# FIG'2018 IN ISTANBUL

# **Orhan Ercan**

PhD, The Turkish Chamber of Survey and Cadastre Engineers, Ankara, Turkey.

# ABSTRACT

The Turkish Chamber of Survey and Cadastre Engineers (CSCE) is proudly honored to host the XXVI FIG International Congress & General Assembly in Istanbul, Turkey, which will be held between 06 and 11 May 2018. The CSCE has been an active member of the FIG since 1969. The CSCE will now host the 2018 FIG Congress & General Assembly in order to provide a platform where scientists, experts, researchers, public and private sector representatives active in the field of surveying will come together and share their professional experiences, thoughts, recently implemented projects, applied methods and to-date technologies. For raising a globe-wide awareness, disseminating information and promoting modern developments, the event will comprise organization of technical excursions and leisure trips for diversification purposes, as well. We strongly believe that Istanbul will provide a world class venue for the delegates to undergo a cultural, technical, professional and personal experience with a balanced activities program that will ensure the FIG2018 Congress & General Assembly be a very successful event. Within the scope of FIG2018; along with keynote speakers, oral presentations, private workshops and a special "Young Surveyors" session will be held with participation of FIG members. Also an exhibition by the public and private sector institutions will be open for all participants throughout the Congress.

**Biography** – Ph.D., He was from 1984-2007, a senior engineer at the General Directorate of Land Registry and Cadastre in Turkey. He executed some of the World Bank's Project, and worked as executive staff at Turkish NSDI, CORS, TAKBIS Projects. Since 2007, he was involved in private sector as company manager and freelancer both in Turkey and Libya. From 2001 to 2010 he was the part-time lecturer at university. He was the member of scientific commission C of OEEPE in 1993-94 and member of FIG working group 5.4.3 in 1995. He is an active member of FIG Commission 7 and Congress Director of FIG2018. Since 2012 he is the chair of International Affairs Commission of Turkish Chamber of Survey and Cadastre Engineers.













#### Proceedings of the World Cadastre Summit 2015, Istanbul









# SMART FUTURE CITIES-THE ROLE OF 3D LAND AND PROPERTY AND CADASTRE INFORMATION.

## Abbas Rajabifard

Professor, FIEAust, FSSSI

Head, Department of Infrastructure Engineering University of Melbourne, Australia

## ABSTRACT

There is now significant worldwide interest and momentum in utilising 3D digital technologies to develop systems better equipped for managing the complexity of urban environments, leveraging the volumes of information being generated by cities, and engaging communities of interest to realise smart future cities. This presents challenges and opportunities for many of the statutory systems that currently administer accurate core land administration data (development, use, value and tenure). How does the cadastre deal with an urban environment that is increasingly populated and structurally complex? In our drive towards a knowledge-based era, cadastres can play a special role in generating new connections between wider society, across state boundaries, and in supporting the delivery of other national visions, digital economy, foundation datasets and smart cities. The realisation of 3D cadastres, and indeed, to realise cadastres that will be sustainable into the future, requires the consideration of how the needs of current users should be balanced against the potential needs of future users. We need to accommodate the needs and opportunities of future cities and consider what must be done to ensure institutional sustainability. This presentation will discuss the drivers, challenges and opportunities for the geospatial and cadastre industries and relevant professions in evolving cadastres to support smart future cities. It will also discuss roadblocks and potential future directions and actions required from government, industry and academia to achieve smarter cities using 3D cadastres identified at a recent international symposium on future cities and 3D cadastre. This symposium was conducted by the Centre for SDIs and Land Administration at the University of Melbourne in February 2015, which aimed to provide an opportunity for the exchange of knowledge, ideas, experience and practices around this highly topical issue. This presentation is also based on the research by the author, his team and a range of industry partners titled 'Land and Property Information in 3D'.

**Biography** – Head of Department of Infrastructure Engineering at The University of Melbourne. He is also Director of the Centre for Spatial Data Infrastructures & Land Administration. He was President of the GSDI Association; Vice Chair of Working Group 3 of the United Nations supported Permanent Committee on GIS Infrastructure for Asia and the Pacific, is a member of ICA-Spatial Data Standard Commission, and is a member of Victorian Spatial Council. He has active research in the areas of SDI, Land Administration and land management, spatial enabled government and societies, smart cities, 3D platforms and virtual jurisdictions. He had published broadly on SDI, land administration, GIS and spatial data management.

#### Proceedings of the World Cadastre Summit 2015, Istanbul



**KEY DRIVERS** 

Needs and opportunities in the context of **future cities**; 3D land and property info to support future planning and management of urban environment (e.g.

Future users vs current users, including wider array of stakeholders;

Making sense of smart data, smart utilities, 4D data.

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Increasing urban complexity;

leveraging BIM, PIM);

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#### MY KEY MASSAGES ARE

- 3D cadastre offers new engagement opportunities and is <u>fundamental</u> for the future.
- Future cadastre needs to take into account the expectations of all stakeholders.
- Future cadastre requires the consideration of how the needs of current users should be balanced against the needs of future users.

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# CADASTRE IN A CHANGING WORLD: A UN-GGIM PERSPECTIVE

### Vanessa Lawrence

# PhD, Co-Chair of United Nations Committee of Experts of Global Geospatial Information Management Initiative, UK

## ABSTRACT

The Economic and Social Council of the UN (ECOSOC) established the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) in 2011. It was established to play a leading role in setting the agenda for the development of global geospatial information and to promote its use to address key global challenges. Its aim is to provide a forum to liaise and co-ordinate geospatial information activities among UN Member States, and between UN Member States and international organisations. The mission of UN-GGIM is "The primary purpose is to give leadership to governments and other institutions concerning the creation of accurate, reliable geographical information and, in turn, using that geographical information to solve local, regional, national and global problems and be able to measure and monitor the changing world. Geographical information is at the heart of the infrastructure of a country. 'Authoritative, accurate, reliable geography can be used in every-day decisions in every country; whether it be to underpin construction, monitor sustainable development, assist resource planning or facilitate transport management. Everything revolves around that question: "where?" You cannot measure and monitor anything in this world unless you understand the "where" aspect.

Biography – Dr Vanessa Lawrence CB, HonFREng, FRGS, FRSGS, FRICS, FCInstCES, CCMI, CGeog is the former Director General and Chief Executive of Ordnance Survey and the former Secretary General of Ordnance Survey International Ltd; she was in post for 14 years and is the longest serving Director General of Ordnance Survey since 1875. Today, Vanessa is working internationally as an advisor, speaker, chair and special contributor to a number of significant bodies including as the co-Chair of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM). In addition, Vanessa is the Honorary Colonel of 135 Squadron Royal Engineers, whose role is to provide geospatial support to the UK military; as well as being a Visiting Professor at the University of Southampton and at Kingston University. Vanessa has been elected an Honorary Fellow of the Royal Academy of Engineering and is one of the few recipients of the Scottish Geographical Medal, a prestigious award conferred only occasionally since 1890 by the Royal Scottish Geographical Society. In addition, she has eight Honorary Doctorate degrees and is an Honorary Fellow of University College London. She was named South-East Director of the Year in 2008 by the Institute of Directors and in January 2011, Vanessa was awarded the Global GeoSpatial Personality of the Decade 2000–2010. In January 2008, Vanessa was appointed as a Companion of The Most Honourable Order of the Bath (CB) in the Oueen's New Year Honours List.











#### Land Administration: the current scenario

- 75 percent of the world's population do not have access to formal systems to register and safeguard their land rights.
- The approach used for building land administration systems in less developed countries must move to being flexible and focused on citizens' needs including providing security of tenure and control of land use, rather than focusing on top-end technical solutions and high accuracy surveys.
- Foreign investors through large scale land acquisitions have attained more than 30 million hectares of land in largely poor and middle-income countries since 2000.





















#### The future we want: 19 June 2012

🔊 UN-GGIM |

187. We recognize the importance of early warning systems as part of effective disaster risk reduction at all levels in order to reduce economic and social damages including the loss of human life, and in this regard encourage States to integrate such systems into their national disaster risk reduction strategies and plans. We encourage donors and the international community to enhance international cooperation in support of disaster risk reduction strategies and plans. We encourage sistance, technology transfer as mutually agreed, capacity building and training programmes. We further recognize the importance of comprehensive hazard and risk assessments, and knowledge and information sharing, including reliable geospatial information. We commit to undertake and strengthen in a timely manner risk assessment and disaster risk reduction struments.

274. We recognize the importance of space-technology-based data, in situ monitoring, and reliable geospatial information for sustainable development policy-making, programming and project operations. In this context, we note the relevance of global mapping and recognize the efforts in developing global environmental observing systems, including by the Eye on Earth network and through the Global Earth Observation System of Systems. We recognize the need to support developing countries in their efforts to collect environmental data.



UN-GGIM

How can you evaluate, measure and monitor sustainable development... ...without location and geography? 3 UN-GGIM | 🖫



















































#### **UN-GGIM: Africa**

The Inception meeting for UN-GGIM Africa was held in Tunis, Tunisia from 10^h - 12^h December 2015.

The purpose of the meeting was to endorse a regional body to coordinate UN-GGIM activities in Africa and to strengthen the needs and interests of Africa within international mechanisms.

The meeting was attended by over 30 participants from 18 African Member States and international organisations.

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Legal and Policy Frameworks

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	UN-GGIM issue	Number of standards			
		ISO	OGC	IHC	
(a)	Developing a national, regional and global strategic framework for geospatial information	6	5	1	
(b)	Establishing institutional arrangements and legal and common 5 2 frameworks				
(c)	Building capability and capacity, especially in developing countries	5	2	2	
(d)	Assuring the quality of geospatial information 7 0				
(e)	Promoting data sharing, accessibility and dissemination	63	24	15	
f)	Embracing trends in information technology 20				
(g)	Promoting geospatial advocacy and awareness - 4				
h)	Working in partnership with civil society and the private sector				
(i)	Linking geospatial information to statistics	7	6	-	

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http://wcadastre.org

















# Five broad themes identified Trends in technology and the future direction of data creation, maintenance and management; Legal and policy developments; Skills requirements and training mechanisms; The role of the private sector and non-governmental sectors; and The future role of governments in data provision and management.

UN-GGIM





# Fifth Session of the Committee and the final before the ECOSOC 2016 decision Date: 5<sup>th</sup> – 7<sup>th</sup> August 2015; side events from 3<sup>rd</sup> August 2015 Location: United Nations Headquarters, New York More information: http://ggim.un.org/ggim\_committee.html



# **CADASTRAL DIMENSIONS – CROSSING BOUNDARIES**

# **Daniel Steudler**

PhD, Swiss Federal Directorate of Cadastral Surveying, Switzerland

# ABSTRACT

Over the last twenty years, the developments in the cadastral field include issues such as the introduction of the digital format and the use of data modelling technology. The last decade also brought new and more efficient data acquisition methods, and more efficient and meaningful geoinformation technology. The question, however, remains if our cadastral systems do respond to the real needs of our societies. And in what ways can they be improved?

**Biography** – Dr. Steudler has a degree from the Swiss Federal Institute of Technology (ETH) in Zurich, the University of New Brunswick, Canada and from the University of Melbourne. Since 1991, he is working for the 'Swiss Federal Directorate of Cadastral Surveying'. He was member in several working groups and committees for geospatial information. He was participant at the UN-FIG-Workshop on 'Land Tenure and Cadastral Infrastructures for Sustainable Development' in Bathurst. Since 1994, he is involved in activities of FIG-Commission 7, such as "Cadastre 2014", "Reforming the Cadastre", "Spatially Enabled Society", and "Cadastral Template – A Worldwide Comparison of Cadastral Systems". Since March 2015, he is chair of the EuroGeographics "Cadastre + Land Registry" Knowledge Exchange Network.

























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0 17 Public-Law Restriction in Swiss Cadastre



The World Cadadre Simit 20-24 April 2015, 8tanbul, Turkey

#### Considerations O Background Think Tank active since 2012; · seemingly these are technicalities aim is to identify the current trends in the deoinformation field and to develop a → but with strong conceptual implications strategy for the cadastre; $\rightarrow$ we as professionals need to be able to handle those Swiss cadastral system is well advanced: digital, well conceptualized, technicalities in order to be able to provide the appropriate services and expertise close to full coverage, legally · all partnering stakeholders would have to respect those basic comprehensive; principles and maintain and update their data sets accordingly issues in Switzerland are mainly organizational (federalist environment) · setting-up of an SDI is less of a technical problem, it is much more about inter-governmental communication (to overcome and structural: a first result of the Think Tank is a stakeholder's silo-type of thinking and the fear of loosing control over its own data and information) Discussion Paper published in May 2014 → identify trends and developments → open eyes and minds of professionals Daniel S The World Cadadre Simmit 20-24 April 2015, Bitanbul, Turkey



The legitimate

often prevails over the legal

BEYOND LIMITS

















# WHY AND WHAT TO STANDARDIZE IN LAND ADMINISTRATION?

# Peter van Oosterom

Professor, Head of GIS Technology, TU Delft, The Netherlands

## ABSTRACT

After more than a decade of development, within first FIG and next ISO TC211, the land administration domain model (LADM) was accepted in 2012 as an international standard ISO 19152. Why should a country consider standardizing its land administration, and which aspects should be standardized as the scope ranges from parties (persons), rights, restrictions and responsibilities (RRRs), spatial units (parcels) and their representations to all kinds of source documents? Changing, a part of, the land administration system (land registry, cadastre) will for sure involve costs, so what are the benefits that would justify these?

**Biography** – He is a full professor and head of the section GIS Technology at TU Delft since 2000. From 1995 to 1999 he was senior information manager within the Dutch Cadastre. Since October 2005 he is member of the INSPIRE drafting team Data Specification and Harmonization. He was member of the INSPIRE thematic working group on cadastral parcels. He is co-editor of ISO 19152 LADM, member of the editorial boards of several journals and member of the program committees of the major GIS conferences. He is the chair of the FIG joint working group '3D Cadastre' of commissions 3 (Spatial Information Management) and 7 (Cadastre and Land Management). He is the (co) author of more than 100 publications.































	Some Turkish LADM influence!					
	<ul> <li>In 2007 two PhD students from Karadeniz Technical University, visiting TU Delft, Fatih Döner and Hall İbrahim İnan, converted the first CCDM document in the ISO template (not as trivial as it sounds)</li> <li>Current LPIS annex Annex H'The LADM and LPIS' (for agricultural parcels) was based on joint work with Hall Ibrahim Inan and EC/IRC Ispra, Italy</li> </ul>					
	Journal of Environmental Management 91 (2010) 2440–2454					
	Conterts late seniable at ScienceCreet Journal of Environmental Management ELSIVIER journal humagage, www.alteviar.com/locata/jervman					
	Data model for the collaboration between land administration systems and agricultural land parcel identification systems					
	Halil Ibrahim Inan **, Valentina Sagris ", Wim Devos", Pavel Milenov *, Peter van Oosterom*, jaap Zevenbergen * *Gaadee Schaul (Inanie), Roby diegevring degewren d'Gewens (Edd., 608, 168, 168, 169, 169, 169, 169, 169, 169, 169, 169					
	Jerge veneration of extension of the results o					
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Resulting technical data SQL DDL and DML	abase model:
<pre>CREATE TABLE MY_POINT ( pid varchar2(00 primary key, sid varchar2(00 primary key, survey_point mdsys.sdo.geometry, transformation varchar2(20) RETEXES 1_apoint map_point mdsys.sdo.geometry, type varchar2(3) RETEXENTS 1_apointtype(cid), begin date_time timestamp);</pre>	SQL DDL
INSERT INTO MY_POINT VALUES ( 'NL', '04-2231', MODYS, 500_GEOMETRY (2001,24571,MOSYS, 500_POINT_TYPE 'NUL', MODYS, 500_GEOMETRY (2001,24571,MOSYS, 500_POINT_TYPE 'POIL', '01-JAN-44 08:10:04.20', ');	(23664.166398,12426.942536,WULL),WULL,WULL), (23764.739732,12526.967747,WULL),WULL,WULL), SQL DML
<b>Ť</b> UDelft	L/DM 51



Conformance testing packages, levels $(1/2)$					
p ackag e	LADM class		Dep en d en cies		
-	VersionedObject	1			
	LA_Source	1	Oid, (as a minimum one of the specializations must be implemented [LA_AdministrativeSource or LA_SpatialSource]), LA_AvailabilityStatusTy pe		
Spatial Unit					
	LA_SpatialUnit	1	VersionedObject, Oid,		
	LA_SpatialUnitGroup	2	VersionedObject, Oid, LA_SpatialUnit		
	LA_LegalSpaceBuildingUni t	3	LA_SpatialUnit		
	LA_LegalSpaceUtilityNetwork	3	LA_SpatialUnit		
	LA_Level	2	VersionedObject, Oid		
	LA_RequiredRelatio nship Spa tial Unit	3	VersionededObject, LA_SpatialUnit		
Surveying					
	LA_Point	2	VersionededObject, Oid, LA_SpatialSource, LA_PointType, LA_InterpolationTy pe		
	LA_SpatialSource	2	LA_Source, LA_Point, LA_Party, LA_SpatialSourceType		
	LA_BoundaryFaceString	2	VersionedObject, Oid, LA_Point (if using geometry)		
	LA_BoundaryFace	3	VersionedObject, Oid, LA_Point (if using geometry)		

Conformance testing packages, levels (2/2)				
p ackag e	LADM class		Dependencies	
Party			Exist only if Administrative Package is implemented	
	LA_Party	1	VersionedObject, Oid, LA_PartyType	
	LA_GroupParty	2	Oid, LA_Party, LA_GroupPartyType	
	LA_PartyMember	2	VersionedObject, LA_Party, LA_GroupParty	
Admin			Exist only if Party Package is implemented	
	LA_RRR	1	VersionedObject, Oid, LA_Party, LA_BAUnit, LA_Right (as a minimum, this specialization shall be implemented), LA_AdministrativeSource	
	LA_Right	1	LA_RRR, LA_RightType	
	LA_Restriction	2	LA_RRR, LA_RestrictionType	
	LA_Responsibility	3	LA_RRR, LA_ResponsibilityType	
	LA_BAUnit	1	VersionedObject, Oid, LA_RRR, LA_BAUnitType	
	LA_Mortgage	2	LA_Restriction	
	LA_AdministrativeSource	1	LA_Source, LA_Party, LA_AdministrativeSourceType, LA_AvailabilityStatusType	
	LA_RequiredRelatio nship B AU nit	3	VersionedObject, LA_BAUnit	
	LA_BoundaryFace	3	VersionedObject, Oid, LA_Point (if using geometry)	













