



National Academy of Sciences of Ukraine (NASU)
Institute of Telecommunications and Global Information Space
Scientific Center for Aerospace Research of the Earth of the Institute of Geological Sciences
State institution "Scientific Hydrophysical Center of NASU"

Ministry of Education and Science of Ukraine
Taras Shevchenko National University of Kyiv
National Aerospace University «Kharkiv Aviation Institute»
Kyiv National University of Construction and Architecture
Kharkiv National University of Radio Electronics
National University of Kyiv Mohyla Academy"
Vinnitsia National Technical University

Ministry of Defence Ukraine
National Space Agency of Ukraine
National Center "Small Academy of Sciences of Ukraine"

University of London (Royal Holloway)
Kielce University of Technology (Politechnika Świętokrzyska)
Universita di Roma-2 "Tor Vergata"

AGENDA

XXI International **Scientific and Practical Conference**

Information and communication technologies and sustainable development

November 14-16, 2022

Kyiv

Kyiv – 2022

Scientific and organizational committee of the conference

<u>Chairman:</u>	
Stanislav Dovgyi	Honorary Director ITGIS NASU, President of NC "Small Academy of Sciences of Ukraine", Academician of NASU, Academician of NAPS, Doctor of Physical and Mathematical Sciences, Professor
<u>Members of organizational committee :</u>	
Olga Butenko	Professor of the Department of Geoinformation technologies and space monitoring of the Earth, KHAI, Doctor of Technical Sciences, Professor
Olena Voloshkina	Head of the Department of Occupational Safety and Environment, KNUCA, Doctor of Technical Sciences, Professor
Petro Vorobiyenko	Chief Researcher, ITGIS NASU, Doctor of Technical Sciences, Professor
Larysa. Globa	Head of the Information and telecommunication Department, NTUU "KPI", Doctor of Technical Sciences, Professor
Oleg Gaiduk	Deputy Minister of Defense of Ukraine for Digital Development, Digital Transformations and Digitization .
Sergey Zaitsev	Profesor uczelni, dr hab. inż., Katedra Systemów Informatycznych, Kielce University of Technology (Politechnika Świętokrzyska)
Iurii Kaliukh	Chief Researcher. ITGIS NASU, Doctor of Technical Sciences, Professor
Vadym Kaptur	Senior Researcher, ITGIS NASU, PhD in Telecommunications, Senior Scientist
Oleh Kopyka	Acting Deputy Direction on Science and Innovations, ITGIS NASU, Doctor of Technical Sciences, Professor
Dmytro Koroliuk	Chief Researcher. ITGIS NASU, Doctor of Technical Sciences, Professor
Oleksandr Lemeshko	Head of the Department of Infocommunication Engineering V.V. Popovsky, Doctor of Technical Sciences, Professor
Volodymyr Mikheev	Deputy Head of State Space Agency of Ukraine, PhD
Mykyta Myrontsov	Senior Researcher, ITGIS NASU, Doctor of Physical and Mathematical Sciences (Geophysics), Senior Scientist
Oksen Lisovyi	Director, National center «Minor Academy of Sciences of Ukraine», Ph.D. (Philosophical Anthropology, Philosophy of Culture)
Vitaly Mokin	Head of the Department of System Analysis, Computer Monitoring and engineering graphics, Vinnytsia National Technical University, Doctor of Technical Sciences, Professor
Oleksandr Nakonechnyi	Head of the Department of System Analysis and Decision Making Theory, Taras Shevchenko National University of Kyiv, Doctor of Physical and Mathematical Sciences, Professor
Mykhailo Popov	General director, State Institution "Scientific Centre for Aerospace Research of the Earth of the Institute of Geological Sciences of the National Academy of Sciences of Ukraine", Corresponding Member of NAS of Ukraine (Aerospace Research of the Earth), Doctor of Technical Sciences, Professor
Eduard Siemens	Director of Graduate School Engineering and Information Technologies Head of the Future Internet Lab Anhalt (FILA) Anhalt University of Applied Sciences, Prof. Dr.-Ing.
Vasyl Trysniuk	Head of Department, ITGIS NASU, Doctor of Technical Sciences, Senior Scientist
Oleksandr Trofymchuk	Director, ITGIS NASU, Doctor of Technical Sciences, Professor

Vasyl Ustimenko	University of London (Royal Holloway), Doctor of Physical and Mathematical Sciences, Professor
Ievgen Khlobystov	Professor of Environmental Studies, National University of Kyiv Mohyla Academy, Doctor of Technical Sciences, Professor
Oleksandr Shchypytsov	Director, State Institution “Scientific Hydrophysical Centre of the National Academy of Sciences of Ukraine”, Corresponding Member of NAS of Ukraine (Oceanology), Doctor of Geographic Sciences (Oceanology), Professor
Ievgen Yakovlev	Chief Researcher, ITGIS NASU, Doctor of Technical Sciences, Senior Scientist
Conference Secretariat:	
Larysa Zotova	mobile: +380-96-456-84-32,
Natalia Sheviakina, Natalia Khabova	fixed. +380-44-245-87-97, mobile.: +380 - 95-779-57-99

November 14, 2022 - registration of participants, organizational issues

November 15, 2022

10:00 Opening ceremony

Welcome speech by the honorary director of the Institute of Telecommunications and Global Information Space, academician of the National Academy of Sciences of Ukraine

Stanislav Dovgyi

10-20

Key presentations:

Jaroslav Ponder - Head of the ITU Office for Europe

Eduard Siemens - Director of Graduate School Engineering and Information Technologies Head of the Future Internet Lab Anhalt (FILA) Anhalt University of Applied Sciences, Prof. Dr.-Ing.

Presentations:

11-00

1. The concept of sustainable development as a prerequisite for the creation of a system of collective security

Petro Vorobiyenko

Institute of Telecommunications and Global Information Space, Ukraine

2. Bayesian data analysis in modeling and forecasting nonlinear nonstationary financial and economic processes

Trofymchuk O. M., Bidyuk P.I., Prosiankina-Zharova T. I., Terentiev O. M.

Institute of Telecommunications and Global Information Space, Ukraine

3. Combined and split ring routes in a multi-product hierarchical network

Trofymchuk O. M., Vasyanin V.O., Ushakova L.P.

Institute of Telecommunications and Global Information Space, Ukraine

4. Designing a dashboard to support decision-making regarding the selection of optimal management options for multi-variant, multi-stage technological processes under conditions of uncertainty

Dratovany M.V., Mokin V.B., Yascholt A.R., Okhrimenko A.V.

Vinnitsia National Technical University, Ukraine

12-00

5. Development of a web-based accounting system for assistance to internally displaced persons in Ukraine

Biletsky B.S.

Vinnitsia National Technical University, Ukraine

6. Intelligent methods of extracting key phrases from the text for building ontological models of information and search systems

Bondaletov K.O.

Vinnitsia National Technical University, Ukraine

7. Possible ways of determining the characteristics of network traffic for identification of required external connection line rate for a specific object

Kaptur V. A., Tsaryov R. Yr.

Institute of Telecommunications and Global Information Space, Ukraine

State University of Intellectual Technologies and Communication, Ukraine

8. On Extremal Algebraic Graphs and implementations of new Multivariate Cryptosystems

Ustimenko V. O., Pustovit O. S.

Royal Holloway, University of London, United Kingdom

Institute of Telecommunications and Global Information Space, Ukraine

13-00 – 13-30 Break

9. The current state and development of 5G technologies

V.M. Vasylenko¹, N.V. Sokorynska², S.V. Zaitsev³, P.M. Courbet¹

¹*Institute of Telecommunications and Global Information Space, Ukraine*

²*Chernihiv Polytechnic National University, Ukraine*

³*Katedra Systemów Informatycznych, Kielce University of Technology (Politechnika Świętokrzyska), Poland*

10. Mathematical model for evaluation of interference dispersion for modern mobile communication systems

S. Zaitsev, N. Sokorynska, V. Prystupa, L. Zaitseva

Institute of Telecommunications and Global Information Space, Ukraine

14-00

11. Adaptive myriad filtering of the electronystagmogram

Tulyakova N.O., Trofymchuk O.M.

Institute of Applied Physics of NASU, Sumy, Ukraine,

Institute of Telecommunications and Global Information Space, Ukraine

12. The method of singular integral equations for problems of fluid dynamics in a region with a free boundary

S.O. Dovgiy, P.O. Vasin, D.K. Zloschastev, D.I. Chernii

Institute of Telecommunications and Global Information Space, Ukraine

13. Quantum computing and new possibilities of information and communication technologies

Dovgiy S.O., Koroliuk D.V.

Institute of Telecommunications and Global Information Space, Ukraine

14. Mathematical model of vector EEG in the form of a vector of cyclic rhythmically connected random processes

Lupenko S.A., Butsii R.A.

Institute of Telecommunications and Global Information Space, Ukraine

15-00

15. Using the Bi-LSTM model to improve the accuracy of cryptocurrency exchange rate forecasting

Yatsko Y.V., Terentiev O.M.

NTUU "KPI", Ukraine

Institute of Telecommunications and Global Information Space, Ukraine

16. Comparison of implementations of information collection systems from crypto exchanges, in real time, in C++, JavaScript and Python programming languages.

Duda V.O., Terentiev O.M.

NTUU "KPI", Ukraine

Institute of Telecommunications and Global Information Space, Ukraine

17. Structuring algorithms of recommender systems used in the financial and credit sphere

Kuprin O. M.

Institute of Telecommunications and Global Information Space, Ukraine

18. Study of the scheme of symplectic integration in modeling the motion of discrete vortices

Dovgiy S.O., Bulanchuk P.O., Bulanchuk O.M., Bulanchuk H.G.

Institute of Telecommunications and Global Information Space, Ukraine

Pennsylvania State University, USA

NC "Small Academy of Sciences of Ukraine", Ukraine

DVNZ "Priazov State Technical University, Ukraine

16-00

19. The next stage of refinement of the GIS assessment of additional seismic risk on flooded loess in Ukraine

Rogozhyn O.G., Yakovlev E.O.

Institute of Telecommunications and Global Information Space, Ukraine

20. Zoning of local areas of the Dnipro-Donetsk basin according to oil and gas potential prospects based on remote and atmogeochemical methods and GIS technologies

Bagrii I.D.¹, Azimov O.T.², Dubosarskyi V.R.¹

¹ Institute of Geological Sciences of the National Academy of Sciences of Ukraine, Ukraine

² Scientific Center for Aerospace Research of the Earth of the National Academy of Sciences of the National Academy of Sciences of Ukraine, Ukraine

21. The informational approach of V.M. Hlushkova in the study of tritium migration

Kryvazhych O.O., Kovalenko O.V.

Institute of Telecommunications and Global Information Space, Ukraine

Institute of Nuclear Research of the National Academy of Sciences of Ukraine, Ukraine

22. Determination of the error of solving the inverse problem of electrometry of oil and gas wells

¹ Myrontsov M., ¹ Noskov O., ² Krasovska I.

Institute of Telecommunications and Global Information Space, Ukraine

National Aerospace University «Kharkov Aviation Institute»

November 16, 2022

10-00

23. Development of information technologies for monitoring emergency environmental situations based on satellite data

Dovgiy S.O., Trofymchuk O.M., Trysnyuk V.M., Horoshkova L.A., Khlobistov E.V.

Institute of Telecommunications and Global Information Space, Ukraine

24. Analysis of physical models and hypotheses underlying the procedure for restoring the actual parameters of the surface

Marushchak V.M., Shumeiko V.O., Prystupa V.M.

Institute of Telecommunications and Global Information Space, Ukraine

25. The application of technologies for the automated use of online services for the search of aerospace survey data according to the specified parameters

Hreben O.S.

KHAI, Ukraine

26. Development of secure communication tools for automated control systems of tactical military units

S.O. Dovgiy, O.V. Kopyyka, O.S. Kozlov

Institute of Telecommunications and Global Information Space, Ukraine

11-00

27. Application of the index-indicator approach for mathematical modeling of the influence of militarytechnogenic load on the ecological state of the components of the environment in the areas of combat operations

Chumachenko S.M.

National University of Food Technologies

28. Regional-object environmental and geological dangers of Russian aggression in the mining and extractive regions of Donbass and Kryvbass

Yakovlev E.O.

Institute of Telecommunications and Global Information Space, Ukraine

29. A risk-oriented approach to assessing the loss of health of personnel under conditions of contamination with dangerous chemical substances

Nagornyi E.I., Nikitin A.A., Konetskyi Y.M., Pashchenko E.Yu.

Institute of Telecommunications and Global Information Space, Ukraine

National University of Defense of Ukraine named after Ivan Chernyakhovsky, Ukraine

30. Regulatory and legal regulation in the field of quality infrastructure

Konetska Olga

Institute of Telecommunications and Global Information Space, Ukraine

12-00

31. The technology of the integrated expert method of decision-making in the formation of aviation groups for extinguishing forest fires

Polishchuk V.B., Khodakivskyi V.M., Shevchenko V.L., Nesterenko O.V.

Ukrainian Scientific Center for the Development of Information Technologies, Ukraine

Institute of Public Administration and Scientific Research on Civil Protection, Ukraine

International European University, Ukraine

32. The aerospace aspect of spatio-temporal analysis of changes in the ecosystems of municipal waste disposal areas

Azimov O.T.¹, Tomchenko O.V.¹, Shevchuk O.V.²

¹ *Scientific Center for Aerospace Research of the Earth of the National Academy of Sciences of the National Academy of Sciences of Ukraine*

² *Institute of Telecommunications and Global Information Space, Ukraine*

33. Socio-ecological risks associated with landfill leachate, considering its hydrochemical characteristics

Trofymchuk O.M.¹, Kuraeva I.V.², Karmazynenko S.P.³, Azimov O.T.⁴

¹ *Institute of Telecommunications and Global Information Space, Ukraine*

² *Institute of Geochemistry, Mineralogy and Ore Formation named after M.P. Semenenko of NASU*

³ *Institute of Geography of the National Academy of Sciences of Ukraine*

⁴ *Scientific Center for Aerospace Research of the Earth of the National Academy of Sciences of the National Academy of Sciences of Ukraine*

34. System of satellite monitoring of hydrological processes in radiation-contaminated territories

Azimov O.T.¹, Tomchenko O.V.¹, Shevchenko O.L.²

¹ *Scientific Center for Aerospace Research of the Earth of the National Academy of Sciences of the National Academy of Sciences of Ukraine*

² *Ukrainian Hydrometeorological Institute of the State Emergency Service and the National Academy of Sciences of Ukraine*

13-00 - 13-30 Break

13-30

35. Information technologies for monitoring and management of landfills based on territorially distributed networks

Kurylo A.V.

Institute of Telecommunications and Global Information Space, Ukraine

36. Temperature mapping of landscapes in areas of landfills based on space-time data

Shevchuk O.V.¹, Tomchenko O.V.², Andreev A.A.², Azimov O.T.²

¹*Institute of Telecommunications and Global Information Space, Ukraine*

²*Scientific Center for Aerospace Research of the Earth, IGN of the National Academy of Sciences of the National Academy of Sciences*

14-00

37. Nonlinear static analysis of flexible distributed systems in the aquatic environment

Shchyptsov O.A., Gordeev A.Yu., Kalyukh Yu.I., Lebid O.G.

State institution "Scientific Hydrophysical Center of the National Academy of Sciences of Ukraine"

Institute of Telecommunications and Global Information Space, Ukraine

38. About one case of predicting losses of floods based on monitoring data

Stefanyshyn D.V.

Institute of Telecommunications and Global Information Space, Ukraine

39. Technologies for obtaining a water surface mask using Google Earth Engine cloud technologies, for temporary monitoring of vertical displacements on the territory of the village. Solotvino

Gordienko O.V.

Institute of Telecommunications and Global Information Space, Ukraine

15-00

40. Ecological assessment and forecasting of the state of the territories of the Carpathian region, which is in a state of potential flooding

Okharev V.O., Trysnyuk T.V., Zotova L.V.

Institute of Telecommunications and Global Information Space, Ukraine

41. Informational and analytical system for ensuring the protection of the natural environment of Ukraine

Semko O.V., Semko V.V.

Institute of Telecommunications and Global Information Space, Ukraine

National University of Life and Environmental Sciences of Ukraine,

42. Geoinformation technologies for soil quality assessment and forecasting at the regional level

Golovan Yu.M.

Institute of Telecommunications and Global Information Space, Ukraine

43. Strategy of system modeling of political modernization processes in Ukraine

V. Lisnychy

Institute of Telecommunications and Global Information Space, Ukraine

44. Implementation of elements of STEM education in the training process of construction engineers

Voloshkina O.S., Sipakov R.V., Goncharenko A.V., Zhukova O.G.

KNUCA, Ukraine