THE ROLE OF SURVEYORS IN LAND ADMINISTRATION

Prof Chryssy Potsiou, FIG President
National Technical University of Athens
School of Rural and Surveying Engineering, Greece
chryssy.potsiou@gmail.com

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Preparing tomorrow's Surveyor today

A report of:

- FIG kick-off seminar in January 2015
- FIG side event at the World Bank conference in March 2015

It aims to:

- provide inspiration to surveyors to *address the global challenges* & *structure the way ahead*

A brief overview of the global trends in changing:

- *economies & markets*, environment, *societal needs* & *technology*

Proposal for:

- FIG vision & response to global challenges
- cooperation among FIG, regional associations & national associations

What is FIG

- Established in 1878 in Paris by 7 member associations
  Belgium, France, Germany, Italy, Spain, Switzerland & UK
- Federation of national associations
- The only international body representing all surveying disciplines
- Supports international collaboration among its members for the progress of surveying in all its fields & applications, everywhere

121 countries represented in 2015
more than 300,000 individuals

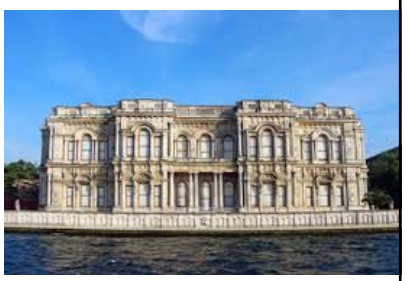
What FIG does

- Globally recognized leading NGO on "*geospatial information*" and the management of "*land, the sea and the built environment* "
- Supports international collaboration
  with *global organizations like the UN agencies and the World Bank* for a better understanding of the value of our profession as it *contributes to global development*
- Improves capacity building in order to
  - *better serve the public* &
  - *maintain the sustainability of the profession*

Ensuring the Rapid Response to Change Ensuring the Surveyor of Tomorrow

FIG always acknowledged "change" as a reality of our world:

- In 1938: *the role of the surveyor in the social order of today;* 60s: *modern technology;* 70s: the "*Space Age*"
- 90s: "*information society*" & "*globalization*"; in recent years: "*shaping the change*", "*facing the challenges, engaging the challenges*"
- 2015: we realize that we cannot manage the change, but *we can only manage the way we respond to change*: we need to *respond intelligently,* improve our efficiency & prepare the surveyor of tomorrow, as change happens too rapidly.



The difference today lies in the fact that "*timing*" is introduced as the crucial factor in our theme

Investigate the Change

Geospatial information is recognized as the tool to address issues like :

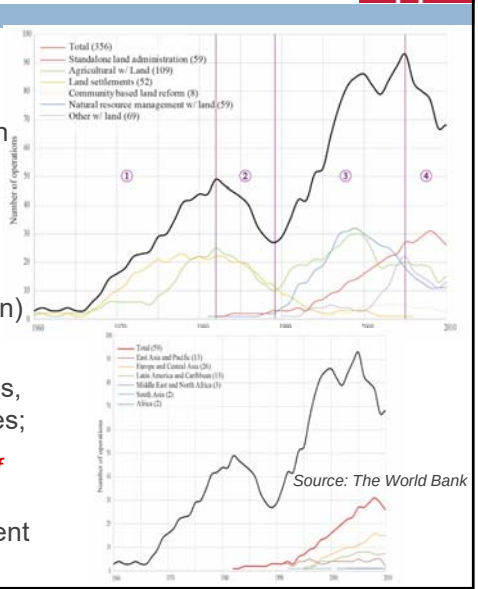
- population growth and the need for food and water security and poverty eradication;
- the rapid urbanization of the world's cities and the need to respond rapidly and intelligently in terms of housing, mobility, transport, city & building modeling, energy saving, water and waste management & governance in general;
- the tendency of development to cluster within the coastal zones & the need for rapid response to natural disasters and to manage the impact of climate change;
- the interconnectivity in all areas of our economies, cultures, governmental operations and private lives and the need for harmonization, compatibility and security of procedures.

Changing economies, markets & societal needs: security of tenure

- The empowerment of *private property rights* is the most fundamental element of a market economy, and therefore implementation of these rights is the key indicator of the transition process in the countries changing from centrally planned economies to market economies.
- The registration of property rights has, among other things, two main objectives, to
  - *provide secure ownership to land and real property*, and
  - *support the operations of the property market*

The World Bank land tenure projects

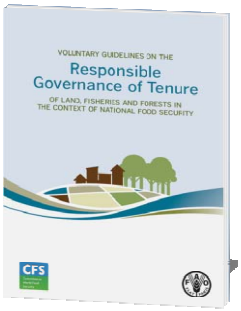
- WB has financed land tenure projects for more than half a century
- WB allocated more than US$3.1 billion to 92 standalone LA projects in 53 countries, plus 242 projects with land tenure components
- 90s: standalone LA projects in ECA, Latin America and EAP (US$ 2.2 billion)
- The ECA land reform (US$1.1 billion) was the greatest in history: 30countries, 900M people, 27.4km^2, 300Mproperties;
- land was given at "*low cost*" or "*free of charge*" with a remarkable progress in economic transformation & development



Source: The World Bank

The VG on The Responsible Governance of Tenure (VGGT)

- FAO gave *strategic priority to the security of tenure* in order to manage the reforms & especially those *for food security*
- In May 2012: endorsement of VGGT by the CFS; global support to proceed quickly with its implementation by all countries
- The implementation phase had two pillars:
  - Raising awareness through10 regional conferences
  - Organizing national focused workshops to investigate the policy relevance & to provide concrete proposals for change & harmonization; currently there are 43 LGAF monitoring studies in process.



Source: FAO

Changing economies, markets & societal needs

- *Urbanization* is a major change that takes place globally; it may be viewed as an *indicator of development*
- Concentration of the most dynamic economic activities in urban areas often produces economies of scale and leads to social and economic benefits
- It is also a matter of human rights that people are free to choose where they will live and work
- In the cities of the developing world urban population grows at a rate of 5 million new comers every month
- Limited capacity of the authorities to provide affordable urban land & affordable housing

Changing economies, markets & societal needs: housing property markets

- There is a growing global housing gap; it is roughly estimated that about 863 million people live in urban slums and informal settlements
- Many live in unplanned areas with disaster risks, in the periphery of many mega cities in seek of low-paid job opportunities thus supporting the economy and the competitiveness of those cities in the developing world.
- Management of such viable urban areas requires not only technical skill but also expertise in social, economic and environmental aspects.
- Land tools that are applicable in the developed world are not efficient in providing pragmatic solutions in these areas, as in most cases are *time and cost consuming*

Source: UN-HABITAT

Changing economies, markets & societal needs: housing property markets

- Lack of affordable housing is a *global issue*; it is a reality also in the *developed world*.
- It causes *shrinkage of labor force* thus threatening the competitiveness of some of the world's *most developed cities*
- Business choose not to locate in areas where there is no affordable housing for their workers
- Those who can afford to live in these areas feel uncomfortably knowing that those they rely upon are living two towns away
- Public administrators have concerns about *losing the entire middle class*;
- Many of the social ills that generate costs for jails, courts, police and family services arise in the absence of quality affordable housing

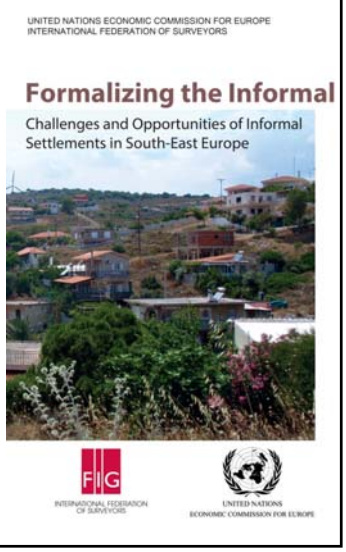
Source: Joint Center for Housing Studies of Harvard University

Changing economies, markets & societal needs: the role of private sector

- A country's housing policy is connected to
  - its basic infrastructure development policy (provision of land & utility services)
  - its general land policy (land administration, land use regulation, spatial planning & construction permitting system, property valuation & taxation).
- There is a continuously growing need for increased *public funds*. *Almost every country of the world will never have enough public funds to efficiently address the adequate housing issue for all, without the private sector participation*
- The economic process requires changes in the role of the state from being a *provider* of growth to becoming an *enabler* of growth

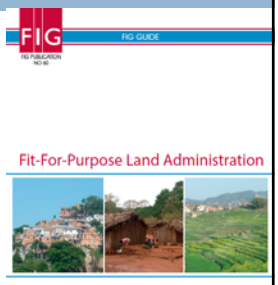
Changing economies, markets & societal needs: the role of the Surveyors

- Many live in informal settlements. Housing is important not only as a shelter; it may be a tool to create wealth when used as *collateral*
- *Clearly defined properties*, property *rights* and *responsibilities*, as well as *access to financing mechanisms*, opens doors to private foreign investment and has a direct effect on *lending practices* and *national economies*
- Unclear property rights, complex land use regulations, a lack of policies to support involvement of private sector, have in many economies in transition *caused uncertainty*, an impediment to foreign investment, *social unrest* and "*economic exclusion*"



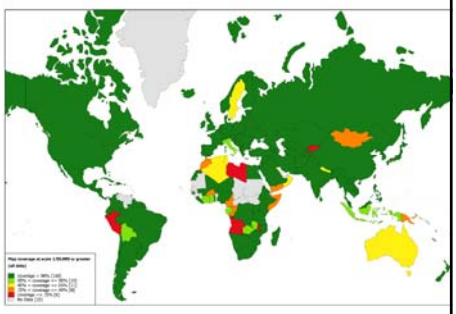
Changing economies, markets & societal needs: the role of the Surveyors

- Since its earliest introduction it has been acknowledged that *the real value of cadastre for a national economy will be realized upon its completion*
- It is similarly recognized that the real value of a *global cadastre* for the global economy will be realized when it is finished.
- Since most developing countries have less than 30 % cadastral coverage, governments are now seeking innovative, fit-for-purpose ways to encourage universal parcel recordation for the remaining population as quickly as possible



Changing Technology

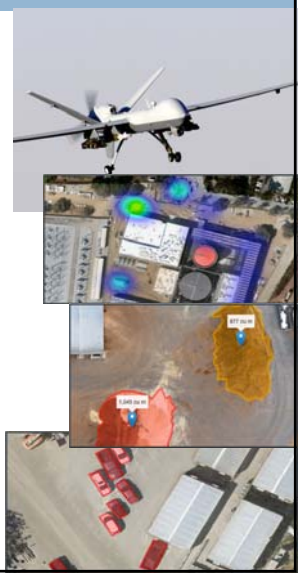
- The rapid improvement in information technology was dramatically enhanced by digital electronics in every segment of the world's economy allowing for *big data management and distribution*.
- Until 1986, the average age of existing maps varied from 20 to 50 years depending on the scale. Only 33.5% of the world was mapped at a scale of 1:25,000 and only about 65.6% at a scale of 1:50,000.
- Statistics of 2012 show that globally the availability of mapping at 1:50,000 is high
- *There is a remaining global need for large scale mapping*



(source: Konecny, 2015)

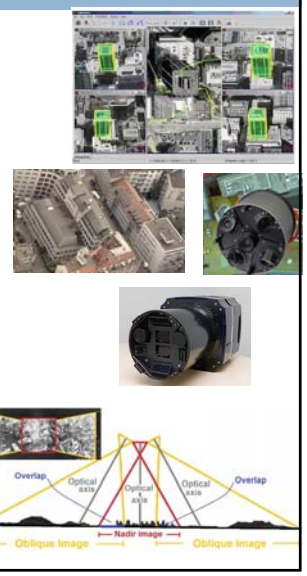
Changing Technology

- The current rise of *UAVs* with cameras (and laser scanners) to capture images that can be processed into point clouds or orthoimages, accompanied by *advanced software to process the images and render them into 3D scenes and accurate point clouds* is revolutionary
- *Developments in point cloud processing are also moving quickly*
- High resolution orthophotos and 2D site maps, at multiple zoom levels, 3D maps that can be navigated online; 2D and 3D measurements; change detection over time using heatmaps and automatic feature extraction are some of their products.



Changing Technology

- technical developments also include *airborne Lidar*
- advanced *aerial multi-camera systems* able to capture oblique and nadir imagery at the same time, that allow a full and high resolution view of both building footprints and facades which is a great benefit when creating 3D city models
- *dense image matching* that allows point densities similar to the ground sampling distance of the imagery from which they are derived
- *modernization of software* to be more 'app-like', 'all-in-one' smart solutions, that make the entire process 'from sensor to information' as simple as possible
- *Interconnectivity* (total stations, GNSS, mobile devices, etc) *is the modern trend*



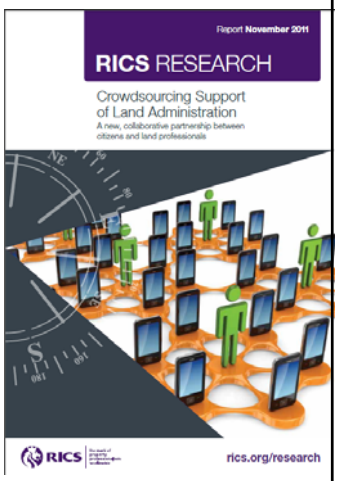
changing culture

- Interconnectivity creates new *security concerns*, but it offers huge benefits, as well. Not only are we able to generate, process, store and communicate information within our profession and with allied professions, but we are applying the innovative process of *crowdsourcing* in compiling data sets.
- There is a tendency towards more open data

  while this brings possible risks, such as terrorist threats, the potential advantages outweigh the disadvantages
- There is a need countries to *develop national information strategies*

Changing culture: the role of the Surveyor

- There is a *changing culture for authoritative spatial information published on the web*, a culture that changes the *administrative concept*
- The question is *how much* change can governments *afford*?
- There is a need for increasing capacity building in assessing the value of data derived through crowd sourcing
- Authoritative data can be provided and assured by government agencies but also by crowdsourcing but always *with the engagement of surveyors*



Technology in city management

- To serve the rising population, technology is transforming *regular cities* into *smart cities*
- Cities will be connected and will interact with people freely, give people the opportunity to manage basic amenities in the most efficient, eco-friendly, and safe manner , *able to respond quickly to new challenges*
- *A smart city is a developed urban area that creates sustainable economic development and high quality of life by excelling in multiple key areas: economy, mobility, environment, people, living, and government*

Surveyors in city management

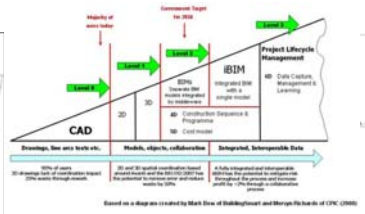
- professionals in geoinformatics are expected to develop expertise and capacity building in reliable and reusable information provision (acquisition, processing, analysis, management, communication, visualization and animation), by developing a series of applications for parking, traffic update, smart lighting, waste management, water monitoring, energy management, as well.

- DSMs
- GIS
- UAV apps
- mobile mapping services
- 3d/4d city models
- smart “apps”

- Building Information Modeling (BIM)
- measurement standards
- installation of sensors in smart buildings
- the Internet of Things
- using sensors in web 2.0
- mobile social sensing
- …

Surveyors in city management

- With a global construction volume which is expected to be US$12 trillion by 2020, BIM is the tool to serve and enhance activities such as cost planning and budgetary estimates of projects, Value Management, Risk Management and calculation, Bid Documentation, Commercial Management and Contract Administration, Dispute Resolution, and so on.
- It enhances team collaboration and understanding among various professionals as well as better information management, reduction of errors and time requirements
- *Combining BIM with Land Administration*



Our response

- It becomes obvious that in the urbanization and globalization era, a *globalization of science* also takes place
- as *competition* may increase surveyors should maintain in-depth technical research, high technical education & they should be prepared to cope with large amount of spatial information
- Through cooperation with other professionals surveyors will increase their skills in providing *solution functionality*, *reliably, affordably* (fit-for-purpose processes) for a complex and rapidly changing world - a *dynamic* world that *cannot wait*.
- The relation between *quality and cost* has been significantly improved by new technologies; we need to investigate and be aware of the *achievements* but also of the *remaining challenges* of new technologies and encourage further improvements

Our Vision

- It is urgent that the surveying profession will *think ahead*, predict future changes, *foresee the requirements of the next generation of the public* and *structure the way ahead*
- It is the purpose of FIG to create "*global*" surveyors capable to contribute to an ambitious *post-2015 global sustainable development agenda*
- During the 2015-2018 time period FIG, its council and commissions, hand in hand with its member associations, academic members, YSs, affiliate and corporate members will strive to achieve the FIG Vision to contribute to the post 2015 global sustainable development agenda
- The council will work closely with the FIG family to **agree upon the deliverables** and upon *key performance indicators* for monitoring our performance

Thank You