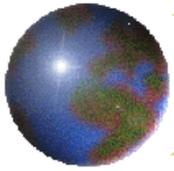


*GIS Cooperative*

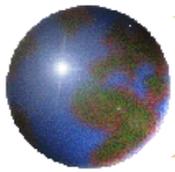
# **GIS Licensure and Data Classification**



# *GIS Licensure and Data Classification*

## **Goals & Objectives**

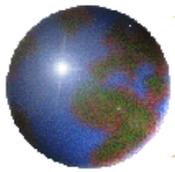
- Review the history and outcomes of these efforts to date.
- Discuss potential recommendations for:
  - GIS Licensure
  - Data Classification
  - Education
- Explore case studies in which geospatial data can potentially be misused.
- Recommend steps that could be implemented to prevent misuse of geospatial data.



# *GIS Licensure and Data Classification*

## History

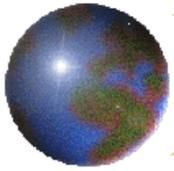
- 2002: First engagement - a group of Survey professionals and Geospatial professionals convened to discuss ways in which the two professions could work together to develop a partnership that would serve to cross-educate the respective parties, to address any issues arising within each, and to build consensus for future directions.
- 2003: Facilitated strategic planning session – the hierarchy of outcomes includes communication and coordination, standardization to assure quality products, education for both professionals and the public, certification, legitimacy (recognition by others), legislation, one voice that is unified on the issues.



# *GIS Licensure and Data Classification*

## **History** (cont.)

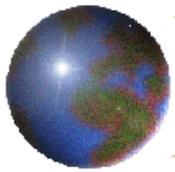
- 2004-06: The group works to complete the definition of Geospatial Professional, application and approval processes, membership recruitment, and educational outreach.
- 2006-08: The group works on developing the Arizona Spatial Data Accuracy and Georeferencing Standards.
- 2008-11: The Geospatial Chapter is formed and meets to continue formulating a position on GIS licensure and data classification.
- 2012: Conducted panel discussions at both the APLS and AGIC conferences, along with dialog with the Board of Technical Registration Legislative & Rules committee.



# *GIS Licensure and Data Classification*

## **Outcomes**

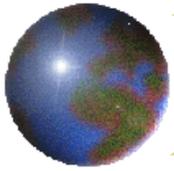
- At each panel discussion, we were very fortunate to have representatives from a couple of other states that shared their experiences with GIS licensure within those states.
- Both panel discussions tended to narrow the focus down to the data level, such as the intended use that the data was created for, how it is presented to and used by end-users, and how to better convey information to end-users on appropriate uses of and limitations in using a given geospatial dataset.



# *GIS Licensure and Data Classification*

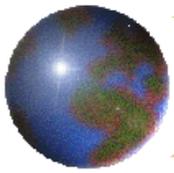
## **Outcomes** (cont.)

- Participants felt that it would be useful to have a Geospatial Data Classification System that would provide minimum standards for effectively providing quality indicators of geospatial data to end-users, e.g. enhanced metadata.
- There was consensus that licensing GIS professionals would be difficult given the breadth of the industry.
- Licensing GIS Professionals would not necessarily alter data practices.
- The conclusion on licensing was that a data-centric and education approach would be more effective.



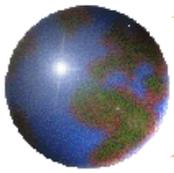
## **Recommendations**

- It is proposed that Arizona take a three-pronged approach to enhancing and expanding data standards, policies, and practices by implementing the following:
  1. Develop minimum metadata standards for geospatial data that provide quality indicators to the end-user.
  2. Develop a clear delineation of practices between registered Professional Land Surveyors and non-survey professionals.
  3. Provide widespread educational opportunities for both data producers and users on the implementation and use of these standards, policies and guidelines.



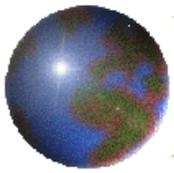
## **Minimum Metadata Standards**

- The adoption of standards for assessing and reporting quality indicators of geospatial data would provide a tool that could effectively inform and guide data end-users in the proper use of and limitations in using a given dataset.
- Metadata standards for geospatial attribute data would be included.
- Data quality indicators include:
  - Intended use of the data.
  - Data creation methodologies.
  - Data processing.
  - Personnel expertise.
  - Known errors and qualifications.



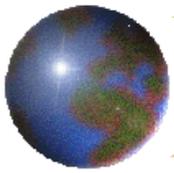
## **Data Classification**

- “GIS” data should be automatically be considered representative and is not authoritative and/or legally recordable.
- If horizontal and/or vertical accuracies are to be stated, or if the data is to be used as an authoritative record, then the data must be certified by a registrant.
- “Authoritative geospatial data” means geospatial data that is developed for a regulatory, statutory, or related purpose by or for the geospatial data custodian. Geospatial data are not considered as authoritative survey products for positions or legal boundaries except when prepared by or under the supervision of a professional surveyor.



## **Delineation of Practices**

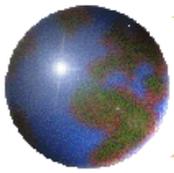
- NCEES Model Rules - 210.25 Inclusions and Exclusions to the Practice of Surveying:
  - “A distinction must be made in the use of electronic systems between making or documenting original measurements in the creation of survey products, versus the copying, interpretation, or representation of those measurements in such systems. Further, a distinction must be made according to the intent, use, or purpose of measurement products in electronic systems to determine a definitive location versus the use of those products as a locational reference for planning, infrastructure management, and general information.”



# *GIS Licensure and Data Classification*

## **Delineation of Practices** (cont.)

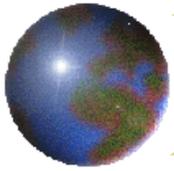
- NCEES Model Rules - 210.25 Inclusions and Exclusions to the Practice of Surveying:
  - “2. The transcription of previously georeferenced data into a GIS or LIS by manual or electronic means, and the maintenance thereof, provided the data are clearly not intended to indicate the authoritative location of property boundaries, the precise definition of the shape or contour of the earth, and/or the precise location of fixed works of humans.”



# *GIS Licensure and Data Classification*

## **Delineation of Practices** (cont.)

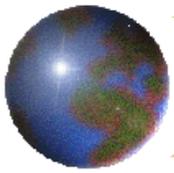
- NCEES Model Rules - 210.25 Inclusions and Exclusions to the Practice of Surveying:
  - “3. The transcription of public record data, without modification except for graphical purposes, into a GIS- or LIS-based cadastre (tax maps and associated records) by manual or electronic means, and the maintenance of that cadastre, provided the data are clearly not intended to authoritatively represent property boundaries. This includes tax maps and zoning maps.”



# *GIS Licensure and Data Classification*

## **Delineation of Practices** (cont.)

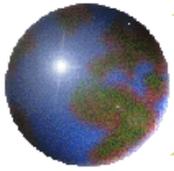
- Registered Land Surveyors are licensed to position legal boundaries, determine the geographic location of natural and manmade features, and provide spatial metadata that includes an authoritative certification of measurement accuracy.
- Non-registrants cannot perform any determination of legal boundaries, but can develop representative mapping of any features as long as the accompanying spatial metadata of such mapping disclaims any assertion of specific spatial accuracy.



# *GIS Licensure and Data Classification*

## **Delineation of Practices** (cont.)

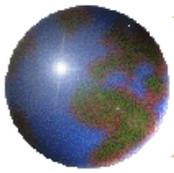
- Washington State Board of Registration for Professional Engineers and Land Surveyors. Proposes new definition for surveying and scope of practice.
- Practice of Land Surveying. The practice of land surveying, as defined in RCW 18.43.020(9) includes all activities where specialized knowledge and skill is needed for; (1) the establishment, re-establishment and recovery of corners, lines, boundaries, and monuments defining property locations. (2) The laying out and subdivision of land. (3) The survey of land areas for the purpose of determining the topography thereof, and (4) The making of topographical delineations and the preparing of maps and accurate records.



# *GIS Licensure and Data Classification*

## **Delineation of Practices** (cont.)

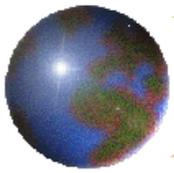
- Activities that must be accomplished by or under the direct supervision of a professional surveyor include, but are not limited to, the following as they relate to boundary and topographic surveying and mapping:
  - (a) Evaluation and interpretation of evidence.
  - (b) Adjustment and authoritative interpretation of survey data
  - (c) Certification of positional accuracy of maps or measured survey data.
  - (d) Acquisition of field data required to authoritatively position the location of features.



# *GIS Licensure and Data Classification*

## **Delineation of Practices** (cont.)

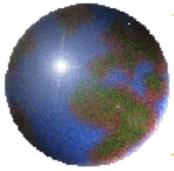
- (e) Utilization of the principles of land surveying to determine the position of any monument or reference point which marks a property line, boundary, corner, right of way, easement or alignment of those lines, or setting, resetting, or replacing any such monument or reference point;
- (f) Setting, resetting or replacing of control points which orient construction or engineering projects in relation to property, easement, or right-of-way boundaries.
- (g) Directly or indirectly giving an authoritative reference or opinion as to the location of a property line, boundary, right of way, easement, or any corner position relating thereto;



# *GIS Licensure and Data Classification*

## **Delineation of Practices** (cont.)

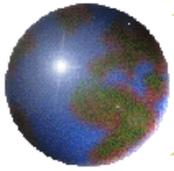
- (h) The creation and modification of descriptions for use in legal instruments of conveyance of real property and property rights (easements) and the subdivision of land.
- (i) The creation of maps and geo-referenced databases representing authoritative locations for boundaries, the location of fixed works, or topography.
- (j) The establishment of ground control which determines authoritative elevations or boundaries in relation to photogrammetric or other active or passive remote-based sensing technology.



# *GIS Licensure and Data Classification*

## **Education**

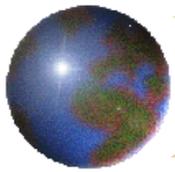
- Education could be considered the most important component of this effort.
- The relationship that has formed between the survey and other geospatial professions has proved extremely beneficial to all by sharing valuable knowledge and best practices.
- This knowledge sharing is then conveyed to colleagues via emails, published documents, professional meetings, user group presentations, and workshops and conferences.
- These same mechanisms would be employed, along with reference video offerings and college class presentations.



# *GIS Licensure and Data Classification*

## **Case Studies**

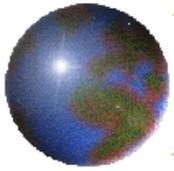
- GIS boundaries used for data processing and analysis.
- Mixing GIS data and imagery.
- GIS data for land development regulation.
- E911 reliance on GIS data.
- New sources of geospatial data.



# *GIS Licensure and Data Classification*

## **Preventing Misuse**

- Education and outreach.
- Adopt minimum standards for metadata.
- Adopt guidelines and/or policies that govern the use of GIS data:
  - Non-certified boundaries should not be displayed above a certain scale based on a hierarchy of scale levels, or the linework is fattened to prevent fine-resolution location determination.
  - Non-certified boundaries should not be displayed with imagery based on similar criteria as above.
  - Set minimum data quality requirements for regulatory use.
  - Provide more than a disclaimer to the general public.



## Questions?

### **Contact Info**

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