

Summary Report

Surveying Forum

Meeting Date: January 22, 2016

Table of Contents

1.Executive Summary	3
2.Introduction and Meeting Format	4
3.Meeting Invitees/Attendees	5
4.Meeting Notes and Priorities	6
5.General Plan of Action	22
6.Attendees Bios and Input Pre-Meeting	26
7.Unedited Meeting Notes	37
8.Photographic Documentation of Notes (Separate Doc)	
9.Presentation to NCEES Saturday, January 23, 2016 (PPT)	

1. EXECUTIVE SUMMARY

The Executive Summary will be completed following review and comment by NCEES leadership, the Forum participants and others in the review process. This will assure that the summary fully reflects the comments made by all who participated.



2. INTRODUCTION AND MEETING FORMAT

The Survey Forum was conducted on January 22, 2016 at the Westin, San Diego in the Opal Conference Room. The purpose of the meeting was to discuss the future of Surveying, with the specific task assigned to the committee that the meeting was being held to develop and recommend a plan of action to reduce the diminishing number of surveyors.

Participating organizations were carefully reviewed and key organizations and their leaders were invited. The response from those invited was excellent, with nearly every invited professional in attendance, or with a designee in attendance. The participants were constantly engaged and worked continually throughout the day to accomplish the goals. Within the room, there was continual evidence of dedication to the purpose and true passion for the future of surveying.

The meeting format was developed to ensure that all voices would be heard, without wasting time. The entire day was facilitated with stringent timing and guidelines to maximize the value of the time available. Attendees were provided multiple methods of contributing and the vehicles to share their views and collaborate. The room was set up to enhance collaboration but also maintain control and accomplish as much as possible in the time given. Name tags and name plates were used. Knowing the attendees included leaders with many ideas that would need to be expressed; the room was organized in a way to gain the most value with the least amount of wasted time. Participants were seated by assignment in a “u-shaped” arrangement in the room with 3 breakout tables for collaborative discussion. For each different agenda item and the assignments that went with them, they were sorted differently so that each collaborative effort brought different participants to each table. This broke them into the red team, the green team and the blue team, which allowed different ideas during each of the break out discussions and maximum collaboration. Participants were continually mixed to keep the ideas flowing. The agenda items were mixed. The agenda moved from brainstorm sessions with the full group, collaborative working groups of 7, individual exercises which were then shared with the group and multiple additional methods of communicating their ideas, which were highlighted on easels with markers and placed on the walls of the room for reporting out the ideas of the group and subsequent voting (with dots) on the priorities that each individual believed was most important for that agenda item. Participants could add to and comment throughout the day on any of the ideas with post it notes and comments

3. MEETING INVITEES/ATTENDEES

- Doyle Allen - Colonial States
- Mike Anderson – Point of Beginning - POB, *publication*
- Scott Bishop, NCEES Representative
- Don Buhler – Bureau of Land Management - BLM
- Earl Burkholder – American Association for Geodetic Surveying - AAGS
- Ralph Guida – Council of Professional Surveyors - COPS
- Bill Hazelton - Surveying and Geomatic Educators Society – SaGES
- Lisa Hanni, NCEES Representative
- Richard Heieren – Western Federation of Professional Surveyors - WFPS
- John Hohol – International Federation of Surveyors - FIG
- Willace Johnson – Surveying and Geomatic Educators Society – SaGES
- Francelina (Lina) Neto – Utility Engineering & Surveying Institute - UESI/ASCE
- Pam Nobles – Association of Photogrammetry, Mapping and Geospatial Firms – MAPPS
- Mike Pallamary – American Surveyor, *publication*
- BJ Roberts – Emerging Young Leaders
- Gavin Schrock – XYHT, *publication*
- Donna Sentell, LAPELS, Executive Director
- Curt Sumner – National Society of Professional Surveyors – NSPS (Invited but could not attend due to weather)
- Frank Taylor – American Society for Photogrammetry & Remote Sensing – ASPRS
- Dan Turner, President Elect, NCEES Representative
- Ron Whitehead – National Association of County Surveyors – NACS
- David Zenk – National Geodetic Survey – NGS
- Barb Eljenholm, Byline7, Facilitator



Note: Additional biographical information provided by the attendees is provided in section 6 of this report.

4. MEETING NOTES AND PRIORITIES

I. Welcome, Introductions and Purpose

The meeting began with a welcome, introductions and the purpose of the meeting from Donna Sentell. Donna went over logistics, talked about the Task Force and NCEES funding the meeting and appreciation was expressed by the group. Donna explained that we needed the key people in the room for this collaborative effort and talked about the charge, **to develop and recommend a plan of action to reduce the diminishing number of surveyors**. As a part of that, we needed to talk about the national brand, image and ways of communicating that image, develop a consistent message and determine the best ways of recruiting and educating not only the profession, but the public and the educational community. Quick introductions around the room of the group, name, organization they were representing were made.

II. Ground Rules

Following Donna's Introduction and Welcome, the group moved into the Roles and Ground Rules. The facilitator asked the audience to set ground rules to keep the meeting on track. The rules began with **silence cell phones** and the group, thought through and added some important rules to keep the meeting on track and make the most of the time available. **Roberts Rules of Order** were cited. Next was the ground rule that **each person was invited to join the discussion on behalf of their organization, not personally, so the comments and ideas they make should represent the organization not their personal opinion**. The **"share the air time"** rule was set **with a 1 minute rule that if anyone spoke for more than a minute they would be stopped**. The next ground rule agreed upon was that **no one could speak twice without everyone in the room speaking at least once**. Finally, the ground rule was made **to keep on task and minimize hidden agendas, so a "tangents" board was created and all were invited to post sticky notes on that board if they had a tangent or off agenda item** that they wanted to discuss later. **Pam Nobles was designated as the enforcer of the ground rules and Richard Heieren was designated as the timer** to enforce the 1 minute rule.

III. Expectations of the Group

The expectations of the group were requested at the initial stage of the meeting, before moving into exercises to fulfill the purpose of the meeting. The following expectations were expressed in writing and posted. This was done in writing rather than verbally to reduce the time needed for this portion of the agenda, and to have the attendees think individually about their expectations personally and for the group as a whole:

- My expectations are to build upon the pride and integrity of the surveying profession. Let's honor this by building on this. The group should accomplish a definitive, tangible

program idea to foster growth in the profession. If we can say in 10 years that our work has resulted in one new licensed surveyor, we have succeeded. Mike Anderson.

- Find out more about the current state of the profession. Is there a problem or is it adaptation to change? Or if there is, what are the impacts? The group should define the problem, frame possible solutions and chose short and long term action items. Gavin Schrock
- My expectations are fairly low-the problems are too large to go for within a day. Perhaps an appreciation of the need for change to ensure long term survival. These problems are existential problems, not some passing concern. For the group, we should realize that the problems are global, not U.S., and other places are tackling it. Also realize that global issues will impact the U.S. area, as they have done for centuries. Maybe get a little bit forward on understanding the nature and reality of the problems. Bill Hazelton
- I expect a good and factual analysis of what the real problems are concerning the drop in test takers. The group should resolve to better encourage more individuals to become land surveyors. Richard Heieren
- I expect to identify specific items/issues and collectively decide which ones are relevant to move the profession forward. The group should develop a plan of action that has group “buy-in”/support. Doyle Allen.
- I expect to have an in-depth discussion regarding the future of surveying. The group should identify problems and opportunities associated with the profession; develop a plan and how to move forward on a national level. Scott Bishop
- To identify issues that contribute to fewer professionals pursuing surveying registration. The group should develop a tangible plan of action and identify ways to work together with all geomatics professionals. Wallace Johnson, RPLS
- My expectations were to define surveying as it exists and is perceived today. For the group, to identify and prioritize goals and develop a message moving forward. Michael Pallamary
- To discuss and determine a path forward to create interest and recruit people into the geospatial licensed community. To come up with consensus action on the above. Pam Nobles.
- I would hope to see the group talk about/identify common issues state to state; compromise on a solution to these issues and develop a plan of action to address them. I hope to see the group accomplish/engage in conversation valuable to the future of licensure, despite our own agendas. Brad Roberts
- I expect to develop a cadre of new surveyors to meet the needs of society. To build a strategy for recruitment of surveyors. For the group to build an outline of steps to accomplish to achieve recruitment. Donald Buhler
- To begin a discussion of how we can promote, maintain and most especially expand the interest in the profession. For the group, to provide suggestions and observations on the challenges facing the profession-especially identifying who and what a surveyor is and does and finding ways to promote this to the public and emphasize the role surveying has played, is playing and the technologies used with the opportunities available in the profession. John Hohol
- The coming together of the minds and expertise of those in attendance and for the group to develop a plan of action for the future, ideas for encouraging young people to

become a surveyor as a profession, and a PR campaign idea to promote such an effort.
Donna Sentell

- To understand reasons for the dwindled licensing of surveyors and for the group to evaluate what modern societal activities need to be under the supervision of a surveyor and therefore protected by boards of registration. David Zenk
- That all of the surveying organizations decide that we fit together like fingers of a hand and that we can share and work together like the hand of a concert pianist to play beautiful music (i.e. to lay out a vision of surveying's successful future. For the group, identify key elements for strengthening surveying's future, identify ways to secure that future, take ownership of a key element of the future, and agree to share with others in the room to maximize the chance for success. Dan Turner
- To agree on a vision/common message of where we think geomatics/surveying engineering needs to go in order to best serve society and is in tune with technology advances. For the group, set actions to start moving surveying/geomatics in a new direction. Agree or not how to use national examination to influence society and education to value surveying/geospatial. Lina Neto
- To learn more about challenges for surveying from different perspectives. To establish personal contact with professional leaders. For the group, to gain a better understanding of the challenges and look at challenges from a broader perspective. Earl. F. Burkholder
- To set goals to expand surveying profession to have a plan to recruit new/young people to surveying. To see a new image for surveyors. Ralph Guida
- To open discussion among the stakeholders, focus on 1 or 2 paths for promoting the profession. To continue the discussion about a plan of action, all work towards a common goal or theme. Lisa Hanni
- To address the issue of a declining number of surveyors across the country and the challenging view that surveyors are not important/needed in today's society. Contribute information that will help us recognize some problems we are facing and maybe some issues we can work on now while more is being done. Ron Whitehead
- Identify the issues and causes for the dwindling numbers and propose resolutions to the identified issues. Frank Taylor

The notes that were prepared by the individuals in attendance were posted on the wall on a facilitation board, and highlights from their written text were called out in large lettering with colored markers so that attendees could see the primary thoughts presented about expectations.

The following is a summary of agenda items IV-X. Please refer to section 7 of this report for the full set of notes from the meeting.

IV. Modified SWOT Analysis

From this point, the group moved into a modified SWOT analysis. Strengths of the profession and the surveyors that are a part of it, Weaknesses, Opportunities and Threats were requested but with a very positive twist, focusing on solutions to weaknesses and threats. The attendees were broken into three groups of seven at separate tables and assigned a scribe and presenter at each table. Upon completion of the collaboration at each table, the scribe wrote the main points on an easel and these were taken to

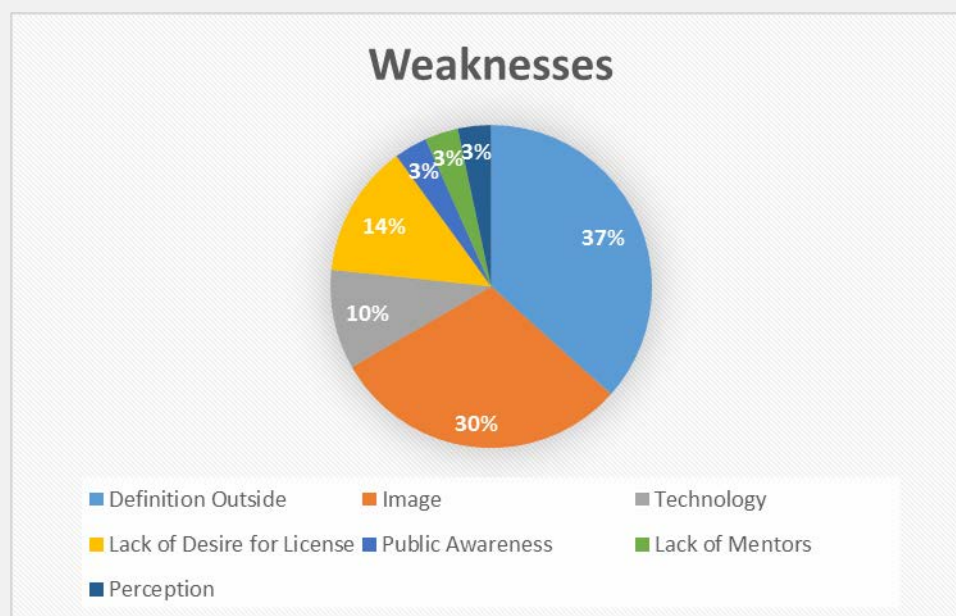
the side wall of the room for each group to present. Following presentations each attendee was given 6 dots to vote for their top 6 priorities in the SWOT analysis. From that exercise the following was derived:

Strengths

Primary strengths of the profession and surveyors in general were cited as their passion for what they do and for the industry. Another strength was identified as the desire of the profession and everyone in the room to address the issue of the dwindling number of surveyors taking the test, and the fact that everyone felt it was of such primary importance that those in the room took time out from their worlds to come together to create a plan for the future. Additional strengths included the history of the profession (cited as the oldest true profession), and that surveying is a profession and not a trade. The fact that surveying provides society with safety and security, that people need surveyors and that surveying makes the world a better place were key strengths of the profession. It was noted that people in the world don't realize this. Pride, value, humility, aspiration to be technically savvy and the rugged, yet geeky image of a surveyor was considered a strength not only in recruiting to the field and educating, but in the desired image.

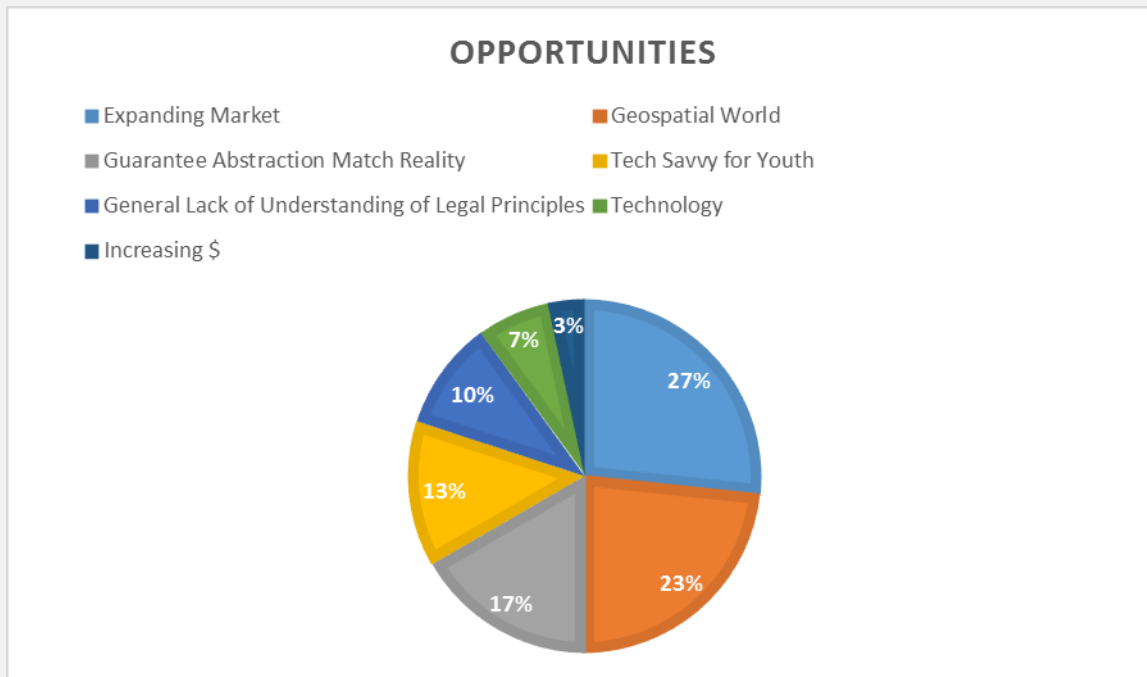
Weaknesses

The lack of understanding of what surveying is and definition to those outside the profession was the top weakness. Image was cited as the next most critical weakness, with lack of interest in becoming licensed as the third most prominent weakness. Technology, also cited as an opportunity later, was noted as a weakness as it defines us (we are our own worst enemy). Public awareness (lack thereof), and lack of mentors were also the areas receiving the top votes as weaknesses needing solutions by the group. Additional notes included lack of people, market changes, enrollment of students in the field, demographics, programs, the profession not being ready to transition to the technology, society not being ready for the technology education, code of ethics, clients wanting more out of less and less, and that much of the above in the way of weaknesses is a global problem, not just a national problem. The following chart shows the percentage distribution of the group as they prioritized weaknesses that need to be addressed:



Opportunities

Much of the discussions within the three groups focused upon opportunities. The expanding market for surveying and all related services was the top opportunity. The fact that we live in a geospatial world was close behind the expanding market. The need for the guarantee that abstraction meets reality was the third most voted opportunity. The opportunity to tap into our technologically savvy youth to recruit ranked highly, as did the thought that the public has a general lack of understanding of legal principles related to surveying. Increasing salaries, technology and measurement needed ranked just above reduced cost of technology, the changing market, growing economy and more activity were all seen as opportunities. The following chart outlines the percentage distribution of the group and their priorities for opportunities to reduce the diminishing number of surveyors:



Threats

Threats to the survey profession, although a major topic of conversation, received less votes than the other categories. The highest votes were placed on “contraction of the definition of surveying” which was later built upon in the “be inclusive rather than excluding” discussions. Encroachment of other fields into the surveying world, surveyors themselves who don’t see the need for change, qualifications, the need to charge more for the professional service, money (many in the profession are not paid professional salaries, the personal bottom line and the path to licensure were seen as additional threats.

Solutions

The top voted solutions discussed were heavily weighted toward more outreach, promotion and advertising about surveying in non-traditional markets. Having a unified approach across the nation to the image/national brand of surveying was also highly ranked. Education and mentoring were also very high on the priorities for solutions to the number of surveyors entering the profession and taking the exam. Tiered licenses received a vote, and additional ideas included surveyors taking the lead

themselves in solving the issue. Creating awareness was cited, along with having publications be the champions for getting the message out.



The SWOT analysis was a relatively short exercise on the agenda provided to lay the foundation for the primary topics of conversation, which were National Brand/Image, Recruiting and Educating. The SWOT analysis further confirmed that these were the top priorities of the group for discussion.

IV. Goals and Objectives

A brief discussion about goals and objectives was facilitated and engaged the entire group of attendees. It was an open discussion of ideas with an easel in front of the group, capturing all ideas for the vote. The goals and objectives were focused upon what the group would like to do as a part of this program and plan of action. The following priorities and numbers of votes were documented:

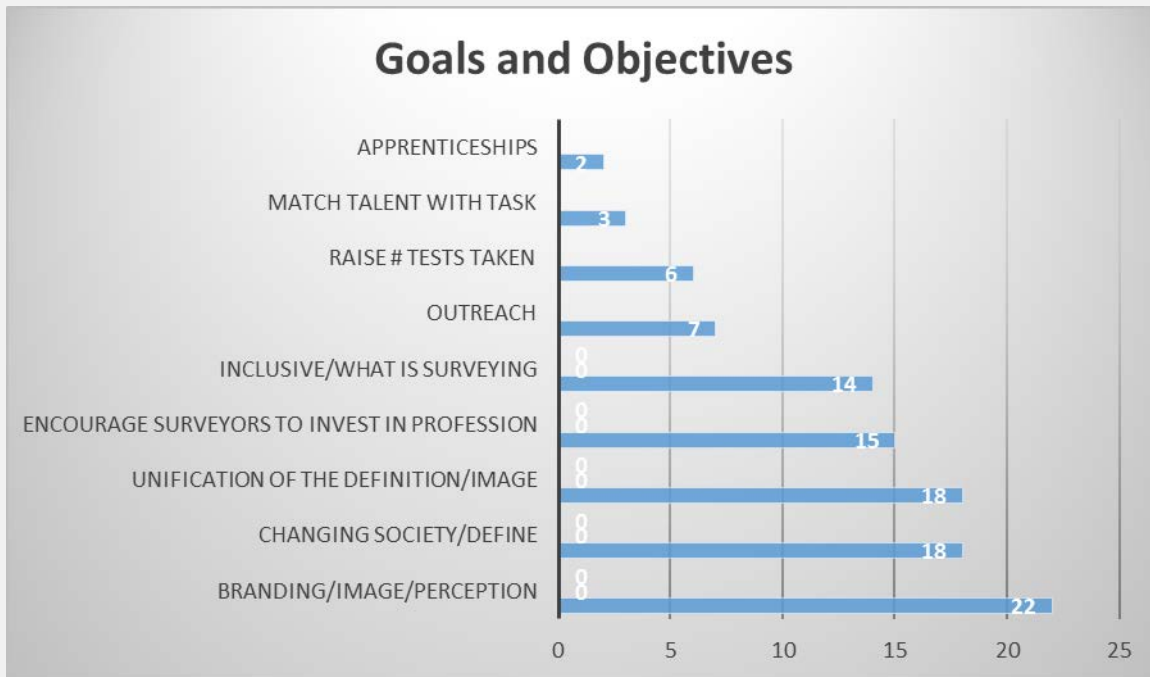
1. *Branding/imaging profession + the state board (perception) (22)*
2. *Changing society – define what falls under survey (18)*

The following comments were posted on this item:

 - a. *We need statistical data on how much income is derived from the different aspects of survey practice (i.e. boundary, topo, construction staking, etc.)*
 - b. *There is no way we can embrace people who are already using LiDAR to enter the profession!*
 - c. *State Boards are a threat to the profession*
 - d. *Commission an economic study*
 - e. *Rather than change it, should we simply expand on the realization of what is connected, but we don't need to control it?*
3. *Unification of the definition of survey (18)*

The following comments were posted on this item

- a. Google has put a lot of surveying out of business
- b. Definition is less important than understanding
- 4. Surveyors not investing in profession—goal-find ways to build interest (15)
- 5. Be more inclusive of “what is surveying” bring into profession and then they will see benefit of being licensed (14)
- 6. Outreach-expose people to profession (7)
- 7. Raise #s of tests/surveyors-what should that # be? (6)
- 8. Match talent with task (3)
- 9. Mentor/apprenticeship – 2 man crews (2)



Following the discussion and summary of the votes, the group moved into the final agenda item of the morning.

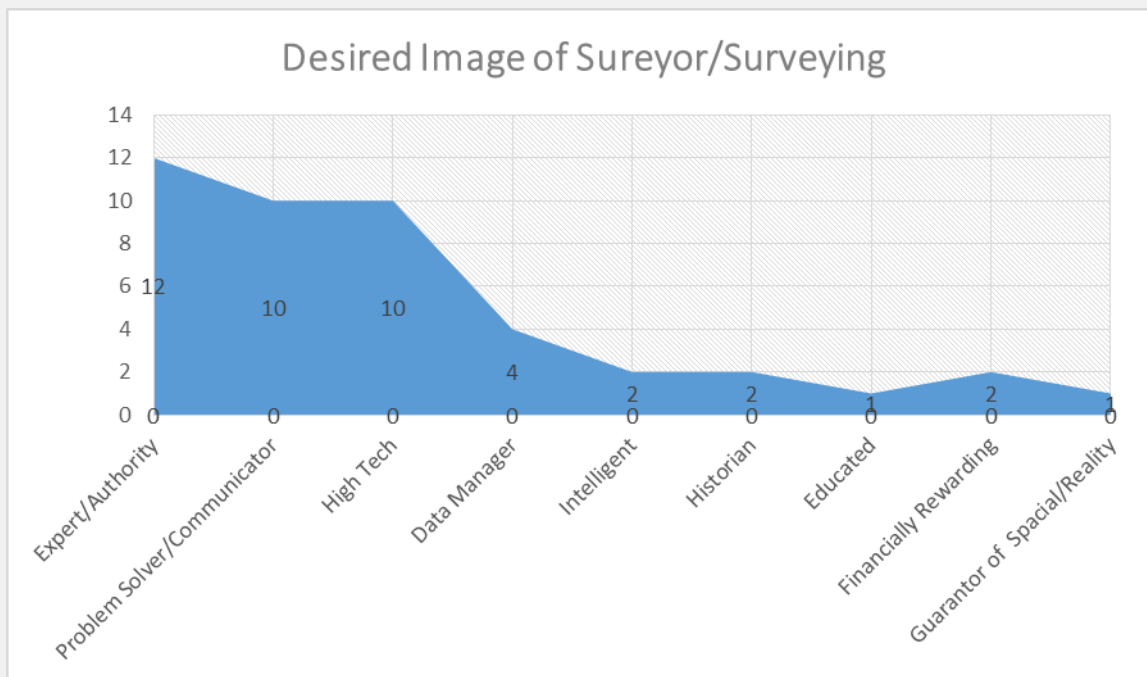
VI. ACHIEVING A NATIONAL BRAND

The group addressed how to achieve a national brand and image for surveying that would encourage new professionals into the field of surveying. This portion of the agenda was approximately an hour in length, and engaged the participants in three ways. First, the discussion was centered upon the desired image of surveying in an open forum with all participants. Second, concise descriptions of what a surveyor is/does were written by each attendee to be used to share what surveying is with a student, a colleague, the public or a number of other audiences. These “elevator speeches” were developed individually, written on note cards and posted to the walls. The third exercise in achieving the national brand was to discuss methods of communicating the national brand. For this final activity, the groups were mixed and sent to break-out tables (3 tables of 7) for discussion, writing priorities on easels, reporting and finally voting.

The following resulted from agenda item IV, Achieving a National Brand:

Desired image of surveying:

In the open discussion with the full room engaged, this portion of the agenda, following the vote, prioritized the image as an expert/authority as the top priority (12). The theme surrounded “professional”, and a problem solver/communicator received the next level of votes (10). The image of a high tech profession/tech savvy was tied for second (10) and a manager of data was next (4). Other key image comments were we are “not just the guy in the orange vest”, a respected professional protecting the public, educated, a land title expert, intelligent, financially rewarding, historian, guarantor of spatial data matching reality. These image discussions were focused on elevating the registration/licensing within a broader group related to the profession.



Elevator Speeches:

The following were developed and vary depending upon “who you have in your elevator”. Some work best for recruiting, some educating, some for the public and some for the profession:

A surveyor establishes and defines the location of Boundary Lines. A surveyor is a “master of measurement.”

Surveyors provide accurate spatial information that supports societal needs and supports other professions-collaborate in sharing spatial positioning in multidisciplinary applications.

Do you like working computer/3d image or new technology? Surveyors are working with the latest technology, such as drone/UAV’s and 3d imaging. Like to travel or work outside? As a surveyor you could travel the world providing surveying services.

Surveyors provide authoritative determinations of position, location, measurement and boundaries. This requires education, skill, experience and integrity.

We use a lot of cool technology to move so that all the world is where it is supposed to be.

I am a surveying professional. As a professional surveyor, I guarantee that spatial information matches the reality...here, and down the street in your neighborhood. It's a privilege to serve you.

A surveyor is one who protects the client and the public through competent management of property records.

A professional surveyor is somewhere between Indiana Jones and a Senator; and the job is somewhere between Google and the National Park Service. It is high tech and boots on the ground. It's taking the world to new places while staying grounded in history.

Communicate geospatial information to the public, real estate professionals, attorneys, etc. through maps, reports and other digital exhibits.

The stability of the American land system is vital for the stability of society. The surveyor is responsible to society is to ensure this stability.

Take Google maps and place them correctly on the earth so you know where you are.

Surveyors guarantee that abstract geospatial information matches the reality on the ground. By applying this guarantee to land and property rights, they underpin the foundation of all modern economies.

A surveyor is a land title expert that uses cutting edge technology to gather data to help solve boundary issues. We also gather and analyze other geospatial data to aid in the decision of any issue that has a geographical component.

Surveyors are a group of very professional, loyal individuals that are vested in their careers. We are well paid, well-educated and tech savvy. Our profession opens doors to use technology unavailable in other professions. We are licensed to protect the health, safety and welfare of the public and we are proud to do so.

Surveyors perform boundary surveys as well as many other geospatial activities such as providing 3D modeling for design, aerial mapping (such as you see on Google Maps) 3d models of historical structures, equipment for preservation, design, changes, equipment adjustments. Collection of data for inclusion into GIS systems as well as many other tasks that produce a geospatially connected world.

I am a professional surveyor and provide authentic information about real property boundaries and accurate 3 dimensional measurement of infrastructure whether on the earth, above it or under it.

The person who shows you your boundary lines. Marks the location of a new road, airport expansion, power line, etc.

911 exists because of surveyors. Surveyors create the foundation for measurements used to protect the public-land safely.

Expert in geospatial information regarding boundary, elevation, hydrographic , and other aspects of development . This includes protection of real property, natural resources and the environment.

A surveyor is an educated, tech savvy professional who makes precise measurements of the earth. It can be a financially rewarding career and one day you could be as well-known as Teddy Roosevelt, Thomas Jefferson or George Washington.

Surveyors are protectors of property rights and property location for their public.

Methods of Communicating the National Brand

An extensive discussion at three tables occurred prior to the reporting phase of this discussion. The top thirteen ideas receiving more than 5 votes for communicating the national brand/image of surveying were as follows:

1. Create a new logo to represent all of surveying and include a QR code that takes the audience to information, a key website or social media page focused on the updated image of surveying (17)
2. Use simple, concise terms to define the image/brand for publication and use in outreach (14)
3. Encourage surveyors to participate in other societies (utility, real estate, etc. so that cross marketing/image and brand can be shared) (13)
4. Maintain a professional image and dress for success (staff and those seen by public) (12)
5. Use the term Geospatial rather than surveyor to foster the high tech image (9)
6. Piggyback on existing organizations at a national level-boy scouts, girl scouts to begin early education and inspire career goals (7)
7. Create ads on Youtube and in social media to engage the public and youth for recruiting/educating (6)
8. Send real life examples—surveyors-- in schools with a variety of media injecting applications into the classroom “class of your own” (6)
9. Identify markets to target—scenario plan... where will we be? (6)
10. Create Commercials (6)
11. Work with public officials to share survey importance and story (6)
12. Use Vines/twitter-leveraging other social media (5)
13. Expand Web presence (5)

Additional ideas for communicating the story of surveying to promote education, recruiting and image were also noted. Special interest stories about surveying and surveyors in not only trade publications but general interest publications were suggested. Suggestions included ACE and piggybacking onto that program and onto other professions.

Geocaching was noted as a good way to engage and interest youth in surveying. Having vendors help carry the message forward, sending press releases initially and more frequently from all organizations and bringing maps to public meetings were also suggested. Awards, speaking engagements, advertising and blogs can be used. The three publications in attendance at the forum could be helpful vehicles for communicating the image/national brand.

Identifying and targeting audiences was considered key for each message. The image/national brand/message was determined to be important not only for recruitment, but for clients, ourselves, collaborators, architects and engineers. Target audiences were identified as government agencies, municipalities, the public, educators and the profession. Future cities were cited as target areas, Native American communities were also suggested for areas to communicate the profession’s image and brand.

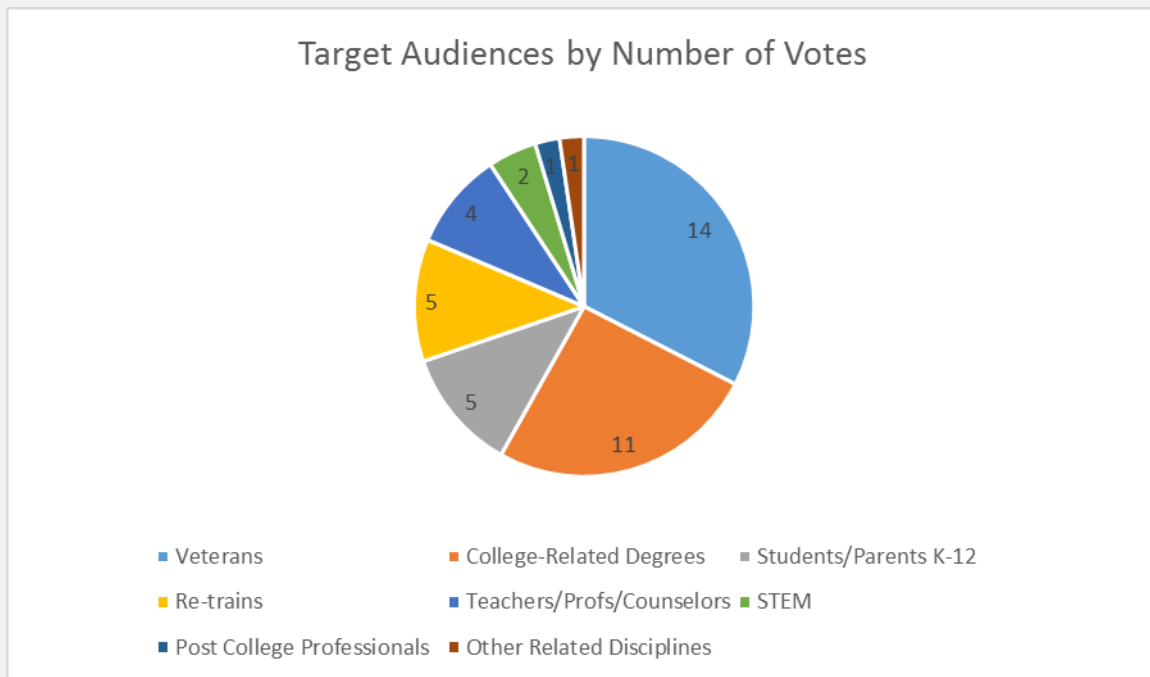
As demands change it was noted how important it will be to keep up with the change and maintain the surveying national brand. It was noted that the State board can limit or expand our role and brand and that stability of home and foundation are important. One of the terms that surfaced during the discussions was: Every square inch counts.

Agenda item VI provided multiple forums for discussion and extensive ideas for the plan of action to achieve the goals and purpose of the forum. Following this item the group continued informal discussions during the lunch and took a group photo prior to reconvening for the afternoon agenda.

V. RECRUITING

The recruiting agenda item focused upon three main areas. 1) Target Audiences; 2) The Message and; 3) The Medium for relaying the message. This was done in mixed break-outs with the same style of documenting, reporting and voting. Approximately an hour was dedicated to recruiting. Each attendee received six dots to vote for their top recruiting priorities. The following results occurred:

Target audiences were students at all levels, veterans, post college professionals, teachers, counselors and other educators. The highest ranking group for potential recruiting was veterans, with college recruiting in related degrees ranking second. K-12 parents and students, as well as re-trains also ranked in the top suggestions. Additional suggestions were post-college professionals, STEM programs, work-study programs and professionals already working in related disciplines.



The Medium

The medium to be used for recruiting was discussed as a part of the conversation. The highlighted idea was a comic/coloring book similar to a youth outreach done in Germany, where 100,000 copies of this tool for recruiting was distributed among elementary aged young children entitled “My Girlfriend is a Surveyor”. Creative approaches sparked discussion and ideas surrounding this. Additional suggestions for getting the word out for recruiting new surveyors were through professors and counselors, geocaching, a PR firm that could help spread the message to target audiences, a client newsletter, and through scouts, local news channels and publications, social media, STEM and other similar organizations. State fairs and unconventional venues were also cited. Marketing your own successors was also cited. The American Geodesist TV show was suggested as a possible avenue to recruit.

Additional collaboration was noted as being needed for specific targeted methods of getting the word out to recruit new professionals into surveying. With additional collaboration among the forum group, and the excellent organizations that they represent, the medium could begin with many of the people in the forum, including the publications and organizations. A possible task force for recruiting formed from the forum group was also suggested.

1. Comic/coloring book (9)
2. Additional Collaboration (8)
3. Professors/Counselors (4)
4. Client newsletters (oil, gas, maritime, natural resources, environment, etc.) (4)
5. Have a PR firm communicate the message to target audiences (2)
6. Educators in Organizations (Scouts, 4H, etc.) (1)
7. Think globally, act locally (1)
8. Geocaching (1)

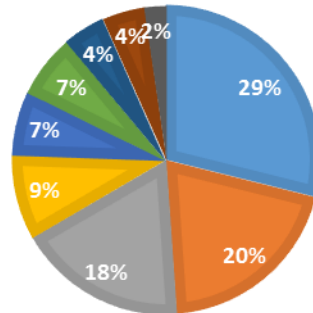


The Message

The message was defined as why new recruits would want to become a professional surveyor. The responses were done collaboratively at tables of 7 and then brought together for the vote. The fact that the field is a high technology, rapidly changing profession was believed to be the greatest message to engage new recruits. Diverse work environment was second from the top of the list. Making the world a better place ranked a close third place. The remaining reasons were lower in votes, but relevant to the group, including the fact that surveying is a quasi-judicial role in the realm of conflict resolution. The fact that survey is a foundation for everything, it pays well, there is a path to licensure, the field provides decision support and analysis and it is a unique field, related to STEM.

THE MESSAGE BY PERCENTAGE OF VOTES

- High tech, rapidly changing profession
- Make the World a Better Place
- Conflict Resolution/Quasi Judicial Role
- Historical Significance
- Foundation Profession
- Diverse Work Environment
- Professional, Pays Well
- Self Employment
- Land Use Consultancy

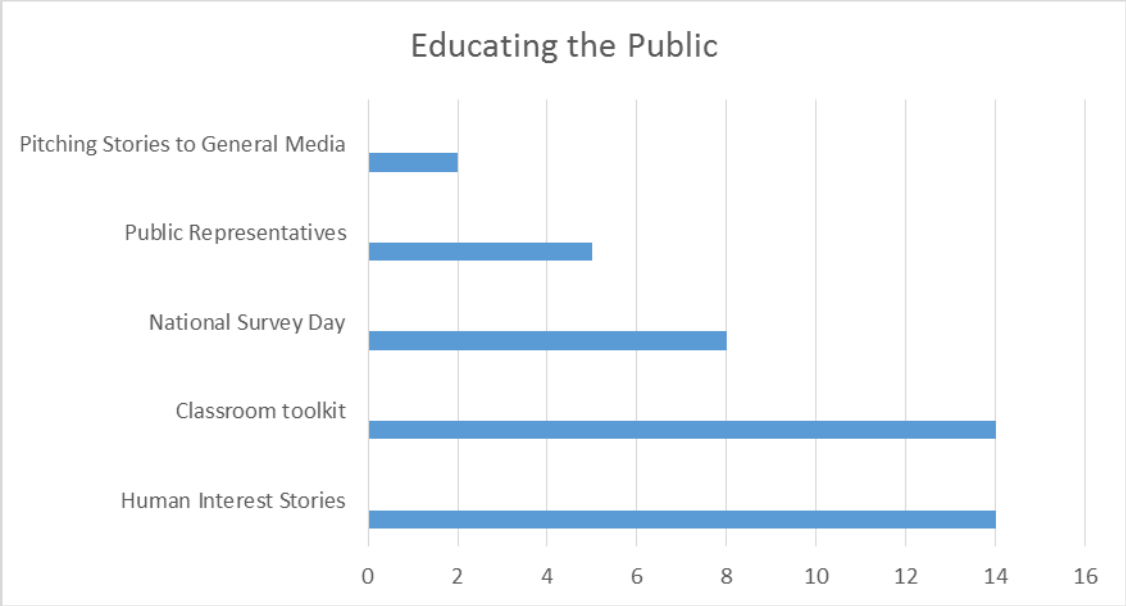


VI. EDUCATING

After some deliberation with the entire group regarding how to address educating regarding professional surveying, it was determined that the best approach to gain the most knowledge and information would be to break into three groups, the first addressing how to educate the public, the second addressing how to educate youth, schools and the educational community and the third addressing how to educate the profession regarding the new image/brand and message of the surveying profession.

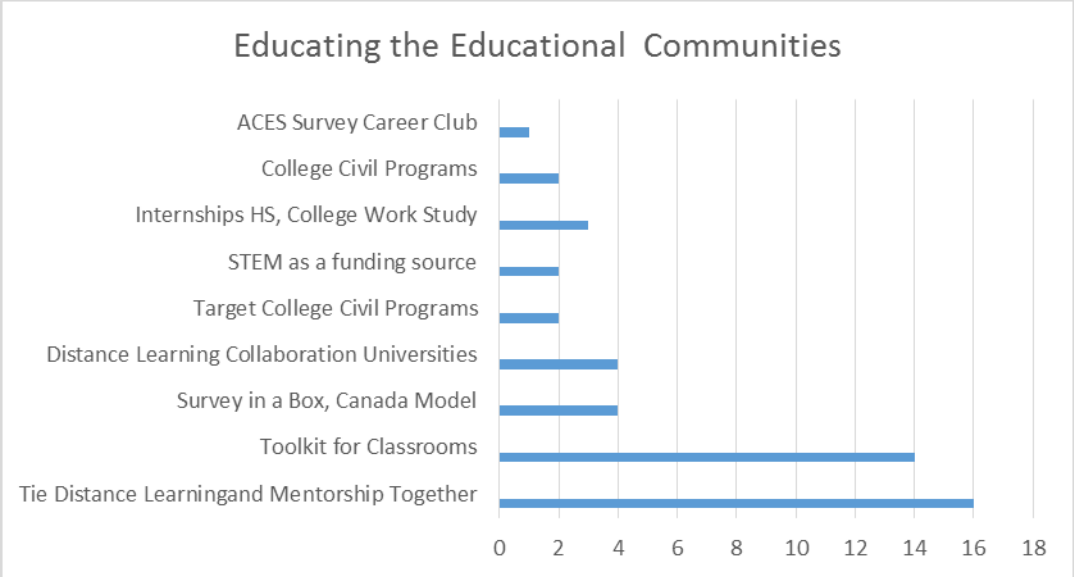
The Public

Good, positive human interest stories were voted as the top way of educating the public (14). Given the same amount of votes was creating a classroom toolkit for use by teachers (14). A survey day (possibly within national surveyors week, possibly in connection with survey days internationally or in various states) was thought to be an educational tool with good merit (8). Leveraging public representatives to help educate the public by first educating them was discussed (5). Pitching stories to the media, outside the survey profession was an idea of the group (2). Getting the word out to FEMA, connecting with the public in their everyday lives, education regarding 911 and how it works and relates to survey, and the investment that the field has in the public good were all discussed. The liability of not having a solid foundation of surveyors serving the world was also a tool to educate the public.



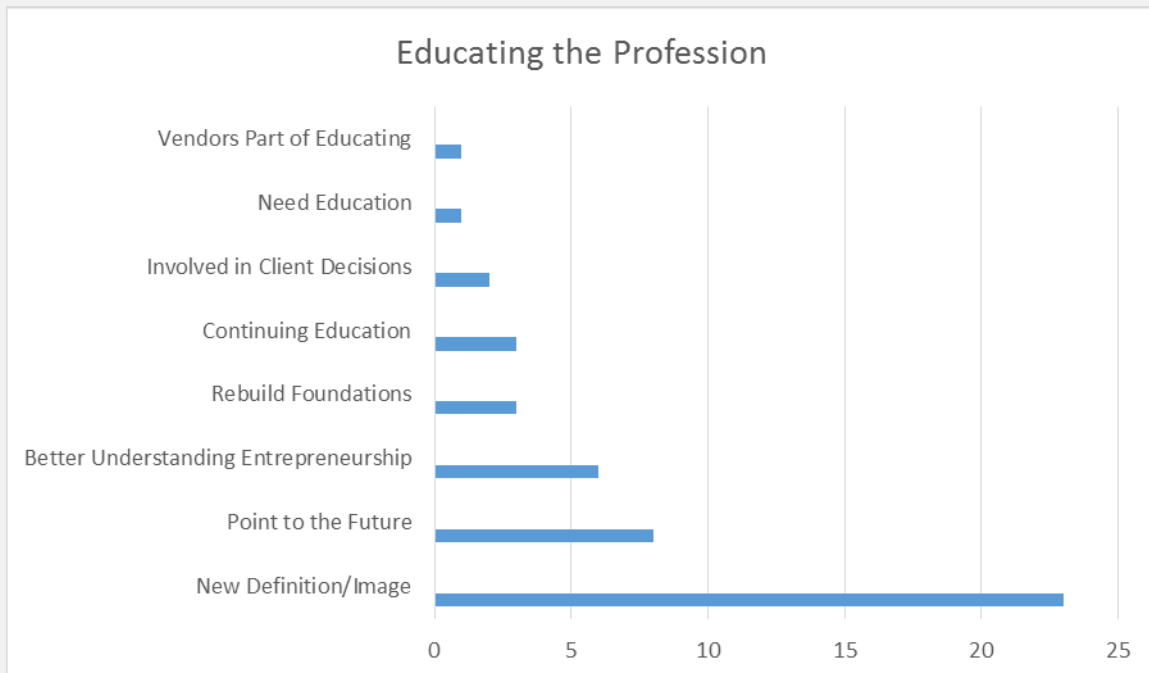
The Educational Community

The focus for educating the educational community showed top votes in tying mentorship and distance learning together (16). Next a toolkit prepared for classrooms for teachers and counselors to use was a high priority (14). A “Survey in a box” model from Canada was brought up as a good tool to educate the educational community (4) and distance learning collaboration with various universities (4). Field trips (3), Internships in HS, College, Mentorships and work study programs (3), civil engineering programs (2), STEM as a funding source (2) an ACES Survey Career Club (1) received votes. Additional ideas were to go into liberal arts colleges to educate, rather than into just the related professions, also colleges of geography, science and math. Future cities and the role of surveying in everyday life were cited as important to share with the educational community. The point was made that someone has to provide the education and fund the efforts.



The Profession

The greatest need by far in educating the profession of surveying was determined to be sharing with them a new definition of the surveying image statement of surveying (23). Education within the profession that points to the future and accurately defines the changing role of surveying and forward technologies was determined to be important (8). A better understanding of entrepreneurial spirit in the profession and how that means not only educating but building the profession, business and recruiting future leaders (6). Rebuilding foundations, theoretical and scientific in the education realm within the profession is needed, and continuing education beyond society meeting is required. Sharing the education that surveyors are involved in decision making with clients (2). In the profession, many “old timers” exist and the question was posed, can we bring them up to date? Are there rewards for doing more work through technology with more efficiency? (1) Vendors are a part of the education process in all aspects of the field and should be a part of educating the profession. How do we expand our understanding of measurement was also brought up. The chart below outlines the summary of this discussion.



VII. Strategic Planning (Replaced with Tangents and What Should Be Included in the Survey Profession)

The forum used this segment of the agenda for addressing the missing pieces identified throughout the day. A strategic plan will be needed for the plan of action and for implementation, and as stated in the next section, that effort will need further discussion among the forum members. This

Strategic Planning Effort, inclusive of a Marketing, Outreach and Public Relations Plan, would be generally another day of collaboration.

- **Tangents**

When the “tangents” board was visited and the notes upon it were read, the following questions and comments came to light:

- We need a corporate sponsor
- How do we support the programs we are recommending in this plan of action?
- If we attempt to encompass services that we feel should be under the surveying definition, and this process is legislative, what potential problems would we open ourselves up to in that legislative process. Accept the broad definition as an image and a career but do not necessarily go through any approval or legislative process.

The tangents were briefly discussed and outlined with no further need for action.

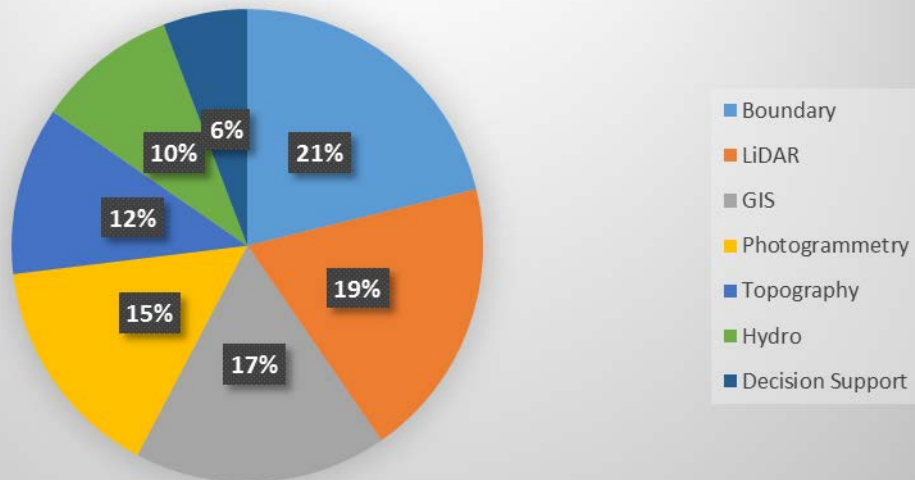
- **What should be included in the survey profession? This question was posed to the forum attendees and the following results were tallied:**

In addition to the priorities below, the group double-voted on those areas shown in the pie chart by voting for “all of the above”. In addition to the areas shown below, the written summary is as follows: the group determined that the following should be included in the image description of the survey profession;

- Boundary (11)
- LiDAR-mobile, terrestrial, aerial (10)
- GIS (9)
- Photogrammetry-aerial and terrestrial (8)
- Topography (6)
- Hydro 5
- Decision support (3)
- Most modern measurement is either XYZ or imagery --Theoretical foundation (2)
- Large Scale Metrology (1)
- Project Management (2)
- Consulting (1)
- Phase One Studies
- Attributes
- Require LS for some public jobs such as records management

The chart below assesses the priorities by percentage:

What Should be Included in Survey Image Moving Forward?



X. NEXT STEPS

At the end of the meeting, when we talked about moving forward, the participants were very interested in moving forward and addressing the next steps as a forum. The group was thankful that NCEES had the insight to bring in a forum group and were appreciative for the opportunity to participate. The following next steps were identified:

1. Complete Meeting Summary Report and Draft General Plan of Action
2. Develop Next Forum to Continue the Conversation and Meet Again By June-Face to Face preferred, video conference possible (Unanimously voted yes)
3. Set up Basecamp to work as a committee and continue communication
4. Begin to gain publicity through publications in the forum and present in the room
5. Take back presentations and information to Boards and Organizations that everyone in the room represents
6. Develop a consistent message
7. Possibly create subcommittees to address implementation and for further discussion, particularly for recruiting, education and creating a national brand.
8. Define this meeting, write up summary of what NCEES is doing (paragraph)
9. Gather more data
10. Engage a larger discussion group at the appropriate time, with the appropriate input.

5. GENERAL PLAN OF ACTION

The following Plan of Action is the result of the January 22, 2016 Survey Forum:

The momentum gained at the January 22, 2016 survey forum was the level of momentum needed to address and successfully move forward **to develop and recommend a plan of action to reduce the diminishing number of surveyors**. The following general plan of action is recommended by the forum participants. It should be clearly noted that this is a general plan of action with no specific long and short term priorities, no responsible parties for the action and only general guidance, which was the charge of the forum. The forum would like to take this general plan of action one step further and develop an implementation plan, which would be the next step in this process. One additional meeting of the forum group in 2016 will further develop the implementation plan, assign leadership responsibility and provide the additional momentum to move the plan forward with engagement of the group. Action items are numbered in the order that they were discussed at the forum.

Opportunities from SWOT Analysis:

1. Seek ways to educate, recruit and emphasize the new national brand/image through the expanding market for surveying and all related services
2. Use the fact that we live in a geospatial world to share the surveying story
3. Tap into our technologically savvy youth to recruit
4. Teach the public and expand knowledge to bridge the gap between their general lack of understanding of legal principles related to surveying and the profession
5. Use facts with Increasing salaries, fast paced technology to recruit new surveyors

Solutions

6. Extend professional reach to encompass reduced cost of technology, changing market, growing economy and more activity to create and express opportunity in the profession.
7. Develop more outreach, promotion and advertising about surveying in non-traditional markets.
8. Have a unified approach across the nation to the image/national brand of surveying
9. Educate and mentor as solutions to the number of surveyors entering the profession and taking the exam.
10. Engage surveyors in taking the lead themselves in solving the issue.
11. Create awareness by having publications be the champions for getting the message out.

National Brand/Image Plan of Action/Action Items:

12. Improve the image of the profession + the state board (perception)
13. In our changing society – define what falls under survey. Begin with something like this from the Forum. Be more inclusive of “what is surveying” bring into profession and then they will see benefit of being licensed (sample only):

Surveyors, best described in modern times as Geomatics Professionals, guarantee that abstract geospatial information matches the reality on the ground. By applying this guarantee to land and property rights, they underpin the foundation of all modern economies. The field of surveying/geomatics encompasses a broad spectrum of services and high-tech tools. Boundary surveying, Photogrammetry (both aerial and terrestrial) GIS, LiDAR (mobile, terrestrial and aerial), Topography, Hydrographic, decision support, large scale metrology and modern measurement or imagery all fall within the theoretical foundation of the survey profession. Although not all of these aspects of surveying require a license, the professional surveying license provides those in the field with additional opportunity, higher salaries and a level of professional stature equivalent to the professional licenses of engineers and architects. The profession opens doors to use technology unavailable in other professions. Surveyors are licensed to protect the health, safety and welfare of the public and are proud to do so.

14. Create unification of the definition of survey for Image Purposes
15. Encourage Surveyors not investing in profession to do so—goal-find ways to build interest
16. Outreach-expose people to profession
17. Promote Desired Image of Surveying as the following:

Expert/authority, “professional”, problem solver/communicator , high tech profession/tech savvy manager of data, “not just the guy in the orange vest”, a respected professional protecting the public, educated, a land title expert, intelligent, financially rewarding, historian, guarantor of spatial data matching reality. These image discussions were focused on elevating the registration/licensing within a broader group related to the profession.

18. As a part of image refinement, select several elevator speeches to use for publicity and for the profession for education, recruiting, general public and profession (samples):

A surveyor is a land title expert that uses cutting edge technology to gather data to help solve boundary issues. We also gather and analyze other geospatial data to aid in the decision of any issue that has a geographical component.

Surveyors are a group of very professional, loyal individuals that are vested in their careers. We are well paid, well-educated and tech savvy. Our profession opens doors to use technology unavailable in other professions. We are licensed to protect the health, safety and welfare of the public and we are proud to do so.

The second oldest profession: George Washington, Thomas Jefferson and Abraham Lincoln, to name a few, were surveyors.

19. Define and refine the desired image of surveying as a problem solver/communicator, high tech educated expert and respected professional protecting the public with the authority as an expert to manage the data and guarantee that spatial information matches reality.
20. Once defined, in clear simple terms, communicate the message of surveying through creation of a logo, brand and avenues of information using multiple forms of media, including Youtube and social media, sending surveyors (real life examples) into schools to speak, into boy scouts and girl scouts, expanding geocaching, building a strong web presence and encouraging surveyors to participate in other societies that relate such as real estate, BIA, ULI and others. Create ads, commercials and special interest stories and work with public officials. (Also seek awards, create press, and prepare articles for general interest publications and blogs).
21. Keep up with change. Redefine the image as needed, stay on the leading edge and maintain the brand by having vision for the future markets.

Recruiting Plan of Action/Action Items:

22. Recruit veterans, recruit in colleges where students are in related degrees, recruit in K-12 schools with students and parents educating them for the future, recruit in STEM programs, recruit retrained and post college professionals. Get teachers, counselors and professors information to share with career-bound students.
23. Use recruiting tools such as American Geodesist TV show, local news mediums, social media, comic/coloring books, PR firm, newsletters.
24. Have the story to tell “Why be a surveyor” and the message that it is a diverse work environment, requires conflict resolution (quasi-judicial role, that surveyors make the world a

better place and work in a high tech, rapidly changing profession with a deep history, that pays well.

Educating Plan of Action/Action Items:

25. Educate the public with good, positive human interest stories. Pitch multiple stories to the media. Connect with the public and their everyday lives. Help them understand why survey is important to them. Leverage public representatives and create a national survey day. Educate within FEMA
26. Educate the Educators and Students by creating a toolkit to provide teachers and counselors, host field trips, use the survey in a box model from Canada, visit STEM programs and K-12 as well as colleges in engineering and similar programs. Create distance learning program, build internship programs in partnership with colleges.
27. Educate the profession first by creating a new image/definition statement of surveying and sharing it/communicating with the profession. Point to the future, provide education within the field to help grow the future professionals and engage existing professionals to do so. Engage vendors, rebuild foundations and foster entrepreneurial spirit.
28. To help fund plan of action and action item implementation, potentially seek corporate sponsors, take information back into organizations represented at the forum to build their support and further engage forum attendees to begin implementation steps within their control.

Next Steps Plan of Action/Action Items

29. Complete Meeting Summary Report and Draft General Plan of Action
30. Develop Next Forum to Continue the Conversation and Meet Again By June-Face to Face preferred, video conference possible (Unanimously voted yes)
31. Set up Basecamp to work as a committee and continue communication
32. Begin to gain publicity through publications in the forum and present in the room
33. Take back presentations and information to Boards and Organizations that everyone in the room represents
34. Develop a consistent message
35. Possibly create subcommittees to address implementation and for further discussion
36. Define this meeting, write up summary of what NCEES is doing (paragraph)
37. Send out Press Release about the forum
38. Possibly gather more data
39. Possibly create a Marketing, Public Relations and Outreach Plan
40. Determine effectiveness of engaging a larger discussion group at some level
41. Develop this general plan of action into a more specific plan of action and strategic plan at the next meeting to identify short term and long term actions, assign champions for each of the actions from within the forum group, develop time frames and create an implementation plan.

6. BIOGRAPHIES OF ATTENDEES AND PRE-MEETING INPUT

Attendee Biographies and ideas to promote surveying as a career. Pre-meeting notes.

Michael Anderson was appointed Editor of *POB* Magazine and www.pobonline.com in October, 2014, following 30 years in general and business-to-business media. His background includes 20 years of covering the construction and heavy machinery industries as an editor with such publications as Site Prep, Equipment World, Better Roads, Construction Equipment and Canada’s Equipment Journal. A native of Ontario, Canada, Anderson has worked in the U.S. market primarily since 2006. He was based in Tuscaloosa, Alabama for a number of years, before relocating to the head office of BNP Media in Troy, Michigan, to head up editorial coverage for the *POB* family of properties, which also includes the www.geodatapoint.com website.

Since transitioning into the surveying, mapping and geospatial space, Anderson has been struck by the passion that exists throughout the sector by professionals who care deeply about their craft, their livelihood and their colleagues. He has welcomed and encouraged Professional Surveyors to “put pen to paper” and share their thoughts with *POB* readers in the form of Guest Columns, Letters to the Editor, website postings and participation in online forums.

To promote surveying as a career, he recommends a nationwide fund that will assist tech-savvy students in achieving four-year degrees on their path to licensure. Depending on a student’s need, funds will be distributed via grant or no-interest loan — the latter to be paid back over a 25-year commitment to the surveying, engineering and related professions. The fund will be sourced from all state associations.

Earl F. Burkholder, PS, PE, F.ASCE

Current job titles: Emeritus Faculty, New Mexico State University
President – Global COGO, Inc.

Field Work: As a retiree, I do no field work. However, I have supervised crews and taught students (labs etc.) throughout my career of 40 plus years.

State of first RLS: Michigan 1973,

Subsequent licenses: New York 1975, Minnesota 1975, North Dakota 1975, Nebraska 1976, Oregon 1981, Ohio 1996, New Mexico 1999

Earl F. Burkholder retired from teaching in the Surveying Engineering Program at New Mexico State University (NMSU) in July 2010. His education includes a BSCE from the University of Michigan, a MSCE from Purdue University, and sabbatical study at the University of Maine. His career includes 5 years working for a large international engineering company, teaching at the Oregon Institute of Technology for 13 years, being self-employed for 5 years, and teaching at NMSU for 12 years.

While self-employed he incorporated a business, Global COGO, Inc. and obtained a trademark on the word, BURKORD™ which covers 3-D coordinate geometry and error propagation software and the design of a 3-D data base. Professional activities include serving two non-consecutive 4-year terms as Editor of the ASCE Journal of Surveying Engineering, serving on the ABET Applied Science Accreditation Commission (Chair 2000-2001), and President of the New Mexico Professional Surveyors during 2009. He is currently Past Chair of the ASCE Geomatics Division Executive Committee and is a member of NMPS, ASCE, ASPRS, AGU, and AAGS. He was presented the ASCE Surveying & Mapping Award in 2010 and the New Mexico Professional Surveyors bestowed a Life Achievement Award in 2013.

He wrote a book, “The 3-D Global Spatial Data Model: Foundation of the Spatial Data Infrastructure” which was published by CRC Press (Francis & Taylor) in April 2008. He is currently preparing a 2nd edition of the book for CRC Press. www.globalcogo.com/SecEd.html

He has also written numerous articles on surveying (www.globalcogo.com/refbyefb.html) and has written about the Future of Surveying over the years (www.globalcogo.com/future.html).

Finally, he wrote an item for ASCE and the NCEES Surveying Summit and recently posted same on the Global COGO web site. www.globalcogo.com/DisruptiveInnovation.pdf.

ONE IDEA – We, surveying profession, should establish ourselves as the leaders in competent use of 3-D digital spatial data. The “heavy lifting” is already done. Leadership can make it happen. Education at all levels is essential!

Ralph Guida - As President of Survey Operations, Mr. Guida leads a staff of roughly 60 Professionals, Technicians, Field Crews, and support staff throughout California. With offices in Pleasanton, Fresno, Los Angeles, Irvine, and San Diego, staff supports the Pipeline, Transportation, Land Development, Water & Waste Water, Site Development, and Construction Industries.

Mr. Guida’s survey career began in High School, where he worked for his father’s Land Surveying company (Ralph Guida Surveying). Starting in the field and working through Union Apprentice Programs he found his bailiwick. In July of 1995, Mr. Guida founded Guida Surveying Inc., continuing the legacy of his father’s vision, and starting the 2nd generation of Guida family Surveyors. His son, Ralph Guida V, will be the 3rd generation in this lineage.

Guida Surveying Inc.’s projects span the professions licensure, providing Boundary & ALTA Surveys, Basemap Development, Right-of-Way Engineering, Topographic Mapping, Legal Descriptions and Plats, Laser Scanning, Aerial Photogrammetry, Construction Staking, and

other services. Field & Office work is roughly 50/50. Mr. Guida received his Professional Land Surveyors license in July of 1994, for the State of California.

Idea to promote Surveying as a career:

The next generation of Land Surveyors will be stimulated by the technical advances in our industry. This “Tech Savvy” generation thrives in industries where technology continues to expand. Promotion of GIS, GPS, Laser Scanning, UAV’s, Digital Orthographic Photography, and other advancements will entice the handheld millennial generation, satisfying their continuing desire for technical advancement.

Dr. Bill Hazelton Owner, Coolgardie Consulting and Wollindina Media

- Electronic textbook publishing, consulting to a range of operations on geospatial matters, including education programs. Development of promotional campaigns for surveying/geomatics programs. No significant field work.

Professional Positions

- President, Surveying and Geomatics Educators Society.
- Director and Executive Committee Member, American Society for Photogrammetry and Remote Sensing.

Previous Positions

- Professor of Surveying/Geomatics/Geodetic Science/GIS and related activities at several universities colleges in Australia and the US, 1993–2014. At several of these positions, I was able to help double the number of students in the program in a relatively short period of time.
- Consulting surveyor, Australia and US, with an emphasis on deformation and forensic surveys.
- Licensed cadastral surveyor, Victoria (1985 to present) and Northern Territory (1994–2002), Australia.
- Research Scientist, Glaciology, Australian Antarctic Program and ANARE, 1985–1987.
- Field surveyor with SR&WSC (later RWC), Victoria, Australia, 1976 to 1992.

Qualifications

B.Surv., Ph.D. (Melb.), L.S. (ret., Vic)

Publications

2 textbooks, 3 book chapters, 18 refereed journal articles, 23 technical articles and notes, 64 conference papers and presentations.

Teaching

Since 1993, I have taught 76 different formal courses at 7 different institutions: of which 60 were new courses I created, and 10 were graduate-level courses. This does not include graduate supervision courses and seminars. Average teaching load while teaching was 11.6 course sections per year. I have taught across almost the entire surveying/geomatics curriculum.

Grants

Approximately \$3.3 million in grants and awards.

Promotion of Surveying as a Career

1. Recognize that direct measurement is no longer a critical skill in geospatial work.
2. Recognize that the degree of complexity in spatial data collection and processing is expanding faster than current education programs can handle it, so on-the-job training is far too slow and process for a comprehensive understanding of the discipline.
3. Most potential recruits to the profession are seeking something very different to traditional surveying, and unless this can be offered, they will not be attracted.
4. Surveying/geomatics is far broader a career than most people inside it recognize, so promotional efforts need to go beyond our traditional views of possible geospatial careers.

Richard C. Heieren, PLS

Position: Owner *Northland Surveying and Consulting LLC* / Professional Surveyor

Registration: Alaska #4473S, 1978
 Idaho #13492
 Montana #19740
 Washington#46885
 US Mineral Surveyor, 1980

Certifications: Alaska Certified Erosion & Sediment Control Lead
 Wetlands Identification and Delineation

Experience: Mr. Heieren grew up in a land surveying family and has been employed in land surveying since 1970.

- He has owned and operated his own business since the spring of 1983 employing 12 people.
- He has served as president of the Fairbanks Chapter of the Alaska Society of Professional Land Surveyors and as past chair of the Western Federation of Professional Land Surveyors. He served on the State of Alaska Board of Registration for Architects, Engineers and Land Surveyors from 2005 to 2013 (serving two years as Chair) and is presently an Emeritus member.

Volunteer Organizations: City of Fairbanks Landscape Review Board
 Member State of Alaska Board of Registration
 for Architects, Engineers and Land Surveyors
 Salvation Army Fairbanks Advisory Board

Professional Organizations: Alaska Society of Professional Land Surveyors
 National Society of Professional Surveyors
 Western Federation of Professional Land Surveyors

Committees: FNSB Landscape Review Board
 City of Fairbanks- Landscape Review Board
 FNSB Title 17 Road Standards
 National Council for Examiners for Engineers and Surveyors various Committees and past Assistant Vice President of the Western Zone

Interests: Mr. Heieren is a licensed private pilot, successful bow hunter and avid fisherman.

Promote Surveying as a Profession: Driving a \$135k 911 Porsche Turbo (making young people aware of one thing that draws them into the surveying profession- money)

JOHN D HOHOL

- National Society of Professional Surveyors (NSPS) Head of Delegation to FIG (International Federation of Surveyors)
- President, FIG Foundation

I am basically retired and do volunteer work with NSPS, FIG and the FIG Foundation. I act as the head of the NSPS delegation to FIG representing NSPS and AAGS at FIG meetings and conferences and in all FIG activities.

I also serve as president of the FIG Foundation, an independent body within FIG (www.fig.net/figfoundation). Its aim to help build a sustainable future with the following missions:

- To give grants and scholarships to projects, for instance to develop curricula for surveying education, training and capacity building, especially in developing countries;
- To encourage research into all disciplines of surveying and to disseminate the results of that research;
- To promote high standards of education and training for surveyors and to facilitate continuing professional development;
- To educate people in the disciplines of surveying, particularly in developing countries and countries in transition;
- To promote the use of distance learning, networking, eLearning and knowledge management in surveying education and continuing professional development;
- To promote the exchange of surveying personnel for greater understanding of all facets of the profession of surveying;
- To support by seed funding conferences, meetings of young surveyors and similar events in co-operation with international agencies such as the United Nations.

The key to attracting young people into a career in surveying is to connect with students BEFORE they reach high school. A great way to introduce them to surveying is geocaching. You can then expand and introduce them to all the latest gee-whiz technology used by surveyors- laser scanning, drones, GIS, GPS, etc.

Willace Johnson

My name is Willace Johnson, Registered Professional Land Surveyor No. 6118 in the State of Texas. Currently, I am a professor in the Surveying and Mapping Department at Tyler Junior College in Tyler, Texas. We are part of a partnership degree program with the University of Texas at Tyler. I primarily

teach the lab application courses of the surveying program and obtained my professional registration from the Texas Board of Professional Land Surveying in June, 2009.

In addition to my teaching responsibilities, I am the owner/operator of Wallace Johnson Surveying and Mapping, LLC (TBPLS Firm No. 10167000) located in Tyler, Texas. I personally complete every project, start to finish, including; research, record sketches, field work, drafting, client communication and boundary determination. The focus of this company is boundary surveying and I do not hold licenses in any other jurisdictions.

I hold active memberships in numerous professional organizations currently holding a Director position with Chapter 4 of the Texas Society of Professional Surveyors (TSPS) and Board Member of the Surveying and Geomatics Educator's Society (SaGES).

To promote surveying as a career it is important to have collaboration and investment from all of the shareholders; Professionals, educators (secondary & higher education), licensing boards and future professionals. Through this collaboration we should first define 'surveying career' and the identifiers that recognize someone as having this career. Then, identify the target audience to aggressively recruit and develop strategies and resources to engage this audience. Finally, document and assess. In my opinion, advances in technology have very quickly created career opportunities for many people outside of the scope of a surveying licensing board. In the State of Texas the scope of a work being regulated by the licensing board is limited to boundary surveying only. The realities are that boundary surveying makes up only a small percentage of work within the geospatial sciences. I believe we must focus on options to expand the scope of licensing boards or encourage more geospatial professionals to pursue and obtain professional surveying licensing.

Pam Nobles, PSM, PLS, SP

President, Owner
Diversified Design & Drafting Services, Inc. (3DS)

I perform no field work.

First licensed as a Professional Surveyor and Mapper in Florida in 1996

Other Jurisdictions:

- Alabama – Professional Land Surveyor 2006
- Virginia – Surveyor Photogrammetrist 2010

I graduated from the University of Florida with a BS in Surveying and Mapping. I purchased my current company in 1998. 3DS thrives by producing three dimensional surveys for engineering design. We utilize traditional survey methods, terrestrial LiDAR, mobile LiDAR, aerial LiDAR, photogrammetry and UAV mapping. We do very little boundary surveying.

I was appointed to the Florida Board of Professional Surveyors and Mappers in October 1999 and served for over 11 years. During that time I was Board Chair for three years. I also began to participate in NCEES and have worked as a subject matter expert on the survey exam for over 12 years. I have also served on numerous committees. I am currently serving on the Exam Audit Committee.

I believe that to promote surveying as a career we are going to have to cast a wider net. We have raised a very tech savvy, entrepreneurial generation. I feel that we should start looking in entrepreneurial incubators, computer coding fields and the gaming industry to name a few.

BJ Roberts

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
1. Nicholls State University	Yes	2010-2011	Interdisciplinary Studies
2. University of Wyoming		2011	Relevant Surveying Courses
3. Louisiana State University		2007-2012	Relevant Surveying Courses
4. Southeastern Louisiana University		2005-2007	Undeclared Major

Personal Bullets

- Born May 31st, 1987 in small town (Franklinton, LA)
- Graduated from Franklinton High School 2005
- Mother worked for Louisiana State Police
- Father worked as a field technician for Louisiana State Land Office (unlicensed)
- Introduced to surveying by father during high school
- Spent summers working on private surveys with father
- Met future wife at Southeastern Louisiana University in 2006
- Married to wonderful wife (Julie) in 2009 (No children yet)

Positions

5/2008 - Present – Sigma Consulting Group
 2013 – Present “Survey Coordinator” 60% Field - 40% Office

Honors

- 6/2013 – Licensed as a Professional Land Surveyor in Louisiana
- 5/2014 – Licensed as a Professional Surveyor in Mississippi
- 12/2014 – Licensed as a Registered Professional Land Surveyor in Texas
- 2014/2015 – Named Louisiana Society of Professional Surveyors District 6’s Secretary
- 2015 – Named Louisiana representative for NSPS “Young Surveyors Group”
- 2015 - Selected to be part of the NCEES Emerging Engineers and Surveyors Group
- 2015 - Licensed as a Professional Land Surveyor and Mapper in Florida

Surveying Career Promotion:

Re-brand the public's perception of who a surveyor is and what it is he/she does.

Gavin Schrock, PLS is a surveyor and technology writer based in Washington State. Surveying since the late 70's in the fields of boundary, geodesy, mapping, assets, energy, defense, geo-sciences, and utilities, he has been licensed in Washington State since 1999. Gavin is the administrator of the Washington State Reference Network, a regional public-private cooperative GNSS network serving the surveying, construction, agriculture, science, resources and asset communities since 2002; he also performs and consults on sundry surveying projects to include deformation monitoring, large scale metrology, and remote sensing. Gavin is also the editor of xyHt magazine, a print and online publication serving positioning location, and measurement disciplines. He is published in these fields and has taught these subjects locally, nationally, and internationally.

How to promote the profession? There was a time when a great many professional activities were readily recognized as falling under the purveyance of surveyors. And a while some of the more purely-measurement aspects have been streamlined or otherwise simplified to require less hands to perform, surveyors may be somewhat culpable in losing their authoritative role - the trend from within the profession to view boundary alone as "real surveying" will set a hard limit on the size of the profession. We have to stop this shunning of non-boundary surveyors (or those who do a mix). Reaching out and including hydro & marine surveyors, engineering surveyors, asset and mapping surveyors, geodetic, utility, energy... then the numbers and public profile of the profession may return - not to mention capturing the imagination of the youth needed to carry the profession forward.

Invited but unable to attend due to travel/weather:

Curtis W. (Curt) Sumner has served as the Executive Director of the National Society of Professional Surveyors (NSPS) since September 1998, working to support its mission of serving the interests of professional surveyors nationwide, and in their relationships internationally.

He was first licensed as a Land Surveyor (LS) in Virginia in 1980, then as a Property Line Surveyor in Maryland in 1990. His opportunities for conducting field work are limited as a result of his responsibilities/obligations to NSPS. Still, he performs surveys on a limited basis. Prior to his current role with NSPS, he was the owner of a surveying consulting firm.

In his current role, he is a primary point of contact and liaison for the surveying profession to numerous national and state organizations in the geospatial community, among federal agencies, and with the U. S. Congress, often providing testimony before Congressional hearings on topics about which the surveying profession has an interest. He is a member of the NSPS Delegation to the International Federation of Surveyors (FIG), and serves on the Surveying Curriculum Advisory Committee at Troy University in Alabama.

Mr. Sumner currently serves as the NSPS Delegate to the Coalition of Geospatial Organizations (COGO) whose purpose is to increase dialog among a variety of interest groups, diminish discord among them on issues affecting them respectively, and speak with one voice on issues when consensus can be achieved. He served as COGO Chair in 2010.

As a long-time member representing NSPS on the ALTA/ACSM Land Title Survey Requirements Committee, he has joined his fellow committee members in the development of upgrades made to these standards, including the recently adopted 2016 version. He also assists in responding to questions/concerns expressed about the standards, and conducts workshops about the them.

Prior to his appointment as NSPS (and then, ACSM) Executive Director in 1998, Sumner was the NSPS Governor representing the Virginia Association of Surveyors for the years 1987-1994, serving as Chair of the Board of Governors in 1992 and 1993. He served in the officer Chairs of NSPS, and was its President during the 1997-1998 term.

Mr. Sumner is an invited presenter and keynote speaker throughout the U. S., and his articles routinely appear in many national and state publications.

Since January 2011, he has hosted the *NSPS Radio Hour*, a weekly, hour-long web radio show broadcasted at www.americaswebradio.com at 11 AM Eastern on Mondays.

In 2006, he was named by *Professional Surveyor Magazine* to be among the Top 25 Most Influential individuals in the surveying profession during the first 25 years of that magazine's existence.

My one idea for promoting surveying as a career is to create an environment in which professional surveyors have the tools, and the desire, to interact with their communities (service organizations, city/county councils, schools, educational organizations, etc.) to demonstrate that surveyors are professionals and to explain how/why they and their profession are critical to every aspect of life, and worthy of respect in both the eyes of the public and in compensation.

**Frank Taylor, CP, RPS - American Society of Photogrammetry & Remote Sensing Representative
G-Squared, LLC**

20 Ardmore Highway
Fayetteville, TN 37334
931-438-1414

Current Job Title: Production Manager
Field Work: less than 2%
Original Jurisdiction: Certified Photogrammetrist #R1208 (ASPRS), since 2002
Licenses: Registered Photogrammetric Surveyor (South Carolina, Virginia)

Frank Taylor is a licensed Professional Photogrammetric Surveyor (South Carolina and Virginia) and an ASPRS Certified Photogrammetrist. He began his career as a Cartographer with the Defense Mapping Agency (NGA). He has worked in various capacities in the Geospatial industry including project and program management, operations management, business development, AT specialist, and other technical aspects of photogrammetry. Frank has managed numerous project types ranging from the standard photogrammetry based topographic mapping (Plan, DTM) project to GIS and aerial triangulation as well as both Airborne and Mobile LiDAR projects serving the transportation, mining, land development and energy industries. He has been responsible for administering contracts for several federal agencies including the US Army Corps of Engineers, the National Park Service and the US

Department of Homeland Security. He has also managed contracts with several state Departments of Transportation including Tennessee, Indiana and Arizona and numerous local governments.

He is an active member of SAME and TNGIC and is the current Assistant Director of the Professional Practice Division of the American Society of Photogrammetry and Remote Sensing (ASPRS). Frank earned a Bachelor of Science degree in Geology from Tennessee Tech University.

Surveying as a career: Surveying is a good career but does require hard work and at times the field work can be quite challenging. I think promoting the new technologies and the numerous positive aspects of the career is a good starting point.

Ron Whitehead PLS

Current Job Title: Public Works Director / County Surveyor
Washington County, Utah

Professional Associations: President, National Association of County Surveyors
Past President, Western Federation of Professional Surveyors
Past President, Utah Council of Land Surveyors
Member NSPS, Liaison National Association of County Surveyors

Licenses Utah (obtained April 1987)
Nevada (obtained March 1988)
Arizona (obtained July 1988)

Most of my workload is in the Public Works area but my County Surveyor position allows me to still stay active in the Surveying profession. My current position with the National Association of County Surveyors allows me to meet other County Surveyors from around the country and discuss common issues and concerns with not only the County Surveyors position but with surveying in general. Surveying field work is less than 10% of my job requirements now.

My idea for promoting Surveying as a career would be to have the surveying organizations take a bigger role in promoting the surveying profession to the newer generation of the work force and in the schools.

David Zenk is a Geodesist with the National Geodetic Survey, serving as Regional Geodetic Advisor for the Northern Plains Region (MN, ND, SD, IA, NE) and has been with the agency since 2007. He holds Bachelor of Science Degrees in Civil Engineering and Mechanical Engineering from the University of Minnesota and a Master’s Degree in Land Surveying from Oregon State University. He taught Civil Technology and Land Surveying at Dunwoody College of Technology in Minneapolis, MN for 21 years. He worked for the Minnesota Department of Transportation Geodetic Unit for 7 years. He has served as adjunct faculty at the University of Minnesota Geography Department and at Saint Cloud State University Geography Department. He is a past Chair of the Minnesota GIS/LIS Consortium. He is currently serving as Editor of the MSPS “Minnesota Surveyor” magazine. He has been licensed as a Registered Land Surveyor and Professional Engineer in the State of Minnesota since 2001.

Summary of the Initial ideas submitted by the group above to promote a career in surveying:

To promote surveying as a career, he recommends a nationwide fund that will assist tech-savvy students in achieving four-year degrees on their path to licensure. Depending on a student's need, funds will be distributed via grant or no-interest loan — the latter to be paid back over a 25-year commitment to the surveying, engineering and related professions. The fund will be sourced from all state associations.

ONE IDEA – We, surveying profession, should establish ourselves as the leaders in competent use of 3-D digital spatial data. The “heavy lifting” is already done. Leadership can make it happen. Education at all levels is essential!

Idea to promote Surveying as a career:

The next generation of Land Surveyors will be stimulated by the technical advances in our industry. This “Tech Savvy” generation thrives in industries where technology continues to expand. Promotion of GIS, GPS, Laser Scanning, UAV's, Digital Orthographic Photography, and other advancements will entice the handheld millennial generation, satisfying their continuing desire for technical advancement.

Promotion of Surveying as a Career

1. Recognize that direct measurement is no longer a critical skill in geospatial work.
2. Recognize that the degree of complexity in spatial data collection and processing is expanding faster than current education programs can handle it, so on-the-job training is far too slow and process for a comprehensive understanding of the discipline.
3. Most potential recruits to the profession are seeking something very different to traditional surveying, and unless this can be offered, they will not be attracted.
4. Surveying/geomatics is far broader a career than most people inside it recognize, so promotional efforts need to go beyond our traditional views of possible geospatial careers.

Promote Surveying as a Profession: Driving a \$135k 911 Porsche Turbo (making young people aware of that draws them into the surveying profession-it's about money)

The key to attracting young people into a career in surveying is to connect with students BEFORE they reach high school. A great way to introduce them to surveying is geocaching. You can then expand and introduce them to all the latest gee-whiz technology used by surveyors- laser scanning, drones, GIS, GPS, etc.

To promote surveying as a career it is important to have collaboration and investment from all of the shareholders; Professionals, educators (secondary & higher education), licensing boards and future professionals. Through this collaboration we should first define ‘surveying career’ and the identifiers that recognize someone as having this career. Then, identify the target audience to aggressively recruit and develop strategies and resources to engage this audience. Finally, document and assess. In my opinion, advances in technology have very quickly created career opportunities for many people outside of the scope of a surveying licensing board. In the State of Texas the scope of a work being regulated by the licensing board is limited to boundary surveying only. The realities are that boundary surveying makes up only a small percentage of work within the geospatial sciences. I believe we must focus on

options to expand the scope of licensing boards or encourage more geospatial professionals to pursue and obtain professional surveying licensing.

I believe that to promote surveying as a career we are going to have to cast a wider net. We have raised a very tech savvy, entrepreneurial generation. I feel that we should start looking in entrepreneurial incubators, computer coding fields and the gaming industry to name a few.

Surveying Career Promotion:

Re-brand the public's perception of who a surveyor is and what it is he/she does.

How to promote the profession? There was a time when a great many professional activities were readily recognized as falling under the purveyance of surveyors. And a while some of the more purely-measurement aspects have been streamlined or otherwise simplified to require less hands to perform, surveyors may be somewhat culpable in losing their authoritative role - the trend from within the profession to view boundary alone as "real surveying" will set a hard limit on the size of the profession. We have to stop this shunning of non-boundary surveyors (or those who do a mix). Reaching out and including hydro & marine surveyors, engineering surveyors, asset and mapping surveyors, geodetic, utility, energy... then the numbers and public profile of the profession may return - not to mention capturing the imagination of the youth needed to carry the profession forward.

My one idea for promoting surveying as a career is to create an environment in which professional surveyors have the tools, and the desire, to interact with their communities (service organizations, city/county councils, schools, educational organizations, etc.) to demonstrate that surveyors are professionals and to explain how/why they and their profession are critical to every aspect of life, and worthy of respect in both the eyes of the public and in compensation.

Surveying as a career: Surveying is a good career but does require hard work and at times the field work can be quite challenging. I think promoting the new technologies and the numerous positive aspects of the career is a good starting point.

My idea for promoting Surveying as a career would be to have the surveying organizations take a bigger role in promoting the surveying profession to the newer generation of the work force and in the schools.