

FINAL PROGRAM



UESI 2018 Surveying & Geomatics Conference

Pomona, California | April 22-24



CAL POLY POMONA

Surveying: A Foundation to Sustainable Infrastructure Development



www.surveyingconference.org

Schedule at a Glance

Contents

Schedule at a Glance.....	2
A Welcome from the Conference Chair	3
Conference Program Committee.....	3
Pre-Conference Workshops.....	4
Program Highlights.....	5-6
Technical Program	7-8
Sponsors & Exhibitors.....	9
Registration, Hotel, & Travel Information	10
General Information	11

Sunday, April 22

8:00 a.m. – 2:00 p.m.
 8:00 a.m. – 5:00 p.m.
 8:00 a.m. – 5:00 p.m.

Registration
 Committee Meetings
 Pre-Conference Workshops

Monday, April 23

7:00 a.m. – 5:00 p.m.
 8:00 a.m. – 9:05 a.m.
 9:15 a.m. – 10:10 a.m.
 10:15 a.m. – 6:30 p.m.
 10:15 a.m. – 10:55 a.m.
 11:00 a.m. – 11:55 a.m.
 12:00 p.m. – 1:40 p.m.
 1:45 p.m. – 2:40 p.m.
 2:45 p.m. – 3:25 p.m.
 3:30 p.m. – 4:50 p.m.
 5:15 p.m. – 6:30 p.m.
 6:45 p.m. – 8:30 p.m.

Registration
 Open Remarks Keynote Speaker
 Concurrent Technical Sessions I
 Exhibit Hours
 Networking Break in Exhibit Hall
 Concurrent Technical Sessions II
 Lunch & Keynote Speaker
 Concurrent Technical Sessions III
 Networking Break with Exhibitors
 Concurrent Technical Sessions IV
 Reception with Exhibitors
 Optional: Surprise On-Campus Event

Tuesday, April 24

7:00 a.m. – 10:00 a.m.
 7:30 a.m. – 8:30 a.m.
 8:30 a.m. – 9:45 a.m.
 9:50 a.m. – 11:00 a.m.
 9:50 a.m. – 10:35 a.m.
 10:40 a.m. – 12:05 p.m.
 12:10 p.m. – 1:40 p.m.
 1:40 p.m. – 2:30 p.m.
 2:35 p.m. – 3:25 p.m.
 3:25 p.m. – 3:40 p.m.
 3:45 p.m. – 4:30 p.m.

Registration
 Continental Breakfast
 Concurrent Technical Sessions V
 Exhibit Hours
 Networking Break with Exhibitors
 Concurrent Technical Sessions VI
 Lunch & Keynote Speakers
 ASCE Surveying and Mapping Award
 Concurrent Technical Sessions VII
 Afternoon Break
 The Future of Surveying / Closing Session



Welcome to 2018 Surveying & Geomatics Conference

Welcome from the Conference Chairs

It is with great pleasure that we welcome you to Cal Poly Pomona for the Utility Engineering and Surveying Institute 2018 Surveying and Geomatics Conference. In the spirit of the educational objectives of our geospatial engineering program, it is our goal to bring surveyors and engineers together. This conference will be a rich venue for discussions in a wide range of subjects linking surveying and engineering, specifically in applications to sustainable infrastructure development. The program offers two pre-conference workshops, and over 50 technical paper presentations split in three parallel sessions. Four keynote speaker sessions will address surveying in land development projects, licensing, natural disasters, and the future of surveying.

We expect that your active participation in the discussions for each presentation will contribute to shape and advance how surveying and engineering interact to solve infrastructure problems with impact to societal and economical problems.

The networking opportunities will extend to experts from all over the country and exhibitors, with a reception on Monday evening. This conference will sure be a great avenue to connect with old and new friends from very diverse professional backgrounds.

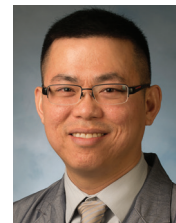
The ASCE Surveying and Mapping Award, established in 1969, has in the past been awarded annually in other venues. The 2018 Award will be bestowed on the second day of the conference.

Finally, we invite you to come enjoy spring in Southern California, along with all the prospects that the region has to offer. Cal Poly Pomona campus is an effervescent haven on the edge of Los Angeles, Orange and San Bernardino counties, with very close proximity to Riverside county. Participants will be able to engage in a bubbling and very diverse student body, as well as take advantage of the nearby tourist attractions.

We look forward to meeting you in April 2018!



Francelina Neto, Ph.D., PLS, M.ASCE
Cal Poly Pomona



Allan Ng, PLS, M.ASCE
Cal Poly Pomona

Conference Co-Chairs

Francelina Neto, Ph.D., PLS, M.ASCE

Cal Poly Pomona

Allan Ng, PLS, M.ASCE

Cal Poly Pomona

Track Chairs

David Garber, P.E., PLS, F.ASCE

Garber-Chilton Engineers & Land Surveyors Inc

Tom Pilarski, PLS, M.ASCE

Psomas

J.P. Mohsen, Ph.D., F.ASCE

University of Louisville

Education Committee

Carol Morman, P.E., PLS, M.ASCE, Chair

Cincinnati State Technical and Community College

Joseph Paiva, Ph.D, P.E., PLS, M.ASCE

Cadastral Consulting, LLC

Omar Mora, Ph.D, Aff. M.ASCE

Cal Poly Pomona

Marlee Walton, P.E., PLS, M.ASCE

Iowa State University

Technical Program Chair

Ahmed Elaksher, Ph.D, PLS, Aff. M.ASCE

Cal Poly Pomona

Journal of Surveying Engineering, Editor

Michael Olsen, Ph.D, Aff. M.ASCE

Oregon State University

AAGS Liaisons

Daniel Gillins, Ph.D, PLS, M.ASCE

NOAA/National Geodetic Survey

Michael Dennis, RLS, P.E., M.ASCE

NOAA/NOS/National Geodetic Survey

UESI Board of Governors Liaison

David Totman, Aff. M.ASCE

President Elect, UESI

ASCE Sponsorship and Exhibit Sales

Sean Scully

Manager, Sponsorship and Exhibit Sales

Utility Engineering & Surveying Institute (UESI) of ASCE

James H. Anspach, PG (R), Dist. M.ASCE

President, UESI

John Segna, P.E., F.ASCE

Director, UESI

Susan Reid, MBA, Aff.M.ASCE

Manager, UESI

Cristina Charron

Manager, Conferences & Meetings



PreConference Workshops/Committee Meetings

Sunday, April 22

Ground Truth for the Future: Low Distortion Projections and the State Plane Coordinate System of 2022

8:00 a.m. – 12:00 p.m., **URSA Major A**

Map projections are distorted — it is a Fact of Life. The crux of the problem is linear distortion: the difference between true horizontal “ground” distance and its projected representation. This difference often exceeds 1 foot per mile (20 cm/km) for State Plane and other existing published coordinate systems. Such linear distortion can be problematic for various geospatial products and services, including engineering plans, survey plats, construction staking, as-built surveys, and facilities management. Linear distortion cannot be eliminated, but it can be minimized using low distortion projections (LDPs) — although some situations can prove challenging for designing LDPs that perform satisfactorily. This workshop shows how LDPs can be designed to achieve optimal performance even over relatively large areas with variable topographic relief. Importantly, the design procedures are based on the same conformal map projection types used for the new State Plane Coordinate System of 2022 (SPCS2022): Lambert Conformal Conic, Transverse Mercator, and Oblique Mercator. The workshop also provides an overview of the history of State Plane and current plans for development of SPCS2022, including proposed options for states and territories to adopt LDPs as part of SPCS2022. Beyond consistency with SPCS2022, another benefit of using those existing map projection types is that they are compatible with engineering, surveying, and GIS data. Because they can be rigorously georeferenced, LDPs can be used directly to represent conditions “at ground” in GIS and CAD platforms. A resulting notable benefit is that LDP datasets can coexist with other geospatial data without resorting to approximate “best-fit” transformations or other “rubber-sheeting” acts of desperation.

Primary Objectives

- Explain map projection concepts to enable evaluation of projection types and characteristics that are most suitable for surveying and engineering applications
- Give overview of the State Plane Coordinate System of 2022 (SPCS2022), including the history State Plane, plans for SPCS2022, and the role of LDPs in SPCS2022
- Provide detailed methods for designing LDPs that optimally minimize linear distortion
- Describe characteristics of various existing methods for minimizing map projection distortion and how to evaluate their performance
- Show how to make use of existing LDPs in their software and workflows
- Discuss documenting LDPs to facilitate data transferability

Workshop Lead & Speaker:

Michael Dennis, RLS, PE, M.ASCE, NOAA/NOS/National Geodetic Survey

Registration: \$100

Sign Up for Both Workshops and Save

Registration bundle rate for morning and afternoon workshops: \$150 (listed as full day pricing in Event Brite).

Continental Breakfast and Lunch will be offered to workshop attendees.

ASCE Standard 38-02: Substructure Utility Location: The Design, the Engineer, and the Surveyor

1:00 – 5:00 p.m., **URSA Major A**

ASCE Standard 38 is a guideline for the collection and depiction of existing subsurface utility data. The collection and depiction or the lack of collecting and depicting of subsurface utility data can positively or negatively affect the design of a project. In this presentation, we will have a brief overview of ASCE Standard 38-02 and look at substructure utility locating from 4 perspectives. In the overview of ASCE Standard 38-02 we will discuss how following this guideline can make it easier for the engineer, the surveyor and the subsurface utility detector to locate, mark out, map and design a project. By walking through a project, we will present the design perspective from the engineer and how the location of subsurface utilities can assist them in their design. We will discuss the Land Surveyors perspective on how the locating of subsurface utilities can easily be done in the mapping phase. We will also look at the substructure utility locator's perspective on the utility locating tools that are available and the accuracies one can expect from those tools. We also will discuss the perspective of the licensing board for the State of California and how they view substructure location and mapping. The intent of this presentation would be to show how the locating of utilities up front in the mapping phase of a project, you can reduce RFI's in the construction phase of a project.

Speakers:

Corey Biddle, M. UESI

Richard Moore, PLS

David Moritz, PLS

Tom Pilarski, PLS, M.ASCE, P_{somas}

Anissa Voyiatis, P.E.

Matthew Wolf

Registration: \$100

Committee Meetings

Sunday, April 22

UESI Surveying and Geomatics Education Committee Meeting

8:00 a.m. – 12:00 p.m., **Lyra Room (lower level)**

UESI Surveying and Geomatics ExCom Meeting

1:00 p.m. – 5:00 p.m., **Lyra Room**

AAGS Member Meeting

1:00 p.m. pm - 3:00 p.m., **Perseus Room (upper level)**

Monday, April 23

IRWA 16th Annual Mapping Competition Judging Meeting

9:00 a.m. – 12:00 p.m., **Lyra Room**

UESI Surveying and Geomatics Liaison Committee Meeting

2:00 p.m. – 4:00 p.m., **Lyra Room**

Monday, April 23

Opening Remarks & Keynote Speaker

8:00 a.m. – 9:05 a.m., URSA Major

OPENING REMARKS

Mark Woodson, P.E., L.S., D,WRE, ENV SP, F.ASCE, ASCE 2016, President, Principal, Woodson Engineering and Surveying

KEYNOTE SPEAKER

The Benefit of Surveying Knowledge in Land Development Projects

This presentation will focus on how having a career in civil engineering can be self-rewarding and financially lucrative. However, given changes in conditions of the economy, the industry can be cyclical in nature. With our fast-changing world in science and technology, it is important to remain open, flexible, and willing to re-tool your skills in order to remain competitive in the future.



Fabrizio Pachano, P.E., PLS, Senior Civil Engineer, LADPWV

Fabrizio Pachano, PE, LS, is a senior civil engineer with the Los Angeles County Department of Public Works. Pachano has over 30 years of civil engineering and land surveying experience in both the private and public sectors. Pachano is a registered civil engineer, a licensed land surveyor, and holds a general contractor's

license, all in the State of California. Pachano has a Bachelor of Science in Civil Engineering from Cal Poly Pomona and a Master's in Business Administration from Cal State Los Angeles with an emphasis in finance.

Lunch & Keynote Speaker

12:00 p.m. – 1:40 p.m., URSA Major

OPENING REMARKS

Engineering the Future

Norma Jean Mattei, Ph.D., P.E., F.SEI, F.ASCE, ASCE 2017 President
With an expanding global population, we must take care of aging infrastructure to meet current needs, and at the same time, move it into the future with new technologies and capabilities that will enable us to combat the problems of tomorrow. This presentation will share how we need to prepare future civil engineers to meet these challenges.

KEYNOTE SPEAKER

Extreme Natural Event Research Applications of Terrestrial Laser Scanning (TLS) and Structure-From-Motion (SFM) Technologies

Geosystems civil engineering is an empirically-driven field that relies heavily on observation to validate analytical models used to predict ground failure. Toward that objective, natural disaster rapid-response research has benefited greatly from the advent of terrestrial LIDAR scanning technology (TLS) and Structure-From-Motion (SFM) interpretation of imagery collected using unmanned aerial systems, both revolutionary tools for characterizing fine-scale changes in topography. For civil engineering research, TLS and SFM have been particularly useful for characterizing the dimensions of failures and for monitoring subtle deformations through time. This talk will present examples of the use of TLS and SFM in extreme event investigations of damage from earthquakes and hurricanes, and an evaluation of the accuracy, bias, and dispersion of TLS and SFM data under controlled experimental conditions. Field applications of TLS and SFM are presented for damage visualization and analysis of recent events including 2016 Kumamoto

earthquakes, the 2016 central Italy Amatrice and Norcia earthquakes, and damage to Guajataca dam during the 2017 Hurricane Maria event. Detailed understanding of the ground surface morphology allows for better numerical modeling of potential failure modes, deformation patterns, and morphologies. Finally, TLS and SFM allow for the permanent archiving of 3-D terrain models.



Robert Kayen, Ph.D., P.E., M. ASCE,

Civil & Environmental Engineering, Industry Faculty, UCLA; Senior Scientist & Research Civil Engineer, USGS

Robert Kayen is a civil engineer, geologist, and professor of civil engineering and environmental engineering at the University of California, Los Angeles, Industry Faculty, and senior scientist at the United States Geological Survey. He is a leading international expert in the fields of earthquake

engineering, soil liquefaction, and ground failure. Kayen's research focuses on geotechnical engineering, engineering characterization of natural hazards and extreme events, and earth science aspects of civil engineering. His works have been applied in earthquake engineering design of building foundations, bridge abutments, and lifeline and environmental systems.

Reception with Exhibitors

5:15 p.m. – 6:30 p.m., URSA Minor

This event will begin with a message to all attendees from the Conference Chairs:

Francelina Neto, Ph.D, PLS, M.ASCE and

Allan Ng, PLS, M.ASCE, Cal Poly Pomona

Be among the first to see innovations in the industry by attending the reception with your exhibitors. Join colleagues and friends in the exhibit area for this opportunity to network and make valuable future contacts. Visit the exhibits and discuss solutions to the challenges facing you in your daily life.

Tuesday, April 24

Continental Breakfast

7:30 a.m. - 8:30 a.m., URSA Major

Message from CPP CE Department

Xudong Jia, Ph.D., P.E., Chair and Professor, Civil Engineering Department, Cal Poly Pomona

Xudong Jia will address those present with a message from the CPP CE Department.

Lunch & Keynote Speakers

12:10 p.m. – 1:40 p.m., URSA Major

OPENING REMARKS

David Totman, A.M.ASCE, UESI President-elect, Director of Asset Management, Innovyze

KEYNOTE SPEAKERS

Collection and Depiction of Existing Subsurface Utility Data – Do I need a license for that?

This presentation will explore national guidelines associated with people and firms performing the collection and depiction of existing subsurface utility data and will emphasize the ASCE C-1 38-02, Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data and how that compares to the NCEES Model Law and Model Rules for engineering and surveying. Subsurface Utility Engineering (SUE) provides valuable information upon which important future engineering design

Program Highlights *(continued)*

Tuesday, April 24 *(continued)*

Lunch & Keynote Speakers *(continued)*

decisions are formulated. Highlights of the presentation include the requirements that practitioners of SUE should comply with at national, state and professional society levels. Paramount to all SUE services is protection of the public. We will discuss a professional's standard of care, level of responsibility for each step of the work, and the challenges newly faced with anticipated deregulation of occupational licensing around the country.



Richard Moore, PLS, Executive Officer of California BPELSG

After working in the land surveying profession for more than 30 years, Ric Moore began working at BPELSG in 2007 when he contracted as the Land Surveyor Consultant to what was then BPELS. In 2009, he joined staff by assuming the newly formed Senior Registrar Land Surveyor position. After managing the

licensing examination operations of the Board, Moore was appointed by the Board to be the BPELSG Executive Officer in July 2011.



Patrick Tami, PLS, President, NCEES; Principal and Office Survey Operations Manager, R.E.Y. Engineers, Inc.

Pat Tami, a Professional Land Surveyor for over 30 years, is the 2017-2018 President of the National Council of Examiners for Engineering and Surveying (NCEES). Tami is a nationally recognized expert in land surveying laws, regulations, and standards. He was appointed three times by California Governors

to the California Board for Professional Engineers, Land Surveyors and Geologist, serving from 2006 to 2016.

2018 ASCE Surveying and Mapping Award

1:40 p.m. – 2:30 p.m., **URSA Major**

Message from UESI Surveying and Geomatics Division

Daniel Gillins, Ph.D., PLS, M.ASCE, UESI Surveying and Geomatics Division Committee Chair, Geodesist, NGS, NOAA

Daniel Gillins will address the audience with a message on behalf of the Surveying and Geomatics Division and will introduce our honoree.

Established in October 1969, the award is made annually to an individual who has made a definite contribution during the year to the advancement of surveying and mapping either in teaching, writing, research, planning, design, construction or management, these contributions being made in the form of papers or other written presentations, or in some instances through notable performance, long years of service, or specific actions which have served to advance surveying and mapping.

Award Recipient:

Tomás Soler, Ph.D., M.ASCE, Chief Technical Officer, Spatial Reference System Division, NGS, NOAA

Tomás Soler is recognized for his lengthy service, contributions in writing and research, and his service in ASCE towards advancing surveying and mapping. He recently retired after 39 years of service as a geodesist in the United States' National

Geodetic Survey (NGS). During his tenure he served in several key

offices from applied basic research to supervision. He witnessed and contributed to many technological advancements, and he published over 125 technical papers on a number of geodetic surveying topics. He was eager to document and convey the scientific message of NGS, and he became one of NGS' most prolific technical writers. Soler has also been active in the Geomatics Division of ASCE. He served as the editor-in-chief of the ASCE Journal of Surveying Engineering from 2004 to 2013. Soler ensured papers were reviewed quickly, and he successfully raised a number of quality indicators for this journal. Due to his success, he was awarded the ASCE Torrens Awards—a prestigious award given to an editor of an ASCE journal who served with distinction. Soler earned a master's degree in civil engineering from the University of Washington and a Ph.D. in geodetic science from The Ohio State University.

Closing Plenary Session

3:45 p.m. – 4:30 p.m., **URSA Major**

The Future of Surveying

The future of surveying is uncertain and with the rapid advances in technology, decrease in candidates eligible for professional licensure and threats to licensure, it is important that surveyors keep up with the latest methods and recruit new people into the profession. Surveyors must also be able to share what they do with the public and enforce the need for licensed professional surveyors well into the future. We will discuss the work of the NSPS Future of Surveying Task Force, a committee started in 2016 with representatives from 20 organizations concerned with surveying; the recent work of the International Federation of Surveyors (FIG) regarding the future of surveying around the world; NCEES speaker kits available to all surveyors for the purpose of promoting surveying; and where we should be with regard to utility mapping. We encourage audience participation to find out what is available and to help us formulate a unified approach to the future of surveying.

Speakers:

Patrick Tami, PLS, President, NCEES; Principal and Office Survey Operations Manager, R.E.Y. Engineers, Inc. (see photo and biography in column 1)



Carol Morman, P.E., PLS, M.ASCE, Program Chair, Civil Engineering Technology, Cincinnati State Technical and Community College

In addition to serving as program chair at Cincinnati State, Morman is also a professor of land surveying courses in the Land Surveying major in Civil Engineering Technologies and is owner and principal engineer and surveyor for CLM Surveying & Engineering. She is a registered land surveyor in Ohio and Indiana and a registered engineer in Ohio, Indiana, and Kentucky. Morman is currently serving as Chairman for the UESI Surveying and Geomatics Education Committee, Vice President of the Greenville Treaty Chapter of the Indiana Society of Professional Land Surveyors, and Faculty Advisor to the Cincinnati State ASCE Student Chapter. She earned an AAS in Civil Engineering Technologies – Surveying from Cincinnati State, a BS in Civil Engineering and a BS in Land Surveying from Purdue University, and a MS in Civil Engineering (Geomatics) from California State University – Fresno.

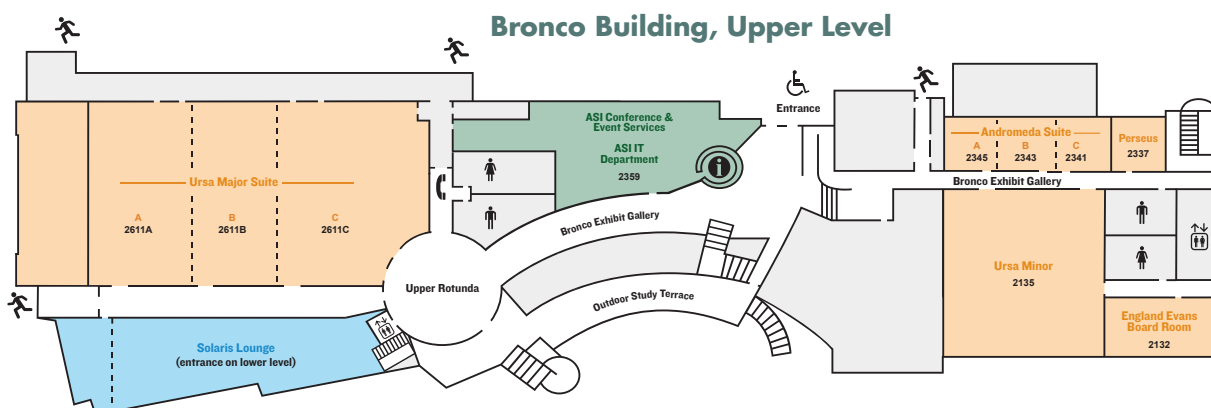
MONDAY

Track Chair: JP Mohsen	Track Chair: Tom Pilarski	Track Chair: David Garber
Track 1 Surveying Practice and Education <i>Location: England Evans</i>	Track 2 Aerial Mapping <i>Location: URSA Major A</i>	Track 3 High Accuracy Positioning and Future Datums <i>Location: Andromeda</i>
9:15 – 10:10 a.m. Session I		
Field Applications	Utility Surveying and Revitalization Projects	High Accuracy Positioning
Moderator: Marlee Walton	Moderator: Scott P. Martin	Moderator: Dana Caccamise
San Bernardino County Public Works UAV Program Tom Herrin Centering Error for Range Poles Kevin Franklin and Thomas Meyer	Salton Sea Watershed Restoration Alternatives: Sediment Transport and Water Quality Analysis Monica Palomo and Omar Mora The Intersection of Utility Surveying & Engineering Jesse Cooper	The Online Positioning User Service: An Overview and Update William Stone Empirical Evaluation of the Accuracy of Static GPS Survey Campaigns Processed in OPUS-Projects Anahita Shahbazi, Jihye Park, Dan Gillins and Sukyung Kim
11:00 – 11:55 a.m. Session II		
Field Applications	Remote Sensing Applications	Dynamic Coordinates
Moderator: David Totman	Moderator: Monica Palomo	Moderator: Michael Dennis
Use of Various Surveying Technologies to 3D Digital Mapping and Modelling of Cultural Heritage Structures John Hatzopoulos, Dimitrios Stefanakis, Andreas Georgopoulos, Sevi Tapinaki, Pantelis Volonakis and Ioannis Liritzis Monitoring subsidence John Hamilton	Water Leakage Detection of Canal Systems through Artificial Neural Network-Based Satellite Image Analysis Jiawei Chen, Pingbo Tang and Todd Rakstad The USGS 3D Elevation Program (3DEP) and National Business Needs for Lidar Drew Decker and Carol Ostergren	Dynamic California – Managing Survey Control in a Moving Environment Scott P. Martin Implementing Dynamic Geodetic Datums in GIS Kevin Kelly
1:45 a.m. – 2:40 p.m. Session III		
Surveying Engineering Education	Geodetic Control and Unmanned Aircraft Systems	AAGS: Future Datums
Moderator: Omar Mora	Moderator: Seema C Shah-Fairbank	Moderator: Herbert Stoughton
Current State of Surveying Education in Civil Engineering Programs in the United States Daniel Gillins and Michael Olsen Providing a Path to Dual Licensure for Civil Engineers Carol Morman	The Caltrans District 7 Geodetic Control System Jay Satalich UAS Surveying of Crop Development over an Experimental Maize Field Michael Starek, Tianxing Chu, Michael Brewer and Seth Murray	Modernizing the National Spatial Reference System in 2022: Replacing NAD 83 Dru Smith The North American-Pacific Geopotential Datum of 2022 (NAPGD2022) Daniel Roman
3:30 – 4:50 p.m. Session IV		
Licensure and Future of Surveying	Unmanned Aircraft Systems	AAGS: Future Datums
Moderator: Jay Satalich	Moderator: Carol Morman	Moderator: Dru Smith
California Surveying Licensing for Surveyors and Civil Engineers Richard Moore and Dallas Sweeney Surveying Education, Training, and Professional Development Herbert W. Stoughton The Time is Now – Surveyors Must Map Their Own Future! Marlee Walton	Evaluating the Precision of UAV Mapping Systems at Different Heights Mark Lao, Jose Velasco, David Sanjenis and Ahmed Elaksher Generating TIR and RGB 3D Point Clouds using Unmanned Aircraft System (UAS)-Based Photogrammetry Farid Javadnejad, Richard Slocum, Daniel Gillins and Christopher Parrish Physical Topographic Development Using Aerial Imagery for Remote Site Modeling Seema Shah-Fairbank and Omar Mora	2017 GPS Survey of Guam and CNMI Kendall Fancher, Ryan Hippenstiel and Dru Smith Leveling After 2022 When the New Datum is Accessed with GNSS and a Geoid Model Daniel Gillins The State Plane Coordinate System: History, Policy, and Future Directions Michael Dennis

Technical Program *(continued)*

TUESDAY

Track 1 Laser Scanning and Mobile Mapping <i>Location: England Evans</i>	Track 2 Utility and Subsurface Surveying <i>Location: URSA Major A</i>	Track 3 Applied Surveying <i>Location: Andromeda</i>
8:35 – 9:45 a.m. Session V		
Mobile Mapping	Utility and Subsurface Surveying	Emergency Response
Moderator: Jorge Chen	Moderator: Omar E. Mora	Moderator: Steven J. Martin
Embrace Land Mobile Mapping for Smarter Cities Stefania Radopoulou and Rui Wu High Resolution Multi-Lane Road Surface Mapping Using 3D Laser Profilers John Laurent and Benoit Petitclerc Progress Monitoring of Horizontal Construction Projects Using Mobile LiDAR Point Clouds Nisha Puri and Yelda Turkan	Subsurface Utility Infrastructure Data in the Survey Environment Shawn Clark Some Challenges in Delivering 3-D Subsurface Utility Model Alec Grkovic Precision Inertial GNSS and Direct Georeferencing of Multichannel Ground Penetrating Radar for Highway Applications William Owen, John Gilmore, Kin Yen, Momoh Mallah and Mark Turner	Hydrographic and Underwater Surveying after Natural Disasters Terence Browne, Roy Forsyth and Chris Hartzell NOAA NGS Emergency Response Imagery for the 2017 Hurricane Season: Technologies, Capabilities, and Challenges Presenting: Lieutenant Junior Grade Christopher Licitra Credit: Mike Aslaksen, Jon Sellars, and Jason Woolard Surveying/Geomatics and GIS Response for the California Oroville Dam Emergency Daniel K. Mardock
10:40 a.m. – 12:05 p.m. Session VI		
Terrestrial Laser Scanning	Infrastructure, Utility and Subsurface Surveying	Boundary Surveying Topics
Moderator: Daniel Gillins	Moderator: Omar E. Mora	Moderator: Dana Caccamisse
Assessing Different Point Cloud Geo-Referencing Procedures Luis Landaverde, Mohammed Algasem, Ahmed Elaksher and Tarig Ali Georeferencing 3D Indoor Maps Using Point Cloud Registration Jorge Chen Fast Segmentation of Terrestrial Laser Scans based on Normal Variation Analysis Erzhuo Che and Michael Olsen	Technological Advances in Pipeline Mapping Neal McPherson, Matt Okubo, Doug Pluta, Rich Josenhans and Omar Mora Integration of Advanced 3D Subsurface Utility Engineering Information, A Model for the Future Matthew Wolf, Robert Vasquez, and Jorgen Bergstrom Advanced Geophysics: Incorporating MCGPR and TDEMI into a Utility Investigation Corey Biddle	Boundary Survey: How to Deal with Boundary Dispute Issues Avinash Prasad and Purnima Prasad Deed: How to Deal with Ambiguous Legal Deed Descriptions Avinash Prasad and Purnima Prasad The Torrens Land Boundary System: A Legal Revolution That Complements the Ongoing Geomatics Technological Revolution William Bowie
2:35 – 3:25 p.m. Session VII		
BIM	Surveying Practice and Education	Inspection Surveying
Moderator: Jin Sung Cho	Moderator: Humberto Gallegos	Moderator: Terrence Browne
Quality Assessment for Concrete Work Using Laser Scanning Technology: "2 & U in Seattle" and "Portland State University of Business" Greg Smith and Jinsung Cho Laser Scanning for Above Ceiling MEP Systems and Mechanical Rooms: "Genentech, Hillsboro, OR and Hollywood Presbyterian Medical Center, LA, CA" Greg Smith and Jinsung Cho	SUE – Is it an Engineering Practice, or a Survey Practice? When is it both? Gregory Jeffries From A Distance: Offering Introductory Surveying Courses Online John Bean and Jeffery Hollingsworth	Automated Surveying of Pardee and Camanche Dams Steven Martin Using Web GIS Platform for Bridge Inspection Inventory Management Farid Javadnejad, Daniel Gillins, Christopher Higgins and Matthew Gillins



GOLD SPONSOR

WestLAND Group, Inc.



www.westlandgroup.net

WestLAND Group, Inc., a full-service civil engineering and land surveying COMPANY, has been providing creative and innovative solutions to public and private clients throughout California since 2000. The firm specializes in: civil engineering / site development, utility engineering, surveying and mapping, and GIS. WestLAND Group is known as an industry leader and a pioneer in the adoption of state-of-the-art technologies, and combines professionalism, innovation, and a strong commitment to quality to ensure your success.

Allen Instruments & Supplies



www.alleninstruments.com

Allen Instruments & Supplies has survey equipment and construction supplies to optimize your productivity and provide a high-level of service throughout the construction lifecycle. Allen Instruments is committed to providing the geospatial solutions you need. We offer a complete line of Survey equipment like total stations, 3d scanners, controllers and GNSS solutions. As well as Mapping & GIS software, UAS, and more.

Archway Systems



www.archwaysystems.com

It also provides consulting services in a variety of areas such as Programming and Networking. Archway offers contract software development and has produced various applications in C and C++ as well as Visual Basic and VBA for dozens of clients. Products developed include: extensions to MicroStation, a complete system for design of orthodontic appliances, a computer network simulator and more.

AVEVA's



www.aveva.com

AVEVA's world-leading technology was originally developed and spun out of Cambridge University in 1967. We provide mission-critical solutions to some of the world's biggest engineering contractors (EPCs) and Owner Operators. AVEVA has successfully established a truly global infrastructure – an international business with over 1,700 employees – and is exposed to the world's fastest-growing economies.

Caltrans



www.dot.ca.gov

Caltrans manages more than 50,000 miles of California's highway and freeway lanes, provides inter-city rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies. Caltrans carries out its mission of providing a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability, with six primary programs: Aeronautics, Highway Transportation, Mass Transportation, Transportation Planning, Administration and the Equipment Service Center.

CUES



www.cuesinc.com

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection, rehabilitation, pipe profiling equipment and asset inspection/decision support software for sanitary and storm sewers, industrial process lines, and water lines. For over 50 years, CUES has provided innovative pipeline inspection technology and solutions to the WWater/WWastewater industry to enable accurate condition assessment and proactive maintenance programs for buried infrastructure.

FARO®



www.faro.com

FARO® is the world's most trusted source for 3D measurement, imaging and realization technology. The company develops and manufactures leading edge solutions that enable high-precision 3D capture, measurement and analysis across a variety of industries including manufacturing, construction, engineering and public safety.

Guida Surveying, Inc.



www.guidainc.com

Guida utilizes a blend of traditional methodologies with new and innovative technologies for the creation and delivery of the best and most accurate work products possible to our clients. We love land surveying and are constantly looking for new ways to utilize new equipment and software to help solve complex survey challenges and to save our clients time and money.

NV5



www.nv5.com

NV5 provides engineering and consulting services to public and private sectors, delivering solutions through five business verticals: Construction Quality Assurance, Infrastructure, Energy, Program Management, and Environmental. NV5 provides the expertise to plan, design and build the infrastructure that links our communities together. Our clients trust us to provide the integrated engineering, consulting and management solutions that enable their success – regardless of project size or complexity.

The National Geospatial-Intelligence Agency (NGA)



www.nga.mil

The National Geospatial-Intelligence Agency (NGA) delivers world-class geospatial intelligence that provides a decisive advantage to policymakers, warfighters, intelligence professionals and first responders. NGA is the lead federal agency for GEOINT and manages a global consortium of more than 400 commercial and government relationships. The director of NGA serves as the functional manager for GEOINT, the head of the National System for Geospatial Intelligence (NSGI) and the coordinator of the global Allied System for Geospatial Intelligence (ASGI). In its multiple roles, NGA receives guidance and oversight from DOD, the Director of National Intelligence (DNI) and Congress.

Rosell Surveying and Mapping, Inc.,



www.rosellsurveying.com/RSM

Rosell Surveying and Mapping, Inc., located in Costa Mesa, CA., provides management team support, CAD Operators and Survey Technicians to support our fully equipped field survey crews. Since 1992, our focus has been to provide our clientele with service, experience and knowledge to achieve their goals. Solution-oriented thinking with an emphasis on problem solving is how we approach every opportunity. Finding the right professional is often about finding the right fit.

The Santa Clara Valley Water District



www.valleywater.org

The Santa Clara Valley Water District provides stream stewardship, wholesale water supply and flood protection for Santa Clara County, California, in the southern San Francisco Bay Area.

Towill, Inc.



www.towill.com

Towill, Inc. is a premier provider of geomatics services and technologies offering a broad range of advanced surveying, mapping, and geospatial solution services which include land surveying; high accuracy specialty surveying; aerial photography; airborne, terrestrial, and mobile Light Detection and Ranging (LiDAR); digital 3D and 2D photogrammetric mapping; volumetrics; and geographic information systems (GIS). Building on a successful business established in 1955, Towill has continually maintained a reputation for innovation and excellence in the geomatics profession.

VMT



www.vmt-gmbh.de/en

With its guidance systems and services, VMT has been one of the leading suppliers in tunnel construction and industrial measurement for more than 20 years. Over 1,000 tunnel projects throughout the world bear witness to the efficiency and innovative strength of the VMT product portfolio in the fields of navigation technology, production and logistics management, deformation monitoring, communication, safety and data management.

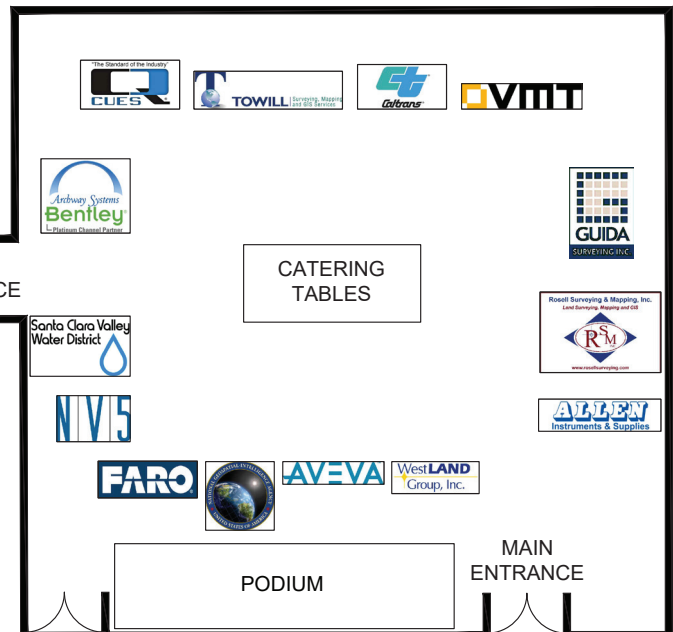


EXHIBIT HALL

URSA MINOR
CAL POLY
POMONA

Registration, Hotel, & Transportation Information

Registration Information

Registration Hours

Sunday, April 22	8:00 a.m. – 2:00 p.m.
Monday, April 23	7:00 a.m. – 5:00 p.m.
Tuesday, April 24	7:00 a.m. – 10:00 a.m.

Registration Rates

Regular (After 2/16/2018)

ASCE/UESI Member	\$450
Non-Member	\$585
Full-Time Student	\$100

On Site (After 4/21/2018)

ASCE/UESI Member	\$550
Non-Member	\$685
Full-Time Student*	\$100

* Full-time Students must present valid identification on-site at registration desk when picking up name badge.

Register Online

The registration process is being handled by Cal Poly Pomona.

Please use this link to register online:

EventBrite <https://www.eventbrite.com/e/asce-uesi-2018-surveying-geomatics-conference-tickets-36627276169>

For further questions please contact:

Allan Y. Ng, P.L.S. – Conference Co-chair
Adjunct Professor, Civil Engineering Department,
California State Polytechnic University Pomona
ayng@cpp.edu

Payment by Check

On the Registration page, under "Order Now". Click "Show other payment options" and "Pay Offline". You can register as normal and send a check with the following information.

Make the check payable to:

Cal Poly Pomona Foundation, Inc.

Note: UESI 2018 Surveying & Geomatics Conference

Mail the check to:

Attn: Allan Ng
Civil Engineering Department,
3801 W. Temple Ave.,
Pomona CA 91768

Refund Policy

Refunds for cancellation will be made if requested in writing 30 days prior to event and are subject to a \$35 cancellation fee. Please contact us at ayng@cpp.edu to discuss.

Receive Member Rates

Not a member of ASCE? Join today and save on your UESI 2018 Surveying & Geomatics

Join UESI and Save!

Simply visit www.asce.org/join or call (800) 548-ASCE (2723) to request an application. For more information on member benefits, go to www.asce.org/membership. You must be a member in good standing to qualify for the member rates.

Regular Registration Discount (REG)

We invite registrants to take advantage of this advance registration discount. The deadline for regular registration is **Saturday, April 21, 2018**. Registration online must include complete payment information, and must be RECEIVED by this date to qualify for this discount.

On-Site Registration (ONS)

On-site registration starts **Sunday, April 22, 2018**.

Confirmation of Registration

Confirmation will be e-mailed to all Early Bird and Regular registrants following online submission of the registration information. Pre-registered attendees will receive their name badges and any tickets ordered at the on-site Registration Desk during Registration hours.

Program and Session Cancellation

We reserve the right to cancel programs and/or sessions because of low registration. In the unlikely event of a cancellation, all registrants will be notified and will receive a full refund, if applicable. Programs and Sessions are subject to change, and we reserve the right to substitute a program, session, and/or speaker of equal caliber to fulfill the educational requirements.

Sponsor the Conference!

Show your support of Pipelines 2017 Conference by becoming a sponsor. Contact Sean Scully at sscully@asce.org or 703-295-6154 for more information.

Hotels

Kellogg West Conference Center & Hotel

3801 W. Temple Avenue
Pomona, CA 91768
(Group block sold out)

DoubleTree by Hilton Pomona

3101 W. Temple Avenue
Pomona, California, 91768, USA
Phone: (909) 594-0600
Fax: (909) 348-5385

This completely remodeled hotel offers panoramic views of the Pomona Hills and California State Polytechnic University. It is also just 16 miles from Ontario International Airport. Contemporary guest rooms include a microwave, mini-fridge and coffeemaker. The facility also has an outdoor saline swimming pool, whirlpool spa and 24-hour fitness center.

Transportation to the Bronco Student Center will be provided.

Transportation & Parking

Airports

Ontario International Airport – 17 Miles (25 minutes) from Cal Poly Pomona
Los Angeles International Airport – 47 miles (1.5 hours) from Cal Poly Pomona

Burbank Airport – 42 miles (1.1 hours) from Cal Poly Pomona

John Wayne – Orange County Airport – 31 miles from Cal Poly Pomona Airport Transfers

Complimentary transfers for hotel guests only are also available via Kellogg shuttle. Please call the center with your travel information one day in advance to reserve the Ontario Airport Shuttle Service at (800) 593-7876.

Parking

Park at any student parking locations in parking structure II. Parking permit can be obtained from Parking Information Booth or automatic parking permit vending machine. Fee is \$9 per day.

Attire

The dress code for the Conference is business casual (i.e. slacks, casual dresses). Meeting room temperatures will vary, so wear layered clothing to ensure your personal comfort. We also recommend attendees wear comfortable shoes. Please note that certain events may have specific details on attire, and you should refer to the description of that event for more information.

Badge Policy and Ribbons

Your name badge is your admission to the Conference. Please wear your badge at all times while at the conference. Ribbons will be available at the Registration desk. ASCE recommends you remove your badge when leaving the conference location.

Conference Proceedings

The proceedings will be provided by Cal Poly Pomona on a USB driver with your welcome registration packet.

Meeting Room Overcrowding

Conference organizers will make every effort to schedule popular events in rooms large enough to accommodate anticipated attendance. Since many events are extremely popular, it is wise to select alternative events as you plan your conference schedule. ASCE and the university are required to follow local fire regulations and may ask participants in rooms filled to capacity to choose another event.

No Smoking Policy

ASCE supports a "No Smoking" policy, and Cal Poly Pomona is a non-smoking campus

Professional Development Hours (PDHs)

You may earn up to TBD# PDHs, nationally recognized units of record, by attending conference technical sessions. Please note that there are differences from state to state in continuing education requirements from professional engineering licensure. Each state licensing board has the final authority to approve courses, credits, PDHs and other methods of earning credits in that state. ASCE does not keep record of credits earned. Submit your credits to the licensing board and regularly check for specific continuing education requirements in the jurisdictions that affect professional engineering licensure and the ability to renew licensure. Certificates will be provided upon request after the conclusion of the Conference. Please make sure you follow the instructions on the PDH form you can pick up with your registration package to keep track of the attended sessions and turn in the form with the assigned staff at the university. For details on your state's requirements please go to: www.ncees.org/licensure/licensing_boards.

Recording of Sessions

Video or audio recording of any educational session is strictly prohibited without prior written permission from both ASCE and the session presenter(s).

Release/Waiver/Special Assistance

Photograph Release: By submitting the Registration form, I hereby release any photographs that may be incidentally taken of me during these events by ASCE to be used for any purpose.

Liability Waiver: I agree and acknowledge that I am undertaking participation in ASCE events and activities at my own free and intentional act, and I am fully aware that possible physical injury might occur to me as a result of my participation. I give this acknowledgement freely and knowingly that I am, as a result, able to participate in ASCE events, and I do hereby assume responsibility for my own wellbeing. I also agree not to allow any other individual to participate in my place.

Medical Emergency

Contact campus police: For emergency, dial 9-1-1 from any campus phone or (909) 869-3070 from any cell phone.

A list of local hospitals: <http://www.cpp.edu/~healthcounseling/health/local-hospitals.shtml>

Conference Cancellation

CPP reserves the right to cancel programs and/or sessions because of low registration. In the unlikely event of a cancellation, all registrants will be notified and will receive a full refund, if applicable. Program and Session are subject to change, and ASCE reserves the right to substitute a program, session, and/or speaker of equal caliber to fulfill the education requirement.

WestLAND Group, Inc.

PROFESSIONALISM, INNOVATION, AND A COMMITMENT TO QUALITY

ENGINEERING | GEOMATICS | GIS

www.westlandgroup.net | 909-989-9789

Awards: 2017 Best Firms To Work For, 2017 POINT OF BEGINNING TOP 100, 2015-2017 HOT FIRM ZWEIG GROUP

Social media icons: Instagram, Twitter, Facebook, LinkedIn, YouTube



UTILITY ENGINEERING & SURVEYING INSTITUTE

How to Join the Utility Engineering & Surveying Institute

Become a
UESI Member Today!

IF YOU WISH TO JOIN AS A MEMBER OF ASCE:

- Go to www.asce.org/join
- Complete the application and choose UESI as your free institute

IF YOU WISH TO JOIN AS A UESI-MEMBER ONLY:

- Go to www.asce.org/uesi
- Go to the UESI Membership page, select "Join UESI Member-only Online"

REGISTER NOW!



PIPELINES 2018 CONFERENCE

Toronto Canada | July 15 – 18

KEY DATES

Final papers due: March 15, 2018

Early Bird Deadline: June 6, 2018

Hotel Reservations Cut-off: June 25, 2018

Advance Registration Deadline: June 27, 2018

Revitalizing Global Underground Utility Infrastructure



For up-to-date information,
visit www.pipelinesconference.org

Follow us on twitter: [UESI@uesi_asce](https://twitter.com/UESI@uesi_asce)

The Online Pack: Unbeatable Value

Unlimited access to Online News, Comment, Features Sections and Archive plus Monthly eNewsletter packed with the Latest News and what's on in the **Geospatial Industry**

Join today for **only £1 a month**

Just £1
a month

Join
today!

Topics covered:

- ✓ 3D Visualisation/Modelling
- ✓ Addressing Technology
- ✓ Aerial Imagery/Photography
- ✓ Asset Management
- ✓ Bathymetry
- ✓ Big Data
- ✓ Business Geographics/Analytics
- ✓ Cadastral Mapping
- ✓ Cartography
- ✓ Climate Change
- ✓ Computing in the Cloud
- ✓ Crime Mapping/ Modelling
- ✓ Data Capture/Collection
- ✓ DEM- Digital Elevation Model
- ✓ DGPS - Differential GPS
- ✓ Digital City Models
- ✓ Digital Mapping
- ✓ Digital Rights Management
- ✓ Disaster Management/Monitoring
- ✓ DSM - Digital Surface Model
- ✓ DTM - Digital Terrain Model
- ✓ Dynamic Mapping
- ✓ Earth Observation
- ✓ Emergency Services
- ✓ ENC - Electronic Navigation Chart
- ✓ Environmental Monitoring
- ✓ Galileo
- ✓ Geo-ICT
- ✓ Geodesy
- ✓ Georeferencing
- ✓ Geosciences
- ✓ Geospatial Image Processing
- ✓ GIS
- ✓ GIS in Agriculture & Forestry
- ✓ GLONASS
- ✓ GMES
- ✓ GNSS
- ✓ GPS
- ✓ GSDI
- ✓ Hardware
- ✓ Hydrography
- ✓ Hyperspectral Imaging
- ✓ Image Analysis
- ✓ INSPIRE
- ✓ Integration
- ✓ Interoperability & Open Standards
- ✓ Land Information Systems
- ✓ Laser Scanning
- ✓ LBS
- ✓ LiDAR
- ✓ Mapping Software
- ✓ Marine Tracking & Navigation
- ✓ Mobile GIS/Mapping
- ✓ Municipal GIS
- ✓ Navigation
- ✓ Network Topology
- ✓ NSDI
- ✓ Open GIS
- ✓ Photogrammetric
- ✓ Photogrammetry
- ✓ Point Clouds
- ✓ Property Information Systems
- ✓ Radio Navigation
- ✓ Remote Sensing
- ✓ Risk Management
- ✓ RTK (Real Time Kinematic) Surveying
- ✓ Satellite Imagery/Navigation
- ✓ Scanning Technology
- ✓ SDI - Spatial Data Infrastructures
- ✓ Smart Grids
- ✓ Software
- ✓ Surveying Instrumentation
- ✓ Surveying Technology Sensor
- ✓ Telematics
- ✓ Topographic Mapping
- ✓ Total Station
- ✓ Tracking & Route Planning
- ✓ Transport
- ✓ Utilities GIS
- ✓ Vehicle Tracking & Navigation
- ✓ VRS - Virtual Reference Station
- ✓ Web Mapping

Sectors covered:

- ✓ Aerospace
- ✓ Agriculture
- ✓ Archaeology & Heritage
- ✓ Architecture
- ✓ Biosecurity
- ✓ Business Security/Service
- ✓ Central/Local/Regional Government
- ✓ Construction
- ✓ Consulting Services
- ✓ Cyber Security
- ✓ Defence
- ✓ Education
- ✓ Emergency Services
- ✓ Energy Utility
- ✓ Engineering
- ✓ Environmental Management
- ✓ Environmental Monitoring
- ✓ Financial Services
- ✓ Fisheries
- ✓ Forestry Management
- ✓ Geosciences
- ✓ Healthcare
- ✓ Infrastructure Protection
- ✓ Insurance
- ✓ Manufacturing
- ✓ Marine
- ✓ Military
- ✓ Mining
- ✓ Natural Resource Management
- ✓ Oil & Gas
- ✓ Property
- ✓ Public Safety/Works
- ✓ Retail
- ✓ Shipping
- ✓ Software Development
- ✓ Technical Services
- ✓ Telecommunications
- ✓ Tourism/Travel
- ✓ Training
- ✓ Transport
- ✓ Utilities (Energy & Water)

Subscribe and stay ahead of the game!
The content that you can trust

Sign up at geoconnexion.com/membership