INGEER International Symposium on
Theory and Practice of Export Control

Free Access to Outer Space vs. Export Control of Missiles

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Outline

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III. Export Control of Missiles

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② ICOC

③ PSI

V. Challenges

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I. Introduction

A threat against the missile proliferation is growing.

WHY?

Because…

① after IIWW, no international legal framework of
the ICBM non-proliferation has been established,
while that of the WMD non-proliferation were well developed.
② ICBMs were recognized as just delivery means, not WMD itself
③ the 1950s-1970s, US and USSR kept launching tests
without drawing a line between rockets and missiles
④ it is technically difficult to distinguish rockets from ICBM
⑤ no international platform to consider rockets and ICBM together
⑥ lack of the post-ABM Treaty of 1972 (1972-2002)

As of 2015, **38** states have ICBM capabilities

II. Free Access to Outer Space

The 1967 Outer Space Treaty

All states have the right of free exploration and use of outer space, while such space activities need to be carried out in accordance with international law.

■ 1967 Outer Space Treaty

Article I:

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.

Article III:

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

II. Free Access to Outer Space

The 1967 Outer Space Treaty

■ The 1960s

After IIWW, international law only focused on the non-proliferation of WMD; however, US already recognized the combination of WMD and ICBM become a threat.

But, USSR provided Scud-missile technologies to developing countries.

→Great concern against the proliferation of ICBM already existed in the 1960s.

■ The late 1990s- the present

Series of launching tests of ICBM were conducted by:

Pakistan (April 1998), Iran (July 1998)

India and Pakistan (April, 1999)

North Korea

Reaching all area of South Korea: Short-Range Ballistic Missiles : 1986 (300 km)

Reaching Japan: Medium-Range Ballistic Missile: May 1993,

Reaching US: ICBM "Taepodong 1" : Aug. 1998

"Taepodong 2": July 2006, 2009, 2012

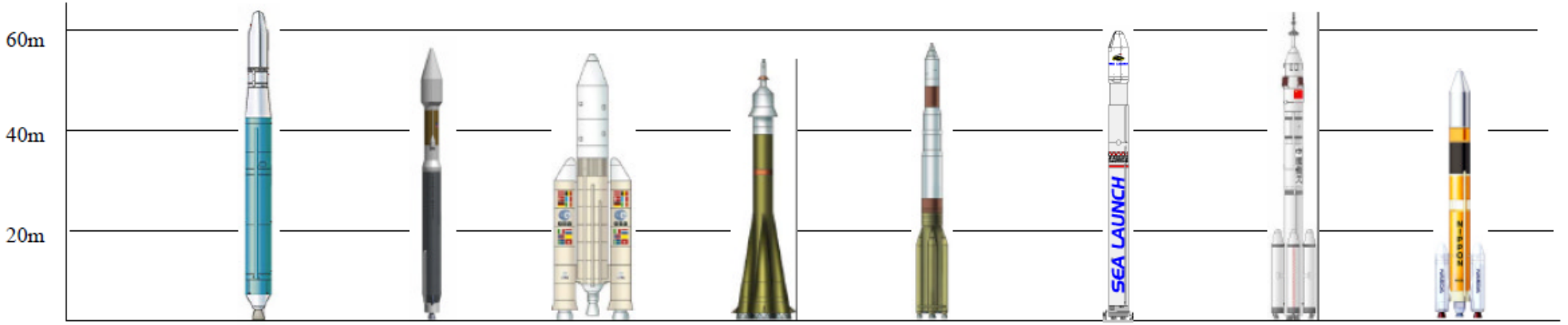
(※2012: notification was made to ICAO and IMO as space launching activities)

→ In 2003, Japan decided to take part in US Missile Defense

II. Free Access to Outer Space

Rockets

■Large Rockets

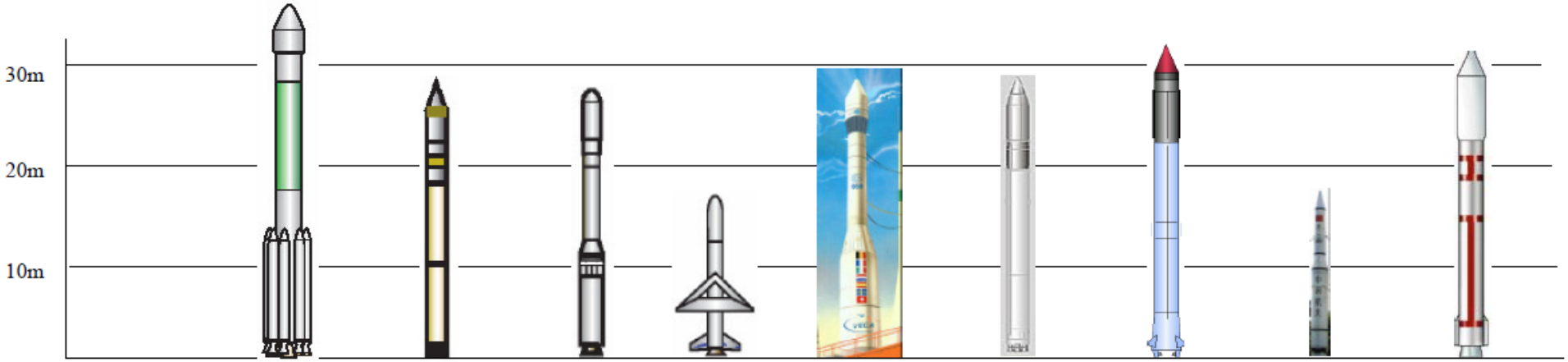


Name	Delta 4M	Atlas5 401	Arian5G	Soyuz U	Proton K	Xenit 3SL	CZ-2F	H-ⅡA
State	US	US	EU	Russia	Russia	Ukraine	China	Japan
Booster	2	2	2	2	4	3	2	2
Height (m)	63	58	54	55	57	69	62	53
Weight (t)	250	333	746	310	692	471	464	285
Orbital Launch Capability (t)	4.2	5.0	6.0	1.4	4.9	6.0	3.5	4.0

II. Free Access to Outer Space

Rockets

■Medium-sized Rockets



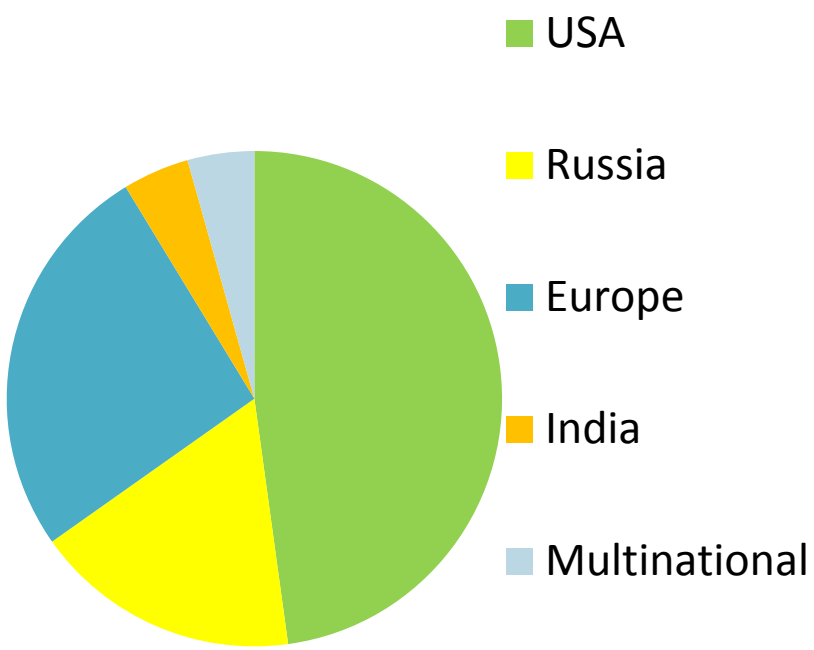
Name	Delta 2	Athena 2	Torus	PegasusXL	Vega	Rokot	Cosmos-3K	KT-1	M-V
State	US	US	US	US	EU	Russia	Russia	China	Japan
Booster	3	4	4	3	4	3	2	2	3
Height (m)	38-39	28	28	17	30	29	32	18	31
Weight (t)	232	120	73	23	136	107	109	20	128
Orbital Launch Capability (kg)	5100	2050	1377	440	1500	1848	1497	100	1800

II. Free Access to Outer Space

Commercial Launch Activities

■2014 Worldwide Orbital Launch Events

Country / Region	Commercial Launches	Non-Commercial Launches	Launches
United States	11	12	23
Russia	4	28	32
Europe	6	5	11
China	0	16	16
Japan	0	4	4
India	1	3	4
Israel	0	1	1
Multinational	1	0	1
Total	23	69	92



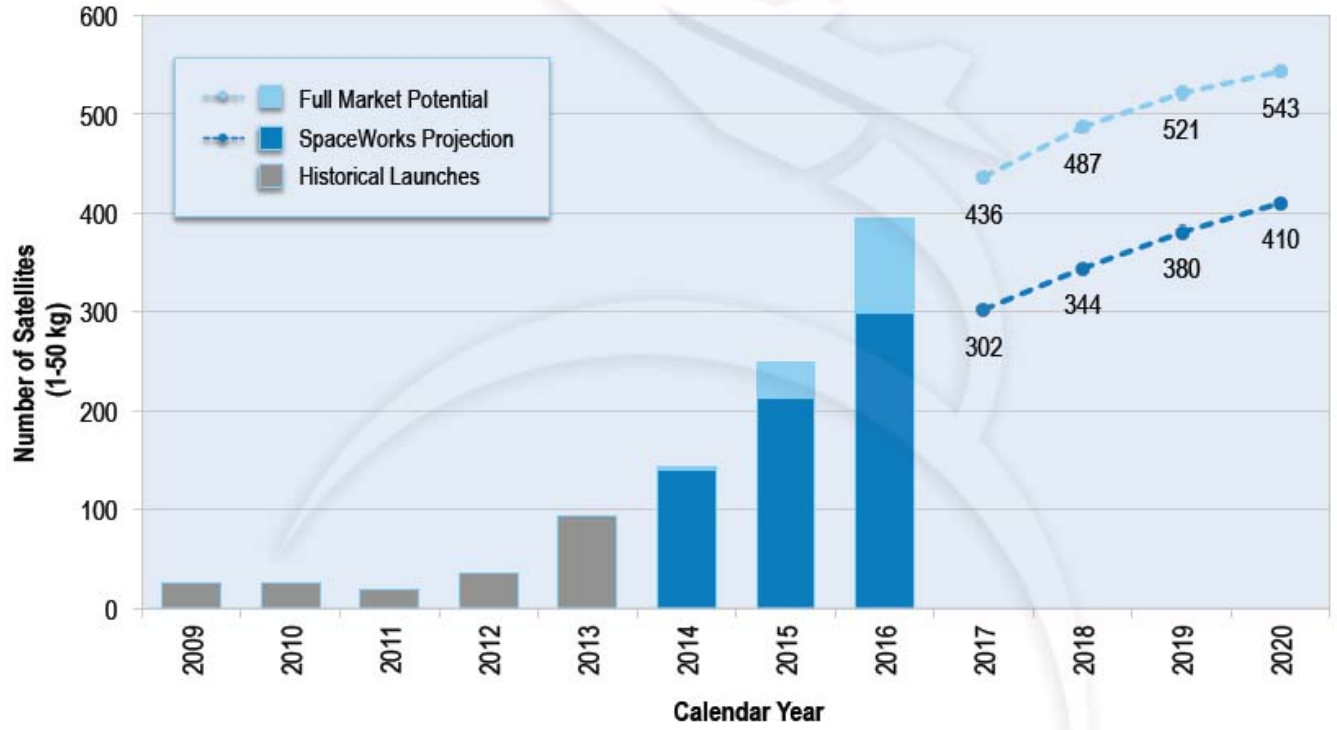
Commercial Launches

FAA: The Annual Compendium of Commercial Transportation 2014

II. Free Access to Outer Space
International Market for Small/Nano-Satellites

Nano/Microsatellite Launch History and Projection (1 - 50 kg)

Projections based on announced and future plans of developers and programs indicate between 2,000 and 2,750 nano/microsatellites will require a launch from 2014 through 2020



The Full Market Potential dataset is a combination of publically announced launch intentions, market research, and qualitative/quantitative assessments to account for future activities and programs. The SpaceWorks Projection dataset reflects SpaceWorks' expert value judgment on the likely market outcome.

II. Free Access to Outer Space
Air-Launch Activities

Carrier Aircraft + Small Rocket/RLV

(originally designed as aircraft)

Generation Orbit

Launch Services, Inc.

S3 SWISS SPACE SYSTEMS

III. Export Control of Missiles

① Missile Technology Control Regime (MTCR)

Objectives:

to limit the risks of proliferation of WMD by controlling transfers that could make a contribution to delivery systems (other than manned aircraft) for such weapons.

The Guidelines are not designed to impede national space programs or international cooperation in such programs as long as such programs could not contribute to delivery systems for weapons of mass destruction.

Documents: Guidelines for Sensitive Missile-Relevant Transfers

Equipment, Software and Technology Annex

Member States: 34 States: on a basis of consensus principle

Argentina (1993)	Greece (1992)	Republic of Korea (2001)
Australia (1990)	Hungary (1993)	Russian Federation (1995)
Austria (1991)	Iceland (1993)	South Africa (1995)
Belgium (1990)	Ireland (1992)	Spain (1990)
Bulgaria (2004)	Italy (1987)	Sweden (1991)
Brazil (1995)	Japan (1987)	Switzerland (1992)
Canada (1987)	Luxembourg (1990)	Turkey (1997)
Czech Republic (1998)	Netherlands(1990)	Ukraine (1998)
Denmark (1990)	New Zealand (1991)	United Kingdom (1987)
Finland (1991)	Norway (1990)	United States of America (1987)
France (1987)	Poland (1998)	
Germany (1987)	Portugal (1992)	

III. Export Control of Missiles ① MTCR

■ How was MTCR established?

1) 1981: While the US-USSR negotiations over the SALT-I and SALT-II, a concern about the proliferation and WMD and delivery systems led to the establishment of task force within the US.
2) 1982: The US President Reagan signed National Security Decision Directive70 to investigate how to control ICBM proliferation.
3) 1987: G7 Members (US, UK, France, Germany, Italy, Canada and Japan) decided to establish MTCR.

■ Who are not MTCR members with missile/rocket capabilities?

China, India, Pakistan, Israel, Iran Iraq, North Korea

■ Who are not MTCR members but declared for the compliance?

China, India, Israel, Rumania, Macedonia, Slovakia

III. Export Control of Missiles ① MTCR

List of Items

Category I (all prohibited)	**Category II (case by case)**
1. Complete Delivery Systems - Complete rocket systems (including ballistic missiles systems, space launch vehicles, and sounding rockets) capable of delivering at least a 500kg “payload” to a “range” of at least 300km. - Production facilities, specially designed for the systems above. - Software, especially designed or modified for the use of production facilities. 2. Complete Subsystems Usable for Complete Delivery Systems	3. Propulsion Components and Equipment 4. Propellants, Chemicals and Propellant Products 5. … 11. Avionics 12. Launch support 13…18 19. Other Complete Delivery Systems ($\geq$300km) (cruise missile & systems) 20.

III. Export Control of Missiles ① MTCR
The Extending Scope

■ The scope of MTCR

1992: After the Gulf War, biological and chemical weapons entered into the scope.

2002: The scope of Item 19 was extended to cover:

1) complete rocket systems with the range less than 300 km;
2) complete unmanned aerial vehicle systems (including cruise missile systems, target drones and reconnaissance drones);
3) complete unmanned aerial vehicle systems with:
   a) 1) an autonomous flight control and navigation capability; or
   a) 2) capability of controlled flight out of the direct vision range involving a human operation; and
   b) 1) incorporating an aerosol dispensing system/mechanisms with a capacity greater than 20 liters; or
   b) 2) designed or modified to incorporate an aerosol dispensing system/mechanisms with a capability of greater than 20 liters;
4) the "intention" as an element for the evaluation to transfer.

2003: Catch-All control was included in MTCR after the Australia Group adopted.

III. Export Control of Missiles ① MTCR
How it works?

■How MTCR works?

MTCR:

1) rests on adherence to common export policy guidelines applied to an integral common list of controlled items listed in the MTCR Equipment, Software and Technology Annex.
2) does not take export licensing decisions as a group, rather depends on individual states responsible for implementing the guidelines and Annex on the basis of sovereign national discretion and in accordance with national legislation and practice
3) welcomes non-partners to adhere to the Guidelines without being obliged to join the group, and a number have done so. (e.g. China)
4) holds Plenary annual meetings for information exchange about relevant national missile non-proliferation export licensing issues

III. Export Control of Missiles ① MTCR
Factors to be considered

■ In the evaluation of transfer applications for Annex items, the following factors will be taken into account:

A) Concerns about the WMD proliferation;

B) the capabilities and objectives of the missile and space programs of the recipient state;

C) the significance of the transfer in terms of the potential development of delivery systems (other than manned aircraft) for WMD;

D) the assessment of the end-use of the transfers, including the relevant assurances of the recipient states (no modification, no re-transfer without the prior consent of the Government)

E) the applicability of relevant multilateral agreements;

F) the risk of controlled items falling into the hands of terrorist groups and individuals.

III. Export Control of Missiles ① MTCR
Evaluation / Limitations

■ Evaluation

- Argentina, Egypt, and Iraq abandoned their joint Condor II ballistic missile program.
- Brazil, South Africa, South Korea, and Taiwan also shelved or eliminated missile or space launch vehicle programs.
- Some Eastern European countries, such as Poland and the Czech Republic, destroyed their ballistic missiles, in part, to better their chances of joining MTCR.3
- Missile efforts have been discouraged in Libya and Syria.

■ Limitations

- Iran, India, North Korea, and Pakistan continue to advance their missile programs.
- India is testing missiles in the intercontinental range.
- They are not MTCR members, are also becoming sellers rather than simply buyers on the global arms market.

  Example 1) : North Korea is viewed as the primary source of ballistic missile proliferation in the world today.

  Example 2) : Iran has supplied missile production items to Syria.

III. Export Control of Missiles ① MTCR
Obstacles for Membership / US Exception

■ Obstacles for MTCR Membership

- 2004: China applied for MTCR membership; however, due to its transfer of the listed items to Pakistan, Iran, North Korea without informing MTCR member states. That led to the rejection of its application.
- June 2015: India applied for the membership; however, Italy blocked consensus on its application during the October 2015 plenary.

■ South Korea's exception by US

- October 2015, South Korea tested a ballistic missile with a range of 500 km based on the US-South Korea agreement of 2012. The range would be extended to 800 km in 2017. (clear explanation is needed to MTCR members)

III. Export Control of Missiles ① MTCR
Challenges

■ Challenges

- The consensus principle (the same obstacle in the UNCOPUOS?)
- How to involve non-MTCR member states who declared its compliance
- Lack of treaty, lack of verification regime
- Lack of technical clear distinction between missile and rockets that leave non-MTCR states free for satellite launching tests without transparency

+

- The use of (manned) air carrier for air-launch gets in the scope of MTCR?

III. Export Control of Missiles

② International Code of Conduct against Ballistic Missile Proliferation (Hague COC: HCOC)

■ Overview

The HCOC, the only multilateral transparency and confidence building instrument concerning the proliferation of ballistic missiles, :

- ✓ consists of a set of general principles, modest commitments, and limited confidence-building measures;
- ✓ is intended to supplement, not supplant, the MTCR;
- ✓ is administered collectively by all subscribing states;
- ✓ established in 1993 with 96 states (**137** states as if 2013);
- ✓ was signed and entered into force in 2002;
- ✓ has Executive Secretariat in Austria, while Presidency-holder changes every year
- ✓ is linked to the UN with the Resolutions regarding the HCOC, adopted during the 59th, 60th, 63th, 65th, 67th and the 69th UN-General Assemblies in New York.

III. Export Control of Missiles

③ Proliferation Security Initiative (PSI)

■ Overview

PSI:

- ✓ was established in 2003 (as of 2015, 105 states);
- ✓ is an initiative of the Bush administration after a failed attempt to stop a North Korean shipment on a Cambodian-registered ship that included 15 Scud missiles and conventional warheads bound for Yemen;
- ✓ is a response to the growing challenge posed by the proliferation of weapons of mass destruction (WMD), their delivery systems, and related materials worldwide;
- ✓ seeks to involve in some capacity all states that have a stake in nonproliferation and the ability and willingness to take steps to stop the flow of such items at sea, in the air, or on land;
- ✓ consists of interdiction principles to establish a more coordinated and effective basis through which to impede and stop shipments of WMD, delivery systems, and related materials flowing to and from states and non-state actors of proliferation concern, consistent with national legal authorities and relevant international law and frameworks, including the UN Security Council

VI. Challenges

■ Who need to be monitored?

A state who is;

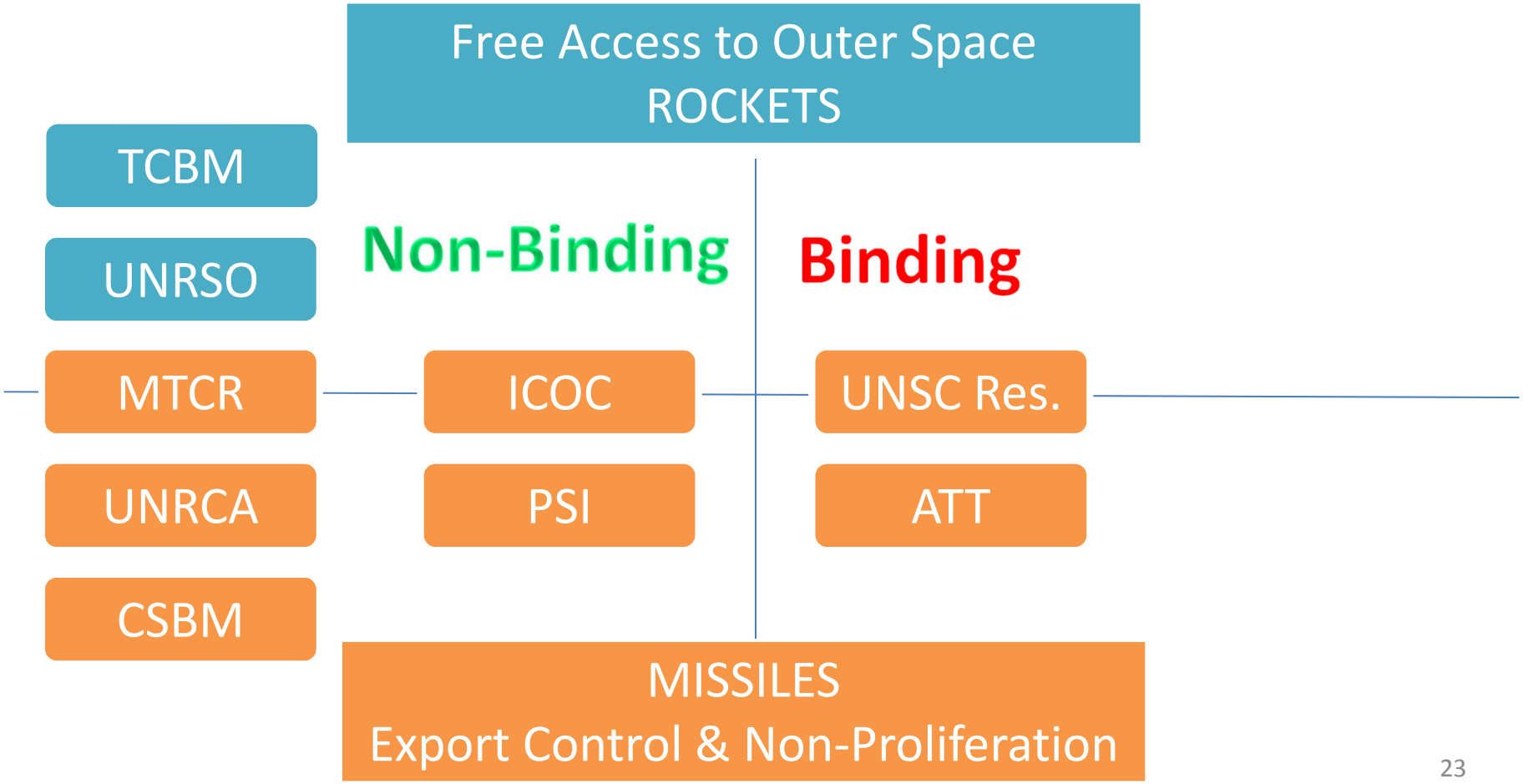
1) not a state party to the 1968 Nuclear Non-Proliferation Treaty
   = suspected as developing nuclear weapons (191)
2) carrying out space launching tests without clear space program
3) not a member states of Missile Technology Control Regime
4) unwilling to comply with International Code of Conduct against Ballistic Missile Proliferation

■ What are the elements that accelerate the missile/rocket proliferation?

1) the growing number of space-faring states
2) a growing international market for small/nano-satellites
3) US Missile Defense
4) air-launch activities (using small rocket + aircarrier)

VII. CONCLUSION

All relevant/potential instruments, binding or non-binding, need to be coordinated to strengthen the non-proliferation of ballistic missiles and enhance transparency in space launching activities.



Thank you for your attention!

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