

# **Space Program and Business in India – Legal Perspectives**

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## **Introduction**

India is steadily establishing its distinct identity in international space regime and has emerged as an important destination for domestic and international space activities and applications. The indigenously developed space technology has enabled India to plan an ambitious, first unmanned scientific mission to moon, space program *Chandrayaan-I* in 2007. The Memorandum of Understanding (MOU) entered for

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this project with National Aeronautics and Space Agency (NASA)<sup>1</sup>, European Space Agency (ESA)<sup>2</sup> and Bulgaria, besides several other co-operative agreements with other countries / agencies in space field, necessitates immediate attention for development of a National Space Policy and Space Law by India. A well defined Policy and Law shall provide international recognition and legitimacy to India's space programs and activities, enable capitalization of unexplored business opportunities by optimization of available infrastructure and resources, and also promote potential space entrepreneurs, domestic and international.

## **I. The National Space Program of India**

### **A. Background**

The launch of Sputnik in 1957 marked the beginning of space age and space race throughout the world. India, after its independence in 1947, focused on development of indigenous technology in construction, launch and operation of satellites. In 1961, space activities started under the Department of Atomic Energy (DAE) and continued under Indian National Committee for Space Research (INCOSPAR), constituted in 1962, with the launch of sounding rockets from Thumba Equatorial Rocket Launching Station (TERLS). The Indian Space Research Organization (ISRO) was created in 1969, continues under the Space Commission (SC) and is currently under the Department of Space (DOS), created in 1972. Other national level committees on space matters include: INSAT Coordination Committee (ICC); the Planning Committee on Natural Resources Management System (PCNNRMS); and the Advisory Committee on Space Sciences (ADCOS).<sup>3</sup> The DOS acts as an arm of the SC and ISRO implements the national space program. Antrix Corporation Limited, a company under DOS was started in 1992 for the marketing of products and services of ISRO. Mr. G.Madhavan Nair<sup>4</sup> is currently

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<sup>1</sup> ISRO, *ISRO and NASA Sign MOU on Chandrayaan-1*, May 9, 2006, available at [http://www.isro.org/pressrelease/May09\\_2006.htm](http://www.isro.org/pressrelease/May09_2006.htm), (last visited Dec. 1, 2006)

<sup>2</sup> ISRO, *Agreement for Including European Instruments on Chandrayaan-1 Signed*, June 27, 2005, available at [http://www.isro.gov.in/pressrelease/Jun27\\_2005.htm](http://www.isro.gov.in/pressrelease/Jun27_2005.htm), (last visited Dec. 1, 2006)

<sup>3</sup> Government of India, Department of Space, *Annual Report 2005-2006*, available at <http://www.isro.org/rep2006/Index.htm> (last visited Dec. 5, 2006)

<sup>4</sup> ISRO: *Mr G Madhavan Nair*, Chairman, Space Commission; Secretary, Department of Space, Govt. of India; Chairman, Indian Space Research Organization; Chairman, Governing Body, National Remote Sensing Agency; Chairman, Antrix Corporation Limited, available at [http://www.isro.gov.in/mnair/biodata\\_mnair.htm](http://www.isro.gov.in/mnair/biodata_mnair.htm), (last visited Dec. 3, 2006).

the head of all the important departments / agencies / organizations associated with space activities undertaken by India and directly reports to the Prime Minister of India.

## **B. International treaties and agreements applicability**

After the launch of Sputnik, the necessity of outer space law to regulate outer space activities developed within the United Nations (UN) and India always attached utmost importance to every international approach associated with peaceful uses of outer space. In 1958, India became a member of the ad hoc committee constituted by General Assembly for Peaceful Uses of Outer Space and continues to play an active role in UN Committee on the Peaceful Uses of Outer Space (COPUOS)<sup>5</sup> and its Subcommittees<sup>6</sup>, the only international forum for the development of international space law. The five international treaties and agreements, associated with international space law, adopted by General Assembly for which India is a party / signatory are: "Outer Space Treaty", 1967<sup>7</sup>, "Rescue Agreement", 1968<sup>8</sup>, "Liability Convention", 1972<sup>9</sup>, "Registration Convention", 1976<sup>10</sup>, "Moon Agreement", 1984<sup>11</sup>.

India is also a party to the other international agreements relating to activities in outer space: "Nuclear

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<sup>5</sup> United Nations Committee on the Peaceful Uses of Outer Space, *Question of the peaceful use of outer space*, adopted by the General Assembly in its resolution 1348 (XIII), 792nd plenary meeting, Dec. 13 1958, available at [http://www.unoosa.org/oosa/en/SpaceLaw/gares/html/gares\\_13\\_1348.html](http://www.unoosa.org/oosa/en/SpaceLaw/gares/html/gares_13_1348.html), (last visited Dec. 1, 2006)

<sup>6</sup> Dr B N Suresh, Director of ISRO's Vikram Sarabhai Space Centre (VSSC) at Thiruvananthapuram, has been elected by consensus as the Chairman of Science and Technology (S&T) Sub-committee of United Nations Committee On Peaceful Uses of Outer Space (UN-COPUOS) for the current year. He was the nominee of Asian Group of countries for the coveted post. See ISRO, *Dr B N Suresh, Director, Vikram Sarabhai Space Centre Elected Chairman of UN Committee*, February 21, 2006, available at, [http://www.isro.gov.in/pressrelease/Feb21\\_2006.htm](http://www.isro.gov.in/pressrelease/Feb21_2006.htm), (last visited Dec 1, 2006),

<sup>7</sup> *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (the "Outer Space Treaty"); adopted by the General Assembly in its resolution 2222 (XXI), opened for signature on January 27, 1967, entered into force on October 10, 1967- India signed the treaty on March 3, 1967 and became a party by ratification on January 18, 1982, 18 UST 2410, TIAS 6347, 610 UNTS 205.

<sup>8</sup> *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* (the "Rescue Agreement", adopted by the General Assembly in its resolution 2345 (XXII)), opened for signature on April 22, 1968, entered into force on December 3, 1968- India became a party by accession on July 9, 1979, UST 7570, TIAS 6599, 672 UNTS 119.

<sup>9</sup> *Convention on International Liability for Damage Caused by Space Objects* (the "Liability Convention", adopted by the General Assembly in its resolution 2777 (XXVI)), opened for signature on March 29, 1972, entered into force on September 1, 1972, India became a party by accession on July 9, 1979, 24 UST 2389, TIAS 7762, 961 UNTS 187.

<sup>10</sup> *Convention on Registration of Objects Launched into Outer Space* (the "Registration Convention", adopted by the General Assembly in its resolution 3235 (XXIX)), opened for signature on January 14, 1975, entered into force on September 15, 1976, India became a party by accession on January 18, 1982, 28 UST 695, TIAS 8489, 1023 UNTS 15.

<sup>11</sup> *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* (the "Moon Agreement", adopted by the General Assembly in its resolution 34/68), opened for signature on December 18, 1979, entered into force on July 11, 1984, India signed the agreement on January 18, 1982, 18 ILM, 1434, 1363 UNTS 3..

Test Ban Treaty”, 1963<sup>12</sup> “International Telecommunications Satellite Organization” (ITSO), 1973,<sup>13</sup> “International Mobile Satellite Organisation” (IMSO)<sup>14</sup>, and “Intersputnik”, 1971.<sup>15</sup>

India has space co-operative agreements with countries including: U.S.S.R. on Thumba Equatorial Rocket Launching Station (TERLS); German aerospace Center (DLR); National Institute of Aeronautics and Space (LAPAN), Indonesia; Hungary; and Comision Nacional de Investigacion y Desarrollo Aerospacial (CONIDA) - Peru<sup>16</sup>. India also has co-operative agreements with: US,<sup>17</sup> ESA,<sup>18</sup> France,<sup>19</sup> Canada,<sup>20</sup> Israel,<sup>21</sup> Brazil,<sup>22</sup> Venezuela,<sup>23</sup> Indonesia,<sup>24</sup> Maldives,<sup>25</sup> and Mongolia.<sup>26</sup>

### C. Indian national space program

#### 1. Charter of Indian Space Research Organization (ISRO)<sup>27</sup>

ISRO implements the following programs of the Department of Space (DOS) with the objective of promoting and developing application of space science and space technology in India:

<sup>12</sup> *Treaty Banning Nuclear Weapon Tests in Atmosphere, in Outer Space and Under Water*, done at Moscow on Aug. 5, 1963, entered into force on Oct. 10, 1963, 14 UST 1313, TIAS 5433, 480 UNTS 43

<sup>13</sup> *Agreement Relating to the International Telecommunications Satellite Organization (ITSO)* with Annexes, done at Washington on August 20, 1971, entered into force on Feb. 12, 1973, amended September and October 1996, and July 2001, 23 UST 3813, 4091, TIAS 7532.

<sup>14</sup> *Convention on the International Mobile Satellite Organization (IMSO)* with annex, done at London on Sept. 3, 1976, entered into force on July 16, 1979, amended Dec. 1994 and Sept. 1998, UST 1, 135, TIAS 9605.

<sup>15</sup> *Agreement on the Establishment of the “Intersputnik” International System and Organization of Space Communications*, done at Moscow on Nov. 15, 1971, entered into force on July 12, 1972, 862 UNTS 3.

<sup>16</sup> United Nations, *International Agreements and other available legal documents relevant to space-related activities*, 1999

<sup>17</sup> Bureau of Oceans, Environment and Science, *U.S.- India Space Cooperation*, Washington, DC, March 2, 2006, available at <http://www.state.gov/p/sca/rls/fs/2006/62489.htm>, (last visited Nov. 27, 2006)

<sup>18</sup> ISRO, *ISRO signs Cooperative Agreement with European Space Agency*, January 09, 2002, available at [http://www.isro.gov.in/pressrelease/Jan09a\\_2002.htm](http://www.isro.gov.in/pressrelease/Jan09a_2002.htm), (last visited Nov. 27, 2006)

<sup>19</sup> ISRO, *ISRO and French Space Agency, CNES, Sign MOU for Atmospheric Research Mission*, May 9, 2001, available at [http://www.isro.gov.in/pressrelease/May09\\_2001.htm](http://www.isro.gov.in/pressrelease/May09_2001.htm), (last visited Nov. 27, 2006)

<sup>20</sup> ISRO, *India's Space Research Organization and Canadian Space Agency to Strengthen Space Cooperation*, March 27, 2003, available at [http://www.isro.gov.in/pressrelease/Mar27\\_2003.htm](http://www.isro.gov.in/pressrelease/Mar27_2003.htm), (last visited on Nov. 27, 2006)

<sup>21</sup> ISRO, *ISRO to Launch Israel's Scientific Instrument*, December 25, 2003, available at [http://www.isro.gov.in/pressrelease/Dec25\\_2003.htm](http://www.isro.gov.in/pressrelease/Dec25_2003.htm) (last visited Nov. 27, 2006)

<sup>22</sup> ISRO, *ISRO Signs MOU with Brazilian Space Agency, March 1, 2002*, available at [http://www.isro.gov.in/pressrelease/Mar01\\_2002.htm](http://www.isro.gov.in/pressrelease/Mar01_2002.htm), (last visited Nov. 27, 2006)

<sup>23</sup> ISRO, *India and Venezuela Sign MOU on Space Cooperation*, March 5, 2004, available at [http://www.isro.gov.in/pressrelease/Mar05\\_2005.htm](http://www.isro.gov.in/pressrelease/Mar05_2005.htm), (last visited Nov. 27, 2006)

<sup>24</sup> ISRO, *ISRO Signs MOU with Indonesian Space Agency*, April 3, 2002, available at [http://www.isro.gov.in/pressrelease/Apr03\\_2002.htm](http://www.isro.gov.in/pressrelease/Apr03_2002.htm), (last visited Nov. 27, 2006)

<sup>25</sup> ISRO, *India to Undertake Satellite Imaging for Maldives*, Jan. 22, 2004, available at [http://www.isro.gov.in/pressrelease/Jan22\\_2004.htm](http://www.isro.gov.in/pressrelease/Jan22_2004.htm), (last visited Nov. 27, 2006)

<sup>26</sup> ISRO, *Space Cooperation Agreement with Mongolia Signed*, January 15, 2004, available at [http://www.isro.gov.in/pressrelease/Jan15\\_2004.htm](http://www.isro.gov.in/pressrelease/Jan15_2004.htm) (last visited Nov. 27, 2006)

<sup>27</sup> ISRO, *Citizen's Charter*, available at <http://www.isro.gov.in/citizencharter.htm>, (last visited Dec. 1, 2006)

(i) Launch Vehicle program having indigenous capability for launching spacecrafts; (ii) INSAT Program for telecommunications, broadcasting, meteorology, development of education etc; (iii) Remote Sensing Program for application of satellite imagery for developmental purposes; and (iv) Research and Development in Space Sciences and Technology for national development.

Services provided by ISRO under DOS include: (a) Providing national space infrastructure for the telecommunication needs of the country; (b) Providing satellite services required for weather forecasting, monitoring etc.; (c) Providing satellite imagery required for the developmental and security needs of the country; (d) Providing satellite imagery and specific products and services required for application of space science and technology for developmental purposes to the Central Government, State Governments, Quasi Governmental Organizations, NGOs and the private sector; and (e) Promoting Research & Development in space sciences and technology.

In order to make the objectives operational, ISRO under DOS is required to: (i) Provide the required transponders and facilities out of its own capacity as well as by hiring additional capacity, if need be; (ii) Register Indian Satellite System for public and private sectors; and (iii) Provide its products and services in a prompt, efficient and corruption free manner to all the users/clients. In close collaboration with ISRO, specialized establishments that operate under DOS include: Vikram Sarabhai Space Centre (VSSC); ISRO Satellite Centre (ISAC); Satish Dhawan Space Centre (SDSC); Liquid Propulsion Systems Centre (LPSC); Space Applications Centre (SAC); ISRO Telemetry, Tracking and Command Network (ISTRAC); Master Control Facility (MCF); ISRO Inertial Systems Unit (IISU); and National Remote Sensing Agency (NRSA). A significant result of the space program is the development of national industrial capabilities in several areas of activity. The space industry partnership has allowed the participation of some 500 industries in small, medium and large-scale sectors either through procurement contracts, know-how transfers or provision of technical consultancy.

## 2. Antrix Corporation: Charter and Currently Activities

ANTRIX Corporation is the commercial wing of the DOS established to promote the commercial use of satellite services across the globe. The services provided by Antrix include: (i) Marketing sub-systems and components for satellites; (ii) Undertaking orders for satellites to user's specifications; (iii) Providing launch services and tracking facilities; and (iv) Organizing training of manpower and software development.

Current activities of Antrix include: (i) Commercial Lease of Transponders onboard INSAT 2E Spacecraft; (ii) Earth Observation Services - IRS Data Access, IRS International Ground Station (IGS) Network: at Alaska, USA (Space Imaging)<sup>28</sup>, China, Germany (Euromap/GAF), and Iran; (iii) Managing Mobile stations at Moscow, Russia, Norman (USA) and other places; (iv) Marketing OCEANSAT-1 (IRS P4) data services through Sea Space Corporation (USA); (v) Dealing in Satellites, Systems & Sub Systems: Hughes Space and Communication, USA; Matra Marconi Space, France; DLR, Germany; MELCO, Japan; (vi) In-Orbit Support to PANAMSAT, World Space, GE Americom, Eutelsat; (vii) Consultancy: ASC Enterprises, ONGC, Indian Oil Corporation (IOC), RIRIC; (viii) Global marketing of Indian Remote Sensing (IRS) Satellite Data Products; (ix) Commercial Satellite Launches of Kitsat (Korea), Tubsat (DLR - Germany), BIRD (DLR - Germany), PROBA (Verhaert, Belgium) aboard the ISRO's PSLV; (x) Space Communication Services from INSAT - operating in C, extended C(C+), S & Ku bands; and Telemetry, Tracking and Command (TTC) support services. (xi) Contract with Eutelsat for W2M satellite.<sup>29</sup> Antrix has achieved steady and significant progress over the years in terms of financial performance with sales turnover exceeding Rs. 3000 million (approx US \$ 75 millions). Its activities are predominantly export oriented and earns valuable foreign exchange for the country.<sup>30</sup>

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<sup>28</sup> ISRO, *Antrix Signs Agreement with Space Imaging, USA for Marketing RESOURCESAT-1 Data*, January 28, 2004, available at [http://www.isro.gov.in/pressrelease/Jan28\\_2004.htm](http://www.isro.gov.in/pressrelease/Jan28_2004.htm) (last visited Dec. 4, 2006)

<sup>29</sup> ISRO, *EADS Astrium-ISRO alliance sealed. First contract with Eutelsat for W2M satellite*, February 20, 2006, available at [http://www.isro.gov.in/pressrelease/Feb20\\_2006.htm](http://www.isro.gov.in/pressrelease/Feb20_2006.htm), (last visited on Dec. 4, 2006)

<sup>30</sup> Indian Space Research Organisation, *Antrix Corporation Limited*, available at <http://www.isro.org/commercial.htm> (last visited Dec. 12, 2006)

## D. Development of Space Policy and Law by India

### 1. Need for National Space Policy and Proposed Key Provisions

The matters related to space activities of the Indian Government are under the overall responsibility of the Space Commission (SC), which formulates guidelines and policies to promote the development and application of space science and technology. India currently ranks 6<sup>th</sup> in the world in budget allocation for space activities, being around Rs 3,150 Crores (around US \$ 750 million) for the year 2005-2006,<sup>31</sup> and there is an immediate need for a codified National Space Policy (NSP) for making its activities more focused and resourceful, as space has become a place that is increasingly used by a host of nations, consortia, businesses, and entrepreneurs, and as space business operate beyond the sovereignty of national borders.

Despite certain potential conflicts arising out of existing space policy, the US National Space Policy provides the desired legal character to its ongoing space activities, under government and private enterprise. The policy statement- *'The United States will preserve its rights, capabilities, and freedom of action in space... and deny, if necessary, adversaries the use of space capabilities hostile to US national interests'* is considered to be a tough policy statement.<sup>32</sup> The NSP should focus on commercial exploitation of various potential space business activities like: space manufacturing; space resources for space and earth; space business parks; satellite and space transfer services; travel and entertainment (space tourism); R&D in space; space transportation; space infrastructure; space utilities; space solar power; etc. The US National Space Policy<sup>33</sup>, U.S. Commercial Remote Sensing Policy, and U.S. Space Transportation Policy may be used as a guide for framing the NSP of India, suiting to its own legal and

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<sup>31</sup> ISRO, *Fund Allocation*, available at <http://www.isro.gov.in/resources.htm>, (last visited Dec. 20, 2006), current annual budget of NASA is \$16b and that of ESA, Japan, China, and Russia is \$3.5b (total space budget of all European countries- \$7b), \$1.6m, \$1.2b, \$800m respectively- information on space spending available at [http://en.wikipedia.org/wiki/National\\_Aeronautics\\_and\\_Space\\_Administration](http://en.wikipedia.org/wiki/National_Aeronautics_and_Space_Administration) (last visited Nov. 27, 2006), [http://en.wikipedia.org/wiki/European\\_Space\\_Agency](http://en.wikipedia.org/wiki/European_Space_Agency) (last visited Nov. 27, 2006), [http://en.wikipedia.org/wiki/Japan\\_Aerospace\\_Exploration\\_Agency](http://en.wikipedia.org/wiki/Japan_Aerospace_Exploration_Agency), (last visited Nov. 27, 2006), [http://en.wikipedia.org/wiki/Chinese\\_space\\_program](http://en.wikipedia.org/wiki/Chinese_space_program), (last visited Nov. 27, 2006), [http://en.wikipedia.org/wiki/Russian\\_Federal\\_Space\\_Agency](http://en.wikipedia.org/wiki/Russian_Federal_Space_Agency), (last visited Nov. 27, 2006),

<sup>32</sup> BBC NEWS, *US adopts tough new space policy*, published on 10/18/2006, available at <http://news.bbc.co.uk/go/pr/fr/-/1/hi/world/americas/6063926.stm>, (last visited Dec. 14, 2006)

<sup>33</sup> *US National Space Policy*, authorized by the President on August, 31, 2006, Unclassified Policy document available at <http://www.ostp.gov/html/US%20National%20Space%20Policy.pdf> (last visited on Dec. 21, 2006)

business considerations and priorities on space activities, and needs to include key provisions on: (i) Developing and promoting space programs on internal and external security matters; (ii) Preserving and promoting international cooperation for peaceful exploration and use of space; (iii) Improving infrastructure for development and promotion of space education and research in India so that the qualified and technical space manpower achieves global acceptance, recognition and competitive edge; and also by further improving Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), established on recommendations by the UNISPACE-II (1982) Conference and the UN Committee on the Peaceful Use of Outer Space (COPUOS)<sup>34</sup>; (iv) Framing guidelines on National Space Security matters; (v) Framing guidelines on civil and commercial space matters; (vi) Defining Radio Frequency Spectrum and Orbit management matters; (vii) Addressing issues related to Orbital Debris and Nuclear race in space; (viii) Privatization of space business aimed at improving domestic and international competition; (ix) Creation of a specialized agency for promotion of Domestic and International space business; (x) Framing broad guidelines on public safety and liability matters; and (xi) Establishing a high-powered committee and study group for development of Space Law.

## **2. Need for development of Space Law and Proposed Key Provisions**

The UN treaties did not contemplate private businesses or individuals claiming space as their own domain for living, working and playing. The private enterprise is permitted by certain countries to operate in space activities. India needs to critically and objectively address all legal and commercial issues related to domestic and international space activities before enactment of space laws. The associated regulatory risks in grant of authorizations, licenses, permits and approvals for communication satellite operations<sup>35</sup> are required to be minimized by properly defining the guidelines and procedures. A well-defined space law shall enable better capitalization and optimization of existing infrastructure and resources by: (i) Promoteing orderly and organized growth of space business by providing recognition

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<sup>34</sup> ISRO, *Dr George Joseph Appointed Director of Centre for Space Science and Technology Education in Asia and the Pacific*, December 8, 2006, available at [http://www.isro.gov.in/pressrelease/Dec08\\_2006.htm](http://www.isro.gov.in/pressrelease/Dec08_2006.htm), (last visited Dec. 22, 2006)

<sup>35</sup> Meredith, Pamela L. and Trinder, Rachel B., *Financing a communications satellite venture: assessing regulatory risk is key*, *Satellite Finance*, Issue 4, June 11, 1988, available at <http://www.zsrlaw.com/publications/articles/rbt980611.htm>, (last visited Nov. 11, 2006)



and legitimacy to ongoing space programs; (ii) Providing opportunity to potential space operators, domestic and international; (iii) Promoting development of indigenous technology matching international standards; (iv) Providing mechanism for enforcement and prevention of misuse of space activities; and (v) Providing stringent punishment for violators of space law. Space Commission (SC) is currently working on comprehensive legal document on issues related to outer space on internal security matters due to private players like Google Earth gaining easy accessibility to satellite data.<sup>36</sup>

In US, there already exist jurisdictional conflicts involving NASA, FAA and other agencies within the Department of Transportation, the Dept. of Commerce, the Dept. of Defense, the FCC and other federal agencies.<sup>37</sup> Despite the jurisdictional conflicts, the statutes on space activities provide a legal character to the space programs and the guidelines and procedures for licensing ensures equal opportunity and transparency in operations. India needs to critically and objectively study the provisions contained in the space laws of other countries<sup>38</sup> and also US Space Laws: National Aeronautics and Space Act, (Pub. L. No. 85-568), as amended; United States Code, Title 42 (The Public Health and Welfare); Chapter 26 (National Space Program) Commercial Space Act, 1998; 15 USC Chapter 82, Land Remote Sensing Policy Act, of 1992; 49 USC Chapter 703, Space Transportation Infrastructure Matching Grants; and 35 USC Chapter 10, Sect. 105, Inventions in outer space; and frame and adopt its own space laws.

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<sup>36</sup> Madhavan G, *India's Space Commission working on comprehensive legal document on issues related to outer space*, Nov. 29, 2006, available at [http://www.gisdevelopment.net/news/viewn.asp?id=GIS:N\\_gkljezqyit](http://www.gisdevelopment.net/news/viewn.asp?id=GIS:N_gkljezqyit) (last visited Dec. 14, 2006)

<sup>37</sup> Livingston D.M., *The Business of Commercializing Space*, presented to the Mars Society, August 13, 1998, available at [www.spacefuture.com/archieve/the\\_business\\_of\\_commercializing\\_space.shtml](http://www.spacefuture.com/archieve/the_business_of_commercializing_space.shtml) (last visited Dec. 7, 2006)

<sup>38</sup> UN: *National Space Laws: Russian Federation*: Presidential Edict No. 185, Structure of management of space activity in Russian Federation (1992); Russian Presidential Edict No 2005: "On the Organization of the Further Utilization of the Baikonur Cosmodrome in the Interests of the Russian Federation's Space Activity"; Decree 5663-1- About Space Activity No 104 - Statute on Licensing Space Operations; Decree No 422, "On Measures to Fulfill the Russian Space Program and Intl. Space Agreements"; Resolution No. 468, Regulations of the Russian Space Agency. *France* - Law No. 61-1382, 20 December 1961 Statute of the Centre National d'Etudes Spatiales (CNES); Decree 62-153, Regulations Relating to the CNES Decree 89-508 & Decree 90-1102, concerning the Space Committee; *Germany* - Law governing the transfer of responsibilities for space activities; *Japan* - Law Concerning The National Space Development Agency Of Japan (Law No. 50 of June 23, 1969); Law Number 161 of 13th December 2002, Law concerning Japan Aerospace Exploration Agency; *United Kingdom* - OUTER SPACE ACT (United Kingdom, 1986), *China* - China's Space Activities (White Paper); *Canada* - Canadian Space Agency Act, and Space Laws of *Ukraine, Spain, Norway, Australia, Argentina, Brazil, Chile, Kazakhstan, Kenya, South Africa and Sweden* available at [http://www.unoosa.org/oosadb/browse\\_all.jsp?cmd=add&node=USA1970&level2=none&level1=countries#19](http://www.unoosa.org/oosadb/browse_all.jsp?cmd=add&node=USA1970&level2=none&level1=countries#19), (last visited on Dec. 22, 2006)

The Indian domestic space law must include key provisions for peaceful use of outer space for the benefit of all mankind worldwide and aimed at welfare and security of India and: (i) Provide for aeronautical and space activities to be controlled by a civilian agency except those associated for development of weapons systems, military operations, or the defense of India; (ii) Promote commercial use of space (iii) Promote development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space; (iv) Provide for licensing norms for space entrepreneurs associated with various commercial activities and applications; (v) Protect property rights in inventions and stipulate provisions on environment safety; (vi) Provide for promotion and management of autonomous educational institutions of international standards for nurturing space professionals; (vii) Provide for liability provisions and include insurance and indemnification matters; (viii) Provide for international co-operation in promoting public safety and space business; and (ix) Provide for co-operation with defense machinery.

## **II. Domestic Satellite Communications in India**

### **A. Communications Satellite Operators**

ISRO is the only agency authorized to carry out communication satellite operations in India. It has developed several national space applications in the area of telecommunication, broadcasting and meteorology. The Indian National Satellite (INSAT) is responsible for the management and operation of the fleet of in-orbit satellites. INSAT is a joint venture between DOS, the Department of Telecommunications (DOT), India Meteorological Department (IMD), All India Radio (AIR) and Doordarshan (National TV Channel) and currently operates nine satellites- INSAT 2 and 3 series, Kalpana-1, and INSAT 4A. ISRO has entered into strategic alliance with Boeing satellites systems to build communication systems of international standards for global market.<sup>39</sup> ISRO has leased eleven 36 MHz equivalent units of C-band capacity on board INSAT-2E to INTELSAT organization.<sup>40</sup>

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<sup>39</sup> The Hindu, *ISRO, Boeing in talks to make satellites for global markets*, Published on June 22, 2004, available at <http://www.thehindubusinessline.com/2004/06/23/stories/2004062302480100.htm> (last visited Dec. 14, 2006)

<sup>40</sup> ISRO, *INSAT-2E Transponders handed over to INTELSAT*, April 27, 1999, available at [http://www.isro.gov.in/pressrelease/Apr27\\_99.htm](http://www.isro.gov.in/pressrelease/Apr27_99.htm), (last visited Dec. 22, 2006)

## B. Existing Law:

Currently, there is no codified law governing licensing of communications satellite operators in India. ISRO is the only organisation associated with satellite operations in India and Antrix Corporation, its wholly owned commercial wing, markets the space products and services. No private company, domestic or international, has so far been permitted to operate a commercial satellite in India. Though the Union Cabinet has approved implementation of communication satellite services in India and ISRO has publicised the *Procedures for SatCom Policy Implementation*,<sup>41</sup> no effective and concrete measures have been taken by the DOS so far. The SATCOM policy section of National Telecom Policy (NTP) 1999 provides for users to lease capacity from both domestic and foreign satellites, subject to consultation with DOS. Currently, DOS through ISRO or Antrix, leases the transponder capacity from foreign satellite operators and then allocates it to the domestic VSAT operators. Telecom Regulatory Authority of India (TRAI) established under TRAI Act, 1997, for regulation of Telecommunications in India and also implementation of National Telecom Policy (NTP) 1999 and the Broadband Policy, 2004 targetting a subscriber base of 20 millions by 2010<sup>42</sup>, has recommended adoption of ‘Open Sky’ policy for all satellite users and the government has not yet adopted its recommendation.<sup>43</sup>

The Department of Telecommunications is the licensing authority for new Telecom Service Providers and manages the spectrum allocation through Wireless Planning and Co-ordinating Wing

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<sup>41</sup> ISRO, *Procedures for SatCom Policy Implementation*, Jan. 12, 2006, important provisions include: (i) INSAT capacity to continue to be allocated to Department of Telecommunications, Doordarshan and All India Radio through INSAT Co-ordination Committee (ICC), which shall earmark certain INSAT capacity for non-government users, to be provided by the DOS on a commercial basis; (ii) Establishment and Operation of Indian Satellites: Indian registered companies with a foreign investment not exceeding 74% to be allowed to establish and operate satellite systems and those who have the operating licence for specific services from respective Ministries / Departments shall be made eligible to apply and their applications shall be processed for approval by an inter-Ministerial Committee chaired by DOS. The Wireless Planning and Co-ordinating Wing (WPC) of the Ministry of Communications will represent the orbit-spectrum requirements of the private Indian satellites in international fora. (iii) Use of Foreign Satellites: In the interest of early introduction/expansion of services, use of foreign satellites to be allowed in special cases until such capacity can be provided by Indian satellites and the concerned administrative departments to consult DOS before authorising operations through foreign satellites, *available at* [http://www.isro.gov.in/pressrelease/Jan12\\_2000.htm](http://www.isro.gov.in/pressrelease/Jan12_2000.htm), (last visited Dec. 14, 2006)

<sup>42</sup> Telecom Regulatory Development Authority, *Broadband Policy 2004*, *available at* <http://www.trai.gov.in/broadbandpolicy.asp> (last visited Dec. 16, 2006)

<sup>43</sup> Connie Carnabuci, *Regulatory Overview- The rules of the skies –July 2006*, *available at* <http://www.satellite-evolution.com/portal/SEA-Jul-web/regulation.pdf> (last visited Dec.18, 2006)

(WPC), based on recommendations of TRAI. The Ministry of Information and Broadcasting issues licenses for Radio stations and has proposed constitution of a separate regulator for Broadcasting. Amendment of the TRAI Act in the year 2000 paved the way for reconstitution of the TRAI and creation of the Telecom Dispute Settlement and Appellate Tribunal (TDSAT), whose duties and powers include: submit recommendations to the government on the functioning of telecom service providers; discharge certain regulatory functions; conduct periodical survey of such services provided by the service providers; fix tariffs for various telecom services; recommend to the Government on: need and timing for introduction of new service providers; provide terms and conditions of the license, to be issued in a time bound process; adjudicate on disputes between a licensor and a licensee, between two or more service providers, between service provider and group of consumers; and, hear and dispose of appeal against any direction, decision or orders under the TRAI Act, 1997.

### **Conclusion**

As on October 2006, there are 183.53 million telephone users (143.02 million wireless and 40.51 million wireline) with a teledensity of 16.6 in a population of 1.1 billion.<sup>44</sup> The private and state owned Cellular mobile service providers are catering to the needs of 74% and 26% users respectively and suddenly the communications industry in India has attracted worldwide attention due to the existing substantial business potentiality. India's endeavor to achieve efficiency and transparency in spectrum management and enabling the satellite, telecom, television broadcasting, and cable operators to become truly global players can be fulfilled by enacting space laws and creating an independent and autonomous regulatory body on lines similar to that of Federal Communication Commission (FCC) existing in US, constituted under the Communications Act of 1934. A well-defined regulatory body in India shall enable proper administration of: all non-Federal Government use of the radio spectrum (including radio and television broadcasting); all interstate telecommunications (wire, satellite and cable); and all international communications that originate or terminate in India.

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<sup>44</sup> Telecom Regulatory Authority of India, *Wireless Subscribers Maintains Growth Rate*, Press release No 123/2006, available at <http://www.trai.gov.in/trai/upload/PressReleases/404/pr13dec06no123.pdf> (last visited Dec. 18, 2006)