

# International Code of Conduct for Space –Do we need it?

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## Consider some complexity of outer space

1. Over 70 countries and dozens of companies operate over 1,300 satellites with virtually no regulation
2. A growing trend of multi-payload launches with an ever decreasing satellite size will add to on-orbit congestion. In 2012, 138 satellite launches were carried out. From year 2013, a new era began with launch of microsattellites (weighing less than 10 Kgs). The number of spacecraft launches jumped from around 130 to more than 200.[1]
3. Deployment of hundreds and perhaps thousands of additional small satellites in the next few years will pose challenge as many like Cube sat and Chip Sat that will require increasingly capable sensors to detect them.
4. As space debris is concentrated in the most heavily used regions of Earth orbit where many active satellites also reside. These regions include the LEO region below 2,000 kilometers (1,200 miles) in altitude and the geostationary Earth orbit (GEO) region, approximately 36,000 kilometers (22,000 miles) above the equator.
5. Of the two regions, LEO currently presents the most pressing challenge for long-term sustainability and increasing collision threats to satellites from space debris.

The space traffic management therefore, is a serious issue confronting the mankind. As on 2014, more than 7757 space launches have taken place since the start of the space age. Of these 3772 launches are by civil and rest 3985 launches are by the military.[2] In addition, there are about 2,600 inactive satellites and large amount debris of defunct pay loads, rocket bodies and other junk. Number of satellites and debris is predicted to go up with more launches, as more and more states rely on satellites for civil and military support operations, accidents and tests

## Commercialization of the Space

In mid-sixties the first commercial satellite was launched for extending communication. Since then telecommunication has been the primary reason for commercialization of space. Now the private sector is even involved in many of the manned and unmanned missions conducted by the National Aeronautics and Space Administration (NASA).[3] Space tourism provides the monetary incentive for companies in the private sector. Private Companies such as Space-X and Virgin Galactic are already well established to take on the growing industry of space tourism and

transport. Eventually, it would lead to more congestion in the space. Already 70% of the satellites are owned by the private sector. In the field of telecommunication and remote sensing this figure is 80% and 20% respectively. All it points that that in coming years most space launches would be by private sector with states focusing on launches for the military and welfare services. All these would lead to greater congestion of the space. Further with large scale use of small satellites which are fast becoming cost effective device for low earth orbit missions and for redundancy but add to the space traffic.

The Low Earth Orbit (LEO) region is relatively more congested as most satellites are launched for this region. It holds nearly 50% of the satellites the total satellites the space. The International Space Station, the Hubble Space Telescope, and almost all manned flights have taken place in this region. About 20% of satellites are in Medium-Earth Orbit, rest in Geostationary Earth Orbit (GEO).

Amongst the space faring nations, only United States and Russia have the confirmed ability to track the space debris. Europe has no systematic, operational capability for space surveillance, and is therefore, strongly dependent on external information, mainly from the USA.[4] China too is speculated to have a limited ability of space surveillance with phased array radars which are most likely used with missile tests.[5] US Strategic command's Joint Space operation center tracks 22000 objects of 10 cm diameter of the size of a soft ball circle warns other space faring states about satellite/debris on the collision path so that evasive manouvres could be initiated to safeguard the satellite.

De-orbiting of the objects from the space is a technical challenge and may become a reality in future. In addition, there is need to have some order in space launches with new space laws to regulate the space traffic.

Regulatory Mechanism for the Space.

Space Laws. The Committee on the Peaceful Uses of Outer Space (COPUS) is the forum for the development of international space law. The Committee has concluded five international treaties and five sets of principles on space-related activities. In addition to the international instruments, many states have legislations governing the space activities. These five treaties deal with issues such as the non-appropriation of outer space by any one country, arms control, the freedom of exploration, liability for damage caused by space objects, the safety and rescue of spacecraft and astronauts, the prevention of harmful interference with space activities and the environment, the

notification and registration of space activities, scientific investigation and the exploitation of natural resources in outer space and the settlement of disputes.

Each of the treaties stresses the notion that the activities and benefits accrued from outer space should be devoted to enhancing the well-being of all countries and human kind, with an emphasis on promoting international cooperation.

Then there are five set of declarations and legal principles which relate to governing the activities of states in the exploration and uses of outer space, use of satellites for International direct television broadcasting, remote sensing, use of nuclear power source in the outer space and promise to use of outer space keeping in mind the development and need of the developing nations.[6]

Organization. The United Nations Office for Outer Space Affairs (UNOOSA) which is created as a small expert unit within the United Nations Secretariat regulates the outer space with body of international agreements, treaties, conventions, and United Nations General Assembly resolutions. It is responsible for implementing the Secretary-General's responsibilities under the international space laws and maintaining the United Nations Register of Objects launched into Outer Space.[7] The aim is to maintain transparency in conduct of outer space affairs.

In consonance with the convention on registration of 1976, all objects launched in outer space are required to be registered with the central registry which is responsible to disseminate information relating to the recovery of space objects, launch and re-entry of nuclear powered satellites and other events relating to the use and exploration of outer space. All states are to establish their own national registries and provide information on their space objects to the Secretary-General for inclusion in the United Nations Register. Despite this, not all launches are registered. As per UN estimate to date 92% of space launches are registered. National space agencies, academic institutions and private entities can register through the member states.

Orbital Slots and Frequency of Operation. The orbital slots and the radio frequency spectrum for operation are allotted by International telecommunication Union which is a specialized body under UN. Spectrum and orbital positions are managed and planned in order to avoid interference and ensure that adequate separations between satellites. This allotment is done first come, first basis. After allotment the satellite must be placed in orbit within nine years. Generally, ITU allotments are respected but it has no mandatory jurisdiction to resolve disputes between states.[8]

The issue of militarization of the outer space however, is dealt by Conference on Disarmament (CD) which established in 1979 as the single multilateral disarmament negotiating forum of the international community.[9]

#### Weaknesses of Existing Regulating Mechanism

US Deputy Asst secretary of state for space policy made an apt comment in a symposium on space held on 18 Apr14, "Space is being increasingly contested in all orbits," "Unless the international community adopts pragmatic and constructive measures to avoid accidents and respond to the danger of irresponsible behavior in space, the environment around our planet will become increasingly hazardous to both human and robotic spaceflight"[10] Besides, the orbit slots in some regions are highly contested. For example Bolivian President while speaking at the Columbia university said, "he is keen to get orbital slot communication satellite in geostationary orbit but was told by ITU that, as the arc of interest for a geostationary satellite orbital position for Bolivia is quite crowded, it would require complex co-ordination to achieve agreement for the mutual operation of all communication satellites in the region".[11]

The weaknesses of the current regulating regime are listed below:-

- (a) Laws not legally binding. Consensus is the rule.
- (b) Draw backs have become more pronounced after entry of the private players.
- (c) Unabated Proliferation of space traffic and debris.
- (d) There is congestion in LEO due increased focus on small satellites. It could be seen that nearly 80 to 85 % launches are in the LEO region
- (e) Shrinking radio frequencies and orbital slots.
- (f) Imminent weaponisation of the space as current regulating regime has no role to play to stop this.

#### International Code of Conduct

It took forty years to produce 10000 pieces of soft ball size space debris, the amount doubled over next 10 years, largely due to accidents and willful neglect. Proposal to remove this threat is highly expensive as well as a technical challenge. Recognizing the need to regulate the outer

space United Nation sought the nations to take Transparency and Confidence Building Measures (TCBM) in the outer space vide a resolution 61/75 which was adopted by the general Assembly on Dec 2006. Thereafter, on Secretary General call to UN members, European Union prepared a proposal for an International Code of Conduct (ICoC) in 2008 for fostering the responsible behavior amongst the space faring nations. The code will not function as a legally binding treaty, but is intended to consist of a set of principles and guidelines agreed to on a voluntary basis amongst states. It is not intended to have any formal enforcement mechanisms.

The ICoC is based on 3 main principles:-

- (a) All countries' have inheritable right to use space for peaceful purposes;
- (b) Protection of security and reliability of space objects in orbit; and
- (c) Consideration for states' legitimate defence interests.

Major Highlights of ICoC

It calls upon the states to:-

- (a) Foster voluntary responsible behavior among space fairing nations.
- (b) Space is global common and every state has freedom to access and explore outer space for peaceful purposes.
- (c) Refrain from threat or use of force except for individual or collective self defence.
- (d) Avoid harmful interference with outer space activities.
- (e) Take all steps to avoid from outer space becoming an arena of conflict.
- (f) Comply with treaties, conventions and other commitments relating to Outer Space activities.
- (g) Take measures on Space Operations and Space Debris Mitigation.
- (h) Issue notification on Outer Space Activities scheduled manoeuvres, predicted on orbit collision, prelaunch notification on high risk re-entry events, malfunctioning of space objects.

(j) Provide Information on space policies and strategies which could affect of current and planned space events, major outer space research programmes.

(k) Follow consultation Mechanism to resolve issues.

(l) Refrain from any action which brings about, directly or indirectly, damage, or destruction of satellites.

#### Positives of the ICoC

(a) It applies to all outer space activities involving all space objects launched in the earth orbit or beyond conducted by the state or jointly with other states including non – governmental bodies.

(b) It is a tool for environmental protection, as well as covers some arms control aspects.

(c) In section 4.2 it addresses military activities such as weaponization and illegal interference in outer space.

(d) It discourages directly or indirectly, damage, or destruction, of outer space objects unless such action is conducted to reduce the creation of outer space debris and/or is justified by the inherent right of individual or collective self-defense in accordance with the United Nations Charter or imperative safety considerations.[12]

#### Criticism of the ICoC

(a) Insufficient Consultation .United States Australia, Canada and Japan have already endorsed the ICoC while others countries such as Brazil, Russia, India and China have expressed disappointment about not having been sufficiently consulted for formulation of the proposal.

(b) The some emerging space faring countries have expressed concerns that the ICoC could be a way to limit their future capacities in outer space activities.

(c) It is seen interfering into the domestic policy-making of nations, who are already developing outer space policies on their own initiative.

(d) The Code may put limits to the testing and use of space-based and ground-based Anti-Satellites Weapons.

e) The proposed code may follow the path of Hague Code of Conduct which too was voluntary and non-binding in character and came in to effect in 2002 to check the spread of missile technology and but, it failed to curb the proliferation of missile. Hence, ICoC may not bring change the space scenario. (ASAT, cyber interference in space op, research in offensive space technology).

(f) Without UN mandate, the ICoC stipulations would remain voluntary and not binding in character with respect to stipulations on registration, issue prelaunch notification or share any information etc on space launch).

(g) Space Launch is essentially a dual use technology (Rogue nations - North Korea and others may follow space route to acquire/enhance missile technology

(h) Does not specifically bar military activities in the space and prohibit intentional damage or destruction or interference of space objects if justified. (On ground of human life health risk, individual or collective self defence).

(j) ICoC is not likely bring any change in outer space scenario

(k) India's main concern is that the code is not legally binding, with enforcement, verification and a penalty mechanism.[13]

To ward off the charge of unilateralism and lack of consultation, three open-ended multilateral consultations were carried out May 2013, Mar 2014 and on 27 May 2014 to agree to draft ICoC.[14]

#### Overall Impact on Space Faring Nations

United States. ICoC was seen intrusive by United States congress. It was felt that the code would constrain the US missile defenses and anti-satellite weapons. The mis-impression has been removed after a countrywide debate. Now the perception is that codes provisions are consistent with all existing practices of NASA, Pentagon and State department. US has carried out with four rounds of consultations with EU after which the provision of the self defence has been added to allow research and development in offensive space regime despite restrictive provision para 4.2 of ICoC. US now views that Code will enhance US security, as ICoC will encourage the subscribing state to follow a predictable and responsible behavior in particular reference to:-

- (a) Timely satellite pre launch notifications
- (b) Info on planned space manoeuvres.
- (c) Planned orbital placements.
- (d) Scheduled space manoeuvres.
- (e) Ban on weaponisation of space.
- (f) Non-interfere with research on BMD and ASAT, Offensive space research.

Many in US however, still believe as a subscribing state of the code it would have given an implicit promise to honor its commitments, thus open itself to an appropriate political response in case of perceived contravention of the code. Secondly, code by promoting outer space security, has brought in the provision of space arms control treaty through back door to the detriment of interests United State. Thirdly, the code would create an obligatory burden on US for reporting and mitigation of the debris which it is already voluntarily doing but, this task would be demanded after ICOC is accepted. Finally, subscribing to the Code may lead the United States to fritter away its advantage in outer space capabilities.[15]

#### China and Russia

Both China and Russia lag United States in space technology. Their main concern remains to match in capability or else curtail US space capability. ICoC in the present form is not seen to tackle this concern hence, they have not endorsed ICoC. Russia and China has proposed a treaty to Conference on Disarmament (CD) in 2008 for Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects (PPWT) as an international legally binding treaty that would outlaw the weaponization of space. This nullify US advantage in the space [16]

#### India

India in principle, welcomes the idea of an ICoC. Firstly, because Transparency and Confidence Building Measures (TCBM) in outer space activities will encourage moral obligation on our adversaries to maintain transparency in outer space activities. Thus enhance the security of our space assets. Secondly, we have huge investment in space mainly for civil use, protection of these assets from hostile space action is paramount. ICoC provisions do not specifically restrict

research and development in defensive areas like Missile Defenses and in anti-satellite weapons which are vital for protection of our space assets.

The restriction on research would have had serious impact on our security specially that our neighbor China has developed asymmetrical anti-space capabilities presumably against US but, these could easily be used against our interests.

India being one of the leading Space power should have been shaping the debate rather than being shaped by it particularly as ICoC has political and geopolitical implications.

The India's other concern is the Code being voluntary measure, lacks the teeth to enforce it, hence, it potentially would create an ineffective mechanism.

## Conclusion

International Code of Conduct is still being debated. However, given the threat from the space debris and inactive satellites, it is incumbent that some regulating mechanism takes root so that space domain becomes safe for satellite operations which will have benefits transcending to all areas in civil and military. India which hitherto was not part of ICoC deliberation should be closely associated in discussions for it has far reaching effects on our safety and security as well research in the related areas.

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[1]<http://claudelafleur.qc.ca/Spacecrafts-index.html#Table-1>

[2]Ibid

[3]<http://scholarworks.gvsu.edu/cgi/viewcontent.cgi?article=1251&context=honorsprojects>

[4][http://www.esa.int/esapub/bulletin/bulletin133/bul133f\\_klinkrad.pdf](http://www.esa.int/esapub/bulletin/bulletin133/bul133f_klinkrad.pdf)

[5]<http://www.globalsecurity.org/space/world/china/space-surveillance.htm>

[6]<http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html>

[7]<http://www.unoosa.org/oosa/en/aboutus/roles-responsibilities.html>

[8]Launching and Operating Satellites: Legal Issues By R. Bender PP38

[9][http://www.unog.ch/80256EE600585943/\(httpPages\)/BF18ABFEFE5D344DC1256F3100311CE9?OpenDocument](http://www.unog.ch/80256EE600585943/(httpPages)/BF18ABFEFE5D344DC1256F3100311CE9?OpenDocument)

[10]<http://spacenews.com/need-space-rules-road-grows-along-orbital-congestion-rose-says/>

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[12]Draft Proposal ICoC 2014

[13] Ibid

[14]<http://www.reachingcriticalwill.org/resources/fact-sheets/critical-issues/5448-outer-space>

[15]<http://www.thespacereview.com/article/2851/1>

[16] CD/1839 29 February 2008