

The XXIV FIG International Congress 2010



Technical Program

11 – 16 April 2010
Sydney Convention & Exhibition Centre
Sydney, Australia



**Facing the Challenges
– Building the Capacity**

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The XXIV FIG International Congress 2010

Facing the Challenges – Building the Capacity

Technical Program

Friday, 9 April 2010

FIG Council Meeting

Friday, 9 April 09:00–17:00
Venue: Boardroom, Crowne Plaza Hotel
Commission: FIG Council
– by invitation only

Saturday, 10 April 2010

ACCO Meeting

Saturday, 10 April 09:00–17:00
Venue: Blackwattle 3, Crowne Plaza Hotel
Commission: FIG Commission Chairs
– by invitation only

Sunday, 11 April 2010

FIG General Assembly – Session I

Sunday, 11 April 09:00–12:00
Venue: Grand Ballroom B, SCEC
– for FIG Members
– open for observers

FIG General Assembly – Session I (cont.)

Sunday, 11 April 13:00–15:00
Venue: Grand Ballroom B, SCEC
– for FIG Members
– open for observers

Reception for FIG Honorary Members

Sunday, 11 April 15:00–16:00
Venue: Bayside 107, SCEC
Commission: FIG President
– by invitation only

Welcome Reception

Sunday, 11 April 18:30–20:30
Venue: Sydney Town Hall
An invitation is extended to all delegates and registered accompanying persons to attend the official Welcome Reception.

Monday, 12 April 2010

Annual Meetings of FIG Commissions

Monday, 12 April 08:00–09:30
Venue: See list, SCEC

- Commission 1 – Bayside 106
- Commission 2 – Bayside 202
- Commission 3 – Bayside 104
- Commission 4 – Bayside 101
- Commission 5 – Bayside 102
- Commission 6 – Bayside 202
- Commission 7 – Bayside 103
- Commission 8 – Bayside 105
- Commission 9 – Bayside 201
- Commission 10 – Bayside 108

Opening Ceremony

Chair: Mr. **Paul Harcombe**, FIG Congress Director, Australia
Monday, 12 April 10:00–11:30
Venue: Bayside Auditorium B, SCEC

Michael Giudici, SSSI President (Australia):
Welcome Address (4735)

Stig Enemark, FIG President (Denmark):
Opening Address (4736)

Tony Kelly, Minister for Lands (Australia):
Welcome Address (4737)

Marie Bashir, AC CVO, Governor of New South Wales (Australia):
Opening Address (4738)

Tim Flannery (Australia):
Opening Keynote Address (4642)

Opening of the Exhibition
Monday, 12 April 12:00–13:00
Venue: Exhibition Hall, SCEC

- Official Opening of the FIG 2010 Exhibition

Plenary Session 1 – FIG Achievements for 2007–2010

Monday, 12 April 13:00–14:30
Venue: Bayside Auditorium B, SCEC
Commission: All
Chair: Mr. **Robert W. Foster**, FIG Honorary President, USA

Stig Enemark (Denmark):
Building the Capacity – the FIG Agenda and Achievements 2007–2010 (4643)

Matt Higgins (Australia):
Achievements of FIG Commissions 2007–2010 (4696)



INV 1 – Land Governance in Support of the Millennium Development Goals

Monday, 12 April 15:00–16:30
Auditorium B, SCEC
Commission: FIG and WB
Chair: Mr. **András Osskó**, Chair of FIG Commission 7, Hungary

Stig Enemark (Denmark): Land Governance and the Response to Climate Change, Natural Disasters and the Millennium Development Goals (4661)

Klaus W. Deininger, World Bank and **Keith C. Bell**, World Bank (USA): World Bank Policy on Land Governance in Support of the Millennium Development Goals (4660)

Stig Enemark (Denmark), **Paul van der Molen** (the Netherlands) and **Robin McLaren** (United Kingdom): Land Governance in Support of the Millennium Development Goals – A New Agenda for Land Professionals (4662)

TS 1B – SIM in Support of Mega City Management

Monday, 12 April 15:00–16:30
Venue: Bayside 103, SCEC
Commission: 3
Chair: Dr. **Szabolcs Mihály**, Hungary
Rapporteur: Mr. **Gerasimos Apostolatos**, Greece

Anthony Adeoye (Nigeria): Lagos State Geoinformation Infrastructure Policy LAGIS as a Tool for Mega City Development: Opportunities and Challenges (3743)

Chryssy Potsiou (Greece), **Yerach Doytsher** (Israel), **Paul Kelly** (Australia), **Rafic Khouri** (France), **Robin McLaren** (United Kingdom) and **Hartmut Müller** (Germany): Rapid Urbanization and Mega Cities: The Need for Spatial Information Management (4709)

Yerach Doytsher (Israel): Technical Innovation in Management of Spatial Data (4710)

Paul Kelly (Australia): Case Studies on Mega Cities (4711)

Robin McLaren (United Kingdom): Mega Cities – Conclusions and Recommendations (4713)

TS 1C – Geodetic Infrastructure and Datum

Monday, 12 April 15:00–16:30
Venue: Bayside 104, SCEC
Commission: 5
Chair: Mr. **Gary Johnston**, Australia
Rapporteur: Mr. **Dave Doyle**, USA

Lars E. Engberg, **Mikael Lilje** and **Jonas Ågren** (Sweden): Is There a Need of Marked Points in Modern Geodetic Infrastructure? (3878)

Daniel Roman, **Yan Wang**, **Jarir Saleh** and **Xiaopeng Li** (USA): Geodesy, Geoids, and Vertical Datums: A Perspective from the U.S. National Geodetic Survey (3768)

Nicholas Brown, **Will Featherstone** and **Guorong Hu** (Australia): AUSGeoid09: Improving the Access to Australia's Vertical Datum (4316)

Roger Fraser (Australia) and **Nic Donnelly** (New Zealand): Progress Towards a Consistent Exchange Mechanism for Geodetic Data in Australia and New Zealand (3961)

Graeme Blick and **Don Grant** (New Zealand): The Implementation of a Semi-Dynamic Datum in New Zealand – Ten Years On (3975)

Munkhtsetseg Dalkhaa (Mongolia): Geodetic Network and Geoid Height Model of Mongolia (3912)

TS 1D – Deformation Measurement of Structures Using GNSS

Monday, 12 April 15:00–16:30
Venue: Bayside 102, SCEC
Commission: 6 and 5
Chair: Dr. **Gethin W. Roberts**, Chair Elect of FIG Commission 6, United Kingdom
Rapporteur: Mr. **Neil Ashcroft**, Singapore

Chris Rizos (Australia), **Joel Van Cranenbroeck** (Belgium) and **Vincent Liu** (Hong Kong SAR, China): Advances in GNSS-RTK for Structural Deformation Monitoring in Regions of High Ionospheric Activity (4125)

Gethin Roberts and **Chris Brown** (United Kingdom): Monitoring Bridges by GNSS (4452)

Joël Van Cranenbroeck (Belgium) and **Antonio Lopez** (Spain): Real Time Bridge Deck Guidance Using GNSS Systems (4077)

Cemal Ozer Yigit, **Cevat Inal** (Turkey), **Li Xiaojing**, **Linlin Ge** (Australia) and **Mevlut Yetkin** (Turkey): Analysis of Wind-induced Response of Tall Reinforced Concrete Building Based on Data Collected by GPS and Precise Inclination Sensor (3930)

Rachelle Winefield, **Jeremy Palmer**, **Chris Crook** and **Nic Donnelly** (New Zealand): The Application of a Localised Deformation Model after an Earthquake (4144)

TS 1E – Environment and Energy: Policy and Practice

Monday, 12 April 15:00–16:30
Venue: Bayside 105, SCEC
Commission: 8
Chair: Dr. **Diane Dumashie**, Chair of FIG Commission 8, United Kingdom
Rapporteur: Mr. **John Brock**, Australia

Diane Dumashie (United Kingdom): FIG Commission Activities 2007–2010 (4695)

Michael Doran (United Kingdom): Environment and Energy (4674)

Kate Fairlie and **Spike Boydell** (Australia): Representing Carbon Property Rights (4224)
This is a peer reviewed paper.

Mwenda Makathimo and **Paul Guthiga** (Kenya): Land Use Policies and Natural Resource Management in Kenya: The Case of Nairobi River Basin, Kenya (4322)

Tony Proust (Australia): How Newcastle, Australia Might Respond to the Threat of Climate Change (3927)

Jennifer Oduor (Kenya): Environmental and Social Considerations in Geothermal Development (3857)

TS 1F – Property Taxation

Monday, 12 April 15:00–16:30
Venue: Bayside 201, SCEC
Commission: 9
Chair: Prof. **Kauko Viitanen**, Chair of FIG Commission 9, Finland
Rapporteur: Mr. **Vince Mangioni**, Australia

Frances Plimmer and **William McCluskey** (United Kingdom): The Basis and Administration of the Property Tax: What Can be Learnt from International Practice? (4174)

Linda Johansson (Sweden): Urban Management Land Information System (UMLIS) for Revenue Collection (4201)

Vince Mangioni (Australia): The Evolution and Operation of Recurrent Property Taxation (4385)
This is a peer reviewed paper.

Ruud Kathmann and **Marco Kuijper** (the Netherlands): Taxpayer Checks Data in the Scheme of Base Registers (3894)

Bambang-Edhi Leksono, **Yuliana Susilowati** and **Arief Setyabudi** (Indonesia): Prediction Model for Transparency of Land Values Data Base on the Transaction Report (4318)

Note that throughout this Program, “TS” refers to a Technical Session with full presentations while “FS” refers to a Flash Session, which are shortened presentations that take the place of Poster Sessions at past FIG events.

TS 1G – Professional Management and Education

Monday, 12 April 15:00–16:30
Venue: Bayside 202, SCEC
Commission: 1, 2 and 7
Chair: Ms. **Leonie Newnham**,
Chair Elect of FIG Commission 1,
Australia
Rapporteur: Prof. **Steven Frank**,
Chair Elect of FIG Commission 2,
USA

Leonie Newnham (Australia):
Building Land Management Or-
ganisations and Professions for
the Information Age (4454)

John Hohol (USA):
The FIG Foundation: Building a
Sustainable Future Report on
Activities (3850)

Richard Hucker MBE (United
Kingdom):
Management of Training of Sur-
veyors (3923)

Ian Iredale and **Craig Roberts**
(Australia):
Promoting the Surveying Profes-
sion in New South Wales, Australia
(3852)

TS 1H – National Infrastructures for Survey, Mapping and Land Administration

Monday, 12 April 15:00–16:30
Venue: Bayside 203, SCEC
Commission: 5 and 7
Chair: Dr. **Neil D. Weston**, USA
Rapporteur: Mr. **Darren Burns**,
Australia

Dan Paull (Australia):
The Provision of Access to a Na-
tionally Coordinated CORS Net-
work (4088)

Russell Priebbenow (Australia):
Delivering Benefits through Col-
laboration – Australia and New
Zealand's Intergovernmental
Committee on Surveying and
Mapping (ICSM) (4107)

Marinko Bosiljevac and **Željko
Bačić** (Croatia):
The Implementation of New Of-
ficial Geodetic Datum and Map
Projections in the Republic of
Croatia (4173)

Bashkim Idrizi and **Risto
Ribarovski** (Macedonia, FYROM):
Historical Overview, Quality and
Current Condition of the Geodetic
Networks in Macedonia (4242)
*This paper has not been presented
at the congress.*

Jamal Ali Gledan (Libya), **Orhan
Ercan** (Turkey) and **Mahmoud
Ejweli** (Libya):
Libyan National Mapping Project
(4423)

TS 1I – Administration of Marine Spaces

Monday, 12 April 15:00–16:30
Venue: Bayside 106, SCEC
Commission: 4 and 7
Chair: Mr. **Andrew Leyzack**, Chair
of FIG Commission 4, Canada
Rapporteur: Mr. **David Neale**,
Trinidad and Tobago

Michael Sutherland (Canada):
Further Steps Towards Improving
the Administration of Marine and
Coastal Spaces: The Marine Cadas-
tre Component (4635)

Haim Srebro and **Orit Marom**
(Israel):
Towards a Marine Cadastre in
Israel (3839)

Hyun Sook Lee (Republic of
Korea):
Issues with Building a Marine
Cadastre System in South Korea
(3896)

I Made Andi Arsana and **Farid
Yuniar** (Indonesia):
Geospatial Aspects of Maritime
Boundary Delimitation in the Sin-
gapore Strait Involving Indonesia,
Malaysia and Singapore (3939)

Astrit Rimayanti and **Sora Lokita**
(Indonesia):
The Solution Method for the Prob-
lem of the Geodetic Datum of the
Territorial Sea Boundary Between
the Republic of Indonesia and the
Republic of Singapore (4544)

TS 1J – Building Institutional and Organisational Capacity

Monday, 12 April 15:00–16:30
Venue: Bayside 101, SCEC
Commission: 1
Chair: Prof. **Mohamed Ettarid**,
Morocco
Rapporteur: Mr. **Yaacoub Saade**,
Chair of FIG Commission 1, Leba-
non

Iain Greenway (United Kingdom),
Stig Enemark (Denmark), **John
Parker** (Australia), **Chee Hai Teo**
(Malaysia), **Richard Wonnacott**
(South Africa), **Spike Boydell**
(Australia) and **Santiago Borrero**
(Mexico):
Institutional and Organisational
Development (3950)

Roberta Esbitt and **Thomas
Werner** (Australia):
Rescuing the Surveying Profession
from Near-Extinction: The Survey-
ing Task Force Inc. (4431)

Fausto Savoldi (Italy):
A Way to Create a New Profession-
alism: Permanent Training (4397)

Melkamu B. Moges (Ethiopia):
Establishing an Ethiopian Land
Administration Professionals
Association: A Conducive Environ-
ment (4404)

Leonard Yablonsky (Russia):
Conceptual Bases of Developing
the Branch of Geodesy and Car-
tography in the Russian Federa-
tion (4495)

Eugene Silayo (Tanzania):
A Strategy for Sustainable Capac-
ity Building in Developing Coun-
tries (4684)
*This paper has not been presented
at the congress.*

TS 1M – Project and Organisation Management I

Monday, 12 April 15:00–16:30
Venue: Bayside 108, SCEC
Commission: 10
Chair: Mr. **Andrew Morley**, Chair
of FIG Commission 10, United
Kingdom
Rapporteur: Mr. **Douichi Choukri**,
Morocco

Peter Smith (Australia):
Quantity Surveying Practice in
Australia and the Asia-Pacific
Region (4312)
This is a peer reviewed paper.

James M.W. Wong and **S.
Thomas Ng** (Hong Kong SAR,
China):
Company Failure in the Construc-
tion Industry: A Critical Review
and a Future Research Agenda
(4360)
This is a peer reviewed paper.

Krishna Mochtar (Indonesia):
Pricing Strategy of Indonesian
Contractors (3832)



FS 1B – Spatial Information Management

Monday, 12 April 16:30–17:30
Venue: Bayside 103, SCEC
Commission: 3
Chair: Ms. **Tarja Myllymäki**, Finland
Rapporteur: Mr. **Peter Laarakker**, the Netherlands

Jaemyeong Kim, Changwan Seo and **Yun-Soo Choi** (Republic of Korea):
3D Geospatial Database Implementation and Quality Management in Korea (4176)

Andrus Nnaemeka Ukaejiofo (Nigeria):
Application of GIS in Land Administration in Nigeria – The Example of Federal Land Information System (FELIS) (4533)

George Vozikis (Greece):
Investigation and Comparison of Different Methods for Automated Building Extraction from High Resolution Image Data (4605)

Ali Reza Telgerdi and Mostafa Telgerdi (Iran):
Migration from CMMS to GIS Improves OCE Factor for Company (4341)

Silja Lockemann (Germany):
Geoinformation as a Planning Instrument for Location Analysis for Semicentralized Supply and Disposal Units in Hanoi (3956)

Open Meeting for Young Surveyors

Monday, 12 April 16:30–17:30
Venue: Bayside 106, SCEC
Commission: Young Surveyors Network
Chair: Ms. **Cecilia Lindén**, Chair of FIG Young Surveyors Network

- This meeting is open for young surveyors and students who are interested in FIG.

FS 1C – Geoid and Gravity – Modelling, Measurements and Applications

Monday, 12 April 16:30–17:30
Venue: Bayside 104, SCEC
Commission: 5
Chair: Prof. **Bill Kearsley**, Australia
Rapporteur: Mr. **Nic Donnelly**, New Zealand

Yam Khoon Tor (Singapore):
Accuracy of Geometric Geoid Model of Singapore using RTK Heighting (3974)

Pavel Novak (Czech Republic):
On Determination of a Regional Vertical Datum by Combination of EGM, Local Gravity and GPS/leveling Data (4048)

Simon Holmes and Dan Roman (USA):
The Application of High-Degree Gravitational Models to Processing Airborne Gravity Collected under the NGS GRAV-D Project (4057)

Janis Kaminskis (Latvia):
Geoid Model for Surveying in Latvia (4066)

Olalekan Isioye (Nigeria):
Normal Gravity and the Nigerian Height System (4515)

Saad Mogren (Saudi Arabia):
A Preliminary Attempt of a Quasi-geoid for Saudi Arabia (4623)

Ernesto Rodríguez Roche and Pedro Luis García Pérez (Cuba):
Improving the Cuban National Geodetic Network by Means of the Global Positioning System (GPS) (4692)

FS 1D – Deformation Measurement of Engineering Structures

Monday, 12 April 16:30–17:30
Venue: Bayside 102, SCEC
Commission: 6
Chair: Dr. **Gethin W. Roberts**, Chair Elect of FIG Commission 6, United Kingdom
Rapporteur: Mr. **Russell Tiesler**, Australia

Vincent Lui (Hong Kong SAR, China):
State of Art in Structural Geodetic Monitoring Solutions (4076)

Russell Tiesler (Australia):
Roseires Dam Heightening Construction Surveys (4223)

Lukasz Bonenberg, Roberts Gethin, Hancock Craig and Lee Jae Kang (United Kingdom):
Engineering Applications of Integrated Wireless Band Pseudolite and GNSS System (4250)

Esra Tekdal Emniyeti, Rahmi Nurhan Celik and Tevfik Ayan (Turkey):
Determination of Structural Deformations Caused by Earthquakes Using Geodetic Techniques (4184)

Yunus Kalkan, Reha M. Alkan and Serdar Bilgi (Turkey):
Deformation Monitoring Studied at Ataturk Dam (4466)

Adrian T.G. Radulescu, Gheorghe M.T. Radulescu and Mihai V.G. Radulescu (Romania):
Geometric Structural Monitoring in Cinematic Regime – Dynamic Surveying as Means to Assure a Structure Safety (3945)
This paper has not been presented at the congress.

Mazher Choudhury, Bruce Harvey and Chris Rizos (Australia):
Mathematical Models and a Case Study of the Locata Deformation Monitoring System (LDMS) (3926)

FS 1F – Cadastre: Developments and Case Studies

Monday, 12 April 16:30–17:30
Venue: Bayside 201, SCEC
Commission: 7
Chair: Mr. **Daniel Roberge**, Canada
Rapporteur: Mr. **John Brock**, Australia

David Cowen, Nancy von Meyer, Robert Ader and David Stage (USA):
The Current Status of Land Parcel Data in the United States (3882)

Dek Kie Tcha, Young Jin Lee and Hyung Moo Kim (Republic of Korea):
New Cadastral Surveying Process Based on Wibro Communication (3983)

Les Gardner and Marc Strong (Australia):
Metrics Manager for Digital Cadastral Data Base Management (3979)

Jong-Hyun Yoon and Young-ho Lee (Republic of Korea):
Cadastral Surveying for Effective Caves Management in Korea (4019)

Robert Veitch, Clare Fitzpatrick and Catherine Cookesley (Australia):
Water as an Ownership Component in Shared Land Use Schemes in NSW and Victoria (4122)

Ross Hansen and Jason Grech (Australia):
A Step towards a Single Point of Truth for Cadastral Records in Parramatta City Council (4502)

Muhammad Adeel (Pakistan):
Evaluating the Role of Cadastral Maps in Pakistan from a GIS Perspective (4747)

FS 1G – Cadastre and Land Administration – Technical Development

Monday, 12 April 16:30–17:30
Venue: Bayside 202, SCEC
Commission: 7
Chair: Dr. **Markus Seifert**, Germany
Rapporteur: Prof. **Steven Frank**, Chair Elect of FIG Commission 2, USA

Nevil Cumerford (Australia):
The ICSM ePlan Protocol, Its Development, Evolution and Implementation (3886)

Ken Lyons and David Hebblethwaite (Australia):
Using Microworlds to Improve Success and Sustainability in Land Development Assistance Endeavours (3765)

In-Su Lee, Dek-kie Tcha, Young-Jin Lee and Su-Jeong Kim (Republic of Korea):
Cadastral Boundary Extraction of Unregistered Islands Using Airborne Laser Scanning (3951)

Ali Darvishsefat and Farokh Pourshakouri (Iran):
Forest Boundary Mapping Using Multitemporal Satellite Images in Forested Areas of North Iran (4339)

Saeed Gharachelo and Seyed Kazem Alavipanah (Iran):
The Study of Geomorphologic Units Using Landscape and Photomorphic Unit (4599)

FS 1H – GNSS CORS Networks – Positioning Infrastructure, Analysis and Applications I

Monday, 12 April 16:30–17:30
Venue: Bayside 203, SCEC
Commission: 5
Chair: Mr. **Robert Sarib**, Australia
Rapporteur: Mr. **Mikael Lilje**, Chair Elect of FIG Commission 5, Sweden

Slawomir Cellmer (Poland):
GNSS Carrier Phase Processing Using Some Properties of Ambiguity Function Method (3913)

Kostov Gintcho (Bulgaria):
Some Studies on the Quality of GNSS Determinations under Specific Conditions (3999)

Joel Haasdyk, Craig Roberts and Volker Janssen (Australia):
Automated Monitoring of CORSnet-NSW using the Bernese Software (4133)

Young-Jin Lee, Kwang-Ho Jung, Jun-Ho Song, Ki-Duk Ahn and Hung-Kyu Lee (Republic of Korea):
CORS Management Reform in Korea (4216)

FIG Foundation Dinner

Monday, 12 April 19:00–22:00
Captain Cook Cruises (boarding time 18:45)

- The FIG Foundation Dinner is a cruise on Sydney Harbour, Join us for an enchanting scenic cruise whilst enjoying a three course meal complemented by Australian wines, beers and assorted soft drinks.
- Cost: A\$180.00 (includes donation to FIG Foundation).

INV 2 – Social Tenure Domain Model

Tuesday, 13 April 08:30–10:00
Venue: Bayside Gallery A, SCEC
Chair: Dr. **Mohamed El-Sioufi**, UN-HABITAT
Rapporteur: Mr. **Danilo R. Antonio**, UN-HABITAT

Stig Enemark (Denmark):
The Social Tenure Domain Model in Support of the GLTN Agenda (4680)

Clarissa Augustinus (South Africa):
Social Tenure Domain Model: What It Can Mean for the Land Industry and the Poor (3724)

Christiaan Lemmen (the Netherlands):
Social Tenure Domain Model as Tool for Secure Tenure and Poverty Alleviation (4681)

TS 2A – International Boundary Issues

Tuesday, 13 April 08:30–10:00
Venue: Bayside Auditorium A, SCEC
Commission: 7
Chair: Mr. **Bill Robertson**, New Zealand
Rapporteur: Mr. **Mohamed Bakessou**, Morocco

Bill Robertson (New Zealand):
Challenges for Surveying in the Establishment of International Borders (3895)

Maurice Kamto (Cameroon):
Law and Demarcation in the Light of the Experience of Demarcation of the Boundary between Cameroon and Nigeria (4759)

Kyoung-Soo Eom (Republic of Korea), **Vladimir Bessarabov** (Russia), **Guillaume Le Sourd** (France) and **Jeffrey Bliss** (USA):
The United Nations Technical Assistance in the Boundary Demarcation Activities (3858)

Sobar Sutisna (Indonesia):
International Boundary Fixing and the Roles of Indonesian Surveyors (3888)

Murat Meha (Kosovo):
Demarcation's Challenges of Kosovo–Macedonia Border (4481)
This paper has not been presented at the congress.

TS 2B – Low-Cost SDI and Best Practice Applications

Tuesday, 13 April 08:30–10:00
Venue: Bayside103, SCEC
Commission: 3
Chair: Dr. **Chryssy Potsiou**, Chair of FIG Commission 3, Greece
Rapporteur: Mr. **Anthony Adeoye**, Nigeria

Heri Sutanta, Abbas Rajabifard and Ian Bishop (Australia):
Impediments in e-Planning in Local Government – Indonesian Case Study (4142)

Rui Pedro Juliao (Portugal):
Low-Cost SDI – The Portuguese Example of Building a SDI for Small Countries (4165)

Lesley Arnold (Australia):
Delivering Sustainable Data and Product Management Business Processes (4178)

Stéphane Roche (Canada):
Geoweb, Neogeography, and VGI: New Challenges for Geomatics Sciences and Engineering (4208)

George Havakis and Ken Toleman (Australia):
Streamlining Processes for Recording and Managing Local Government Assets (4321)

TS 2C – Low Cost GNSS and New Positioning Techniques

Tuesday, 13 April 08:30–10:00
Venue: Bayside 104, SCEC
Commission: 5
Chair: Dr. **Volker Schwieger**, Germany
Rapporteur: Mr. **David Martin**, France

Neil Weston (USA) and **Volker Schwieger** (Germany):
Cost-effective GNSS (4685)

Binghao Li, Andrew G. Dempster and Chris Rizos (Australia):
Positioning in Environments Where GPS Fails (4357)
This is a peer reviewed paper.

Joel van Cranenbroeck (Belgium):
Advanced Development in RFID Technology to Provide Solutions for Structural Health Monitoring Operations (4508)

Reha Metin Alkan (Turkey):
Development of a Low-cost Positioning System Using OEM GPS Receivers and Usability in Surveying Applications (4206)

Claudia Depenthal (Germany):
iGPS Used as Kinematic Measuring System (4587)

Oscar Colombo (USA), **Shane Bruner, Glenn Jones, Volker Janssen and Chris Rizos** (Australia):
Wide-area, Sub-decimetre Positioning for Airborne LiDAR Surveys Using CORSnet-NSW (3965)

TS 2D – Deformation Measurement Using GNSS

Tuesday, 13 April 08:30–10:00
Venue: Bayside 102, SCEC
Commission: 6 and 5
Chair: Mr. **Neil Ashcroft**, Singapore
Rapporteur: Dr. **Gethin W. Roberts**, Chair Elect of FIG Commission 6, United Kingdom

Paul Drummond (New Zealand):
Combining CORS Stations, Automated Observations and Processing for Network RTK Integrity Analysis and Deformation Monitoring (4437)

Victor H.S. Khoo, Yam Khoon Tor and Gerry Ong (Singapore):
Monitoring of High Rise Building Using Real-Time Differential GPS (3976)

Jayanta Kumar Ghosh, Devanjan Bhattacharya, Ankur Mundra, Yuvraj Singh, Vinayak Shrestha and Ram Bhuwan Chauhan (India):
Geo-Deformation Analysis Using GPS (4463)

Jacob Odeh Ehiorobo, Bufanyat U. Anyata and Godwin Ovuworie (Nigeria):
Monitoring of Deformation in an Earth Dam Using Differential GPS (4287)

Heri Andreas, Hasanuddin Z. Abidin, Mipi A. Kusuma, Prihadi Sumintadireja, Irwan Gumilar and Teguh P. Sidiq (Indonesia):
Ground Displacements around LUSI Mud Volcano Indonesia as Inferred from GPS Surveys (3875)

Issaka Yakubu, Isaac Dadzie and Anthony Armstrong Mensah (Ghana):
Monitoring Levels of Deformation within Tarkwa Community: A Multi-GPS Receiver Network System Approach (3859)

Hakan S. Kutoglu (Turkey):
Datum Issue in Deformation Monitoring Using GPS (4326)

TS 2E – Climate Change and Environmental Threats

Tuesday, 13 April 08:30–10:00
Venue: Bayside 105, SCEC
Commission: 8
Chair: Dr. **Isaac Boateng**, United Kingdom
Rapporteur: Dr. **Reinfried Mansberger**, Austria

Owen McShane (New Zealand):
Why Urban Planners Love Global Warming: Why We Must Challenge the Theories of the Urban Central Planners (4624)

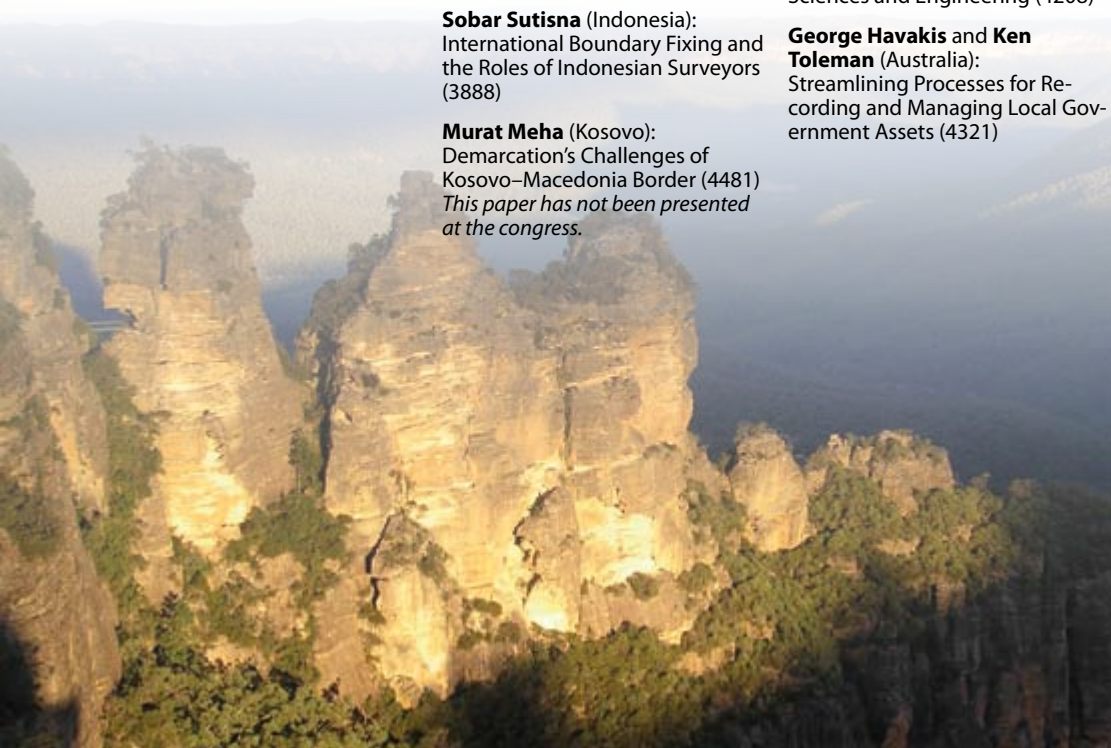
Ian Cox, Heping Zuo, Jai Vaze and Andrew Davidson (Australia):
Enabling Community Access to NSW Climate Change Rainfall and Runoff Projections; a Spatial Perspective (3969)

Mweembe Muleya Mudenda (Zambia):
Climate Change and Urban Slums in Lusaka, Zambia: Ignore, Mitigate or Adapt (4196)

Wafula Nabutola (Kenya):
The Mau Forest in the Rift Valley: Kenya's Largest Water Tower: a Perfect Model for the Challenges and Opportunities of a Sustainable Development Project? (4755)

Heri Sutanta, Abbas Rajabifard and Ian Bishop (Australia):
Studying Spatial Plan in Coastal Urban Environment – Facing Global Threat and Adapting to Local Condition (4156)
This is a peer reviewed paper.

Chima Ogba and Pius Utang (Nigeria):
Geospatial Evaluation of Niger Delta Coastal Susceptibility to Climate Change (4039)
This is a peer reviewed paper.



TS 2F – Environmental and Financial Aspects in Valuation

Tuesday, 13 April 08:30–10:00
Venue: Bayside 201, SCEC
Commission: 9
Chair: Dr. **Frances Plimmer**, Chair Elect of FIG Commission 9, United Kingdom
Rapporteur: Mr. **Steven Nystrom**, USA

Bengt Kjellson and **Lars Magnusson** (Sweden):
Property Rights, Access to Finance and Poverty Reduction – the FIG Challenge (3891)

Steven Nystrom (USA):
Real Estate and the Financial Crisis, Systemic Shock Analysis (4705)
This is a flash presentation.

Joycelyn Makena Kaaria (Kenya):
Incorporating Environmental Perspectives in Real Estate Valuation Practice: Challenges and Recommendations (4363)

Markku Airaksinen and **Simo Hannelius** (Finland):
The Income Approach and Comparison Approach Combined with Market Prices in Forest Valuation (4141)

TS 2G – Future Education Models and Curricula

Tuesday, 13 April 08:30–10:00
Venue: Bayside 202, SCEC
Commission: 2
Chair: Prof. **Bela Markus**, Chair of FIG Commission 2, Hungary
Rapporteur: Ms. **Marina Vaskovich**, Sweden

Grenville Barnes and **Brian Child** (USA):
Building a New Generation of Sustainable Development Practitioners: The Masters in Development Practice at the University of Florida and the Global MDP Network. (4243)

M. Tevfik Özlüdemir, **Rahmi N. Çelik** and **Erol Köktürk** (Turkey):
Education and Training in Surveying Sector of Turkey: Current Challenges and Future Perspectives (4294)

Oda Stenersen Leiknes (Norway):
Education in Land Surveying and Land Administration in Bergen, Norway – Why Popular Among Young People? (4472)

Taylan Ocalan and **Nursu Tunalioglu** (Turkey):
Exchanges and Orientations at Surveying and Geomatic Engineering Education in Turkey (4262)

Richard Abbott (Australia):
Paperless e-Surveying with Mr Laptop Surveyor (3758)

TS 2H – e-Land Administration Projects

Tuesday, 13 April 08:30–10:00
Venue: Bayside 203, SCEC
Commission: 7
Chair: Mr. **Gyula Iván**, Hungary

Rik Wouters (the Netherlands):
Extracting Information from Deeds by OCR (3841)

Dimitris Rokos, **Konstantinos Kyriazis** and **Panos Lolonis** (Greece):
Setting up the Infrastructure for Improving the Development of Cadastre in Greece (3916)

Zsuzsanna Ferencz (Hungary):
Test and Implementation of DATR System in Hungary (4143)

Gyula Iván, **Gábor Szabó** and **Zoltán Weninger** (Hungary):
DATR — Towards e-Land Administration in Hungary (4186)

Rui Pedro Juliao, **Catarina Roque** and **Jose Neto** (Portugal):
SiNERGIC – A New Approach to Cadastre (4215)

TS 2I – Hydrographic Surveying in Practice with High Resolution Data

Tuesday, 13 April 08:30–10:00
Venue: Bayside 106, SCEC
Commission: 4
Chair: Mr. **Andrew Leyzack**, Chair of FIG Commission 4, Canada
Rapporteur: Mr. **Jerry Mills**, USA

Mark Sinclair (Australia):
Airborne Lidar Bathymetric Survey for Climate Change (4083)

Dean Battilana and **Lawes Geoffrey** (Australia):
Fansweep 20 Total Propagated Uncertainty, Does It Reflect Reality? (3739)

Volker Böder (Germany):
Applications for a Hydrographic Multi Sensor System on Lakes and Rivers (3962)
This is a peer reviewed paper.

Branko Kordić, **Almin Đapo** and **Boško Pribičević** (Croatia):
Multibeam and Sidescan Sonar Application for Determining the Position and Shape of the Remains of Hadrian Bridge on Drava River (4296)

Christian Fellingner (Australia):
New Way Forward for Handling Large Volumes of Data (4152)

John McCarthy and **Matthew Simpson** (Australia):
In the Steps of Our Forefathers – From Sextant and Leadline to Satellites and Multibeam Echo-sounders (4159)

TS 2J – Modern Mapping Solutions

Tuesday, 13 April 08:30–10:00
Venue: Bayside 101, SCEC
Commission: 3
Chair: Mr. **Paul Kelly**, Australia
Rapporteur: Mr. **Michael Klebanov**, Israel

Greg Scott (Australia):
Topographic Mapping in Australia: The Future State (4003)

Igor Vilus (Croatia):
The Official Topographic and Mapping System of the Republic of Croatia (4395)

Walter Henninger (Germany):
Public Private Partnership between the State of Bavaria and the German Alpine Association to Publish Topographic Maps of the Bavarian Alps in the Scale of 1:25,000 (3808)

Agus Hermawan Atmadilaga and **Nurwadjedi Sarbini** (Indonesia):
Updating Land Resource Map as Response to the Sustainable National Development Issues in Indonesia (4745)

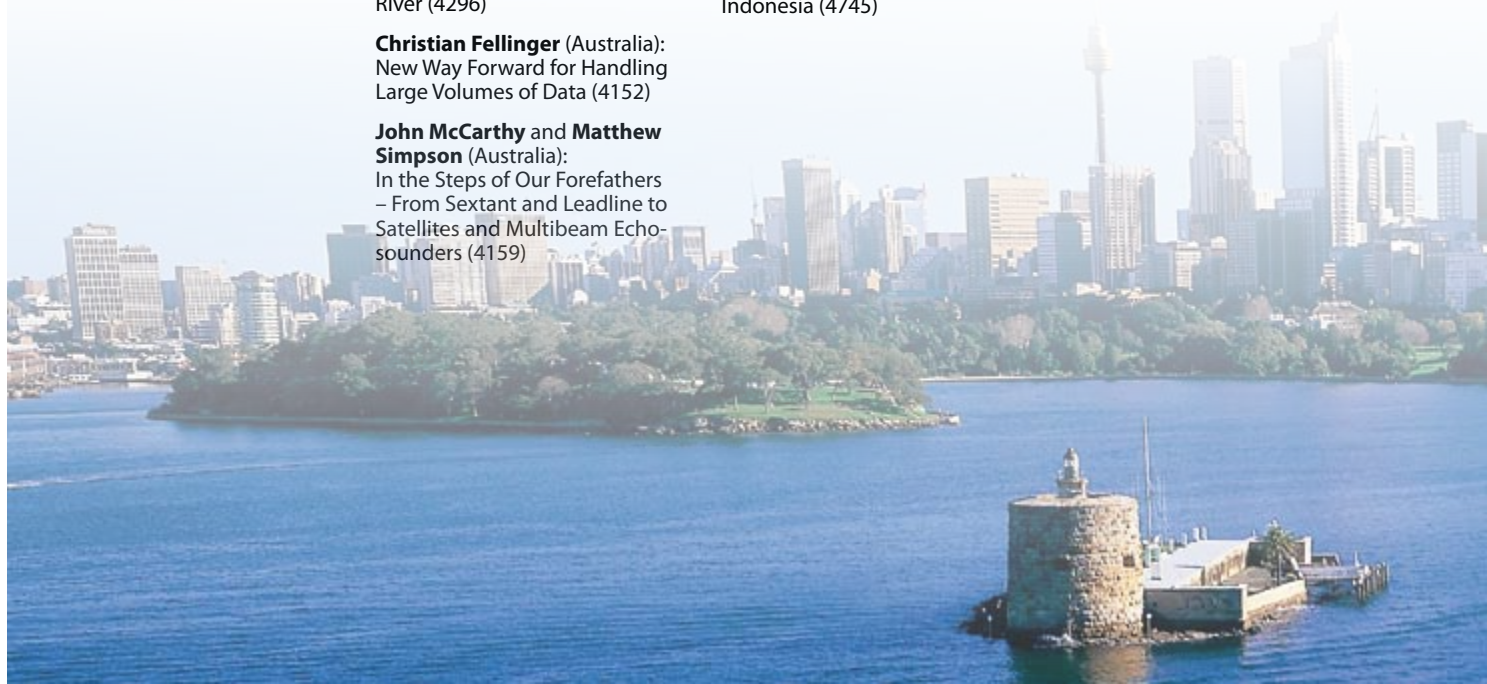
Plenary Session 2 – Spatially Enabled Society

Tuesday, 13 April 10:30–12:00
Venue: Bayside Auditorium A, SCEC
Commission: All
Chair: Prof. **Ian Williamson**, Australia
Rapporteur: Dr. **Chryssy Potsiou**, Chair of FIG Commission 3, Greece

Abbas Rajabifard (Australia):
Spatially Enabled Society (4644)

Santiago Borrero (Colombia):
Spatially Enabled Society (4645)

Warwick Watkins (Australia):
Spatially Enabled Society (4646)



**After Lunch Talk 1 – ESRI:
Visions for the Future**

Tuesday, 13 April 13:00–14:00
Venue: Bayside Auditorium A, SCEC
Commission: All
Chair: Mr. **Robin McLaren**, United Kingdom

Damian Spangrud (USA):
Properly Managing the Data Asset (4657)

FS 2B – SIM Best Practice Applications

Tuesday, 13 April 13:00–14:00
Venue: Bayside 103, SCEC
Commission: 3
Chair: Mr. **Lefteris Lykouropoulos**, Greece
Rapporteur: Ms. **Piroska Zalaba**, Hungary

Sanja Zekusic (Croatia):
Official Spatial Data as a Base for Management in Agriculture (4448)

Huseyin Can Unen, Himmet Karaman, Muhammed Sahin (Turkey) and **Amr Elnashai** (USA):
Seismic Performance Analysis of Utility Lifeline Networks in Istanbul, Turkey (4234)

Dursun Zafer Seker, Mehmet Alkan, Hakan Kutoglu, Hakan Akcin and Yegan Kahya (Turkey):
Development of a GIS Based Information and Management System for Cultural Heritage Site: Case Study of Safranbolu (4328)

Himmet Karaman and Muhammed Sahin (Turkey):
Effects of the Datum and Projection of the Data for the Earthquake Loss Assessment (4329)

Robert Young (USA):
Using GI and Survey Grade Data for Urban Natural Gas Operations (3744)

FS 2C – Positioning Measurement Techniques and Applications I

Tuesday, 13 April 13:00–14:00
Venue: Bayside 104, SCEC
Commission: 5 and 6
Chair: Dr. **Neil D. Weston**, USA
Rapporteur: Dr. **Volker Schwieger**, Germany

Lucinda Coombe (USA):
Delivering Survey Results Faster in the Digital World (3778)

Ricardo Freire and José Vasconcellos (Brazil):
Geodetic or Rhumb Line Polygon Area Calculation over the WGS-84 Datum Ellipsoid (3868)

Oluropo Ogundipe, Julie Greensmith and Gethin Roberts (United Kingdom):
Multipath Detection Using the Dendritic Cell Algorithm (4673)

Kazimierz Becak and Khairunissa Ibrahim (Brunei Darussalam):
Introducing the Global Elevation Data Testing Facility (4687)

FS 2D – Usage of Image Techniques in Surveying

Tuesday, 13 April 13:00–14:00
Venue: Bayside 102, SCEC
Commission: 6
Chair: Prof. **Xiaoli Ding**, Hong Kong SAR, China
Rapporteur: Mr. **Mahmoud Gomah**, Australia

Wioleta Błaszczak-Bąk, Waldemar Kamiński, Artur Janowski and Jacek Rapiński (Poland):
Review of Mathematical Algorithms of LiDAR Data Processing and Their Application in Geodesy and Surveying (3992)

Davood Akbari (Iran):
Hyperspectral Target Detection Improvement Based on Noise Reduction and Spectral-spatial Methods Composition (3819)

Robert Pâquet (Australia):
Estimation of Interpolation Error in DEMs Using Statistical Methods (3985)

Bryan Williams (USA):
Raising Expectations on Surveying Deliverables via Imaging Technology in Optical Instruments (4334)

Mir Moosa Hodjati, Mohamad Reza Saradjian and Siamak Jamshidi (Iran):
Chlorophyll-a Estimation in Sefidrud Estuarine Using MODIS Images (4449)

Seyyed Emad Musavi, Amir Abuhamze and Musa Saie (Iran):
A Study for Choosing the Best Pixel Surveying Method by Using Pixel Decisioning Structures in Satellite Images (4617)

FS 2F – Future Trends in Land Administration and Management

Tuesday, 13 April 13:00–14:00
Venue: Bayside 201, SCEC
Commission: 7
Chair: Mr. **Richard Grover**, United Kingdom
Rapporteur: Mr. **John Brock**, Australia

Ingrid Öhlund (Sweden):
Sustainable Co-operation between Real Properties Can Give Conditions to a Better Atmosphere and Environment (4071)

Stojanka Brankovic and Marija Raskovic (Serbia):
Developmental and Sustainable Land Administration as a Support to Growth of Society as a Whole (4082)

Michael Christopher Whelan (Australia):
Alternate Dispute Resolution (ADR) as a Means of Addressing Disputes (4636)

FS 2G – Round Table on Knowledge Transfer and Attracting Young People to Surveying – Jointly Organised with ASIERA

Tuesday, 13 April 13:00–14:00
Venue: Bayside 202, SCEC
Commission: 2 and ASIERA
Chair: Prof. **Chris Rizos**, Chair of ASIERA, Australia
Rapporteur: Mr. **Cemal Ozgur Kivilcim**, Turkey

FS 2H – GNSS CORS Networks – Positioning Infrastructure, Analysis and Applications II

Tuesday, 13 April 13:00–14:00
Venue: Bayside 203, SCEC
Commission: 5
Chair: Ms. **Christina Kempe**, Sweden
Rapporteur: Mr. **Darren Burns**, Australia

Barde Jatau (Nigeria), **R.M.S. Fernandes** (Portugal), **Adeyemi Adebomehin** (Nigeria) and **Nuno Gonçalves** (Portugal):
NIGNET – The New Permanent GNSS Network of Nigeria (4549)

Yahia M. Al-Haifi (Yemen):
The Significance of GPS Network Solution Over GPS Baseline Solution in Establishing Geodetic Control Points for Highway Construction in Yemen: a Practical Case Study (4075)
This paper has not been presented at the congress.

Dennis Odijk and Peter J.G. Teunissen (Australia):
Speeding up CORS Network RTK Ambiguity Resolution (4313)

FS 2I – Coastal Zone Issues
Tuesday, 13 April 13:00–14:00
Venue: Bayside 106, SCEC
Commission: 4 and 8
Chair: Mr. **David Neale**, Trinidad and Tobago
Rapporteur: Dr. **Diane Dumashie**, Chair of FIG Commission 8, United Kingdom

TS 3A – Land Governance for Sustainable Development

Tuesday, 13 April 14:00–15:30
Venue: Bayside Auditorium A, SCEC
Commission: 7
Chair: Ms. **Dorine Burmanje**, the Netherlands
Rapporteur: Prof. **Paul van der Molen**, the Netherlands

Tony Burns (Australia), **Klaus Deininger** (Germany), **Harris Selod** (France) and **Kate Dalrymple** (Australia):
Implementing the Land Governance Assessment Framework (4640)

Ian Williamson (Australia), **Stig Enemark** (Denmark), **Jude Wallace** and **Abbas Rajabifard** (Australia):
Land Administration for Sustainable Development (4103).

Launch of the book “Land Administration for Sustainable Development”.

TS 3B – Spatial Information Management and Spatial Data

Tuesday, 13 April 14:00–15:30
Venue: Bayside 103, SCEC
Infrastructures
Commission: 3 and 7
Chair: Mr. **Damir Pahić**, Croatia
Rapporteur: Mr. **Pekka Halme**, Finland

Robin McLaren (United Kingdom):
Can the Innovative Use of Mobile Phones Support More Effective Land Administration Services? (4447)

Christos Zenonos (Cyprus):
Trends & Developments to the Cyprus Cadastral System / Cyprus Integrated Land Information System (4708)

Jean Dotse (Ghana):
A Borderless Africa – National and Regional Reference Frames and SDI's (4373)

Conrad Tang and **Lesly Lam** (Hong Kong SAR, China):
Evolutionary Process of the Development of Spatial Data Infrastructure (SDI) in Hong Kong Part I: Top Directive and Policy Support (4175)

TS 3C – GNSS CORS Networks – Positioning Infrastructure, Analysis and Applications I

Tuesday, 13 April 14:00–15:30
Venue: Bayside 104, SCEC
Commission: 5
Chair: Mr. **Nic Donnelly**, New Zealand
Rapporteur: Mr. **Graeme Blick**, New Zealand

Neil D. Weston, **Richard Snay**, **Charles Schwartz** and **Gerald L. Mader** (USA):
A Near Real-time GPS Interference Detection System in the United States Using the National CORS Network (4085)

Cecep Subarya, **Hasanuddin Abidin**, **Wedyanto Kuncoro** and **Joni Efendi** (Indonesia):
GPS Analysis Strategies to Minimize the Error Contribution to Geodetic GPS Determination (4319)
This is a peer reviewed paper.

James Millner, **Martin Hale**, **Jacqueline LeLievre**, **Hayden Asmussen** and **John Gallagher** (Australia):
Positioning Infrastructure Used for a Sustainable Future: Case Study from Victoria Australia (4554)

Andreas Knoepfler (Germany), **Frederic Masson** (France), **Michael Mayer** (Germany), **Patrice Ulrich** (France) and **Bernhard Heck** (Germany):
GURN (GNSS Upper Rhine Graben Network) – Status and First Results (4380)

TS 3D – Model Building and Data Analysis

Tuesday, 13 April 14:00–15:30
Venue: Bayside 102, SCEC
Commission: 6
Chair: Dr. **Gethin W. Roberts**, Chair Elect of FIG Commission 6, United Kingdom
Rapporteur: Prof. **Hansjoerg Kutterer**, Germany

Hansjoerg Kutterer, **Hamza Alkhatib**, **Harald Vennegeerts** and **Jens-Andre Paffenholz** (Germany):
Monte-Carlo Simulation of Profile Scans from Kinematic TLS (3795)

Dionysia-Georgia Perperidou, **Konstantinos Sigizis** and **Eleni Tziortzioti** (Greece):
A New Methodology for Surveying and Exploring Complex Environments Using 3D Scanning (4049)

Jens-André Paffenholz, **Hamza Alkhatib** and **Hansjörg Kutterer** (Germany):
Adaptive Extended Kalman Filter for Geo-Referencing of a TLS-based Multi-Sensor-System (4052)
This is a peer reviewed paper.

Karl Zippelt and **Rebekka Czerny** (Germany):
Collection and Interpretation of Point Clouds of Terrestrial Laser-scanning as a Basis for Hydraulic Flow Modelling (4374)

Alexander Reiterer, **Peter Rautek** and **Eduard Groeller** (Austria):
A Novel Method for the Visualization of Deformation Data (3829)
This is a peer reviewed paper.

Hetti Arachchige Nalani (Sri Lanka), **Alias Abdul Rahman** (Malaysia) and **Michael Hahn** (Germany):
A Review – Realistic Multi Level 3D Building Models Based on Airborne and Mobile Laser Scanning Data (4686)

TS 3E – Neighbourhood and Society

Tuesday, 13 April 14:00–15:30
Venue: Bayside 105, SCEC
Commission: 8
Chair: Mr. **Wafula Nabutola**, Chair Elect of FIG Commission 8, Kenya
Rapporteur: Mr. **John Brock**, Australia

Lani Roux and **Michael Barry** (Canada):
A Historical Post-formalisation Comparison of Two Settlements in South Africa (4288)

Dirk Loehr (Germany):
Land Conversion Out of Control – How to Achieve Better Governance (4666)

Frank Friesecke (Germany):
Urban Development Grants in Germany – A Critical Success Factor to Strengthen Cities under Changing General Conditions (3823)

Grant Gleeson (Australia):
Whose Neighbourhood Is It Anyway? The Blight of Zoning – What Happens When “Topical” Development Meets Fast Approval Processes or Is This Just Wrong-headed Thinking? (4368)

Enrico Rispoli (Italy):
Railway Connections and High Speed Transport: the Social and Environmental Impact (4344)

TS 3F – Compulsory Purchase and Compensation I

Tuesday, 13 April 14:00–15:30
Venue: Bayside 201, SCEC
Commission: 9
Chair: Mr. **Bengt Kjellson**, Sweden
Rapporteur: Mr. **Trevor Knowles**, New Zealand

Kauko Viitanen and **Heidi Falkenbach** (Finland):
FIG Recommendations for Good Practices in Compulsory Purchase and Compensation (4193)

Winrich Voss (Germany):
Land Conversion Out of Control, Norway and Germany – Part Germany (4220)

Håvard Steinsholt (Norway):
Some Aspects of Norwegian Expropriation Input to Comparative Study of Chosen Expropriation Issues: Germany, Norway and Poland (4307)
This is a peer reviewed paper.

Sabina Żróbek and **Marek Walacik** (Poland):
Compulsory Purchase Compensation in Polish Legislation on a Background Solutions Adopted in Other Countries (4028)
This is a peer reviewed paper.

Varnavas Pashoulis (Cyprus):
Law and Valuation of the Compulsory Purchase in the Republic of Cyprus and Recommendations for Improvement (4601)



TS 3G – Surveying Education Curricula I

Tuesday, 13 April 14:00–15:30
Venue: Bayside 202, SCEC
Commission: 2
Chair: Prof. **Steven Frank**, Chair Elect of FIG Commission 2, USA
Rapporteur: Prof. **Miljenko Lapaine**, Croatia

Gary Hunter (Australia) and **Chris Hoogsteden** (New Zealand):
A New Initiative for Land Administration and Management Education in the Philippines (4016)

Ernest Chan (Hong Kong SAR, China):
Changes of the Academic Structure of Hong Kong Universities in 2012 – Opportunities and Challenges for Undergraduate Surveying Teaching (4199)

Joshua Greenfeld (Israel):
Developing a Surveying Body of Knowledge (4372)
This is a peer reviewed paper.

Nadezda Kamynina and **Vasily Malinnikov** (Russia):
Land Information Systems and Administration – TEMPUS Project in Russia (4222)

Robert Webb (Australia):
A New Undergraduate Model for Broadly Based Spatial Science Curriculum at Queensland University of Technology: Diversity in Surveying Curriculum (4161)

Michael Mayer, Bernhard Heck (Germany) and **Claudia Pereira Krueger** (Brazil):
Higher Education in Satellite Geodesy – A Research-related Intercultural Approach (4381)
This is a flash presentation.

TS 3H – Remote Sensing and Imagery I

Tuesday, 13 April 14:00–15:30
Venue: Bayside 203, SCEC
Commission: 5 and 6
Chair: Dr. **Renee Bartolo**, Australia
Rapporteur: Dr. **Ralf Schroth**, Germany

Cankut Ormeci, Ugur Alganci and **Elif Sertel** (Turkey):
Identification of Crop Areas Using SPOT-5 Data (4581)

Ganiy I. Agbaje (Nigeria):
Nigeria in Space – an Impetus for Rapid Mapping of the Country for Sustainable Development Planning (4621)

Hang Jin and **Yanming Feng** (Australia):
Towards an Automatic Road Marking Extraction Based on ISO-DATA Classification and Shadow Detection from Large-scale Aerial Images (4403)

TS 3I – Positioning Techniques for Hydrography

Tuesday, 13 April 14:00–15:30
Venue: Bayside 106, SCEC
Commission: 4 and 5
Chair: Prof. **Volker Böder**, Germany
Rapporteur: Mr. **John McCarthy**, Australia

Mahmut Olcay Korkmaz, Caner Güney, Özgür Avcı, Mete Ercan Pakdil and **Rahmi Nurhan Çelik** (Turkey):
Web-Based Integrated Precise Positioning System Design and Testing for Moving Platforms in Offshore Surveying (4323)

Gabriele Giorgi (the Netherlands), **Tim Gourlay, Peter Teunissen, Kim Klaka** and **Lennard Huisman** (Australia):
Carrier Phase Ambiguity Resolution for Ship Attitude Determination and Dynamic Draught (4059)

Maurice Perwick (New Zealand):
Profiling Lake Roxburgh Using the NZ Quasigeoid 2005 (4596)

TS 3J – Francophone Session 1 – Cadastre and Land Administration

Tuesday, 13 April 14:00–15:30
Venue: Bayside 101, SCEC
Commission: FIG and FGF
Chair: Mr. **Aziz Hilali**, Vice President of FGF, Morocco
Rapporteur: Mr. **Yaacoub Saade**, Chair of FIG Commission 1, Lebanon

Francis Gäbele and **Marc Vanderschueren** (Belgium):
Continuité dans l'Approche Méthodologique d'Evaluation de Valeurs par les Experts du Cadastre Belge
Continuity in the Methodologic Approach of the Evaluation of Values by the Appraisers of the Belgian Cadastre (4628)

Pierre Bibollet (France):
Le portail e-foncier, levier de modernisation de la délégation de service public du géomètre-expert (3880)

Jean-Paul Miserez (Switzerland):
Réaliser la Déclaration 1 de Cadastre 2014: un exemple suisse (4652)
This paper has been presented at the congress by Dr. Daniel Stuedler.

François Mazuyer (France):
Professional Ethics and Deontology (3874)

Samuel Nguema Ondo Obiang (Gabon):
La problématique foncière au Gabon et la nécessité d'une réforme et de son ouverture vers l'extérieur (4677)

TS 3M – Project and Organisation Management II

Tuesday, 13 April 14:00–15:30
Venue: Bayside 108, SCEC
Commission: 10
Chair: Mr. **Andrew Morley**, Chair of FIG Commission 10, United Kingdom
Rapporteur: Mr. **Robert Sinkner**, Chair Elect of FIG Commission 10, Czech Republic

Andrew Daniel Finegan (Australia):
Making Sense of Wicked Projects (4014)
This is a peer reviewed paper.

Chigozie Dimgba and **Ubong Ikpe** (Nigeria):
A Perspective on Project and Programme Management (Best Practises) (4260)

Abdelrazik Kandeil and **Mohamed K. Hassan** (Egypt):
Hand-Over Process Improvement in Large Construction Projects (4301)
This is a peer reviewed paper.

Joint Board of Spatial Information Societies

Tuesday, 13 April 14:00–17:00
Venue: Bayside 107, SCEC
Commission: Board of JB-GIS
Chair: Mr. **Mark Cygan**, Chair of JB-GIS

- for JB-GIS Members
- by invitation only

Director General Forum

Tuesday, 13 April 14:00–17:00
Venue: Bayside Gallery B, SCEC
Commission: Director General Forum
Chair: Mr. **Warwick Watkins**, Surveyor General, NSW, Australia
Rapporteur: Mr. **Iain Greenway**, FIG Vice President, United Kingdom

The Director General Forum brings together senior managers of national mapping, cadastral and land organisations from around the world to discuss topics of mutual interest and importance. This event is the 3rd in a series which FIG has hosted. About 40–50 countries are expected to be represented. The Forum in Sydney will consider in particular: organisational mergers and government restructuring; delivering in challenging financial times; and building strong relationships with the private and academic sectors. The Forum will agree key issues in a communiqué from national organisations to FIG to be presented at the closing ceremony of the congress.

By invitation only.



TS 4A – Open-Source Software Solutions in Cadastre

Tuesday, 13 April 16:00–17:30

Venue: Bayside Auditorium A, SCEC

Commission: 7

Chair: Dr. **Daniel Steudler**, Switzerland

Rapporteur: Ms. **Piroska Zalaba**, Hungary

Daniel Steudler (Switzerland) and **Mika Törhönen** (Italy): The Potential of Open-Source Software in Cadastre and Land Registration – A General View (4167)

Geoffrey C Hay and **G. Brent Hall** (New Zealand): A Semantic Web Approach to Application Configuration in the Land Administration Domain (4519)

Gertrude Pieper (the Netherlands): Existing Open Source Tools and Possibilities for Cadastre Systems (4577)

Markus Seifert (Germany): Open Source Software in Daily Bavarian Cadastral Work – Practical Experience (4604)

TS 4B – Organisational, Strategic and Fiscal Aspects in SIM

Tuesday, 13 April 16:00–17:30

Venue: Bayside 103, SCEC

Commission: 3

Chair: Dr. **Chryssy Potsiou**, Chair of FIG Commission 3, Greece

Rapporteur: Dr. **Rahmi Nurhan Çelik**, Turkey

Oscar Custers and **Gijsbert Noordam** (the Netherlands): Leveraging Geospatial Information Across the Enterprise: Bentley's Flexible Geospatial Approach (4702)

Jens Riecken (Germany): Spatial Information Management in the Context of Organizational Development – the Approach in North-Rhine Westphalia, Germany (3805)

Anders Lundquist, **Ewa Rannestig** and **Ulf Sandgren** (Sweden): The Swedish National Geodata Strategy and Its Implementation (3796)

Asmat Ali (Pakistan): Is Public Private Partnership an Effective Instrument to Implement SDIs? (4523)

Sarah James and **John Richardson** (United Kingdom): Managing Data Licensing Need Not Be a Problem! (4746)

TS 4C – GNSS CORS Networks – Positioning Infrastructure, Analysis and Applications II

Tuesday, 13 April 16:00–17:30

Venue: Bayside 104, SCEC

Commission: 5

Chair: Dr. **Craig Roberts**, Australia

Rapporteur: Mr. **Neil Ashcroft**, Singapore

Volker Janssen, **Thomas Grinter**, **Craig Roberts** and **Michael Troth** (Australia): Improving Cadastral Infrastructure with RTK GPS in Australia (3825)
This is a peer reviewed paper.

Jeremy Palmer (New Zealand) and **Michael Moore** (Australia): PositioNZ-PP – A GPS Post-Processing Service New Zealand (4102)

Lars Jämtnäs, **Ragne Emardson** and **Bo Jonsson** (Sweden): Quality Assessment of Network-RTK in the SWEPOS™ Network of Permanent GNSS Stations (4247)
This paper has been presented by Mr. Johan Sunna.

Simon C W Kwok (Hong Kong SAR, China): What Makes the Positioning Infrastructure Work – The Experience of the Hong Kong Satellite Positioning Reference Station Network (4526)

TS 4D – TLS Application I

Tuesday, 13 April 16:00–17:30

Venue: Bayside 102, SCEC

Commission: 6

Chair: Mr. **Faheem Khan**, Singapore

Rapporteur: Prof. **Alessandro Capra**, Italy

Ivo Milev (Germany): Leeds the Automation Degree in the Processing of Laser Scan Data to Better Final Products? (4409)

Thomas Werner and **David Morris** (Australia): 3D Laser Scanning for Masonry Arch Bridges (4436)

Timothy Nuttens, **Alain De Wulf**, **Lander Bral**, **Bart De Wit** and **Leen Carlier** (Belgium): High Resolution Terrestrial Laser Scanning for Tunnel Deformation Measurements (4497)
This is a peer reviewed paper.

Ela Vela, **Luka Babić**, **Almin Đapo**, **Branko Kordić** and **Boško Pribičević** (Croatia): Terrestrial Laser Scanning for the Digital Preservation of a Croatian Historical Village “Dobranje” (4492)
This is a peer reviewed paper.

Alessandro Capra, **Eleonora Bertacchini**, **Emanuele Boni**, **Cristina Castagnetti** and **Marco Dubbini** (Italy): Terrestrial Laser Scanner for Surveying and Monitoring Middle Age Towers (4445)

Peter Rieger, **Nikolaus Studnicka**, **Martin Pfennigbauer** and **Andreas Ullrich** (Austria): Advances in Mobile Laser Scanning Data Acquisition (4575)

TS 4E – Coasts and Natural Resources

Tuesday, 13 April 16:00–17:30

Venue: Bayside 105, SCEC

Commission: 8 and 4

Chair: Dr. **Isaac Boateng**, United Kingdom

Rapporteur: Dr. **Michael Sutherland**, Chair Elect of FIG Commission 4, Canada

Isaac Boateng (United Kingdom): The Best Practice for Coastal Adaptation Planning: A Surveyor's Perspective (4756)

Rizqi Abdulharis and **S. Hendriatiningsih** (Indonesia): Spatial Unit Administration: An Integrated Administration of Land, Marine and Air Space Unit towards Sustainable Development of Archipelago State? (4487)

Flavio Boscatto and **Francisco Henrique Oliveira** (Brazil): The Cadastre System of Mollusk Culture at Santa Catarina Island – Brazil (4277)

Maisam Toosi, **Fereidoon Owfi**, **Arash Eslami**, **Mahnaz Rabaniha** and **Abdol Reza Meshgini** (Iran): Sustainable Development of Iranian Coastal Habitats of the Caspian Sea, with GIS Method (Case Study: Chaloos City, Mazandaran Province) (4272)

Narsimha Garlapati, **Mustak Shaikh** and **Mick Dwyer** (Australia): Building the Capacity to Access Spatial Information about the Extent of Riparian Vegetation in New South Wales, Australia (4070)
This is a peer reviewed paper.

Jesper Rye Rasmussen (Denmark): Climate Change and Mapping of the Future Nature (4033)

Taufik Hidayatullah, **Yudi Siswanto**, **Anggoro Cahyo Fitrianto** and **Irmadi Nahib** (Indonesia): Mapping Small Island Natural Resource Balance and Economic Valuation (4362)
This is a flash presentation.

TS 4F – Compulsory Purchase and Compensation II

Tuesday, 13 April 16:00–17:30

Venue: Bayside 201, SCEC

Commission: 9

Chair: Ms. **Heidi Falkenbach**, Finland

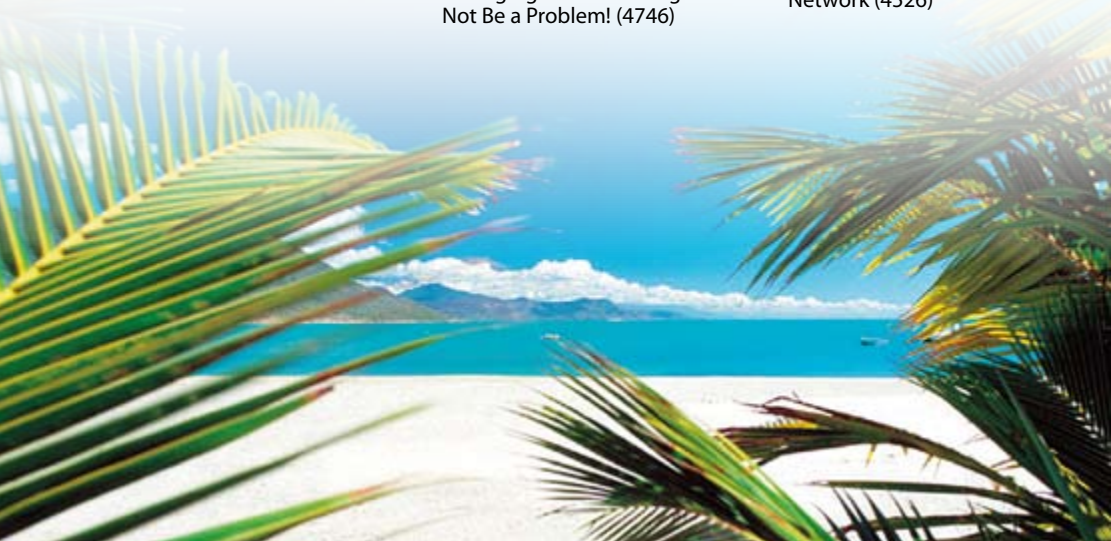
Rapporteur: Mr. **Vince Mangioni**, Australia

Nira Orni and **Rachelle Alterman** (Israel): Change of Public Purpose After Expropriation (4598)

Muhammad Bashar Nuhu (Nigeria): Evolving a New Methodologies for Public Land Acquisition and Land Administration in Nigeria (4299)

Recep Nisanci and **Volkan Yildirim** (Turkey): Issues in Determination of Easement Value through Power Transmission Lines: A Case Study of Trabzon, Turkey (4273)

Craig Harris and **Trevor Knowles** (New Zealand): Public Works Act Land Acquisition in New Zealand... Clarifying for Owners the Crowns Differing Roles and Managing Owners/consultants Expectations on Reimbursement of Fees (4429)



TS 4G – Surveying Education Curricula II

Tuesday, 13 April 16:00–17:30
Venue: Bayside 202, SCEC
Commission: 2
Chair: Mr. **Gert Steinkellner**, Austria
Rapporteur: Mr. **Ernest Chan**, Hong Kong SAR, China

Hans Mattsson and **Marina Vaskovich** (Sweden): Capacity Building in Land Management (3925)

Miljenko Lapaine and **Stanislav Franges** (Croatia): Education in Geodesy and Geoinformatics at the University of Zagreb and the Bologna Process (4267)

Damir Medak, **Bosko Pribicevic**, **Stanislav Franges** (Croatia), **Adrijana Car** (Austria) and **Jacek Kozak** (Poland): Impact of TEMPUS CARDS Project GIST-CroHE on the New MSC in Geoinformatics Curriculum and on the Implementation of Bologna Process at the Faculty of Geodesy, University of Zagreb, Croatia (4246)

Branko Bozic (Serbia), **Olga Petrakovska** (Ukraine) and **Violeta Vasilic** (Serbia): Similarities and Differences between Surveyor's Education in Kiev and Belgrade at University Level (4002)

Bruce Harvey (Australia): Teaching Surveying: What Is Important? (3968)
This is a flash presentation.

Gheorghe M.T. Radulescu, **Adrian T.G. Radulescu**, **Gabriel Badescu**, **Carmen Nutiu** and **Virgil.M.G. Radulescu** (Romania): The Role of Surveying Within the University Curricula for Training Terrestrial Measurement and Cadastre Engineers (3944)
This paper has not been presented at the congress.

TS 4H – Remote Sensing and Imagery II

Tuesday, 13 April 16:00–17:30
Venue: Bayside 203, SCEC
Commission: 5 and 6
Chair: Dr. **Ralf Schroth**, Germany
Rapporteur: Ms. **Gypsy Bhalla**, Australia, Australia

Senol Kuscu, **M.Sait Ayik**, **Eray Can** and **Ayhan Mesci** (Turkey): Project for the Producing of 1/1000 Scale Based Plans from Colourful Images with Taken Digital Camera in Bursa Metropole Area in Turkey (4512)

Mostafa Ebrahim (Egypt): Influence of Video Frame Miss-Selection on the Accuracy of Moving Objects 3D Measurements Using Close-Range Photogrammetry (4412)

Gabriel Scarmana (Australia): Mapping City Environments Using a Single Hand-Held Camera (4430)

Jung Hum Yu (Republic of Korea) and **Linlin Ge** (Australia): Digital Elevation Model Generation Using Ascending and Descending Multi-baseline ALOS/PALSAR Radar Images (4086)
This is a peer reviewed paper.

TS 4I – Hydrographic Capacity Building

Tuesday, 13 April 16:00–17:30
Venue: Bayside 106, SCEC
Commission: 4
Chair: Mr. **Gordon Johnston**, United Kingdom
Rapporteur: Mr. **David Neale**, Trinidad and Tobago

Adam Greenland (New Zealand): IHO Capacity Building in the South West Pacific Region – NZ Perspective (3981)

Volker Böder (Germany): The DHyG-Accredited Hydrographer – First Steps and Evaluations (3960)

Roderick Nairn and **Jasbir Randhawa** (Australia): Competency Certification for Hydrographic Surveyors – The Australasian Experience (3861)

Scott Preskett (New Zealand): The Continuing Development of the IHO Category A Hydrographic Surveying Program at the University of Otago (4100)

TS 4J – Francophone Session 2 – Institutional and Professional Development

Tuesday, 13 April 16:00–17:30
Venue: Bayside 101, SCEC
Commission: 7 and FGF
Chair: Prof. **Francis Gäbele**, Belgium
Rapporteur: Mr. **Marc Vanderschueren**, Belgium

Francis Gäbele and **Marc Vanderschueren** (Belgium): La Sécurité Juridique des Biens Immobiliers en Belgique / The Legal Certainty of Immovable Property in Belgium (4627)

Claire Galpin (France), **René Claude Niyonkuru** and **Jean Marie Habwintaha** (Burundi): Faire face aux défis de demain au Burundi: Gestion foncière décentralisée (4664)

Mamadou Zoumana Camara (Mali): Problematique de la mise en place du cadastre au Mali (4548)

Annick Jatton and **Stéphane Roche** (Canada): Renforcer les compétences par la formation à distance: exemple de l'Université Laval au Québec (4682)

Moha El-Ayachi and **Mohamed STIFA** (Morocco): Étude des potentialités du DGPS en Temps Réel avec solution OMNISTAR pour des fins de géo-localisation (4678)

TS 4K – Land Administration Domain Model

Tuesday, 13 April 16:00–17:30
Venue: Bayside Gallery A, SCEC
Commission: 7
Chair: Dr. **Markus Seifert**, Germany
Rapporteur: Mr. **Gyula Iván**, Hungary

Christiaan Lemmen, **Peter van Oosterom** (the Netherlands), **Claude Eisenhut** (Switzerland) and **Harry Uitermark** (the Netherlands): Rights, Restrictions and Responsibilities in the Land Administration Domain Model (LADM) (4221)

Jaap Zevenbergen (the Netherlands) and **Solomon Haile** (Kenya): Institutional Aspects of Implementing Inclusive Land Information Systems like STDM (4254)

Christiaan Lemmen, **Peter van Oosterom** (the Netherlands), **Rod Thompson** (Australia), **João Hespanha** (Portugal) and **Harry Uitermark** (the Netherlands): The Geometry of Spatial Units in the Land Administration Domain Model (LADM) (4214)

Tarun Ghawana (India), **João Paulo Hespanha** (Portugal), **Jaap Zevenbergen** and **Peter van Oosterom** (the Netherlands): Groundwater Management in Land Administration: A Spatio-temporal Perspective (4298)
This is a peer reviewed paper.

Director General Forum – Reception

Tuesday, 13 April 17:00–18:00
Venue: Bayside Gallery B, SCEC
Commission: Director General Forum

- by invitation only

TS 4M – Buildings, Construction and Sustainable Development

Tuesday, 13 April 16:00–17:30
Venue: Bayside 108, SCEC
Commission: 10
Chair: Prof. **Moha Elayachi**, Morocco
Rapporteur: Mr. **Robert Sinkner**, Chair Elect of FIG Commission 10, Czech Republic

Paula Judson, **Usha Iyer-Raniga**, **Ralph Horne** and **James Wong** (Australia): Integrating Built Heritage and Sustainable Development (3977)

Sara Wilkinson, **Kimberley James** and **Richard Reed** (Australia): Building Adaptation in the Melbourne CBD: The Relationship between Adaptation and Building Characteristics (3779)

Kenny Chan (Hong Kong SAR, China): Building the Capacity and Improvement Factors in Real Estate Management and Maintenance (4564)

Clive Warren (Australia) and **Graham Mathews** (New Zealand): Building Resilience – Built Environment Professions in Pre and Post Disaster Management (4190)

Reception at the Government House

Tuesday 18:00–19:30
Venue: Government House, Macquarie Street, Sydney

- reception hosted by the Governor of NSW, Prof. Marie Bashir AC CVO
- for Presidents of FIG members associations
- buses from SCEC 17:40
- by invitation only

TS 5A – Development of 3D Cadastre

Wednesday, 14 April 08:30–10:00
Venue: Bayside Auditorium A, SCEC
Commission: 7
Chair: Prof. **Peter van Oosterom**, the Netherlands
Rapporteur: Dr. **Jaap Zevenbergen**, the Netherlands

Tor Valstad (Norway):
At Last! After 10 Years in Waiting Norway Has a New Cadastral Law that also Includes 3D Objects (4473)

Göran Eriksson and Lars Jansson (Sweden):
Strata Titles Are Introduced in Sweden (3909)

Ingegerd Hedmark and Karolina Rönnberg (Sweden):
The City Line in Stockholm, the Longest Three Dimensional Property Unit in Sweden (4255)

Muhammad Imzan Hassan and Alias Abdul Rahman (Malaysia):
Malaysian Integrated 3D Cadastre Registration System (4212)
This is a peer reviewed paper.

Tan Liat Choon, Khadijah Binti Hussin and Ernest Khoo Hock Oon (Malaysia):
3D Property Situation in Malaysia-Initiatives towards 3D Cadastre (3929)

Sudarshan Karki, Kevin McDougall and Rod Thompson (Australia):
An Overview of 3D Cadastre from a Physical Land Parcel and a Legal Property Object Perspective (4432)

TS 5B – Information Management Software

Wednesday, 14 April 08:30–10:00
Venue: Bayside 103, SCEC
Commission: 3
Chair: Prof. **Yerach Doytsher**, Chair Elect of FIG Commission 3, Israel
Rapporteur: Dr. **Charalobos Ioannidis**, Greece

Michael Dixon (Australia):
The Evolution of Data Automation and Its Importance to the Australian Spatial Data Infrastructure (4093)

Geoffrey Y.K. Shea and Jiannong Cao (Hong Kong SAR, China):
Use of Open Source Programs to Create a Foundation for Developing Serious GIS Application on Mobile Device (3984)

Cameron Shorter (Australia):
Overview of Geospatial Open Source Software Which Is Robust, Feature Rich and Standards Compliant (4207)

Mario Miler, Drazen Odobasic and Damir Medak (Croatia):
Efficient Web-GIS Solution based on Open Source Technologies: Case-Study of Urban Planning and Management of the City of Zagreb, Croatia (4291)
This is a peer reviewed paper.

Alexander P. Karpik, Vladimir A. Seredovich and Dmitry V. Lisitskiy (Russia):
Conceptual Fundamentals of Digital Geospatial Environment (4378)

Hamed Olfat, Abbas Rajabifard and Mohsen Kalantari (Australia):
Automatic Spatial Metadata Update: A New Approach (4079)
This is a peer reviewed paper.

TS 5C – The Quality of Measurements

Wednesday, 14 April 08:30–10:00
Venue: Bayside 104, SCEC
Commission: 5
Chair: Mr. **Graeme Blick**, New Zealand
Rapporteur: Dr. **Gethin W. Roberts**, Chair Elect of FIG Commission 6, United Kingdom

Jorma Jokela, Pasi Häkli (Finland), Rupert Kugler, Helmut Skorpil and Michael Matus (Austria):
Calibration of the BEV Geodetic Baseline (3873)
This is a peer reviewed paper.

David Martin (France):
Instrument Calibration at the ESRF (3910)

Stepan Savchuk and Ihor Tsjupak (Ukraine):
Scientific Geodetic Basis and Test Field for Metrological Certification of Devices (3922)

Simon Fuller, Eldar Rubinov, Phil Collier and Seager James (Australia):
Integrated Quality Indicators and Stochastic Modelling for Real-Time Positioning: Overview and Implementation (4145)
This is a peer reviewed paper.

Eldar Rubinov, Simon Fuller, Phil Collier and James Seager (Australia):
Implementation of Real-Time Quality Control Procedures for Network RTK GNSS Positioning (4151)
This is a peer reviewed paper.

Philipp Zeimetz and Heiner Kuhlmann (Germany):
Validation of the Laboratory Calibration of Geodetic Antennas based on GPS Measurements (4308)
This is a peer reviewed paper.

TS 5D – Landslide and Subsidence Monitoring I

Wednesday, 14 April 08:30–10:00
Venue: Bayside 102, SCEC
Commission: 6
Chair: Mr. **Joel van Cranenbroeck**, Belgium
Rapporteur: Prof. **Andreas Eichhorn**, Germany

Andreas Eichhorn (Germany) and **Thilo Schmalz** (Austria):
Calibration of a Numerical Slope Model by Means of Adaptive Kalman-filtering (4024)

Susan Shield, Peter Sergeant and Mark Harrower (Australia):
Subsidence Analysis for Underground Coal Mining Operations: The Use of Airborne Laser Scanning Data (4225)

Hakan Akcin and Senol Hakan Kutoglu (Turkey):
Real Time Subsidence Monitoring Techniques In Undercity Mining and a Case Study: Zonguldak Metropolitan Area Applications-Turkey (4458)

Turgut Uzel, Kamil Eren and Ahmet Anil Dindar (Turkey):
Monitoring Plate Tectonics and Subsidence in Turkey by CORS-TR and InSAR (4570)

TS 5E – Planning Heritage: Back to the Future

Wednesday, 14 April 08:30–10:00
Venue: Bayside 105, SCEC
Commission: 8
Chair: Mr. **Tim Goodhead**, United Kingdom

Malvern Tipping (United Kingdom):
Identifying Clay-construction Buildings in a Norfolk Market Town (4522)

S. Hendriatiningsih, Yan Shofian Syarief, Alfita Puspa Handayani, Andri Hernandi and Rizqi Abdulharis (Indonesia):
Cultural Landscape Mapping: The Basis for Managing a Sustainable Future? (4488)

Ioan Stangu (Romania):
Geo-Cybernetics – A 21st Century Cybernetic Approach to Sustainable Development and Environmental Protection (3816)

TS 5F – History of Surveying

Wednesday, 14 April 08:30–10:00
Venue: Bayside 201, SCEC
Commission: History
Chair: Mr. **John Brock**, Australia
Rapporteur: Ms. **Kerima-Gae Topp**, Australia

Craig Roberts and Matthew Cooper (Australia):
The Scale of the Solar System: Re-enacting the Transit of Venus Observations 5–6 June 2012 (3851)

Geoffrey Sandford (Australia):
Larry Wells and the Lost Tribe (4524)

Case Bosloper (Australia):
William Dawes' Gravity Measurement in Sydney Cove, 1788 (4534)

Adrian Cummins (Australia):
John McDouall Stuarts Explorations 1858–1862 (4160)

Graham Tweedie (Australia):
A Tribute to the Surveyors/Explorers of the 19th Century Australia (4084)
This is a flash presentation.

TS 5G – Education Pedagogy in Surveying

Wednesday, 14 April 08:30–10:00
Venue: Bayside 202, SCEC
Commission: 2
Chair: Prof. **Damir Medak**, Croatia
Rapporteur: Mr. **Robert Webb**, Australia

Michael Mayer (Germany):
An Engineering Science Experience Report on Using Competence-based Techniques to Support Students Individually and Sustainably (4382)

Simon Mclean (United Kingdom):
Pedagogy of Using Industrial Simulation in Surveying Education: A Study of Two Models Run at Sheffield Hallam University, 2008/9 (3769)
This is a peer reviewed paper.

Martin Smith, Andrew Burton and **Nikolaos Kokkas** (United Kingdom):
Teaching and Learning Strategies for 3D Urban and Landscape Modelling (4061)

Steve Yau Wah Lam (Hong Kong SAR, China):
Work-Integrated Geomatics Higher Education in Hong Kong (4359)
This is a peer reviewed paper.

Arve Leiknes (Norway):
Cadastral Practice – a Success for the Education in Land Surveying and Land Management at Bergen University College (4478)

TS 5H – Gender Issues in Surveying

Wednesday, 14 April 08:30–10:00
Venue: Bayside 203, SCEC
Commission: 1 and 7
Chair: Ms. **Gertrude Pieper**, the Netherlands
Rapporteur: Ms. **Leonie Newnham**, Chair Elect of FIG Commission 1, Australia

John Parker (Australia):
Why Aren't Women Getting the Jobs They Deserve to? (4367)

Benedicta Ugwulebo (Nigeria):
How Women in Surveying can Change the Society (4257)

Fabian Thiel (Cambodia):
Gender Equality and Land Law in Cambodia (4668)

Bayram Uzun and **Ebru H. Colak** (Turkey):
The Issues of Women's Property Acquisition in Turkey (4237)

Sibel Seyhan (Turkey):
Female Geodetic Engineers and Their Problems in Turkey (4753)
This is a flash presentation.

TS 5I – Building Land Administration

Wednesday, 14 April 08:30–10:00
Venue: Bayside 106, SCEC
Commission: 7
Chair: Mr. **Richard Grover**, United Kingdom
Rapporteur: Mr. **Leiv Barte Mjos**, Norway

Wilhelm Zeddies (Germany):
Official Surveying and Mapping in Germany – Cooperation between the Public and the Private Sector (3802)

Jouni Johannes Anttonen (Finland):
Successful Capacity Building of the Cambodian Land Administration: Finnish Technical Assistance Combined with the Local Khmer Expertise, Traditions and Culture (4602)

Andrus Nnaemeka Ukaejiofo (Nigeria):
Identifying Appropriate Tools for Effective Land Governance in Nigeria (4612)

Ewa Swensson (Sweden):
Quality Improvement of the Cadastral Information in Sweden (4031)

TS 5J – Spatial Information for Climate Change Monitoring and Other Natural Disasters Management

Wednesday, 14 April 08:30–10:00
Venue: Bayside 101, SCEC
Commission: 3, 7 and 8
Chair: Dr. **Orhan Ercan**, Turkey
Rapporteur: Mr. **Kwame Tenadu**, Ghana

David Mitchell (Australia):
Reducing Vulnerability to Natural Disasters in the Asia Pacific through Enhanced Tenure Security (4127)
This is a peer reviewed paper.

Fahmi Amhar (Indonesia):
On Rapid Response Mapping after Padang Earthquake (4428)

Ioan Stoian, Ioan Stangu, Vasile Nacu and **Nicusor Baroiu** (Romania):
Geo-Cybernetics and the Risk Reduction of Natural Hazards in the Lower Danube, Romania (4060)

Jaek Liou (Republic of Korea):
Building the Capacity for Climate Change from Low Carbon Development and Energy GIS (4106)

TS 5K – Cadastral Projects

Wednesday, 14 April 08:30–10:00
Venue: Bayside Gallery A, SCEC
Commission: 7
Chair: Mr. **Christiaan Lemmen**, the Netherlands
Rapporteur: Ms. **Monica Lengoiboni**, the Netherlands

Haim Srebro (Israel):
On the Way to a Coordinate Based Cadastre (CBC) in Israel (3837)

Lars Palm (Sweden):
Quick and Cheap Mass Land Registration and Computerisation in Ethiopia (4278)

Hyunjin Kim (Republic of Korea):
The Study and Example of Application for the Establishment of Cadastral Methodology in Morocco (4150)

Moha El-ayachi, Elhassan Semlali, Mohamed Ettarid and **Driss Tahiri** (Morocco):
An Object Model of a Multi-purpose Cadastral Information System with the Object Oriented Approach – A Case Study (3953)
This is a peer reviewed paper.

SIDS 1 – Small Islands Development Seminar – Building Professional Capacity

Wednesday, 14 April 08:30–10:00
Venue: Bayside Gallery B, SCEC
Chair: Dr. **Mele Rakai**, Fiji
Discussant: Ms. **Jude Wallace**, Australia
Rapporteur: Dr. **Spike Boydell**, Australia

The FIG Congress includes a special seminar looking at the issues confronting so-called "Small Island Developing States". These island nations face special challenges as they struggle with Land Governance issues associated with achieving the Millennium Development Goals. The opening session aims at setting the scene for professional capacity building in the region by identifying the specific gaps in capacity in the region, and discussing ways in which land practitioners could contribute towards closing the gaps and thus assist with the achievement of the MDGs in the region.

Detailed program of the Small Island Developing States Seminar is on page 30.



Plenary Session 3 – The Big Challenges

Wednesday, 14 April 10:30–12:00
Venue: Bayside Auditorium A, SCEC
Commission: All
Chair: Prof. **Stig Enemark**, FIG President, Denmark

Daniel Fitzpatrick (Australia): Climate Change, Disaster Management and Land Governance (4647)

Paul Munro-Faure (Italy): Good Land Governance (4648)

Mohamed El-Sioufi (Kenya): Climate Change and Sustainable Cities (4658)

After Lunch Talk 2 – The Fourth Wave of Property Reform

Wednesday, 14 April 13:00–14:00
Venue: Bayside Auditorium A, SCEC
Chair: Prof. **Stig Enemark**, FIG President, Denmark

John McLaughlin (Canada): The Fourth Wave of Property Reform (4654)

SIDS 2 – Small Islands Development Seminar – Climate Change and Natural Disasters

Wednesday, 14 April 13:00–14:00
Venue: Bayside Gallery B, SCEC
Chair: Mr. **Johnny Edmonds**, New Zealand
Discussant: Dr. **Daniel Fitzpatrick**, Australia
Rapporteur: Dr. **David Mitchell**, Australia

This session on climate change and disaster mitigation develops the relationship between climate change, community resilience and land tenure. The tsunami that hit Samoa and other Pacific Island Countries in September 2009 was graphic evidence of the vulnerability of coastal communities. The objective of this session is to articulate the input and contribution of land professionals in the preparedness, mitigation, emergency response, recovery and rehabilitation stages of Disaster Risk Management.

Detailed program of the Small Island Developing States Seminar is on page 30.

FS 3B – Technical Aspects of SIM

Wednesday, 14 April 13:00–14:00
Venue: Bayside 103, SCEC
Commission: 3
Chair: Mr. **Varnavas Pashoulis**, Cyprus
Rapporteur: Mr. **Ionuț Cristian Săvoiu**, Romania

Antonio Juliano Fazan and **Aluir Porfirio Dal Poz** (Brazil): Building Roof Contours Extraction from Aerial Imagery based on Snakes and Dynamic Programming (4265)

Imane Sebari, Bassioni Gabin Da, Fatiha Ibannain (Morocco) and **Abdoulaye Belem** (Burkina Faso): Setting Up a Geocatalogue for the Geographic Institute of Burkina (4331)

Masoume Kheiri (Iran): Finding K-optimum Paths in Multimodal Transportation Network (4320)

Mariane Alves Dal Santo and **Carline Führ** (Brazil): Polygonal Line Simplifying Methods Applied to GIS (4399)

Neil Corby, Nariman Habili, Robert P Cechet and **Krishna Nadimpalli** (Australia): Rapid Inventory Collection System (RICS) (3899)

Ali Aien, Saeid Mohsen Kalantari Soltanieh, Abdol Reza Meshgini and **Reza Akbari** (Australia): Development of Geospatial Data Standards and Exchange Software for Geomatics Application (3893)

FS 3C – Positioning and Measurement Techniques and Applications II

Wednesday, 14 April 13:00–14:00
Venue: Bayside 104, SCEC
Commission: 5 and 6
Chair: Dr. **Gethin W. Roberts**, Chair Elect of FIG Commission 6, United Kingdom
Rapporteur: Ms. **Christina Kempe**, Sweden

Ling Zhu and **Ruoming Shi** (China, PR): Rectification for Linear Pushbroom Image of UAV (4205)

Joel Van Cranenbroeck (Belgium): The Sundial Cities (4078)

Dek Kie Tcha, Chul Soo Yang and **Rae Jeong Jeong** (Republic of Korea): A Study on the Field Surveying System Development by Many-to-Many Local Communication Topology (3978)

Wolfgang Koppe and **Ralf Duerig** (Germany): Assessment of TerraSAR-X Orthorectified Imagery Based on Commonly Used DEMs as well as on TerraSAR-X Stereo DEM (4675)

Heru Setyo Ajie (Indonesia): Repositioning Old Wells (4525)

Daniel Robert Helmricks (USA): Motor Vehicle Accident Forensic Survey (4669)

FS 3D – TLS Application II

Wednesday, 14 April 13:00–14:00
Venue: Bayside 102, SCEC
Commission: 6
Chair: Mr. **Faheem Khan**, Singapore
Rapporteur: Dr. **Ivo Milev**, Germany

Paul Natsikas and **Kevin Ide** (Australia): Laser Scanning Pavement Auditing Survey, Northern Diversion Sewer Project, Melbourne (4440)

Dongwei Qiu and **Yanhui Ding** (China, PR): Deformation Monitoring of Bridge Approach Using Terrestrial Laser Scanning (4036)

Mike Pinkerton (New Zealand): Terrestrial Laser Scanning for Mainstream Land Surveying (3814)

Tosa Ninkov, Vladimir Bulatovic, Zoran Susic and **Dejan Vasic** (Serbia): Application of Laser Scanning Technology for Civil Engineering Projects in Serbia (3864)

Tomáš Křemen, Václav Smitka and **Jiří Pospíšil** (Czech Republic): Terrestrial Laser Scanning for the Fire Test on Experimental Building in Mokrsko (4690)

Andrzej Dumalski and **Karolina Hejbudzka** (Poland): An Attempt at Using a Terrestrial Laser Scanner for Detecting Minimal Displacement and Objects' Deformation (4017)

Artur Adamek, Piotr Glowacki, Jacek Jania, Jacek Krawiec and **Zdzisław Kurczynski** (Poland): Usefulness of Terrestrial Laser Scanning for Survey of Dynamics of Frontal Zone of Hansbreen – Svalbard Tidewater Glacier (4295)

FS 3E – Land Use Classification and Soils

Wednesday, 14 April 13:00–14:00
Venue: Bayside 105, SCEC
Commission: 8, 3 and 6
Chair: Dr. **Reinfried Manberger**, Austria

Rudiney Soares Pereira, Renata Ferrari and **Mariane Alves Dal Santo** (Brazil): Dynamic Modeling of Land Use and Coverage at Quarte Colônia, RS (4315)

Emi Sukiyah, R. Febri Hirnawan and **Dicky Muslim** (Indonesia): The Erosion Model Based on Grainsize Distribution Ratios of Weathering Product of Quaternary Volcanic Deposits (4218)

Rod Eckels (Australia) and **Nicholas Bugosh** (USA): A Natural Approach to Mined Land Rehabilitation (3958)

Andrés Parra and **Francisco Hernandez** (Colombia): Identification and Delimitation of Natural Lentic Wetlands in the Department Valle del Cauca with Satellite Imagery (4305)

Stefan Ovidiu, Badescu Gabriel, Bancila Afrim Nicolae, Bud Ioan and **Hotea Vasile** (Romania): Possibilities for Determining the Stability of Underground Mine Working in the Area of Sasar Mine – Baia Mare, Using Topographical Methods, in the Circumstances of Entering the Economical Circuit (4537)

Thanh Son Nguyen (Viet Nam) and **Chi-Farn Chen** (Chinese Taipei): Analysis of Seasonal Soil Moisture Using MODIS Land Surface Temperature and NDVI Data for Agrodrought Monitoring in the Mekong Delta, Vietnam (4750)

FS 3F – Land Management Projects

Wednesday, 14 April 13:00–14:00
Venue: Bayside 201, SCEC
Commission: 7
Chair: Mr. **Babu Ram Acharaya**, Nepal

Joseph Salukvadze (Georgia): Improvements in Land Governance and Land Administration in Transitional Countries of the Post-Soviet Region: Comparative Analysis (4289)

Zahir Ali and **Abdul Nasir** (Pakistan): Land Administration System in Pakistan – Current Situation and Stakeholders' Perception (3901)

Vanco Gjorgjiev, Gjorgji Gjorgjiev and **Naumce Lazarevski** (Macedonia, FYROM): The Transaction Procedures of Real Estate in the Cadastre System in Republic of Macedonia (3955)

Greg Foster, Paul Robinson, Dwayne Schulz and **Andrew Bell** (Australia): Surety by Sharing – Parrallel Leasing in New South Wales (3885)

FS 3G – Land Administration and Development

Wednesday, 14 April 13:00–14:00
Venue: Bayside 202, SCEC
Commission: 7
Chair: Mr. **William Kalande**, Kenya

Peter Swan (Australia): Unique and Innovative Solutions to Land Development in Queensland (3963)

Sudarsono Osman and **Hui Urg Kueh** (Malaysia): Land Administration, Management and Spatial Information (4572)

FS 3H – Remote Sensing and Optical Techniques I

Wednesday, 14 April 13:00–14:00
Venue: Bayside 203, SCEC
Commission: 5 and 6
Chair: Prof. **Heiner Kuhlmann**, Germany

Christian Hirt (Australia), **Beat Bürki, Sébastien Guillaume** (Switzerland) and **Will Featherstone** (Australia): Digital Zenith Cameras – State-of-the-art Astrogeodetic Technology for Australian Geodesy (3831)

Jacky Chow, Axel Ebeling and **William Teskey** (Canada): Low Cost Artificial Planar Target Measurement Techniques For Terrestrial Laser Scanning (4394)

Timothy Nuttens, Alain De Wulf, Rudi Goossens (Belgium), **Christiane Tytgat** (Greece) and **Daniël Van Damme** (Belgium): Digital Photogrammetry Used for the 3D Reconstruction of the Walls around the Acropolis of Titani (Greece) (4483)

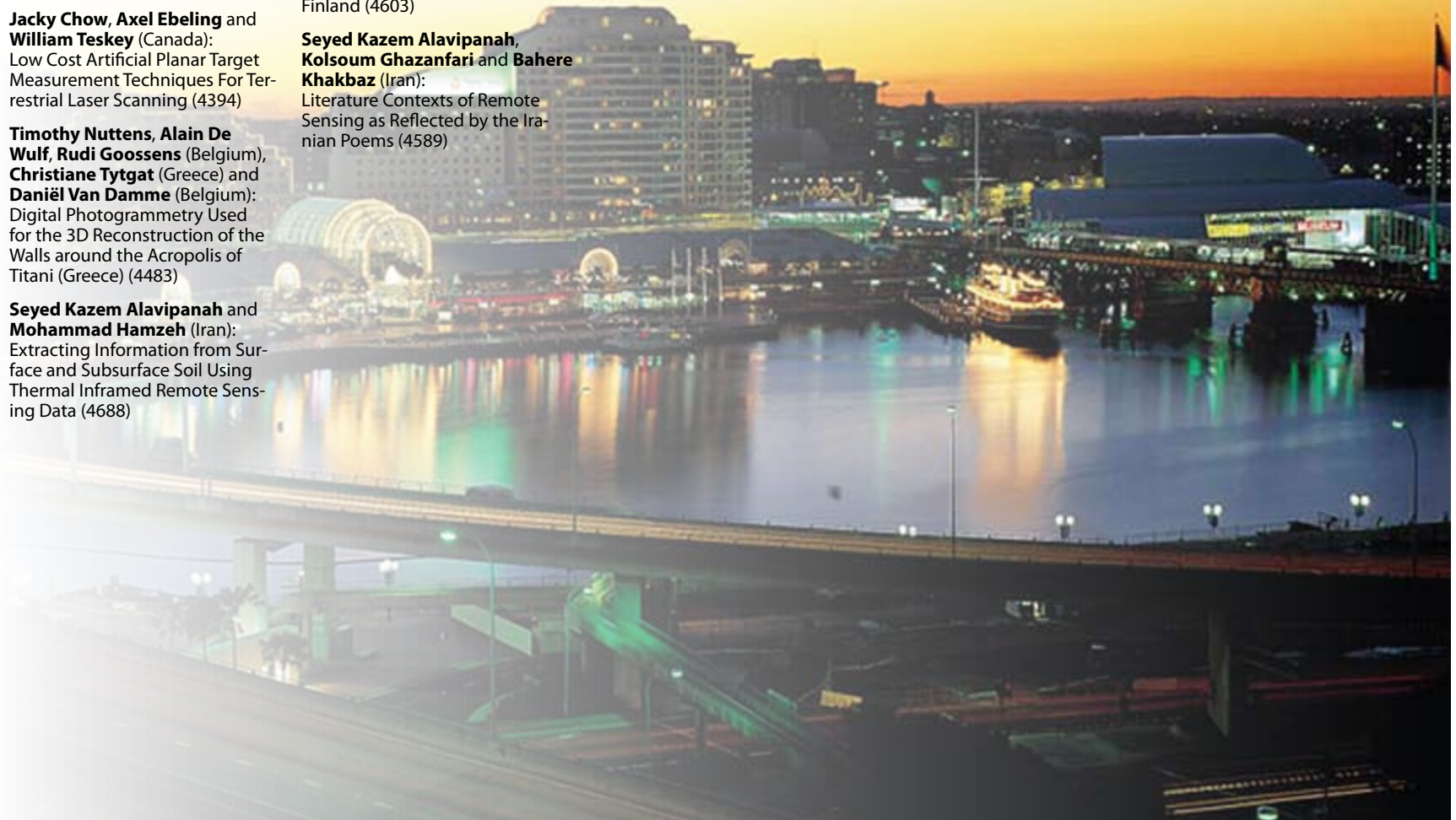
Seyed Kazem Alavipanah and **Mohammad Hamzeh** (Iran): Extracting Information from Surface and Subsurface Soil Using Thermal Infrared Remote Sensing Data (4688)

FS 3J – Institutional and Cultural Contributions

Wednesday, 14 April 13:00–14:00
Venue: Bayside 101, SCEC
Commission: 1
Chair: Mr. **Yaacoub Saade**, Chair of FIG Commission 1, Lebanon
Rapporteur: Mr. **Khalid Yousfi**, Morocco

Jouni Johannes Anttonen (Finland): Parental Advisory: Kids, Don't Try This at Home! Surveying in Donald Duck Comics Published in Finland (4603)

Seyed Kazem Alavipanah, Kolsoum Ghazanfari and **Bahere Khakbaz** (Iran): Literature Contexts of Remote Sensing as Reflected by the Iranian Poems (4589)



TS 6A – Land Administration and Climate Change

Wednesday, 14 April 14:00–15:30
Venue: Bayside Auditorium A, SCEC

Commission: 7
Chair: Prof. **Paul van der Molen**, the Netherlands
Rapporteur: Mr. **Soren Fauerholm Christensen**, Denmark

Grenville Barnes and Cheryl Quail (USA):

Facing the Cadastral Challenges of Managing Carbon Property Rights to Mitigate Climate Change (4239)

Michael Stapleton (Australia):
Climate Change and the Cadastral Surveyor (3934)

Krishna Nadimpalli, Mark Dunford, Lauren Power, Mark Edwards and Robert P Cechet (Australia):

National Exposure Profile for Evidence Based Climate Change Adaptation (3897)

Eddie Cichocki (Australia):
Surveying Response to the Victorian Bushfires of February 2009 (4104)

Jelena Unger (Croatia):
Cadastre Involvement in Sustainable Development as an Essential Component (3820)

TS 6B – Spatial Data Infrastructures

Wednesday, 14 April 14:00–15:30
Venue: Bayside 103, SCEC

Commission: 3
Chair: Ms. **Kari Strande**, Norway
Rapporteur: Dr. **Michael Barry**, Canada

Bas Kok (the Netherlands):
Convergences between Geo Spatial Communities: A Key Condition for Decision Making (4041)

Robert Woodcock (Australia):
Auscope: Australian Earth Science Research Spatial Information Infrastructure (4000)

Wilhelm Zeddies (Germany):
Geospatial Reference Data as Public Sector Information – Involvement of the Surveying and Mapping Authorities – The German Way (3804)

Guler Yalcin, Bilal Erkek and Sedat Bakici (Turkey):
Spatial Data Infrastructure in Turkey and Projects (3870)

Ljerka Rašić and Željko Bačić (Croatia):
The Role of National Mapping and Cadastre Agencies in Establishment of NSDI: Croatian Example (4032)

TS 6C – Global Geodetic Observing System and APREF I

Wednesday, 14 April 14:00–15:30
Venue: Bayside 104, SCEC

Commission: 5
Chair: Prof. **Rudolf Staiger**, Chair of FIG Commission 5, Germany
Rapporteur: Mr. **Robert Sarib**, Australia

Markus Rothacher (Germany):
Global Geodetic Observing System and GGOS (invited) (4698)

Ruth E. Neilan (USA), **John M. Dow** (Germany), **Chris Rizos** (Australia) and **Markus Rothacher** (Switzerland):
The Global Geodetic Observing System and the International GNSS Service (IGS) (4697)

John Dawson and Guorong Hu (Australia):
Improving the Geodetic Infrastructure of the Asia-Pacific Region (4109)

Gary Johnston and Linda Morgan (Australia):
The Status of the National Geospatial Reference System and Its Contribution to Global Geodetic Initiatives (4116)

Hasanuddin Z. Abidin, Cecep Subarya, Buldan Muslim (Indonesia), **Rahma Hanifa** (Japan) and **Wenny Rusmawar** (Indonesia):
The Applications of GPS CORS in Indonesia: Status, Prospect and Limitation (3924)

TS 6D – Quality Management and Standards

Wednesday, 14 April 14:00–15:30
Venue: Bayside 102, SCEC

Commission: 6 and 5
Chair: Dr. **Ivo Milev**, Germany
Rapporteur: Mr. **Don Abbey**, Australia

Steve Yau Wah Lam (Hong Kong SAR, China):
TQM of Engineering Survey Operations under ISO 9001 in Hong Kong (3998)

Jim Ollis (Australia):
A National Survey Standard for Road and Bridge Construction in Australia and New Zealand (4001)

Mourad Bouziani, Khalid Yousofi, Kamal Charafi and El Maati Zidane (Morocco):
Quality Standards of Road Surveying in Morocco (4217)

Nic Donnelly and Matt Amos (New Zealand):
Implementation of a New Survey Control Standard for New Zealand (4126)

Don Abbey and Linda Morgan (Australia):
SP1 – A New Standard for Control Surveys in Australia (3903)

TS 6E – Planning: Addressing Issues of Urban Growth

Wednesday, 14 April 14:00–15:30
Venue: Bayside 105, SCEC

Commission: 8
Chair: Mr. **Wafula Nabutola**, Chair Elect of FIG Commission 8, Kenya

Sophie Schetke, Dagmar Haase and Theo Kötter (Germany):
Towards Sustainable Urban Land Use – A Methodological Design for Implementing Socio-ecological Targets into the Strategic Planning of Cities in Germany (4626)

Olga Petrakovska (Ukraine):
Restrictions of Land Use in Ukraine (4491)

Madan Mohan (India):
Geospatial Information for Urban Sprawl Planning and Policies Implementation in Developing Country's NCR Region: A Study of NOIDA City, India (4050)

Trinh Thi Hoai Thu (Viet Nam):
Proper Assessment Process of Urban Area Expansion (4482)

David Oluwamotemi (Nigeria):
Land Acquisition, Compensation and Resettlement in Developing Economies – Nigeria as a Case Study (3616)

TS 6F – Real Estate Market and Valuation

Wednesday, 14 April 14:00–15:30
Venue: Bayside 201, SCEC

Commission: 9
Chair: Mr. **Dieter Kertscher**, Germany
Rapporteur: Dr. **Anna Baranska**, Poland

Steven Nystrom (USA):
Diagnostic Tools and Perspective Practices for the Valuation Profession (4455)

Dennis Webb (USA):
Short- and Long-Term (Sustainable) Property Values (4281)

Faanimo Reti-Warren (Samoa):
Current Valuation Practices in Samoa: The Act of Balancing the Unbalanced (a Practiced Paper) (4520)

Wilfred Anim-Odame (Ghana), **Tony Key** and **Simon Stevenson** (United Kingdom):
The Nascent Real Estate Investment Market in Ghana (3830)
This is a peer reviewed paper.



TS 6G – e-Learning I

Wednesday, 14 April 14:00–15:30
Venue: Bayside 202, SCEC
Commission: 2
Chair: Prof. **Esben Munk Sorensen**, Denmark
Rapporteur: Ms. **Kate Fairlie**, Australia

Liza Groenendijk, Christiaan Lemmen and **Paul van der Molen** (the Netherlands):
E-learning: the Future for Land Administration Studies? (3935)

Bela Markus (Hungary):
Worldwide Learning Infrastructure (4035)

Arnaud Deshogues, Pierre-Yves Gillieron and **Bertrand Merminod** (Switzerland):
Enhancement of Geomatics Education by Using Internet Based Techniques (4157)
This is a peer reviewed paper.

Moha El-ayachi (Morocco):
Toward a Virtual Academic Consortium to Promote Land Information Sciences in Africa (4232)
This is a peer reviewed paper.

TS 6H – Engineering Surveys I

Wednesday, 14 April 14:00–15:30
Venue: Bayside 203, SCEC
Commission: 6
Chair: Prof. **Alojz Kopacik**, Chair of FIG Commission 6, Slovakia
Rapporteur: Mr. **David Martin**, France

Guenter Schmitt (Germany):
Geodetic Contributions to IWRM-Projects in Middle Java, Indonesia (3751)

Théo Engel (Switzerland), **Bodo Lahr** (Germany) and **Jürg Kaufmann** (Switzerland):
Building Up on Railway Coordinates (4477)

David Martin (France):
Review of Accelerator Alignment (3911)

Edi Meier, Philippe Limpach, Hilmar Ingensand, Alain Geiger and **Andreas Steiger** (Switzerland):
Hydrostatic Leveling Systems: Measuring at the System Limits (4474)

Steve Yau Wah Lam (Hong Kong SAR, China):
Recent Advances of Engineering Survey Operations for Tunnel Construction in Hong Kong (3995)

Jesus Velasco, Juan Prieto, Tomas Herrero and **Jose Fabrega** (Spain):
Drilling a 25 km Tunnel for High Speed Railway in Spain (4542)
This is a peer reviewed paper.

TS 6I – Technology in Land Administration

Wednesday, 14 April 14:00–15:30
Venue: Bayside 106, SCEC
Commission: 7 and 5
Chair: Dr. **Conrad Tang**, Hong Kong SAR, China
Rapporteur: Mr. **Gyula Iván**, Hungary

Ian Harper (Australia):
The New Technology of a Survey Data Model and Cadastral Fabric as the Foundation for a Future Land Administration System (4038)

Thaer Shunnar and **Michael Barry** (Canada):
Knowledge Discovery from Land Record Systems (4282)

Michael Dixon (Australia) and **Duncan Guthrie** (United Kingdom):
Administrative Boundaries: Automating the Data Processing Cycle for a Critical National Dataset (4091)

Mariane Alves Dal Santo, Carlos Loch and **Francisco Henrique Oliveira** (Brazil):
Digital Cartographic Generalization for Database of Cadastral Maps (4276)

Ji Yeon Jeong (Republic of Korea):
Use of Network RTK Using VRS for a Cadastral Survey in Islands (4013)

Reddy Jai Ram (Australia):
The Integration of CORS Networks and the Cadastre and Its Application in NSW, Australia (3798)

TS 6J – Professional Qualifications and Mutual Recognition

Wednesday, 14 April 14:00–15:30
Venue: Bayside 101, SCEC
Commission: 1
Chair: Mr. **Teo Chee Hai**, FIG Vice President, Malaysia
Rapporteur: Mr. **Yaacoub Saade**, Chair of FIG Commission 1, Lebanon

Brian Coutts (New Zealand):
Disciplinary Principles for Cadastral Surveyors in Australia and New Zealand (3980)

John Fryer (Australia):
Surveyors Crossing International Boundaries – The Australian and New Zealand Bureau for Assessment of Overseas Qualifications (3806)

Patrick McNamara (Australia):
Surveyors Intellectual Property in The High Court of Australia (4743)

Glenn Campbell and **Jim Liddle** (Australia):
The Implementation of a Competency Based Assessment System for Applicants for a Restrictive Licence for Cadastral Surveying (4469)
This is a peer reviewed paper.

John Worldon (Australia):
Private Sector Industry Association Involvement in the Registration Process (3964)

INV 3 – Spatially Enabled Society

Wednesday, 14 April 14:00–15:30
Venue: Bayside Gallery A, SCEC
Commission: 3 and 7
Chair: Mr. **Helge Onsrud**, Norway

Ian Williamson, Abbas Rajabifard and **Peter Holland** (Australia):
Spatially Enabled Society (4134)

Daniel Stuedler (Switzerland) and **Abbas Rajabifard** (Australia):
Spatially Enabled Society – Role of the Cadastre (4164)

Greg Scott (Australia):
Spatially Enabled Society – Developments in Asia-Pacific Region (4757)

SIDS 3 – Small Islands Development Seminar – Access to Land, Coastal and Marine Resources

Wednesday, 14 April 14:00–15:30
Venue: Bayside Gallery B, SCEC
Chair: Mr. **Russell Nari**, Vanuatu
Rapporteur: Mr. **Bill Robertson**, New Zealand

The challenge of access to land and marine resources due to a lack of clearly defined real property rights is often cited as a major cause of dispute and resultant instability for SIDS. In this session we explore institutional impediments to land and resource access in SIDS. We investigate the issues of gender and intergenerational equity, and the application of land trusts, with a view to proposing workable leasehold solutions that do not risk creating long-term perpetual lease structures.

Detailed program of the Small Island Developing States Seminar is on page 30.

TS 7A – Land Administration – Responses to Crises and Innovations

Wednesday, 14 April 16:00–17:30
Venue: Bayside Auditorium A, SCEC
Commission: 7
Chair: Mr. **András Osskó**, Chair of FIG Commission 7, Hungary
Rapporteur: Mr. **Wilhelm Zeddies**, Germany

Godfried Barnasconi and **Paul van der Molen** (the Netherlands): Cadastral Innovations and Financial Crisis (4228)

David Cowen and **Donald Buhler** (USA): The United States Mortgage Crisis and Cadastral Data (4022)

Jaap Zevenbergen (the Netherlands) and **Tony Burns** (Australia): Land Administration in Post-Conflict Areas; A Key Land and Conflict Issue (4011)

Daniel Roberge and **Michel Paradis** (Canada): Reconstruction in Haiti: A Land Rights Infrastructure to Support its Sustainable Development (4751)

TS 7B – Regional and National Spatial Data Infrastructures

Wednesday, 14 April 16:00–17:30
Venue: Bayside 103, SCEC
Commission: 3
Chair: Mr. **Robin McLaren**, United Kingdom
Rapporteur: Mr. **Ali Fahri Özten**, Turkey

Zeljko Bacic (Croatia) and **Zeljko Obradovic** (Bosnia and Herzegovina): South-East Europe Regional SDI Cooperation – SEE Inspiration (4044)

Dan Paull (Australia) and **Dave Lovell** (France): Closer Than You Think: The Pioneering Relationship between PSMA Australia and EuroGeographics (4090)

Nick Littlewood, Sarah MacDonald and **Gerry Stanley** (Australia): The Benefits of the PSMA Australia Data Network (4087)

Szabolcs Mihály and **Pál Lévai** (Hungary): Provision of Interoperable Datasets to Open GI to EU Communities An European example of SIM (4203)

TS 7C – Global Geodetic Observing System and APREF II

Wednesday, 14 April 16:00–17:30
Venue: Bayside 104, SCEC
Commission: 5
Chair: Mr. **Mikael Lilje**, Chair Elect of FIG Commission 5, Sweden
Rapporteur: Mr. **Gary Johnston**, Australia

Dru Smith, Kendall Fancher, Steve Breidenbach, Jeff Olsen and **Nagendra Paudel** (USA): Recent IERS Site Survey of Multiple Co-located Geodetic Techniques by NGS (4187)

Guorong Hu and **John Dawson** (Australia): The Asia Pacific Regional Geodetic Project (APRGP) GPS Solution (1997–2008) (4113)

Graeme Blick (New Zealand) and **Robert Sarib** (Australia): The Geodetic Infrastructure in Australia and New Zealand: Differences and Similarities (4065)

Doug Kinlyside, Tony Watson, Glenn Jones and **John Kelaher** (Australia): From AGD66 to GDA94 and towards GDA20xx in NSW (4433)

Richard Stanaway and **Craig Roberts** (Australia): CORS Network and Datum Harmonisation in the Asia-Pacific Region (3773)

TS 7D – LIDAR and InSAR Usage in Surveying

Wednesday, 14 April 16:00–17:30
Venue: Bayside 102, SCEC
Commission: 6
Chair: Prof. **Hansjoerg Kutterer**, Germany
Rapporteur: Dr. **Renee Bartolo**, Australia

Lei Zhang, Xiaoli Ding (Hong Kong SAR, China) and **Zhong Lu** (USA): Monitoring of Bridge Deformation with InSAR: An Experimental Study (3737)

Mahmoud Gomah and **John Trinder** (Australia): Support Vector Machines Based Filtering of Lidar Data (4063)
This is a peer reviewed paper.

Hyunil Yoo (Republic of Korea): LIDAR Application for Cultural Heritage 3D Modeling and Reconstruction (4015)

Gil Goncalves and **Luisa Gomes Pereira** (Portugal): Case Study: Accuracy of a DTM Derived from Full-waveform LiDAR Data under an Unstructured Eucalyptus Forest (4219)

Cristodoulos Psaltis and **Charalabos Ioannidis** (Greece): Supervised Change Detection on Simulated Data Employing Support Vector Machines (4236)
This is a peer reviewed paper.

TS 7E – SDI and Planning

Wednesday, 14 April 16:00–17:30
Venue: Bayside 105, SCEC
Commission: 8 and 3
Chair: Dr. **Dalal S. Alnaggar**, FIG Vice President, Egypt
Rapporteur: Mr. **Michael Doran**, Northern Ireland

Asmat Ali (Pakistan): Is Public Private Partnership an Effective Instrument to Implement SDI? (4484)

Joerg Blankenbach and **Markus Schaffert** (Germany): A GIS-based Approach to Supporting e-Participation in Municipal Administration and Planning Strategies in the Context of Web 2.0 (3997)

Jason Clark and **Ben Somerville** (Australia): Making Infrastructure Development Location Intelligent (4551)

TS 7F – Real Estate Market and Valuation Methods

Wednesday, 14 April 16:00–17:30
Venue: Bayside 201, SCEC
Commission: 9
Chair: Mr. **Steven Nystrom**, USA
Rapporteur: Ms. **Faanimo Reti-Warren**, Samoa

Dieter Kertscher (Germany): The Successful Way from the Purchase Price Collection to a Complete Transparency for the Real Estate Market (3865)

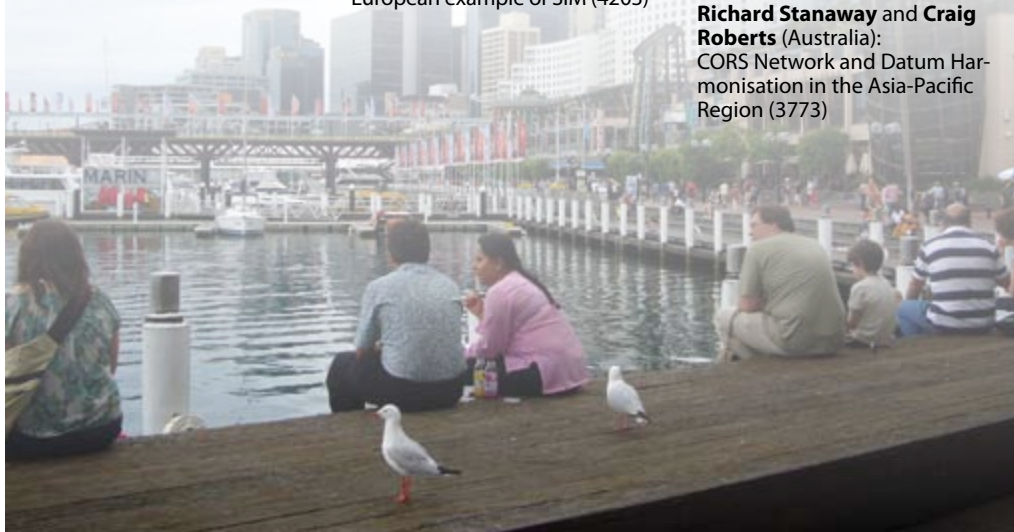
Mehrdad Koohi Kamali and **Mohammad Rajabi** (Iran): Integrated MRA and Geostatistics Method of Residential Property Valuation (4155)

Anna Baranska (Romania): Influence of Models Form in Two-stage Valuation Procedure on Prediction of Real Estates Market Value (4240)

Rene Gudat (Germany): Collections of the Property Market Data for the Valuation Process – An German Approach in an International Context (4029)
This is a peer reviewed paper.

Marija Raskovic and **Stojanka Brankovic** (Serbia): Real Estate Market non-transparency – valuation and assessment problems in Serbia; towards mass valuation (4081)
This is a peer reviewed paper.

Virgo Eresta Jaya (Indonesia): Land Value Indexation in Indonesia (4364)



TS 7G – e-Learning II

Wednesday, 14 April 16:00–17:30
Venue: Bayside 202, SCEC
Commission: 2
Chair: Ms. **Liza Groenendijk**, the Netherlands
Rapporteur: Prof. **Steven Frank**, Chair Elect of FIG Commission 2, USA

Gethin Roberts and **Joshua Grey** (United Kingdom):
NEST – A New Web Based Teaching Tool for Engineering Surveying (4451)

Kefei Zhang, Erjiang Fu, Gang-Jun Liu, Stuart Whitman and **Ming Zhu** (Australia):
Action Research for a New e-Learning GPS/Surveying Platform (4154)
This is a peer reviewed paper.

Esben Munk Sorensen (Denmark):
Videoconferencing in Surveying Education Programmes Needs New Institutional Capacity – From One-campus Activities to Multi-campus Functions (4241)

Vladimir Golubev, Aleksander Chibunichev and **Irina Fartukova** (Russia):
Innovative Technologies for Learning in Moscow University of Geodesy and Cartography (MIL-GAIK) (4210)

Pedro José Mayoral Valdivia, Alejandro Silvestre Tello Moreno and **José Manuel González Freire** (Mexico):
YouTube Based Learning (4098)

TS 7H – Young Surveyors Network – Attracting New Generations

Wednesday, 14 April 16:00–17:30
Venue: Bayside 203, SCEC
Commission: 1 and 2
Chair: Ms. **Cecilia Lindén**, Chair of FIG Young Surveyors Network, Sweden
Rapporteur: Mr. **Yaacoub Saade**, Chair of FIG Commission 1, Lebanon

Cecilia Lindén (Sweden):
Building a Young Surveyors Network – A Way to Rejuvenate the Surveying Profession? (3745)

Tim Goodhead (United Kingdom):
Opportunities for Linking Young Surveyors Across Professional Surveying Member Organizations and FIG (3919)

Chris McAlister, Kate Fairlie (Australia) and **Cemal Ozgur Kivilcim** (Turkey):
Identify Crisis: Challenges and Capacity Building for Next Generation Surveyors (4435)

Gary Jeffress and **Grenville Barnes** (USA):
Facing the Challenge of the Shrinking, Aging Surveying Profession (3860)

TS 7I – Geographical Names

Wednesday, 14 April 16:00–17:30
Venue: Bayside 106, SCEC
Commission: 3 and 7
Chair: Mr. **William Watt**, Australia

Rudolph Matindas (Indonesia) and **Bill Watt** (Australia):
United Nations Group of Experts on Geographical Names – Structure, Directions and Achievements (4560)

Bill Watt and **Greg Windsor** (Australia):
Place Names in the Spatial Environment (4559)

Lorraine Bayliss and **Bill Watt** (Australia):
CGNA Education Package (4558)

Donald Grant and **Wendy Shaw** (New Zealand):
Place Naming Legislation in New Zealand (4557)

Anselm Haanen (New Zealand) and **Brian Goodchild** (Australia):
A Street Addressing Standard for Australia and New Zealand (4097)

TS 7J – Social Aspects in Land Administration and Land Reform

Wednesday, 14 April 16:00–17:30
Venue: Bayside 101, SCEC
Commission: 7
Chair: Mr. **Jouni Anttonen**, Finland

Randolf Vicente (Philippines):
Accelerating the Philippines' Land Adjudication and Titling Activities Through Public-Private Partnership on Social Marketing and Field Operations Management (4309)

Stephnie Nicolene De Villiers (Namibia) and **Arbind Man Tuladhar** (the Netherlands):
Transparency in the Resettlement Process of Namibia (4189)

Sar Sovann (Cambodia):
Status of Land Reform in Cambodia (4633)

Suon Sopha, Lor Davuth and **Meach Sam Eil** (Cambodia):
Concept and Implementation of Public Awareness, Community Participation and Land Management Activities for Stablising Cadastral Index Map and Land Register through Systematic Land Registration in Cambodia (4701)

TS 7K – Legal and Institutional Aspects in Land Administration

Wednesday, 14 April 16:00–17:30
Venue: Bayside Gallery A, SCEC
Commission: 7
Chair: Prof. **Ian Williamson**, Australia
Rapporteur: Dr. **Gary Hunter**, Australia

Jürg Kaufmann (Switzerland):
The New Swiss Law on Geoinformation and the Ordinance on the Cadastre on Public Law Restrictions (4064)

Dimo Todorovski and **Vasil Miskovski** (Macedonia, FYROM):
Building the Capacities in the Cadastral and Land Registration Organizations at Individual Level in Developing and Transition Countries (4439)

Orhan Ercan (Turkey), **Jamal Ali Gledan** and **Mahmoud Ejewli** (Libya):
Capacity Building at Surveying Department of Libya (4424)

Babu Ram Acharaya (Nepal):
Development of Integrated Land Information Institutions as Key Success Factor for Sustainable Land Management: A Case of Nepal (4442)

Home Visits

Wednesday, 14 April **19:00–22:30**
Hosted by Australian surveyors within 1 hour from Sydney

- Visit the home of an Australian surveyor living in the Sydney region. Aussies are renowned for their friendly outdoor barbecues, all in a relaxed atmosphere where you will meet with your hosts and other international colleagues.
- Cost: 50.00 AUD.

SIDS 4 – Small Islands Development Seminar – Good Governance in Land Tenure and Administration

Wednesday, 14 April 16:00–17:30
Venue: Bayside Gallery B, SCEC
Chair: Mr. **Tony Burns**, Australia
Rapporteur: Dr. **Kate Dalrymple**, Australia

The land sector is particularly susceptible to corruption and rent seeking. The small island states in the Pacific, typically grouped into three regions: Melanesia, Micronesia and Polynesia, cover a very wide expanse of the world's surface. The prevalence and importance of customary tenure in the Pacific adds a level of complexity to any consideration of land governance but nonetheless, land governance is an important topic for the Pacific region. This session will explore the topic of land governance as it applies to small island states.

Detailed program of the Small Island Developing States Seminar is on page 30.

Standards Network Meeting

Wednesday, 14 April 16:00–17:30
C1, SCEC, Exhibition Hall
Commission: Standards Network
Chair: Mr. **David Martin**, Chair of Standards Network, France

- by invitation only



TS 8A – Land Management

Thursday, 15 April 08:30–10:00
Venue: Bayside Auditorium A, SCEC
Commission: 7
Chair: Mr. **Soren F. Christensen**, Denmark
Rapporteur: Prof. **Ryszard Żróbek**, Poland

Bruce Manners, Don Grant and James Dempsey (New Zealand): Towards Tomorrow's Cadastral Survey Industry (4099)

Arvo Kalevi Kokkonen (Finland): Finnish Cooperation with Neighbouring Areas for Developing Land Management in Russia (4370)

Alina Zrobek-Rozanska and Ryszard Zrobek (Poland): Issues of Efficiency in Public Real Estate Resources Management (3654)
This is a peer reviewed paper.

Alessandro Dalmasso (Italy): Land Maintenance Management in the Chisone and Germanasca Valleys (4348)

Chuka Oboli and Anne Akpoyoware (Nigeria): Reform in Cadastre and Land Administration in Nigeria-Coping with Challenges in Development (3914)

Shewakena Aytenfisu Abab and Melkamu Belachew Moges (Ethiopia): Facing the Challenges in Building Sustainable Land Management Capacity in Ethiopia (4051)
This is a peer reviewed paper.

TS 8B – Spatial Information Modelling I

Thursday, 15 April 08:30–10:00
Venue: Bayside 103, SCEC
Commission: 3
Chair: Prof. **Yerach Doytsher**, Chair Elect of FIG Commission 3, Israel
Rapporteur: Mr. **Angel Yanakiev**, Bulgaria

Iain Greenway (United Kingdom): Transforming Land and Property Services – Northern Ireland Learns from and Builds on the Australian Experience (3949)

Benoit Fredericque and Alain Lapierre (Canada): 3D City GIS – A Major Step towards Sustainable Infrastructure (4703)

Kevin McDougall (Australia): From Silos to Networks – Will Users Drive Spatial Data Infrastructures in the Future? (4137)
This is a peer reviewed paper.

Chan Tai, Stephen Farrell and Glenn Frankish (Australia): The National Data Grid: a Development Model for Grid Cell Data Infrastructure (4464)
This is a peer reviewed paper.

Michiel Jellema (the Netherlands): Strategic Position Model Geo-ICT Function: Facing the Challenge of Organizational Alignment (3907)
This is a peer reviewed paper.

TS 8C – New GNSS Applications and Developments

Thursday, 15 April 08:30–10:00
Venue: Bayside 104, SCEC
Commission: 5
Chair: Dr. **Volker Schwieger**, Germany
Rapporteur: Mr. **Mikael Lilje**, Chair Elect of FIG Commission 5, Sweden

Simon D. Hennig, Wolfgang Koppe, Nadine Kiefl, Juergen Janoth and Ralf Duering (Germany): Digital Elevation Modeling using TerraSAR-X Radargrammetry (4672)

Detlev Kosmann, Birgit Wessel and Volker Schwieger (Germany): Global Digital Elevation Model from the TanDEM-X and the Calibration/Validation with Worldwide Kinematic GPS-Tracks (4030)

Juergen Schweitzer, Bimin Zheng, Volker Schwieger and Detlev Kosmann (Germany): Evaluation of the TanDEM-X Digital Elevation Model by PPP GPS – Analysis and Intermediate Results (4045)
This is a peer reviewed paper.

R.M.S. Fernandes, Jorge M. F. Santos (Portugal) and **Detlev Kosmann** (Germany): Merging GNSS Kinematic Tracks – Using the TanDEM-X Mission in Africa (4338)

Chee Yin Lee, David Silcock, Lucas Holden and Sue Lynn Choy (Australia): GPS Surveys within Falls Creek: Implementation and Processing for Aerial Photography (4434)
This is a peer reviewed paper.

TS 8D – Photogrammetry, RMS and Image Data Processing

Thursday, 15 April 08:30–10:00
Venue: Bayside 102, SCEC
Commission: 6
Chair: Dr. **Renee Bartolo**, Australia

Werner Mayr (Germany) and **Ralf Schroth** (Romania): Autonomous Aerial Sensing – Fast Response and Personalized (3993)

Khaloud Qtaishat (Jordan): Evaluate the Geometry Strengths and Weaknesses for the Large Format Digital Cameras (3871)
This is a peer reviewed paper.

Robert Paquet and Harvey Mitchell (Australia): Seeking Historical Ground Deformations from Archival Aerial Photography (3986)

Rokhmana Catur Aries (Indonesia): Some Notes on Using Balloon Photogrammetry for the Precise Plantation (4166)

Ida Jazayeri, Simon Cronk and Clive Fraser (Australia): Automated Object Reconstruction and Modelling via Multi-Image Close-Range Photogrammetry (4393)
This is a peer reviewed paper.

Jan Hardos, Martin Hudec and Martin Paulovic (Slovakia): 3d Basic Maps of Highways in Slovakia – Virtual Reality (4670)

TS 8E – Law and Planning

Thursday, 15 April 08:30–10:00
Venue: Bayside 105, SCEC
Commission: 8
Chair: Mr. **Wafula Nabutola**, Chair Elect of FIG Commission 8, Kenya
Rapporteur: Mr. **El Mekki Abou Elala**, Morocco

Alexander Kohli (Switzerland): Land Management and Cadastre – a Symbiotic Interaction? (4580)

Rattanak Nguon and Jean-Christophe Diepart (Cambodia): Scaling the Landscapes: a Methodology to Support Integrated Spatial Planning in Cambodia (4639)

Sandy Rendel (Australia): Recent Developments in the Law of Easements in NSW, Following the High Court of Australia Decision in Westfield v Perpetual Trustee and also Including Conflicts with Planning Consents (4371)

TS 8F – GNSS CORS Networks – Positioning Infrastructure, Analysis and Applications III

Thursday, 15 April 08:30–10:00
Venue: Bayside 201, SCEC
Commission: 5
Chair: Prof. **Rudolf Staiger**, Chair of FIG Commission 5, Germany
Rapporteur: Mr. **Robert Sarib**, Australia

Volker Janssen, Adrian White and Thomas Yan (Australia): CORSnet-NSW: Towards State-wide CORS Infrastructure for New South Wales, Australia (3959)

Bashir Al Arabi and Jamal Ali Gledan (Libya): Establishment of CORS Libya (4539)

Gavin Docherty and Craig Roberts (Australia): GNSS CORS Networks – The Impact of Solar Cycle 24 on Network RTK in Australia (4108)

Dave Collett (New Zealand): Developing a National Real-time CORS Network in New Zealand (3869)

Jamil Hasan, Mohamed Azhari and Leng Hua Chang (Malaysia): The Malaysia Real-Time Kinematic GNSS Network (MyRTKnet) in 2010 and Beyond (4742)

TS 8G – Educational Needs

Thursday, 15 April 08:30–10:00
Venue: Bayside 202, SCEC
Commission: 2
Chair: Mr. **Christian Paresi**, the Netherlands
Rapporteur: Dr. **Martin Smith**, United Kingdom

Garfield Young, Roger Murphy and **Martin Smith** (United Kingdom):

Investigating How Education Is Shaping the Modern Surveyor/Geomatics Engineer (4062)

Kate Fairlie (Australia), **Robert Mahoney** (United Kingdom), **Reinfried Mansberger** and **Gert Steinkellner** (Austria):

Navigating the Future of Surveying Education – Outcomes and Conclusions of the FIG Commission 2 Workshop 2009 in Vienna (3920)

David Wolrige (Australia):
The New Era for Surveying Firms (4139)

Raisa Yakovleva (Russia):
Elements of Legal Education in the Sphere of Geodesy and Cartography: Intellectual Property (4496)

Wing Yiu, Anthony Lai (Hong Kong SAR, China):
Assessing Training Needs for Building Surveying Practitioners (4521)

This is a peer reviewed paper.

Cengizhan Ipbuker (Turkey):
The Reason of Changing the Name to “Geomatics” (4229)
This is a flash presentation.

TS 8H – Cadastre and Land Administration Worldwide

Thursday, 15 April 08:30–10:00
Venue: Bayside 203, SCEC
Commission: 7
Chair: Dr. **Szabolcs Mihaly**, Hungary
Rapporteur: Mr. **Gyula Iván**, Hungary

Michael Klebanov and **Joseph Forrai** (Israel):
Implementation of Coordinate Based Cadastre in Israel: Experience and Perspectives (3794)

Leiv Bjarte Mjøs (Norway):
Cadastral Practice in Norway (4465)

Mehmet Çete (Turkey):
The Reforms in Turkish Cadastre (4365)

Kholoud Saad (Egypt), **Salem A. Sola** and **Ali Said El-Baden** (Libya):
Transformation of the Land Registration Services for Libyan Registry Authority (4406)

Hyung Moo Kim, Dek-Kie Tcha, Chul Soo Yang, Guon Mo Nam and **In Su Lee** (Republic of Korea):
A Design and Implementation of Full 3D Cadastral Data Architecture in South Korea (3972)

TS 8I – Economic Benefits of Hydrography

Thursday, 15 April 08:30–10:00
Venue: Bayside 106, SCEC
Commission: 4
Chair: Dr. **Michael Sutherland**, Chair Elect of FIG Commission 4, Canada
Rapporteur: Mr. **John McCarthy**, Australia

Gordon Johnston (United Kingdom):
The Economic Benefits of Hydrography (4615)

Brian Connon (USA) and **Rod Nairn** (Australia):
Economic Impact of Hydrographic Surveys (4588)

Olumide Omotoso (Nigeria):
Capacity Building and the Economic Benefits of Hydrography (4486)

TS 8J – SIM Services and Applications

Thursday, 15 April 08:30–10:00
Venue: Bayside 101, SCEC
Commission: 3 and 7
Chair: Mr. **Bo Lauri**, Sweden

Isaac Adedurin (Nigeria):
Land Procurement, Management, Information and Surveying in Nigeria (3809)

Arif Cagdas Aydinoglu (Turkey):
Geo-data Management Issues for Urban Land Administration in Turkey (4314)

Charisse Griffith-Charles (Trinidad And Tobago):
Challenges to Effective Land Governance in Trinidad and Tobago (4504)

George Mourafetis and **Lefteris Lykouropoulos** (Greece):
Massive Collection of Cadastral Data in Greece Using Web-enabled GIS Technologies (4410)

Trias Aditya (Indonesia):
Urban Sensing & Land Management for Urban Poverty & Risk Reduction in Web 2.0 Era: A Call for Developing a Collaborative Land Information Infrastructure (4376)

TS 8K – Developing Cadastre from Cadastre 2014

Thursday, 15 April 08:30–10:00
Venue: Bayside Gallery A, SCEC
Commission: 7
Chair: Mr. **Jürg Kaufmann**, Switzerland
Rapporteur: Dr. **Daniel Steudler**, Switzerland

Rohan Bennett, Abbas Rajabifard, Mohsen Kalantari, Jude Wallace and **Ian Williamson** (Australia):
Cadastral Futures: Building a New Vision for the Nature and Role of Cadastres (4096)
This is a peer reviewed paper.

Anna Krelle and **Rajabifard Abbas** (Australia):
Cadastre 2014: New Challenges and Direction (4027)
This is a peer reviewed paper.

Bill Hirst (Australia):
Cadastre 2014 – Australia and New Zealand: Now and the Future (3824)

Vuttinan Utesnan (Thailand):
Reporting Thailand Cadastral System in Cadastre 2014 Trend (3966)

Mohsen Kalantari, Abbas Rajabifard and **Rohan Bennett** (Australia):
Modern Land Administration: Technical Characteristics (3988)

SIDS 5 – Small Islands Development Seminar – Building Professional Capacity

Thursday, 15 April 08:30–10:00
Venue: Bayside Gallery B, SCEC
Chair: Dr. **Mele Rakai**, Fiji
Discussant: Dr. **Ian Williamson**, Australia
Rapporteur: Dr. **Spike Boydell**, Australia

This closing session aims at developing strategies and activities for building the professional capacity of land administration practitioners and professionals in the region; and identifying the roles that land administration practitioners can play towards achieving the MDGs in the region.

Detailed program of the Small Island Developing States Seminar is on page 30.

Plenary Session 4 – Technological Futures

Thursday, 15 April
10:30–12:00
Venue: Bayside Auditorium A, SCEC
Commission: All
Chair: Dr. **Dalal S. Alnaggar**, FIG Vice President, Egypt

Mary O’Kane (Australia):
Technological Futures (4649)

Ed Parsons (United Kingdom):
Technological Futures (4650)

Matt Higgins (Australia):
Technological Futures (4653)

After Lunch Talk 3 – Leica Geomatics: Surveying in the Year 2020

Thursday, 15 April 13:00–14:00
Venue: Bayside Auditorium A, SCEC
Chair: Mr. **Matt Higgins**, FIG Vice President, Australia

Johannes Schwarz (Switzerland):
Surveying in the Year 2020 – Potential impacts of emerging technologies on surveying applications and instrumentation – A manufacturer’s perspective (4655)

FS 4B – Spatial Data Infrastructures in Support of Disaster Management Need

Thursday, 15 April 13:00–14:00
Venue: Bayside 103, SCEC
Commission: 3
Chair: Prof. **Mohamed Essadiki**, Morocco
Rapporteur: Mr. **Christos Zenonos**, Cyprus

Chris McAlister, Tammy Carter and Justin White (Australia):
A Time of Need – Coordinating Spatial Disaster Management in SEQ (4441)

Turan Erden and Mehmet Zeki Coskun (Turkey):
The Role of Geospatial Tools in Disaster Management Life Cycle (3917)

Maisam Toosi (Iran), **Ahmad Savari** (Canada), **Fereidoon Owfi, Armin Moniri and Mojgan Rezaei** (Iran):
Design and Implementing of Integrated Management and Assessment of HSEQ Risk in Petroleum Complex of Iran (Case Study: Mobin Petroleum Site, Bushehr Province) (4274)

FS 4C – Adjustment Techniques and Reference Frames

Thursday, 15 April 13:00–14:00
Venue: Bayside 104, SCEC
Commission: 5
Chair: Mr. **Dave Doyle**, USA
Rapporteur: Dr. **Neil D. Weston**, USA

John Dawson and Alex Woods (Australia):
Coordinate Transformations between GDA94 and the ITRF (4105)

Nasr A. Al-Sahhaf (Saudi Arabia), **R.M.S. Fernandes** (Portugal) and **Sami Alhamidi** (Saudi Arabia):
The ArabRef Project – A New Geodetic Network for Arabia (4337)

Vivian de Oliveira Fernandes and Ruth Emilia Nogueira (Brazil):
Implications for the Adoption of Global Reference Geodesic System SIRGAS2000 on the Large Scale Cadastral Cartography in Brazil (4419)

Guorong Hu, John Dawson, Gary Johnston and Nicholas Brown (Australia):
Precision Analysis of GPS for Datum Modernisation in Australia (4110)

FS 4D – Landslide and Subsidence Monitoring II

Thursday, 15 April 13:00–14:00
Venue: Bayside 102, SCEC
Commission: 6
Chair: Prof. **Andreas Eichhorn**, Germany
Rapporteur: Dr. **Milan Talich**, Czech Republic

Hasanuddin Z. Abidin, Heri Andreas, Irwan Gumilar (Indonesia), **Yoichi Fukuda** (Japan) and **Dodid Murdohardono** (Indonesia):
Studying Land Subsidence in Semarang (Indonesia) Using Geodetic Methods (3748)

Febri Hirnawan (Indonesia):
Slope Instability Zoning Mapping of Landslide Hazardous Area for the Stabilization System (3991)

Hakan Yavasoglu, Ergin Tari (Turkey) and **Frederic Masson** (France):
Slip Partition on the North Anatolian Fault and Its Splays in Central Anatolia Using GPS Data (4413)

Piotr Grzempowski and Stefan Cacoń (Poland):
Modelling of Ground Surface Deformations with Finite Element Method in Fault Zones for the Purpose of Designing Geodetic Observations (4283)

Steve Garlinge (Australia):
Continuous Monitoring of Long-wall Undermining (4135)

Milan Talich (Czech Republic):
How to Create Strain Maps by Online Tools (4264)

Febri Hirnanwan, Dicky Muslim and Emi Sukiyah (Indonesia):
A Measure of Intense Active Tectonism through Manifestation of River Basin Morphometry Development on Quaternary Volcanic Deposits (4235)

Haluk Ozener (Turkey):
The Importance of Tuzla Fault and a Study on Deformation Monitoring in the Aegean Region, Turkey (4422)

FS 4E – Critical Infrastructure Development

Thursday, 15 April 13:00–14:00
Venue: Bayside 105, SCEC
Commission: 8 and 3
Chair: Mr. **Kwame Tenadu**, Ghana

Sian Elliott and Samsung Lim (Australia):
Visualisation of the Public Transport System of Sydney (4042)

Bernard Kumi-Boateng and Yakubu Issaka (Ghana):
Site Selection for Waste Disposal Using GIS – A Case Study of Akosombo (3931)

Guilherme Clasen Wosny, Francisco Henrique Oliveira and Julia Cucco (Brazil):
Overview of Transmission Line Integrated with Land Cadastre in Brazil (4303)

Ibrahim Mahamid and Amund Bruland (Norway):
Preliminary Cost Estimating in Road Construction Projects (4592)

Nikolay Naydenov (Bulgaria):
Parking Survey – Case Study (3932)

Mehmet Zeki Coskun (Turkey):
Production and Geo-Statical Analysis of Acute Myocardial Infarction Maps by Geographic Information System in Istanbul (4383)



FS 4F – Land Tenure and Land Management Projects in Developing Countries

Thursday, 15 April 13:00–14:00
Venue: Bayside 201, SCEC
Commission: 7
Chair: Mr. **Muhammad Bashar Nuhu**, Nigeria
Rapporteur: Mr. **William Kalande**, Kenya

Nigel Edmead (USA):
Open Title: a Low Cost Tool for Inventorying Property Rights – Experiences from Ghana (4037)

Teshome Taffa Dadi (Ethiopia):
Nature of Property Units in Ethiopia: Case Study of Two Pilot Projects (4043)

Jacob Odeh Ehiorobo and **Henry Audu** (Nigeria):
Technical and Legal Issues in Land Acquisition for Development of Crude Oil and Natural Gas Facilities within The Niger Delta Region of Nigeria (4261)

FS 4G – Engineering Surveys II
Thursday, 15 April 13:00–14:00
Venue: Bayside 202, SCEC
Commission: 6
Chair: Mr. **David Martin**, France
Rapporteur: Mr. **Paul Stivano**, Australia

Nursu Tunalioglu and **Taylan Ocalan** (Turkey):
The Gridding Size Effects on Exposing Highway Profile (4275)

Ding Ke-liang and **Tie Li-Shan** (China, PR):
Level Surveying Method and Accuracy Analysis on Passenger Dedicated Line CP III Network Points (4053)

Jacob Odeh Ehiorobo (Nigeria):
Developing Sustainable Electrical Power for Nigeria from Natural Gas: Measurements and Documentation for Construction of Natural Gas Distribution Pipelines from Gathering Facilities to Power Plants (4258)

Bernhard Heck, **Michael Mayer**, **Malte Westerhaus** and **Karl Zippelt** (Germany):
Karlsruhe Integrated Displacement Analysis Approach – towards a Rigorous Combination of Different Geodetic Methods (4459)

Nicholas Zembillas (USA):
Subsurface Utility Engineering Offers an Accurate View of What's Down Under (4659)

Paul Stivano (Australia):
Volumetric Surveys of Ash Storage Dams (4004)

Hediye Erdoğlan (Turkey):
Experimental and Analytical Studies on Dynamic Characteristics of the Bosphorus Suspension Bridges (4541)

FS 4H – Remote Sensing and Optical Techniques II
Thursday, 15 April 13:00–14:00
Venue: Bayside 203, SCEC
Commission: 5 and 6
Chair: Dr. **Gethin W. Roberts**, United Kingdom

Mika Salolahti (Finland):
Advanced Use of LiDAR Data – Automatic Building Vectorization and Contour Production (4689)

Roy Hill and **Jake Jenkins** (USA):
GeoSAR and PurVIEW: a New Solution for Efficient and Accurate Large-area Topographic Mapping (4571)

Federica Zampa (Italy), **Dario Conforti** and **Daina Morgan** (Canada):
Lynx Mobile Mapper: The New Survey Technology (4706)

Paola Ronzino (Italy):
Innovative Techniques for 3D Digital Survey of the Paphos Theatre (4350)

Ajay K. Singh and **S. S. Singh** (India):
Sub Watersheds Status of Hasdeo River Basin Area in Chhattisgarh, India (4552)

FS 4I – Measuring and Monitoring the Coastal Zone
Thursday, 15 April 13:00–14:00
Venue: Bayside 106, SCEC
Commission: 4
Chair: Mr. **David Neale**, Trinidad and Tobago
Rapporteur: Ms. **Angela Etuonovbe**, Nigeria

Michael Sutherland (Canada), **Dexter Davis** and **Sandesh Jaggan** (Trinidad And Tobago):
Augmenting Tide Gauge Data with Satellite Altimetry in the Caribbean (4614)

Moslem Alghasi (Iran):
New Method in Mangrove Forest Hydrography via Remote Sensing (Aerial Photography) and Classic Hydrography (4182)

Nathan Quadros (Australia):
Construction of a High Accuracy, Seamless, State-Wide Coastal DEM (4092)

FS 4J – GIS Applications on Internet
Thursday, 15 April 13:00–14:00
Venue: Bayside 101, SCEC
Commission: 3 and 7
Chair: Mr. **Lefteris Lykouropoulos**, Greece

Francisco Ortiz de Urbina (Australia):
Location Intelligence 2.0: Changing the Way Spatial Information Is Used (4131)

Usman Iqbal, **David Bruce** and **Ed Garvin** (Australia):
A Balancing Act: Fusing Spatial Privacy and Spatial Metadata for Responsible Participatory Geo-Governance (4597)

Dean Luo and **Liqiong Liao** (China, PR):
Extend Municipal GIS Functions Based on Web-Services (4012)

Leonie Dunbar (Australia):
Geographic Internet Addresses – Providing Online Homes for Australian Communities (3755)

JaeJun Yoo (Republic of Korea):
The First Step at Convergence of Geospatial Web and Sensor Web (4741)

FS 4K – Case Studies from Small Islands States

Thursday, 15 April 13:00–14:00
Venue: Bayside Gallery A, SCEC
Commission: 8, 3 and 7
Chair: Dr. **Diane Dumashie**, Chair of FIG Commission 8, United Kingdom

Jean Francisco Francois (Mauritius):
Facing the Challenges of Setting up a Cadastral System in the Rodrigues Island (Mauritius) through a Vision of Good Land Governance towards a Proper Land Administration, Information Land Management System to Support Sustainable Development (3905)

Mone Iye Cornelia Marschiavelli and **Niendyawati Salam** (Indonesia):
Vulnerability Assessment Concept for Small Islands Case Study: Makalehi Island, North Sulawesi, Indonesia (4585)

Malcolm Archbold (New Zealand) and **Sione Nailasikau Halatuituia** (Tonga):
Development of the Kingdom of Tonga Cyclone Emergency Recovery and Management System using Geospatial Tools (4073)

TS 9A – Development of Land Tenure Systems – Developing Countries

Thursday, 15 April 14:00–15:30
Venue: Bayside Auditorium A, SCEC
Commission: 7
Chair: Mr. **Teo CheeHai**, FIG Vice President, Malaysia
Rapporteur: Mr. **William Kalande**, Kenya

Monica Lengoiboni, Paul van der Molen, Jaap Zevenbergen, Christiaan Lemmen and Arnold Bregt (the Netherlands): Pastoralism within Land Administration: Accommodating Pastoralists' Spatiotemporal Land Rights in Land Administration Domain Model (LADM) (3946)

Michael McDermott, Spike Boydell and Jason Prior (Australia): Complexity Epistemology and Real Property Rights (4194)

Noel Taylor (Australia) and **Fatma Abdel Kader** (Egypt): Parcel Based Deeds Registration – A Viable Alternative to Title Registration in Egypt? (4180)

Belachew Yirsaw Alemu (Ethiopia): Urban Land Lease Policy of Ethiopia – Case Study on Addis Ababa and Lease Towns of the Amhara National Regional State (4006)

Habtemicael Weldegiorgis (Eritrea): The Challenges of Developing Cadastral System in Eritrea (3774)
This is a peer reviewed paper.

TS 9B – SIM Best Practice Applications

Thursday, 15 April 14:00–15:30
Venue: Bayside 103, SCEC
Commission: 3
Chair: Dr. **Jens Riecken**, Germany
Rapporteur: Mr. **Steven Nystrom**, USA

Olaf Hedberg and Elizabeth Thomas (Australia): The Role of an Institutional Environment in Building Creative and Innovative Spatial Capacity (3807)

Ebru H. Colak, Bayram Uzun and Halilibrahim Inan (Turkey): A Parcel-Based Health Information System in Turkey (4233)

Kambiz Borna, Shahrbanu Firuzi, Mohmmadreza Rrajabi, Majid Hamrah and Mehdi Mirzaie (Iran): Optimization Linear Black Box Models of Rainfall – Runoff by Using GIS and Neural Networks (3821)

Alexandra Lyle and Samsung Lim (Australia): Tracing Tramways – the Application of Geographic Information Systems in Transport Archaeology (3967)

Brian Marwick and Peter Richards (Australia): A New G-NAF Processing Environment (4089)

Joseph Abhayaratna (Australia): LYNX and the Commonwealth Spatial Data Initiative (4094)

TS 9C – Standards

Thursday, 15 April 14:00–15:30
Venue: Bayside 104, SCEC
Commission: 5
Chair: Mr. **David Martin**, France
Rapporteur: Mr. **Volker Janssen**, Australia

Darren Burns and Robert Sarib (Australia): Standards and Practices for GNSS CORS Infrastructure, Networks, Techniques and Applications (4438)

William Henning (USA): Real Time Network Guidelines from NOAA's National Geodetic Survey (3772)
This is a peer reviewed paper.

Robert Odolinski (Sweden): Swedish User Guidelines for Network-RTK (4226)

Kwang-Ho Jung, Su-Hyeon Ryu, Young-Jin Lee, Hung-Kyu Lee and Sang-Heon Cha (Republic of Korea): Nationwide Geodetic Adjustment of Integrated GPS Networks in Korea (4227)

TS 9D – Machine Guidance and Integrated Measurement Systems

Commission: 6
Thursday, 15 April 14:00–15:30
Venue: Bayside 102, SCEC
Chair: Dr. **Gethin W. Roberts**, Chair Elect of FIG Commission 6, United Kingdom
Rapporteur: Mr. **Jim Ollis**, Australia

Ryan Keenan (Sweden): RTK Networks for Competitive Advantage in Machine Control and Site Positioning (4292)

Peter Kyrinovic and Alojz Kopacik (Slovakia): System for Automatic Crane Measurement (4266)

Alexander Reiterer (Austria), **Taher Hassan and Naser El-Sheimy** (Canada): Automated Traffic Sign Detection for Modern Driver Assistance Systems (3828)
This is a peer reviewed paper.

Rob Huber and Claude Laflamme (Canada): Leveraging Mobile Mapping Systems (4253)

Jiri Ardielli (Czech Republic): System for Localization and Identification of Divers' Activity in Aquatic Environment (4667)

TS 9E – Sustainable Planning and Urban Renewal

Thursday, 15 April 14:00–15:30
Venue: Bayside 105, SCEC
Commission: 8
Chair: Mr. **Michael Doran**, Northern Ireland
Rapporteur: Mr. **Yaacoub Saade**, Lebanon

Hervé Grélard (France): Land Surveyors and Sustainable Development – The Agenda 21 of the French Order of Licensed Surveyors (3827)

Chijioko Eze (Nigeria): Integration of Geographic Information System in Planning and Management of Industrial Developments in Nigeria (3749)
This is a peer reviewed paper.

Austin Aminu Usman (Nigeria): Urban Renewal: A Developmental Tool Not Recognized in Developing Countries – A Case of Abuja, Nigeria (4414)

Ibrahim Usman Jibril (Nigeria): The Return of the Greens in Abuja, Nigeria's New Capital City (4638)

Narelle Underwood (Australia): The Surveyor's Role in Developing a Sustainable Society (4324)

Tina Koehler (Germany): A Contribution to a Sustainable Development of Rural Areas by Implementation of New Planning Instruments and Local Government Reorganisation (4054)

TS 9F – Real Estate Management

Thursday, 15 April 14:00–15:30
Venue: Bayside 201, SCEC
Commission: 9, 7 and 8
Chair: Mr. **David Smjekal**, Czech Republic
Rapporteur: Mr. **Tuomo Heinonen**, Finland

Silja Lockemann (Germany): Influences of the Demographic Change on the Property Market (3948)

Tuuli Luoma, Jessica Niemi, Peggie Rothe and Anna-Liisa Lindholm (Finland): Office Occupiers' Real Estate Attributes – Identifying Occupiers' Preferences (4018)
This is a peer reviewed paper.

Man Wah Conny Wang (Hong Kong SAR, China): The Future of Real Estate Management: Privatization of Public Housing Management (3757)

Peter Clark and Many Mooya (South Africa): Exploring the Significance of Valuations in South Africa's Listed Property Sector (3938)
This is a peer reviewed paper.

Andrea Massaro (Italy): Planning Permission by Curative Statute (4349)

Catherine Kariuki and Nicky Nzioki (Kenya): The Management of Corporate Real Estate Assets in Kenya (4629)
This paper has not been presented at the congress.

TS 9G – Quality in Surveying Education

Thursday, 15 April 14:00–15:30
Venue: Bayside 202, SCEC
Commission: 2
Chair: Dr. **Gary Hunter**, Australia
Rapporteur: Dr. **Reinfried Mansberger**, Austria

Sara Wilkinson and **Richard Reed** (Australia):
Student Perceptions of Surveying and Built Environment Professional Bodies: An International Comparison (3797)
This is a peer reviewed paper.

Eugene Levin, Alfred Leick and **Robert Liimakka** (USA):
Some Aspects of Geospatial Education in Technological Universities (4694)

Robert Taylor, David Phillips, Jonathan Leaver, Fed Kirman and **Randall McMullan** (New Zealand):
Perspectives on the Challenges of Delivering a Sustainable Survey – Technician Training Programme in New Zealand (4752)

TS 9H – Land Consolidation I

Thursday, 15 April 14:00–15:30
Venue: Bayside 203, SCEC
Commission: 7
Chair: Mr. **Mats Backman**, Sweden

Louisa J. M. Jansen (the Netherlands), **Mustafa Karatas, Gürsel Küsek** (Turkey), **Christiaan Lemmen** and **Rik Wouters** (the Netherlands):
The Computerised Land Re-allotment Process in Turkey and the Netherlands in Multi-purpose Land Consolidation Projects (4574)

Alfred Bollinger (Switzerland):
From Land-consolidation to Rural Development Projects in Switzerland (3844)

P. P. Oli (Nepal):
Land Pooling / Readjustment Programmes in Nepal (4553)

Seija Kotilainen and **Heikki Seppänen** (Finland):
A Study on the Experiences of Arable Land Owners on Land Rearrangement – Project-related Land Consolidation with a Public Road Project at Pajuneva in Finland (3990)
This is a peer reviewed paper.

TS 9I – Nautical Charting – Marine Cartography

Thursday, 15 April 14:00–15:30
Venue: Bayside 106, SCEC
Commission: 4
Chair: Mr. **Adam Greenland**, New Zealand
Rapporteur: Mr. **David Neale**, Trinidad and Tobago

Gareth Hodgkinson (New Zealand):
Introducing the Revolution in New Zealand Paper Chart Production (3982)

Kristian Jones (New Zealand):
Implementation of a Hydrographic Product Database Solution for Land Information New Zealand Hydrographic Services: Challenges and Efficiency Gains (4115)

Marina Christofidis and **Thobias Leonicio Rotta Furlanetti** (Brazil):
Evaluating the Intelligibility of Cartographic Representation Techniques Used for Water Quality Monitoring Framework in Brazil (4490)

Kazeem Akorede Shitta (Nigeria):
Lithostratigraphy of Nigeria – An Overview (4418)

Roderick Nairn (Australia):
The Challenge of Surveying and Charting the Antarctic (4531)

TS 9J – Land Administration Projects

Thursday, 15 April 14:00–15:30
Venue: Bayside 101, SCEC
Commission: 7
Chair: Mr. **Arvo Kokkonen**, Finland
Rapporteur: Mr. **Lars Palm**, Sweden

Oksana Sukhova (Ukraine):
Is It Real to Have Effective Land Administration When There is Power Disproportion? (3856)

Sergey Volkov and **Alexander Sagaydak** (Russia):
Land Administration in the Russian Federation (4579)

Leslie C. Fehlhaber and **Jemma A. Picco** (Australia):
Surveying Challenges to Deliver Tenure for the Eastern Kuku Yalanji People's Native Title Determination in the Wet Tropics of Far North Queensland (4112)

Aune Rummukainen (Finland):
Indigenous Peoples Rights to Land – as an Example Sámi People in Finland and Veddha People in Sri Lanka (3867)

William Kalande (Kenya):
Stretching Beyond the Limitations of Social Based Land Dispute Classifications: Formulation of a Cadastral Land Dispute Classification Model (4411)

INV 4 – Land Policies in Africa

Thursday, 15 April 14:00–15:30
Venue: Bayside Gallery A, SCEC
Chair: Dr. **Diane Dumashie**, Chair of FIG Africa Task Force, United Kingdom

Mwenda Makathimo and **Joycelyn Makena Kaaria-Ogeto** (Kenya):
The Role of Surveyors in Land Policy Formulation: Best Practices from the Kenyan Experience (4663)

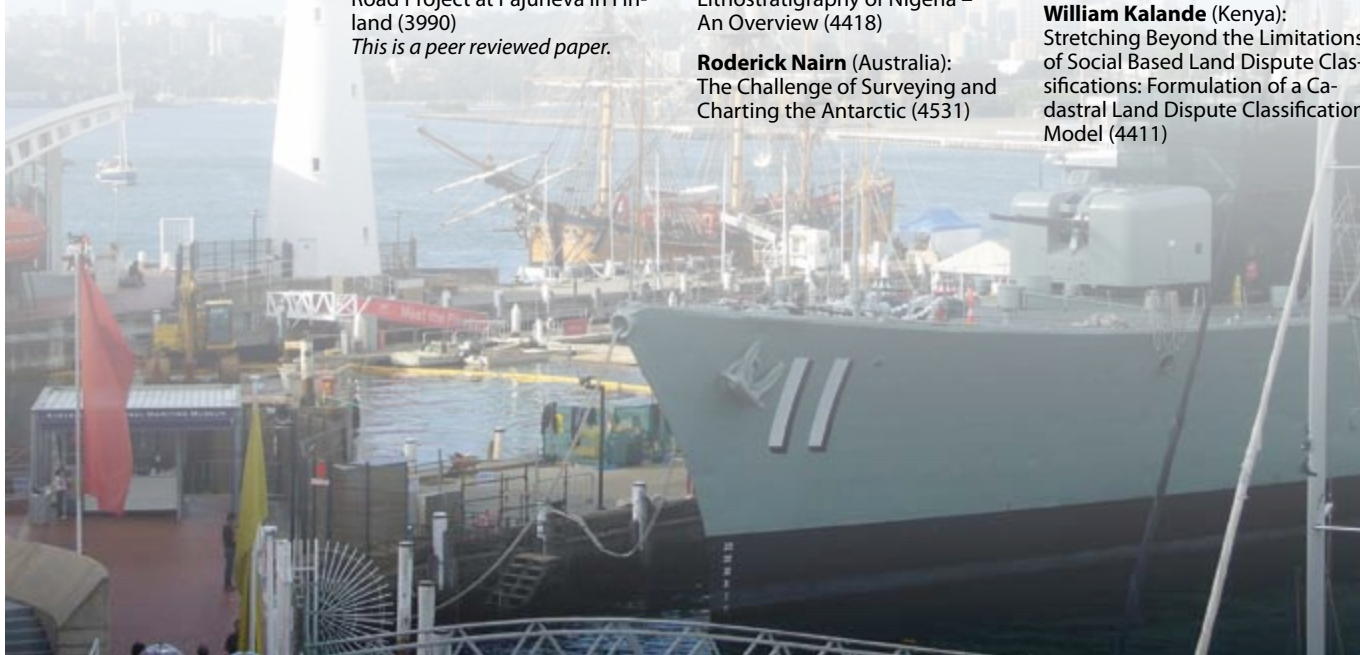
Olusola Atilola (Nigeria):
Land Reform in Nigeria (4758)

Anthony Arko-Adjei (Ghana), **Arbind Tuladhar, Jitske De Jong** and **Jaap Zevenbergen** (the Netherlands):
Customary Tenure Institutions and Good Governance (4279)
This is a peer reviewed paper.

FIG Corporate Members Meeting

Thursday, 15 April 14:00–15:30
Venue: Bayside 107, SCEC
Commission: FIG Corporate Members

– by invitation only



TS 10A – New Development in Cadastre – Developed Countries

Thursday, 15 April 16:00–17:30
Venue: Bayside Auditorium A, SCEC
Commission: 7
Chair: Mr. **Gottfried Barnasconi**, the Netherlands
Rapporteur: Mr. **András Osskó**, Chair of FIG Commission 7, Hungary

Tarja Myllymäki and Tarja Pykälä (Finland):
Challenge to Implement International Cadastral Models – Case Finland (3876)

Mick Strack (New Zealand):
Property Rights for a New World: Adapting to an Ethic of Sustainability (4149)
This is a peer reviewed paper.

Daniel Roberge (Canada):
Re-thinking and Re-engineering Cadastral and Land Administration Activities in Québec to Better Face the Challenges (4101)

Elisabetta Genovese and Francis Roy (Canada):
From Parcel to Global Cadastre: Challenges and Issues of the Post-reform Quebec Cadastre (4499)

TS 10B – Spatial Information Infrastructures to Address Social Aspects

Thursday, 15 April 16:00–17:30
Venue: Bayside 103, SCEC
Commission: 3, 7 and 8
Chair: Dr. **Vladimir Tikhonov**, Russian Federation

Michael Barry, Andrew Hunter (Canada), **Richard Molero** (Venezuela) and **Tha'er Shunnar** (Palestinian Authority):
Flexible Database Structures for Land Records (4426)

Kevin McDougall and Dev Raj Paudyal (Australia):
Spatial Data Infrastructure for Pro-poor Land Management (4171)
This is a peer reviewed paper.

Mabel Alvarez (Argentina), **Tatiana Delgado Fernández** and **Rafael Cruz Iglesias** (Cuba):
Social SDI's a Challenge for Land Surveyors (4356)
This paper has not been presented at the congress.

Bruce Douglas (Australia):
Hammers and Nails – Some Pragmatic Views of the Spatial Information Industry in Australia and New Zealand (4618)

TS 10C – GNSS Modernisation and Trends

Thursday, 15 April 16:00–17:30
Venue: Bayside 104, SCEC
Commission: 5
Chair: Mr. **Dave Doyle**, USA
Rapporteur: Ms. **Christina Kempe**, Sweden

Katrin Huber, Florian Heuberger, Ana Karabatic, Robert Weber, Philipp Berglez and Christoph Abart (Austria):
PPP: Precise Point Positioning – Constraints and Opportunities (4040)

Lennard Huisman and Peter Teunissen (Australia):
On the Robustness of Next Generation GNSS Phase-Only Real-Time Kinematic Positioning (4095)

Chris Rizos (Australia):
Impact of Next Generation GNSS on Australasian Geodetic Infrastructure (4148)

Larry Hothem (USA):
GPS Modernization Program Update and GNSS International Cooperation (4366)

Yanming Feng (Australia) and **Bofeng Li** (China, PR):
4D Real Time Kinematic Positioning (4392)

TS 10D – Building Measurement and Modelling

Thursday, 15 April 16:00–17:30
Venue: Bayside 102, SCEC
Commission: 6
Chair: Prof. **Alojz Kopacik**, Chair of FIG Commission 6, Slovakia
Rapporteur: Dr. **Volker Schwieger**, Germany

Wolfgang Niemeier (Germany):
Towards a Geometry-Oriented Construction Process in Structural Engineering (4754)

Volker Schwieger, Li Zhang and Matthias Wengert (Germany):
A Quality Model for Residential Houses Construction Processes (3881)

Christian Manthe and Christian Clemen (Germany):
Room-Element-Aggregation to Enhance the Quality of Observed 3D Building Information (4172)

Valeriu Manolache (Romania):
Methods for Analysis of Building Deformations, Determined through Geodetic Measurements (4516)

TS 10E – Disaster Management: Preparedness and Resilience

Thursday, 15 April 16:00–17:30
Venue: Bayside 105, SCEC
Commission: 8, 3 and 7
Chair: Mr. **Daniel Roberge**, Chair Elect of FIG Commission 7, Canada
Rapporteur: Ms. **Sophie Schetke**, Germany

Raphael Legouge (France), **Rangsima Sunila, Kirsi Virrantaus and Hannes Seppänen** (Finland):
Risk and Vulnerability Analysis in the Gulf of Finland (4195)
This is a peer reviewed paper.

Darren Mottolini, Ian Hyde and Bandarian (Australia):
Implementing a Spatial Vision for Western Australia: Engaging Citizens through a Coordinated and Collaborative Approach to Spatial Information Management (3836)

Arif Cagdas Aydinoglu and Elif Demir (Turkey):
Designing Provincial Level Emergency and Disaster Management System for Turkey (4310)

Matthew Ibitoye and Adebayo Eludoyin (Nigeria):
Land Exposure and Soil Erosion in Part of Humid Region of Southwest Nigeria (3936)
This is a peer reviewed paper.

TS 10F – Land Taxation and Fiscal Cadastre

Thursday, 15 April 16:00–17:30
Venue: Bayside 201, SCEC
Commission: 9 and 7
Chair: Dr. **Frances Plimmer**, Chair Elect of FIG Commission 9, United Kingdom
Rapporteur: Dr. **Winrich Voss**, Germany

Christine Grover (United Kingdom):
The Origins of the British Fiscal Cadastre (3915)

Francis Gäbele and Marc Vanderschueren (Belgium):
The Immovable Valuation Missions of the General Administration of the Patrimonial Documentation of Belgium (3890)

Jukka Nieminen and Tuomo Heinonen (Finland):
Zanzibar Land Administration and Revenue Generation System (LARGE) (4620)

Yuliana Susilowati, Bambang Edhi Leksono and Denisanto (Indonesia):
The Influence of Urban Accessibility in Determining Average Indicated Land Values for the Region (4317)

Kambiz Borna, Saeed Mesgarie, Saeed Borna and Majid Hamrah (Iran):
To Apply Fuzzy Method for a Rural Fiscal Cadastre Using Google Maps Data (3846)
This is a flash presentation.

TS 10G – Knowledge Sharing

Thursday, 15 April 16:00–17:30
Venue: Bayside 202, SCEC
Commission: 2 and 1
Chair: Ms. **Leonie Newnham**,
Chair Elect of FIG Commission 1,
Australia
Rapporteur: Prof. **Bela Markus**,
Chair of FIG Commission 2, Hun-
gary

Lesly Lam and **Canon Tong**
(Hong Kong SAR, China):
Causal Ambiguity and Knowledge
Transfer between Public and
Private Sectors Organisations in
Private Finance Initiatives Projects
(4169)

Karolina Larsson (Sweden) and
Endri Diyanto (Indonesia):
Exchange of Experiences and
Knowledge in Land Adminis-
tration and Cadastral Services
between Sweden and Indonesia
(4204)

Paul Kenny (Australia):
Training the Other Surveyor
(3722)

TS 10H – Land Consolidation II

Thursday, 15 April 16:00–17:30
Venue: Bayside 203, SCEC
Commission: 7
Chair: Mr. **Rik Wouters**, the
Netherlands
Rapporteur: Ms. **Louisa J. M.**
Jansen, the Netherlands

Mats Backman (Sweden):
Cost-benefit Analysis of Land
Consolidation in Sweden from the
Viewpoint of Society and a Land
Owner (3811)

Juhana Hiironen (Finland):
Renewing the Evaluation of Land
Consolidation Effects (4025)

Visa Korhonen (Finland):
Forest Land Consolidations and
Jointly Owned Forests – The Way
towards Better Competitiveness
of Forestry (4485)

Tayfun Cay and **Fatih Iscan** (Tur-
key):
Application of Fuzzy Logic in Land
Consolidation Activities (4351)
This is a peer reviewed paper.

Suvi Panschin and **Arvo**
Vitikainen (Finland):
Land Consolidation and Agricul-
tural Traffic – Instrument for Cal-
culating the Traffic Volume (4179)
This is a peer reviewed paper.

**TS 10I – Vertical Reference
Frame**

Thursday, 15 April 16:00–17:30
Venue: Bayside 106, SCEC
Commission: 4 and 5
Chair: Mr. **Darren Burns**, Australia
Rapporteur: Mr. **Gordon**
Johnston, United Kingdom

William Mitchell and **James**
Chittleborough (Australia):
Monitoring Sea Level Trends in
the South West Pacific (4402)

Nicholas Dando and **Bill Mitchell**
(Australia):
Tidal Planes and MSL Errors (4119)

David Dodd (Canada), **Jerry Mills**
(USA), **Dean Battilana** (Australia)
and **Michael Gourley** (Canada):
Hydrographic Surveying Using
the Ellipsoid as the Vertical Refer-
ence Surface (4197)

John Hannah (New Zealand):
The Problems and Challenges
in Using Tide Gauges to Moni-
tor Long-term sea Level Change
(3786)
This is a peer reviewed paper.

Matt Amos (New Zealand):
New Zealand Vertical Datum 2009
– A Geoid Based Height System
for the Unification of Disparate
Local Vertical Datums (3884)

Renee Shields (USA):
Height Modernization in the Unit-
ed States: Plans for a New Vertical
Datum (4494)

**TS 10J – Spatial Information
Modelling II**

Thursday, 15 April 16:00–17:30
Venue: Bayside 101, SCEC
Commission: 3
Chair: Dr. **Haim Srebro**, Israel
Rapporteur: Dr. **Michael Barry**,
Canada

Volkan Yildirim and **Recep**
Nisanci (Turkey):
Developing a Geospatial Model
for Power Transmission Line Rout-
ing in Turkey (4270)

Tahsin Yomralioglu and **Arif**
Cagdas Aydinoglu (Turkey):
State-of-Play towards Building
Turkey GII (4330)

Xu Aigong and **Askey Harinda**
Lakmal (China, PR):
Logical Process Modeling of Spa-
tio – Temporal Application (3872)
This is a peer reviewed paper.

**TS 10K – Cadastral Boundary
Issues**

Thursday, 15 April 16:00–17:30
Venue: Bayside Gallery A, SCEC
Commission: 7
Chair: Mr. **Gyula Iván**, Hungary
Rapporteur: Mr. **Libor Tomandl**,
Czech Republic

Grahame Wallis (Australia):
Boundary Determinations by
Government – Have They Been
Successful? (3987)

Robert W. Foster (USA):
Boundary Disputes – The U.S. Sur-
veyor's Role (4352)

Jennifer Whittal (South Africa)
and **Susan Jones** (New Zealand):
Locating the Positions of the
Original Cape Farms of the 1660's
– a Demonstration of Cadastral
Reconstruction Using Regular
Techniques and GIS Cadastral
Fabrics (4026)
This is a peer reviewed paper.

Conrad Tang (Hong Kong SAR,
China) and **Linda Guan** (China,
PR):
Correlation of Paddy Field for
Land Boundary Record (4140)

Bruno Razza (Italy):
The Public's Understanding of a
Real Estate Cadastral Status and
the Surveyor's Measurements
Probative Role (4345)

Shane Simmons (Australia):
Part-parcel Adverse Possession
as a Means to Resolving Survey
Areas (4400)

Joseph Owusu and **Jonathan**
Quaye Ballard (Ghana):
Satellite Positioning (GPS) in Cu-
stomary Land Boundary Demarca-
tion in Peri-urban Ghana – Case
Study: Ejisu Paramount Stool Land
(3848)

Presidents' Meeting

Friday, 16 April 08:30–10:30
Venue: Bayside 202, SCEC
Chair: **Prof. Stig Enemark**, FIG
President, Denmark

- For Presidents of FIG Mem-
ber Associations
- By invitation only

**FIG General Assembly –
Session II**

Friday, 16 April 11:00–14:00
Venue: Grand Ballroom B, SCEC

- For FIG Members
- Open for observers

Closing Ceremony

Friday, 16 April 14:30–16:00
Venue: Grand Ballroom B, SCEC
Commission: All
Chair: Mr. **Paul Harcombe**,
Congress Director, Australia

Michael Giudici, SSSI Presi-
dent (Australia):
Closing Address (4740)

Stig Enemark, FIG President
(Denmark):
Closing Address and Congress
Resolutions (4739)

Gala Dinner

Thursday, 15 April 19:00–23:00
Dockside, Cockle Bay

The congress dinner will take
place at the Dockside restau-
rant positioned above the busy
Darling Harbour waterfront.

- cost: 165 AUD
- sponsored by Leica Geo-
systems

Farewell Reception

Friday, 16 April 16:00–17:00
Venue: Parkside Foyer, SCEC

FIG Congress – SIDS Workshop

Small Island Developing States and The Millennium Development Goals

14th & 15th April 2010
Bayside Gallery B

The aim is to emphasise the important role of land governance in addressing the MDGs but also articulating the input of land professionals and their contribution that promotes engagement from all sectors of society. This will require a strong and deep commitment to establishing a healthy land professional's network

The participatory attendance for this workshop is *on invitation only*. Congress delegates will be able to witness the debate.

Workshop themes:

1. Building Professional Capacity

The opening session aims at setting the scene for professional capacity building in the region by identifying the specific gaps in capacity in the region, and discussing ways in which land practitioners could contribute towards closing the gaps and thus assist with the achievement of the MDGs in the region.

2. Climate change and natural disasters

This session on climate change and disaster mitigation develops the relationship between climate change, community resilience and land tenure. The tsunami that hit Samoa and other Pacific Island Countries in September 2009 was graphic evidence of the vulnerability of coastal communities. The objective of this session is to articulate the input and contribution of land professionals in the preparedness, mitigation, emergency response, recovery and rehabilitation stages of Disaster Risk Management.

3. Access to land, coastal and marine resources

The challenge of access to land and marine resources due to a lack of clearly defined real property rights is often cited as a major cause of dispute and resultant instability for SIDS. In this session we explore institutional impediments to land and resource access in SIDS. We investigate the issues of gender and intergenerational equity, and the application of land trusts, with a view to proposing workable leasehold solutions.

4. Good governance in land tenure and administration

The land sector is particularly susceptible to corruption and rent seeking. The small island states in the Pacific, typically grouped into three regions: Melanesia, Micronesia and Polynesia, cover a very wide expanse of the world's surface. The prevalence and importance of customary tenure in the Pacific adds a level of complexity to any consideration of land governance but nonetheless, land governance is an important topic for the Pacific region. This session will explore the topic of land governance as it applies to small island states.

5. Building Professional Capacity

This closing session aims at developing strategies and activities for building the professional capacity of land administration practitioners and professionals in the region; and identifying the roles that land administration practitioners can play towards achieving the MDGs in the region.

A joint FIG/Sponsors publication will be prepared including some key reference material and a joint declaration to be adopted by the conference. This publication will be published in the FIG publication series. The full proceedings will be published on the FIG and Sponsor Websites and will be made available as a CDROM.

Wednesday, 14 April 2010

8:15–10:30 – Session 1:

Building Professional Capacity

Venue: Bayside Gallery B

Chair: **Mele Rakai** (Fiji)

Discussant: **Jude Wallace** (Australia)

Rapporteur: **Spike Boydell** (Australia)

Diane Dumashie, SIDS Seminar Convenor, Chair of FIG Commission 8, UK:

Opening Remarks and Setting the Timetable for the Day

Stig Enemark, FIG President:

Welcome Address

Mele Rakai, PILPA President:

Welcome Presentation

Comments & Questions

Antonio Wycliffe, ASPNG:

Capacity Building needs and Role of Land Professionals in PNG

Jackson Vaikota, Surveyor-General:

Capacity Building needs and Role of Land Professionals in Solomon Islands

Fa'atasi Malologa, Surveyor-General:

Capacity Building needs and Role of Land Professionals in Tuvalu

David Neale, Cane Associates Co Ltd, Trinidad:

Capacity Building experiences and insights in the Caribbean

Marnie Leybourne, Australia, Past SSSI President:

Building Professional networks – possible role of SSSI

Discussion/Comments/Questions

Jude Wallace:

Discussant Summary and Close

10.30–12.00 Congress Plenary Session 3: The Big Challenges

Venue: Bayside Auditorium A

13:00–14:00 – Session 2:

Climate Change and Natural Disasters

Venue: Bayside Gallery B

Chair: **Johnny Edmonds** (New Zealand)

Discussant: **Daniel Fitzpatrick** (Australia)

Rapporteur: **David Mitchell** (Australia)

Grenville Barnes (USA):

Overview of the major land issues associated with land tenure and natural disasters in SIDS, and the role of land professionals

Toelau Iulio (Samoa):

Case study of responding to land issues after the 2009 tsunami in Samoa, from a Department of Lands perspective

Eric Gorapava (Solomon Islands):

Case study of land tenure and climate change from a Department of Planning perspective

Masang Bagingdo (Papua New Guinea):

Case study of the Papua New Guinea experience with natural disasters from a land practitioners perspective

Discussion

Discussant summary and close

14:00–15:30 – Session 3: Access to Land and Resources

Venue: Bayside Gallery B

Chair: **Russell Nari** (Vanuatu)

Rapporteur: **Bill Robertson** (New Zealand)

Opening comments from the Chair

Max Kepp (Papua New Guinea):

Urbanisation Issues and Priorities in PNG and the Region including different forms of collective tenure

Faanimo Reti-Warren (Western Samoa):

Resource Access Issues and priorities in Samoa and the Region including land tenure issues

Charlie Terapii (Cook Islands):

Access to Land Resources in the Pacific

Kulene Sokotia (Tuvalu):

Land issues and Priorities for

Small Pacific Island Countries including sea level rise

Azzan Rashid (Zanzibar):

Local and Regional Resource Access Issues and Priorities including land and marine resource issues

Questions and Discussion

Summary and listing of critical lines of enquiry and action for the next four yearly FIG term and close

15:30–17:00 – Session 4: Land Governance in Land Tenure and Administration

Venue: Bayside Gallery B

Chair: **Tony Burns** (Australia)

Rapporteur: **Kate Dalrymple** (Australia)

Chair opening Remarks

Paul Munro-Faure (FAO):

FAO voluntary guidelines on land and natural resource governance, focusing on the consultative processes being used in developing the guidelines

Pepi Kimas (Papua New Guinea):

Land governance in the context of Papua New Guinea focusing on recent legislation to support incorporated land groups

Justice Albert Palmer / Ruth Liloqala (Solomon Islands):

Land governance in the context of the Solomon Islands focusing on land governance in a post-conflict situation

Discussants

The following discussants will broaden the discussion to other regions in the Pacific and provide other experience in strengthening land governance in the region:

- **Maraia Ubitau** (Fiji)
- **Tebutonga Ereata** (Kirabati)
- **Fetu'u Vea** (Tonga)

Summary and Close

17:00–18:30 Reception hosted by Land Equity

Venue: Bayside Gallery B

Thursday, 15 April 2010

8:30–10:30 – Session 5:

Building Professional Capacity

Venue: Bayside Gallery B

Chair: **Mele Rakai** (Fiji)

Discussant: **Ian Williamson** (Australia)

Rapporteur: **Spike Boydell** (Australia)

Chris Lunnay (Australia):
Capacity Building experiences and insights in Asia/Africa

Discussion/Comments/Questions

Next Steps – Identifying capacity building strategies and activities for land practitioners in the region:

- **Ueligitone Seiuli**, Samoa
- **Sevanaia Dakaica**, Fiji
- **Marnie Leybourne**, Australia

Next Steps – Contributions of land practitioners towards achieving MDGs in region:

- **Stanley Waleanisia**, Solomon Islands
- **Martin Sokomanu**, Vanuatu
- **Tony Bevin**, New Zealand

Discussant Summary – **Ian Williamson**

Draft Declaration – Chairs or

Rapporteurs for all Sessions

- Session 1: **Mele Rakai**
- Session 2: **David Mitchell**
- Session 3: **Bill Robertson**
- Session 4: **Tony Burns**
- Session 5: **Spike Boydell**

Dr **Diane Dumashie**, SIDS Seminar Convenor, Chair of FIG Commission 8, UK:
Conclusions and Close of Seminar

Venue Floor Plans

Parkside / Ground Level

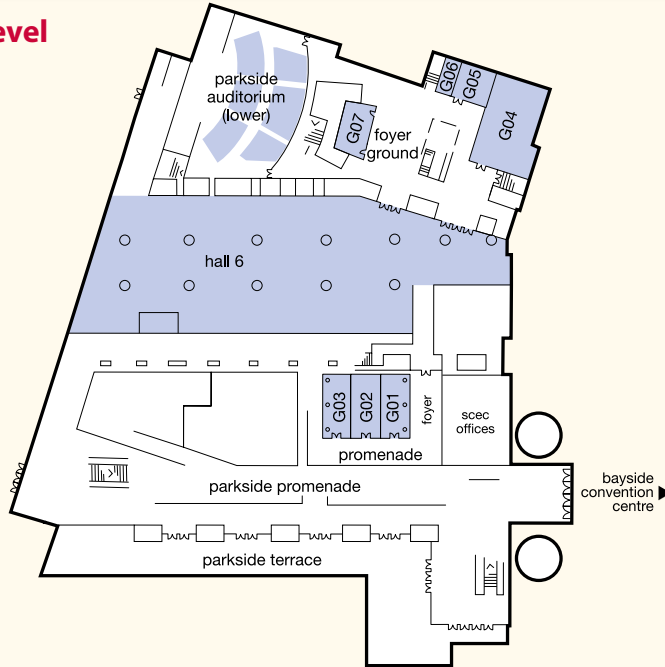


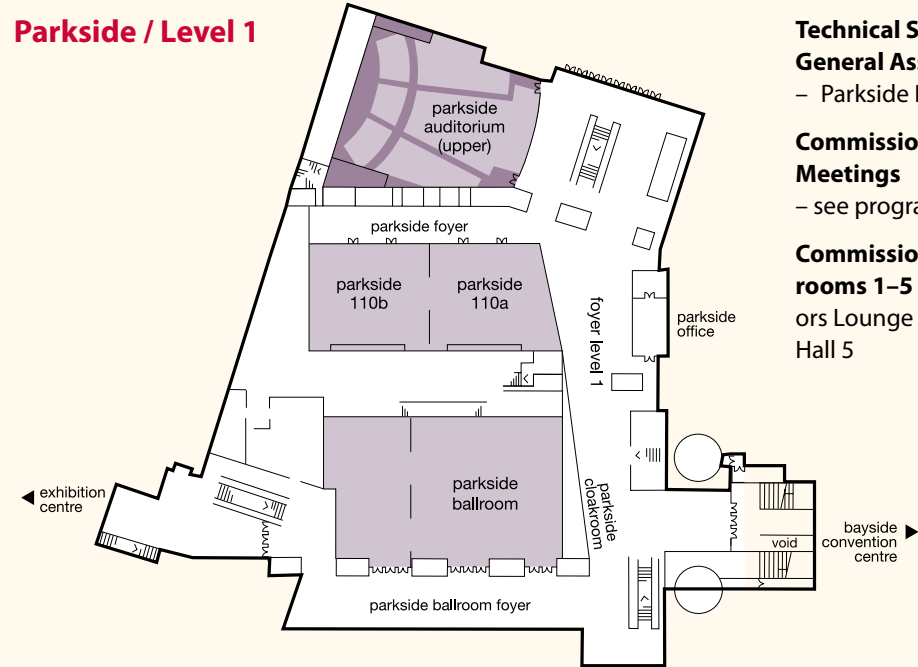
FIG and OMC Offices

- Parkside G01 and G02

Registration Desk

- Promenade

Parkside / Level 1



Technical Sessions

General Assembly

- Parkside Ballroom

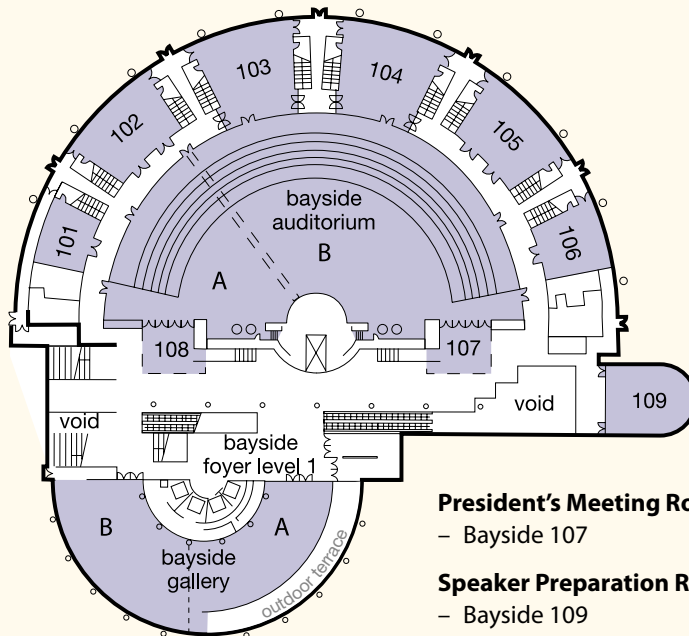
Commission Annual Meetings

- see program

Commission meeting rooms 1–5

- at the Surveyors Lounge in Exhibition Hall 5

Bayside / Level 1



Technical Sessions

- Bayside 101, 102, 103, 104, 105, 106 and 108

Plenary Sessions / Technical Sessions

- Bayside Auditorium A

Opening Ceremony / Plenary Session

- Bayside Auditorium B

FIG Meeting Room

- Bayside 108

Technical Sessions

- Bayside Gallery A and B

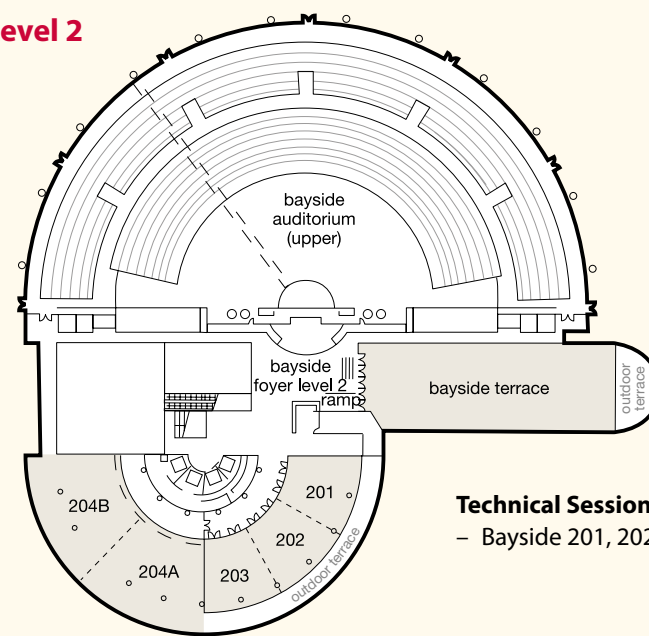
President's Meeting Room

- Bayside 107

Speaker Preparation Room

- Bayside 109

Bayside / Level 2



Technical Sessions

- Bayside 201, 202, 203

The XXIV FIG International Congress 2010

Facing the Challenges – Building the Capacity

11 – 16 April 2010

Sydney Convention & Exhibition Centre
Sydney, Australia



FIG 2010 Organisers

International Federation of Surveyors (FIG)

FIG Office
Kalvebod Brygge 31-33
DK 1780 Copenhagen
Denmark
Email fig@fig.net
www.fig.net



Congress Website

www.fig2010.com

Congress Proceedings

www.fig.net/pub/fig2010

Surveying and Spatial Sciences Institute

27 – 29 Napier Close Deakin
ACT Australia 2600
www.spatialsciences.org.au



Next FIG Working Weeks:



18–22 May, Marrakech, Morocco

FIG Working Week 2011 –
Bridging the Gap between Cultures

www.fig.net/fig2011



6–11 May, Rome, Italy

FIG Working Week 2012 – Territory,
Environment and Cultural Heritage

www.fig.net/fig2012

www.fig2010.com