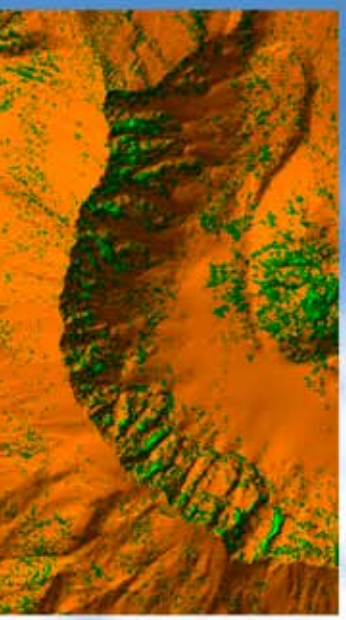
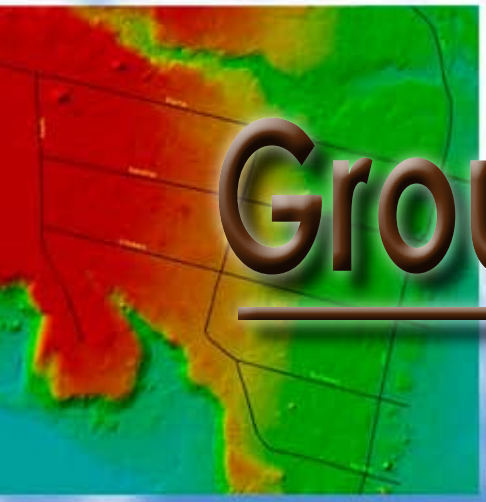


Lidar | 3D GIS | DEM | Cloud Computing

(R)EVOLUTION



Ground to Cloud

Emerging Technologies Supporting Geospatial Application

MAPPS/ASPRS 2012 Specialty Conference

Tampa Marriott Waterside Hotel & Marina

Tampa Bay, Florida

October 29 to November 1, 2012

asprs THE IMAGING & GEOSPATIAL INFORMATION SOCIETY

MAPPS Management Association for Private Photogrammetric Surveyors
An Association of Photogrammetry, Mapping, and Geospatial Firms ®

Final Program

From Server to Desktop.

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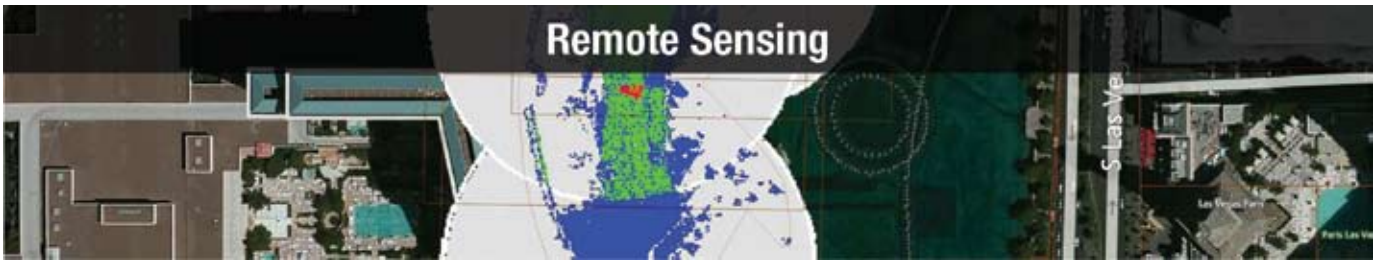

COMPLETE YOUR GEOSPATIAL WORKFLOW

More than ever before, we can sense the real world around us – from space, the air, and the ground. Let the data work for you. Intergraph's geospatial portfolio connects photogrammetry, remote sensing, and GIS to provide a streamlined system. Discover and exploit the wealth of information contained in data from any source, share it rapidly (and securely), and deliver it on demand as reliable and actionable information to drive *smarter decisions.*

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INTERGRAPH®

Dear Colleagues,

On behalf of the Management Association for Private Photogrammetric Surveyors (MAPPS) and the American Society for Photogrammetry and Remote Sensing (ASPRS), we welcome you to the MAPPS/ASPRS 2012 Fall Specialty Conference in Tampa, Florida.

We have assembled an exciting agenda on emerging trends in technologies that support Geospatial applications. An assortment of workshops, non-classified technical sessions, along with socials events will hopefully make this a relevant and memorable event for each of you.

We have built a dynamic agenda for outstanding subject matter experts to present on a variety of geospatial disciplines including geospatial cloud computing, multi sensor integration, lidar extraction techniques, mobile mapping, data fusion/ integration, accuracy and specifications, emergency response, natural resource inventory, 3D GIS, and more.

Sessions also include a keynote address by Dr. Gerald Bawden, USGS, on "Ultra-High Resolution 3D and 4D Point Cloud Analysis Spanning the Earth's Sciences". Other special topics and general sessions dispersed throughout the conference include the Archeological Use of Lidar, an update on the ASPRS *Airborne Topographic Lidar Manual*, policy and technical matters associated with the National Enhanced Elevation Assessment (NEEA) and the 3D Elevation Program (3DEP), Cloud Data Management, Unmanned Aerial Vehicles, New Frontiers in Lidar Technologies: Gieger Mode Lidar and Full Waveform Digitization plus a closing session hosted by leaders in the profession who will provide insight in an open discussion on "where we are going".

We recognize that the revolution and evolution of cloud computing combined with the emergence of other technologies are required to effectively provide geospatial solutions to the many challenges that we face. It is our intent that the papers, posters, panel discussions, and other sessions that make up this conference help solidify the conference theme "Ground to Cloud (R)Evolution; Emerging Technologies Supporting Geospatial Application", and support the core mission of both MAPPS and the APSRS to promote imaging and geospatial technologies.

We encourage you to take advantage of the many networking opportunities available to get better acquainted with your colleagues and to meet new ones. We encourage interaction between seasoned professionals and students and young professionals. You are also encouraged to explore the conference exhibit hall where many commercial, government and not-for-profit organizations are demonstrating geospatial technology, systems, techniques and applications reflecting state-of-the art innovations of our dynamic profession including a UAV Showcase.

We are glad that you are here!

Enjoy the conference,

Gary Florence
Technical Program Co-Chairman, ASPRS

Eric Andelin
Technical Program Co-Chairman, MAPPS

Gary Florence
Technical Program Co-Chairman, ASPRS

Eric Andelin
Technical Program Co-Chairman, MAPPS

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Directions

Directions Magazine, now with four internet-based publications, is the worldwide leader in delivering timely news and technology trends to professionals using geospatial technology and location intelligent software solutions. Through our daily publications, we bring awareness to the news that shapes the geospatially-enabled IT marketplace and the expansion of mobile location-based applications. Read Directionsmag.com, everyday for the most complete coverage of *all things location*.

Vector 1 Media

Vector1 Media publishes Sensors & Systems (www.sensysmag.com), Informed Infrastructure (www.informedinfrastructure.com) and Asian Surveying & Mapping (www.asmmag.com). Each of these publications deal with the combination of sensors and systems for different scales of geography. Sensors & Systems covers global change, Informed Infrastructure examines smart city applications and technology, and Asian Surveying & Mapping is focused on geospatial technology application in Asia-Pacific. Surveying, positioning, GIS, and remote sensing play key parts in this content for the better stewardship of our planet.

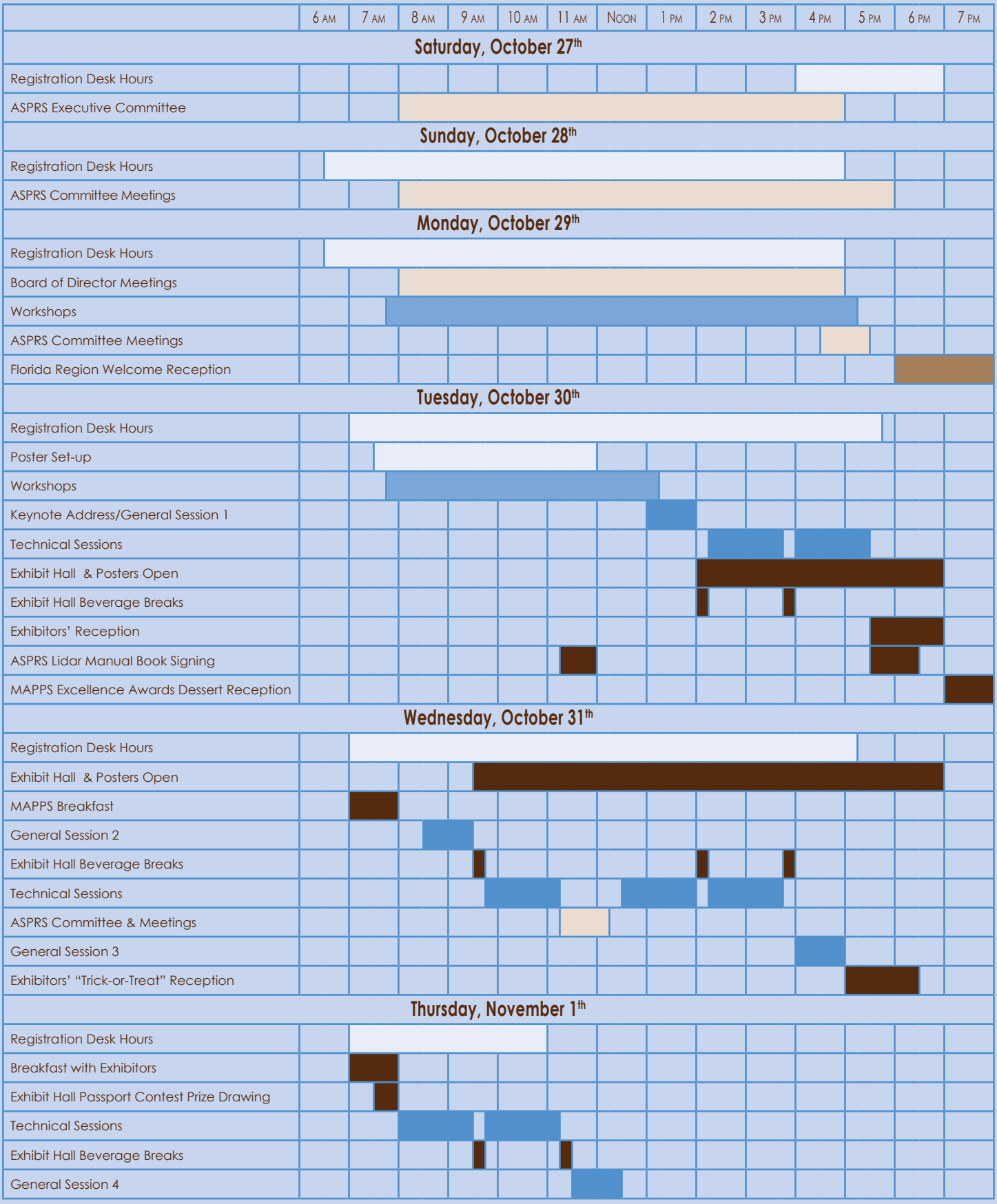
American Surveyor
Asian Surveying & Mapping
Coordinates
EARTH
Earth Imaging Journal
GEO Informatics
GeoConnexion
GIM International
GISuser
GISuser.com
GPS World
Imaging Notes
LiDAR magazine
LiDARnews.com
Point Of Beginning
Professional Surveyor
Spatial Media LLC

Complimentary Public WiFi

The MAPPS/ASPRS 2012 Specialty Conference is pleased to provide free wireless internet for most conference attendees in the Conference meeting areas and the general session room. The complimentary wireless internet will be limited speed and is for general usage. Please respect your fellow attendees and do not download large files, steam video content or engage in malicious activities while using this service. Each attendee will be provided access information within their onsite registration packet.

All users of the free pubic WiFi will be held to the Terms and Conditions of using this free service. The Terms and Conditions can be found online at www.asprs.org/Conferences/Tampa-2012.

Cover imagery courtesy of GeoCue; Terra Remote Sensing, Inc.; and U.S. Geological Survey.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Saturday, October 27th
Registration Desk Hours
ASPRS Executive Committee
Sunday, October 28th
Registration Desk Hours
ASPRS Committee Meetings
Monday, October 29th
Registration Desk Hours
Board of Director Meetings
Workshops
ASPRS Committee Meetings
Florida Region Welcome Reception
Tuesday, October 30th
Registration Desk Hours
Poster Set-up
Workshops
Keynote Address/General Session 1
Technical Sessions
Exhibit Hall & Posters Open
Exhibit Hall Beverage Breaks
Exhibitors' Reception
ASPRS Lidar Manual Book Signing
MAPPS Excellence Awards Dessert Reception
Wednesday, October 31th
Registration Desk Hours
Exhibit Hall & Posters Open
MAPPS Breakfast
General Session 2
Exhibit Hall Beverage Breaks
Technical Sessions
ASPRS Committee & Meetings
General Session 3
Exhibitors' "Trick-or-Treat" Reception
Thursday, November 1th
Registration Desk Hours
Breakfast with Exhibitors
Exhibit Hall Passport Contest Prize Drawing
Technical Sessions
Exhibit Hall Beverage Breaks
General Session 4

How do I get help in an Emergency?
Contact an ASPRS or MAPPS staff person or pick up any hotel house phone and ask for Security. Give all details of the emergency including the location.

Where is the Conference Registration Desk?
The Conference Registration Desk is located on the second floor of the hotel near the Grand Ballroom in the Tampa Marriott Waterside Hotel.

What are the Conference Registration Desk Hours?

Saturday, October 27th	4:00 PM to 7:00 PM
Sunday, October 28th	6:30 AM to 5:00 PM
Monday, October 29th	6:30 AM to 5:00 PM
Tuesday, October 30th	7:00 AM to 5:45 PM
Wednesday, October 31st	7:00 AM to 5:15 PM
Thursday, November 1st	7:00 AM to 11:00 AM

Once the Conference Registration Desk is closed, materials will not be available until the following morning.

What are the Exhibit Hall Hours?
The Exhibit Hall is located on the second floor in the Grand Ballroom of the Tampa Marriott Waterside Hotel.

Tuesday, October 30th	2:00 PM to 7:00 PM
Exhibitors' Reception	5:30 PM to 7:00 PM
Wednesday, October 31st	9:30 AM to 6:30 PM
Trick-or-Treat Reception	5:00 PM to 6:30 PM
Thursday, November 1st	7:00 AM to 11:00 AM
Closing Breakfast	7:00 AM to 8:00 AM

Please note: Children under the age of 13 are not allowed in the exhibit hall.

Are Workshops included with the registration fees?
No. Workshops require individual registration and a separate fee in addition to the general conference registration fees. Availability is based on space. We do not reserve spaces without full payment in advance and there is no waiting list. *ASPRS reserves the right to cancel any workshop if the minimum number of registrations were not received by September 28, 2012.* On-site registration is available for confirmed workshops with available space.

What should presenters do after they register?
All Technical Paper Presenters should check in at the Conference Registration Desk to pick-up their registration packets **and initial the Master Final Program next to their name including either a hotel room number or cell phone number**. A Master Final Program will be posted at the Conference Registration Desk so the session moderators can check if each presenter has arrived and can contact them if necessary.

Does the Conference provide laptops for Technical Sessions?
No, the Conference does **not** provide laptops or desktop computers for Presenters during Technical Sessions. *All Presenters' must provide their own laptop computer*.

What does the Conference provided in each Technical Session room?
Each technical session room will be equipped with a LCD projector and screen. A microphone will be provided when necessary. *The Conference does **NOT** provide internet access, laser pointers, or laptop computers for the technical sessions*.

Do Presenters have a Preparation Room?
Yes, **Meeting Room 13**, third floor of the hotel has been reserved for presenters. The room will be available on a first come basis and should be used for rehearsal only.

Tuesday, October 30th	8:00 AM to 5:00 PM
Wednesday, October 31st	8:00 AM to 5:00 PM
Thursday, November 1st	8:00 AM to 11:00 AM

This room will be equipped with an LCD projector and screen. All presenters must bring their own laptops for all presentations. We encourage presenters to review their materials prior to their presentation.

Do Moderators need to check-in?
Yes, as soon as you arrive, go to the Conference Registration Desk where a Master Final Program will be posted. Please initial and write your cell phone number or a hotel room number beside your name on this Master Program. We are asking the Presenters to do the same thing. This will be your way of knowing what presenters have arrived for your session and how to get ahold of everyone.

Prior to your session, check the Master Final Program at the Conference Registration Desk to confirm that all of your presenters have arrived at the conference.

What are Poster Presenters expected to do?
The Conference provides to each Poster Presenter one side of a fabric covered poster board that measures three feet wide by eight feet high, and push pins. All Poster Presenters should plan to arrive between **7:30 AM and 10:00 AM on Tuesday, October 30th** to affix their work to any available board. All posters must be removed by **12 NOON on Thursday, November 1st**. All poster packaging must be removed from the poster area once posters are hung. The Conference Organizers are not responsible for posters that are not removed. Poster Presenters must also check in at the Conference Registration Desk to pick-up their registration packets and **initial the Master Final Program next to their name including either a hotel room number or cell phone number.**

Please be near your poster during the Exhibitors' Reception on Tuesday, October 30th from 5:30 pm until 7:00 pm. This is a time for Conference attendees to view your posters and ask you questions or gain further information about your research.

Is there an ASPRS and MAPPS staff office in the hotel?
Yes, the ASPRS and MAPPS staff offices are located in the **Office 1 and 2** rooms behind the Conference Registration desk.

Where should Student Assistants and Volunteers report?
All Student Assistants and Volunteers should check in with the Coordinator in **Meeting Room 10** on the third floor of the hotel at least 15 minutes before their scheduled session time.

Why do I need a badge?
You paid your registration fee and your badge is proof of your payment. For entrance to the General Sessions, plenary and technical sessions, and Exhibit hall, you need to wear your name badge.

What if I forget or lose my badge?
A charge of $5 will be made for replacement of lost badges.

Why do I need tickets for certain events?
Your tickets are proof of payment for certain events and must be presented at the collection point. Lost tickets will not be replaced.

How can I visit the Exhibit Hall if I am not registered for the conference?
Daily Exhibit Hall badges may be purchased at the Conference Registration Desk in the Tampa Marriott Waterside Hotel. Everyone entering the Exhibit hall must have a name badge, including children over 13 years of age. Children under 13 years of age are not permitted in the Exhibit hall at any time due to insurance and safety regulations.

Will it be possible to post resumes and job openings?
Yes, posting boards are provided near the Exhibit hall for all resumes and job openings. Please bring multiple copies of all postings to allow interested parties to take one and check the board frequently for new materials.

How do I get a copy of the Proceedings?
All registrants, except for Spouse/Guest, will receive password access information to the Proceedings located online with their registration materials. Additional access can be purchased at the Conference Registration Desk.

How can someone from outside the hotel contact me?
Messages cannot be personally delivered to Conference attendees due to the varied schedules of everyone in attendance. Messages can be left in the rooms of those staying at the Tampa Marriott Waterside Hotel through the hotel telephone operator. Packages and fax messages can be sent to individuals staying at the hotel. There is a charge for all packages and faxes sent to hotel guests. This fee will **NOT** be paid by ASPRS or MAPPS. All packages should be addressed as follows:

Tampa Marriott Waterside Hotel
Attn: (Person to receive shipment)
700 South Florida Avenue
Tampa, FL 33602
C/O: MAPPS/ASPRS 2012 Specialty Conference; 10/29 – 11/01/12;
Vendor Name (exhibit booth # or room #)

Is there a Lost and Found?
Please contact Hotel Security through the hotel house phones for all lost and found items.

Where can I store my bags/luggage?
Please contact the Hotel Bellman for storage of your personal items. There may be a fee for this service. The Conference is not responsible for your bags or luggage during the Symposium and will not hold bags/luggage.

Students & Young Professionals

Please join the Student Advisory Council (SAC) for some activities designed just for YOU!

Student & Employer "Meet and Greet"

Monday, October 29th, 5:15 PM to 6:15 PM
Location: Grand Ballroom Salon E, Second Floor

This event is designed to connect students looking to apply for jobs in the geospatial information industry with employers who may have positions available. Bring your resume, business card, or just a smile and a handshake, and expand your job network at the conference. It's also an opportunity to meet other students and young professionals from all over the world who are attending the conference.

Student Advisory Council Meeting (SAC)

Wednesday, October 31st, 11:15 AM to 12:15 PM
Location: Florida Ballroom Salon II, Second Floor

Get together with the other Students and Associate members of the ASPRS and learn what the SAC has been working on and what is planned for the coming week. Meet the new SAC Councilors and give them your ideas of what you would like ASPRS to be able to offer student members. All are welcome to attend.

Other Social Activities

Your SAC Networking Councilors will arrange relaxed social gathers after each of the day's conference activities. These gatherings allow you to get to know more of the student and young professional members of ASPRS. Attendees are welcome to join in on the fun. To find out about all of the evening activities, check the Message board on site in the conference registration area.

We guarantee that your participation in these activities will make your conference experience more enjoyable!

Saturday Conference Registration Desk Hours
4:00 PM to 7:00 PM — Conference Registration, Second Floor

Saturday, October 27th — Committee Meeting

ASPRS Executive Committee
8:00 am to 5:00 pm, Meeting Room 13, Third Floor

Sunday Conference Registration Desk Hours
6:30 AM to 5:00 PM — Conference Registration, Second Floor

Sunday, October 28th — ASPRS Committee Meetings

Anyone interested in the work of an ASPRS Division or Committee is welcome to attend these meetings. There is no registration required for attendance at the Division and Committee meetings. Your participation is encouraged and welcome

ASPRS Division Directors and Committee Chairs (Joint Meeting - will focus upon the activities of each entity as they relate to the Strategic Plan of ASPRS.)
8:00 AM to 9:00 AM, Meeting Room 8, Third Floor

Remote Sensing Applications Division (RSAD) Climate Change Subcommittee
9:00 AM to 10:00 AM, Meeting Room 8, Third Floor

ASPRS Journal Policy & Publications Committee (Joint Meeting)
9:00 AM to 11:00 AM, Meeting Room 9, Third Floor

Photogrammetric Applications Division (PAD)
10:00 AM to 11:00 AM, Meeting Room 8, Third Floor

ASPRS Education & Professional Development Committee
11:00 AM to 12:00 NOON, Meeting Room 8, Third Floor

Professional Practice Division (PPD)
11:00 AM to 12:00 NOON, Meeting Room 9, Third Floor

ASPRS Films Committee
1:00 PM to 2:00 PM, Meeting Room 8, Third Floor

Geographic Information Systems Division (GISD)
1:00 PM to 2:00 PM, Meeting Room 9, Third Floor

ASPRS Data Preservation & Archives Committee
2:00 PM to 3:00 PM, Meeting Room 8, Third Floor

Convention Policy & Planning Committee (CPPC)
2:00 PM to 4:00 PM, Meeting Room 9, Third Floor

ASPRS Bylaws Committee
3:00 PM to 4:00 PM, Meeting Room 8, Third Floor

ASPRS Membership Committee
4:00 PM to 5:00 PM, Meeting Room 8, Third Floor

Remote Sensing Applications Division (RSAD)
4:00 PM to 5:00 PM, Meeting Room 9, Third Floor

ASPRS Standards Committee
5:00 PM to 6:00 PM, Meeting Room 9, Third Floor

ASPRS Division Directors
5:00 PM to 6:00 PM, Meeting Room 8, Third Floor

Calling All Conference Volunteers — Plan on attending the orientation meeting to meet your fellow volunteers, take a tour of the conference facility and hear some helpful information regarding the conference.

Conference Volunteer Orientation
5:45 PM to 6:15 PM, Meeting Room 5, Second Floor

Monday Conference Registration Desk Hours
6:30 AM to 5:00 PM — Conference Registration, Second Floor

Board of Director Meetings

Anyone interested in the work of an ASPRS Division or Committee is welcome to attend these meetings. There is no registration required for attendance at the Division and Committee meetings. Your participation is encouraged and welcome.

ASPRS Board of Directors
8:00 AM to 5:00 PM, Grand Ballroom Salon E, Second Floor

MAPPS Board of Directors
8:00 AM to 5:00 PM, Greco Board Room, Third Floor

Workshops

Workshop #2 — Intermediate Workshop
Cloud Computing for Geospatial Powerhouse: Introduction and Case Studies
Ra'ad Saleh
Steve Lamber, *Esri*
Monday, October 29th, 7:45 AM to 5:15 PM, CEU .8
Room: Grand Ballroom Salon B, Second Floor

Workshop #3 — Introductory Workshop
Hyperspectral Remote Sensing: Phenomenology and Data Processing
William Farrand, *Space Science Institute*
Monday, October 29th, 7:45 AM to 12:15 PM, CEU .4
Room: Grand Ballroom Salon C, Second Floor

Workshop #4 — Introductory Workshop
Utilizing Mobile Imagery and Lidar to Support an Enterprise Asset Management System
Jason Amadori, *GISP, Earth Eye, LLC*
Monday, October 29th, 12:45 PM to 5:15 PM, CEU .4
Room: Grand Ballroom Salon C, Second Floor

Workshop #7
QBS Contracting for Geospatial Services
Bruce Ware, *U.S. Army Corps of Engineers*
Monday, October 29th, 7:45 AM to 5:15 PM
Room: Meeting Room 8, Third Floor

INTRODUCTORY	3, 4, 6
INTERMEDIATE	2, 5, 10
ASPRS Workshops	2, 3, 4, 5, 6, and 10
MAPPS Workshops	7, 8, and 9

Workshop fees are <u>not</u> included in the cost of the conference registration.

Networking Opportunity — Florida Region Welcome Reception

Monday, October 29th, 6:00 PM to 8:00 PM
Location: Jackson's Bistro on Harbour Island, 601 S. Harbour Island Blvd., Tampa, Fl

The ASPRS Florida Region would like to invite all conference attendees to a conference kick-off reception at Jackson's Bistro on Harbor Island. Just a short walk from the Conference host hotel, over the Harbour Island Bridge, Jackson's Bistro is a perfect location to grab a quick bite before heading out to enjoy the Tampa nightlife. Join the Florida Region for a great kick-off to the conference and stop by Jackson's Bistro on Monday evening. Light hors d'oeuvres will be served. *Admission to this event is open to all conference attendees.*

Tuesday Conference Registration Desk Hours
7:00 AM to 5:45 PM — Conference Registration, Second Floor

Poster Set-up
7:30 AM to 12 NOON — Grand Ballroom Foyer, Second Floor

Workshops

Workshop #5 — Intermediate Workshop
Real Time Airborne Flash Lidar
Roy Nelson, *Ball Aerospace & Technologies Corp*
David Gonzalez, *Exelis Visual Information Systems*
Tuesday, October 30th, 7:45 AM to 12:15 PM, CEU .
Room: Florida Ballroom Salon I, Second Floor

Workshop #6 — Introductory Workshop
Find Real World Solutions Using Remote Sensing
Andrew J. Brenner, PhD, *Photo Science*
Tuesday, October 30th, 7:45 AM to 5:15 PM, CEU .8
Room: Grand Ballroom Salons A & B, Second Floor

Workshop #10 — Intermediate Workshop
Lidar Waveform: The Potential and Benefits for Topographic Mapping Lidar
Dr. Charles K Toth, Senior Research Scientist, *Center for Mapping, The Ohio State University*
Tuesday, October 30th, 7:45 AM to 12:15 PM, CEU .4
Room: Grand Ballroom Salon C, Second Floor

Workshop #8
Licensing of Photogrammetrists and Other Geospatial Practitioners
G. Michael Ritchie, PE, PLS, PSM, CP, President and CEO, *Photo Science, Inc.*
John M. Palatiello, Executive Director, *MAPPS*
Tuesday, October 30th, 7:45 AM to 12:15 PM
Room: Meeting Room 9, Third Floor

Workshop #9
Preparing Independent Government Cost Estimates (IGCE) for Geospatial Contract Negotiations
Dennis Hall, *National Oceanic and Atmospheric Administration, Contracting Officer's Representative (COR), Coastal Services Center (CSC)*, Charleston, SC
Tuesday, October 30th, 7:45 AM to 12:15 PM
Room: Florida Ballroom Salons Ii & Iii, Second Floor

ASPRS Committee Meetings

Anyone interested in the work of an ASPRS Division or Committee is welcome to attend these meetings. There is no registration required for attendance at the Division and Committee meetings. Your participation is encouraged and welcome.

ASPRS Sustaining Members Council Meeting
11:30 AM to 12 NOON
Location: Grand Ballroom Foyer, near Exhibitors' Lounge

CEU's

Continuing Education Credits (CEU's)

ASPRS is pleased to announce that Continuing Education Units (CEUs) are awarded for the ASPRS workshops. This program is being offered in conjunction with George Mason University.

The Continuing Education Unit (CEU) is a nationally recognized unit of measurement for participation in non-credit continuing education programs. Adults who successfully complete George Mason University's approved programs will be awarded continuing education units. A permanent record of CEUs awarded will be maintained in the university database and will be easily accessible for certification and verification purposes.

The objective of the CEU is to:

- **Provide a nationally established record of professional development learning activity**
- **Encourage adult students to utilize educational resources to meet their personal and educational needs**
- **Recognize individuals who continue their education and keep themselves current in their chosen professions**
- **Enable individuals to have an accurate source of their current CEU activity**
- **Provide a system to document continuing education experiences in meeting certification requirements.**

George Mason University, Office of Continuing Professional Education is registered with the National Association of State Boards of Accountancy (NASBA), as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit.

Keynote Address/General Session 1

Ultra-High Resolution Three and Four Dimensional Point Cloud Analysis Spanning the Earth Sciences

Gerald Bawden, *U.S. Geological Survey*

Tuesday, October 30th, 1:00 PM to 2:00 PM
Location: Florida Ballroom Salons IV – VI, Second Floor

Ground-based Lidar, known as Tripod/Terrestrial Lidar (T-Lidar) and Terrestrial Laser Scanning T-Lidar is ushering in a new era of geodetically driven mesoscopic scale science with true 3D site characterization and 4D change detection of dense point cloud imagery and their derive surfaces. This presentation will showcase several diverse geodetic science applications of ground based T-Lidar spanning the broad range of earth science issues. 3D glasses will be provided to visualize the 3D and 4D science in this presentation.

Gerald W. Bawden, Ph.D.

Dr. Gerald Bawden is a research geophysicist and the Chief Scientist of the U.S. Geological Survey's Western Remote Sensing and Visualization Center in Sacramento and is the assistant Hazards Coordinator for the Pacific Southwest Area. His research group's focus is to detect, measure, map, and analyze surface change/deformation associated with earthquakes, fluid production, debris flows, floods, fires, dam failures, mine collapse, glaciers, and other natural and anthropogenic hazards by utilizing geodetic techniques, such as ground---based tripod---LiDAR, GPS, leveling, airborne LiDAR, and satellite Interferometric Synthetic Aperture Radar (InSAR).

Bawden received his B.S. in Geology from UC Santa Barbara, M.S. in Geology from UC Davis, and Ph.D. in Geology-Geophysics from UC Davis.

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Technical Sessions 2:15 PM to 3:45 PM

TS 1 - Geospatial Cloud Computing I

Room: Grand Ballroom Salons A & B, Second Floor
Moderator: Chris Padwick, *DigitalGlobe*

High Performance Cloud Computing for Image Processing
Chris Padwick, *DigitalGlobe*

Web Access to Cloud-based World Elevation Data and Services
Peter Becker, *Esri*
Cody Benkelman

Cloud – The New Modality for Geospatial: Opportunities, Challenges and Best Practices
Mark Baker, *Esri*

A Fully Scalable Cloud Lidar Distribution System
Shane Engel, *Dewberry*

TS 2 - Lidar I — Emerging Trends & the Future

Room: Meeting Room 9, Third Floor
Moderator: Amar Nayegandhi, *Dewberry*

Recent Advances in Lidar Waveform Processing
Amar Nayegandhi, *Dewberry*

Real-Time Flash Lidar Data Distribution and Processing for Time-Critical 3D Mapping Applications
Dennis Nicks, *Ball Aerospace*
Eric Coppock, Rex Craig, Jack Hollister, Roy Nelson, and Tanya Ramond

Extending on the MS Kinect Calibration
Charles Toth, *The Ohio State University – Center for Mapping*
Molnar Bence and Dorota A. Grejner-Brzezinska

Full Waveform Lidar
James Young, *AeroMetric*

TS 3 - Strategies for Multi Sensor Integration

Room: Florida Ballroom Salons II & III, Second Floor
Moderator: Mark Romano, *Earth Eye, LLC*

Mobile & Airborne Multi-Sensor Integration in Geospatial Applications
Mark Romano, *Earth Eye, LLC*
Jason Amadori

Real-Time Multi-Sensor Integration and Analysis in Geospatial Applications
Morakot Pilouk, *Esri*

Rule Based Multi-Sensor Integration in Geospatial Applications
Michael Martin, *LSI*
Tom Watson

Multi-Platform Sensor Networking for Large Scale Natural Disasters
Raad Saleh, *U.S. Geological Survey*

Special Session 2:15 PM to 3:45 PM

SS 4 - Deepwater Horizon Imagery Location and Access I

Sponsored by The Education and Professional Development Committee and the Primary Data Acquisition Division
Room: Grand Ballroom Salon C, Second Floor
Moderator: Lawrence R. Handley, *U.S. Geological Survey*
Co-Moderator: Kathryn Lockwood, *CNL World*

The Deepwater Horizon 2010 MC252 incident continues to generate investigation and analysis using GIS and remote sensing imagery for response, natural resource damage assessment, and restoration. A two-session panel discussion and demonstration features and explains a portal that provides an interface to the three major websites that house the majority of imagery and flight data for the Deepwater Horizon 2010 MC252 event. The portal is a single point for accessing, locating, and maneuvering through the sites that house pre-, during, and post -imagery and data. Experts from three of the organizations will explain data aquistions and how to access the data for the Deepwater Horizon 2010 Oil Spill: 1) the US Geological Survey's (USGS) Hazards Data Distribution System (HDDS), 2) National Oceanic and Atmospheric Administration's (NOAA) Environmental Response Management Application (ERMA), and 3) British Petroleum's (BP) imagery website.

Panelists:
Pierre le Roux, *AeroMetrics, Inc.*
George Graettinger, *NOAA*
Nathan Handley, *WETMAP*
Rynn Lamb, *U.S. Geological Survey*

Exhibit Hall Activities

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Exhibit Hall & Posters Open

2:00 PM to 7:00 PM
Grand Ballroom Salons F-J, Second Floor

Refreshment Break

2:00 PM to 2:15 PM
Grand Ballroom Salons F-J, Second Floor

Each day of the conference a morning and afternoon break will be served in the exhibit hall. This is a perfect opportunity to take a break from technical sessions to network, visit the amazing exhibitors and grab a cup of coffee or soda.

Everyone needs a refresher now and then, so take a moment and take a break in the exhibit hall at the MAPPS/ASPRS 2012 Specialty Conference!

TS 5 - Oral Poster Presentations 2:15 PM to 3:45 PM

Room: Florida Ballroom Salon I, Second Floor

Investigation in Cloud Computing for More Robust Automated Bulk Image Geoprocessing
Richard Brown, *Computer Services Corporation*
James Smoot and Lauren Underwood

Modeling Line-of-Sight Visibility Below the Canopy with Airborne Lidar Point Cloud Data
Michael Starek, *Texas A&M University - Corpus Christi*
Heezin Lee, S. Bruce Blundell, Michael J. Starek, and John G. Harris

Applications of Interferometric Synthetic Aperture Radar (IFSAR) at the National Geospatial Technical Operations Center
Kimberly Mantey, *U.S. Geological Survey*

Lidar and The National Map
Lori Phillips, *U.S. Geological Survey*

Detecting Sub-Canopy Plant Invitations in Urbanizing Forests Using Lidar
Kunwar Singh, *University of North Carolina at Charlotte*
Amy Davis and Ross Meentemeyer

A Fast Algorithm for Constructing Spatial index for Narrow and Long Lidar Point Clouds
Lihong Su, *Texas A&M*

Comparison of Information Extracted from Full-waveform Lidar Data and Conventional Multi-pulse Lidar Data
Hongzhou Wang, *University of Houston*
Craig Glennie

Application of Lidar Data for Monitoring Coastal Change in Galveston Island
Xiao Zhang, *University of Houston*
Craig Glennie

High-resolution Imagery to Detect Sediment and Erosion Changes in the Badriver Watershed, WI
Ming-Chih Hung, *Northwest Missouri State University*
Yi-Hwa Wu and Jamie Patton

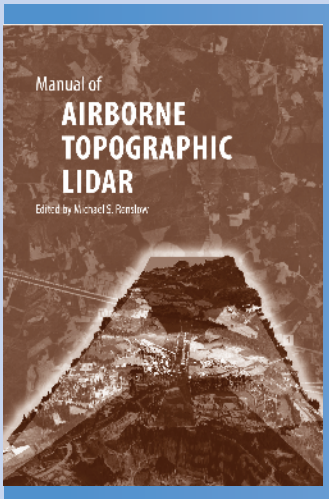
Formosat-2 Imagery to Detect Aquatic Invasive Plants along the Ohio River
Ming-Chih Hung, *Northwest Missouri State University*
Yi-Hwa Wu and Jamie Patton

Evaluating the Ecotourism Potentials of Naharkhoran Area in Gorgan Using Remote Sensing and Geographic Information System
Oladi Ghadikolaei Djafar, *University of Sari*, Iran
Delavar Bozorgnia

Feasibility Study on Ecotourism Potential Areas Using Remote Sensing and Geographic Information System
Daraeighadikolaei Naser, *University of Agricultural Science and Natural Resource*, Iran

Change Matters in the Cloud
Hua Wei, Esri
Vinay Viswambharan and Jeff Liedtke

Assessment of Fort Riley's Land Condition Recovery Under Multiple Fisturbances Due to Military Training, Burning, and Haying
Santosh Rijal, *Southern Illinois University - Carbondale*



ASPRS *Airborne Topographic Lidar Manual* — Book Signing with Michael Renslow, CP

Debuting at the MAPPS/ASPRS 2012 Specialty Conference, the long awaited, ASPRS *Airborne Topographic Lidar Manual*! **The first comprehensive manual published on lidar technology**. Edited by Michael Renslow, an industry leader on the topic and conference general session speaker, the book pulls chapter material from lidar industry experts worldwide.

When: Wednesday, October 31st,11:15 AM until 12 NOON & 5:30 PM until 6:30 PM

Where: Conference Exhibit Hall, Grand Ballroom Salons F-J, ASPRS Booth #107

Cost: Free with book purchase and conference registration

Book: ASPRS *Airborne Topographic Lidar Manual*

We encourage you to come early and purchase your copy first to avoid long wait times to speak with Mike.

Technical Sessions 4:00 PM to 5:30 PM

TS 6 - Geospatial Cloud Computing II

Room: Grand Ballroom Salons A & B, Second Floor
Moderator: Antonio Montoya, *AeroMetric*

UAV-based Mapping and 3D Modeling: Image Acquisition and Pix4D Processing Solutions.
Christoph Strecha, *Pix4D*

Cloud Computing and the New Distributed Organization
Antonio Montoya, *AeroMetric*

Privacy and Security Risks in Cloud Computing
Vivek Ratna, *Digital Learning Solutions, LLC*

Remote Sensing and Photogrammetry Applications on the Cloud
Joe Mostowy, *Intergraph*

TS 7 - Lidar II — Quality Assessment

Room: Meeting Room 9, Third Floor
Moderator: Eric Orndorff, *HRG, Inc*

PAMAP Program QA Surveys
Eric Orndorff, *HRG, Inc*

Quality Control Analysis of Lidar Feature Extraction
Mark Rahmes, *Harris Corporation*
Harlan Yates, Patricia Brown, Morris Akbari, and Amanda Tipping

Monitoring Vegetation Encroachment on Power Line Right-of-Way Corridors using Lidar Data with E3De and ArcGIS
David Gonzalez, *Exelis Visual Information Solutions*

Poles Extraction form Mobile Terrestrial Lidar Point Cloud
Sherif Ibrahim, *University of Calgary*, Canada
Derek Lichti

TS 8 - Data Fusion/Integration in Geospatial Applications I

Room: Florida Ballroom Salon I, Second Floor
Moderator: Ricardo Passini, *BAE Systems, Inc.*

Accuracy Assessment of Merged Optical, Quad-polarization Radar, Radar Texture, and Principal Component Imagery for Land Cover Classification
M. Gregory Hammann, *George Mason University*
Barry Haack

Improving Regional Wetland Mapping for the State of Washington
Lisa Erickson, *Photo Science, Inc.*
Andrew Brenner, Chris Robinson, Nate Herold, and Tim Siewack

Lidar and Thermal Imagery Data Fusion to Identify Energy Loss
Merinda Lobato, *Merrick & Company*

Photogrammetric Orientation of the Ultracam Eagle Using Airborne GPS and IMU Read. – Photgrammetric System Calibration
Ricardo Passini, *BAE Systems, Inc*
David Day

Exhibit Hall Activities

Refreshment Break

3:45 PM to 4:00 PM
Grand Ballroom Salons F-J, Second Floor

Each day of the conference a morning and afternoon break will be served in the exhibit hall. This is a perfect opportunity to take a break from technical sessions to network, visit the amazing exhibitors and grab a cup of coffee or soda.

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Special Sessions 4:00 PM to 5:30 PM

SS 9 - Deepwater Horizon Imagery Location and Access II

Sponsored by The Education and Professional Development Committee and the Primary Data Acquisition Division
Room: Grand Ballroom Salon C, Second Floor
Moderator: Lawrence R. Handley, *U.S. Geological Survey*
Co-Moderator: Katheryn Lockwood, *CNL World*

There is a growing need for users to locate, view, access, and understand the appropriate use of the approximately 180 terrabytes of imagery data related to the Deepwater Horizon 2010 MC252 event. Session 2 is a continuation of discussion and demonstration of a portal that provides an interface to the three major websites that house the majority of imagery and flight data for the Deepwater Horizon 2010 MC252 event.

Panelists:
Pierre le Roux, *AeroMetrics, Inc.*
George Graettinger, *NOAA*
Nathan Handley, WETMAP
Rynn Lamb, *U.S. Geological Survey*

SS 10 - Archeological Use of Lidar

Room: Florida Ballroom Salons II & III, Second Floor
Moderator: Bill Emison, *Merrick & Company*

Lidar technology is revolutionizing the science of archaeology by allowing scientists to discern changes in landform and to "see" through vegetation providing a new window into man's earliest activities. Appling lidar technology to archeology research, ancient cultural resources such as burial grounds and historical settlements can be efficiently mapped and serve as a useful tool to assist archeologists, surveyors and other field staff in modeling where artifacts may reside, streamlining the time and effort expended to manually search for artifacts in the field. This session will provide three case studies of how advanced lidar is being deployed to support archaeological studies of significant ancient sites in Mexico, the Chao Canyon NM and Indian mounds in Missouri. The session will provide valuable insight into topics including project flight planning, project scoping and data deliverables needed to support project missions and the positive impacts the projects have had on the archeology teams.

Archeological use of Lidar to Investigate the Chaco Canyon, NM
Richard Friedman, *City of Farmington, New Mexico*

Lidar Mapping in Mexico
Bill Emison, *Merrick and Company*

Lidar Mapping of Indian Mounds in Missouri
Dave Hart, *Continental Mapping*

Networking Opportunities

Exhibitors' Reception

Tuesday, October 30th, 5:30 PM to 7:00 PM
Location: Exhibit Hall, Grand Ballroom Salons F – J, Second Floor

Take this wonderful opportunity to visit with the national and international suppliers exhibiting at the MAPPS/ ASPRS 2012 Specialty Conference. A Conference tradition, the Exhibitors' Reception is a perfect time to mingle with fellow attendees and thank the Conference Exhibitors, our hosts for the evening. The evening is sure to provide a relaxed environment with light hors d'oeuvres and beverages and a time to come together with old and new friends.

Admission to this event is included with all registrations. Please note, due to insurance regulations children under the age of 13 are not permitted in the exhibit hall at any time. Anyone over the age of 13 will require a registration to enter the exhibit hall.

Sponsored by

ULTRACAM

MAPPS Geospatial Products & Services Excellence Awards Dessert Reception

Tuesday, October 30th, 7:00 pm to 8:30 pm
Room: Florida Ballroom Salons IV – VI, Second Floor

All MAPPS members and invited guests are encouraged to attend this special reception during which the 2012 MAPPS Excellence Award recipients will be announced and honored. All entries will be on display.

Wednesday Conference Registration Desk Hours
7:00 AM to 5:15 PM — Conference Registration, Second Floor

Exhibit Hall & Posters Open
9:30 AM to 6:30 PM — Grand Ballroom Salons F-J, Second Floor

Networking Opportunity — MAPPS Breakfast

By Invitation Only
Wednesday, October 31st, 7:00 am to 8:00 am
Room: Meeting Room 8, Third Floor

The MAPPS Breakfast will provide the membership with an opportunity to gather for networking and fellowship. It will also be a venue and forum for hearing a guest speaker on a topic relevant to the private geospatial community.

General Session 2

ASPRS Airborne Topographic Lidar Manual

Mike Renslow, Editor

Wednesday, October 31st, 8:30 AM to 9:30 AM
Room: Grand Ballroom Salon E, Second Floor

ASPRS is publishing the first comprehensive manual on airborne lidar technology and applications. The Manual covers the basics of lidar technology with special emphasis on best practices and procedures for acquiring, processing, and performing quality control and quality assurance. In addition to an update of state-of-the-art sensors and support systems, several emerging lidar sensors and techniques are covered in detail.

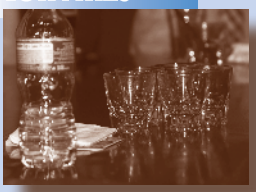
This session will introduce the Manual and summarize the content and chapters written by lidar experts and practitioners from around the world. In addition to reviewing the general content of the Manual, discussion of new technology will focus on Flash lidar, Geiger Mode lidar, Emphasis on Best Practices, Quality Assurance/Quality Control and Reporting, the DEM Applications, Airport Obstruction Mapping, and the 2009 new Geoid Height Models and Vertical Datums.

Mike Renslow

Mike Renslow is a photogrammetric consultant specializing in the application of advanced technologies. He has 45 years of experience as an engineering surveyor, photogrammetrist, cartographer, aerial photographer, and business manager working for government, academia, and the private sector. Renslow has been a member of ASPRS for 39 years, and served as President in 1999-2000. He is an ASPRS Certified Photogrammetrist and Registered Professional Photogrammetrist in Oregon.

Renslow is currently the technical editor for *Photogrammetric Engineering & Remote Sensing*, Treasurer for the ASPRS Foundation, and Chair of the Evaluation for Certification Committee. He is also a Senior Lecturer for Penn State University e-Education Program, Geography Department (Lidar Technology and Mapping).

Exhibit Hall Activities



Refreshment Break

9:30 AM to 9:45 AM
Grand Ballroom Salons F-J, Second Floor

Each day of the conference a morning and afternoon break will be served in the exhibit hall. This is a perfect opportunity to take a break from technical sessions to network, visit the amazing exhibitors and grab a cup of coffee or soda.

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Technical Sessions 9:45 AM to 11:15 AM

TS 11 - Data Fusion/Integration in Geospatial Applications II

Room: Meeting Room 8, Third Floor
Moderator: Chris Robinson, *NOAA*

Large Scale Asset Inventories Using Mobile Lidar Technology
Eric Andelin, *Surveying and Mapping (SAM)*

Cost Effective Evaluation of Change Detection
Patricia Brown, *Harris Corporation*
Mike McGonagle, Amanda Tipping, Tim Faulkner, Mark Rahmes, and Harlan Yates

Partnerships for High Resolution Land Cover Development in the Lower Columbia River
Chris Robinson, *IM Systems Group*
Keith Marcoe and Nate Herold

High Spatial Resolution Land Cover, Percent Impervious Surface and Urban Tree Canopy Derived by GEOBIA Techniques for Gainesville, GA
JB Sharma, *Institute for Environmental Spatial Analysis, Gainesville State College*
Joshua Nolan

TS 12 - Lidar III — Assessment and Automation

Room: Meeting Room 9, Third Floor
Moderator: Aparajithan Sampath, *SGT*

Assessment of Quality of Registration of Overlapping Aerial Lidar Scan
Aparajithan Sampath, *SGT*

Automatic Selection of Planes in Overlapping Areas for Fast and Reliable Lidar System Calibration
Essam Hamza, *University of Calgary*, Canada
Ayman Habib

Mapping and Visualization of Mobile Lidar Data
Andrew Fisher, *BAE Systems, Inc.*
Brenda Burroughs

Introduction to Lidar Data Compression
Jon Skiffington, *Lizard Tech*

TS 13 - Accuracy & Specifications

Room: Meeting Room 12, Third Floor
Moderator: David Maune, *Dewberry*

Best Practices for Lidar Vertical Accuracy Testing
Jennifer Novac, *Dewberry*
David Maune and Amar Nayegandhi

Accuracy and Lidar Tracking
Mike Tully, *Aerial Services, Inc.*
Chuck O'Hara

Draft ASPRS Accuracy Standards for Digital Geospatial Data
David Maune, *Dewberry*

Quality Assessment of Elevation Products Derived from Interferometric Synthetic Aperture Radar (IFSAR) at the USGS National Geospatial Technical Operations Center
Kimberly Mantey, *U.S. Geological Survey*

Special Sessions 9:45 AM to 11:15 AM

SS 14 - ASPRS Primary Data Acquisition Division (PDAD) Committee Updates

Room: Grand Ballroom Salon C, Second Floor
Moderators: Robert Ryan, *Stennis Space Center* and Greg Stensaas, *U.S. Geological Survey*

An update to PDAD committees on Image Quality, In-situ Metric Calibration, and Oblique Imaging Guidelines will be presented. A demonstration of the interactive Digital Imagery Spatial Resolution Simulation Tool will be made, which shows the impact of ground sample distance (GSD) and Modulation Transfer Function (MTF) on image quality. A new ad hoc committee on Aerial Camera Radiometry and its goals will also be presented. PDAD will be looking for new members to add these committees.

SS 15 - GEOINT Analytics I

Room: Grand Ballroom Salons A & B, Second Floor
Moderator: Joan Vallancewhitacre, *National Geospatial-Intelligence Agency*

The PLACES Project and Automated Methods for Place Name Conflation
Ashley Holt, *National Geospatial-Intelligence Agency*

Landsat-based Early Warning System to Detect the Destruction of Villages in Darfur, Sudan
Andrew J. Marx, *U.S. Department of State, University of Maryland*

Harnessing Big Data and Models to Solve User Geospatial Problems and Challenges Using IDEAS (Intelligent Data and Model Discovery and Access)
Charles Samuels, *The SI Organization, Inc.* and
Shawna Johnson, *Global Marketing Insights, Inc.*

ASPRS Committee Meetings

Anyone interested in the work of an ASPRS Division or Committee is welcome to attend these meetings. There is no registration required for attendance at the Division and Committee meetings. Your participation is encouraged and welcome.

LiDAR Division Meeting
11:15 AM to 12:15 PM
Room: Florida Ballroom Salon I, Second Floor

Student Advisory Council (SAC)
11:15 AM to 12:15 PM
Room: Florida Ballroom Salon II, Second Floor

Technical Sessions 12:30 PM to 2:00 PM

TS 16 - Data Fusion/Integration in Geospatial Applications III

Room: Meeting Room 8, Third Floor
Moderator: Devin White, *National Geospatial-Intelligence Agency*

Uncertainty Handling in Geospatial Data
Peter Doucette, *National Geospatial-Intelligence Agency*
Devin White and John Marshall

Change Matters in the Cloud
Jeff Liedtke, *Esri*
Vinay Viswambharan

Potential of SAR Interferometry in Detection of Mass Movements in South Kyrgyzstan
Kanayim Teshebaeva, *GFZ German Research Center for Geosciences*, Germany
Helmut Echtler, Mahdi Motagh, Sigrid Roessner, and Hans-Ulrich Wetzel

Robust 3-d Change Detections in EO/IR Aerial Imagery
Vishal Jain, *Vision Systems, Inc.*
Andrew Miller and Joseph L. Mundy

TS 17 - Lidar IV — Quality Assessment

Room: Meeting Room 9, Third Floor
Moderator: Bob Ryan, *URS Corp*

Lidar QAQC Performed in a Web-Server/Cloud Environment
Bob Ryan, *URS Corp*
Alex Bostic

Quality Assessment (QA) of Lidar at the USGS National Geospatial Technical Operations Center (NGTOC)
Leslie Lansbery, *U.S. Geological Survey*
Thomas Jerris and Robert Swain

Base Stations: Are They Still Needed to Optimize Lidar Accuracy?
Chris Guy, *AeroMetric*
Terry Keating

New Methods of Shallow Water Mapping
Vladimir Kadatskiy, *RIEGL USA*

TS 18 - Emergency Response

Room: Meeting Room 12, Third Floor
Moderator: Robert Ryan, *Innovative Imaging & Research, Johns C. Stennis Space Center*

NOAA Capabilities for Image Delivery During an Emergency Response
Michael Aslaksen, *NOAA*
Jason Woolard and Jon Sellars

Extending the Operational Envelope of Aerial Electro-optical Imaging Pre-sunrise to Post-Sunset for Improved Emergency Response
Robert Ryan, *Innovative Imaging & Research, Johns C. Stennis Space Center*
Mary Pangutti and Kara Holekamp

Points in Libya
Connie Li, *AeroMetric*

Exhibit Hall Activities

Refreshment Break

2:00 PM to 2:15 PM
Grand Ballroom Salons F-J, Second Floor

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Special Sessions 12:30 PM to 2:00 PM

SS 19 - Advancements in GEOINT Analytics II

Room: Grand Ballroom Salons A & B, Second Floor
Moderator: Joan Vallancewhitacre, *National Geospatial-Intelligence Agency*

Maritime ISR Data Fusion/Integration for Cost-Effective Improvements in Detection and Monitoring of Illicit Trafficking in Mesoamerican Territorial Waters Implemented Through Comprehensive Engagement Strategy
Thomas D. Morelli and Bradley J. Niesen, *Sea Land & Air Technologies & Systems, Inc. (SLATS)*

Graphical User Interface for Seagrass Mapping
Hyun Jung Cho, *Bethune-Cookman University*

Monitoring of Super Algal Blooms in Indian River Lagoon, FL using Satellite Data
Andrew Kamerosky, *Bethune-Cookman University*

SS 20 - New Frontiers in LiDAR Technologies: Gieger Mode Lidar and Full waveform Digitization

Room: Grand Ballroom Salon C, Second Floor
Moderator: Qassim Abdullah, *Woolpert, Inc.*

Lidar technologies in the past decade reached tremendous level of sophistication in both the technical advancement and its pace of development. Among the two most notable advancements are the introduction of new types of lidar such Gieger mode Lidar, Flash Lidar and photon counting lidar and the addition of full waveform digitization capability to many of the existing lidar systems. The panel will shed the light on such advancements in order to educate the mapping community on the benefits these advancements offer to the lidar data end user and data provider.

Panelists:
Qassim Abdullah, *Woolpert, Inc.*
Charles Toth, *Ohio State Univesity*
Roy Nelson, *Ball Aerospace*
Joe Liadsky, *Optech, Inc.*

Technical Sessions 2:15 PM to 3:45 PM

TS 21 - Lidar V, Extraction Techniques

Room: Meeting Room 9, Third Floor
Moderator: Jason Schwartz, *Follow-Me Systems, LLC*

Game Technologies for Enhancing Cloud-based LiDAR Utilization
Jason Schwartz, *Follow-Me Systems, LLC*

Segmentation and Reconstruction of Building Facades from 3D Point Cloud
Aparajithan Sampath, *SGT*

A Method of Meaningfully Reducing Lidar Data to a TIN Format
Stephan Miller, *Harris Corporation*
Jay Hackett

Palm Biomass Modeling and Archiving Using Terrestrial Lidar
Mwafag Ghanma, *United Arab Emirates University*, Abu Dhabi
Dhafer Al Ahbabi

TS 22 - Natural Resource Inventory & Assessment

Room: Meeting Room 8, Third Floor
Moderator: Nathaniel Morton, *Photo Science, Inc.*

Segmenting the Distribution of Heterogeneous Forested Landscapes: A Size-Constrained Region-Splitting Segmentation Routine
Nathaniel Morton, *Photo Science, Inc.*
Brad Weigle

Evaluation of Forest Conservation Programs: A Case of the Calakmul Man and Biosphere Reserve, Mexico
Jitka Hiscox, *Clark University*
Ximena Rueda

Modeling Soil Parameters using Hyperspectal Image Reflectance in Coastal Wetland Environment
Nicole Hewitt, *University of FL/Gulf Coast Research & Ed Center*
Naveen Anne, Amr Abd-Elrahman, David Lewis, and Kristine Jimenez

Natural Resource Inventory & Assessment – Communicating the Big Picture, Visualizing an Unlimited Amount of Point Cloud Data Consistently Across Multiple Computing Devices
Bill Emison, *Merrick & Company*

Special Sessions 2:15 PM to 3:45 PM

SS 23 - NGA Academic Partnerships

Room: Grand Ballroom Salons A & B, Second Floor
Moderator: Joan Vallancewhitacre, *National Geospatial-Intelligence Agency*

NGA Academic Research Program

Joan Vallancewhitacre, *National Geospatial-Intelligence Agency*

NGA 2012 Broad Agency Announcement

Dennis Walker, *National Geospatial-Intelligence Agency*

Visiting Scientist Program

Laura Locke, *Oak Ridge Institute for Science and Education (ORISE)*

SS 24 - From Application to Employment: Starting a Career in a Geospatial Discipline

Sponsored by the ASPRS Student Advisory Council
Room: Grand Ballroom Salon C, Second Floor
Moderator: Kunwar Singh

This session will address career planning and the steps involved from application to employment for graduate students in a Geospatial discipline. A panel of professionals from industry, consulting, state and federal government as well as academic research positions will be represented. This session will provide students with a foundation to guide their career planning as they plan to secure a future in the Geospatial arena.

Panelists

Charles Mondello, *Pictometry International Corp.*
Karen Schuckman, *Penn State Unversity*
Al Karlin, *Southwest Florida Water Management District*

Exhibit Hall Activities

Refreshment Break

3:45 PM to 4:00 PM
Grand Ballroom Salons F-J, Second Floor

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General Session 3

Policy Matters Associated with the National Enhanced Elevation Assessment (NEEA) and the 3D Elevation Program (3DEP)

Jerry Johnston, *U.S. Geological Survey*

Wednesday, October 31st, 4:00 PM to 5:00 PM
Location: Grand Ballroom Salon E, Second Floor

The U.S. Geological Survey (USGS), in partnership with member agencies of the National Digital Elevation Program (NDEP), recently completed a National Enhanced Elevation Assessment to document agency business uses, data requirements, and the associated benefits expected from enhanced elevation data from lidar and IfSAR sources. The study documented 602 functional activities from 34 Federal agencies, 50 States and Territories, and from a sampling of local governments, tribes, industries and non-profit organizations. The results paint a comprehensive picture of the value and applications of elevation data. They further demonstrate that the status quo approach of developing acquisition plans and partnerships on a project-by-project basis has been successful in avoiding duplication, and in gradually improving the data holdings of the nation. But it is striking that in spite of these efforts, 72% of the nation has data more than 30 years old and that we are currently meeting less than 10% of the documented benefits. The need for more systematic investment and a national approach is clear. This presentation will summarize the results of the study and describe our effort to develop a national program based on these results.

Jerry Johnston

Jerry Johnston is Geospatial Information Officer at the U.S. Department of the Interior. In this role, he leads DOI's efforts to coordinate and implement geospatial technology across the Department to meet a wide range of mission goals. This includes providing a vision for geospatial interoperability throughout the enterprise, as well as guidance and perspective on opportunities for adopting place-based approaches more broadly across Departmental lines of business. Prior to joining DOI in 2012, Johnston was with the Environmental Protection Agency, most recently serving as the Agency's Geospatial Information Officer. Prior to his work at EPA, he served as the Director of Midwest Technical Operations for Image Matters LLC, a small business focused on the development of geospatial semantics and interoperability solutions for a diverse set of customers. Additionally, Johnston was previously Executive Vice President of Pangaea Information Technologies, a provider of geospatial information management products and services to both public and private sector clients. Heholds a BS in Environmental Science from Michigan State University as well as MS and PhD degrees in Environmental Science from Indiana University, Bloomington, and serves as the Vice Chair of the National Geospatial Advisory Committee (NGAC).

Ride the Social Media (R) evolution

ASPRS and MAPPS are taking a ride on the social media revolution and we need YOU! Follow us and the Conference on Facebook and Twitter, check-in on Foursquare and download the MAPPS/ASPRS 2012 Specialty Conference Smartphone App!

@MAPPSorg
@ASPRSorg

#ASPRS12S and #MAPPS30

Networking Opportunity — Exhibitors' "Trick-or-Treat" Reception

Wednesday, October 31st, 5:00 pm to 6:30 pm
Location: Exhibit Hall, Grand Ballroom Salons F – J, Second Floor

Celebrate Halloween with us! No tricks - just treats! The MAPPS/ ASPRS 2012 Specialty Conference will be held over Halloween and what better way to enjoy yourself than with a Halloween themed Reception?

We encourage you to dress up in costume; come donned in your most frightening, cute, and original creations!

"Trick-or-Treat" your way through the exhibit hall. You will have time to visit with exhibitors, see new products, ask questions and pick-up goodies! Spooky themed treats and punch will be served. The FIRST 100 attendees through the doors will receive a FREE Trick-or-Treat Goodie Bag!

Don't forget to complete your **Exhibit Hall Passport Contest** game card by visiting the participating exhibitors exhibitors and receiving your stamp. Submit completed game cards to the ASPRS booth #107 or MAPPS booth #311. Game cards must be submitted by the end of the Trick-or-Treat Reception for your chance to win some great prizes. Be sure to attend the Breakfast with Exhibitors on Thursday, November 1st at 7:30 am for the prize drawings. Winners must be present to win.

Admission to this event is included with all registrations. Please note, due to insurance regulations children under the age of 13 are not permitted in the exhibit hall at any time. Anyone over the age of 13 will require a registration to enter the exhibit hall.

"Our customers literally don't want imagery from any other camera. That's why I fly UltraCam."

ULTRACAM EAGLE

In response to logistical challenges and dangerous conditions in Africa, the team required state-of-the-art imaging and high capacity digital storage combined with the personal attention of a knowledgeable support team. That's why Topocart chooses Microsoft UltraCam.

UltraCam's flexibility, precision and image quality has supported Mr. Arteiro's ambitions of geographic expansion from Brazil to Angola, Mozambique, Spain and the United States. With the ease and cost effectiveness of upgrades, Topocart stays on the leading edge of digital mapping technology while saving money by capturing more information in less time. Microsoft continues to assist the growing needs of businesses like Topocart with an innovation path that now includes the UltraCam Eagle, the latest technological advance, featuring an ultra-large image footprint and revolutionary enhancements for high-quality imagery at unprecedented efficiencies. For details, visit www.UltraCamEagle.com.

Microsoft

Thursday Conference Registration Desk Hours
7:00 AM to 11:00 AM — Conference Registration, Second Floor

Exhibit Hall & Posters Open
7:00 AM to 11:00 AM — Grand Ballroom Salons F-J, Second Floor

Networking Opportunities — Breakfast with Exhibitors & Exhibit Hall Passport Contest Prize Drawing

Thursday, November 1st, 7:00 AM to 8:00 AM
Location: Exhibit Hall, Grand Ballroom Salons F – J, Second Floor

Start your day off right and take this last opportunity to network, meet with the exhibitors and tour the exhibit hall. This is a perfect time to wrap up business and grab a bite to eat before heading to the final day of the conference. A light continental breakfast and coffee will be served.

Make sure you stay around until 7:30 am for the **Exhibit Hall Passport Contest Prize Drawing**! Multiple winners, great prizes, but you must be present to win. The prize drawing will take place in the Exhibit Hall and will begin at 7:30 am.

Admission to this event is included with all registrations.

Technical Sessions 8:00 AM to 9:30 AM

TS 25 - Mobile Mapping
Room: Meeting Room 6, Second Floor
Moderator: Brian Bailey, *Surveying Solutions, Inc.*

This session will cover Mobile Lidar Mapping: Challenges and hurdles to successful implementation and management of Mobile lidar projects.

High Accuracy Mapping Using Mobile Lidar, Measurement, Modeling and Entity Creation from Point Clouds
Dave Hart, *Continental Mapping Consultants, Inc.*

Control Options for Mobile Mapping
Brian Bailey, *Surveying Solutions, Inc.*

Extraction of Transmission and Distribution Powerline Models from LiDAR Data
Ted Knaak, *Certainty 3D, LLC*

Mobile Mapping of LAX Airport: Challenges and Solutions
Nickolas Fusco, *Photo Science, Inc.*

TS 26 - 3D GIS I
Room: Meeting Room 12, Third Floor
Moderator: Renee Brandt, *Esri*

Real-Time Visualization with Totalsight TM Flash Lidar
Eric Coppock, *Ball Aerospace*

Beyond Visualization: Enabling 3D Spatial Analysis of Vector Geometry
Tom Watson, *LSI*
Michael Martin

Create Realistic Perspectives with 3D
Morakot Pilouk, *Esri*
Nathan Shephard

A 3D Spatial Model for Surface and Subsurface Spatial Objects
Edward Duncan, *3D GIS Research Group*, *Johor Bahru,* Malaysia

TS 27 - Sensors and GIS Applications I
Room: Meeting Room 5, Second Floor
Moderator: Stewart Walker, *BAE Systems, Inc.*

Combining Processing Stages for Ultraspectral Image Glossy Compression
Rolando Herrero, *Northeastern University*
Vinay Ingle

Enhanced Radiometric Performance of Aerial Multispectral Digital Cameras
Mary Pagnutti, *Innovative Imaging & Research, John C. Stennis Space Center*
Robert Ryan

Addressing the Challenges of Efficient Imagery Acquisition
Timothy Leary, *VisionMap, LLC*
Erez Shor

An Implementation of Fully-Automated, Real-time Georegistration Video
Stewart Walker, *BAE Systems, LLC*
Reuben Settergren

Exhibit Hall Activities

Refreshment Break
9:30 AM to 9:45 AM
Grand Ballroom Salons F-J, Second Floor

Special Topics 8:00 AM to 9:30 AM

SS 28 - 3D Elevation Program (3DEP) and National Enhanced Elevation Assessment (NEEA)

Room: Grand Ballroom Salons C & D, Second Floor
Moderator: Dave Maune, *Dewberry*

The USGS will be implementing a 3D Elevation Program (3DEP) in response to national requirements identified in the National Enhanced Elevation Assessment (NEEA). The 3DEP goal is to collect medium-high resolution Lidar data over the US, except for IfSAR over Alaska, over an 8-year collection period. Initial implementation steps involve transitioning the current program to larger data collection projects at a higher data quality and program planning for infrastructure, products and delivery capabilities. The fully implemented program is expected to provide over $1B in benefits annually. The program relies on an increasing number of Federal, State and other data acquisition partners. This session will provide details and discussion on the completed NEEA assessment and planning activities underway to develop and fund the new program including a governance model and acquisition strategy for ensuring that partner requirements and program goals are clear and successfully accomplished.

Panelists:
Larry Sugarbaker, *U.S. Geological Survey*
Dave Maune, *Dewberry*

SS 29 - Cloud Data Management

Room: Grand Ballroom Salons A & B, Second Floor
Moderator: Brad Adams, *Woolpert*

Massive datasets acquired in GeoSpatial projects present interesting challenges where rapid dissemination or democratization of information is often the goal. Recovery efforts with regard to natural disasters such as the Earthquake in Japan, or The Deep Water Horizon Oil spill in the Gulf benefit from web based/cloud based services. Large transportation design projects as well with work being performed in many offices with multiple stakeholders working on data as it arrives can be better managed via the cloud. This session will cover projects and/or best practices in meeting the demands of projects in the cloud.

Web Hosting Architectures and Strategies in the Cloud
Pierre le Roux, *AeroMetric*

Lidar Data Management in the Cloud
Paul DiGiacobbe, *Incubation at HNTB*

Distributed Processing in the Cloud
Lewis Graham, *GeoCue*

Technical Sessions 9:45 AM to 11:15 AM

TS 30 - 3D GIS II

Room: Meeting Room 12, Third Floor
Moderator: Patrick Wallis, *Esri*

Using 3D GIS to Sustain the Built Environment
Patrick Wallis, *Esri*
Eric Wittner

A Web-based 3D Digital Atlas of the Great Smoky Mountains National Park
Chris Strother, *University of GA CRMS*
Marguerite Madden and Thomas Jordan

Information Clouds from Aerial Imagery
Belai Beshah, *North West Geomatics*, Canada
Stephan Gehrke, Robert Uebbing, and John Welter

Working with Lidar in a GIS Environment
Cody Benkelman, *Esri*
Steve Snow

TS 31 - Sensors and GIS Applications II

Room: Meeting Room 5, Second Floor
Moderator: Scott Perkins, *T-Kartor USA*

Asset Inventory – City of Indianapolis
Eric Andelin, *Woolpert*

GIS Applications for Automated Map Production Tailored to Fit User Needs for NYC BikeShare
Scott Perkins, *T-Kartor USA*

Low Land Wetland Mapping Based on SAR Optical Images
Gang Hong, York University

Fusing Terrain Elevations into Sensor Imagery
Roger Brown, *USACE*

Exhibit Hall Activities

Refreshment Break

11:15 AM to 11:30 AM
Grand Ballroom Salons F-J, Second Floor

Special Topic 9:45 AM to 11:15 AM

SS 32 - Unmanned Aerial Vehicles

Room: Grand Ballroom Salons C & D, Second Floor
Moderator: Mike Tully, *Aerial Services, Inc.*

Trimble Navigation Becomes a Force in the UAV Market
George Southard, *Trimble Navigation*

Other Presenters
Mike Tully, *Aerial Services, Inc*
Pandy Willis, *FAA*
Jeff Lovin, *Woolpert*

Closing/General Session 4

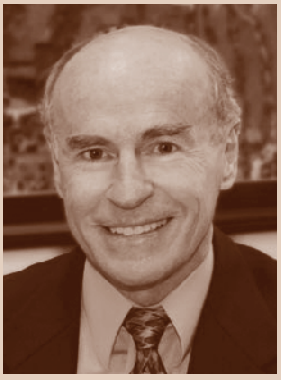
Conference Wrap-up "Where Are We Going?"

Lewis Graham, *GeoCue, Inc.*
Jeff Lovin, *Woolpert, Inc.*
Terry Keating, *AeroMetric*
Brian Raber, *Merrick & Company*

Thursday, November 1st, 11:30 am to 12:30 pm
Location: Grand Ballroom Salon E, Second Floor

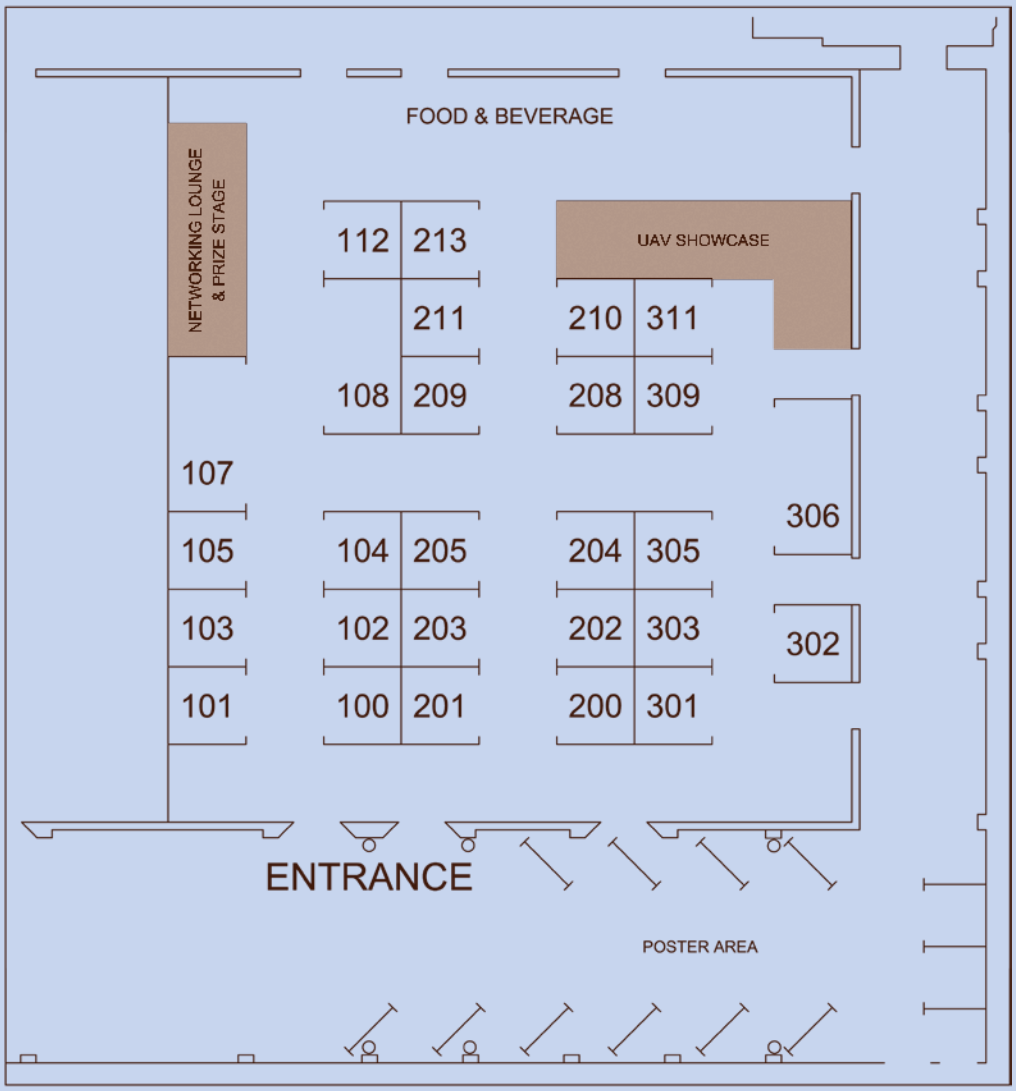
This conference wrap-up discussion features four industry leading experts. Gain a perspective on where the geospatial industry is headed and how technology and workforce needs are expected to evolve with the changing times.

Lewis Graham is the President and Chief Technical Officer of GeoCue Corporation, a company whose focus is geospatial workflow management, particularly for lidar data processing. Prior to founding GeoCue, Lewis was the founding CEO of Z/I Imaging Corporation, a joint venture company of Carl Zeiss and Intergraph Corporation. Graham is an active member of ASPRS where he currently serves as the director of the Lidar Division. A member of the ASTM E57 data standards committee and a member of the Transportation Research Board and currently serves as a panel member of National Cooperative Highway Research Program (NCHRP) 15-44.



Dr. Terry Keating serves as AeroMetric's Senior Vice President and Chief Technology Officer. As CTO, Keating coordinates process improvement and standardization of new mapping technologies and sensors. In addition, he manages the Integrated Geospatial Solutions (IGS) Division. The IGS team web-enables the maps, images and associated client location-based information and provides consulting, web hosting, geospatial mash-ups, and other Oracle and ESRI integration services. He also serves as AeroMetric's Quality Assurance/Quality Control Officer. In his earlier career, Keating owned Kork Systems (photogrammetric software) and for three years managed Z/I Imaging.

Jeff Lovin is Vice President and Managing Principal of the Photogrammetry and Remote Sensing Division of Woolpert, Inc. Lovin is responsible for business operations of the division including staffing and management development, business planning and development, strategic initiatives and partnerships, program management, quality assurance, and overall profit and loss accountability. Lovin has spent his entire career at Woolpert, where he has developed a diverse technical background in flight operations, surveying, and photogrammetry. Lovin became a Certified Photogrammetrist in 2003 and is also a licensed Photogrammetric Surveyor in the state of South Carolina.



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***Participants in the Exhibit Hall Passport Contest. Be sure to stop by their booth for your Passport Stamp!**

EXHIBIT HALL PASSPORT CONTEST

Don't forget to play the **Exhibit Hall Passport Contest**, a NEW exhibit hall game! Receive your Passport game card at registration and then visit each booth listed on the Passport. Talk with the exhibitor, view demonstrations and you will be rewarded with great information and a stamp in their Passport square.

Once you have filled ALL the squares on your passport, turn your completed game card into the ASPRS booth #107 or MAPPS booth #311 by 6:30 pm on Wednesday, October 31st and be entered in the prize drawing!

Aero 309

Dunedin, New Zealand
http://areo.co.nz

Areo is a New Zealand company founded in 2006 to commercialize photorealistic rendering research begun in 2000. We have an experienced research, production, hardware engineering and project management team who have developed photogrammetric tools for use in many industries. Having started out as a gaming developer, Areo have produced multiple award winning computer games by recreating real life (3D) environments. It is the accuracy of these "real-life" environments that has seen the company develop photogrammetry software for industry, enabling surveyors, miners, architects, engineers, and planners to understand their subject in greater detail. Located in Dunedin's Warehouse Precinct, Areo sits alongside a number of hi- tech companies developing 3D tools for use in animation/visualization and TV/Film. Areo is a privately held company in Dunedin, New Zealand.

Applanix Corp. 204

Richmond Hill, Ontario, L4B 3B3
www.applanix.com, 905-709-4600, 905-709-6027

Applanix, a wholly owned subsidiary of Trimble, develops, manufactures, sells and supports advanced products and scalable solutions that maximize productivity through Mobile Mapping and Positioning. Whether it be precise position and orientation for mapping the seafloor, georeferencing of a LIDAR point cloud, real-time guidance of robotic vehicles, or a complete airborne mapping solution for generating directly georeferenced orthophotos, Applanix has what you need. Established in 1991, Applanix strives to support customers around the world with exceptional service, anywhere at anytime.

ASPRS 107

Bethesda, Maryland 20814
www.asprs.org, 301-493-0290, 301-490-0208 (fax)

Come visit the ASPRS Bookstore to see ASPRS' new technical manual, the *Manual of Airborne Topographic Lidar*. The Manual's editor, Michael S. Renslow will be available to sign your copy.

ASPRS staff will be on hand to answer questions about membership, certification, and the awards and scholarship program. Ask about our upcoming conferences. Don't forget to pick-up your complimentary copy of *PE&RS* and enter our drawing for free copy of our two newest books.

BAE 101

San Diego, California 92128
www.baesystems/gxp, 800-316-9643

BAE Systems, well known for its precision photogrammetry and geospatial production tools, develops software to address the need for multi-sensor image exploitation, and higher productivity. SOCET GXP v4.0 includes tools for terrain registration, comparison and volumetrics, such as: automated 3-D site and city modeling, planimetric feature extraction, 3-D line of sight analysis and visualization, and LiDAR terrain visualization. In addition, our newest product offering, GXP Xplorer, introduces a revolutionary way to access, catalog, and share data.

Cardinal Systems, LLC 200
Flagler Beach, Florida 32136
www.cardinalsystems.net, 386-439-2525, 386-439-0259

Cardinal Systems provides mapping software solutions for the handling of digital spatial data and is the provider of the Vr Mapping software suite. Offering the modules VrOne, VrTwo, VrLiDAR, VrOrtho, VrAirTrig, VrMosaic, VrBalance, VrAdjust, VrVolumes and VrLite we are continually developing fresh new programs for the geospatial community in which Vr is fast becoming the standard. To learn how to revolutionize your data collection and editing methods please visit us at Booth 200.

Certainty 3D 104
Orlando, Florida 32819
www.certainty3d.com, 407-248-0160, 407-641-9062 (fax)

Certainty 3D offers LiDAR data processing solutions for Riegl, Leica, Optech, Z&F, Faro and other systems. Certainty 3D's primary focus is the extraction of high quality CAD deliverables from point cloud and calibrated image data. Certainty 3D also offers freeware applications for LiDAR project planning, scheduling and cost estimation.

Certainty 3D's primary product is TopoDOT, a CAD application used to deliver value from LiDAR system data.

Digital Aerial Solutions, LLC 213
Tampa, Florida 33610
www.digitalaerial.com, 813-628-0788, 813-628-0777 (fax)

Digital Aerial Solutions (DAS) is a Veteran Owned Small Business (VOSB), located in Tampa Florida. DAS was established January 2003 and owns and operates the latest advanced digital imagery and LiDAR acquisition and processing technologies commercially available in today's geospatial industry. DAS is licensed by the State of Florida's Board of Professional Surveyors and Mappers (LB#7289) to provide precision digital imagery products and services.

Dynamic Aviation 209
Bridgewater, Virginia 22812
www.dynamicaviation.com, 540-828-6070

Dynamic Aviation specializes in providing turbine powered aircraft and aviation infrastructure to organizations with exacting data needs, but lacking aviation resources. We offer versatile, superior aerial platforms into which existing and emerging technologies can be installed to acquire data of all types. Our aerial platforms can be deployed to obtain LiDAR and multi/hyperspectral data. They may be used for aerial photography, geophysical survey, and air sampling; as well as for aerial and maritime surveillance.

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Redlands, California 92373
www.esri.com, 909-793-2853

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Boulder, Colorado 80301
www.exelisvis.com, 303-786-9900, 303-786-9909 (fax)

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GeoCue Corporation 208
Madison, AL 35758
www.geocue.com, 256-461-8289

GeoCue is a software development and consulting services company that creates tools and techniques to improve geospatially organized processes. The company offers GeoCue, a geospatial process management product that allows production shops to work on large multi-technician projects with significant improvements in return on investment.

Hyatt Survey Services 302
Bradenton, Florida 34212
www.hyatt-survey.com, 941-748-4693, 941-744-1643 (fax)

Hyatt Survey is a full service firm providing boundary, topographic, hydrographic, construction and GPS surveying services throughout the state of Florida. A certified Woman-Owned Small Business Entity (WBE), Hyatt Survey Services, Inc. is located in Bradenton, Florida. Hyatt Survey provides professional surveying and mapping services to a multitude of federal, state and local government entities as well as the private commercial and residential sector.

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Madison, Alabama 35758
www.intergraph.com, 800-246-4193

Intergraph is the leading global provider of engineering and geospatial software that enables customers to visualize complex data. Businesses and governments in more than 60 countries rely on Intergraph's industry-specific software to organize vast amounts of data to make processes and infrastructure better, safer and smarter.

Leica Geosystems Inc. **203**
Norcross, Georgia 30092
www.leica-geosystems.us, 800-367-9453

Leica Geosystems continues to grow the most comprehensive portfolio of airborne imaging solutions in the industry and remains the only manufacturer to provide complete solutions from one supplier including state-of-the-art sensor platform, end-to-end workflow and fully integrated peripherals.

LiDAR News - Spatial Media **210**
Frederick, Maryland 21701
www.lidarnews.com, 301- 620-0784, 301-695-1538 (fax)

LiDAR News, a Spatial Media publication, promotes the adoption of LiDAR and 3D imaging technology. Dr. Gene Roe leads an expert editorial team, bringing insights and commentary to readers via websites, blogs, eNewsletters & the print edition of LiDAR Magazine. www.lidarnews.com

Spatial Media (Frederick, Maryland) is an advanced internet media provider, operating websites, eNewsletters and interactive magazines. Publications include The American Surveyor (www.amerisurv.com), GISuser.com, LBSzone.com, Machine Control Magazine (www.machinecontrolonline.com) and others. Visit www.spatialmedia.us

LizardTech **100**
Seattle, Washington 98104
www.lizardtech.com, 206-652-5211, 206-652-0880 (fax)

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MAPPS **311**
Reston, Virginia 20190
www.mapps.org, 703-787-6996, 703-787-7550 (fax)

Formed in 1982, MAPPS is the only national association exclusively comprised of private firms engaged in satellite and airborne remote sensing, surveying, photogrammetry, aerial photography, LIDAR, scanning, hydrography, bathymetry, aerial and satellite image processing, GPS, and GIS data collection and conversion services. MAPPS includes companies that provide hardware, software, products and services to the geospatial profession. MAPPS provides its 160+ member firms opportunities for developing business-to-business relationships, information sharing, public policy advocacy and market growth.

National Geospatial Intelligence Agency (NGA) **306**
Springfield, VA 22150
www1.nga.mil

The National Geospatial-Intelligence Agency is the nation's primary source of geospatial intelligence, or GEOINT. Both a Department of Defense combat support agency and a member of the U.S. Intelligence Community, NGA creates GEOINT using remotely sensed data, physical geography, land cover and cultural data collected by many sources to help its mission partners visualize and understand the world. NGA provides GEOINT data and analytical services to support safety of navigation on land, air and sea.

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West Henrietta, New York 14586
www.optech.com, 585-427-8310, 585-427-8422

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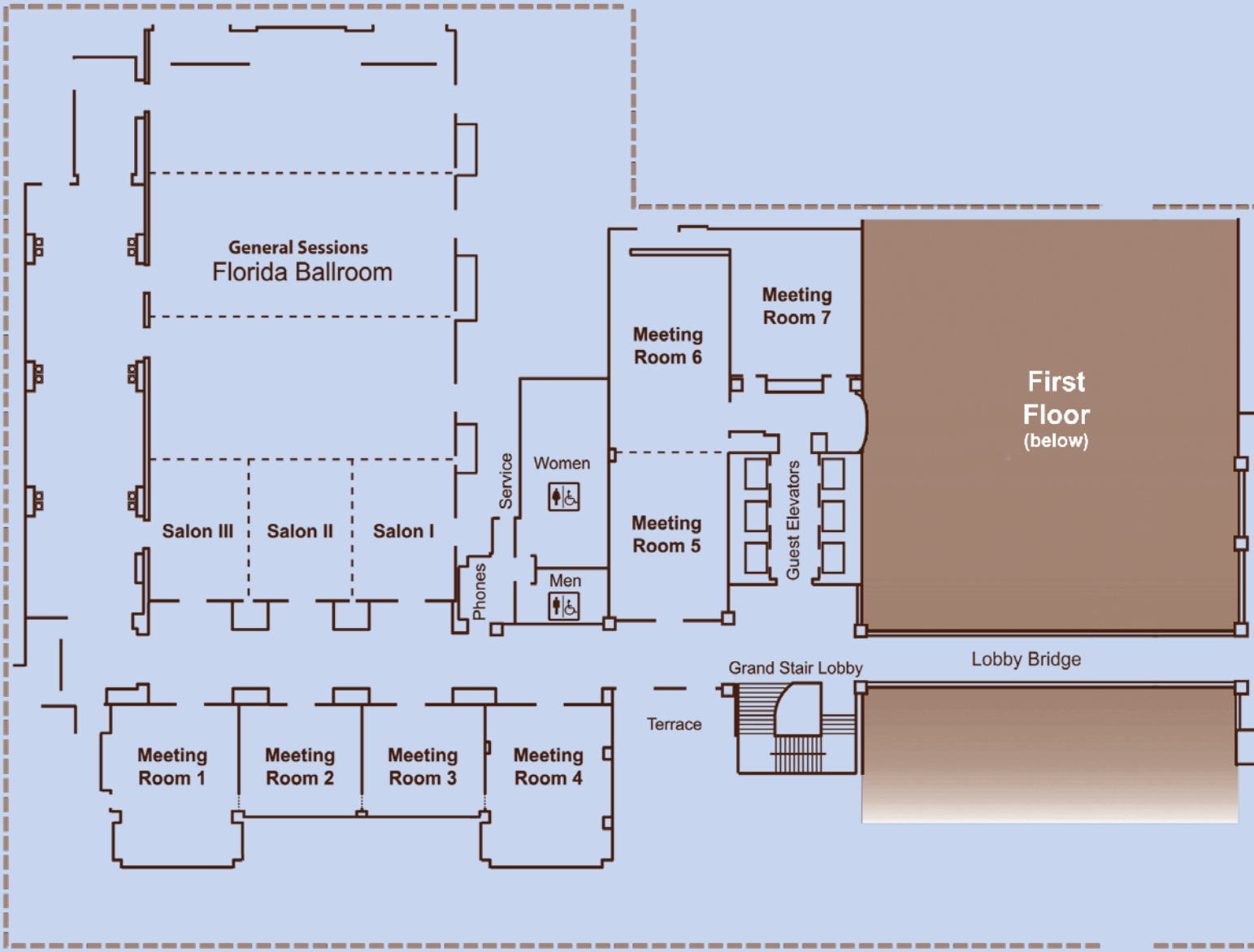
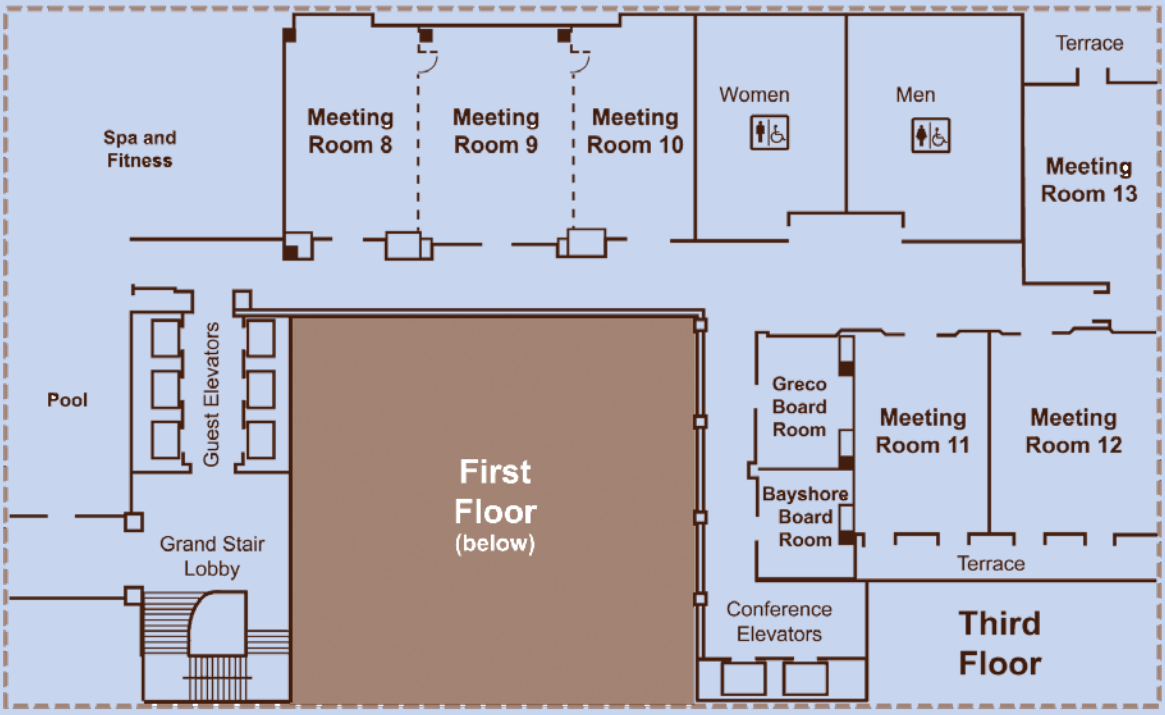
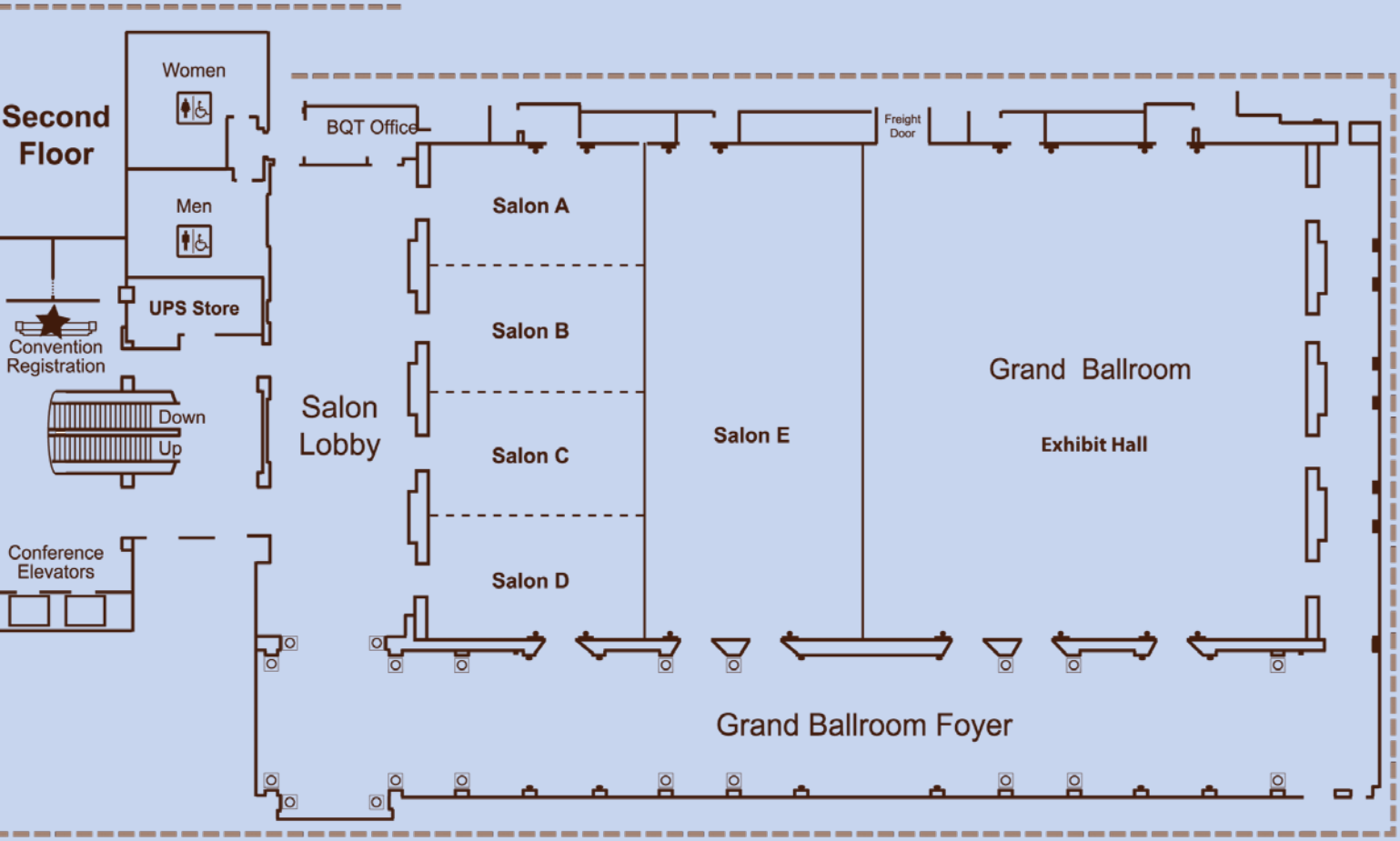
Second Floor



Third Floor


Spa and Fitness
Meeting Room 8
Meeting Room 9
Meeting Room 10
Women
Men
Terrace
Meeting Room 13
Pool
Guest Elevators
First Floor (below)
Grand Stair Lobby
Greco Board Room
Meeting Room 11
Meeting Room 12
Bayshore Board Room
Terrace
Conference Elevators
Third Floor


Second Floor
Women
Men
UPS Store
Convention Registration
Down
Up
Conference Elevators
BQT Office
Freight Door
Salon A
Salon B
Salon C
Salon D
Salon Lobby
Salon E
Grand Ballroom
Exhibit Hall
Grand Ballroom Foyer

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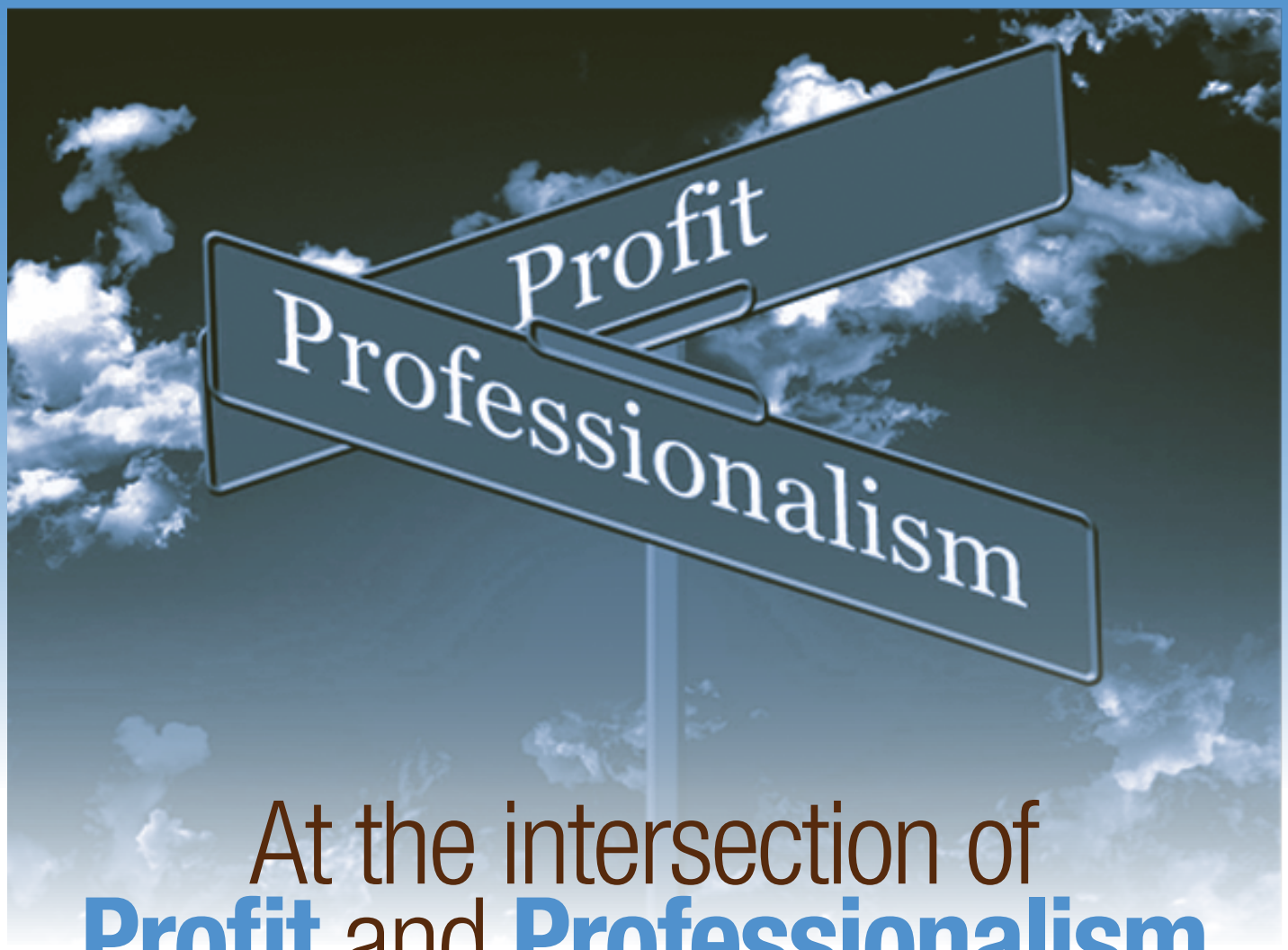

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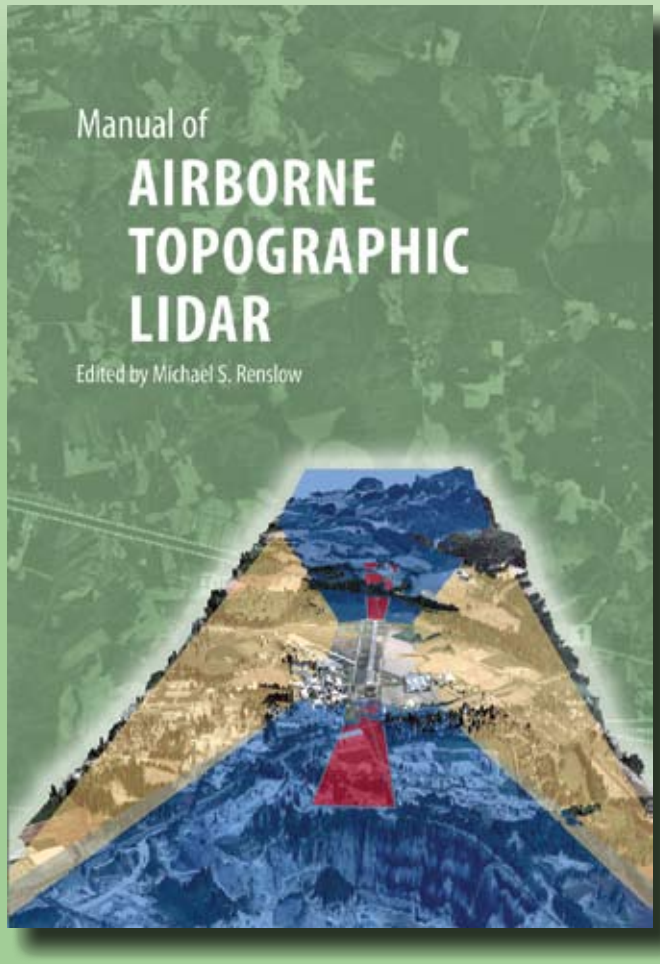
Manual of Airborne Topographic Lidar

Edited by Michael S. Renslow



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