

Defining the Geospatial Professional – Reaching a Consensus

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What is a Geospatial Professional?

- Audience poll – How would you define a professional?
 - Years of experience
 - Mastery of technology and core concepts
 - Project or program management/development
 - Actual tasks performed daily
 - Education and training
 - Certificates and certifications
 - Hard and soft skills
 - Other?
- Many industries (such as engineering, medicine, real estate) have standards for defining a professional
- In geospatial field, we seem to be all over the place...



Geospatial Certifications

- **GISP – Geographic Information Systems Professional certification through GISCI, includes portfolio and exam**
- **ASPRS Certified Mapping Scientist – Application, references, and exam**
- **Esri Technical Certification – Desktop Associate, Desktop Professional, Developer and Enterprise options as well. Exams available for different versions of software.**
- **USGIF – Geospatial Intelligence Certificate Program, GEOINT Pilot Exam**
- **NGA – internal geospatial certifications**
- **Collegiate GIS Certificate Programs – courses lead to formal certificate**
- **What others do you know of?**

GIS&T Body of Knowledge

- **The Geographic Information Science and Technology Body of Knowledge (GIS&T BOK) was originally published in 2006 by AAG (American Association of Geographers) and has been considered the standard for knowledge and competencies in the geospatial industry for the last ten years**
- **Book includes 10 knowledge areas, 73 units, 329 topics, and over 1,600 formal educational objectives**
- **Used for curriculum development, basis of certification development (GISP), basis of program accreditation, HR hiring guidelines**
- **Opposing views (mostly academia) say it's too diverse and interdisciplinary**

A Dissertation Topic is Born

- Working with GISCI on GISP exam development inspired my dissertation topic. Considering I have several of GIS certifications myself, I have always wondered why are there so many different options.
- There have been continuous efforts in other countries as well for a universal certification for GIS.
- The biggest obstacle is that there are so many different applications of the technology, which has advanced rapidly in recent years, so it is difficult to develop something will span across many different disciplines. Core competencies will vary among industries.
- I wanted to come up with a way to develop a model for defining professionalism in the geospatial field, not just a list of skills and core competencies.

Dissertation Summary

- **General Problem:** Technological change is outpacing the ability of the geospatial industry to keep pace with a uniform set of competencies that are now ten years old, creating inabilities in hiring and staying current with industry needs and requirements.
- **Specific Problem:** There is a lack of geospatial community consensus on the technical knowledge, competencies, leadership skills, and experience required to meet current and future industry demands for geospatial professionals



Dissertation Summary

- **Purpose:** The purpose of this study is to consult a panel of experts to determine modern needs and requirements of geospatial professionals as described by an updated set of core competencies that have previously described in the GIS&T BOK, as well as provide a framework for improving partnerships between academia and practice that will better prepare geospatial employees for professional status, resulting in a modern, more ideal hiring pool for talent managers.



Dissertation Summary

- **Research Questions:**

- **RQ1: What is the level of consensus among a panel of geospatial executives with expertise in talent management in the geospatial field regarding the competencies necessary to define a professional in the geospatial industry, including technical, leadership, and soft skills?**
- **RQ2: What is the level of consensus among a panel of geospatial executives with expertise in talent management regarding the nature of the partnerships to be developed between academia and practice improve the transition for graduates in the geospatial field from education to workplace, and improve the potential employee pool for hiring managers?**

How do we reach a consensus among industries in the geospatial field?

- In terms of defining the geospatial professional, there is no clear consensus across industries, which is evident in the number of and diversity in existing certifications, as well as GIS certificate programs and geospatial curricula
- Countless industries using geospatial technology with various requirements for technical competencies, education, experience, leadership, and hard and soft skills
- GIS&T BOK may work to an extent, especially for entry and mid-level practitioners, but need something more specific to professionals
- Need to remain software/vendor neutral
- Also need to keep in mind that technology and applications are changing rapidly, which effects the needs and demands of employers across industries

Methodology – The Modified Delphi Approach

- Delphi Method developed in the 1950's as a systematic, interactive method that relies on a panel of experts, who review data in two more rounds
- Traditionally, surveys and questionnaires are used to determine important information, then a rating is done of items, usually based on a Likert scale
- An additional round can be used for ranking of importance
- Data is evaluated statistically to determine consensus



Methodology – The Modified Delphi Approach

- **Modified Delphi approach - Linstone Turoff desirability/feasibility scales. AKA Policy Delphi**
 - **Usually, 70% frequency and 3.5+ median score will move items to the next round**
 - **Multiple criteria for each item:**
 - **Desirability (Effectiveness or Benefits)**
 - **Feasibility (Practicality)**
 - **Importance (Priority of Relevance)**
 - **Confidence (In Validity of Argument or Premise)**
 - **Can choose at least Desirability/Feasibility**
 - **Final round chooses most important items and ranks them**
- **Resulting data used to determine items of consensus**
- **Can use this information to build new framework for defining geospatial professionalism as well as organization and academia partnerships for geospatial professional development**

Next Steps

- Define criteria for panel members – geospatial executives with expertise in talent management
- Determine appropriate size of panel based on existing research
- Recruit panel to participate in study
- Use the existing GIS&T BOK as the baseline for item rating, but also collect data from open-ended questionnaires regarding additional competencies and skills that should be considered
- Execute Modified Delphi Approach
- Statistical data analysis
- Final consensus based on results
- Suggest framework for defining geospatial professional using results, incorporate into improving partnerships between organizations and academia

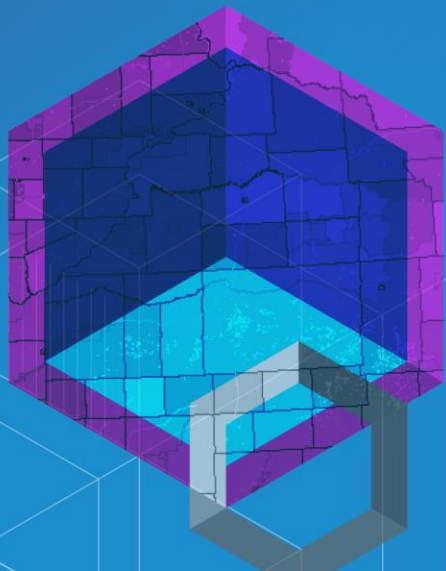
THE GEOSPATIAL PROFESSIONAL

Defined by consensus of panel experts in the geospatial field that can be reevaluated over time as technology and industry standards advance and change using a developed methodology and model.

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Questions or Comments?
Thank you!



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