



**United Nations-UNOOSA/Mongolia
Workshop on the Applications of Global Navigation
Satellite Systems**

25-29 October 2021, Ulaanbaatar, Mongolia

**POLICY AND REGULATORY ISSUES
ON SATELLITE TECHNOLOGY AND COMMUNICATIONS
IN MONGOLIA**

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- COVID-19 IMPACTS ON ICT SECTOR DEVELOPMENT
- INTERNATIONAL ACTIVITIES ON SPACE COOPERATION
- MILESTONES ON SATELLITE TECHNOLOGY AND APPLICATIONS IN MONGOLIA
- LEGAL ENVIRONMENT, GOVERNMENT AND SECTOR STRUCTURE
- POLICY AND REGULATORY FRAMEWORKS
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- CHALLENGES AND RECOMMENDATIONS





COVID-19 IMPACTS ON ICT SECTOR DEVELOPMENT



The impact of the Covid-19 pandemic on the global economy is unprecedented.

- The Covid-19 impact is not limited to human health; this pandemic has affected every industry and the global ICT sector is no exception to this.
- For the communications sector, governments and public authorities around the world have implemented various **policy and regulatory measures** affecting the industry, ranging from **legislation** to recommendations with respect to **traffic management, location data, alerts, spectrum** and other measures.
- Some of the major areas of impact on the ICT industries included: **Slow Growth and Postpone Investment in ICT Sector; Cancellation of ICT events and cooperation activities; Disruption of Supply Chains; Partially halting new technology development and Innovation/Research;**



INTERNATIONAL ACTIVITIES ON SPACE COOPERATION-UNOOSA



UN OFFICE FOR OUTER SPACE AFFAIRS (UNOOSA) AND MONGOLIA (1):

- Space Law and Policy: The 100-year long history of space law is broadly internationally based. First mentioned in a journal article in Paris, in 1910, space law was an idea without shape or substance for more than 2 decades (**A CONCISE HISTORY OF SPACE LAW, Stephen E. Doyle, USA, Consultant, IISL**);
- **UN Outer Space Treaty (1967)** is a treaty that forms the basis of international space law. : **Mongolia Ratified (Oct.1967)**;
- **The Convention on International Liability for Damage Caused by Space Objects (1972)**, **Registration Convention: Mongolia (1985)**;
- UNOOSA Space and Policy: Treaties & Principles, Space Law Resolutions; Legal Subcommittee; Capacity Building and National Space Law;



SPACE4SDGS

Source: <http://www.unoosa.org/oosa/en/ourwork/spacelaw/index.html>



INTERNATIONAL ACTIVITIES ON SPACE COOPERATION-UNOOSA



UN OFFICE FOR OUTER SPACE AFFAIRS (UNOOSA) AND MONGOLIA (2):

- A series of high level for a: Space as a Driver for Socioeconomic Sustainable Development (**SPACE4SDG**), 2016-2019;
- UNOOSA, UNISDR and Government of Mongolia: Asian Ministerial Conference on Disaster Risk Reduction, Ulaanbaatar, Mongolia, July 2018;
- UNISPACE-I (1968) and **UNISPACE+50** and on **Space2030**, Germany, 2018;
- COPUOS: 21 Guidelines for the long-term sustainability of outer space activities of the Committee on Peaceful Uses of Outer Space adopted, Vienna, June 2019;
- **UNOOSA/Turkey/APSCO** Conference on Space Law and Policy, September 2019, Istanbul, Turkey;



Source: <http://www.unoosa.org/oosa/en/ourwork/spacelaw/index.html>



MILESTONES AND KEY EVENTS

(SATELLITE TECHNOLOGY AND COMMUNICATIONS)



1970: Establishment of satellite earth station "Orbit";
1971: Member country of "Intersputnik" international organization for satellite communication;
1981: International satellite gateway in Ulaanbaatar;
1980: National TV broadcasting by using the Radio Relay Link;

1981: Mr. Gurragcha, the 1-st Cosmonaut of Mongolia and the 2-nd Asian in space. Mongolia has become the 10-th country to send an astronaut into space.

1991: National TV broadcasting via AsiaSat satellite;

1993: International Gateway Capacity Expansion and New route;

1997: Member country of "Intelsat" organization;

1998: Installation first VSAT station's in remote and rural areas;

1999 : TV broadcasting via Intelsat / C band/;

2004 : DTV broadcasting via Intelsat / C band/;

2008: DTV broadcasting via Apstar V /Ku band, 90 channels/;

2016: Transferred to Digital TV Broadcasting (Terrestrial);



MILESTONES AND KEY EVENTS

(GNSS NETWORK AND APPLICATIONS)



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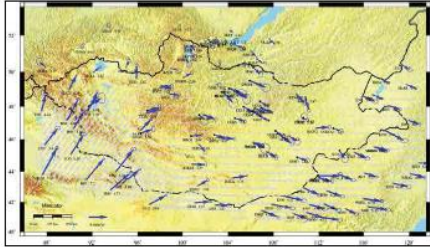


Figure 3. Blue arrows show directions and velocities (mm/year) with respect to stable Eurasia; light grey arrows show vectors averaged on a 30'x30' regular grid

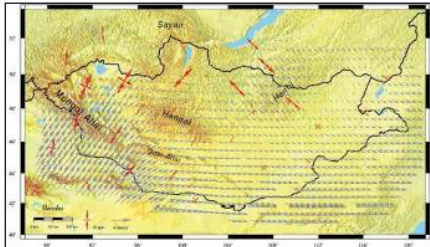


Figure 4. The red arrows are principal shortening and elongation rate axes, respectively and light grey arrows show vectors averaged on a 30'x30' regular grid

- 1935-1956: 2nd, 3rd, and 4th class triangulation network of Mongolia with over 15000 points was established;
- 1995: The first GPS station in Mongolia for the global geodetic scientific applications;
- 1997: The GNSS/GPS geodetic networks have been designed and established in the territory of Mongolia;
- 2000: The first GNSS CORS was established by State agency of Geodesy and Cartography.
- 2011-2013: CORS network of nearly 18 stations has been built to modernize the old geodetic network;

In Mongolia, several Continuous GNSS stations are operated and managed by different agencies, private companies and national scientific institutions and these stations have been built for purposes such as **topography, cartography, cadastral surveying geodynamic, mining and crustal movement monitoring.**

GNSS network operated by Agency of Land management, Geodesy and Cartography, consists of more than 50 stations. Currently, twelve organizations operate 65 GNSS stations nationwide.

Source: <https://mycoordinates.org/gnss-cors-geodetic-network-development-in-mongolia/>



LEGAL ENVIRONMENT

Legal Framework:

- Broadcasting Act (2020)
- Communications Act (1995, 2001, 2019)
- Act on Radio waves (1999, 2019)
- Postal Act (2003, 2019)
- Act on USOF (2006)
- e-Signature Law, (2011)
- Financial Transparency Law, (2014)
- National Payment System Law, (2017)
 - Government Resolution 159, 2017 (Government Electronic Databases and Data Exchange)
 - Government Resolution 259, 2018 (Government e-Services and Database Development)

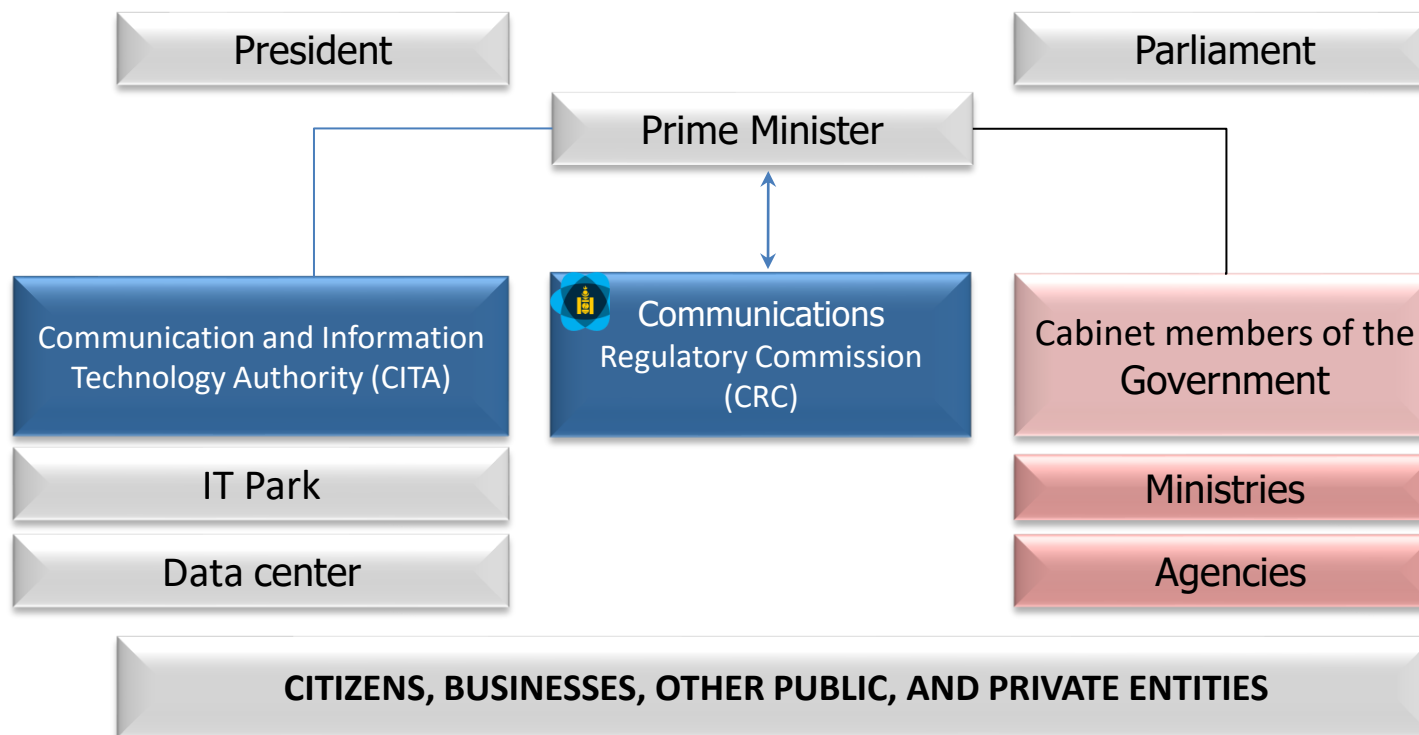


Draft of laws (2020-2021):

- **Ministry of Digital Development and Communications, 2021**
- IT and E-Government Law, Information Security Law, Data Protection Law;



GOVERNMENT AND ICT SECTOR STRUCTURE



- **National ICT Policy Committee was established in 2019 supervised by the Cabinet Secretary, Government of Mongolia;**
- **Permanent Standing Committee on e-Policy, Parliament of Mongolia, 2018;**



AUTHORITIES CONCERN AND POLICIES RELATED TO SPACE TECHNOLOGY



COMMUNICATIONS
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OF MONGOLIA

PRIME MINISTER

Communications
Regulatory Commission

Communications and Information Technology
Authority (CITA)

National Space
Council

Radio Frequency
planning, licensing, TA

- Communication and Post Policy Planning Department
 - Space Communication Division

- Information Technology Policy Planning Department
 - System Integration Division

- Broadcasting and Digital Content Policy Planning Department

- Public Administration Department
 - Foreign Relation Division
 - Monitoring and Evaluation Division

- Universal Service and Obligation Fund

Ministry of
Education, Culture,
Science & Sports

Mongolian Academy
Science

State and Private
owned Universities
and Institutes

Non Government
Organizations

Private Companies

Source: Cabinet Secretariat, CITA and CRC



GOVERNMENT POLICY AND STRATEGY



- ITU Radio Regulation (1964, Mongolia) and Mongolia has 2 space satellite locations approved by the ITU WRC (WAR SAT-77, East 74 and WARC ORB-88, East 113.6 and ITU Plan for Sansar-1 Satellite);
- “The Sustainable Development Goals SDG-2030” Approved by Parliament of Mongolia, (Paragraph-2.1.5 *Third stage in 2026-2030, to launch and use National Communication Satellite*);
- “Mongolian National Satellite Program” approved by Mongolian Government (2012), The project was included following activities:
 - Improving legal environment to promote space technology development;
 - Developing long term strategy for space industry development,
 - Developing national communication satellite system,
 - Developing national earth observation satellite system,
 - Promote international cooperation for the space technology development,
 - Human resource development.
- **The State Policy on Development of ICT (2017-2025),** Government Resolution No.47, 2017 (Paragraph-9. *Launch and use National Communication Satellite*);





The State Policy on Development of ICT (2017-2025) and Action Plan Targets:

Vision:

Development of ICT is considered to be a major accelerator of the development of Mongolia.

Mission:

The main mission of this policy document is to accelerate the development of Mongolia by enabling public access to ICT advancements, developing knowledge based high technology and export oriented local manufacturing industry, supporting human capital development and enhancing competitiveness.



The State Policy on Development of ICT (2017-2025) and Action Plan Targets:

Goals set on the State Policy on Development of ICT, will be focused following areas:

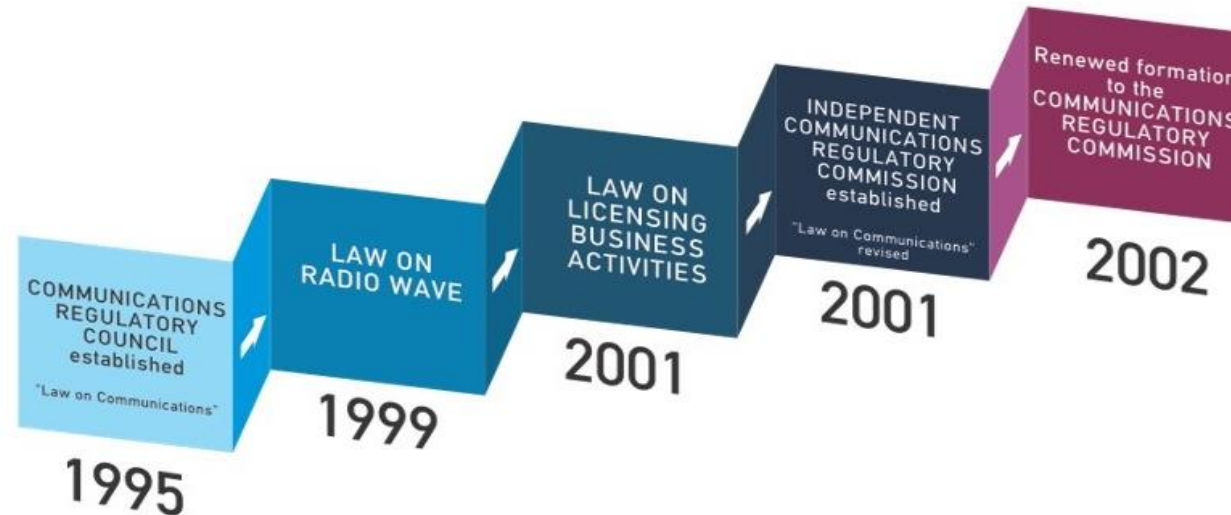
- 1. Legal framework and regulation of ICT;***
- 2. ICT network and infrastructure;***
- 3. ICT services;***
- 4. E-Governance based on ICT.***
- 5. ICT innovation and research;***
- 6. ICT manufacturing;***
- 7. ICT market, investment and competitive environment;***
- 8. Information security;***



REGULATORY FRAMEWORKS



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The CRC is an independent Mongolian Government Regulatory Authority. The CRC was established by the Communications Act of 1995, it is charged with regulating and supervising a wide range of subjects including competition issues, the provision of networks and services for fixed line and wireless telecommunications, television and radio broadcasting, and satellite communications, radio spectrum management, postal services and the Internet to ensure that the public interest is well-served.

The CRC's jurisdiction covers all regions of Mongolia.



REGULATORY FRAMEWORKS



Communications Act, Mongolia (Chapter-9, 2019) and other related laws:

Main function is to create effective and fair competition environment for the sector players in the ICT sector; issue licenses, make professional conclusions and decisions.

Department of Radio Frequency Regulation and Monitoring, CRC



CRC REGULATES

/Law on Licensing Entities/

- Telecommunications
- TV and Radio broadcasting
- Content
- Spectrum Management and Monitoring
- Post
- Internet

AUTHORITY OF CRC

/Law on Communication/

- To prepare a proposal of State Policy
- Licensing
- Certification
- Interconnection
- Tariff
- Competition
- Enforcement of USOF obligation
- Standardization
- Numbering
- Managing Radio Frequency Spectrum
- Settlement of Regulation and spectrum utilization fee
- Resolving disputes



REGULATORY FRAMEWORKS



CENTER FOR RADIO FREQUENCY AND BROADCASTING MONITORING (COMMUNICATIONS REGULATORY COMMISSION)



Main functions of the CRFBM:

- ✓ Spectrum occupancy measurement;
- ✓ Neighborhood channel interference measurement;
- ✓ Field strength measurements;
- ✓ Detect illegal frequency;
- ✓ Find unlicensed transmitter;
- ✓ Check all kind radio transmitter's parameter;
- ✓ Solve interference reason and etc.,

Spectrum monitoring equipment and stations:

- Fixed station -2;
- Transportable station -1;
- Mobile station -1;
- Portable station -4;
- Laboratory -1 (Basic type approval, MNS: ISO 17065 standard) ;



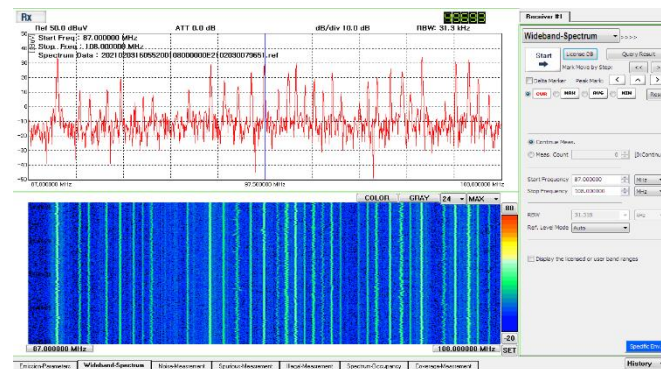
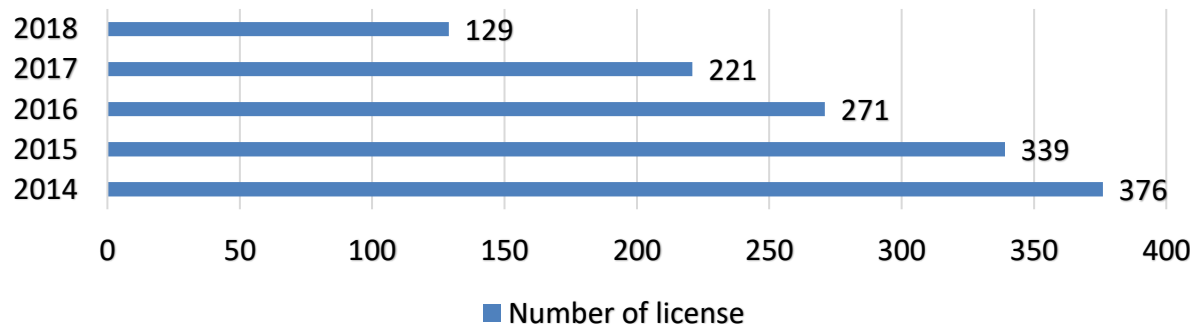


REGULATORY FRAMEWORKS

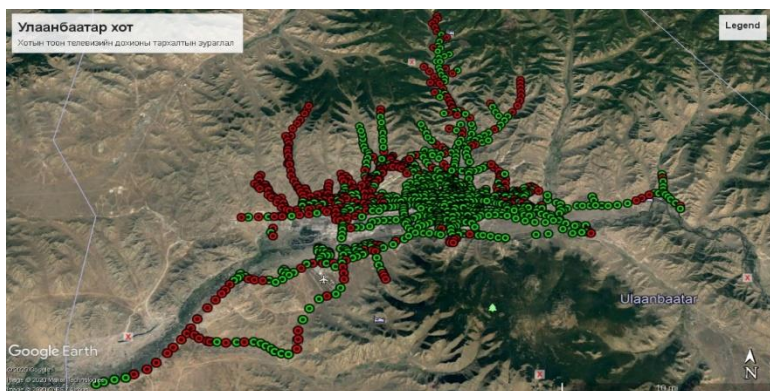
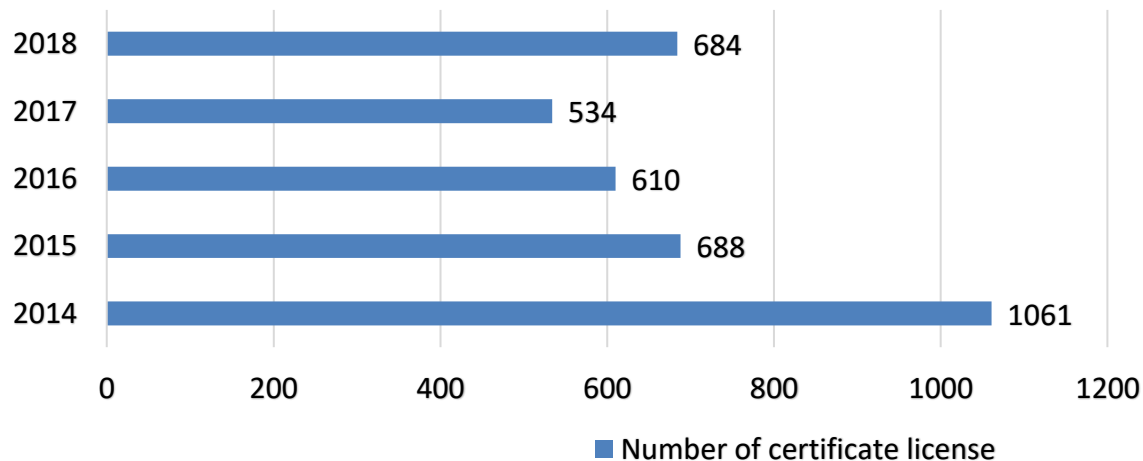


Center for Radio Frequency and Broadcasting Monitoring (Communications Regulatory Commission)

Number of radio frequency license



Number of radio frequency certificate license





REGULATORY FRAMEWORKS



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CRC of Mongolia type approved and granted more than 1500 conformity certificates for the information and communication equipment, that complied with relevant national, regional, and international standard requirements.

Ensure that the provisions of the Law on Standardization, Technical Coordination and Conformity Assessment, Government Resolution No. 291 of 2018, the ICommunications Act and the Act on Radio wave are fulfilled.

(Act on Radio wave:

Article 14. Exploitation of radio frequency without license and certificate and

14.1.3 Short range devices with conformity certificate which have as well as meet the technical requirements)





NATIONAL PROGRAM AND PROJECTS



Implementation of National program and projects (1):

The following activities have been carried out within the implementation of the current program and projects:

- The basic survey on “**Feasibility Study on Launching Communication and Remote Sensing Satellite**” was conducted in 2011-2012, which defined existing situation and future needs and requirements for remote sensing and communications satellite, possible options and related cost estimation for Mongolia to launch a satellite individually or jointly;
- CITA has conducted a satellite technology research, which meets needs and requirements of Mongolia and introduced stakeholders which expressed interest of cooperating in this area to the National Security Council and the Government of Mongolia;
- Government has been submitted the request to orbital position for Mongolian national satellite to ITU;





NATIONAL PROGRAM AND PROJECTS



Implementation of National program and projects (2):

The following activities have been carried out within the implementation of the current program:

- As a part of building capacities of domestic universities to prepare national specialists, the preparatory works have started to introduce a master degree program on Satellite communications in 2016 at Mongolian University of Science and Technology (MUST) and a master degree program on Space engineering at the National University of Mongolia (NUM);
- As a part of the program to support universities and academic research institutions to develop small research satellite, the national competition to design and launch “CANSAT” satellite has been organized in the last three years.
- Mongolia and France signed a Memorandum of Understanding (MoU) on 18 May 2018 in order to carry out space cooperation at the institutional level between the Centre national d'études spatiales (CNES) and the CITA of Mongolia;





NATIONAL PROGRAM AND PROJECTS



Key e-Government Program and Projects (3):

- National Programs approved by the Government: e-Government (2014-2018), e-Governance (2018-2025), Broadband, Information Security, Postal Service for every Household, Satellite, Public e-Services and Data Exchange Platforms;
- UBIT Initiative : Smart Ulaanbaatar City Program, 2014-2024;
- Development of public key infrastructure as well as establishment of “XYP” Electronic Data Exchange Platform among Government organizations, National Data Center, 2016-2020;
- Smart Government Project, The World Bank, 2016-2020;
- **Digital Transformation Policy: E-Mongolia 2.0-National program (2020-2024);**

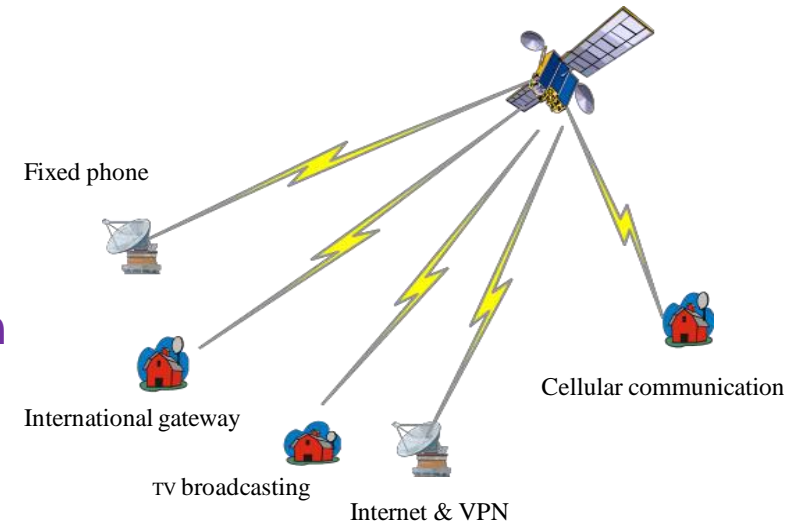
Source: CITA, CRC and Ulaanbaatar City Council, 2021



EXISTING SATELLITE SERVICES AND DEMANDS



- Fixed phone service
- International gateway
- TV broadcasting
- Satellite broadband Internet & VPN
- Cellular communication
- Iridium – satellite mobile communication
- GNSS – satellite positioning equipment



Currently in Mongolia, three (3) satellites are being used for satellite communications:

- INTELSAT 906 (@64 E) in the C-band;
- APSTAR 5 (@138 E) in the Ku-band and C-band;
- Intelsat 20 – (Ku);

With the exception of one user who uses APSTAR in C-band, all other users employ the Ku-band.

A number of Mongolian organizations and company are currently using these foreign communications satellites for various purposes (11 licensed companies are working as Satellite network provider issued by the CRC).



EXISTING SATELLITE SERVICES AND DEMANDS



Current users of Satellite technology and communications:

- Government agencies:
 - Line Ministries (Urban development, Distance learning, Education, Health, Disaster Network);
 - Mongolian Civil Aviation Agency;
 - National Emergency Management Authority;
 - National Remote Sensing Center, National Agency of Meteorology, Hydrology and Environmental Monitoring;
 - Academy of Science and Universities;
- Fixed communications carriers:
 - Mongolian Telecommunication Company,
 - Mongolia NetCom and Naran earth station
 - Mongolia Railway Company
- Mobile (cellular) communications carriers:
 - Mobicom, Skytel, Unitel, G-mobile
- Broadcasting company: Ddish;
- Satellite network service companies:
 - ISATCOM, MonSat, Orbitnet and etc.,

GNSS CORS network usage and demands on network & application in Mongolia:

- National fundamental GNSS network and more than 300 licensed companies are end users of the GNSS network;
- International joint research and experiments - Crustal movement study in Mongolia;
- Meteorological and environmental analysis and research;
- Producing topographic and cadastral mapping by real-time kinematic measurement (RTK);
- Daily geodetic measurements for construction, urban development, civil aviation, mining, agriculture, railways and roads;
- Mining industry;
- Academic and Research activities;
- Others.



EXISTING SATELLITE SERVICES AND DEMANDS



Current and future demands of space technology and satellite communications:

- Government services and applications delivery (Public service such as disaster relief, health, education);
- Communications field (Fixed, Mobile, Broadcasting);
- Science and technology applications and remote sensing;
- VSAT networks (Rural and remote areas, Mining company);
- Broadcasting Direct To Home (DTH);
- Disaster relief and emergency communications;
- Back haul for terrestrial mobile networks;
- High capacity internet;
- Daily geodetic measurements for construction, urban development, civil aviation, mining, agriculture, railways and roads;
- and others



KEY POLICY AND REGULATORY STRATEGIES



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Government policy and regulatory strategies for supporting the application of GNSS and network development:

- Sometime each crisis is also an opportunity: Covid-19 pandemic has accelerated the digital transformation in every sphere of society and the country like Mongolia.
- Policy-makers and regulators should work together to improving national policy, plans and legislation; to adapt appropriate regulatory regime, enhancing international cooperation, learning best practices and fostering partnership with private sector and ICT Stakeholders to fighting Covid-19 and after that;
- ICT regulatory decisions and frameworks need to be up-to-date, flexible (licensing regime and use of spectrum), transparent, fair and market-oriented to support and speed-up digital transformation across sectors;
- Policy-makers and regulators should work together to provide people with access to technologies, the digital skills to use them, and trust in using ICTs.



CONCLUSIONS



General conclusion for supporting the application of GNSS and network development:

- This workshop became good platform and important opportunity for the collective space community to address the GNSS network development updates, GNSS based applications, geodetic reference and GNSS planned networks, to sharing best practices and national GNSS policy/regulatory issues;
- Need coordinated activities, events and capacity building programs of the UNOOSA, UNESCAP, ITU, APSCO and national space agencies, regulators, academics, NGO, business and industry, professionals for implementing key policy and regulatory frameworks in line with SDG2030, UNISPACE+50 and on Space2030 program;
- Appropriate legal environment, effective policy/regulatory framework are required to ensure the modernization of National geometric network with GNSS CORS and new trends GNSS applications in Mongolia.
- Need to strengthening cross-institutional links fostering the collaboration among all stakeholders academics, ICT, industrial promotion, science and technology to devise and jointly implement policies.
- Need to establish networks and partnerships the during Key issues for developing countries: Policy-makers and regulators should work together to improving national space law, policy and regulatory mechanisms; capacity building, and international cooperation, learning best practices GNSS networks.



ХАРИЛЦАА ХОЛБООНЫ
ЗОХИЦУУЛАХ
ХОРОО



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THANK YOU

