Educational and Research Institute of Telecommunication Systems

**National Technical University of Ukraine
"Igor Sikorsky Kyiv Polytechnic Institute"**

M.Ilchenko

26.01.2022

Educational and Research Institutes

- ✓ *Institute of Materials Science and Welding*
- ✓ *Institute of Aerospace Technologies*
- ✓ *Institute for Publishing and Printing*
- ✓ *Institute of Energy Saving and Energy Management*
- ✓ *Institute for Applied Systems Analysis*
- ✓ *Institute of Telecommunication Systems*
- ✓ *Institute of Mechanical Engineering*
- ✓ *Institute of Physics and Technology*
- ✓ *Institute of Nuclear and Heat Power Engineering*

FACULTIES

- *Faculty of Sociology and Law*
- *Faculty of Electronics*
- *Faculty of Instrumentation Engineering*
- *Faculty of Heat and Power Engineering*
- *Faculty of Electric Power Engineering and Automatics*
- *Faculty of Chemical Technology*
- *Faculty of Linguistics*
- *Faculty of Biotechnology and Biotechnics*
- *Faculty of Chemical Engineering*
- *Faculty of Informatics and Computer Engineering*
- *Faculty of Management and Marketing*
- *Faculty of Radio Engineering*
- *Faculty of Physics and Mathematics*
- *Faculty of Biomedical Engineering*
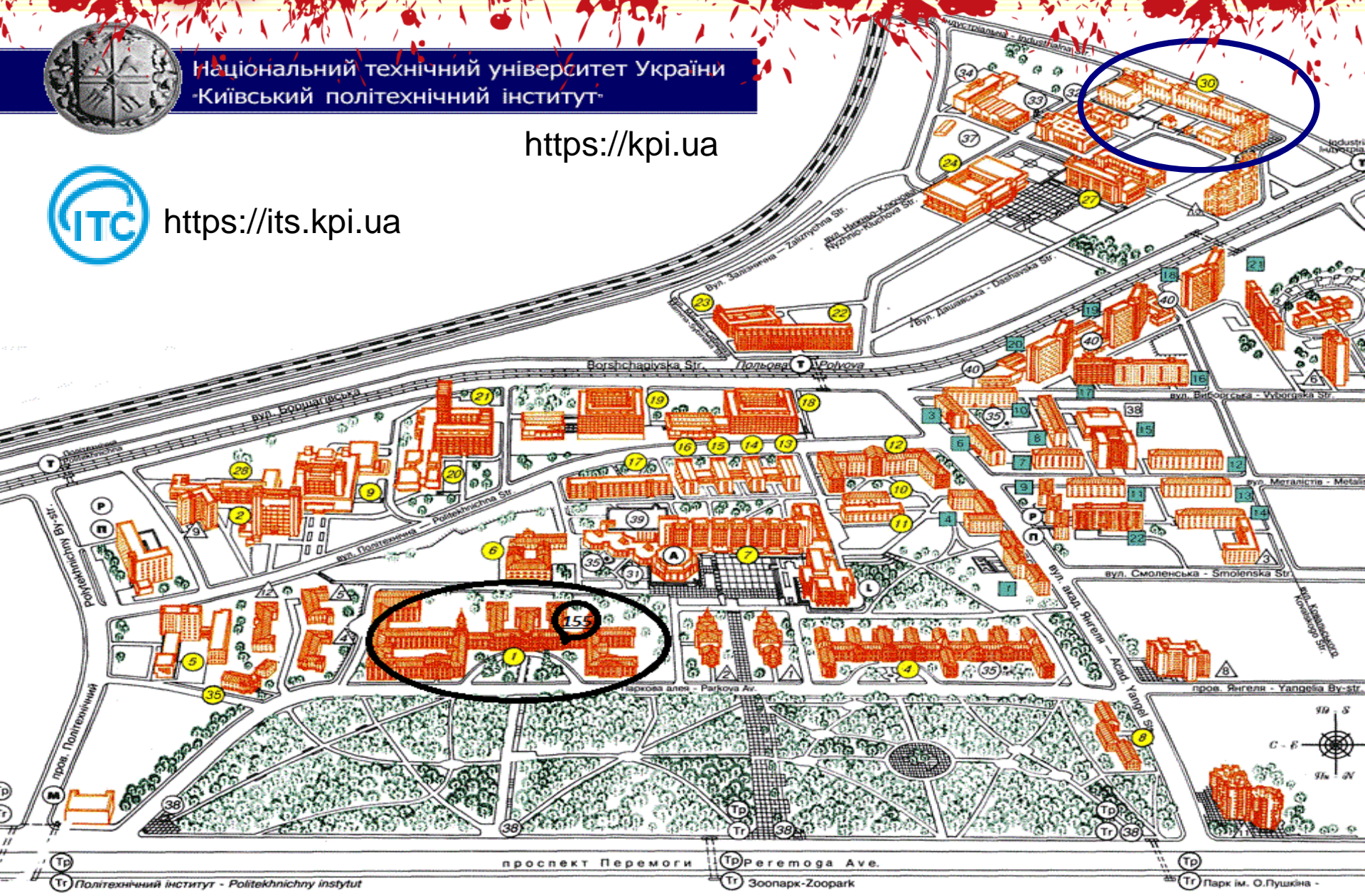- *Faculty of Applied Mathematics*

Національний технічний університет України
"Київський політехнічний інститут"

https://kpi.ua

https://its.kpi.ua

Project
of Kyiv Polytechnic Institute for organizing the training of telecommunications specialists turned 20 years old in may, 2013

Over 300 representatives of government, telecommunication companies, and students took part in celebration of the 20th anniversary of the Department of Telecommunications and the 10th anniversary of the Institute of Telecommunication Systems of "KPI" on 29 May 2013

ВІТАЄМО
УЧАСНИКІВ УРОЧИСТИХ
ЗБОРІВ З НАГОДИ
20-РІЧЧЯ КАФЕДРИ
ТЕЛЕКОМУНІКАЦІЙ ТА
10-РІЧЧЯ ІНСТИТУТУ
ТЕЛЕКОМУНІКАЦІЙНИХ
СИСТЕМ !

The new department of telecommunications was established in 1993 by the Ministry of Communications of Ukraine, National Space Agency, Academy of Sciences of Ukraine, SCST. Based on it, as well as two new departments and the Research Institute of Telecommunications in 2002 an educational complex

"Institute of Telecommunication Systems"
was created

ITS complex took a niche in Ukraine for training of specialists in use and development of telecommunications equipment

Scientific Supervisor, Director of the Institute of Telecommunication Systems–

Academician of the National Academy of Sciences of Ukraine, Doctor of Technical Sciences, Professor, Honored Scientist of Ukraine, Laureate of State Prizes in Science and Technology, Honorary Personality in Communication of Ukraine

ILCHENKO
Myhailo

Teaching Staff of ITS

- Professors - 14;
- Associate Professors - 27;
- Senior Teachers - 10;
- Assistants - 6;
- Teaching and support staff - 15

65% of teachers have doctors and candidates of technical sciences degrees

ITS DIRECTORATE

Scientific Supervisor, Director of the Institute of Telecommunication Systems, prof., academician of the NAS of Ukraine M.Ilchenko

First Deputy Director of the Educational and Research Ph.D., H. Avdieienko

Vice-director ITS of education and methodical affairs, PhD, Ass. prof. V. Pravylo

Vice-director ITS of education affairs, PhD, Ass. prof. I. Kononova

Vice-director ITS of scientific affairs, prof. S. Kravchuk

Vice-director ITS of international cooperation., prof. L. Globa

Vice-director ITS of administrative affairs O. Miklyaev

ITS STRUCTURE

Department of Telecommunications

Department of Information and Communication Technologies and Systems

Scientific Supervisor of Department,
prof., academician
NAS of Ukraine
M.Ilchenko

Head of Department, prof.
S. Kravchuk

Head of Department, ass. prof.
V. Pravylo

Our history in fields of telecommunication, science and achievements
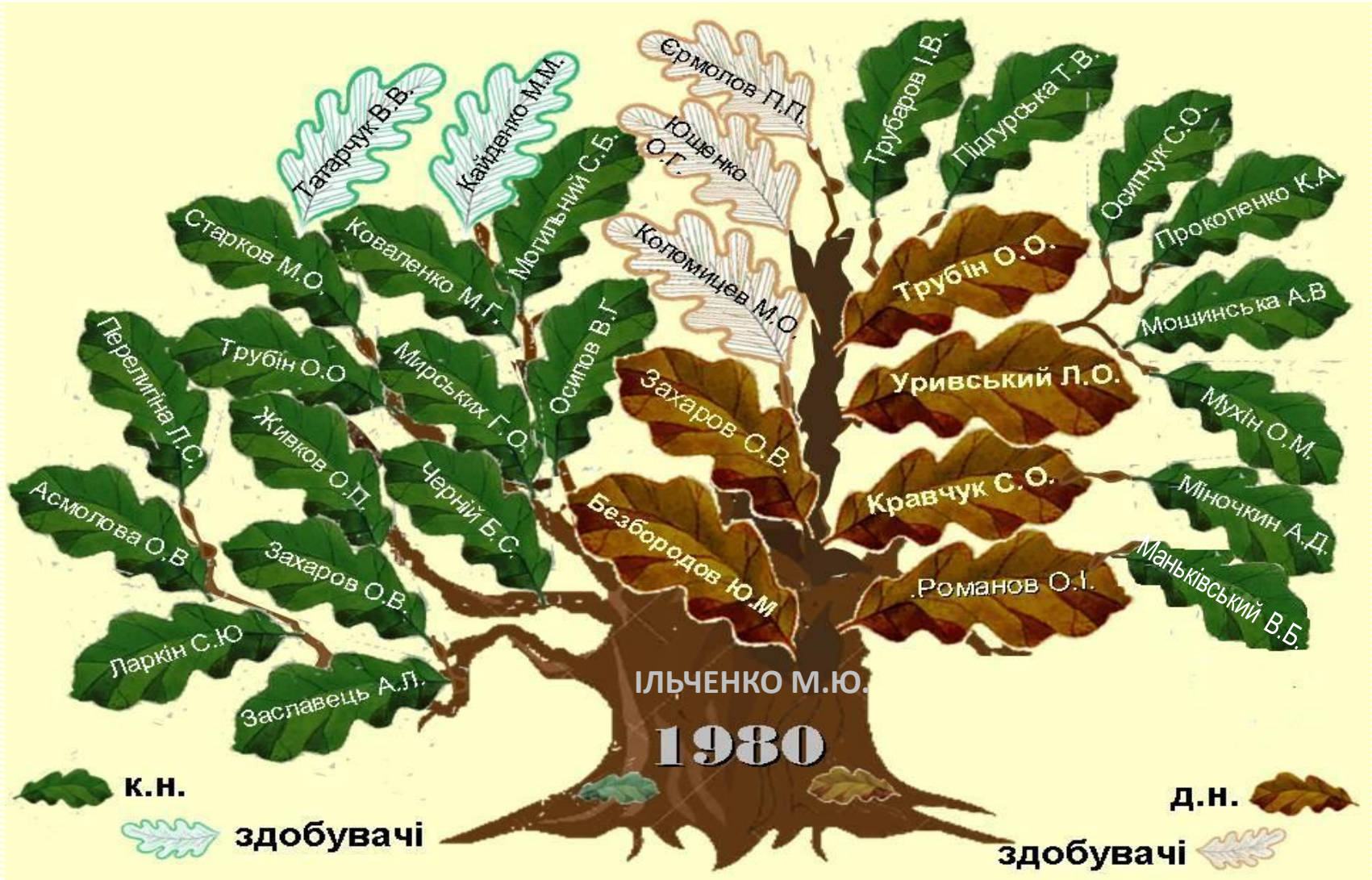
Over 25 years ITS prepared
1675 bachelors,
808 masters,
665 specialists
in telecommunication

There are 30 graduates of Igor Sikorsky KPI work in Huawei Ukraine

Боднарчук Сергей, 2012, Радиотехнический факультет

Янишевский Антон, 2000, Факультет электроники

Воронин Роман, 2016, ИТС

Мандрык Тарас, 2005, Факультет информатики и вычислительной техники

Ананко Андрей, 1995, Электро-аккустический факультет

Кот Андрей, 2016, ИТС

Гулей Сергей, 2006, ИТС

Чермянин Антон, 2016, ИТС

Вижуткин Дмитрий, 2005, факультет электроники

Набока Борислав, 2016, ИТС

Иваны́к Александр, 2003, Институт прикладного системного анализа

Мацевытый Владимир, 2003, Факультет электроники

Гиндикина Мария, 2016, Радиотехнический факультет

Яровый Максим, 2009, Факультет электроники

Еременко Алексей, 2009, Факультет электроники

Дяденко Александр, 2011, ИТС

Босюк Олег, 2016, ИТС

Дмитренко Анатолий, 2014, Институт специальной связи и защиты информации

Completed
47 theses,
including
13 doctoral
та 47 PhD
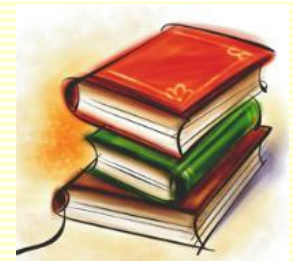
Formed a team of teachers, which brings together experienced professionals and talented young people (average age of teachers under 50 years old)

Young teachers and scientists of ITS

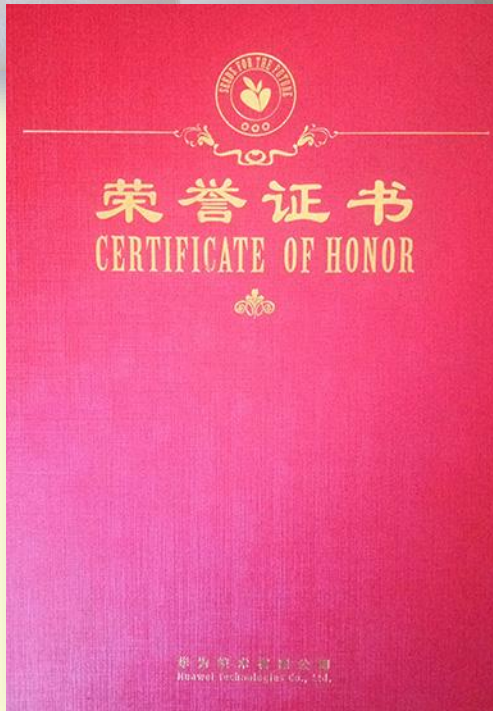# ITS has laureates of State Prize in Science And Technology of the USSR, the Ukrainian SSR and Ukraine

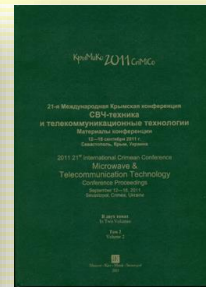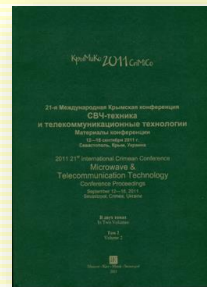# ITS has students - Champions in Telecommunications

Over 20 best students of ITS have won the first place in the nationwide competition of professional training and research activities
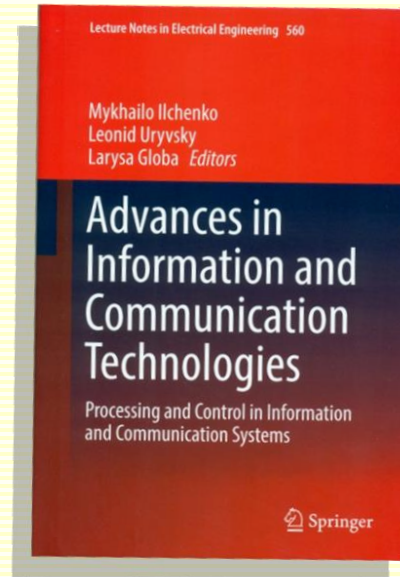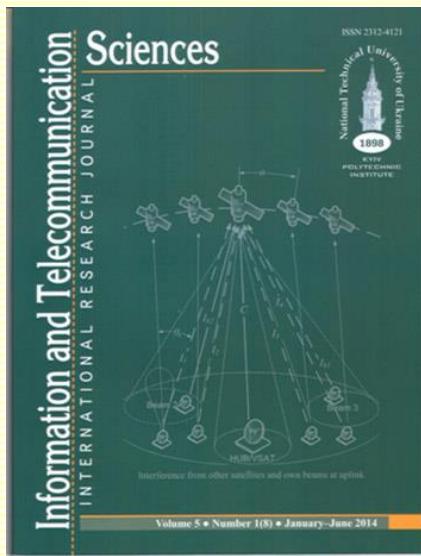
MYKYTA OSOKIN

Published
28 monographs,
20 textbooks,
over 600 articles

Published a scientific journal "Information and Telecommunication Sciences" and journals of Springer publisher
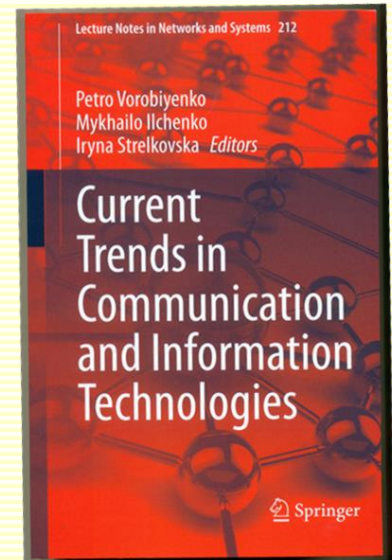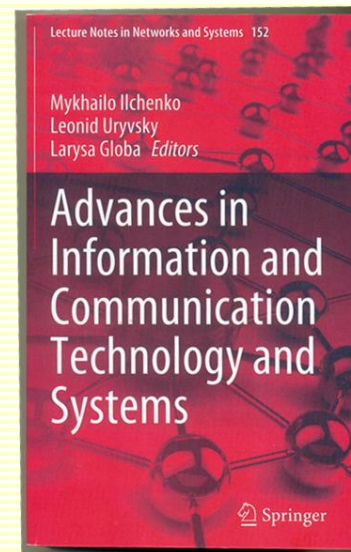
The Third International Conference on Information and Telecommunication Technologies and Radio Electronics (UkrMiCo)

Section 1. Infocommunications

IT, Cloud and Big Data technologies, E-society,

Internet of Things and its etc. implementation, information and communication systems security

- **STRELKOVSKA Iryna Viktorivna** – Dr.Sc., Prof., O.S. Popov ONAT, Odessa, Ukraine

- **KLYMASH Mykhailo Mykolaiovych** – Dr.Sc., Prof., Lviv Polytechnic National University, Lviv
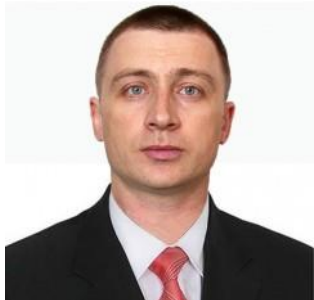
Section 2. Telecommunications

Telecommunication systems and networks, theoretical foundations of information processing and transmission in telecommunication systems, SDN and SDR etc.

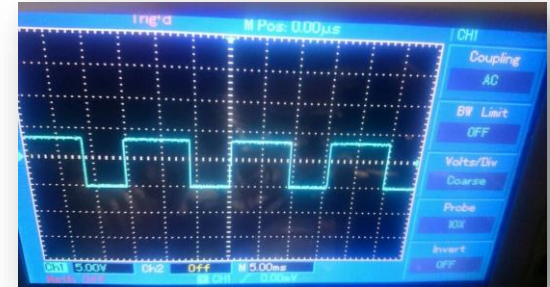- **KRAVCHUK Serhii Oleksandrovych** – Dr.Sc., Prof., Igor Sikorsky KPI, Kyiv.

- **LEMESHKO Oleksandr Vitaliiovych** – Dr.Sc., Prof., KhNURE, Kharkiv, Ukraine.

Section 3. Radio Engineering

theory of circuits, signals and processes in radio engineering and electronics, circuit engineering, antennas, microwave technology, microwave and THz electronics etc.
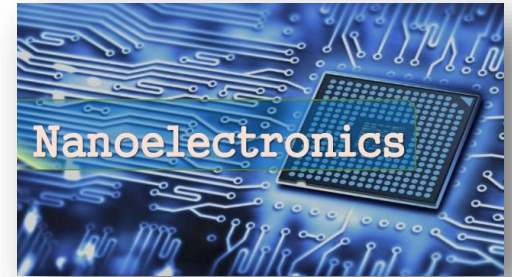

- **KRIZHANOVSKYY Volodymyr Hryhorovych** – Dr.Sc., Prof., Donetsk NU, Vinnytsia, Ukraine

- **PAVLIKOV Volodymyr Volodymyrovych** – Dr.Sc., Senior Scientist, NAU "KHAI", Kharkiv

Section 4. Electronics

Electronic materials, electronic devices, nanoelectronics and nanotechnology etc.

- **LEPIKH Yaroslav Illich** – Dr.Sc., Prof., Mechnikov ONU, Odessa

- **MELNYK Ihor Vitaliiovych** – Dr.Sc., Prof., Igor Sikorsky KPI, Kyiv, Ukraine

UkrMiCo'2016

Research Institute of Telecommunications of the National Technical University of Ukraine "KPI", according to the decision of the Presidium of NAS of Ukraine from 13.06.2001 №181, is working under the guidance of scientific and methodical Informatics department of NAS of Ukraine

Research institute has 10 laureates of the State Prize in Science and Technology

Major research areas:

Technologies of telecommunication systems and networks creation

Telecommunications software and hardware engineering

Information and communication computer systems and networks

The overall structure of building national information and telecommunications infrastructure
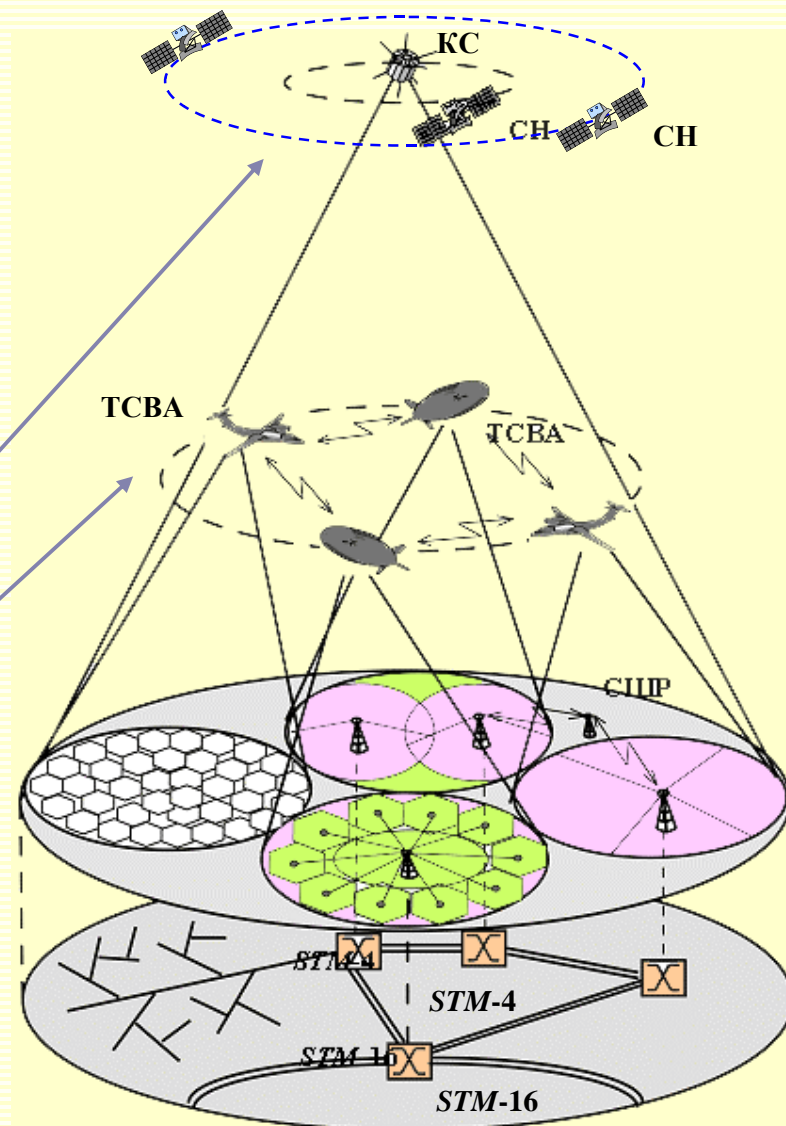
The research first presents the concept of building a national information and telecommunication infrastructure,

Which covers
- **satellite**,
- **stratosphere**,
- **terrestrial**

Segments of telecommunications systems and networks.

KC – communications satellite,
CH – navigation satellite

Institute of Telecommunication Systems

Telecommunication network using satellite telecommunications systems

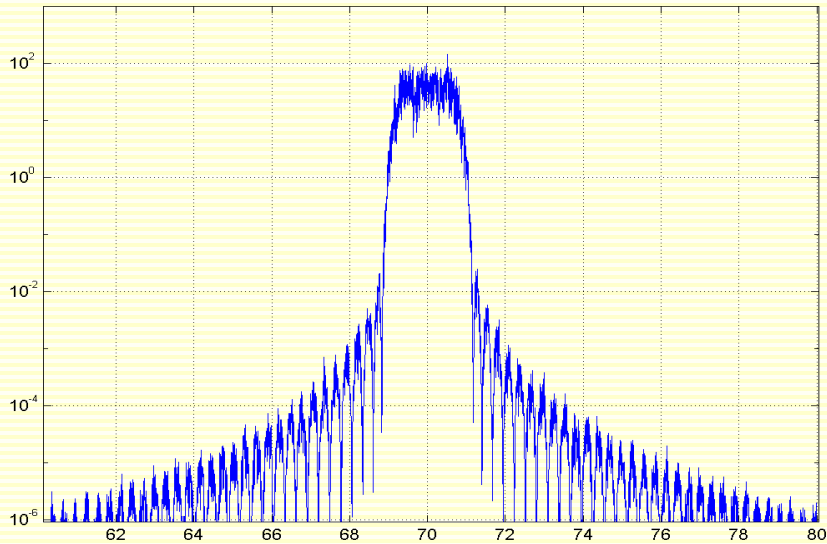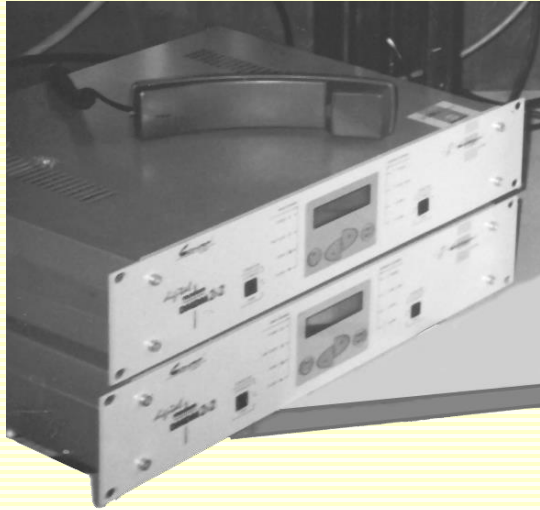# Satellite communication systems control center

Map diagram of the satellite transport network of the State Customs Service of Ukraine communications system
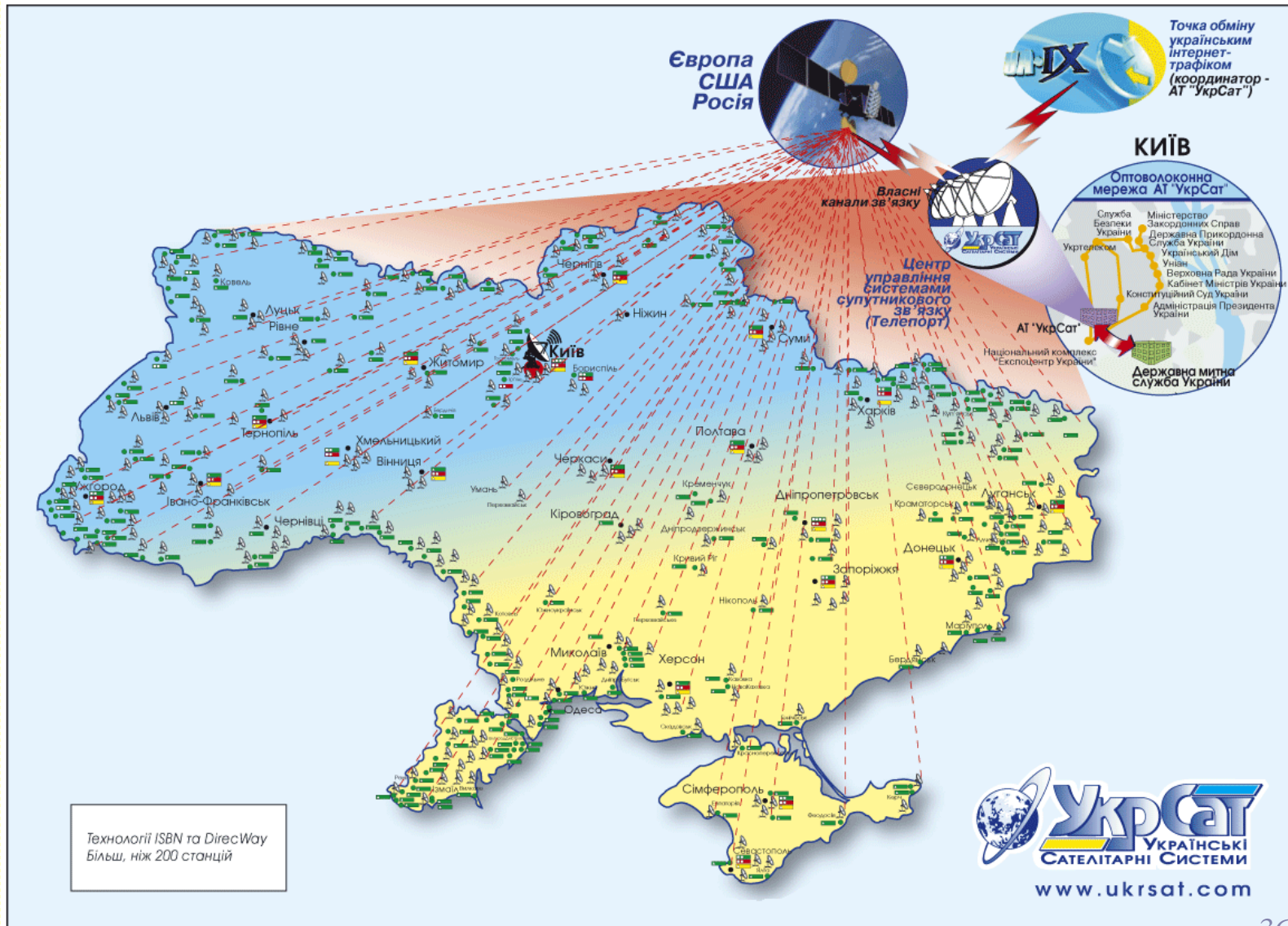
Satellite-terrestrial navigation systems

Digital microwave radiorelay system

Extract from the regulation of the Cabinet of Ministers of Ukraine

12 march 2012. № 294
Kyiv

Some question defining the medium-term priorities of innovations on national level for 2012-2016

MEDIUM-TERM
priority directions of innovations on national level for 2012-2016

Development of modern information, communications technologies, robotics

4. **Development of the technologies for developing the national information-communications infrastructure, in particular using MITRIS radio technology.**

Extract from the regulation of the Cabinet of Ministers of Ukraine
5 september 2012. № 838
Kyiv

## On amendments to some resolutions of the Cabinet of Ministers of Ukraine

PLAN of radio frequency resource usage in Ukraine SECTION II. Perspective for implementing radio technology				
Technology name	Base standards	Type of radio technology	Frequency band	Peculiarity of deployment
9.4. Radio relay communications		**fixed**	**94,1-100 GHz 102-105 GHz 106,5-109,5 GHz 111,8-113 GHz 130-134 GHz 141-148,5 GHz**	Further research is needed for joint frequency band usage by different radio departments considering the results of VKR-15

40

Scientific and technical expertise of the national satellite system "Lybid"

- Participation in testing the payload of the satellite "Lybid"
- Evaluation of qualitative and quantitative indicators of satellite "Lybid" payload
- Simulation of components and the entire network of satellite "Lybid"
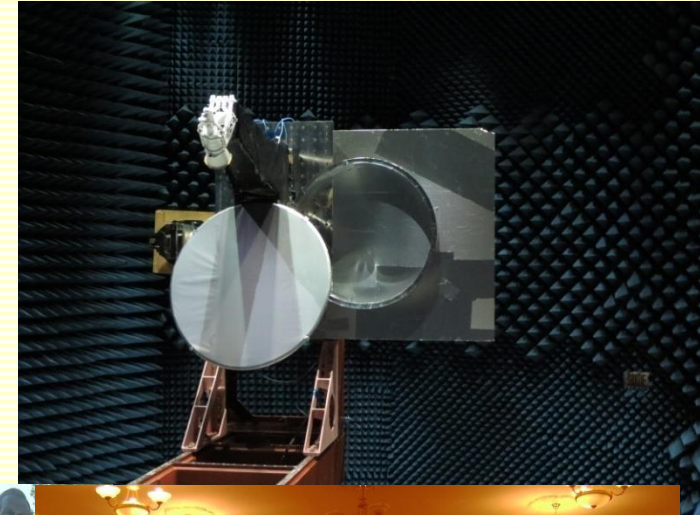
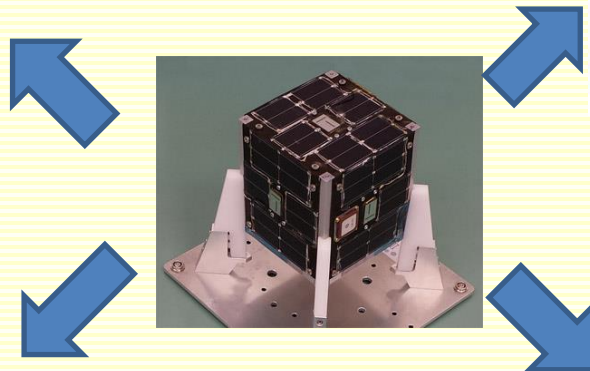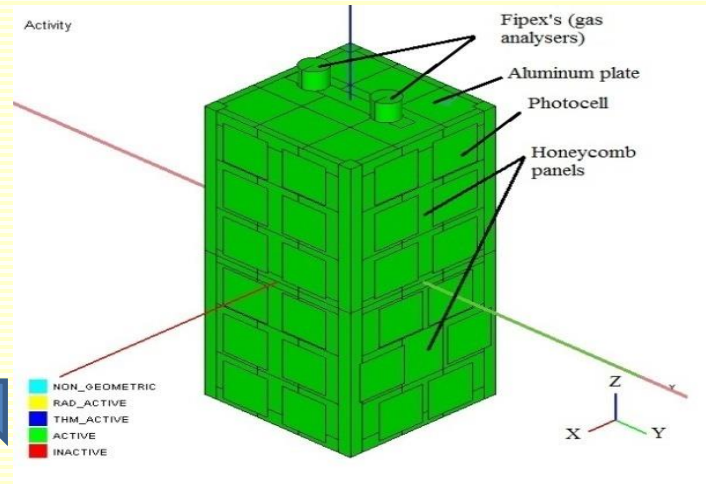**Montreal, Canada**

Krasnoyarks

Kyiv
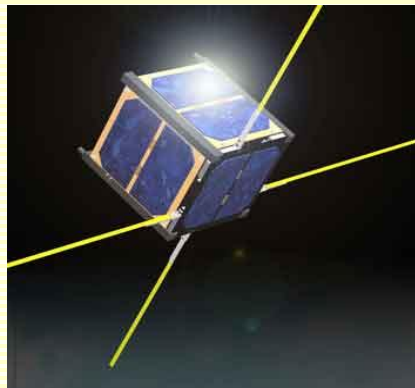
PolyITAN nano satellite, international CubeSat program

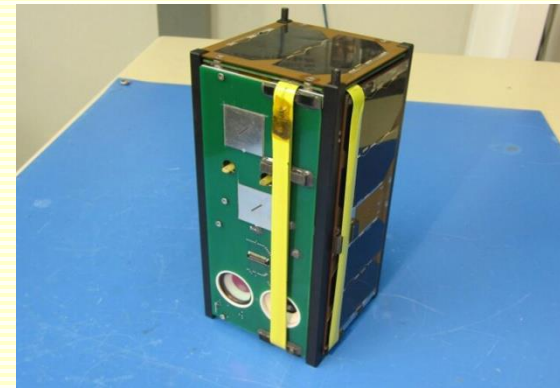**PolyITAN-2 , 2015-2016**

PolyITAN-3 , 2016

PolyITAN-1 , 2014

Університет-КРІ-1(PolyITAN-4)

PolyITAN-ДЗЗ-Т (PolyITAN-5),2017

The concept of building the control center

Nazar Biendasiuk

437 Mhz Downlink
145 Mhz Uplink

RF cables, controlling the turning device

Remote access

Transceiver
AX.25 protocol
Audio

TCP/IP
HTTPs/XML

Planning, monitoring, control

Application server

Reports, Data samples

Database server

Interface to outside applications

Ground control center

Flight control center
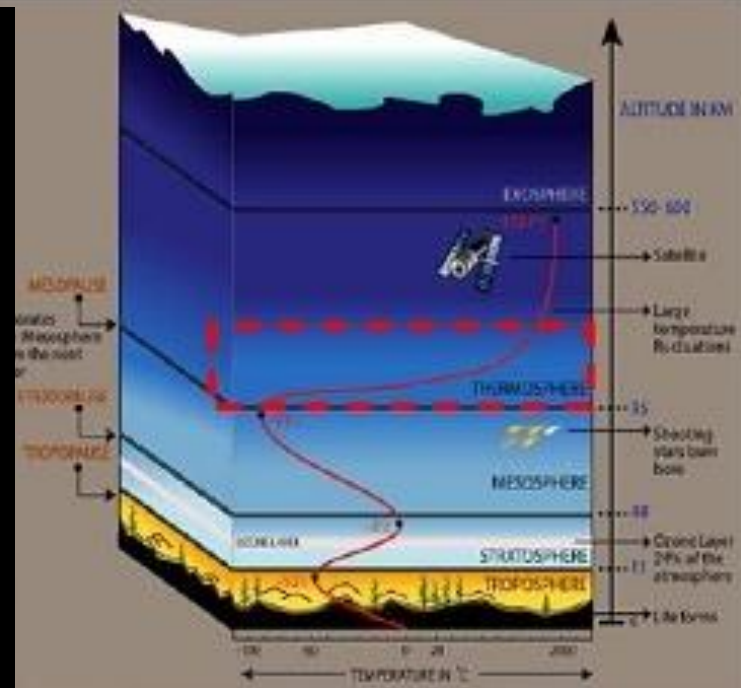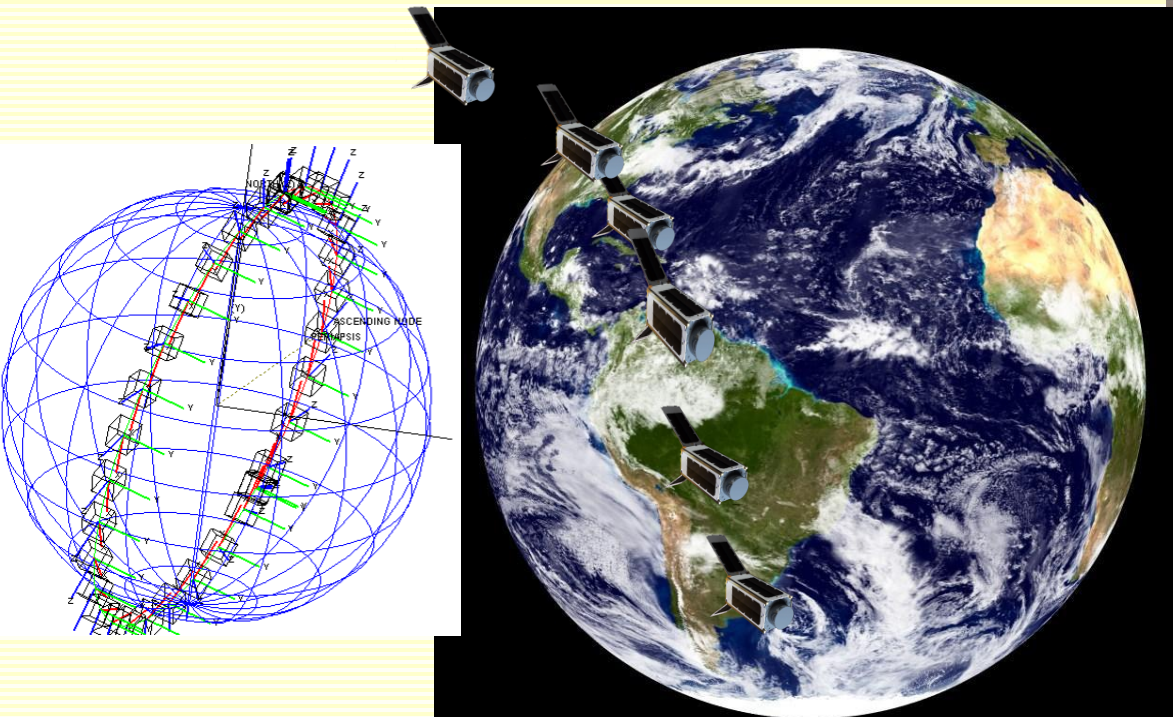
Nano satellite "PolyITAN-2" (format 2U-CubeSat)

(international program on the study of the thermosphere as the least studied layer of Earth's atmosphere)
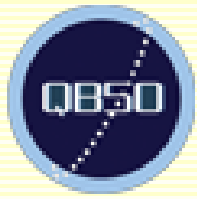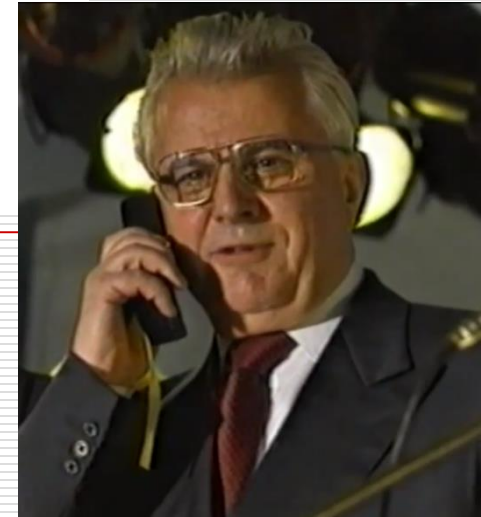
Project

"MAP OF TELECOMMUNICATIONS TECHNOLOGY DEVELOPMENT"

Project goals are
Creating a map of historical development of telecommunications,
that is
easy to read, colorful, and meaningful

1993

July 1, 1993 - the day the first mobile call in Ukraine was made from the UMC mobile network (now MTS).

First President of Ukraine Leonid Kravchuk called to Ambassador to Germany John Piskov. "Good day to you, it's Leonid Kravchuk .." - these were the first words of the UMC subscriber.

Motorola Associate-2000 - telephone, used for the first call in Ukraine, weighed 400 g, price $ 2,000, plus $ 1000 for connection.

Ukraine was one of the first countries in the CIS, which had mobile communications (in July 1993 cellular network was launched only in Russia and Uzbekistan and with only one base station)

Partners of ITS (sponsors, ITS graduates employers)
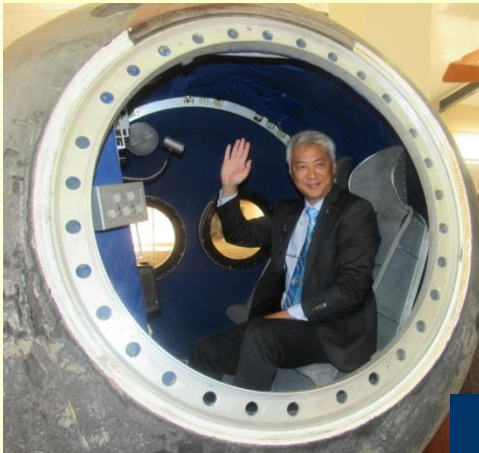
HUAWEI and NTUU "KPI"

Meeting with Mr. Ren Zhengfei the founder and president of Huawei Technologies Co. Ltd.
February 2016

Meeting with Delegation of European Research Center
June 02, 2016

Agreement between Igor Sikorsky Kyiv Polytechnic Institute and Huawei Technologies Co., Ltd. was signed

September 14, 2016

Thank you for attention!