[KE-02-029] The Geospatial Community

Abstract

The geospatial community has grown and evolved tremendously over the past five decades and now includes formal and informal collections of individuals, groups, institutions, and organizations with similar or complementary goals and aspirations connected to the production and use of geospatial data and technology. This entry documents the roles played by professional organizations as well as the private and not-for-profit sectors, and the nature of their interactions and agendas in the coming years.

Keywords: community, coordinating organizations, professional development, professional ethics

Author & citation

Wilson, J. P. (2025). The Geospatial Community. The Geographic Information Science and Technology Body of Knowledge (Issue 1, 2025 Edition), John P. Wilson (Ed.).
DOI: 10.22224/gistbok/2025.1.28.

Explanation

1. Introduction
2. What Makes Community Important
3. The Roles of Professional and Governmental Organizations
4. The Role of the Private Sector
5. The Role of the Not-for-Profit Sector
6. The Path Forward

1. Introduction

The geospatial sector is broad and growing as geospatial technologies and data help to drive economic development and environmental initiatives across the globe (Walter, 2020; Geospatial Commission, 2023). National, state, and local governments as well as international agencies and academia have played prominent roles in this sector for many decades and nowadays, increasing numbers of the individuals employed in this sector work for geospatial technology and services companies (e.g., Esri, Fugro, Mapbox, NV5 and Woolpert) or in geospatial units housed in a variety of firms whose primary business is aligned with other sectors, including civil and environmental engineering (e.g., AECOM,GHD, and Jacobs), hospitality and mobility (e.g., Airbnb, Lyft and Uber), or management services (e.g., Accenture and Deloitte).

Drawing on one of several definitions of community published in the APA Dictionary of Psychology (VandenBos 2015), we can describe the geospatial community as a collection of individuals interested in the production and use of geospatial data and technology and who are therefore perceived by others or by themselves as distinctive in some way.

2. What Makes Community Important

The abovementioned definition is especially important because the geospatial sector is hard to define given it is relatively new and because many of its members are embedded in a large number and variety of sectors. This said, the best of the geospatial communities described in this entry will share one or more of the following characteristics:

- The sense of belonging to an effort that seeks common goals and outcomes.
- Sharing common experiences.
- Something that can be more effective and compelling as a whole or better than the sum of its parts.
- The ability to respond to threats or opportunities in a coordinated manner.

3. The Roles of Professional and Governmental Organizations

The large number of professional and governmental organizations with geospatial connections vary in their mission, structure, and audiences. Many are designed to serve the needs of individuals via their membership structure (e.g., the American Association of Geographers, the American Geographical Society), the International Association of Chinese Professionals in GIS, the GIS Certification Institute, the Open Source Geospatial Foundation, and the Special Interest Group on Spatial Information (SIGSPATIAL) of the Association for Computing Machinery. Others serve specific units in the professional or academic sectors (e.g., the World Geospatial Industry Council (which serves geospatial businesses) and the Association of Geographic Information Laboratories in Europe and the University Consortium for Geographic Information Science in the U.S. (which serve universities with geospatial programs that touch multiple disciplines) or groups of individuals (e.g., Women in GIS), or those who have other professional affiliations (e.g., North American Cartographic Information Society and the Society for Conservation GIS). As an example, the National States Geographic Information Council (NSGIC) exists to serve and lead geospatial directors or administrators and their teams at the state-level in the U.S. as they address common practical and technical topics related to data and its applications, policies and practices, and other geospatial matters.

Numerous geospatial organizations exist for the complementary purposes of knowledge creation (i.e., theory and methodological innovation), practice (i.e., the application of geospatial data and technology to help solve real world problems), and technology (i.e., the building and distribution of geospatial products and services) (Table 1), though in practice and operations these divisions aren’t always precise, and missions may span two or more categories. Whether their scope of activities is narrow (e.g., only a small annual conference and a sharing of information on a website) or broad (e.g., multiple meetings and events, managing certification programs, or setting international standards), they all make substantial contributions to the geospatial enterprise by keeping the community inclusive. The Geospatial Professional Network is perhaps the most prominent organization of this type, having evolved from the Urban and Regional Information Systems Association in October 2024, in hopes of providing a vibrant community uniting emerging and experienced GIS professionals through top-tier education, networking, and career development. This new organization supports 3 individual member types (professionals, young professionals, and students) and 3 organization member types (government agencies, partners, and educational institutions).

Table 1. List of 20 leading spatial professional organizations by domain (Wilson 2024).

DOMAIN	ACRONYM	ORGANIZATION
Theory	AAG	American Association of Geographers
	AGS	American Geographical Society
	CPGIS	International Association of Chinese Professionals in Geographic Science
	UCGIS	University Consortium for Geographic Information Science
Practice	ACSM	American Congress on Surveying and Mapping
	ASPRS	American Society for Photogrammetry and Remote Sensing
	CAGIS	Cartography and Geographic Information Society
	FGDC	Federal Geographic Data Committee
	GPN	Geospatial Professional Network (renamed in October 2024 from the Urban and Regional Information Systems Association, URISA)
	GISCI	GIS Certification Institute
	NACIS	North American Cartographic Information Society
	NGAC	National Geospatial Advisoroy Committee
	NSGIC	National States Geographic Information Council
	SCGIS	Society for Conservation GIS
	USGIF	United States Geospatial Intelligence Council
	WGIC	World Geospatial Industry Council
Technology	SIGSPATIAL	ACM Special Interest Group on Spatial Information
	ISDE	International Society for Digital Earth
	OGC	Open Geospatial Consortium
	OSGEO	Open Source Geospatial Foundation

Umbrella organizations serve to coordinate the collective needs of other entities that share common interests. The U.S. Coalition of Geospatial Organizations (COGO, https://cogo.pro/) comprises 14 member organizations and 7 advisory groups that are themselves professional societies, trade associations, and other membership organizations. All together they represent more than 170,000 individual producers and users of geospatial data and technology (Table 2). COGO only takes public policy positions that achieve a unanimous vote of its member organizations. Its most high profile activity is coordinating an extensive assessment of the U.S. National Spatial Data Infrastructure (NSDI) every 3-5 years (Freundschuh et al. 2018; Smith et al. 2024). By conducting NSDI Assessments, COGO necessarily interacts regularly with the Federal Geographic Data Committee (FGDC), which is the federal entity that provides managerial and advisory guidance for decisions and initiatives involving the Federal government. To do this, the FGDC receives important input from the National Geospatial Advisory Council (NGAC).

Table 2. List of member and advisory organizations that are part of the Coalition of Geospatial Organizations (https://cogo.pro/organizations/).

Relationship	Acronym	Organization
Member Organizations	AAG	American Association of Geographers
	AAG	American Association for Geodetic Surveying
	ASCE	American Society of Civil Engineers

	ASPRS	American Society for Photogrammetry and Remote Sensing
	CAGIS	Cartography and Geographic Information Society
	GPN	Geospatial Professional Network
	GISCI	GIS Certification Institute
	IAAO	International Association of Assessing Officers
	MAPPS	Management Association for Private Photogrammetric Surveyors
	NSPS	National Society of Professional Surveyors
	NSGIC	National States Geographic Information Council
	NTGISC	National Tribal Geographic Information Support Center
	UCGIS	University Consortium for Geographic Information Science
	USGIF	United States Geospatial Intelligence Foundation
Advisory Organizations	APA	American Planning Association
	MAGIC	MidAmerican GIS Consortium
	NAPSG	National Alliance for Public Safety GIS Foundation
	NACo	National Association of Counties
	NENA	National Emergency Number Association
	NLC	National League of Cities
	WGA	Western Governors Association

Most of the organizations in Tables 1 and 2 focus on geospatial work in the United States and there are similar organizations in many other countries (Solís and Sinton 2023). Some of these have had particular impact on the geospatial community overall, led by the work of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM). The UN-GGIM plays a leading role in setting the agenda for the development of global geospatial information and promoting its use to address key global challenges, including work to advance the UN's Sustainable Development Goals. The priorities and work program of the Committee of Experts are driven by member states. Much of the work seeks to provide a platform for the development of effective strategies on how to build and strengthen national capacity around geospatial information, as well as disseminating best practices and experiences of national, regional and international bodies on geospatial information related to legal instruments, management models and technical standards. Examples of the types of geospatial projects on which the UN-GGIM has worked, based on a list on its website (https://ggim.un.org/about/), include:

- Development of the global geodetic reference frame
- Development of a global map for sustainable development
- Geospatial information supporting Sustainable Development and the post 2015 development agenda
- Adoption and implementation of standards by the global geospatial information community
- Development of a knowledge base for geospatial information
- Identification of trends in national institutional arrangements in geospatial information management

- Integrating geospatial statistics and other information
- Legal and policy frameworks, including critical issues related to authoritative data
- Development of shared statement of principles on the management of geospatial information
- Determining fundamental data sets

Two other internationally-based organizations that have community influence include the Open Geospatial Consortium (OGC) and the Group on Earth Observations (GEO). OGC brings together leaders from government, business, research institutions, and startups to develop international standards for geospatial content and location-based services, sensor web, Internet of Things, GIS data processing and data sharing. Their role and the work of the International Standards Organization (ISO) in formalizing international geospatial standards has also helped to build community by enabling interoperability on a global scale. GEO is a global collaboration dedicated to understanding our Earth in all its complexity.

4. The Role of the Private Sector

The activities of geospatial data and technology companies must in some manner support their customers, partners, and stakeholders. The World Geospatial Industry Council (WGIC), itself a non-profit organization whose mission is to support its industry members, and other technology business companies have valued the current (2023-2024) global geospatial market at about USD 80 billion, with growth expected up to USD 250 billion in the next decade. The abovementioned estimates are relatively conservative (compared to the numbers reported later in this section), but the growth they project can only be realized when there is an adequate workforce prepared for the industry's needs, and this has become a community-wide area of concern and discussion.

As they contribute to and build the global community, hosting events and professional gatherings represent key opportunities for knowledge exchange and networking. Six of the companies frequently conducting this type of outreach are profiled here.

Esri, the world's largest geospatial technology company, hosts a large number and variety of events that support immersive learning, collaboration, and networking, led by the Esri User Conference and the Education and Safety and Security Summits that are held in San Diego each summer. Esri also hosts smaller events in the United States and Europe, including the Esri Partner Summit, the Esri Developer and Technology Summit, the Esri European Developer Summit, the Esri Energy Resources and European Energy Resources GIS Conferences, the Esri Federal GIS Conference, the Esri Imagery and Remote Sensing Educators Summit, the Esri Infrastructure Management and GIS Conference, the Esri Mid-Atlantic and Southeast User Conferences, the Esri Public Sector CIO Summit, the Geodesign and Planning Directors Summits. And last, but not least, Esri also hosts a Young Professionals Network to serve those just starting their GIS journey and experienced professionals that are new to the geospatial field as well as a large and diverse array of webinars and other virtual resources.

Similarly, Bentley Systems, which provides geospatially enabled infrastructure engineering software, relies on a series of user conferences that target specific technologies and user groups, such as the infrastructure project delivery user conferences and civil user conferences that were convened in 2024, as well as a large and diverse array of webinars

and other virtual resources.

Mapbox specializes in location intelligence for business and is a provider of custom online maps for websites and applications such as Foursquare, Lonely Planet, the Financial Times, Strava and Snapchat. Mapbox also participates in a large number and variety of conferences with many in recent years connected with mobility 3D map coverage, mobility and automotive connectivity, 5G deployment, and IoT in one way or another. They also host regular Mapbox/OpenStreetMap online meetups to help connect the Mapbox and OpenStreetMap user communities.

Maxar Technologies and Planet Labs take slightly different approaches but they both participate in numerous conferences and events every year. Maxar Technologies, for example, favor conferences focused on intelligence and space systems that include the DGI: Geospatial Intelligence for Defense and Security conference in London UK, the Space Symposium, and the United States Geospatial Intelligence Foundation Symposium for example.

Planet Labs, on the other hand, regularly attend investor conferences, such as Needham's Annual Growth Conference and Morgan Stanley's Annual Laguna Conference, industry events, such as the DGI: Geospatial Intelligence for Defense and Security conference noted earlier, GeoSmart India, and the Fall Meeting of the American Geophysical Union, and they host free Planet On-The-Road events in various cities across the globe. The choice of conferences and events speak in part to their current and aspiring business opportunities and partners.

Finally, Trimble hosts three annual conferences organized around innovation (exploring cutting-edge strategies and solutions to support asset lifecycle management), dimensions (detailing the newest technologies and both an onsite and off-site expo and a 3D basecamp), and tech insights (introducing the newest technologies, ideas and innovations along with education and training opportunities) as well as a large and diverse array of webinars and other virtual resources.

The examples above point to a vibrant and supportive private sector and the value of this sector offered by the WGIC may represent just part of the geospatial sector in the U.S. and further afield. Geospatial World, a global geospatial communications and consulting company based in India for example, estimated the broader U.S. geospatial economy, encompassing all related activities and services, at $185 billion in 2023. Similarly, the U.S. geospatial workforce has continued to grow and included 1,080,000 jobs in 2023, and the broader socio-economic benefits of geospatial technology in the U.S. were estimated between USD $0.7 and 1.09 trillion given enhanced efficiency, support for sustainable development, and the adoption of innovative solutions across multiple sectors of the economy.

5. The Role of the Not-for-Profit Sector

There is also an abundant number of not-for-profit organizations involved in the geospatial ecosystem, several of which have already been mentioned above. It is common for these to have missions with a good-for-all focus.

For example, the Open Source Geospatial Foundation (OSGeo) is a non-profit, non-government organization founded in 2006 to support and promote the collaborative development of open geospatial data and technology. Its most well-attended event is the annual, global-wide FOSS4G (Free and Open Source Software for Geospatial) Conference which regularly draws more than 1,000 practitioners and advocates. Local and regional FOSS4G events and meetup groups are also popular, bringing the community together to share updates on their work and ideas for future collaboration. OSGEO also makes extensive use of the web and social media to connect their members with a series of initiatives and projects and the outcomes (i.e., open source resources) generated by these efforts.

The UNIGIS International Association, on the other hand, is a worldwide network of universities cooperating since 1990 in the design and delivery of distance learning in Geographical Information Systems and Science. This association is managed by a network of scholars and teachers from Jagiellonian University in Poland, Óbuda University in Hungary, the Universidade Nova de Lisboa in Portugal, the Universidad San Francisco de Quito Ecuador, the University of Girona in Spain, the University of Salsburg in Austria, the University of Southern California in the United States, and Vrije Universiteit Amsterdam in the Netherlands. These universities with the assistance of teachers and tutors from study centers in Argentina, Colombia, India, Kyrgyzstan, Malaysia, Mexico, Nepal, Peru, and Saudi Arabia, provide a global, virtual and multilingual geospatial network for university learners at all levels.

The third and final example is a global community of students, researchers, educators, and scholars named YouthMappers that uses public geospatial technologies to highlight and directly address development and environmental challenges worldwide. This consortium, made up of nearly 400 chapters, supports university efforts to offer meaningful global learning experiences, build a socially engaged citizenry, enhance long-term scientific capacity around the world, and foster youth leadership. Their work is guided by a Statement of Ethics that emphasizes ethical values and privacy, human dignity, people, community building, quality and open data. Many of the projects to date have generated new open data in OpenStreetMap and others have used geospatial technologies and multinational collaboration to address the UN’s Sustainable Development Goals (Solis and Zeballos 2023). Their motto is that they don't just build maps, they build mappers.

Other notable not-for-profit groups include OpenStreetMap, the GISCorps, and the Overture Map Foundation. OpenStreetMap is built by a community of mappers that contribute and maintain data about roads, trails, cafés, railway stations, and much more, all over the world and this organization hosts a Humanitarian OpenStreetMap team to help people in need. The GISCorps, operating under the auspices of the Geospatial Professional Network, is a similar organization that coordinates short-term, volunteer-based GIS services to communities in need worldwide. The Overture Maps Foundation is another open data mapping collaboration, launched in December 2022 under the auspices of the Linux Foundation. This project, which seeks to create reliable, easy-to-use, and interoperable open map data, is intended to be complementary to the crowdsourced OpenStreetMap project, and the foundation encourages members to contribute data directly to the OSM project.

6. The Path Forward

The geospatial community will continue to grow in new and interesting ways in the next few decades as the pace of automation and digitization increases in nearly every facet of life (e.g., precision agriculture, telemedicine, and smart cities), and the list below points to four ways in which this community may evolve:

- Initiatives that cross organizations to work together (e.g., OGC helping FGDC with NSDI work).
- Collective work on the “workforce crisis” that strongly affects all sectors being highlighted by government (e.g., https://www.nationalacademies.org/event/41079_11-2023_the-geospatial-workforce-crisis-a-diversity-of-pathways-forward).
- Social media. The continued growth of very technically oriented communities connected via StackExchange, https://gis.stackexchange.com/, and more general via Github, which hosts many open source geospatial products, or reddit, https://www.reddit.com/r/gis/.
- The slow but forward movement of a professional credential (GISP/GISCI) that builds a particular type of community thread.
- The likelihood that the geospatial community is growing in ways geospatial professionals do not always realize (i.e., as part of other disciplines and industry sectors) and conversely, the individuals in these other disciplines and sectors may be doing geospatial work without realizing that there is already a series of structures that exist to support people and institutions like themselves doing geospatial work, and how bringing all of these individuals together might reshape the geospatial community in the future.

References

Freundschuh, S.M., Sinton, D. S., and Smith, C. (Eds.). (2018). Second Report Card on the U.S. National Spatial Data Infrastructure, Compiled by the Coalition of Geospatial Organizations. December.

Geospatial Commission. (2023). UK Geospatial Strategy 2030: Unlocking the Power of Location. Geospatial Commission.

Smith, C., Rogers, K., Zimmerman, C., Craig, W., Stinchcomb, C., Sinton, D. S. (Eds.). (2024). Third Assessment of the U.S. National Spatial Data Infrastructure. Compiled by the Coalition of Geospatial Organizations. September.

Solís, P. and Sinton, D. (2023). Geospatial Organizations and Programs, Internationally-based or with a Non-US Focus. The Geographic Information Science & Technology Body of Knowledge (2nd Quarter 2023 Edition). John P. Wilson (Ed.).

Solís, P. and Zeballos, M. (2023). Open Mapping towards Sustainable Development Goals Voices of YouthMappers on Community Engaged Scholarship. Springer.

VandenBos, G. R. (Ed.). (2015). APA Dictionary of Psychology (2nd ed.). American Psychological Association.

Walter, C. (2020). Future Trends in Geospatial Information Management: The Five-to-Ten-Year Vision (3rd ed.). Ordnance Survey (for the UN Committee of Experts on Global Geospatial Information Management).

Wilson, J. P. (2024). Spatial Data Science. Redlands, California: Esri Press.