

FIG WORKING WEEK 2019

22-26 April, Hanoi, Vietnam

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April 22-26, 2019 in Hanoi, Vietnam

"Geospatial Information for a Smarter Life
and Environmental Resilience"



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Analysis of the Third FIG 3D Cadastrals Questionnaire:

Status in 2018 and Expectations for 2022

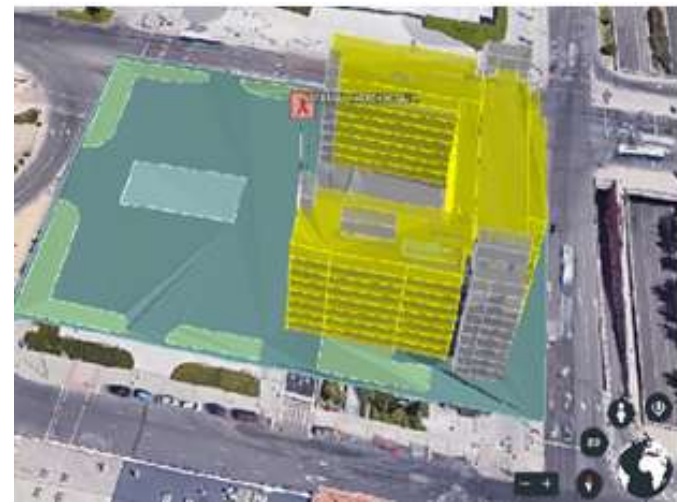
14-5-2019

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Outline

- ❖ Introduction
- ❖ Questionnaire Layout
- ❖ Survey Highlights
- ❖ 2022 Perspective
- ❖ Concluding Remarks



Cadastrales



Introduction

❖ 3rd Questionnaire

❖ Number of Participants

Year/Number	2010	2014	2018
	36	33	33



❖ New Participants – 2018

- *Australia, New South Wales*
- *Scotland*
- *New Zealand*



❖ 23 Participants in **all** Questionnaires* (2010/2014/2018)

- *Argentina, Australia/Queensland, Australia/Victoria, Canada/Quebec, China, Cyprus, Finland, Germany, Greece, Hungary, India, Israel, Kenya, Malaysia, The Netherlands, Nigeria, Poland, South Korea, Spain, Sweden, Switzerland, Trinidad and Tobago and Turkey*

*including late submissions

2018-2022 Questionnaire Layout Modifications

❖ 13 Thematic Blocks

❖ **New Questions**

- **24 New Questions**
- **Marine Cadastre**
- **Common Property Management**
- **Temporal Features**
- Registration and the recording of designated **3D storages**
- **Legal and Organizational Aspects**
- **Changes in the way the 3D data is being stored & represented**
- **Database issues**

4. X/Y Coordinates

	Status 2018	Expectations 2022
4.1. Do the plans of survey guarantee X/Y coordinates? (and are they relative or in an absolute spatial reference system?)	}	
4.2. Are the cadastral database coordinates authoritative?		
4.3. If not, what is the authoritative source of X/Y coordinates?		existing
4.4. Do you have parcels defined by the walls of a building (with no recorded geometry)?		
4.5. What is the spatial reference system for X/Y Coordinates?		
4.6. <i>When owners receive or purchase a copy of the plan what can they see on the plan to help them identify their parcel/lot (e.g. bearings and distance, identifying corners or recovery marks, neighbouring lots, coordinates etc.)?</i>	}	new
4.7. <i>Have there been any changes made in the way cadastral information is recorded and represented from a historical point of view?</i>		
4.8. Any other X/Y coordinate issues?		

http://www.gdmc.nl/3DCadastres/participants/3D_Cadastres_questionnaire2018.pdf

Highlights



❖ Main cadastral objects for registration

- *apartments*
- *tunnels*
- *bridges*

❖ New Trends

- *airspace*
- *underground spaces*
- *utilities*
- *marine parcels*

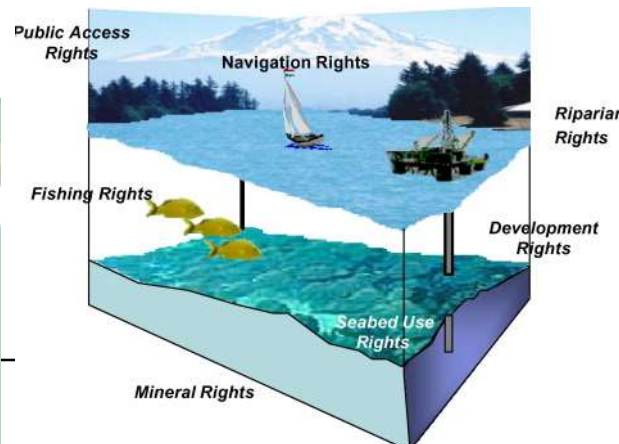
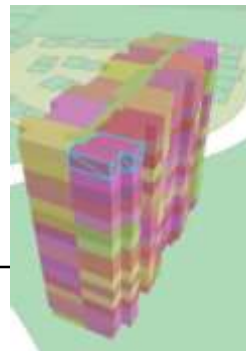


Airspace sold

STATE cabinet has approved the sale of airspace over the South Bank rail corridor, which will allow planned offices to extend over the rail lines.

Premier Peter Beattie and Transport Minister Steve Bredhauer said the sale fuelled a new era in Brisbane city development.

"Mirvac and South Bank Corporation approached the Government proposing to buy this airspace because Mirvac wants extra floor space for offices it plans to build on an adjacent lot," Mr Beattie said.



Highlights *cont.*

❖ Some Observations

- *3D parcels bound by 2D parcels – tendency toward "YES"*
- *Disconnected 3D parcels allowed – main apartment unit and an accessory unit*
- *Connection between legal spaces and their physical counterparts*
- *Relevant legislation*
- *Marine cadastre – mainly in 2D*
- *Networks – in most cases **not** part of the land administration*
- *Datum and units changes*
- *Height – usually **not** shown in cadastral plans*
- *Time dimension – temporal titles (leases, easements)*
- *DCDB – further investigation is required*
- *3D cadastre for other purposes – city models*



Croatia

PREGLED KATASTARSKOG OPERATA | PREGLED ČESTICA | PREGLED STATUSA PREDMETA | PREGLED STATUSA DRUGOSTUPANJSKOG PREDMETA

Informacije o čestici | Ispis

Prejepis PL / Izvadak iz BZP
Izvod iz katastarskog plana
Izvadak iz ZK / Izvadak iz BZP

Sadržaj
Pretraga
Katastarski ureč*: GRAD ZAGREB
Katastarska općina*: CENTAR, 335240
Broj kat. čestice*: 1/1
Traži | Prikaži k.o.

Parcel description

REPUBLIKA HRVATSKA
Općinski građevinski načrt u Zagrebu:
ZEMLJOPISNO-KATASTARSKI PLAN ZAGREB
Izvod na dan: 03.02.2019. 21:41
Katastarska općina: 335240, CENTAR
Broj zemljišnog dijela: Z-01445/2017
Oznaka zemljišta

NETSLUŽBENA KOPIJA
ETAŽNO VLASNIŠTVO I ODRŽAVNI ODRŽAVNI
IZVADAK IZ ZEMLJIŠNE KNJIGE
A
Prijedlogovnik
PRVI ODRŽAVLJAK

Rbr.	Broj zemljišta (kat. čestice)	Oznaka zemljišta	Površina			Primjedba
			jutro	čhv	m2	
1.	1/1	KUĆA BR. 156 I ZGR., ZAGREB, PANTOVČAK 156 POVRŠINE 136 M2 I DVORIŠTE POVRŠINE 56 M2			192	Pripis iz uložka 21590
		UKUPNO:			192	

II
Vlasništvo
Sadržaj upisa | Prijedlogovnik

Rbr.	Sadržaj upisa	Primjedba
1.	Suvlasnički dio: 2134/10000 ETAŽNO VLASNIŠTVO (E-1) stan br. 1 (oznaka S1) u podrumu površine 70,70 m ²	
	ULICA DRAGUTINA DOMJANIĆA 28, 10000 ZAGREB	

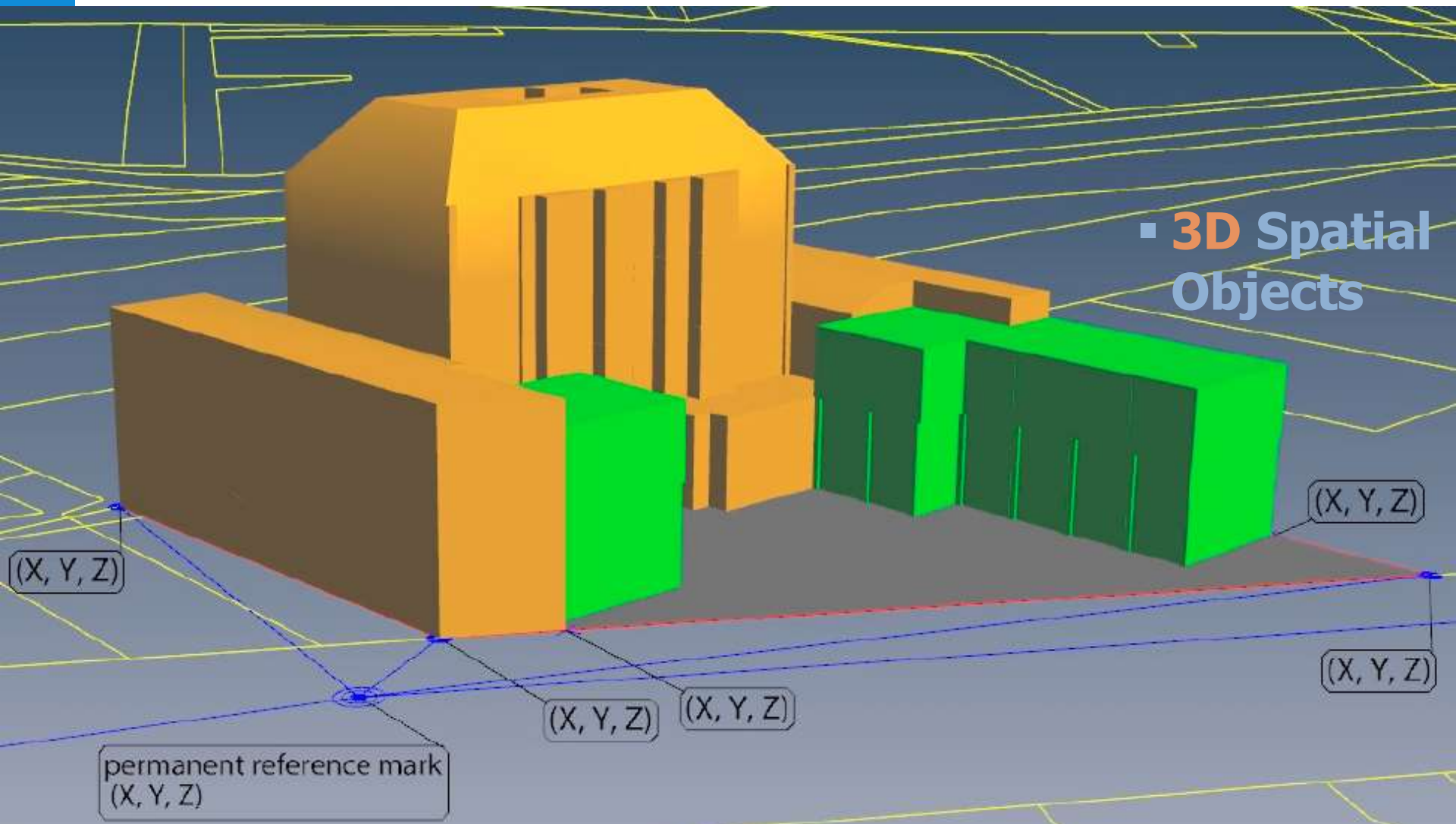
Spatial Info

Legal Info

*1. share 2134/10000, separate part (E-1)
Apartment 1 (name S1, in the basement, area 70.70 m² ...*

Highlights - New Zealand 3D Cadastre Prototype (ASaTS)

- 3D Parcels as Spatial Objects Approach

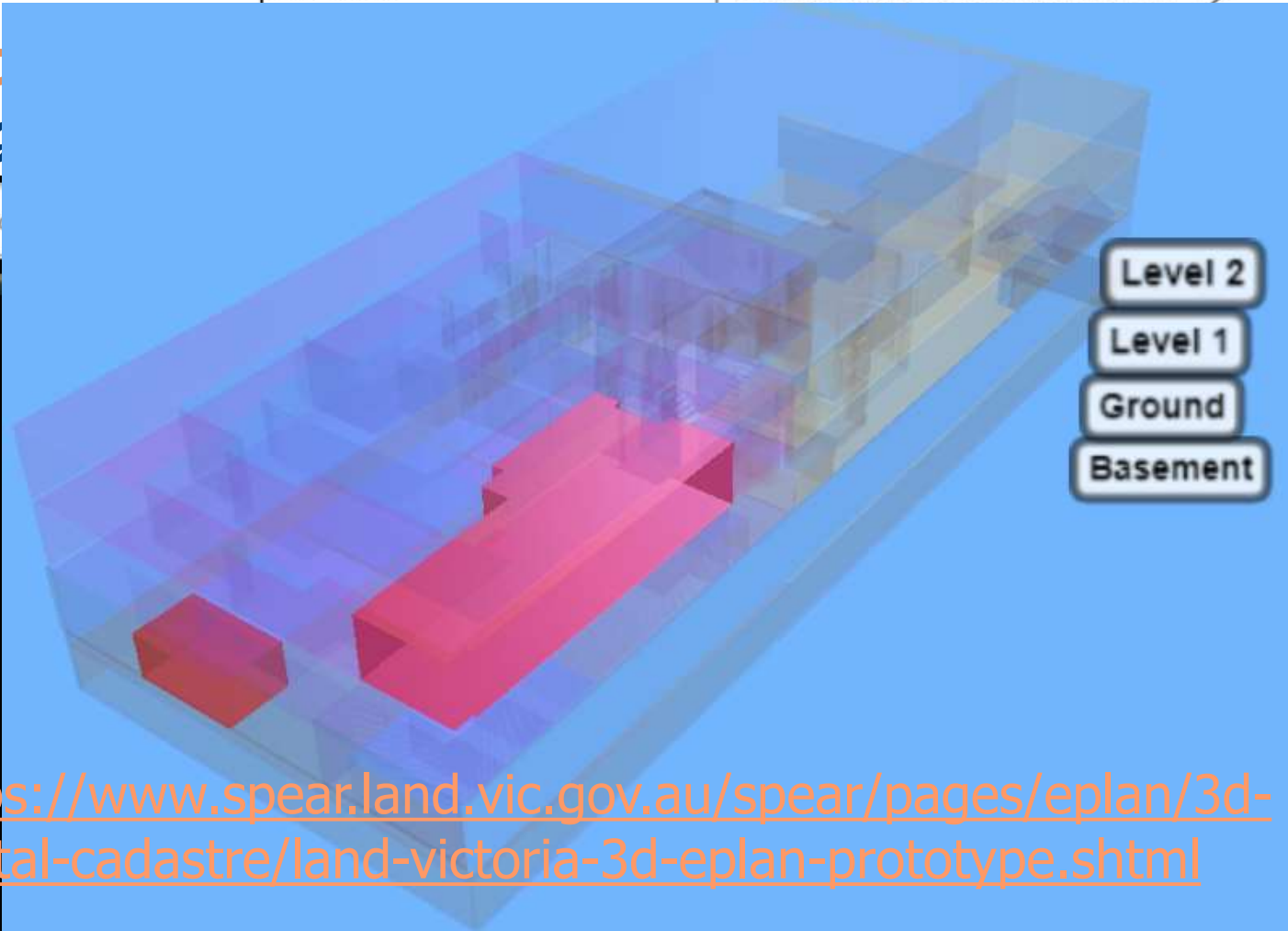


Highlights

Australia Victo

❖ 3D Digital
▪ ePlan – dig

	PLAN OF SUBDIVISION	STAGE NO. /	LRS use only EDITION 1	Plan Number PS 704971 N
	Location of Land Parish: PRAHRAN	Council Certification Council Name: CITY OF PORT PHILLIP Ref:		



<https://www.spear.land.vic.gov.au/spear/pages/eplan/3d-digital-cadastre/land-victoria-3d-eplan-prototype.shtml>

- Level 2
- Level 1
- Ground Level
- Show Satellite Image
- Basement
 - B_Lot 1
 - B_Lot G01
 - B_Lot G02
 - B_Lot G03
 - B_Lot G04
 - B_Lot 101
 - B_Lot 102
 - B_Lot 103
 - B_Lot 104
 - B_Lot 201
 - B_Lot 202
 - B_Lot 203
 - B_Common Property 1
 - B_Common Property 2



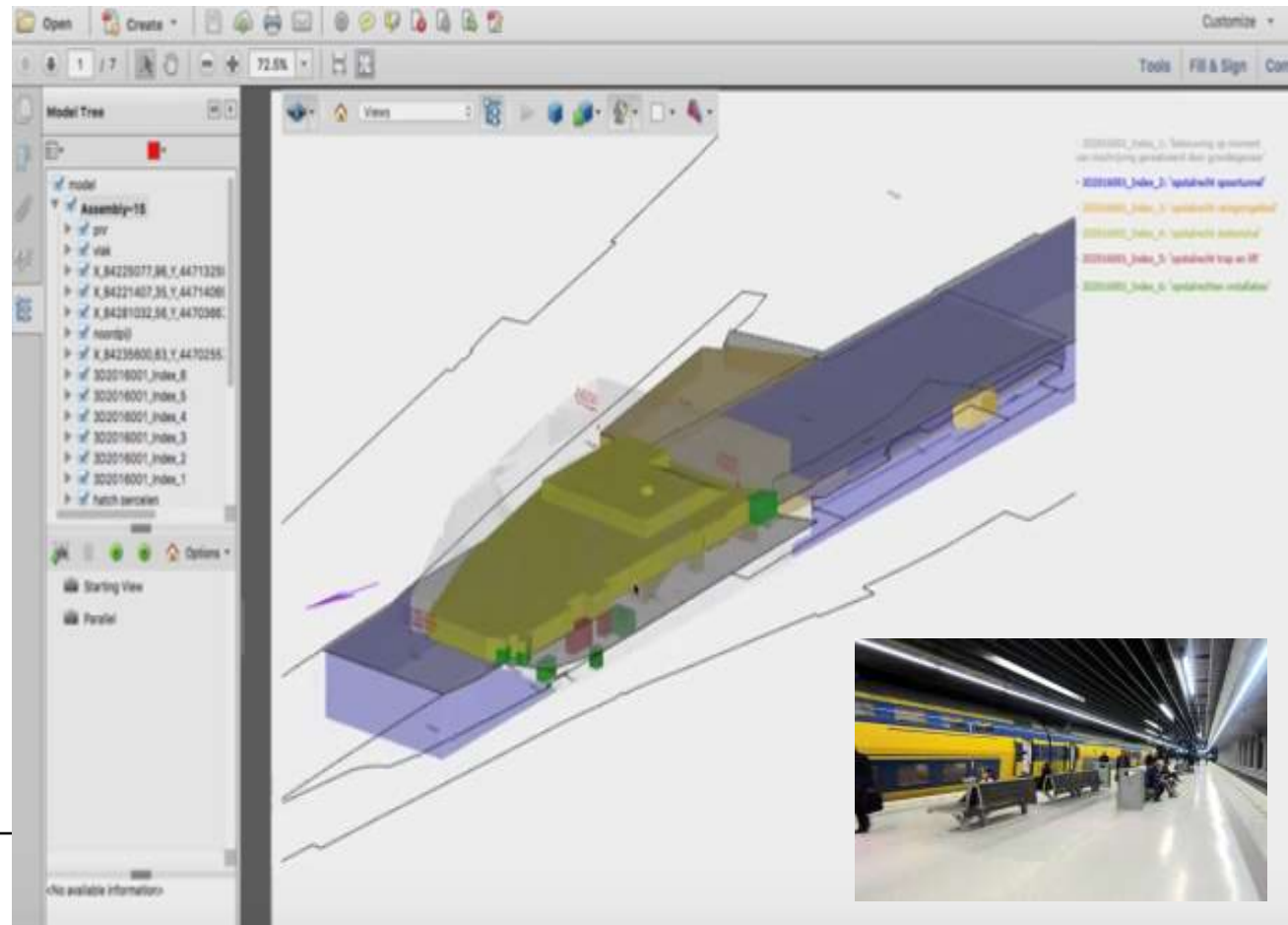
Highlights

The Netherlands – Pilot Project

❖ 3D registration



- *Delft railway station*
- *Volumes defined in 3D PDF per owner*



Highlights – Turkish 3D Cadastre Pilot – Data Visualization

<https://www.tkgm.gov.tr/tr/icerik/3-boyutlu-kadastro-projesi>

Legal Information

TAPU SENEDİ

ANKARA		Türkiye Cumhuriyeti	
GÖZÜBBASI		TAPU VE KADASTRO GENEL MÜDÜRLÜĞÜ	
Mülkiyet		TAPU SENEDİ	
İsim	CHENCK		
Soyadı			
Adres	ANKARA		
Tapu No	Adres No	Parçesi No	Yüzölçümü
1/10000	101	101	4000 m ²
İçerik	Felsefi		
İçerik	Yüzölçümü	Alan Payı	İçerik No

3D Building Model



Bu çalışma kapsamında mülkiyete esas mimari planlar, yapılarla bütünleştirilerek bağımsız bölümlerin örnek 3 boyutlu tapuları hazırlanmıştır.

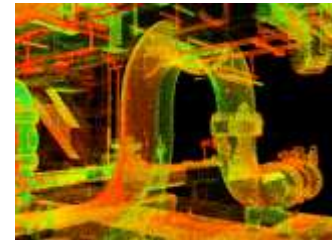
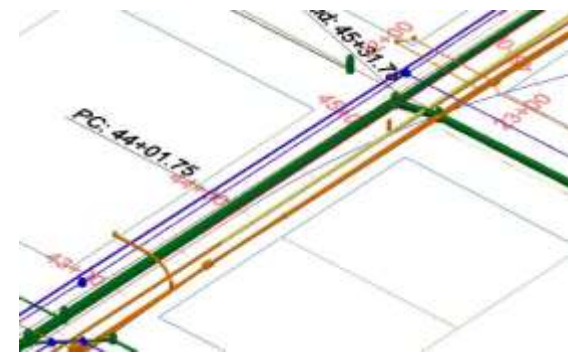
Highlights cont.

❖ Main Challenges

- **Legal aspects** – policies and regulations
- **Technical aspects** – data acquisition, storage, **visualization**, **validation** and quality
- **Institutional issues** – cross-organizational collaboration
- **Standardization** – official data models
- **Data availability**
- **Registration** of various cadastral objects

❖ Reflection – Exceeded Expectations

- **China** – development of 3D cadastral information system
- **Switzerland** – development of data acquisition techniques – **point clouds**
- **Singapore** – technological development: 3D data collection, management and visualization



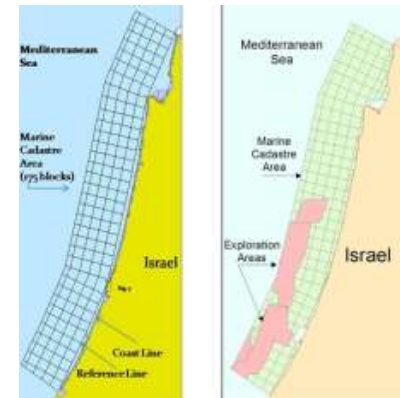
2022 Perspective

- Few responses
- No changes are expected in some domains
- **Australia Queensland** – **underground network** legal objects with above surface segments to be registered in DCDB as **3D objects** and LADM compliant DB
- **New Zealand** - registration as **3D digital spatial objects** and **3D pdf titles**
- **China** – all **networks** fully **digitized, LADM model**
- **Croatia** – expected to employ **new technologies** with **3D capabilities**
- **Greece** – **fully operational digital cadastre** as a basis for 3D cadastre
- **Malaysia** – registration of **volumetric airspace** units and overlapping constructions; LADM formal model and 3D marine boundaries
- **Israel** – **3D parcel registration**
- **Hungary** – **networks** within the land administration as 3D parcels
- **Singapore** – expending **technical capabilities**

Concluding Remarks



- ❖ Steady progress
- ❖ **Technical** Aspects - Visualization and Usability
- ❖ **Digital** Cadastre – Prototypes & Pilots
- ❖ Data **Accessibility** – Legal & Cadastral Information
- ❖ **Legal** aspects
- ❖ Formal model – LADM
- ❖ **Marine** cadastral
- ❖ Temporal aspects
- ❖ On the way to fully operational **3D cadastre** – a set of **functionalities** and **capabilities**



■ *Completed questionnaires 2018-2022 are available on the 3D Cadastres website: <http://www.gdmc.nl/3DCadastres/participants/>*

The 8th Land Administration Domain Model Workshop (LADM2019)

1-3 October 2019 Kuala Lumpur, Malaysia



Scope

The focus of LADM2019 workshop will be on preparing input for second Edition of the Land Administration Domain Model (first Edition published as ISO 19152:2012). It is now time to provide proposals for the new LADM parts. Based on current experiences and future expectations, the need and content of possible extensions will be addressed; eg. further modelling of LADM's rights, restrictions and responsibilities; a valuation information package, a spatial planning information package, Marine Cadastre, more explicit relations with Building Information Modelling, further modelling of LADM's survey and spatial representation and 3D/4D Cadastre. In addition, more and more attention will be paid to the Operational Standards in Land Administration. This includes addressing the technical models for LADM: INTERLIS, RDF, CityGML, IndoorGML, LandInfra, InfraGML, LandXML, and BIM/IFC. Finally, also the aspects beyond Information models will be discussed: Organization, Best practices, Legal/financial aspects, OpenCadastre approach, Crowd sourcing, Workflow modelling, Blockchain and ledger technologies.

Submission and selection

All submissions (extended abstracts of 500-1000 words) will be peer reviewed and all accepted contributions are expected to submit a full paper, which will be included in both the on-line and printed proceedings (available at the workshop), published by the FIG with ISBN/ISSN reference. All papers must be submitted via the EasyChair online system before 1 May 2019.

Organization

LADM2019 is organized by FIG, OGC en ISO TC211. LADM2019 is a joint event with UDMS's 4th International Conference on Smart Data and Smart Cities (SDSC2019) and Geomatics Geospatial Technology (GGT2019) as part of Geospatial Kuala Lumpur 2019.



More information

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WORKING WEEK 2020
10 – 14 MAY

www.fig.net/fig2020

Smart Surveyors for Land and Water Management

