



National Technical University of Athens
School of Rural and Surveying Engineering



THE POTENTIAL OF CROWDSOURCING IN LAND ADMINISTRATION

Prof Chryssy Potsiou, FIG Vice President
NTUA, Greece
chryssyp@survey.ntua.gr
George Mourafetis, Surveyor, IT expert Hellenic Cadastre

Istanbul, INTERGEO EURASIA

Where we are

- Comprehensive LAS exist in only 50 countries and only for the 25% of the world's 6 billion land parcels.
- The rest of the world: reduced security of tenure; poverty.
- There is a need for establishing cooperation between professionals & citizens; citizens direct involvement in capturing and maintaining information about property rights.
- However: crowdsourcing is considered as a particular threat by involved professionals (conservative mapping & cadastral agencies, surveyors & lawyers, those who benefit from the existing chaos)

Fit for Purpose approach

FIG: *Highly qualified professional surveyors' interest is gradually moving from measurement to requirement determination for data collection and to data evaluation and management.*

What needs to be done

There is a need for:

- **Better investigation** of the capacity of governmental agencies to monitor, evaluate and interpret the volumes of collected data through crowdsourcing methods
- **Raising public awareness about the benefits** citizens will enjoy
- **Raising public trust**
- **Establishing policy frameworks legally** for the appropriate use of VGI, OpenStreetMap and OpenCadastreMap techniques.

Direct citizen contribution to LA?

As the land administration activity on the one hand deals with huge amounts of data, which moreover are of a very dynamic nature, and on the other hand requires a continuous maintenance process, the role of information technology is of strategic importance.

Technical and the socio-organizational concerns

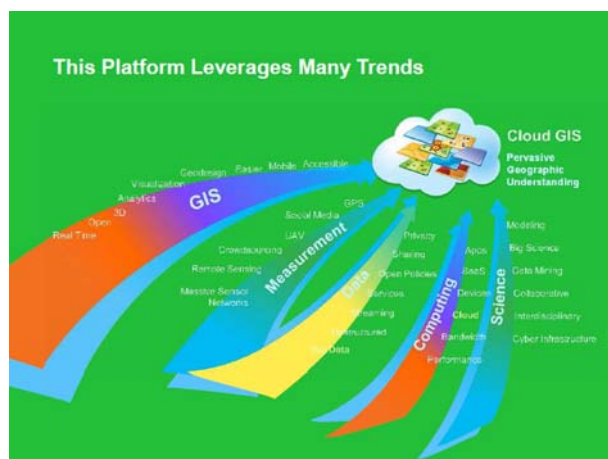
FIG Proposal

- **Bottom-up pilot projects** are expected to challenge formal systems, their constraints and inadequacies.
- **Action plan for pilot projects** to communicate the benefits to the local authorities & citizens; to investigate the appropriate tools & methods; to cooperate with the local authorities; to activate community leaders and citizens; to identify the type of information that should be collected for the various LASs; to do basic training.

Integration of community-based LASs into cadastral systems

- **Type of information:** land parcel centroid or parcel boundaries, building outline, building characteristics, floors, property rights, property rights holders' data, photos of the property, photos of supporting documents. Depending on the availability of other topographic information, other base mapping and socio-economic data should be collected as well. Pilot projects should build on the infrastructure and capacity of existing projects-if possible.
- **Next step:** investigate **how this will be done**; a **hybrid approach** is proposed.
- **land surveyors should undertake a minor but important role** in the pilot projects to increase capacity and provide guidance and training of trusted para-professionals, community leaders, citizens and land right holders.
- Compilation or completion/correction of **draft cadastral** maps (in countries that run implementation cadastral projects; in regions where cadastral maps are problematic or not updated; in regions where no cadastre or formal property rights exist- in such cases basic technical guidelines are needed; such guidelines should be provided by the authorities in cooperation with land surveyors)
- Publishing the results as a protection against errors and abuse
- Demonstration of feasibility of crowdsourcing to LA organizations and surveyors.

GIS is the platform for Land administration



- Land Administration is the process of determining, recording and disseminating of information about ownership, value and use of land when implementing land management policies.
- GIS is key to good land administration
- Platforms evolve
Rapid change of platforms
- Cloud creates a new environment

Cloud integrates all types of information providing web services to Everyone interested (gov, banks, citizens, professionals, etc)



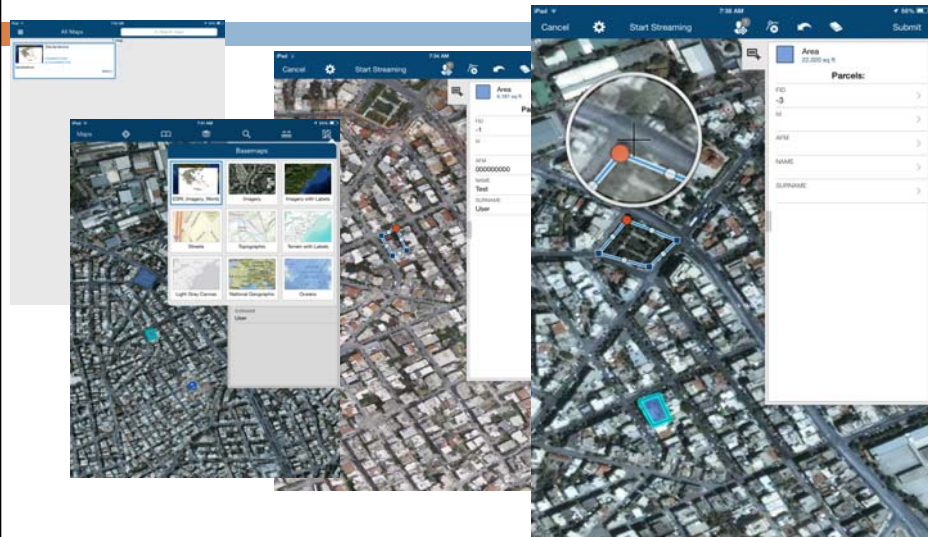
ESRI's ArcGIS online application: LADM in the cloud (available in IOS and Android)



Implementation requires a server-side and a client-side functionality

- NTUA testing for the Hellenic Cadastre project
- Use of orthophotos as basemap
- allows citizens/land owners to use their GPS enabled mobile phones to provide information about the location/boundaries of their property
- Either with on-site visit using mobile phone, or through the desktop/laptop

Selection of basemap, input of descriptive information, digitization of boundaries, refinement. The app allows attachments such as photos.



First results

- ❑ Some of the collected information may be available to the users and some of that may be kept private; this is very encouraging in terms of privacy considerations
- ❑ Achieved accuracy depends on the type of mobile phone used and on the existing network of antennas
- ❑ In the field one may work connected to internet or independently, which is preferable when there is no good internet connection
- ❑ Within the city areas, due to the dense network, accuracy is quite acceptable