

“Prohibition of Harmful Interference to Satellite Communications by ITU Law”

Yuri Takaya (Ph.D)
Kobe University
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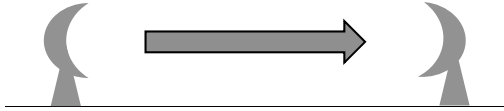
Outline

Introduction

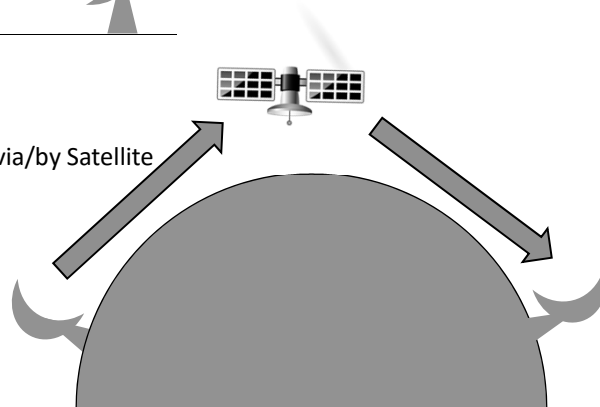
1. What is ITU Law?
2. What is “Harmful Interference”?
3. Prohibition of “Harmful Interference” in ITU Law
4. Prevention of “Harmful Interference” in Space Law
5. Emerging Cyberthreat against Satellite Communication

Introduction: Satellite Communications

◆ Radio Communications

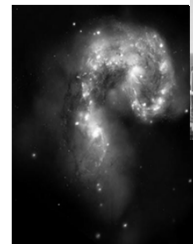


◆ Radio Communications via/by Satellite



Introduction: History of Satellite Communications

- 1945 An idea was presented by A.C. Clarke "Extraterrestrial Relays"
3 satellites in GEO covers the global communication
- 1957 The first satellite "Sputnik-1" by Soviet Union
mission: observation of Ionosphere + test of "frequencies"
- 1960 Echo I launched by US
The first communication satellite
- 1962 Telstar I launched by US
The first satellite for TV broadcasting

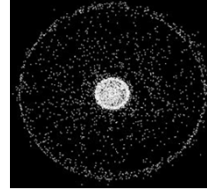


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Introduction: Major Earth Orbits



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Low Earth Orbit (LEO)

Earth Observation, Remote Sensing
Telecommunication

Medium Earth Orbit (MEO)

Positioning Navigation and Timing

Geostationary Orbit (GEO)

Telecommunication, Meteorology

↑

36,000 km altitude / International Telecommunication Union

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Let's see youtube video: "satellites 101"
<https://www.youtube.com/watch?v=mbDQsXUxefk>

1. What is ITU Law?

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1. What is ITU Law?

◆ ITU: International Telecommunication Union



1865 founded in Paris as the International Telegraph Union

1932 renamed as International Telecommunication Union

1947 became UN specialized agency



Scope: Telegraph



→ whole information and communication technologies (ICTs)
(digital broadcasting, the internet, mobile technologies, 3DTV)

Membership: 193 countries + 700 private entities + academic institutions

HQ: Geneva in Switzerland + 12 regional offices

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1. What is ITU Law?

◆ ITU: International Telecommunication Union



Main Mission:

[Article 1.2.a]

(to) effect allocation of bands of the radio-frequency spectrum,
the allotment of radio frequencies and the registration of radiofrequency
assignments and,

for space services, of any associated orbital position

in the geostationary-satellite orbit or of any associated characteristics of
satellites in other orbits, in order to avoid harmful interference
between radio stations of different countries;

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1. What is ITU Law?

◆ ITU Law

Treaties and Regulations created by/within ITU

- Constitution of the International Telecommunication Union
Purpose: To facilitate peaceful relations, international cooperation
among peoples and economic and social development
by means of efficient telecommunication services
- Convention of the International Telecommunication Union
- Administrative Regulations

ITU holds World Radio Communication Conference (WRC) every 3-4 years
in order to revise Radio Regulations (RR), the International Treaty
Governing the Use of Spectrum

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2. What is “Harmful Interference”

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2. What is “Harmful Interference”?

◆ Definition



Radiocommunication Regulations, Section VII- Frequency Sharing

1.166 “*interference*”

“[T]he effect of unwanted energy due to one or combination of emission, radiations upon reception in a *radiocommunication system*”

1.169 “*harmful interference*”

“[I]nterference which endangers the functioning of a radionavigation service or of other safety services [...] seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service [...]

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3. Prohibition of “Harmful Interference” in ITU Law

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3. Prohibition of “Harmful Interference” in ITU Law

◆ ITU Constitution

Art. 45

not to cause any harmful interference to the radio services or communications of other member states or of operating agencies when they establish and operate any radio services or communications

→Exception Art. 48

Member States retain their entire freedom with regard to military radio installations.
(..but requires to follow the existing regulation in case of public correspondence)

◆ Radiocommunication Regulations

Art. 15 No unnecessary transmission, No Transmission of signals without ID
(superfluous signals, false or misleading signals)

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3. Prohibition of “Harmful Interference” in ITU Law

◆ For Treaty Compliance...

Radiocommunication Regulation

Article 11. Notification and recording of frequency assignments

Master International Frequency Register (MIFR) (=Master Register)

Article 15. § 11-13 : Reports of Infringements

Infringements of the Constitution, Convention or Radio Regulations shall be reported to their respective administrations by the control organization, stations or inspectors detecting them. (§ 11)

Article 16. International Monitoring

administrations agree to develop monitoring facilities to implement ITU-R

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4. Prevention of “Harmful Interference” in International Space Law

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4. Prevention of “Harmful Interference” in International Space Law

Why is satellite communication allowed to any country?

According to Article I of 1967 Outer Space Treaty, ALL states have the right to....

◆ use of outer space

The use of artificial satellite for..

- Earth Observation/Remote sensing
- Astronomical Observation
- Telecommunication
- Navigation



◆ explore in outer space

- US Apollo program for Moon exploration
- Japan Hayabusa for Asteroid exploration
- EU Rosetta program for comet investigation



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◆ access to outer space

- launching activities by rocket, space shuttle

4. Prevention of “Harmful Interference” in International Space Law

- ◆ Definition of “harmful interference” in ITU Law is to endanger the functioning of a radionavigation service or of other safety services

→ related provisions in the Outer Space Treaty of 1967

Article I: “Outer space is the Province of all Mankind”

Any state has the right for free use, exploration of, access to OS

Article III: Application of International Law

Article IV: Exclusively Peaceful Uses of Celestial Bodies

(x Test of Any Kind of Weapons on Celestial Bodies)

Article IX: Appropriate Consultation for Potential Harmful Interference

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4. Prevention of “Harmful Interference” in International Space Law

- ◆ State Responsibility

Article VI of the 1967 Outer Space Treaty

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, [...]

The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

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4. Prevention of “Harmful Interference” in International Space Law

◆ State Liability – “Liability of Launching States”

Article VII of the 1967 Outer Space Treaty

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air or in outer space, including the moon and other celestial bodies.

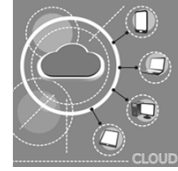
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5. Emerging Cyberthreat against Satellite Communication

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5. Emerging Cyberthreat against Satellite Communication

◆ Harmful Interference to Satellite Communications



The Causes:

95-97% Human Errors, Hardware Problems
3-5% cause was not identified by “intentionally caused”



→ cyber attack or cyber crime against
satellite communication?



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5. Emerging Cyberthreat against Satellite Communication

◆ ITU's attempts

- UNGA Resolution 57/239 “Creation of a global culture of cybersecurity”
- The Tunis Agenda of the World Summit on the Information Society (WSIS) in 2005

→ the ITU Secretary-General, Dr. Dr. Hamadoun I. Touré, launched
Global Cybersecurity Agenda (GCA)

→ High-Level Experts Group (HLEG) was established for ITU efforts
to criminalize harmful interference by illegal cyber acts



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5. Emerging Cyberthreat against Satellite Communication

“Cyberspace allows criminals to exploit online vulnerabilities and attack countries’ infrastructure”

- ◆ Work Area one (WA1)

Goal: to clarify how criminal activities committed over ICTs could be dealt with through legislation in an internationally compatible manner

- ◆ 15 Recommendations

The Council of Europe’s Convention on Cybercrime of 2001

The Council of Europe’s Convention on the Prevention of Terrorism of 2005

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5. Emerging Cyberthreat against Satellite Communication

Application of the Council of Europe’s Convention on Cybercrime to harmful interference to satellite communication

- ◆ Goal of the Convention:

“to criminalize cybercrime by requiring states parties to establish cyber offence by adopting / building their domestic law in line with human rights treaties”

- ◆ “cybercrime”

(Articles 2-8) illegal access; illegal interception; data interference; system interference; misuse of device; computer-related forgery; and computer-related fraud

- ◆ Benefit from applying the Convention to Harmful Interference

→ States can reach individual hackers by their national criminal legislation²⁴

5. Emerging Cyberthreat against Satellite Communication

Challenges to criminalize harmful interference to satellite communication

If harmful interference is caused to any radionavigational or safety service, resulting in the damage caused by space objects on the earth/airplane in the air, is it still cybercrime?

→ Even if the criminal of CNAs to satellite communication is identified, states parties to the Outer Space Treaty are still responsible for their national space activities and “launching states” are still liable for the damage caused on the surface of the Earth as well as an airplane in flight. (Art. VI and VII of the Outer Space Treaty of 1967)

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Conclusion

◆ ITU’s legal efforts to apply the Convention on Cybercrime to harmful interference to satellite communications requires reviewing:

- the scope of international liability of “launching state” ; and
- the applicability of other law to the case (example: Law of Armed Conflict) depending on the scale of the damage.

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