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Technical expertise: geographical names data management

Integration of modern technologies to activate geographical names

Summary**

Geographical names are receiving increasing attention at the international, regional and local levels as organizations recognize their socioeconomic importance and significance for development. Geographical names are unique identifiers for countries, regions, cities, towns, villages and for natural, historical, religious and archaeological features. They not only allow locations to be identified, but also express cultural and civilizational heritage. They have always played an essential role in human communication, serving as important referents throughout history and fostering interaction among cultures.

The role played by geographical names has greatly expanded in the context of rapid global digital transformation. Automation, digitization, artificial intelligence and smart technologies have revolutionized how names are documented, analysed and used. With virtual platforms enabling cross-cultural communication over geographical distances, an urgent need has arisen throughout the world for the documentation, romanization and automation of geographical names. That need has increased in tandem with the enormous growth of e-commerce, digital government services and logistics, which rely on accurate geographical data to optimize operations and ensure the efficient delivery of services. Modern geospatial solutions are also vital for disaster management, emergency response and the maintenance of regional and international security.

The integration of modern technologies and geographical names databases has opened up new horizons, not only when it comes to documenting names, but also with respect to conducting advanced spatial analytics to support decision-making. Satellite imagery and automated processing has made it possible to track urban growth,

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** The full report was prepared by Ali Bakhit, Kingdom of Saudi Arabia, Ministry of Municipalities and Housing, member of the National Committee on Geographical Names. It will be available under document symbol GEGN.2/2025/27/CRP.50, in the language of submission only, at https://unstats.un.org/unsd/ungegn/sessions/4th_session_2025/.

population distribution and environmental changes in specific geographical areas. In addition, by linking geospatial data to deep learning and artificial intelligence, patterns associated with geographical names can be automatically extracted and analysed. Such integration has enhanced many applications, such as spatial commercial licensing systems, postal services, real estate registration systems, navigation systems and emergency response networks. Smart camera technologies and artificial intelligence-based systems have expanded the scope of interactive data collection, enabling real-time observation of geographical locations and more accurate detection of dynamic changes, thus promoting data-driven governance.

The integration of geographical names with spatial and demographic data has led to the development of automated analytics to facilitate trend forecasting and urban planning. Geographical names are no longer simply referents in databases, but rather are an essential element of a country's digital infrastructure. Integrating them into artificial intelligence systems, search engines and modern geospatial systems makes them more familiar and accessible, enhancing their significance in digital ecosystems. The integration of technology with geographical names is essential for improving operational efficiency, enhancing spatial intelligence and ensuring sustainable development in an increasingly interconnected world.

The report highlights mechanisms for operationalizing modern technologies and artificial intelligence in geospatial systems, in particular when linking geographical name data and improving the accuracy, consistency and integration of names. The report also explores how these developments contribute to the observation and analysis of changes associated with geographical names over time, and how that aligns with the Sustainable Development Goals. Through the use of advanced technologies, geographical names can be transformed into powerful tools for digital governance, economic development and global connectivity. In a context of rapid digital advancement, geographical names will remain pertinent.