

Mapping Academic Capacity in Geomatics and Land Administration Worldwide

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FIG.

SUMMARY

Geomatics plays a fundamental role in addressing global challenges, integrating six interconnected pillars: geography; geodesy and surveying; Earth observation (photogrammetry, remote sensing); geoinformatics (GIS, spatial databases, territorial analysis); cartography; and land administration. Within this framework, land administration is not external to geomatics but one of its core pillars, when addressed from a technical and engineering perspective (e.g. cadastral information management, land tenure systems, technical land registration, and spatial data infrastructures). This holistic perspective positions geomatics as both a technological and institutional discipline, bridging science, society, and policy. This presentation introduces an interactive web-based map viewer designed to explore and analyze university-level geomatics programs worldwide. The dataset was compiled exclusively from publicly available information (university websites, study catalogs, and accreditation databases). Programs were included if they are explicitly named Geomatics, Geographic/Geospatial Engineering, Geodesy, Surveying, Cartographic Engineering, or Land Administration when the latter has a technical/engineering focus. Programs dealing with land administration solely from a social sciences perspective were excluded. To ensure academic and professional relevance, all inclusions were validated with the approval of FIG members, who represent the profession globally and safeguard against academic intrusions outside the discipline. Standardized metadata (official title, institution, country, degree level, core subjects, URL, and date of access) was recorded to enable comparison and filtering. The viewer allows users to search and filter programs, analyze geographic distribution and curricular content, and identify institutional clusters, thematic gaps (e.g. weak integration of land administration in certain regions), and emerging trends in curriculum development. Limitations such as incomplete data, language barriers, and uneven institutional reporting are acknowledged. These are mitigated by the dynamic update mechanism: the platform evolves continuously through contributions from FIG members, academic institutions, and researchers, with transparent versioning. The insights produced are not only descriptive but actionable, providing evidence to guide curriculum enhancement, foster international cooperation, and target capacity building in underrepresented regions. The presentation will demonstrate the platform's functionalities, highlight selected analytical findings, and show how this initiative can support the alignment of geomatics education with the pressing challenges of climate geo-resilience and sustainable development.

RESUMEN

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La geomática desempeña un papel fundamental frente a los retos globales, integrando seis pilares interconectados: geografía; geodesia y topografía; observación del territorio (fotogrametría, teledetección); geoinformática (SIG, bases de datos espaciales, análisis territorial); cartografía; y administración de tierras. En este marco, la administración de tierras no es externa a la geomática, sino uno de sus pilares esenciales cuando se aborda desde una perspectiva técnica e ingenieril (p. ej. gestión de información catastral, sistemas de tenencia de la tierra, registro técnico de la propiedad e infraestructuras de datos espaciales). Esta visión sitúa a la geomática como una disciplina tecnológica e institucional que articula ciencia, sociedad y política. Esta ponencia presenta un visor web interactivo para explorar y analizar programas universitarios de geomática a nivel mundial. El conjunto de datos se elaboró exclusivamente a partir de información pública disponible en sitios web de universidades, catálogos académicos y bases de acreditación. Se incluyen los programas que se denominan explícitamente Geomática, Ingeniería Geográfica/Geoespacial, Geodesia, Topografía, Ingeniería Cartográfica, así como programas de Administración de Tierras siempre que tengan un enfoque técnico/ingenieril. Se excluyen aquellos que tratan la administración de tierras únicamente desde las ciencias sociales. Para garantizar la pertinencia académica y profesional, la inclusión final de programas es validada por miembros de la FIG, quienes representan a la profesión a nivel internacional y previenen el intrusismo académico. Se normalizó un conjunto básico de metadatos (nombre oficial, institución, país, nivel de titulación, asignaturas clave, URL y fecha de acceso) para permitir búsquedas y comparaciones. El visor permite filtrar programas, analizar su distribución geográfica y curricular, e identificar agrupamientos institucionales, vacíos temáticos (p. ej. débil integración de la administración de tierras en determinadas regiones) y tendencias emergentes en el desarrollo curricular. Se reconocen limitaciones como la incompletitud de datos, las barreras lingüísticas o la desigual presencia institucional en la web. Estas se mitigan gracias al mecanismo dinámico de actualización: la plataforma evoluciona continuamente mediante las contribuciones de miembros de la FIG, instituciones académicas e investigadores, con control de versiones para asegurar la transparencia. Los resultados que ofrece el visor no son solo descriptivos, sino también accionables: proporcionan evidencias para orientar la mejora curricular, promover la cooperación internacional y focalizar iniciativas de fortalecimiento de capacidades en regiones subrepresentadas. La presentación mostrará las funcionalidades del visor, ejemplos de hallazgos analíticos y el potencial de esta iniciativa para alinear la educación en geomática con los retos contemporáneos de resiliencia climática y desarrollo sostenible.

BIOGRAPHICAL NOTES

International Representative for Geomatics Engineering. He is the Young International Representative (YSN) for academic affairs of FIG (International Federation of Surveyors) and also Social Media Officer of Commission 7 (Land Administration). Likewise, he is the Representative of Spain (COIGT) in FIG and official member of Commissions 2 (Education) and 7. In addition, he is the 2nd delegate of Spain (COIGT) in APPAT (Pan-American Association of Professionals in Land Surveying and Topography). He is responsible for Communication and Institutional Relations at COIGT Castilla-La Mancha. He holds a PhD, MSc, and BSc in Geomatics Engineering and has received regional, national, and

international awards, being a leader in the educational, professional, institutional, and social redefinition of Geomatics and the Geospatial Ecosystem. He is currently a national civil servant with the Spanish government and was previously a university professor specializing in Sociological Geomatics (Genealogy and Geodemographics) and Land Administration (Cadastre-Land Registry).

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