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# Remote sensing and dissemination of information: A legal perspective

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**Abstract**
Today, every country is evolving internationally and territorially. Such relevant information from satellite and remote sensing data, the application of the GIS, military and strategic requirements, monitoring and protection systems has become increasingly important. The world is experiencing a growing demand for geospatial information and high standards of remote sensing data, with the most need for military situations. That is why the most of the satellite-based countries set up satellite-based technologies and generates massive amounts of data under the veil covering their satellite remote sensing approach. The reasons may be that strategy is missing and that the data obtained could be kept confidential to protect the sovereignty of States. Besides promulgating computer technology, there is growing dependence on digital data in almost all areas of life such as e-government, the service sector and healthcare. In addition, there are specific management and delivery problems that torment real time access to digital repositories, the majority of which are Web-based. Another significant issue with data sources is the control of the quality, exploration, consistency, validity and accuracy concerns. In this article, the authors considerably analysed various dimensions of 'remote sensing' and 'dissemination of the information' that is obtained. Also, the management of such sensitive information is quite tough and requires great technical support. In this paper, some broad perceptions on remote sensing and data handlings & approaches of various nations have been sketched out, particularly those relating to the accessibility of data in the open area.

**Keywords:** remote sensing, data information, satellites

## 1. Introduction

*"Thanks to satellites and to science, we now know much more about Earth than we did on the first Earth Day fifty years ago."*

*- Dr. Michael Freilich,*
*Former Director of NASA's Earth Science Division*

The Indian space programmes began way back before fifty years, with an overt goal of marketing the growth and system of space technology in addition to science for the socio economic advantages of the country. To obtain the information about material objects, phenomenon or areas, with no direct physical contact, remote sensing is the device for it. The spatial information acquired through remote sensing strategies as satellite imagery offers very much beneficial information about the places, availability, use and also changing land use design of natural resources, their geomorphic, geological, and evaluation landforms temporal resolutions. Such remote sensing technology is a revolution in the space technologies and development is thrown at a rapid phase with such information available in hand for any nation [1].

It offers hidden information and such identification of the resources from earth's crush will curb the mismanagement and misuse of natural resources. It helps you to produce new ideas and more accurate information for future preparation and control of information for sustained development. Vast scope is provided by it to explore, identify as well as evaluate the natural sources of undeveloped areas and also to record the dynamic changes in bodily tasks and resulting landforms. Satellite data can be used as standard inputs because of the listing and mapping of natural development and resources. The various program areas of remote sensing info has been offered in remote sensing is cheaper and quicker, compared to standard data collection methods and re-construction of the outcomes [2]. This is because radiometric data are captured on higher density magnetic tapes that can be converted quickly into computer compatible tapes. Consequently, it helps in demarcation and identification of various units along with the characteristic features. The remote sensing, improves the detection and also tracing of discontinuous capabilities that are seemingly trivial or just puzzling when opened in a limited viewpoint. It gives info on specific terrain components and also options that come with hydro-geomorphic importance, that are not feasible to gather by naked eyes in the soil surveys. Also, multi-scale data are provided by satellite information.

## 2. International regulations for remote sensing satellite technology

The importance of international law in the surveillance of the Earth lies in the two fundamental concepts of international space law [3].

- Outer Space Treaty of 1967 stipulates that the examination and management of the Outer Space should be initiated for the advantage and interests of every nation and in compliance with the Province of the whole society.
- The Treaty provides global support and proper accountability for the interests of each State in the functioning of the States.

In 1986, the United Nations General Assembly established a

global framework for the control of information policy on satellite planet observation. The Remote Sensing Associated Principles on Earth from Space have been developed. Though they have considerable weight to the extent that State train is represented by them, the policies themselves are not lawfully obliging, is a resolution of the General Assembly [4]. There is no veto on the expressly controlled territory, known as the "Sensed" Zone, which, as a result of Article 1, enables the States to investigate different States from this non-Sovereign perspective in the Room, to prevent them from being 'sensed,' or even from having an exclusive, protected, or free right of access to information.

However, as the main raw information, along with the concocted information about the nation under its jurisdiction remains equivalent to Proceed XII of the Remote Sensing Principles, it shall be admitted to this sensitive situation on a non-discriminatory schedule and on reasonable terms and conditions of expenses. In the possession of any State engaged in remote sensing operations, the State concerned shall have access to the information analyzed available on that territory under its jurisdiction in the same terms and conditions, with specific regard to the requirements and to the interests of developing countries.

While the standard definition for non-discriminatory access may say that the sensing states are required to provide information about the sensitive states exactly the same way as the many other States which are interested in using the data, there may be a dispute that a third party's position (neither the sensing situation nor the sensible status) is in the alternative.

Thus, for example, in the event that Canada recognizes Mongolia, China does not have the "right" to such knowledge, while Mongolia may be considered contrary to the Remote Sensing Principles as a rejection of the appeal. However, on the basis of a different interpretation, some argue that while Principle XII appears to grant sensitive states a particular privilege in respect of access to research, given the fact that a distance sensing is essentially an obstacle to sovereign rights of a sensitive state, a more in-depth analysis does not provide a perquisite that only non-discriminatory access is possible [5].

**The cases of Canada and Germany are instructive for the remote sensing system:**

The Act defines raw data and distance sensing products in the Canadian Remote Sensing Space Systems Act. Whilst exemptions exist, the distribution of raw data to all users is first made available by the Minister of Foreign Affairs. In general, section 8(6) prohibits the disclosure to third parties of raw data. The prohibition is backed by the belief that raw data "can be used to expose a large satellite agreement that would allow an adversary to set up counterspective programs or trick detected by such systems." Conversely, section 8(7) usually permits the contact of 'remote sensing instruments' to third parties. The act concentrates on two things: raw data and distant sensing production since they are the poles at either end of a fine range of viable products resulting from various processing phases [6].

The Act for the "Protection on the Security of the Federal Republic of Germany Against Endangerment over the Distribution of Highly Detailed Terrestrial Satellite Data" is true for information with a valid informational value exactly where it's produced and processed. Depending on the ministries' criteria, the dispenser must check whether a transaction will jeopardize the interests of foreign policy or the national security. In the event that sensitivity is clarified, the distributor must deny or even approve the permit given by the Federal Office of Economics plus Export Control.

When remote sensing images started to be available from satellites, some countries started voicing their concerns around the legality of such observations of the territory of theirs by other nation. These apprehensions had been mainly caused on account of the reality that remote sensing capability was accessible just with the highly developed superpowers also it'd security-related and economic implications. Through the years, these issues had been raised in the interpretation and international level of different provisions of Multilateral Treaties and international Law on Space as relevant to remote sensing had been extensively debated. There are numerous countries which are showing interest to get into the remote sensing information. Especially Italy, France and Germany have become the main players in the remote sensing sector. The other nations like Argentina, Nigeria, South Korea, Malaysia etc are getting foothold in the market. Many of these nations point out compliance and agreement with UN resolutions on remote sensing of the planet from outer space which are reviewed in next section [7].

**The Right to Sense**

When the Legal Sub Committee started a major evaluation of remote sensing, a selection of users announced the beliefs of theirs that there was clearly no extant international law which governed remote sensing of the Earth from outside space, that such law must be created promptly, which any such law should prohibit realizing the territory of every other State for natural energy details without the consent of the sensed States. Additionally, it was recommended by several that the information obtained by such sensing shouldn't be disseminated to the final States or any other 3rd parties without the consent of the sensed State. Certainly, it had been briefly argued that Earth oriented remote sensing could well be illegal until international law expressly and affirmatively sanctioned it [8].

The very first issue which had to be clarified, consequently, was the existing condition of international law in this specific place, the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies expressly proclaims in Article I states that:

*"Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind ..... That Article goes on to assert that "there shall be freedom of scientific investigation in outer space ..... and that "States shall facilitate and encourage international cooperation in such investigation."*

However, an analysis of the related documents of the Legal Sub-Committee of the Outer Space Committee and the General Assembly shows absolutely no intention by those structures to preclude activities such as the remote sensing of the Earth by generally promoting the freedom of the use and exploration of outer space [9]. An important question is that recent technical advances in remote sensing have in any way implemented an exercise so radically different from all those formulated at the time of the negotiation of the 1967 Outer Space Treaty with its basics that such an exercise

could not be considered equally covered by that treaty. Both the increased sophistication of receptors as well as the wider proliferation of useful applications of the information derived were very expected evolutionary developments on earlier abilities. Consequently, neither would appear to constitute some grounds for a legal difference between modem remote sensing things and the universally recognized category of tasks in the tranquil use and exploration of outer space [10].

Current discussions within the Legal Sub Committee have evinced basically no significant continuing support of the concept that remote sensing is an exercise outside the range of the Outer Space Treaty, or perhaps for the thought that such sensing are undertaken solely with the previous consent of the sensed nations. Though one could reasonably conclude from this a basic validation that the conduct of remote sensing is uninhibited and unrestricted by present international law, one shouldn't additionally determine that such validation has quieted the anxieties that gave rise to the dialogue, specifically whether a State's command over improvement of its organic resources will be diminished by the development of remote sensing pursuits.

**3. Remote sensing and commercialization**

In the late 1980s, US policy makers tackled Landsat, a satellite system which at that time continuously generates global data for 10 years. The ambiguous debate and reasoning orbited around a limited national budget and a desire to leverage on government services to reduce direct costs to government. The expansion of a market for commercial remote sensing data satellites was projected to take at least a decade. Independent analyzes of Landsat's transport strategies to the private sector suggested that without significant government subsidies, no accurate alternative was accessible.

The Outer Space Treaty of the United Nations became the official international law enforcement body for remote satellite operations in 1984. The Treaty on the Outer Space of the United Nations assigns celestial and spatial beings, hard to use, to non-superior nations, and calls for the recognition of manmade spatial objects. Furthermore, UN principles on remote earth sensing have been developed and negotiated from the space within the international alliance. The United Nations Remote Sensing Principles were developed and adopted by the General Assembly as a resolution in 1987. Until then, the status of the treaty didn't even come, but it was acknowledged by international customary law. In the political and economic context, the UN principles advocate remote sensing systems as common goods. The data should be delivered on a non-discriminatory basis and at equal prices as clearly as possible.

Apparently, the proposal goes against the wishes of the finance, profit-making industry. Most of the economic benefit of Earth's remote sensing data is unique and timely to individual customers. In 1992, the Land Remote Sensing Policy Act improved the contact and clarified rules that NOAA had previously adopted in the 1984 Land Remote Sensing Trade Act to license commercial remote sensing systems. Non-discriminatory access was embodied in the act with a language suggesting the need to make data accessible to the countries of sensed states rather than to dormant people on the identical terms. It has helped private companies develop the customer base of their preference, while at the same time acknowledging foreign nations' interests in ensuring non-discriminatory allocation. As a result, in January 1993, the first commercial Remote Sensing license was allocated, followed by others quickly. DOC granted seventy licenses to operate commercial remote sensing satellites between 1993 and 2001.

The collection, storage and distribution of data on a fair and non-discriminatory basis is in the national interest and in the general public's interest. The incentive for privatization nevertheless moves decision-makers away from this logic of public interest similar to commercial sector viability. The USA has developed a set of approaches, often contradictory and implemented by different departments to keep up with developments in technology. It is about time that our policies change and differentiate between a large coverage of remote sensing systems and their individual markets. This taxonomy is applicable to the promotion of commercial and public sector interests within remote sensing policies.

**4. Sovereignty And Remote Sensing of Data**

In international law state sovereignty means, above many things, that individual States are principally free to act at the discretion of theirs, unless international law allows for restrictions. With respect to info, meaning that provided no restrictions are required by international law every State may freely get rid of that info that is governed by its jurisdiction; energy limited territorially and regarding the individuals subject to it. This means that inside the boundaries of the power of it's, a land costs nothing in its treatment of info, which it might keep it to itself and offer it to anyone who's ready to have it. This will furthermore signify that a nation can't dispose of info not falling within the jurisdiction of it's, which this info could be governed by the nation under the jurisdiction of that it falls. Hence the question arises whether you will find provisions in global law imposing a certain type of conduct on nations, particularly with respect to info on natural resources.

Up to today, general international law doesn't have some provisions on info on natural resources. We've also not been educated on virtually any agreements and on any usage possibly according to opinion juris to the outcome that a nation, the materials of which make up the topic of any item of info, has supreme energy with regard to the management of all such info. Consequently, we've to question much more generally for provisions that is relevant for data collection as well as dissemination; moreover, we've to look at whether info on natural resources is specifically governed by the provisions of international law on natural resources, and whether those provisions affect them mutatis mutandis.

**The Outer Space Treaty**

Article I, paragraph two of the 1967 Treaty on Outer Space allows the all States are free wear outside space under global law. In the preamble, the parties to the Treaty issue out it are appealing to continue the usage of outer space for peaceful uses. Based on Article III, the States get their activities "In the curiosity of keeping global security and peace and also encouraging global cooperation and understanding". Article XI, which is necessary for any discussion of our issue, reads: "The States Parties to the Treaty performing outer space activities, such as the Moon and other celestial bodies, agree to recognize the Secretary-General of the United Nations as well as the general public and even the global medical community, in order to encourage mutual assistance in the field of quiet research

and the use of outer space. The above mentioned provisions therefore not just permit information collection, they also contact for dissemination of the info received. They use on the tasks of States Parties to the Treaty in the exploration as well as utilization of outer space".

**The Sensing State's Sovereignty versus the sensed state's sovereignty**

With regard to the issue we're currently talking about, the wording of these laws is pretty sharp. The proposals produced by the Latin American places and also by France and also the Soviet Union start out of the assumption that typically just the sensed State may get rid of the info concerning it. Based on the U.S. proposition, the realizing State is; however, principally free to use all gained info. Thus the laws proposed by the Latin American places and also by France and the Soviet Union on one hand and the U.S. laws on the other hand, are virtually diametrically opposed in their method of solving the issue of a State's appropriate with regard to remote sensing information.

In an effort to explain this particular opposition at least as much as its legitimate factors are concerned reference is put forth, first of many, to several statements sent during the controversy on remote sensing in the 14th period of the Legal Subcommittee. Besides many political, technical and economic reasons for and also against free data collection and also dissemination, the authorized aspects had been just described in a strikingly little measure. The remarks quoted don't really explain the almost totally opposing conceptions. It should be emphasized in this relationship that the independence of nations to discard the own natural resources of theirs isn't under discussion; this independence is undisputed. Furthermore, the supporters of the restricted conceptions aren't much about avoiding achievable abuses of gratis data collection as well as dissemination.

**5. Dissemination of data in India: Legal Perspective**

ISRO features an attractive Indian Remote Sensing application after 1988 with a gamut of Indian Remote Sensing Missions (IRS) monitoring Earth with Optical, microwave oven and hyper spectral instruments flown on board to supply essential information in different spatial, temporal and spectral resolutions to cater to various user needs in the nation as well as for global use. NRSC is the nodal centre for web hosting Satellite Data Products from over thirteen Satellites are primarily tasked to coat Surroundings and India in a programmatic manner or perhaps on demand as needed by consumer as per mission ability. NRSC also acquires as well as archives statistics of worldwide regions for disasters, specific studies and calibrations. Weather and climate models for a global scope are provided nearly in real time knowledge applications from IRS environmental sensors. For land use acreage cover tracking, research experiments, weather applications and ocean studies, the NRSC data archive will be used in great detail. Public agencies, businesses and even academics are really benefiting from the useful extensive product database as well as technology to achieve their respective final objectives. Earth observations from Satellite has proved an important tool in the monitoring , control and management of natural resources, as well as in a national, local and regional green evaluation.

The Indian Remote Sensing Data Policy (RSDP) contains "modalities to manage, to acquire or possibly to disseminate remote sensing information intended for development." It is necessary that the Department of Space (DOS) Nodal Office be approved and licensed to manage the RSD from India as well. The policy further states that "for the acquisition or division of IRS information for use in countries other than India, the Government of India, through the nodal office, will issue licenses to entities or agencies of those countries that are enthusiastic about the acquisition/distribution of IRS information in compliance with relevant procedures."

The RSDP is envisaged as an initiative to establish clear designs for the division of satellite information, enabling even high-quality information to be written that is available to the owners without restriction. Hence, Indian customers are not revoked permission to access this beneficial data-which has become a cornerstone of the nation's natural energy management tasks-in regulating the mode of information dissemination. The Indian Space Research Organization (ISRO)/ DOS national remote sensing center (NRSC) enjoys the power to obtain and distribute any satellite information in India, whether from international or Indian satellites, under this particular policy. For the acquisition and dissemination of remote sensing satellite data by Indian and international satellites to civilian users in India, the government has introduced an integrated remote sensing data policy (RSDP). As a gradual refinement in the analysis of the legal implications of remote sensing has evolved, two new types of approaches have been suggested in order to accommodate the strong desire of most States to encourage the development of remote sensing, while guarding against the disadvantages of a State knowing less about its own resources than does some foreign entity. The first of these suggestions is that data with a resolution higher than a specified number of meters should not be disseminated without the sensed country's agreement, while all lower resolution data would be unrestricted." The underlying, if unproven, theory is that only data of high resolution would have relevance to natural resources exploitation.

**6. Conclusion & Suggestions**

Our modernized world is now focused on satellite information which leads to broadcasting, navigational and earth monitoring services. Therefore, space is not only a technical advantage, but today it is also a strategic matter that goes beyond all international boundaries. The horizontal abundance of high-resolution images presents an endless potential danger, and many high-resolution satellite photographs rely on the circumstances of the application. Generally, the risk will be calculated basing on the allocation of remote sensing resources across the political spectrum, how extremists use the sources and how the neighbour states observe the routine images. Most countries ban multiple copies of data for commercial distribution in order to avoid misconduct of data for non-peaceful ideas. Yet such stringent requirements have led to applications such as Google Earth that provide users worldwide with free high-resolution images. Therefore, the need for a globally organized strategy to which the free threat to high-resolution images is highlighted in this report. It will henceforth be in the general public interest of all nations to devise a shared foreign policy structure to help streamline data collection and dissemination processes around the world, without jeopardizing or encompassing national security.

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