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CALL FOR MANUSCRIPTS

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Special Issue Title: Geo-Information Technologies (Geo-IT) for Efficient Spatial Resources Management and Mitigation of the related Global Challenges

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Special Issue Information:

The continuous applications of Geo-Information Technologies (Geo-IT) have been offering various opportunities for efficient management of different types of spatial resources in a rapidly changing environment in both urban and rural areas. The Geo-IT have enabled different professionals, decision makers, and planners to establish the humankind-spatial resources-relations and make intelligent decisions in spatial resources to various users. Some of Geo-IT applications include the surveying methods and data processing that allow for the integration of spatial and non-spatial data, and the carrying of quick and efficient spatial analysis that support planning and decision making, and offer relatively quick response on spatial resources use and monitoring issues. In service delivery, Geo-IT can be applied as strategic tools for process automation, improvement of spatial development operations and support decision-making for a profound and improved spatial resources use. From this perspective, managers and planners can use spatial data with aims at efficient management of the existing resources and planning for spatial development.

Yet, the increasing use of spatial resources alongside socio-economic development programmes lead to undesirable environmental threats such as climate change which in turn threatens the environment and natural resources in general. Some of the main ongoing environmental and climate threats include environmental degradation, global warming, sea

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level rise, unexpected heavy rainfall, rapid changes in land use and cover, forest degradation and clearance, wetland degradation and related losses, floods outburst and landslides damaging physical infrastructure and threatening biodiversity in general. Effective and sustainable mitigation strategies against these challenges require the collection and use of both spatial and non-spatial data for timely, regular and cost-effective monitoring of the environment, evidence-based decision-making processes, and improved understanding of the interactions between socio-economic activities and environmental management processes. Geo-IT support the collection, processing, management, and dissemination of spatial data among different agencies involved in environment and natural resources management. The use of those data is also expected to support the well-sounding planning and decision making in relation to the use and allocation of spatial resources, their protection or preservation and delivery of various services needed for the human welfare.

This special issue welcomes the manuscripts discussing scientific and technical approaches that offer new insights into how the Geo-IT have been contributing to natural resources and environment management, spatial development, and mitigation of various challenges (including those pertaining to climate change) related to increased use of spatial resources. Since Geo-IT have been improved over time and new trends in their applications have been observed in the last years, the manuscripts discussing how those applications have been contributing to solving the local and global challenges, enhancing service provision and efficient spatial data management are welcomed. As the whole world has been facing various challenges driven by the COVID-19 pandemic, scientists have been expected to probe a wide range of solutions or strategies to address those challenges or provide a wide understanding of this pandemic in order to develop scientific options that contribute to the appropriate management of the related impacts. This special issue also expects the manuscripts that unfold the state-of-the-art techniques and applications that address the problems related to COVID-19 pandemic. Yet, there have been some socio-spatial or environmental transformations resulting from various strategies that have been implemented in a bid to cope with this pandemic. Scientific contributions discussing those transformations are also welcome. Generally, the expected manuscripts can be aligned with the following thematic areas:

- **Environment, Climate Change, Disaster and Natural Resources Management:** E.g. Collection, delivery and dissemination of crucial information about the environment and natural resources among various professionals and the public; Air quality monitoring in the urban areas, human settlements and economic zones development; Flood, erosion and drought risks modelling and predictions in the support of government, environmental agencies and insurance companies to improve prevention, early warning mechanisms and mitigation strategies; Disaster risk reduction and management in the overcrowding urban spaces; Environmental impact analysis alongside socio-economic development, and natural resources exploitation; Wetland and watershed management; Biodiversity modelling, monitoring and ecosystem restoration; etc.
- **Sustainable Urban and Rural Planning and Development:** E.g. Smart land use and decision support tools for spatial planning; Web-based decision support for urban

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planning and growth monitoring; Monitoring compliance to zoning regulations and land development tracking; Tracking social and spatial inconsistencies that may exist within urban spaces and rural settlements alongside the improvement of community welfare; GIS-based multi-Criteria analysis for rural settlements site selection and new urban neighbourhood development; Management the competing land use interests; Integrated urban and rural planning and land resource allocation; Smart solutions and inclusive management of informal settlements or slums; Urban renewal and/or re-organisation; Green cities development: connecting the urbanization, environmental assets and ecosystem Services; Geo-IT for physical and socio-economic dynamics in urban spaces;

- **Connection between Geo-IT and Geospatial Artificial Intelligence (Geo-AI), big data analytics and machine learning:** E.g. exploration of the related applications in infrastructure mapping, land use/cover change detection and dynamics analysis, environmental degradation assessment, socio-economic development analysis, population dynamics, geomatics, and geo-spatial data privacy, etc.

- **Geo-IT in Sustainable Renewable Energy Exploration, Production and Distribution:** E.g. Exploration and evaluation of potential sites for renewable energy; Urban and rural electrification and development of renewable energy solutions; Geo-IT based approaches to support decision-making in renewable energy production and supply; Spatial equity in energy supply, access and use; etc.

- **Geo-IT in basic infrastructure provision:** E.g. Design, planning and provision of basic infrastructure (and their maintenance) in urban and rural areas; Connectivity among of various urban neighbourhoods; Assessment and improvement of service provision performance; Bridging spatial disparities and urban divide; Location based strategy to improve access to basic infrastructure; Spatial modelling of basic infrastructure and services accessibility and travel behaviour; etc.

- **Improved Agriculture Development, Food-chain and food security:** E.g. Efficient and effective water resources management for proper and fair irrigation process; Assessment and monitoring of soil properties for agricultural production enhancement; Crop production and yield estimation; Agricultural land suitability and allocation; New approaches for food production vis-a-vis the decreasing agricultural land, especially in the urban settings; Connectivity among farming sites, financial institutions and markets; Modelling accessibility to food (markets and consumers); Crop health monitoring and impact of natural disasters on crop production for operational approaches; etc.

- **Improved Land Administration and Management Systems:** E.g. E-land registration, Cadastral data management, Low-cost and/or pro-poor cadastral survey; Innovative tools and procedures for managing (including the updating) land information; Geo-information technologies in land valuation and tax collection; Inter-agencies connectivity and use of land information in service delivery; Modelling land fragmentation and consolidation scenarios; Blockchain for land administration; Geo-IT for land governance; Land Administration for 3D land development; etc.

- **Geo-IT in public health, environmental health and** COVID-19 **pandemic mitigation:** E.g. Deciphering health inequities, evaluating performance or challenges

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related to heath care service delivery; Connection between health challenges and socio-and physical conditions of the local environment; Performance in the global fight against COVID-19 outbreaks; Spatial analysis of COVID-19 risk trends and allocation of required resources (including health facilities); Modelling the COVID-19 pandemic impacts and post crisis development strategies (including settlement improvement, enhancing access to basic infrastructure and emergency support services provision, positive global environmental impacts related to various measures against COVID-19 outbreaks); Geographical perspectives of cooperation and responses to COVID-19 pandemic; Allocation or delivery of COVID-19 vaccine; etc.

Instructions for Authors:

Original full papers which are aligned with the focus of this special issue are welcome. **Any submission which does not portray the Geo-IT component will not be considered for the review process.** The manuscript should be written in a concise form, in 1.5 spaced format, with a font size of 12 pt., in Times New Roman font style, and the length should not exceed **10,000 words** (references included). Title should not exceed 15 words and keywords should be 5 maximum. The recommended reference style is APA 6th Edition (accessible from https://apastyle.apa.org/6th-edition-resources/). For more, the authors should consult the RJESTE author guidelines available at https://www.ajol.info/index.php/rjeste/about/submissions.

Manuscripts should be submitted to Dr. Ernest Uwayezu (wayezuernest@gmail.com with a copy to the Editor in Chief (ebizuru@gmail.com) and the co-editor (grwanyiziri@gmail.com).