CONFERENCE REPORT

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MIDDLE EAST
GEOSPATIAL
FORUM

15th – 17th February, 2015
Hotel Al Bustan Rotana, Dubai, UAE

INTRODUCTION

With rapid development and urban expansion taking place around the globe during the past few years, concepts like "Sustainable Development" and "Smart Cities" are making quite a buzz. As the major cities around the world continue to attract plentyof immigrants from smaller towns, these cities with their limited resources and supply are facing a huge challenge to sustain themselves. Thus, the need of the hour is to have sustainable planning and make these cities smarterin order to serve the current and future population. Keeping this trend in mind and the exponential growth seen by geospatial industry over the past few years, the need to have a common platform for public, private and corporate sector was felt, which could facilitate sharingof ideas and thus lay the foundation of a common ground for geospatial experts from around the globe to search for means to solve the global issues. In the quest to bring various sections of geospatial industry together, Dubai Municipality along with Geospatial Media & Communications organized GRASF (GIS and Remote Sensing Annual Scientific Forum) and MEGF (Middle East Geospatial Forum) Conference 2015 at Hotel Al BustanRotana in Dubai, UAE from 15th to 17th February 2015. The conference was based on a carefully designed plan with plenary and technical sessions that featured an array of celebrated speakers from around the globe. With its theme as 'Towards Geosmart Sustainable Development', the program was successful in its endeavor to bring out the tremendous significance of geospatial technology across various verticals such as GeoInfra, Smart Transportation, Public Safety, Spatial Government, LiDAR & Remote Sensing Applications, Standards & Interoperability, and 3D Laser Scanning etc.

OVERVIEW

NUMBER OF PARTICIPANTS	ORGANIZATION REPRESENTED	COUNTRIES REPRESENTED
800+	200+	30+

- 2GIS
- 3Consulting
- AAM Group
- Abba Electronics LLC
- ABC Surveys
- Abu Dhabi Municipality
- Abu Dhabi University
- ACES
- Adnan Saffarini
- Aerial Space Imaging Saudi Arabia
- Aerometric ME
- Ahmadu Bello University
- Airbus
- Ajman Municipality
- Akar Technical Services
- Al Ain Municipality
- Al Ain Town Planning
- Al Bayader Irrigation & Contracting
- Al Futtaim Carillion L.L.C
- Al Futtaim Group Real Estate LLC
- Al Ghurair Real Estate
- Al Nisr Publishing LLC
- Al Rajhi Construction LLC
- Al Riyadh development authority
- Al Tamimi& Company
- Al Torath Consulting Engineers
- ALEC
- American University in Dubai
- American University in Sharjah
- ANSES
- Arabtec Construction LLC
- Arc International
- Asga Tech
- Association of Schools and Programs of Public Health (ASPPH)
- Atheeb Intergraph Saudi Arabia
- Atkins
- Augview
- Avineon
- Bacs
- Bayanat for Mapping & Surveying Services LLC
- Beijing Space Eye Innovation Technology
- Bentley Systems ME

- Bin Laden Contracting Dubai
- Budapest University of Technology and Economics
- Business France
- Center of Excellence & Development
- CH2M Hill
- CYient
- Dassault Systems
- Delft University of Technology
- Department of Municipal Affairs
- Department of Planning & Survey
- DEWA
- Diab Consulting
- DigitalGlobe
- Directorate of Town Planning and Survey
- DMG Events
- Dubai Chamber
- Dubai Civil Aviation Authority
- Dubai Civil Defense
- Dubai Land Department
- Dubai Municipality
- Dubai Police
- Dubai Silicon Oasis Authority
- Dubai Statistics Center
- Dubai Technology & Media FZA
- Dutch Foundation and Concrete Processing
- Dutco Balfour Beatty LLC
- Dutco Tennant LLC
- Emirates Marine Environmental Group
- Emirates Roads Contracting
- Emirates Space Imaging
- ESRI
- ESRI North East Africa
- Etisalat
- European Space Imaging
- Faculty of Veterinary
- FBIC
- Federal Polytechnic
- Federal University of Technology - Minna
- FIT Counsel
- Fujairah Municipality
- Fujairah Natural Resources Corporation (FNRC)
- Fujairah Police

- Fujairah Statistics Centre
- Future Communication
- Gannet Fleming
- Geco Engineering
- GEH
- General Commission for Survey (GCS), KSA
- Geo Systems
- GeoImage
- Geosystems
- GHD
- Global Scan Technologies
- Gmap
- GMC
- GPC Global Information Solutions
- Green Maxim
- GRINTEC
- Gulf Cobla LLC
- Gulf Computer
- Gulf News
- Gunal&Mapa
- Halcrow international partnership
- HassoPlattner Institute
- HERE
- Hexagon Geospatial
- High Commission Development of Riyadh
- Holy Makkah Municipality
- Horizon Geosciences
- Information Systems Department ANSES
- Intergraph
- IPI-LUH
- ISPRS
- JAL Technology
- Karlsruhe Institute of Technology
- Khaleej Times
- Khalifa University
- Khan Saheb Civil Engineering
- Khatib&Alami
- Kling Consultant
- LB DESIGN GROUP
- Leica Geosystems FZE
- Lothhammer
- Mapping Solutions
- Masdar Institute of Science and Technology
- Melange Global General Trading LLC
- Meydan
- Micro Map
- Microsoft
- Milani Studio
- Ministry of Defense
- Ministry of Environment, Dubai.
- Ministry of the Interior
- MIRAK
- Mohammad Bin Rashid Housing EST
- Municipality of Dhofar
- MWH Global
- Myzox Co. LTD
- Nakheel
- National Survey Authority
- Navmatica ME DMCC

- Navyuga
- NCSI
- NEST Information Technologies Pvt. Ltd
- Netpro FZE
- Newforma Incorporation
- NOC
- Obohcom Technologies Nigeria LTD
- OGC
- OMNEX
- Optech
- Oracle
- Orbits Engineering Firm
- Ordnance Survey International
- Parsons Oversease LTD
- Planning & Survey Department
- PolkenGeocart Survey
- Polytechnic
- Proteus
- RAK Municipality
- Ras Al Khaimah Municipality
- RIEGL Laser Measurement Systems GmbH
- Roads and Transport Authority
-   - ROLTA Middle East
- Royal Studio
- Saif Bin Darwish
- Saudi Electricity Company
- Service Management Centre of Excellence
- Sharjah Electricity & Water Authority
- Sharjah Town Planning & Survey Department
- SI Imaging Services
- Sigma Enterprises LLC
- Six Contrict
- Space Imaging Middle East
- Space Makers
- Spatial Networks
- Stesalit
- Stesalit Systems
- Tatweer
- Terrasolid
- Topcon ME & Africa FZE
- TrackMe
- Trakhees
- Trimble
- Trojan Holding
- Twenty First Century Aerospace Technology LTD
- UAE University
- United Ceramics and Building Solutions LTD
- University of Salzburg
- University of Sharjah
- Urthecast
- US Centers for Disease Control and Prevention (CDC)
- Value Labs LLP
- Vexcel
- Vienna University of Technology
- Virtual City Systems
- Vision
- Water Seal Insulation Material CO. LLC
- Worley Parsons

15th February

PRE-CONFERENCE TRAINING WORKSHOP: ALL ABOUT GEOSPATIAL

The training program titled 'All About Geospatial' was aimed at training students and other non-GIS people about these technologies and their applicability in our everyday lives. The training program was conducted by some of the most renowned names in the Middle East geospatial fraternity, comprising experts from both the academia and industry.

The training module started with a presentation on Environment Remote Sensing by **Dr. Prashanth Marpu** from Mazdar Institute. He spoke on real time monitoring of environment activities using satellite images. He explained this using a case study on water quality assessment and monitoring. He also briefed on the topic of basics of remote sensing. The second presentation of the first session was given by Dr. Mohamed Mostafa, President, Navmatica Middle East, UAE, who spoke on Air & Land Mapping.

The second session started with a presentation by **Prof. Martin Breunig,** from Karlsruhe Institute of Technology, Germany. He spoke on the basics of GIS, GIS Data, DTM and system architecture of GIS. Martin Holt from Airbus Defense & Space spoke on GIS data resources, land cover & land use classification, change detection and its uses etc. This was followed by a presentation from Dr. Hussein Harahsheh of Global Scan Technologies, Dubai. He spoke on various topics of interest, ranging from geospatial for environment, importance of geological information in planning process, scope of information and the importance of geospatial information in today's world. He explained all this with supporting case studies from various fields like site selection for resorts development, land degradation & desertification around the global region etc. He also briefed on water erosion, oil spill detection & monitoring.

The third session started with a presentation by **Mustafa Al Musawa** from Abu Dhabi Municipality on 3D city modeling use in planning & management using GIS modeling & application. He spoke on City GML (Geography Markup Language), its level of details and explained its practical application supported by case studies of Al Fujairah 3D ADM Base Map, Abu Dhabi Municipality building data management system, addressing system and storm water modeling. It was followed by a presentation from Prof. Mulhim Al Doori of American University in Dubai on Big Data. He covered topics like explosion in quantity of data, big data characteristics, cost problems, importance of big data, spatial big data, spatial data mining, modeling spatial database & spatial data types & relations.

The training program was attended by over 150 participants ranging from university students to industry personnel, government employees and representatives of many other renowned geospatial organizations.

16th February

INAUGURAL SESSION

Addressing the attendees during his welcome address, **H.E. Eng Abdulla Rafia**, Asst. Director General, Dubai Municipality described how various cities across the Middle East region have been making rapid progress in terms of creating new infrastructure. He further emphasised that geospatial technology has been at the forefront of this development story and has been instrumental in their efforts to create smart and sustainable infrastructure.

Eng. Abdulhakim Abdulkarim Malik gave a presentation on the use of Geospatial technology for sustainable development and creation of smart cities. He further added how Dubai Municipality is using modern technologies to solve complex issues related to rapid growth in Dubai related to Infrastructure and utility management. He presented case studies on soil mapping, 3D mapping and utilities management for Dubai. He also mentioned the success of project Makani where more than 1,00,000 buildings were mapped digitally with accurate GPS coordinates.

In her presentation, **Bhanu Rekha**, Managing Editor GeoBUIZ, Geospatial Media & Communications spoke on varied topics such as the use of geospatial technology in smart & sustainable development, changing dynamics of geospatial technology in agriculture and electricity domains for Middle East Region. The inaugural session was followed by official exhibition inauguration. The exhibition was inaugurated by H.E. Eng Abdulla Rafia, Asst. Director General, Dubai Municipality.

MEGF PLENARY: EMERGING GEOSPATIAL TECHNOLOGY TRENDS

The MEGF plenary began with a presentation on Spatial Data Infrastructures & Interaction Paradigms by **Prof. Josef Strobl** from University of Salzburg. He explained the concepts of SDI (Spatial Data Infrastructure) & GSDI (Global Spatial Data Infrastructure). He also explained and compared how actual and digital data (& Infrastructure) is related by relating Real world with Virtual world, Earth & Model, Convergence & Overlap etc.

In her presentation, **Anne Kemp** from Akins - UK spoke on BIM (Building Information Modeling). She explained briefly how BIM model is successfully used by UK government for Smart City Planning and how it has been made mandatory for all urban planning projects. Further, she explained how planning for a project required the clear

identification of expected results. She said that the core principle is data and not just document and model, and integrating technologies like BIM, GIS & CAD. She also covered topics like life cycle of BIM and BEM (BIM Execution Plan), intelligent infrastructure, and future collaboration of data, information, decision making tools, and strategic framework to achieve one shared version of truth. She explained this using case studies of MAWP (Mayor's Aviation Work Program) & Etihad Rail.

Richard Budden, Business Development Manager at ESRI Middle East spoke on the topic Sustainable Development for Smart Cities – A Geospatial Approach. He spoke on real life challenges for data collection, ever increasing population and migration to big cities & how to tackle these issues by smart and

sustainable city development. He spoke on alternative energy sources to meet the demand and Role of GIS using Smart Grid, Routing & Logistics with a real life example of MadsarCity in Abu Dhabi.

Cambell Brooke, World Wide Sales Director for Geospatial Trimble Navigation gave a presentation covering topics like Geospatial Information, Integrated Mobile Mapping, Use of High Precision 3D geospatial information & Enterprise application. He explained this using a case of Oil palm mapping.

Claudio Mingrino, V. P & Executive Director, EMEA, Hexagon Geospatial spoke on market trends in technology & Business. He also talked about Neogeography& VGI (Volunteered Geographic Information), open data and global trends in cloud computing.

GRASF: LiDAR & Remote Sensing Applications I

KEY OUTCOMES

▶ Image Segmentation and Random forest classification can be used at multiple levels in hierarchical order to classify Very High Resolution (VHR) optical data and Thermal Hyperspectral data based on Object-Based Fusion.

▶ The Airborne Hyperspectral and Thermal Imaging systems gives Precise location, High resolution spectral information or high temperature resolutions which can then be further analyzed in GIS as a layers for inclusion in decision making for variety of disciplines.

▶ Very High Resolution (VHR) mapping for ecological studies can be used for making business processes more efficient and environmental decision making more quantifiable & justifiable using of cutting edge Geospatial technology.

▶ Planning Department (PD) of Dubai Municipality is working on project to control, monitor and to support decision making for planning and advancing the Land to Population supply and demand needs due to changing planning zoning. (F.A.R.)

SPEAKERS

→ **Dr. Prashant Marpu**
Assistant Professor, Chemical & Environmental Engineering, Madsar Institute, UAE

→ **Dr. Mulhim Al-Doori**
American University of Dubai UAE

→ **Hussein Harahsheh**
General Manager
Global Scan Technologies, UAE

→ **Jason Howse**
ITRES Research Ltd, Canada

→ **Richard Flemmings**
Project Manager, Proteus FZC UAE

→ **Muhammad Mahamoud**
Abu Dhabi Municipality UAE

Workshop: 3D Laser Scanning

KEY OUTCOMES

▶ Importance of Point Cloud data for spatial analysis.

▶ Need of software and hardware integration for 3D laser scanning for precision data collection.

▶ Use of 3D laser images for Geo-infra projects.

▶ Collecting XYZ geospatial coordinate data with excellent precision, range and collection rates to produce highly accurate 3D point cloud data.

▶ Increasing use of terrestrial laser scanning for automated monitoring and long-range scanning.

▶ Real time location intelligence for fleet management.

▶ Use of Mobile mapping for road surface analysis and maintenance.

SPEAKERS

→ **Arnaud Lezennec**
Geospatial Regional
Sales Manager – Africa Trimble.

17th February

GRASF PLENARY

The third and final day of the GRASF & MEGF 2015 conference started with the GRASF plenary session, which saw presentations by representatives from academia and the industry. The presentation by **Prof. Martin Breunig** titled 3D Geoinformation Science: State of the art and perspective for the gulf region emphasised on the use of 3D modelling for building smart and sustainable cities in the Middle East.

In another presentation, Prof. **Christian Heipke**, Secretary General for ISPRS, (International Society of Photogrammetry and Remote Sensing) Germany spoke on the research trends in Photogrammetry, Remote Sensing and GI Science and the role of ISPRS in shaping and promoting this technology and obtaining reliable data about the Earth & Environment.

Dr. Sisi Zlatanova from Delft University of Technology, the Netherlands spoke on the topic of 3D indoor navigation. She also touched upon various other topics such as the conversion between IFC and CityGML, indoor partitioning for localisation, 3D web visualization, 3D data integration of objects above and below ground, voxels representations, 3D management and visualisation of line objects (pipelines) and 3D spatial analysis (cross section and profiles).

Lena Halounova, Congress Director, Prague gave a presentation on Geoinfostrategy in the Czech Republic.

Dr. Arpad Barsi, Head of Department of Photogrammetry and Geoinformatics at the Budapest University of Technology & Economics, Hungary spoke on the topic of Indoor GIS data capture: current status and perspectives. He explained how to effectively handle ill-conditioned photogrammetric equation systems resulted by imperfect image capturing constellations.

GRASF: GI-Science

KEY OUTCOMES

▶ Custom based GIS applications are powerful tools for business-focused, domain specific, embedded and integrated GIS functionality due to their domain specific UI and functionality.

▶ Advancement in the field of Mobile Spatial Data Acquisition using GeoTechMobile and cloud computing is key for On-field Intended usage and operation management.

▶ Geospatial technology is the key to make the cities smart by involving public-private sectors, data exchange and integration of variety of resources available.

▶ Voxel model is a challenging geospatial application but can be used for large application operations, complex issue operation performance and for automaticity of large data type.

CHAIRPERSON

→ **Dr. Mulhim Al Doori**
American University in Dubai, UAE

SPEAKERS

→ **Prof. Martin Breunig**
Dean of Geodetic Institute, Germany

→ **Prof. Georg Gartner**
President, International Cartographic Association, Austria

→ **M. M. Yagoub, PhD**
Associate professor of Remote Sensing and GIS, UAE University – Al Ain.

→ **Maitha Alnuaimi**
Abu Dhabi Municipality, UAE

→ **Carsten Roensdorf**
Head of Advisory Services Middle East, Ordnance Survey International, UAE

→ **Sisi Zlatanova & Pirouz Nourian**

GRASF: Survey, Marine Survey, Geodesy Seismology & Government Solutions

KEY OUTCOMES

▶ Data obtained from Spatial Data Division (SSD), Abu Dhabi Ocean Observing Systems (ADOOS) & Bathymetric Survey is useful for municipality and other relevant organization for management and development of Abu Dhabi Coastline.

▶ Geotechnical Web Mapping Application developed by ESRI ArcGIS for server based technology has provided accuracy, precision& consistency in data collected from different stake holders, contractors and consultants for Geotechnical Information Management System (GIMS) of Abu Dhabi Municipality.

▶ Geodesy is a science of transforming 3D Earth model to 2D mapping using Coordinate system, Reference point and Standards used by GIS communities.

▶ Dubai Municipality at different interval time period has updated their Seismic, GPS system knows as Dubai Virtual Reference System (DVRS), Hydrological and Oceanographic system to provide the accurate and real time data for customers and stake holders for decision making.

CHAIRPERSON

→ **Dr. Prashant Marpu**
Madsar Institute, UAE

SPEAKERS

→ **Eman Al Khatibi & Kamal**
AbouElenean, UAE

→ **Saman Samarawickrama**
Abu Dhabi Municipality, UAE

→ **Khalid Shimo**
Abu Dhabi Municipality, UAE

→ **Syed Iliyas Ahmed**
Abu Dhabi Municipality, UAE

→ **Giridhar Kolan & Mohamed Hamoud**
Geotechnical Information Management System
Abu Dhabi Municipality, UAE

GRASF: Oracle workshop 3D City Models

KEY OUTCOMES

▶ City GML and KML standards are used for integrating and managing large scale 3D city level database in Oracle Spatial Database System. It is also used for City Model development & City Model Change Detection and for the purpose of City Maintenance.

▶ Interoperability can be achieved by using CityGML for 3D city modeling and for a Specific purpose in many different system environment keeping Open Standards & Interfaces in mind.

▶ The Segment Classification method can be used for Massive 3D City Modelling data to overcome the applications, system and workflow challenges and to improve effective processing, analysis, exploration & visualization techniques.

CHAIRPERSON

→ **Hans Viehmann**
Product Manager EMEA,
Oracle, Germany

SPEAKERS

→ **Hans Viehmann**
Oracle, Germany

→ **Carsten Roensdorf**
Ordnance Survery International

→ **Lutz Ross**
Virtual City Systems

→ **Rico Richter**
HassoPlattner Institute, Postdam University

→ **Anis Mushtaqi**
Dubai Municipality, UAE

MEGF: Geospatial for Public Safety & Utilities Management

KEY OUTCOMES

▶ With Significant improvement in obtaining high resolution, accurate & precise data, which is now commercially available at lesser cost thus various internal security issues can now be addressed at much quicker time and lessor cost.

▶ By coupling industry leading sensors with advanced forensic reconstruction software, we can provide crash and crime scene investigations with up to 70% reduction in time and manpower.

▶ Mobile mapping can be used for Road Surface Analysis by obtaining highly accurate 3D point cloud data for speedy repairs and maintenance.

▶ UAS (Unmanned Aircraft System) based surveillance methods can be expanded by combining thermal imagery or Chemical sensors along with usual Laser Scanner.

▶ Augmented Reality can be used in operations where High accuracy of position and height information is required in Infrastructure projects.

▶ NOC is important certificate required to change the project plan from getting the job done to Best fulfil the business objective of the organization or stakeholders keeping the advancement in the GIS technology and its proper use.
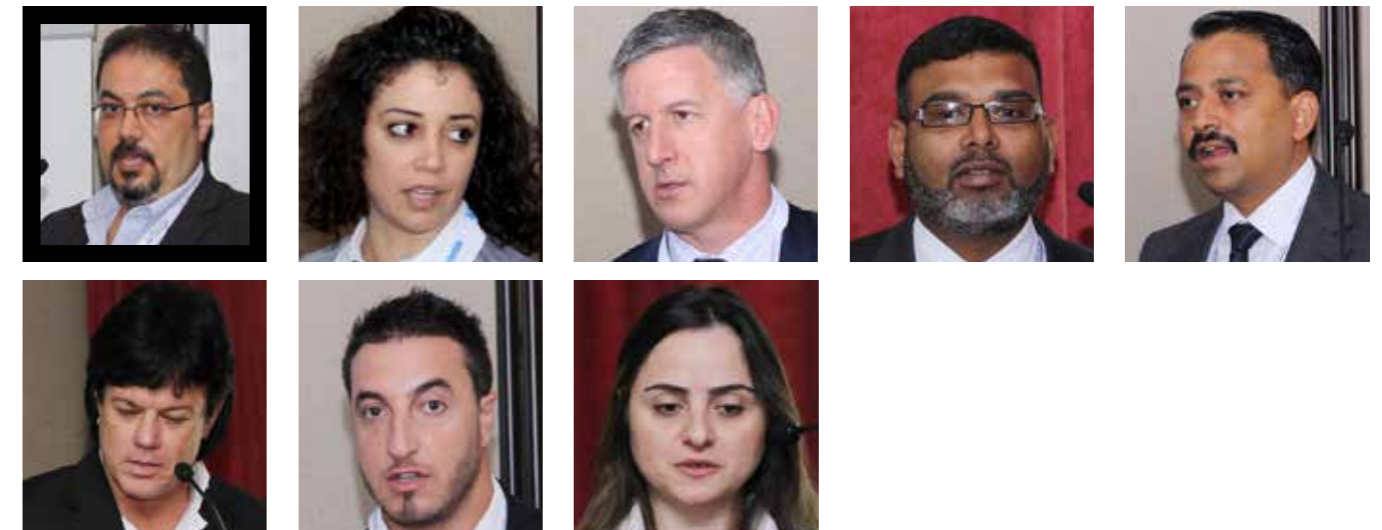
SPEAKERS

→ **Motaz Mostafa**
Regional Sales Manager, Trimble Geospatial, USA

→ **Rami Hazime**
Senior Regional Sales Manager, ME, Digital Globe, UAE

→ **Thomas Gaisecker**
Senior Manager, International Sales, RIEGL Laser Management System, GmbH, Austria

→ **Saif Al Saifi**
Marketing and Sales executive, GRINTEC GmbH, Austria

→ **Joseph Abdo**
Director of Professional Services, GPC-GIS, UAE.

MEGF: GeoInfra

KEY OUTCOMES

▶ End to End precision 3D mobile mapping for urban area requires Calibration of digital camera, laser camera, accuracy of 3D cloud point data collector and noting the different urban cases. Along with automated process for data extraction and quality control procedures.

▶ Building Information Model (BIM) can now be used for better asset management and handling emergency situation. It's a new state of the art technology.

▶ The Hybrid Vector Images can be created from raster images obtained through Airborne and Mobile mapping after careful data classification using Advance Point Coloring method.

▶ The Key issues for managing legal risk for Sustainable and BIM Projects are Head Contract Issues, Design issues, Key issues in Construct, BIM Issues, intellectual property rights etc.

▶ In spite huge technical improvement in capturing very high spatial resolution sensor systems; to meet the needs of technical users and decision makes, city planner needs a spatial images ranging from 0.05 to 5m resolutions.

▶ With increase in number of GPS system, Load Distribution and memory consumption management is required to improve the field performance to utilize all the available satellite system.

▶ 3D City Model are better than traditional 2D models as this additional dimension increases value data, decision making capabilities and more effective communications about complex situations.

CHAIRPERSON

→ **Dr. Mohamed Mostafa**
President, Navmatica ME, UAE

SPEAKERS

→ **Dr. Rana Charara**
Sales Engineer Trimble Infrastructure Division

→ **Scott Lambert**
Regional Head of Construction & Infrastructure, Al Tamimi& Company, Dubai

→ **Dr. Zaffer Sadiq Mohamed**
Senior Principal Consultant – Spatial & IT, GHD Pty Ltd & Advisor Industry Liasion, Cooperative Research Center for Spatial Information, Australia.

→ **Hannu Korpela**
Sales Manager, Terrasolid, Finland

→ **Vivek Kale**
Soluctions Director, Bentley Systems

→ **Marius Heiberg**
Senior Architech and BIM Manager, Kling consult, Dubai

→ **Charles Al Rachid**
Business Development Manager, Space Imaging Middle East, UAE

→ **Hadeel Akram Fadda**
Senior Architect, Building Department, Dubai Municipality, UAE

GRASF: Spatial Governments

KEY OUTCOMES

▶ To analyze Sub-Surface geo-science features a database which supports 4D model is required. DB4Geo is a dynamic geometric and topological database structure which integrates geospatial and time-depended data. DB4Geo implements OGC standards and REST based infrastructure.

▶ GeoProjects is web based tool which uses Key Performance Indicators (KPI's) to improve Capital Investment planning, control & monitoring, corrective measurement and complete transparency of any ongoing project useful for Project Manager and end users.

SPEAKERS

→ **Andy Wilson**
MCMI

→ **Abdelrahaman Elbadawy**
Khatib&Alami, UAE

→ **Paul Kuper & Edgar Butwilowski**
Karlsruhe Institute of Technology

→ **Hussein Abdulmuttalib**
Dubai Municipality, UAE

GRASF: LiDAR & Remote Sensing Applications II

KEY OUTCOMES

▶ Kernel Principal Components along with Spatialized Algorithms can be used to classify Large Dimensional Data to increase the accuracy in data extraction and advance image classification.

▶ High Resolution Multispectral image from WorldView-2 (WV2) along with ground truth data verification can be effectively used for identification of Chlorophyll-A in coastal areas around the world.

▶ Remote Sensing Data and GIS technology along with Analytical Hierarchical Process (AHP) can be effectively used for arid land water resource planning.

▶ To establish accurate GNSS Geodetic Network, it is important to consider certain factor affecting GNSS data acquisition, data processing and network adjustment.

CHAIRPERSON

→ **Dr. M. M. Yagoub, PhD,** Associate Professor of Remote Sensing & GIS, UAE University – Al Ain.

SPEAKERS

→ **Dr. Prashant Marpu**
Madsar Institute, UAE

→ **Mohamed Mostafa & Vi Huynh**

→ **Abdallah Bachir**

→ **Ayuob Almhab**

MEGF: Workshop on Standards and Interoperability

KEY OUTCOMES

▶ The economic value of open standards.

▶ Improving Inter-disciplinary collaboration – tackling the complex regional global issues that know no boundaries

▶ The role of standards in advancing the vision of smart infrastructure, smart cities

▶ Sensors and the Internet of Things – further advancing the vision of living maps

▶ Big Data Analytics – making more out of location information

▶ Leveraging Societal Contributions of location information

SPEAKERS

→ **Mark E. Reichardt**
President and CEO,
Open Geospatial Consortium
USA

List of Exhibitors