:** ~ 120.500 km² and ~ 22.900.000 rights. (mainly rural areas)

The Hellenic Cadastre – Identified errors

Four district categories:

- Land parcels whose shape or boundaries need correction.
- Land parcels which were not recorded at all.
- Land parcels which were registered into the interim cadastral plans as belonging to wrong cadastral units.
- Land parcels which are located in adjacent cadastral units and are affected geometrically due to the correction of the boundaries of the unit which is under re-survey.



Areas with gross errors in cadastral surveys.

The Hellenic Cadastre – Identified errors

Until now:

Lesvos Island

42.250 registered land parcels.

2.500 recorded errors.

Chios Island

113.400 registered land parcels.

1.970 recorded errors.

Lefkada Island

43.440 registered land parcels.

790 recorded errors.

The real number of errors is still undefined.

Under editing process. Objections by the property owners.

If errors \approx 30% of land parcels the cadastral survey should be repeated.

VGI methodology –A tough estimation

Conventional methodology:

New Cadastral Survey (1 year to be declared, 2 years to be implemented).

VGI methodology: 10 volunteers \times 15 parcels each day.

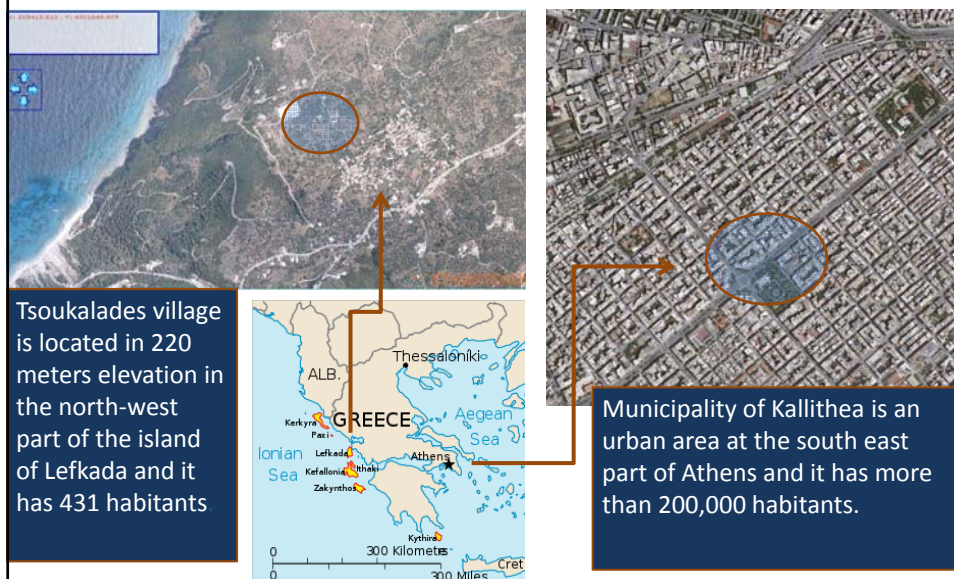


The Two Practical VGI Applications – General facts

Two practical experiments were carried out in an urban and a rural area of Greece.

- | | |
|--|---|
| <ul style="list-style-type: none"> ▣ Lefkada Island – Rural Area ▣ A weekend experiment ▣ Area of interest: 23.450 m² ▣ 15 volunteers -19 parcels ▣ 3 experts - 1 handheld GPS ▣ Collection of GPS tracks | <ul style="list-style-type: none"> ▣ Centre of Athens – Urban Area ▣ One Day experiment ▣ Area of interest: 55.750 m² ▣ 7 volunteers - 9 parcels ▣ 2 experts -1 Ipad ▣ VLSO orthophoto ▣ Visual recognition and online design of the cadastral extracts |
|--|---|

The Two Practical VGI Applications - The Areas of Interest



The Two Practical VGI Applications – The volunteers

- Variation in age, educational background, gender.
- All were local residents and property owners in the areas of interest.
- Their motivations: speed up the procedures; eliminate the costs; unblock the market in the areas with errors; participate as active cells of the society.



Results in Rural Area – Lefkada island (I)



- The cadastral survey began in 1997 and is still uncompleted due to errors.
- It has been resurveyed four times.
- Property market is blocked for more than 15 years.
- 63% of land parcels were correct re-surveyed within a weekend.

Results in Rural Area – Lefkada island (II)



Cadastral survey prepared by the:

private cadastral surveyor;

cadastral agency ;

volunteers : 2/3 of the boundary points are within the required accuracies

Results in Urban Area - Kallithea



Επίπεδο: 856,18 σ.μ.

Α/Α	X	Y
1	473029.20	400401.10
2	473144.30	400175.20
3	473155.30	400343.10
4	473164.30	400241.10
5	473199.30	400411.20

- The first phase of the cadastral survey has been completed by 2008.
- The second phase has not started yet.
- The Volunteers identified their properties on VLSO orthophotos and they created online cadastral extracts provided by the Hellenic Cadastre with coordinates. (<http://gis.ktimanet.gr/wms/ktbasemap/default.aspx>).

Conclusions

Strengths of the experiments:

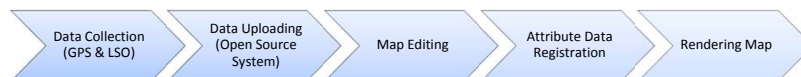
- Noticeable Participation and limited time of Survey
- Willingness to answer sensitive personal information
- No boundary disputes among the owners
- Straightforward process including editing in second experiment.

Weaknesses of the experiments:

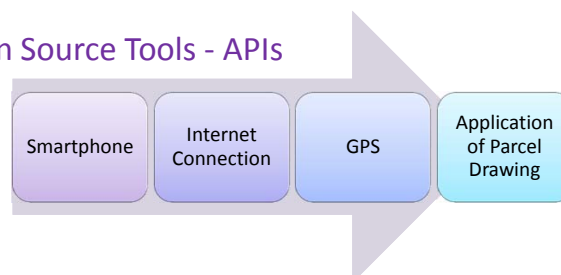
- Accessibility was limited due to cultivated crofts in rural areas.
- Handheld GPS can not be used in urban areas.
- Some elder volunteers provided with a handheld GPS were not familiar with new technologies preferring keeping a supervising role.

Proposals

- Hierarchical participation of local authorities, students, citizens.
- Five step - process



- Open Source Tools - APIs



Thank You!

