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## Licensing, Certification and New Technologies

It is a challenge in the current environment of fast-paced technological advancement to ensure those providing products and services are both capable and qualified to fulfill the needs of clients and customers. How do users of current and future technologies choose providers? How do they know that the product or service they are receiving will have a reasonable expectation for correctness and completeness? Licensure and certification have provided traditional paths for demonstrating knowledge and technical proficiency. “Certification” has historically been utilized to evaluate and ensure technical competence, while “licensure” has traditionally been the mandate of legislation (at both the state and federal level) premised by the need to “*protect the public health, safety and welfare.*” Traditional requirements to become licensed include a combination of a defined level of formal education, experience (e.g., time), demonstrated competency in practice (e.g., examples of past work), references from other licensed persons and validation by testing.

Licensing has long been a requirement for doctors, lawyers, engineers and land surveyors. As technologies have advanced, many states have realized the need to license photogrammetrists, providers of a variety of geospatial information (e.g., geographic information systems professionals, or GISPs) and recently those operating unmanned aerial systems (UAS), such as pilots and/or flight planners. As more states enact legislation relating to existing and new geospatial products and services, it is difficult for practicing professionals, state and national organizations, and the public to keep up with changes to existing rules and regulations and the addition of new rules and regulations. The American Society for Photogrammetry and Remote Sensing (ASPRS), as the leading scientific organization representing the photogrammetry and remote sensing profession, provides a resource to readily access this new and changing information through its published maps and variety of geospatial mapping products and services<sup>1</sup>. The “Licensure Maps and Regulations” website<sup>1</sup> shown in Figure 1 gives meta data on State Surveying Regulations; State Licensure Map for GIS Services, Lidar and Topographic Products, Georeferenced Imagery and

Authoritative Imagery, respectively, with each state’s metadata on existence of State Regulations, Board Website, Individual State Regulations and Composite State Regulation Document. Currently there are twenty-one (21) states that have existing regulations relating to georeferenced imagery products and services, thirty-three (33) that have existing regulations relating to authoritative imagery products and services, forty-seven (47) states with regulations relating to topographic mapping-related products and services, and fifteen (15) states with existing regulations relating to GIS-related products and services.

### State Licensure Map - Authoritative Imagery

Disclaimer: This map represents the ASPRS best effort at determining where the specific referenced product or service (Georeferenced Imagery, Authoritative Imagery, or Topographic Mapping) is addressed by individual state regulations relating to Surveying & Mapping. This map is not meant to be an interpretation of said regulations. Before providing geospatial mapping services in any State, practitioners should perform the appropriate research necessary to make a proper determination of which licensing requirements apply to the specific type of work that will be performed.

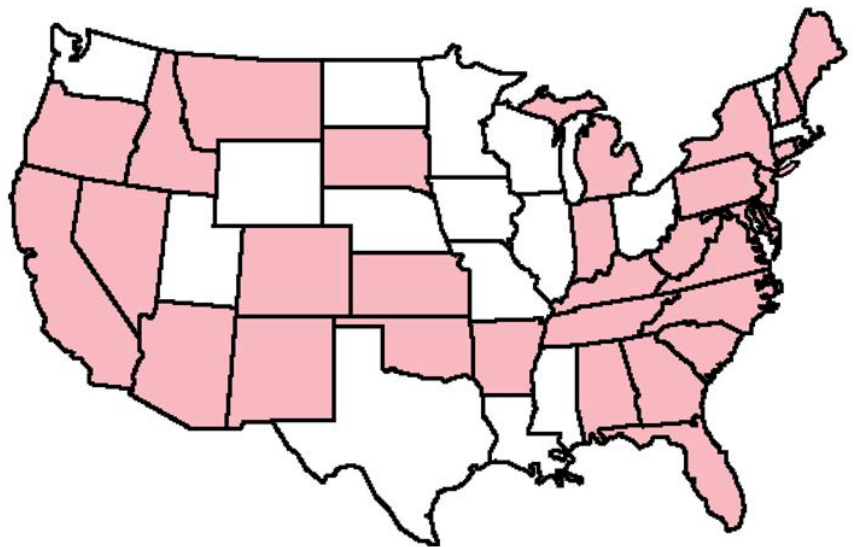


Figure 1: From the “Licensure Maps and Regulations” in ASPRS Profession Practice Division: The State Licensure Map—Authoritative Imagery

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Having a list of the current regulations is just the first step. Every provider of a potentially regulated product or service should be aware of and understand how specific state regulations impact their practice because each state regulates geospatial products and services differently. Products or services that are regulated in one state may not be regulated the same way (or at all) in another state. For the practicing geospatial professional (whether it be an engineer, surveyor, photogrammetrist, GISP or UAS pilot), knowledge of an individual area of practice is essential. Knowledge of state, local and possibly even federal regulations are required to properly perform services, provide products and fulfill contractual requirements for clients.

As mentioned earlier, the geospatial industry is going through rapid changes as advancements are made in measurement technologies and capture platforms. The miniaturization of measurement technologies (e.g. imagery and lidar systems) combined with the new and readily available low-cost UAS have allowed for an unprecedented opportunity for both individuals and firms to get into the business of collecting data to support an ever-expanding variety of geospatial products and services. The field-to-finish (e.g., black box) software solutions supporting these new advancements allow for anyone to provide products that appear to be the same as those that have historically been created utilizing validated photogrammetric methods.

At almost every major geospatial conference in the last few years, the “big” giveaway is a UAS. Does this mean that anyone can use this technology to create and provide services to the public? Various states have proposed or enacted legislation that clearly states otherwise. Over the last few years, there have been regulations enacted by over twenty (20) states regarding UAS use<sup>2</sup>. The 2012 FAA enacted its Section 333 exemption policies<sup>3</sup>, and in November 2015 published its report, *Unmanned Aircraft Systems (UAS) Registration Task Force (RTF) Aviation Rulemaking Committee (ARC) Task Force Recommendations Final Report*<sup>4</sup>, in which it recommended that all UAS flying within U.S. airspace that have a mass of more than 25 grams (~0.55 pounds) be registered with the FAA.

The new legislation and rules are examples of how the landscape of certification and licensure is being affected by new technologies. These rapid changes beg the questions as to which geospatial products and services should require certification and which should require licensure. How will the current and future practice of certified and/or licensed professional practice be affected by these changes? The answers to these questions will define the future of all practicing geospatial professionals, whether they are engineers, surveyors, photogrammetrists, GISPs or UAS pilots.

To help facilitate appropriate regulations regarding certification and licensure, the ASPRS Professional Practice Division (PPD)<sup>5</sup> proactively engages states to discuss potential legislative changes, and assists states by reviewing current and proposed state licensure laws related to geospatial products and services. ASPRS PPD works with individual

states to ensure that there is an available licensure path for appropriately educated and experienced professionals. ASPRS PPD also actively engages other national geospatial organizations (URISA, NSPS, MAPPS, etc.) to coordinate efforts of regulation review and interpretation, with the goal of appropriately advising legislative bodies on legislation relating to existing and future geospatial products and services. Additionally, ASPRS has formed its Unmanned Autonomous Systems Division whose “objectives include outreach and education, liaising with UAS-interested parties outside the Society, development and promotion of standards and best practices, establishment of calibration and validation sites, and credentialing and certification activities...”<sup>6</sup>

While it is in the best interest of every practicing professional to be active in his or her individual national organizations, it is incumbent upon every practicing geospatial professional to stay up to date on the specific rules affecting his or her practice. The combination of these two items is the only way to ensure the appropriate implementation of certification and licensing requirements, while also ensuring the protection of the health, safety and welfare of the public in our fast-paced geospatial world.

## References

- 1 <http://www.asprs.org/PPD-Division/Licensure-Maps-and-Regulations.html>
- 2 Current Unmanned Aircraft State Law Landscape, by National Conference of State Legislators, November 25, 2015: <http://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx>
- 3 FAA Modernization and Reform Act, of 2012, HR 658, by Federal Aviation Administration (FAA): [https://www.faa.gov/uas/media/Sec\\_331\\_336\\_UAS.pdf](https://www.faa.gov/uas/media/Sec_331_336_UAS.pdf) and [https://www.faa.gov/uas/legislative\\_programs/section\\_333/](https://www.faa.gov/uas/legislative_programs/section_333/)
- 4 Unmanned Aircraft Systems (UAS) Registration Task Force (RTF) Aviation Rulemaking Committee (ARC) Task Force Recommendations Final Report November 21, 2015: [https://www.faa.gov/uas/publications/media/RTFARCFinalReport\\_11-21-15.pdf](https://www.faa.gov/uas/publications/media/RTFARCFinalReport_11-21-15.pdf)
- 5 <http://www.asprs.org/Divisions/Professional-Practice-Division.html>
- 6 <http://www.asprs.org/Divisions/Unmanned-Autonomous-Systems-Division.html>

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