GEOSPATIAL

KUALA LUMPUR
1 - 3 OCTOBER 2019

GGT · FIG · UDMS · isprs

Geomatic & Geospatial Technology International Conference

information from imagery

6th GEOMATICS & GEOSPATIAL TECHNOLOGY
4th SMART DATA & SMART CITIES
8th LADM WORKSHOP

PROGRAM BOOK

Land Surveyors Board, Peninsular Malaysia

In this information age, the requirements and expectations of consumers are rapidly changing with time and becoming more complex due to improved educational levels and various information avenues available to them. As a result, consumers are more knowledgeable and discerning in their choice of services including matters pertaining to properties. The ongoing trend in the services sector leads to increased competitiveness including those of land surveying services. As a provider of these services, it is imperative that land surveyors, under the auspicious of the Board, place a premium emphasis on the quality of their services to ensure that these complex needs and expectations are fulfilled. As on previous occasions, the Board will continue to assist Land Surveyors in providing facilities and funding in order to enhance their image and professionalism. Nonetheless, at the same time, Land Surveyors are urged to be more innovative and productive in providing services to their clients without compromising on ethics and the prescribed regulations. Their adherence will ensure that they provide value added services thus be more competitive in a conducive environment for the benefit of all concerned.

In this respect, lifelong learning is viewed as a requisite by which land surveyors are able to keep abreast with ever changing technological advancements in land surveying and cadastral environment. It is therefore vital for land surveyors to participate in various Continuing Educational and Professional Development programmes to ensure the attainment of this objective. The Board, on its part, have always resolved to provide quality services in order to be effective and transparent in maintaining its integrity. By providing quality services, the Board will be able to foster better understanding and cordial relationship with all parties concerned thereby enhancing the land surveying profession.

Association of Authorised Land Surveyors Malaysia

The Association of Authorized Land Surveyors Malaysia, is a non-governmental organization formed in 1976, and whose membership consisted of practicing professionals with a total number of members reaching more than 500.

PEJUTA is working together with the Department of Surveys and Mapping Malaysia (JUPEM) and the Land Surveyors Board (LJT), to foster, preserve and enhance the status, prestige and integrity of the profession of surveying through the promotion and encouragement of ethical practices and compliance to code of professional conduct amongst the memberships.

Welcome to Geospatial Kuala Lumpur 2019

The Geospatial Kuala Lumpur 2019 International Conference features the following three major conferences in one place – the 6th GGT International Conference, the 4th SDSC International Conference, and the 8th LADM Workshop. This event aims to gather all groups of geospatial community within Malaysia and International for discussing and showcasing the achievements with recent novel research, projects and technology developments in the field of geo-information science and technology. Several renowned speakers on 3D GIS, LADM, 3D Cadastre, 3D City Modelling, LiDAR Mapping, Smart City, and Big GeoData have been planned for the event.

The Geospatial Kuala Lumpur 2019 also will showcase the latest technology and services by various companies in the exhibition hall. The conference offers an interdisciplinary forum in the fields of multi-scale and multi-dimensional modelling and data representation including collection, modelling, management, maintenance, analysis and visualization of spatial information.

We sincerely welcome you to take part in this activity by sharing with us your expertise and passion for geospatial data, technologies and applications.

Contents

WELCOME MESSAGE FROM CHAIR OF GGT 2019

This year we organize Geospatial KL 2019 International Conference which has three sub conferences, namely, GGT 2019, LADM 2019, and SDSC 2019. Each has attracted many international speakers and authors (from more than 30 countries). GGT 2019 focuses on several aspects of geomatics and geospatial sciences and more than 120 papers were received from researchers and practitioners.

LADM 2019 has 30 papers and SDSC 2019 has more than 20 papers. It is a 3-day event where tutorial is organized on the 1 October. The tutorial has several directions including 3D modelling (indoor), BIM, smart cities, 3D city modelling, large data management. Several keynotes, namely from TU Munich (Germany), Country Garden (China), ESRI Redland (United States), SmartSel (Malaysia), Smart Selangor Delivery Unit (Malaysia), and Land Urbanization (Afghanistan).

Several other interesting technical programs have been planned such as Industrial Talk, Invited Talk, Research and Scientific parallel sessions from the three sub conferences. Short papers and posters are part of the program. All accepted papers are published as ISPRS International Archives and Annals (all as Scopus indexed). Twenty major companies participate for this event with two as Platinum category (namely Info Geomatik Sdn Bhd and Country Garden of China). We hope this great event would trigger more interesting discussions and elaborations in various aspects geospatial science, LADM and Smart Cities development and solutions.

We hope the programs satisfy your needs.

Enjoy!

Professor Sr Dr Alias bin Abdul Rahman
Chair GGT 2019
Chair Geospatial KL 2019

3D GIS Research Lab
Faculty of Built Environment and Surveying
Universiti Teknologi Malaysia
81310 Johor Bahru, Johor
Malaysia

30 September, 2019

WELCOME MESSAGE FROM CHAIR OF SDSC 2019

For fifty years, the UDMS (Urban Data Management Society) has been involved in promoting information technologies in cities and especially in urban planning. At the beginning, urban data design was the main topic of discussion, but gradually this evolved into geographic information systems and more global systems, with the meetings taking the form of symposia, as a forum for specialists. The society is now oriented towards digital aspects of Smart Cities.

Following events in Split, Croatia; Puebla, Mexico and Delft, The Netherlands, we are very pleased that the 4th international conference "Smart Data, Smart Cities" (SDSC) is being held in Kuala Lumpur, Malaysia, in collaboration with other entities within Geospatial KL 2019.

As in previous years, three key conference themes were proposed to represent the breadth of topics that come under the broad umbrella of Smart Cities: Smart Data (sensor network databases, on-the-fly data mining, urban analytics and big data, knowledge based systems, big databases and data management, artificial intelligence, deep learning, city analytics), Smart People (volunteered information, citizen engagement and participation, privacy challenges in smart cities) and Smart Cities (digital twins, 3D modelling, Internet of Things, Social Networks, monitoring systems, mobility and transportation, telecommunications infrastructure, decision, making, disaster management). In addition, this year saw a specific call for papers related to Smart Visualization, reflecting the increasing importance of dashboards and other interactive visualization approaches as a way to deal with the complex information generated by Smart City technology.

The SDSC team would like to take the opportunity to thank the researchers who submitted papers to the conference, the reviewers, the audience and in particular the local organizing team who have worked hard behind the scenes to make this conference a success. We wish you an enjoyable event.

Professor Dr. Robert Laurini
Chair SDSC 2019

WELCOME MESSAGE FROM CHAIR OF LADM 2019

Welcome to the 8th LADM Workshop in Kuala Lumpur, Malaysia!

Worldwide, effective and efficient land administration is an ongoing concern, inhibiting economic growth and property tenure. In many nations, land administration systems are either non-existent or manual paper-based or semi-automated systems subject to limited public access. All of these approaches are at significant risk of data loss and failure due to disasters and lack of interoperability.

Over the past years the Expert Group on Land Administration and Management of the UN-GGIM is developing a Framework for Effective Land Administration (FELA). This will be a reference for developing, reforming, renewing, strengthening or modernizing land administration and management systems. Land data are in the core of any land administration and management system. The document calls for recognition of land tenure, land use, land value, and land development data - including elements relating to gender, conflict, and disaster - as fundamental geospatial data themes within any jurisdiction - and that those data be integrated with other fundamental themes. The document refers to the Land Administration Domain Model as a standard for land administration.

The Open Geospatial Consortium published a White Paper on Land Administration. This white paper provides an overview of the land administration domain and proposes actions needed for design and development of implementation standards this domain – this includes as main reference the Land Administration Domain Model. A close cooperation between the Open Geospatial Consortium (OGC) and ISO is expected to accelerate those developments. The charter members of the OGC Domain Working Group seek to identify enabling standards and best practices to guide countries in a programmatic way to establish more cost effective, efficient and interoperable land administration capability, to upgrade current manual to semi-automated processes, and to suggest solutions that are more automated and flexible to new data sources technologies.

Countries are developing and implementing LADM profiles and several software are implementing LADM compliant data structures. LADM is more and more in the picture! The purpose of the International FIG Workshop on the Land Administration Domain Model (LADM2019) is to bring together experts from industry, government (land administration agencies) and academia in order to exchange first practical experience and options for further development. It was discussed and agreed in ISO TC 211 to publish LADM Edition II as multipart – as follows:

Part 1 - Land Administration Fundamentals
Part 2 - Land Tenure or Land Registration or Land Interest
Part 3 - Marine Space or Marine Geo-Regulation
Part 4 - Land Valuation
Part 5 - Spatial Planning
Part 6 – Implementations

This approach simplifies the consensus process. The seven previous workshops were all from the era focused on initial creation of the standard content:

1. March 2003, Enschede, the Netherlands;
2. December 2004, Bamberg, Germany;
3. November 2009, Quebec City, Canada;
4. July 2012, Rotterdam, the Netherlands;
5. September 2013, Kuala Lumpur, Malaysia;
6. March 2017, Delft, the Netherlands;
7. April 2018, Zagreb, Croatia

The eight International LADM Workshop is organized from 1 to 3 October 2019 in conjunction with the Geospatial Kuala Lumpur 2019. The focus of LADM2019 workshop in Kuala Lumpur will be on preparing input for second Edition. After the initial brainstorming on the second Edition of LADM at the 6th workshop 4 and further scoping at the 7th workshop 5 the result was submitted by FIG to ISO TC211 as a New Work Item proposal (NWIP) for the second Edition. 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; e.g. further modelling of LADM's rights, restrictions and responsibilities; a fiscal/valuation extension module, Marine Cadastre, more explicit relations with Building Information Modelling, further modelling of LADMs 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 GeoBIM.

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. As member of the LADM community we wish you a pleasant workshop!

Professor Dr. Ing. Peter van Oosterom
Chair LADM 2019

CONFERENCE DATE AND VENUE

1-3 October 2019, Kuala Lumpur, Malaysia.
This conference also organizes one whole day Tutorials (on 1st October 2019). The conference venue; Hotel Istana is a 5 Star hotel in Kuala Lumpur City Centre.

Hotel Istana Kuala Lumpur
73, Jalan Raja Chulan
50200 Kuala Lumpur
MALAYSIA

CONFERENCE PROGRAM

ONE-DAY TUTORIAL (1st OCTOBER 2019)

Time	Ballroom Mahkota 2
08:30 – 09:00	Registration
09:00 – 09:30	**Redefining 3D Earth – Malaysian Cadastre and Mapping Perspective** *Assoc. Prof. Kamaludin Omar (GSTC LJT, Kuala Lumpur)*
09:30 – 10:30	**3D Cadastres – Revision LADM** *Ms. Eftychia Kalogianni (TU Delft, Netherlands)*
10:15 – 11:00	Group Photo & Coffee Break
11:00 – 11:30	**Modelling Urban Knowledge** *Prof. Dr. Robert Laurini (INSA Lyon, France)*
11:30 – 12:30	**3D City Modelling and CityGML 3.0** *Prof. Dr. Ing. Thomas Kolbe (TU Munich, Germany)*
12:30 – 13:00	**3D City Modelling for Istanbul City** *Assoc. Prof. Dr. Gurcan Buyuksalih, Serdar Bayburt (BIMTAS, Istanbul)* *Prof. Dr. Alias Abdul Rahman & Dr. Ivin Amri Musliman (UTM, Malaysia)*
13:00 – 14:00	Lunch Break
14:00 – 14:30	**Management of Large Point Cloud Datasets – Oracle Perspective** *Dr. Mike Horhammer (Oracle HQ, Pennsylvania, United States)*
14:30 – 15:00	**Smart Cities – (my) German Perspective** *Prof. Dr. Ing. Volker Coors (HFT Stuttgart, Germany)*
15:00 – 15:30	**GeoBIM – Moving from Theory to Practice** *Assoc. Prof. Dr. Claire Ellul, University College London (United Kingdom)*
15:30 – 16:00	**3D Modelling based on Voxel** *Dr. Ing. Ben Gorte (GRID, University of New South Wales, Australia)*
16:00 – 16:30	Coffee Break
16:30 – 17:00	**3D Indoor Modelling - 3D Navigation** *Prof Dr Ing. Sisi Zlatanova, Dr. Abdoulaye Diakité, Abdullah Alattas, Jinjin Yan (GRID, University of New South Wales, Australia)*
17:00 – 17:30	**Making GIS Work for Indoor Applications** *Dr. Ing. Morakot Pilouk (ESRI HQ, Redlands, California, United States)*
17:30 – 17:45	Final Remarks and Certificates Presentation

CONFERENCE PROGRAM

GEOSPATIAL KL 2019 CONFERENCE (2 – 3 OCTOBER 2019)

Note that slight schedule changes might happen during the conference. For the latest schedule, please refer to our online version: www.geoinfo.utm.my/geospatial2019

Pre-Registration: 1st October 2019 (2.00pm to 6.00pm) at Secretariat Room (Zamrud)

DAY 1		Ballroom Mahkota 2				
Wednesday, Oct. 2nd	08:00 – 09:00	Registration				
	09:00 – 10:00	**Technical Session I (Parallel)**				
		LADM (S1)	SDSC (S1)	GGT (S1A)	GGT (S1B)	GGT (S1C)
	10:00 – 10:30	Coffee/Tea Break				
	10:30 – 11:00	**Speech from GGT 2019 Chair** Professor Dr. Alias Abdul Rahman (UTM) **Speech from SDSC 2019 Chair** Professor Dr. Robert Laurini (INSA Lyon, France) **Speech from LADM 2019 Co-Chair** Professor Dr. Chrit Lemmen (University of Twente, The Netherlands)				
	11:00 – 11:10	**Opening Speech** Professor Dr. Ing. Sisi Zlatanova President, ISPRS – Technical Commission IV				
	11:10 – 11:20	**Awards**				
	11:20 – 11:50	**Keynote 1** Professor Dr. Thomas Kolbe, TU Munich, Germany				
	11:50 – 12:20	**Keynote 2** Dr. Wei Zhou Country Garden Pacificview (Platinum Sponsor)				
	12:20 – 12:50	**Keynote 3** Mr. Mohamad Suhaimi Mohamad Tahir, SmartSel, Malaysia				
	12:50 – 14:00	Lunch Break				
	14:00 – 14:45	**Talks from Industry 1** GPS Lands (M) Sdn Bhd AntaraGrafik Systems Sdn Bhd Reveron Consulting Sdn Bhd (Chair)				
	14:45 – 15:10	**Invited Talk 1** Haji Shaharuddin bin Musa, PEJUTA				
	15:10 – 16:10	**Technical Session II (Parallel)**				
		LADM (S2)	SDSC (S2)	GGT (S2A)	GGT (S2B)	GGT (S2C)

16:10 – 16:30	Coffee/Tea Break				
16:30 – 18:30	**Technical Session III (Parallel)**				
	LADM (S3)	**SDSC (S3)**	**GGT (S3A)**	**GGT (S3B)**	**GGT (S3C)**
19:30	Conference Dinner (Mahkota 1)				

CONFERENCE PROGRAMME (DAY 2)

DAY 2		Ballroom Mahkota 2				
Thursday, Oct. 3rd	08:30 – 10:00	**Technical Session IV (Parallel)**				
		LADM (S4)	**SDSC (S4)**	**GGT (S4A)**	**GGT (S4B)**	**GGT (S4C)**
	10:00 – 10:30	Coffee/Tea Break				
	10:30 – 11:00	**Keynote 4** Dr. Ing. Morakot Pilouk, ESRI HQ, Redlands, USA				
	11:00 – 11:30	**Keynote 5** Mr. Kees De Zeeuw, Dutch Kadaster, Netherlands				
	11:30 – 11:50	**Invited Talk 2** Dr. Noordin bin Ahmad, PEJUTA				
	11:50 – 13:00	**Talks from Industry 2** AAM Geospatial Sdn Bhd (Chair) Jinsoon Yap Survey Solution KQ Geo Technologies Co. Ltd. E.J. Motiwalla				
	13:00 – 14:00	Lunch Break				
	14:00 – 15:30	**Technical Session V (Parallel)**				
		LADM (S5)	**SDSC (S5)**	**GGT (S5A)**	**GGT (S5B)**	**GGT (S5C)**
	15:30 – 16:00	Coffee/Tea Break				
	16:00 – 17:00	**Talks from Industry 3** Jalal Johari Consultants Sdn Bhd (Chair) Map Information Solutions Sdn Bhd Bandwork GPS Solutions Sdn Bhd RDG Supply Sdn Bhd				
	17:00 – 17:15	**Awards and Certificates Presentation** **Closing**				

DETAIL PROGRAM

Day 1: Technical Session I (Parallel)

LADM (S1) Track – Foundations / Fundamentals

LADM (S1) – Wed. Oct. 2nd, 09:00 – 10:00 Chairperson: Chris Body (Room: Ballroom Mahkota 2)	**The Scope of LADM Revision is Shaping Up** *Christiaan Lemmen, Peter van Oosterom, Abdullah Kara, Eftychia Kalogianni, Anna Shnaidman, Agung Indrajit and Abdullah Allatas*
	Code List Management Supported through a Controlled Domain Vocabulary *Erik Stubkjær, Hans-Christoph Gruler, Scott Simmons and Volkan Çağdaş*
	A Suggested Terminology for Point-Like Entities in a Bi-Temporal Representation of 2D and 3D Land Administration Data *Rod Thompson and Peter van Oosterom*
	LADM Refined Survey Model *Anna Shnaidman, Peter van Oosterom and Christiaan Lemmen*

SDSC (S1) Track – Machine Learning and Big Data #1

SDSC (S1) – Wed. Oct. 2nd, 09:00 – 10:00 Chairperson: Robert Laurini (Room: Baiduri + Berlian)	**Recognition of Urban Functional Regions at Street Scale based on LJ1-01 Night-Time Light Remote Sensing and Mobile Big Data** *Qiming Zhou, Yang Zhang, Duo Gao and Bo Sun*
	Comparative Analysis of LSTM, RF and SVM Architectures for Predicting Wind Nature for Smart City Planning *Shubhi Harbola and Volker Coors*
	Attention-Based Location Information Extraction with Sequential Unstructured Data *Kyunghyun Min, Kiyun Yu and Jiyoung Kim*
	Reinforcement Learning for Optimal Transit Network Design and Frequency Setting *Sunhyung Yoo, Brian Lee and Hoon Han*

GGT (S1A) Track

GGT (S1A) – Wed. Oct. 2nd, 09:00 – 10:00 Chairperson: Khairulnizam Md Idris (Room: Delima + Nilam)	**Modeling Urban Crime Patterns using Spatial Space Time and Regression Analysis** *Hasranizam Hashim, Wan Mohd Naim Wan Mohd, Eran Sadek Said Md Sadek and Khoiri Mohd Dimyati*
	Consideration and Exploration on the Demand Changes of Surveying and Mapping Geographic Information *Xiaoli Liu and Chengming Li*
	Geospatial Assessment and Modeling of Urban Heat Islands in Quezon City, Philippines using OLS and Geographically Weighted Regression *Christian Kim Alcantara, John Emmanuel Escoto and Ariel Blanco*
	Spatial Prediction Models for Landslide Activity Mapping using Vegetation Anomalies *Mohd Radhie Mohd Salleh, Zamri Ismail, Shakirah Amirah Mohd Ariff, Muhammad Zulkarnain Abd Rahman, Mohd Faisal Abdul Khanan, Mohd Asraff Asmadi and Khamarrul Azahari Razak*

GGT (S1B) Track

GGT (S1B) – Wed. Oct. 2nd, 09:00 – 10:00 Chairperson: Prof. Dr. Ismail Rakip Karaş (Room: Safir I)	**An Approach of Vicarious Calibration of Sentinel-2 Satellite Multispectral Image Based on Spectral Library for Mapping Oil Spills** *Jamal Althawadi and Mazlan Hashim*
	Landsat Capability to Mapping of Total Solid Suspended (TSS) and Coastal Ecosystem *Nurjannah Nurdin, Muhammad Helmi, Riza Yuliratno Setiawan, Mukti Zainuddin, Rustam, Agus Aris and Muhammad Akbar As*
	Low Data Requirements Framework for Landslide Susceptibility Prediction using 3D Alos Palsar Images and Neural Networks *Sohaib K. M. Abujayyab and Ismail Rakıp Karaş*
	Multispectral and Hyperspectral Satellite Data for Alteration Mapping using Partial-Subpixel Algorithm in An Unexplored Region *Aliyu Jaafar Abubakar, Mazlan Hashim, Amin Beiranvand Pour and Kabiru Shehu*

GGT (S1C) Track

GGT (S1C) – Wed. Oct. 2nd, 09:00 – 10:00 **Chairperson: Haji Shaharuddin bin Musa** **(Room: Safir II)**	**Seagrass Habitat Suitability Map at Merambong Shoal, Johor: A Preliminary Study using Multibeam Echosounder and Maxent Modelling** *Muhammad Abdul Hakim Muhamad and Rozaimi Che Hasan*
	Orientation-Based Pairwise Coarse Registration with Markerless Terrestrial Laser Scans *Siti Nurhashima Mohd Isa and Shazmin Aniza Abdul Shukor*
	A Review of Modelling Approaches on Tidal Analysis and Prediction *Auwal Garba Abubakar, Mohd Razali Mahmud, Kelvin Tang Kang Wee, Alhaji Hussaini and Nur Hidayah binti Md Yusuf*
	Evaluating Imagery-Derived Bathymetry of Seabed Topography to Support Marine Cadastre *Kelvin Kang Wee Tang, Mohd Razali Mahmud, Auwal Garba Abubakar and Alhaji Hussaini*

Day 1: Technical Session II (Parallel)

LADM (S2) Track – 3D / BIM

LADM (S2) – Wed. Oct. 2nd, 15:10 – 16:10 **Chairperson: Sisi Zlatanova** **(Room: Ballroom Mahkota 2)**	**An LADM-based 3D Underground Utility Data Model: A Case Study of Singapore** *Jingya Yan, Kean Huat Soon, Siow Wei Jaw and Gerhard Schrotter*
	Easement Spatialization with Two Cases based on BIM *Shen Ying, Yifan Xu, Chengpeng Li, Renzhong Guo and Lin Li*
	Design and implementation of a 3D National Digital Cadastral Database based on Land Administration Domain Model; Lessons Learned from a 3D Cadaster Project in Malaysia *Abbas Rajabifard, Behnam Atazadeh, Kit Meng Yip, Mohsen Kalantari, Mohsen Rahimipour Anaraki, Hamed Olfat, Farshad Badiee, Davood Shojaei, Chan Keat Lim and Mohd Azua Mohd Zain*

SDSC (S2) Track – Data Processing

SDSC (S2) – Wed. Oct. 2nd, 15:10 – 16:10 **Chairperson: Chair Claire Ellul** **(Room: Baiduri + Berlian)**	**Big Data in Emission Producing Manufacturing Industries – An Explorative Literature Review** *E. Hämäläinen and T. Inkinen*
	Green City a Smart City. Case Study of Warsaw *Elzbieta Bielecka and Beata Calka*
	Aggregation in Land-Cover Data Generalization Considering Spatial Structure Characteristics *P.D. Wu, Y. Yin and C.M. Li, X.L. Liu*
	Population Density Data for Smart Cities *Beata Calka*

GGT (S2A) Track

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<tr>
<td rowspan="3">GGT (S2A) – Wed. Oct. 2nd, 15:10 – 16:10
Chairperson: Ivin Amri Musliman
(Room: Delima + Nilam)</td>
<td>Development of Geodatabase for Archaeological Site in Bujang Valley Kedah
Nur Umaira Mohd Aminuddin, Zulkepli Majid, Nursyahira Ahmad Fuad, Anuar Aspuri, Mohd Faizi Mohd Salleh, Mohd Farid Mohd Ariff, Khairulnizam M Idris and Norhadija Darwin</td>
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<tr>
<td>Geospatial Approach for Groundwater Exploration at UTM Johor Bahru Campus
Muhamad Asyraf Zamari, Tajul Ariffin Musa and Edy Tonnizam Mohamad</td>
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<td>Comparative Analysis of Various Camera Input for Videogrammetry
Noorulya Ahmad, Nor Suhaibah Azri and Muhamad Uznir Ujang</td>
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GGT (S2B) Track

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<td rowspan="3">GGT (S2B) – Wed. Oct. 2nd, 15:10 – 16:10
Chairperson: Dr. Mohammad Zakri Tarmidi
(Room: Safir I)</td>
<td>Urban Vegetation Classification with NDVI Threshold Value Method with Very High Resolution (VHR) Pleiades Imagery
Haslina Hashim, Zulkiflee Abd Latif and Nor Aizam Adnan</td>
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<td>Consistency in Remote Sensing-Based Urban Mapping for Growth and Mobility Analysis
Lasse Møller-Jensen and Albert Nii-Moe Allotey</td>
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<td>Extent Mapping of A Major Flooding Event on the Island of Trinidad using Space-Borne Synthetic Aperture Radar
Deanesh Ramsewak and Besham Maharaj</td>
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GGT (S2C) Track

GGT (S2C) – Wed. Oct. 2nd, 15:10 – 16:10 **Chairperson: Prof. Dr. Narimah Samat** **(Room: Safir II)**	**Forest Degradation Analysis using Geospatial Techniques Approach in Tropical Region of Pahang, Malaysia** *Mohamad Al-Ekhwan Othman, Zulfa Hanan Ashaari, Ahmad Zaharin Aris and Mohammad Firuz Ramli*
	Prediction of Future Land Use Land Cover Changes of Kelantan, Malaysia *M.A Mahamud, Narimah Samat, Mouleong Tan, Ngai Weng Chan and Y.L. Tew*
	Potential Fish Ground Breeding Area Based on Localized Criteria for Sustainable Food Security *Ainn Alfatihah Zamzuri and Muhammad Imzan Hassan*

Day 1: Technical Session III (Parallel)

LADM (S3) Track

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<tr>
<td rowspan="9">LADM (S3) – Wed. Oct. 2nd, 16:30 – 18:30
(Room: Ballroom Mahkota 2)</td>
<td>Track A: Country Profiles / Implementations I
Chairperson: Jacynthe Pouliot</td>
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<tr>
<td>On the Design of a Modern and Generic Approach to Land Registration: The Colombia Experience
Javier Morales, Christiaan Lemmen, Rolf de By, Mathilde Molendijk, ErnstPeter Oosterbroek and Alvaro Enrique Ortiz Davila</td>
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<td>The Role of the LADM in the Transactional Flow of Land Administration – Case: Colombia
Daniel Casalprim and Golgi Alvarez</td>
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<tr>
<td>Implementation of the Spatial Planning Package for Construction of an LADM Country Profile: Reducing Asymmetric Access to Information of RRRs in Indonesia
Agung Indrajit, Virgo Eresta Jaya, Bastiaan van Loenen, Anna Shnaidman, Hendrik Ploeger and Peter van Oosterom</td>
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<tr>
<td>Track B: Modelling / Implementation
Chairperson: Kees de Zeeuw</td>
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<td>How to Quickly Detect the Overlap and the Consistency between LADM with LandInfra and LandXML: Application of Schema Matching Techniques
Jacynthe Pouliot, Claire Monney, Jens Ingensand and Suzie Larrivée</td>
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<td>Exploring and Assessing STDM and LADM for Gender Equitable Land Administration
Christiaan Lemmen, Eva-Maria Unger, Monica Lengoiboni, Marisa Balas, Kholoud Saad, Rohan Bennett, Peter van Oosterom, Jaap Zevenbergen and Martinus Vranken</td>
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<td>LADM based models for sustainable development LD-DRM for disaster prone areas and communities (an example for SDG 1 and SDG 13)
Eva-Maria Unger, Rohan Bennett, Christiaan Lemmen, Jaap Zevenbergen, Paula Dijkstra and Kees de Zeeuw</td>
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<td>Interoperability Issues Related to LADM Profiled Implementations – A First Exploration
Peter Oukes, Christiaan Lemmen and Erwin Folmer</td>
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SDSC (S3) Track – Smart Cities and 3D/4D

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<tr>
<td rowspan="7">SDSC (S3) – Wed. Oct. 2nd, 16:30 – 18:30
Chairperson: Volker Coors
(Room: Baiduri + Berlian)</td>
<td>Accuracy assessment of 3D positioning from non-metric short range UAV data over dense urban areas
Camilo Leon and Miguel Blanco</td>
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<td>Systems Architecture for Management of BIM, 3D GIS and Sensors Data
M. Aleksandrov, D. Abdoulaye, J. Yan, W. Li and S. Zlatanova</td>
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<td>Improving GPS Trajectories using 3D City Models and Kinematic Point Clouds
Y. Dehbi, L. Lucks, J. Behmann, L. Klingbeil and L. Plümer</td>
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<td>A Requirement Analysis on Extending Semantic 3D City Models for Supporting Time-Dependent Properties
K. Chaturvedi and T. H. Kolbe</td>
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<td>Integrated Management and Visualization of Static and Dynamic Properties of Semantic 3D City Models
K. Chaturvedi, Zhihang Yao and T. H. Kolbe</td>
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<td>The Maximization of the 4th Dimension of the Building Site
M. Rotilio, E. Laurini, M. Lucarelli and P. De Berardinis</td>
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<td>Towards Egress Modelling in Voxel Building Models
Ben Gorte, Mitko Aleksandrov and Sisi Zlatanova</td>
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GGT (S3A) Track

GGT (S3A) – Wed. Oct. 2nd, 16:30 – 18:30 * **Chairperson: Ivin Amri Musliman** **(Room: Delima + Nilam)**	**Mobile Indoor Laser Scanning for 3D Strata Registration purposes based on IndoorGML** *Nizar Hashim, M. Imzan Hassan and Alias Abdul Rahman*
	Integration between Surface and Subsurface Spatial Objects for Developing Oman 3D SDI Based on the CityGML Standard *Khalid Al Kalbani and Alias Abdul Rahman*
	3D Geospatial Database Schema for Istanbul 3D City Model *Alias Abdul Rahman, Hanis Rashidan, Ivin Amri Musliman, Gurcan Buyuksalih, Serdar Bayburt and Peyami Baskaraca*
	Extraction and Transformation of IFC Data to CityGML format *Mohammed Jawaluddeen Sani, Ivin Amri Musliman and Alias Abdul Rahman*
	Spatial Adjacency Analysis of CityGML Buildings via 3D Topological Data Structure *Syahiirah Salleh, Uznir Ujang, Suhaibah Azri and Tan Liat Choon*
	The Integration of 3D Spatial and Non – Spatial Component for Strata Management *Faraliyana Mohd Hanafi and Muhammad Imzan Hassan*
	Free Global DEM: Converting DSM to DTM and its Applications *Atriyon Julzarika and Harintaka*
	Multi-Scale and Scale Dimension Properties in Spatial Raster Modelling – Concept and Current Implementation *Hairi Karim, Alias Abdul Rahman and Mohd Radhie Mohd Salleh*
	Hotine Oblique Mercator Map Projection in PROJ4js LIBrary *Khairul Anshar, Nanna Suryana and Mohd Fairuz Iskandar Othman*
	Building Information Modeling Potential for an Enhanced Real Estate Valuation Method based on the Hedonic Approach *Siham El Yamani, Mohamed Ettarid and Rafika Hajji*

GGT (S3B) Track

<table>
<tr>
<td rowspan="8">GGT (S3B) – Wed. Oct. 2nd, 16:30 – 18:30
Chairperson: Prof. Dr. Taşkın Kavzoğlu
(Room: Safir I)</td>
<td>**UAV-Based Hyperspectral Data Analysis for Urban Area Mapping**
Nurul Asyikin Suran, Helmi Zulhaidi Mohd Shafri, Nur Shafira Nisa Shaharum, Nurul Ain Wahida Mohd Radzali and Kumar V.</td>
</tr>
<tr>
<td>**The capabilities of Unmanned Aerial Vehicle for Slope Classification**
Nur Murfiqah Mokhtar, Norhadija Darwin, Mohd Farid Mohd Ariff, Zulkepli Majid and Khairulnizam M Idris</td>
</tr>
<tr>
<td>**Unmanned Aerial Vehicle (UAV) Derived Normalised difference Vegetation Index (NDVI) and Crown Projection Area (CPA) to detect Health Conditions of young Oil Palm trees for Precision Agriculture**
Stanley Anak Suab, Mohd Shahrizan bin Syukur and Ram Avtar</td>
</tr>
<tr>
<td>**Mapping the Effects of Agricultural Development to Water Yield using Remote Sensing**
Babangida Baiya and Mazlan Hashim</td>
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<tr>
<td>**Satellite-Based Mapping of Above-Ground Blue Carbon Storage in Seagrass Habitat within the Shallow Coastal Water**
Dalhatu Aliyu Sani and Mazlan Hashim</td>
</tr>
<tr>
<td>**Integration between Unmanned Aerial Vehicle and Terrestrial Laser Scanner in Producing 3D Model**
Allysa Mat Adnan, Norhadija Darwin, Mohd Farid Mohd Ariff, Zulkepli Majid and Khairulnizam M Idris</td>
</tr>
<tr>
<td>**Accuracy of Unsupervised Classification to Determine Coral Health using Spot-6 and Sentinel-2A**
Nurjannah Nurdin, Supriadi, Mahatma Lanuru, Muhammad Akbar As, Indah Kartika and Teruhisa Komatsu</td>
</tr>
<tr>
<td>**Water Level Fluctuation Assessment of Lake Chad for Environmental Sustainability using Remote Sensing and Geographic Information System Technique**
Alhaji Hussaini, Mohd Razali Mahmud, Kelvin Kang Wee Tang and Auwal Garba Abubakar</td>
</tr>
</table>

GGT (S3C) Track

GGT (S3C) – Wed. Oct. 2nd, 16:30 – 18:30 **Chairperson: Sr. Haji Johari Wahab** **(Room: Safir II)**	**Assessment of Geocentric Datum of Malaysia 2000 (GDM2000)** *Nur Jehan Jaffar, Tajul Ariffin Musa and Wan Anom Wan Aris*
	The Implementation of Modern Geocentric Datum: A Review *Nornajihah Mohammad Yazid, Ami Hassan Md Din, Nazirah Mohamad Abdullah and Abdullah Hisam Omar*
	Gravimetric Geoid Modelling over Peninsular Malaysia using Two Different Gridding Approaches for Combining Free Air Anomaly *Muhammad Faiz Pa'suya, Ami Hassan Md Din, Jack Mccubbine, Abdullah Hisam Omar, Zulkarnaini Mat Amin and Noor Anim Zanariah Yahaya*
	Adjustment of Cadastral Network using Least-Squares Variance Component Estimation *Nur Khalilah Bidi, Ami Hassan Md Din, Zainal Abidin Md Som and Abdullah Hisam Omar*
	Cadastral Positioning Accuracy Improvement (PAI): A Case Study of Pre-Requisite Data Quality Assurance *Norshahrizan Mohd Hashim, Abdullah Hisam Omar, Kamaludin Mohd Omar, Mohd Azwan Abbas, Mohamad Asrul Mustafar and Saiful Aman Sulaiman*
	Seismic Strain Map in Malaysia Derived from Long-Term Global Positioning System Data *Mohamad Shazani Mohamad, Wan Anom Wan Aris, Nur Jehan Jaffar and Rusli Othman*
	The Presence of Geophysical Loadings in GPS Observations using General Least Squares Approaches *Nur Surayatul Atikah Alihan, Dudy Darmawan Wijaya, Ami Hassan Md Din and Abdullah Hisam*
	Investigating for 3D Turkey Cadastre with International Standards *Mehmet Alkan and Hicret Gursoy Surmeneli*

Day 2: Technical Session IV (Parallel)

LADM (S4) Track – Country Profiles / Implementations II

LADM (S4) – Thu. Oct. 3rd, 08:30 – 10:00 **Chairperson: Shen Ying** **(Room: Ballroom Mahkota 2)**	**LADM Country Profiles Development: Aspects to be Reflected and Considered** *Eftychia Kalogianni, Mohsen Kalantari, Efi Dimopoulou and Peter van Oosterom*
	Database Design and Development of 3D Cadastral Registration based on LADM *Nur Amalina Zulkifli, Alias Abdul Rahman and Chengxi Bernad Siew*
	Initial Country Profile of the Kingdom of Saudi Arabia based on LADM *Abdullah Alattas, Peter van Oosterom and Sisi Zlatanova*
	LADM-based Israeli Country Profile: Toward Implementation of 3D Cadastre Registration *Anna Shnaidman, Peter van Oosterom, Shimom Barazani, Anat Marcovich and Shuli Avni Shoham*

SDSC (S4) Track – Machine Learning and Big Data #2

SDSC (S4) – Thu. Oct. 3rd, 08:30 – 10:00 **Chairperson: Robert Laurini** **(Room: Baiduri + Berlian)**	**The Use of Deep Learning to Extract Relevant Data from Floorplan for 3D Modelling** *Ji Yeup Kim, Ki Yun Yu and Ji Young Kim*
	Multi-later Perceptron based POI Recommendation with Neighbourhood *Jungseok Lee, Kiyun Yu and Jiyoung Kim*
	The Implementation of Big Data Analysis in Regulating Online Short-Term Rental Business: A case of Airbnb in Beijing *J. Li and F. Biljecki*
	Semantic Land Use Segmentation from Aerial Images using Deep Learning Approach *Tee-Ann Teo and Fang-Yu Lin*
	Happy or Scared – Detecting Emotions of Pedelec Drivers In Urban Areas *H. Dastageeri, P. Rodrigues and J. Silberer*
	Cybersecurity Strategy for Smart City Implementation *RG Guntur Alam and Huda Ibrahim*

GGT (S4A) Track

GGT (S4A) – Thu. Oct. 3rd, 08:30 – 10:00 * **Chairperson: Azman Ariffin** **(Room: Delima + Nilam)**	**Development of 3D City Model using Videogrammetry Technique** *Afina Hairuddin, Nor Suhaibah Azri and Muhamad Uznir Ujang*
	Towards 3D Smart Campus via 3D City Modelling *Siti Sri Suriati Ramlee, Uznir Ujang, Suhaibah Azri, Nurfatiha Abdul Razak, Tan Liat Choon and Syahiirah Mohd Salleh*
	3D Model for Indoor Spaces using Depth Sensor *Nurul Fatikah Mukhtar, Nor Suhaibah Azri and Muhamad Uznir Ujang*
	Development of Mobile Application for Gated and Guarded Community Management *Nurfatiha Abdul Razak, Muhamad Uznir Ujang and Nor Suhaibah Azri*
	The Influence of Land-Use Land-Cover Changes on Urban Bird Communities *Nurul Hawani Idris, Aina Amirah Ali and Mohamad Hafis Izran Ishak*
	Assessing Sustainability Level from Social Aspects for Affordable Housing in Malaysia using Spatial Indicators *Nazmin Amalina Mohamed Hafidzi, Zakri Tarmidi, Noordyana Hassan, Nurul Hana Adi Maimun, Nik Norasma Che Ya, Noorsidi Aizuddin Mat Nor and Azman Ariffin*
	Evaluating Potential Free Software for Web-Based Multimedia Cartography *Baqir Abdul Basir and Abdul Rauf Abdul Rasam*

GGT (S4B) Track

<table>
<tr>
<td rowspan="7">GGT (S4B) – Thu. Oct. 3rd, 08:30 – 10:00 *
Chairperson: Dr. Khairulnizam M Idris
(Room: Safir I)</td>
<td>**Probability Density Based Classification and Reconstruction of Roof Structures from 3D Point Clouds**
Youness Dehbi, Sonja Koppers and Lutz Plümer</td>
</tr>
<tr>
<td>**Measurement Accuracy on 3D Point Cloud generated using Multispectral Imagery by different Calibration Methods**
Khairulazhar Zainuddin, Zulkepli Majid, Mohd Farid Mohd Ariff and Khairulnizam M Idris</td>
</tr>
<tr>
<td>**A Geospatially Enabled Digital Twin Approach for Smart Infrastructure Application**
Dionnald Beh, Alias Abdul Rahman and Mark Schneider</td>
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<tr>
<td>**Spatial Variation of Urban Heat Island Intensity in Urban Cities using Modis Satellite Data**
Ruchi Bala, Rajendra Prasad, Vijay Pratap Yadav and Jyoti Sharma</td>
</tr>
<tr>
<td>**Visibility Analysis of Huge Outdoor Advertisements along Guadalupe Bridge in EDSA Highway from Structure-from-Motion Photogrammetry**
Maria Nathalie Manansala, Renzelle Monice Ong and Karl Adrian Vergara</td>
</tr>
<tr>
<td>**Practical Terrestrial Laser Scanning Field Procedure and Point Cloud Processing for BIM Applications – TNB Control and Relay Room 132/22KV**
Mohd Hafiz Zakaria, Khairulnizam M Idris, Zulkepli Majid, Mohd Farid Mohd Ariff, Norhadija Darwin, Mohd Azwan Abbas, Khairulazhar Zainuddin, Muhamad Afiq Aziz and Rashidah Abdul Shukor</td>
</tr>
<tr>
<td>**Seismic Damage Assessment of Lifelines based on Geospatial Analysis**
Mohammad Eskandari, Sara Goodarzi and M.A Nekooie</td>
</tr>
</table>

GGT (S4C) Track

GGT (S4C) – Thu. Oct. 3rd, 08:30 – 10:00 * **Chairperson: Uznir Ujang** **(Room: Safir II)**	**Boundary Re-assessment of the Meter Reading Unit (MRU) for Tenaga Nasional Berhad, TNB Cheras** *Alia Syafika Zulkflee, Mohd Faisal Abdul Khanan, Hafiz Aminu Umar, Muhammad Zulkarnain Abdul Rahman and Nik Mohd Fadhil Nik Mohd Kamil*
	Exploring Spatio-temporal Wave Pattern using Unsupervised Technique *Nurul Atikah and Norhakim Yusof*
	Development of Augmented Reality Pipeline Visualiser (ARPV) Application for Visualising Underground Water Pipeline *Meng Cheng Li, Shahabuddin Amerudin and Zainab Mohamed Yusof*
	A Structural Model of Enterprise GIS requirement for Johor Bahru City Council *Azman Ariffin, Nurul Syazwani Samsudin, Uznir Ujang, Affendi Ahamad and Zakri Tarmidi*
	Development of Smart Cities in Taiwan from the Perspective of Cloud Computing Security *Shiann-Ming Wu and Yung-Chang Wu*
	Creating Strategic Business Value from Big Data Analysis - Application Telecom Network Data and Planning Documents *Otmane Yazidi Alaoui, Salaheddine Hamdoune, Boulaassal Hakim, Wahbi Meriem and Omar El Kharki*
	An Area Merging Method in Map Generalization Considering the Boundary Characteristics of Structured Geographic Objects *Pengda Wu, Yong Yin and Chengming Li*

Day 2: Technical Session V (Parallel)

LADM (S5) Track – Industry / Modelling

LADM (S5) – Thu. Oct. 3rd, 14:00 – 15:30 Chairperson: Rod Thompson (Room: Ballroom Mahkota 2)	**The Role of LADM in Configurable Geographic Information Systems** *Katherine Smyth*
	Uganda and Tanzania Land Administration Modernization Based on IT-Leap Concept *Aurélie Milledrogues, Igor Popiv, Maksym Kalyta and Carol Roffer*
	Developing an LADM-compliant Mobile Data Collector for Accelerating Participatory Cadastral Mapping and Registration Activities *Trias Aditya, I Ketut Gede Ary Sucaya, Fajar Adi Nugroho, Han Lukman Syahid and Dany Laksono*
	Agent-Based Simulation modeling Approach for Tenure Security Dynamics *Padmakumara Milinda Piyasena Nawasiya Mudiyanselage*
	LADM2019 Warp-up and next steps within FIG, ISO TC211 and OGC

SDSC (S5) Track – Buildings and Spaces, Processes and Frameworks

GGT (S5A) – Thu. Oct. 3rd, 14:00 – 15:30 **Chairperson: Sisi Zlatanova** **(Room: Baiduri + Berlian)**	**A Large Scale Classification of Public Spaces using a Study of Perception and Public Data from Inegi of the City of Puebla, San Pedro Cholula and San Andres Cholula** *A. Oliart Ros, T. Gonz´Alez Cacho, D. Sol Mart´Inez and D. Clavijo Plourde*
	Contribution of Sustainable Design to Critical Regionalism: Analysing Sustainability Effectiveness in Vernacular Urban Building *Stephen T.F. Poon*
	Understanding Smart City: A Shareable Framework. The Case of China *Chengming Li, Xiaoli Liu, Zhaoxin Dai and Pengda Wu*
	Universities as Smart City Drivers in Small and Medium-Sized Cities *L. Bodum and D. Moreno*
	A Database System for Smart Sustainable Islands Index Application *Vassilios C. Moussas, Dimos N. Pantazis and Argyrakis Panagiotis*
	Smart Governance in the Capital City of Warsaw with the use of ICT and Geoinformation Technologies *D. Gotlib, T. Kulisiewicz, M. Muraszkiewicz and R. Olszewski*

GGT (S5A) Track

GGT (S5A) – Thu. Oct. 3rd, 14:00 – 15:30 * **Chairperson: Dr. Muhammad Imzan Hassan** **(Room: Delima + Nilam)**	**Effectiveness of Classification Method and Color Symbol Scheme on Choropleth Map of Population Density in Special Region of Yogyakarta** *Zulfa Nur'aini 'Afifah and Sudaryatno*
	A Web-based Land Information System, Tool for Online Land Administration in Akure Nigeria *Sunday Oyetayo Babalola and Uyi O Igbinomwanhia*
	Integrating Network Concept into Multi Criteria Analysis for Suggesting Bus Rapid Transit Routes *Nur Liyana Jamalul Shamsudin, Mohd Faisal Abdul Khanan, Hafiz Aminu Umar, Siti Nurulainni Atan and Ami Hassan Md Din*
	Site Selection for New Point to Point (PP) Bus Endpoints and Routes in Metro Manila, Philippines *Karl Adrian Vergara, Joanna Sanchez and Erwin Lorenzo Bautista*
	Analysing Student Tourist Movement Based on the Utility Maximisation in Designing Tour Package in Johor Bahru *Isabel Farid, Mohd Faisal Abdul Khanan, Hafiz Aminu Umar and Zamri Ismail*
	Bio Optical Modelling of Laguna Lake using Bomber Tool and Wasi-derived Inverted Parameters *Rey Jalbuena, Ariel Blanco, Amihan Manuel, Raymund Sta. Ana and Justine Ace Santos*
	Coastal Vulnerability Index Development: A Review *Amalina Izzati Abdul Hamid, Ami Hassan Md Din, Norhakim Yusof, Nazirah Mohamad Abdullah, Abdullah Hisam Omar and Mohd. Faisal Abdul Khanan*
	A Study on the Site Selection for Radar Installation for Meteorological Observation *Unuzaya Enkhjargal, Suho Bak, Dohyun Hwang and Hongjoo Yoon*

GGT (S5B) Track

<table>
<tr>
<td rowspan="7">GGT (S5B) – Thu. Oct. 3rd, 14:00 – 15:30 *
Chairperson: Prof. Dr. Taşkin Kavzoğlu
(Room: Safir I)</td>
<td>A Comparison of Machine-Learning Regression Algorithms for the Estimation of Lai using Landsat – 8 Satellite data
Vijay Pratap Yadav, Rajendra Prasad, Ruchi Bala, Ajeet Kumar Vishwakarma, Suraj Amarbahadur Yadav and Shubham Kumar Singh</td>
</tr>
<tr>
<td>Geospatial Machine Learning Datasets Structuring and Classification Tool: Case Study for Mapping LULC from Rasat Satellite Images
Sohaib K. M. Abujayyab and Ismail Rakıp Karaş</td>
</tr>
<tr>
<td>Investigating the effect of Spatial Resolution on the estimation of Optimal Segmentation Parameters using Worldview-2 and Sentinel-2 Images
T. Kavzoglu and H. Tonbul</td>
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<tr>
<td>The Potential of Building Detection from SAR and Lidar using Deep Learning
Zuhaidah Nordin, Helmi Zulhaidi Mohd Shafri, Ahmad Fikri Abdullah and Shaiful Jahari Hashim</td>
</tr>
<tr>
<td>Big Data Processing and Analysis using Multi-Temporal Sentinel-1 Data to Manage Floods in North of Morocco
Tabyaoui Hassan, El Hammichi Fatima and Lahsaini Meriem</td>
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<tr>
<td>Assessing Disaster Risk and Resilience: A Case Study in Urban Flood Vulnerable Community in Kampung Asahan, Kuala Selangor
Mohamad Fazli Sardi, Khamarrul Azahari Razak and Rosdiana Zaini Bakri</td>
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<tr>
<td>An Automated Bottom up Hydrologic Coding System for Dendritic River System
Zhaoxin Dai, Chengming Li, Pengda Wu and Yong Yin</td>
</tr>
</table>

GGT (S5C) Track

GGT (S5C) – Thu. Oct. 3rd, 14:00 – 15:30 * Chairperson: Suhaibah Azri (Room: Safir II)	**An Indicator-based Approach for Micro-Scale Physical Flood Vulnerability Mapping** *Ismaila Usman Kaoje, Muhammad Zulkarnain Abd Rahman, Tze Huey Tam and Mohd Radhie Mohd Salleh*
	Standardized Database for Flood Risk Management in Morocco *Tabyaoui Hassan and El Hammichi Fatima*
	Spatial Analysis of Poverty and Happiness Profiles in Special Region of Yogyakarta using Small Area Estimation Method *Shafiera Rosa El-Yasha, Mayang Rizky, Totok Wahyu Wibowo and Sudaryatno*
	A Review on Measuring Entrepreneurs' Social Behavior via Spatial Analysis Techniques *Noorain Mohd Nawawi, Muhamad Uznir Ujang, Nor Suhaibah Azri and Tan Liat Choon*
	Land Use/Land Cover Assessment in a Seismically Active Region in Kundasang, Sabah *Nur Afiqah Mohd Kamal, Khamarrul Azahari Razak and Shuib Rambat*
	Spatial Database Modeling for Speleological Inventory of the Moroccan Atlas Mountains *El Hammichi Fatima and Tabyaoui Hassan*
	Tourists Geovisualization Analysis Utilizing Instagram Data in Central Java Province and Special Region of Yogyakarta *Achmad Rofii, Totok Wibowo, Sudaryatno and Nur Farda*
	Assessing UAV Indices as Vegetation Health Indicator for Tanjung Piai Mangrove Forest *Sheriza Mohd Razali, Ahmad Ainuddin Nuruddin and Nurul Fatin Musa*

SHORT PAPER PRESENTATION (WITH POSTER)

1. **A Proposal to implement Integrated GIS System in Disseminating Spatial Information for Malaysia Development Approval (Stakeholders and Applicants) – A Concept Paper**
   Hairi Karim, Abdul Latif Abu Seman, Mohamad Azrol Mohamad Dali, Siti Zurianah Othman and Siew Chengxi Bernad

2. **Development of GIS Database and Facility Management System: Asset and Space in UKM**
   Mohd Aizat Saiful Bahri, Khairul Nizam Abdul Maulud, Muhammad Amartur Rahman, Aslinda Oon Binti Ridzuan Oon, Adi Irfan Che Ani, Che Hafify Che Hashim, Hairi Karim, Muhammad Syahidi Hasbullah and Mohd Za'im Aziz

3. **Interactive 3D City Visualization from Structure Motion Data using Game Engine**
   Dany Laksono, Trias Aditya and Gondang Riyadi

4. **Spatially Modelling Net Migration in New Zealand**
   Lars Brabyn

5. **Urban Infrastructure and Buildings in Ruins: Damage Severity Mapping of Neighborhoods affected by the June 08 Windstorm in Bauchi**
   Kamil Muhammad Kafi, Abdulkadir Aliyu, Muhammad Saleh, Kemi Hamdat Olugbodi, Ibrahim Jibrin Abubakar and Suleiman Gambo Usman

6. **Analysis of the Red Tide Occurrence Pattern When High Water Temperature**
   Dohyun Hwang, Suho Bak, Unuzaya Enkgjargal, Minji Jeong, Hongjoo Yoon and Wonchan Seo

7. **Prediction and Mapping of Cochlodinium Polykrikoides Red Tide using Machine Learning under Imbalanced Data**
   Suho Bak, Dohyun Hwang, Unuzaya Enkhjargal and Hongjoo Yoon

8. **Spatial Database Development for Oil Spills Pollution Affecting Water Quality System in Niger Delta**
   Hafiz Aminu Umar, Mohd Faisal Abdul Khanan, Anuar Ahmad, Mohammad Jawaluddeen Sani, Muhammad Zulkarnain Abdul Rahman and Alias Abdul Rahman

9. **Assessment of different Unmanned Aerial Vehicle System for production of Photogrammetry products**
   Mohd Hafis Mohd Room, Anuar Ahmad and Mohd Adly Rosly

10. **Implementation of 3D Cadastre with Indigenous Knowledge Concept of "Tri Hita Karana" in Bali Island, Indonesia**

Ketut Tomy Suhari, Asep Yusuf Saptari, Bambang Edhi Laksono, Nyoman Robby Manik Saputra and Putu Harry Gunawan

11. **Assessment of Sustainability of Affordable Housing in Malaysia**
    Nurfarhani Rizal, Zakri Tarmidi, Najib Razali and Sufi Pisol

12. **Public Private Partnership as a Determinant Factors of Affordable Housing in Abuja Nigeria**
    Yahaya Ahmed and Ibrahim Atan bin Sipan

SHORT PAPER PRESENTATION

1. **A Geospatially Enabled Digital Twin Approach for Smart Infrastructure Application**
   Dionnald Beh, Alias Abdul Rahman and Mark Schneider

2. **Building Information Modeling Potential for an Enhanced Real Estate Valuation Method based on the Hedonic Approach**
   Siham El Yamani, Mohamed Ettarid and Rafika Hajji

3. **Hedonic Model and GIS-based Real Estate Valuation Management in Amman: Conceptual Study**
   Zubeida Aladwan, Mohd Sanusi Ahamad and Ahmad Shukri Yahya

4. **Assessing UAV Indices as Vegetation Health Indicator for Tanjung Piai Mangrove Forest**
   Sheriza Mohd Razali, Ahmad Ainuddin Nuruddin and Nurul Fatin Musa

5. **Investigating the effect of Spatial Resolution on the estimation of Optimal Segmentation Parameters using Worldview-2 and Sentinel-2 Images**
   T. Kavzoglu and H. Tonbul

6. **A Study on the Site Selection for Radar Installation for Meteorological Observation**
   Unuzaya Enkhjargal, Suho Bak, Dohyun Hwang and Hongjoo Yoon

KEYNOTE & INVITED TALK SESSION

Wed. Oct. 2nd Ballroom Mahkota 2	11:20 – 11:50	**Keynote 1** **SDDI – Integration of Digital Twins, IoT, and Security for Smart Cities based on Open Standards** *Professor Dr. Thomas Kolbe, TU Munich, Germany* *Chair person: Prof. Dr. Alias Abdul Rahman*
Wed. Oct. 2nd Ballroom Mahkota 2	11:50 – 12:20	**Keynote 2** *Dr. Wei Zhou* *Platinum Sponsor, Country Garden Pacificview* *Chair person: Prof. Dr. Volker Coors*
	12:20 – 12:50	**Keynote 3** **Geospatial Management in Selangor – A Way Forward towards Smart State** *Mr. Mohamad Suhaimi Mohamad Tahir, SmartSel, Malaysia* *Chair person: Prof. Dr. Volker Coors*
	14:45 – 15:10	**Invited Talk 1** **Geomatics in Malaysia: Facing the 4th Industrial Revolution** *Haji Shaharuddin bin Musa, PEJUTA* *Chair person: Sr. Haji Kamali Adimin*
Thu. Oct. 3rd Ballroom Mahkota 2	10:30 – 11:00	**Keynote 4** **Indoor GIS Advancement** *Dr. Ing. Morakot Pilouk, ESRI HQ, Redlands, USA* *Chair person: Prof. Dr. Alias Abdul Rahman*
	11:00 – 11:30	**Keynote 5** **UN GGIM Framework for Effective Land Administration** *Mr. Kees De Zeeuw, Dutch Kadaster, Netherlands* *Chair person: Prof. Dr. Alias Abdul Rahman*
	11:30 – 11:50	**Invited Talk 2** **Whether Geomatics or Geospatial: Shifting from Terms to Actions for Surveyors** *Dr. Noordin bin Ahmad, PEJUTA* *Chair person: Assoc. Prof. Dr. Zulkarnaini Mat Amin*

FLOOR / ROOM AND EXHIBITION PLAN

Conference presentations and talks will take place in five different rooms namely; Mahkota 2, Nilam + Delima, Berlian + Baiduri, Safir I and Safir II.
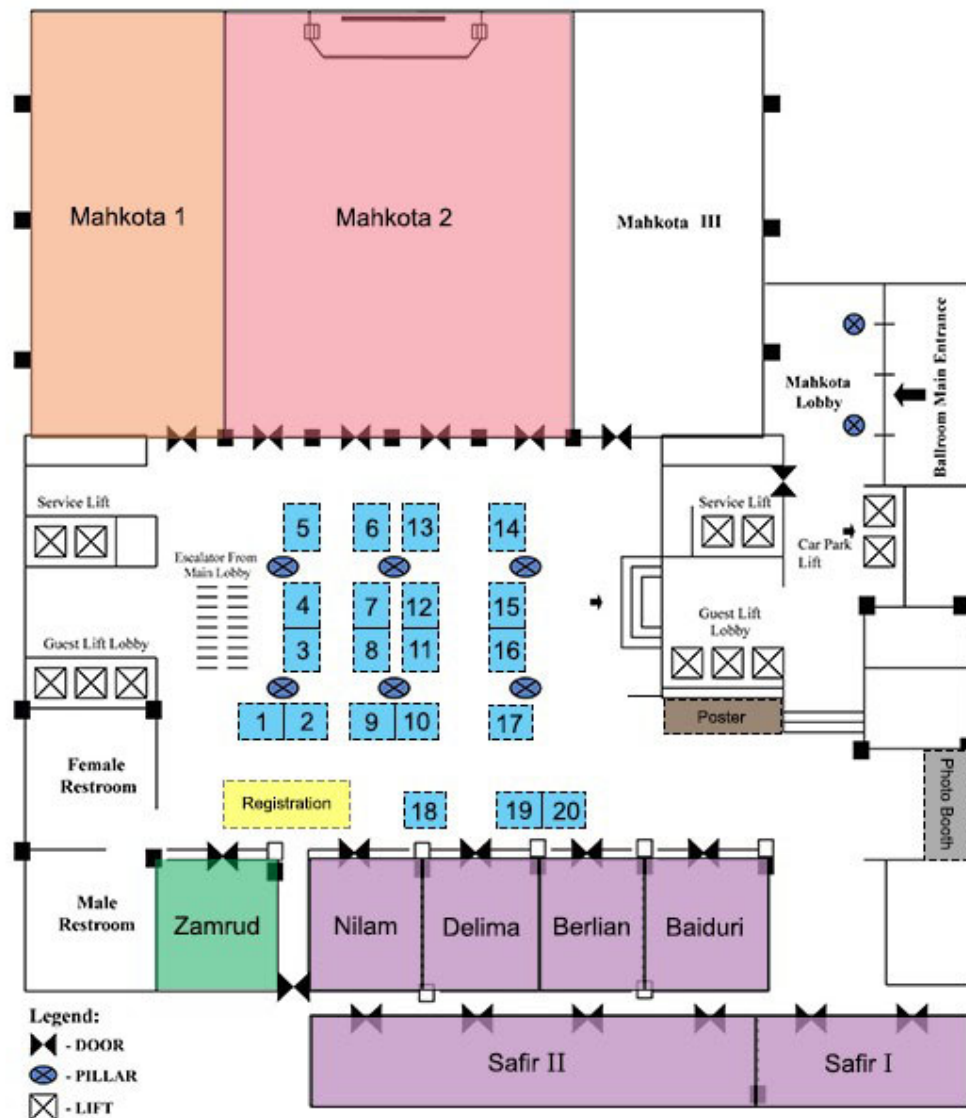

Figure: Hotel Istana conference floor plan.

Booth Layout:

1. Institution of Geospatial and Remote Sensing Malaysia (IGRSM)
2. KQ Geo Technologies Co. Ltd.
3. Bandwork GPS Solutions Sdn Bhd
4. GPS Lands (M) Sdn Bhd
5. TECRS – Saudi Arabia
6. MAP2U Sdn Bhd
7. Reveron Consulting Sdn Bhd
8. RDG Supply Sdn Bhd
9. Jinsoon Yap Survey Solution – South
10. AntaraGrafik Systems Sdn Bhd
11. MNJ Teras Sdn Bhd
12. Jalal Johari Consultants Sdn Bhd
13. Country Garden Pacificview
14. Transwater API Sdn Bhd
15. EJ Motiwalla
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