



GIS IN CENTRAL ASIA – GISCA 2022 and GEOINFORMATICS – GI 2022 Annual International Scientific Conferences

"Designing the geospatial ecosystem"

Tashkent, 23-27 May 2022
online/onsite



Organized by:

**“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers”
National Research University (“TIAME” NRU)**



PREFACE

GIS in Central Asia – GISCA 2022 and Geoinformatics – GI 2022 Annual International Scientific Conferences were organized by the faculty of Land Management at the “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University (“TIAME” NRU) on 23-27 May 2022. A teleconference was organized for the participants who could not participate due COVID-19-related or other restrictions by using a Zoom platform including lively discussion options broadcast through the YouTube platform.

The main objectives of this event are to bring together academics, professors, researchers, and specialists in the field of GIS from Central Asia and other countries, to orientate scientists working in the field of socio-ecological systems to interdisciplinary geospatial doctoral studies and research, as well as expanding the involvement of professors and doctoral students working in the field of geoinformatics in the international community, strengthening the internationalization of universities and research institutes, encouraging international cooperation, and knowledge exchange in GIS education.

The GISCA2022 and GI2022 have a broad range of topics including GIS for regional sustainable development; development of geospatial infrastructures and ecosystems; GIS for management in the field of environmental protection, agriculture, and water resources management; new trends and technologies in geodesy, cadastre, cartography, and land management; cultural and natural heritage; precision agriculture, sensors, remote sensing; agricultural machinery; agricultural economics, the economics of precision farming; sustainable development of land use and land cover; hydrology, hydrotechnical facilities.

The world countries have adopted the global Sustainable Development Goals (SDGs) Action Agenda. In 2022, GISCA 2022 and GI 2022 are focused on the theme "Designing the geospatial ecosystem" towards the achievement of SDGs, especially SDG2, SDG6, SDG11, SDG13, SDG15, and SDG17. Geographic Information Science as a conceptual foundation, Geoinformatics as the methodology, and GIS as software technologies are powerful instruments for linking information across different sources by location. This is exactly what is needed to successfully manage our environments and natural resources, our economies, and ultimately our societies.

In total, 119 submitted papers have been received, while 18 submitted papers were rejected due to irrelevant topics, low quality of research, and content concerns. The rest 101 papers have been sent for review, and a total of 60 papers have been accepted by the reviewers. Selected papers were compiled into the proceeding after being reviewed rigorously.

Employees of enterprises and organizations related to Geoinformatics, professors, students, graduate students, and researchers of foreign and national universities, including the following Erasmus+ „NICoPA: New and Innovative Courses for Precision Agriculture“ Project foreign partner universities and organizations:

- The Austria-Central Asia Center for GIScience (ACA*GIScience);
- Eurasia-Pacific Uninet, Austria;
- Austrian Academy of Sciences;
- Paris-Lodron University of Salzburg, Austria;
- Budapest University of Economics and Technology, Hungary;
- Obuda University, Hungary;
- University North, Croatia;
- Technical University of Berlin, Germany;
- Plovdiv Agricultural University, Bulgaria;
- Czech University of Life Sciences Prague, Czech Republic;
- Exolaunch GmbH, Germany;
- Kazakh Agrarian University named after S.Seifullin, Kazakhstan;
- Sh. Ualikhanov Kokshetau University, Kazakhstan;
- Manash Kozybayev North Kazakhstan university, Kazakhstan;
- Turkmen Agricultural University Named after S.A. Niyazov, Turkmenistan;
- The Turkmen State Architecture and Construction Institute, Turkmenistan;
- Turkmen Agricultural Institute, Turkmenistan.

The conference started with keynote speakers' presentations and was followed by invited speakers and participant presentations. There was a discussion session after each presentation. We would like to thank the keynote speakers: Prof. Josef Strobl, Prof. Alishir Kurban, Prof. Oleg Vorobev, Prof. Lola Gulyamova, Prof. Shukhrat Shokirov, Prof. Mariyana Shishkova.

We would like to thank the organizing committee, the reviewers, the editors, and the publisher for their immense contribution to the GISCA22 and GI22 Conferences. We are expecting more experts and scholars from all over the world to join the next GISCA and GI in 2023.

Sincerely yours,

Prof. Dr. Lorant Foldvary, D.Sc.,
Chief Editor of the GISCA22 and GI22

Mr. Ilhom Abdurahmanov, MSc,
Co-Chief Editor of the GISCA22 and GI22

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