

Kobe Seminar on International Law, 21 October 2014
Regulation of Cross-Border Economic Crime

Legal Development against
Harmful Interference **by CNA**
to Satellite-Based Communications

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Introduction

◆ Intentional / Deliberate Interference to Satellite Communications
→ in the scope of “Space Security”

◆ Causes of Interference

95-97% Human Errors, Hardware Problems

3-5% **Intentionally** Caused

◆ Most of space systems are highly dependent on computer network systems

→ **Vulnerable** to Intentional Interference by **Computer Network Attacks**

Outline

1. What are CNAs?
 2. Harmful Interference in Space Law
 3. Harmful Interference in ITU Law
 4. ITU Initiative to Criminalize CNA
- Conclusion



1. What are Computer Network Attacks?

1. What are CNAs?

“[A]ctions taken through the use of computer networks to disrupt, deny, degrade, or destroy **information** resident in computers and computer networks, or **the computers and networks themselves.**”

*US Department of Defense,
Dictionary of Military and Associate Terms 08 November 2010 amended in 2014*

1. What are CNAs?

CNA to Satellite-based Communications

“to cause **harmful interference**
to satellite radiocommunication
by sending a malicious code (or virus)
to satellite operation systems”

CNA Excludes: electromagnetic pulse, jamming, laser, etc.

1. What are CNAs?

CNA Cases

2007 Estonia

Distributed Denial of Service (**DDoS**) attack

2007 Syria

Disable the Warning System of an Air Defense Network

2010 Iran

Stuxnet worm attacked **Nuclear Facilities** in Iran

1. What are CNAs?

Obstacles to Prohibiting CNA in Law of Armed Conflict

Due to the nature of CNA.....

- ◆ not recognized as “force” in Art. 2 (4) of the UN Charter
 - ◆ Intangibility of target and weapons
 - ◆ lack of clarification on “when” CNA starts
 - ◆ IP address is not necessarily a proof
- ◆ difficult to identify whether CNA is launched by **civilians**

1. What are CNAs?

Possible Damage by CNA to Satellite Communications

◆ **Direct** Damage

dysfunction of satellite operating systems (i.e. by DDoS)

◆ **Indirect** Damage

unauthorized manipulation of communication satellite to endanger other states' outer space activities



2. Harmful Interference in Space Law

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- ◆ Outer Space Treaty of 1967
- ◆ Transparency and Confidence-Building Measures (TCBMs)
 - ◆ Code of Conduct for Outer Space Activities

2. Harmful Interference in Space Law

Outer Space Treaty of 1967

- ◆ Article I: The Province of all Mankind
Free use, exploration, access
- ◆ 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 XI: Appropriate Consultation for
Potential Harmful Interference

2. Harmful Interference in Space Law Outer Space Treaty of 1967

intentional harmful interference to space activities is not substantially covered by the Outer Space Treaty of 1967 because...

- ◆ no definition of “harmful interference”
- ◆ Article III allows the possible interference
in the case of self-defense or collective security
- ◆ Article IV (2) leaves the definition “peaceful” vague
- ◆ principles do not reach non-state actor to prohibit harmful interference

2. Harmful Interference in Space Law Transparency and Confidence-Building Measures

◆ 2013 Report of Governmental Group of Experts (GGE)

Benefits from TCBMs

Due to technical limit in tracing the original point
“where”, “when”, and “by whom” CNA is launched,
the clarification of state’ intent in advance through TCBMs
helps to prove who is the real victim, considering unauthorized
manipulation

2. Harmful Interference in Space Law

2013 Code of Conduct for Outer Space Activities

- ◆ no **harmful interference** in the freedom for outer space activities (para 25)
- ◆ the responsibility of states to cooperate in good faith
 - to avoid **harmful interference** with outer space activities (para 27)
- ◆ space debris mitigation to minimize the risk of **harmful interference** (para 49)
- ◆ ITU regulation on addressing **harmful radio-frequency interference** (para 53)
- ◆ information on space policies and procedures
 - to prevent and minimize **harmful interference** (para 75)
- ◆ consultation mechanisms to prevent or minimize **harmful interference** (para 82)



3. Harmful Interference in ITU Law

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the **sovereign right** of each state to
“**regulate**” its telecommunication
in the preamble of ITU Constitution and Convention

ITU Law works tightly with National Legislation

✂️ ITU Law: ITU Constitution and Convention + Administrative
Regulations (i.e. Radio Regulations)

3. Harmful Interference in ITU Law

Protection of Frequency from Harmful Interference

Scope of ITU Work

◆ Legal issues in International Communication Technologies (ICTs) (digital broadcasting, the Internet, mobile technologies and 3D TV)

◆ Art. 11 of Radio Regulation (RR):

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

→ enhance “**international recognition**” of radio assignment

→ provide protection from harmful interference

3. Harmful Interference in ITU Law

Definition of Harmful Interference

ITU Radio 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 [...]

3. Harmful Interference in ITU Law

Prohibition of Harmful Interference

ITU Constitution

(there are more provisions which indirectly prohibits..)

◆ 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

◆ Art. 48

Ensures states for “**entire freedom**” in **military radio installations**, but requires to follow the existing regulation in case of public correspondence



4. ITU Initiative to Criminalize CNA

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- ◆ 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)

ITU efforts to **criminalize CNA**

4. ITU Initiative to Criminalize CNA

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

◆ Work Area one (WA1)

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

◆ 15 Recommendations

Council of Europe’s Convention on Cybercrime

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

4. ITU Initiative to Criminalize CNA Council of Europe's Convention on Cybercrime

Goal:

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

CNA allows unauthorized access to satellite operation system

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

4. ITU Initiative to Criminalize CNA

Council of Europe's Convention on Prevention of Terrorism

- ◆ Recommendation 1.11. of the HLEG report

(in line with the Convention on Cybercrime and human rights treaties)

- ◆ Goal

“to fight against terrorist misuse of the Internet and related ICTs”

- ◆ Relevant to [cybersecurity](#)

 - Article 5 (public provocation to commit a terrorist offence)

 - Article 6 (recruitment for terrorism)

 - Article 7 (training for terrorism)

Conclusion

- ◆ Harmful Interference caused by CNA to Satellite-based communications shed light on the need to review the existing treaties that serve to prevent and prohibit CNA to **all** outer space activities.
- ◆ Due CNA allowed unauthorized access by **individuals** to space systems, ITU attempts for the criminalization of CNA by domestic law is effective solution.
- ◆ Legal development over **cybersecurity** in **space law**, (**ITU law**), **law of armed conflict** and **human rights** should be studied comprehensively.



Thank you for your kind attention.