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Liberalization of Geospatial data: A Gateway to Innovation for Indigenous Businesses

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The Government of India has recognized the crucial role played by Geospatial Data in the digital economy as well as traditional sectors and has also significantly liberalized the erstwhile licensing regime by announcing the liberalisation rules on the acquisition and production of geospatial and mapping data. The data collected by private parties are intellectual assets and will likely have implications under the Personal Data Protection Bill as the information gathered will be classified as 'sensitive personal data. The collection of geospatial data intersects with the issues of protection of personal data, security, and intellectual property concerns. The following article attempts at understanding these interplays with geospatial data.

Keywords: *geospatial data, privacy, data protection, intellectual property.*

INTRODUCTION

In an effort to stimulate innovation, the Government of India announced the liberalisation rules on the acquisition and production of geospatial and mapping data on February 15, 2021, by removing the existing multi-layered licensing procedures applicable to private entities. The

Department of Science and Technology ("DST") has established a set of guidelines[1] in this regard, allowing private Indian enterprises and individuals to conduct mapping and distribute geospatial data for a variety of purposes, including transportation and e-commerce, without seeking government approval. The measure of liberalizing geospatial data is deemed to be a step towards the goal of an innovative Atmanirbhar Bharat and further adding towards the vision of a $5 trillion economy[2].

WHAT IS GEOSPATIAL DATA?

A simple answer would be *exceptional mapping*. To be more specific, it combines map-mapping with databases; you can put down a map of your state with all the cities, but you can also add information to that map such as population density, median household income, number of businesses per square mile, and really any piece of data anyone wants to add to the map. Geospatial data refers to information about the location of natural or man-made features, whether above or below the ground, boundaries, points of interest, natural phenomena, mobility data, weather patterns, statistical data, and so on. Ground-based survey techniques, photogrammetry using manned/unmanned aerial vehicles, terrestrial vehicle-mounted Mobile Mapping System, LIDAR, RADAR Interferometry, satellite-based remote sensing, mobile phone sensors, and other techniques have all made significant advances in technology over the years.[3] Geographical Information System (GIS) tools can assist in making sense of information if we can plot any dataset on a map as a representation of space. By viewing data with a geographic component, we see it through a different lens. Geospatial data tackles the problem of location and decision making because geographic problems require spatial thinking[4]. Decisions such as: Which is the quickest route for an ambulance to help the one in

[1] 'Guidelines For Acquiring And Producing Geospatial Data And Geospatial Data Services Including Maps' (*Department of Science & Technology*, 15 February 2021) <https://dst.gov.in/news/guidelines-acquiring-and-producing-geospatial-data-and-geo-spatial-data-services-including-maps> accessed 16 February 2022

[2] *Ibid*

[3] 'Geospatial Infrastructure critical to drive economy to USD 5 Trillion' (*The Print*, 30 July 2021) <https://theprint.in/ani-press-releases/geospatial-infrastructure-critical-to-drive-economy-to-usd-5-trillion/706374/> accessed 16 February 2022

[4] 'What Is Geodata? A Guide To Geospatial Data - GIS Geography' (*GIS Geography*, 27 January 2022) <https://gisgeography.com/what-is-geodata-geospatial-

distress? Where certain types of cancer are most likely to occur? And what are the variables that correlate with increased cancer rates? Depending on restrictions and the environmental conditions, where can logging occur? Which area would be the most profitable to set up a retail grocery store? What is the "walkability" of your neighbourhood?

A few common themes of geospatial data have been:[5]

1. Cultural:

- Administrative (Boundaries, cities, and planning)
- Socioeconomic data (Demographics, economy, and crime)
- Transportation (Roads, railways, and airport)

2. Physical:

- Environmental data (Agriculture, soils, and climate)
- Hydrography data (Oceans, lakes, and rivers)
- Elevation data (Terrain and relief)

Collection of geospatial data in India: Continuing from the colonial era, the political facet of mapping emerged significantly in the public discourse from the 1990s onwards as digital technologies amplified the ability of non-governmental actors to collect, generate, and share geospatial data, in the form of maps or otherwise. The government's ability to have an authoritative and universal voice when it comes to the geospatial depiction of the nation and its many components was structurally undercut by this 'democratisation' of the ability to map and share private/user-generated maps. Mapping in India has been governed by policies addressing both terrestrial mapping and remote sensing, similar to other upsurges in the digitised world, which are often followed by the introduction of legal provisions in order to keep access to and use of digital data under mechanisms of monitoring and permission.

data/#:~:text=Geodata%20is%20location%20information%20stored,geographic%20problems%20require%20spatial%20thinking> accessed 16 February 2022

[5] *Ibid*

Naturally, national security concerns have driven many of these policies.[6]

The Introduction of National Map Policy, 2005: To address security issues, a dual-classification system was established among the maps, with Defence Series Maps ("DSM") and Open Series Maps ("OSM"). While the former consists of topographical maps that primarily serve the country's defence and security needs, the latter promotes growth. While the DSMs are totally classified, the policy also contains stringent requirements governing the use and dissemination of OSMs. A one-time clearance from the Ministry of Defence was necessary for the unrestricted usage and distribution of OSMs.

Disputes in the realm of geospatial data in India: Numerous situations have occurred since the adoption of restrictive mapping policies, in which agencies have been faced with legal action for breaking such policies. These instances were brought to the public's attention in 1998 when the selling of Eicher's Delhi Guide Maps CD-Roms was forbidden.[7]Additionally, we've seen two significant court battles, both involving SOI and Google on the other. One was Google's Mapathon competition facing legal challenges. Another notable legal controversy in the realm of geospatial mapping has been Google's incorrect portrayal of India's international borders. In 2009, Google maps for India caused a stir when it identified sections of Arunachal Pradesh, including its capital Itanagar and Tawang, as being in China[8]. It was quickly followed by a Google apology and an immediate fix for Indian users. Google, on the other hand, utilises a distinct version for China and the rest of the globe, resulting in a discrepancy in the boundary portrayal.[9]

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[6] Adya Garg, 'Legal Challenges To Mapping In India #1 - Laws, Policies, And Cases' (*The Centre for Internet & Society*, 11 May 2016) <https://cis-india.org/openness/legal-challenges-to-mapping-in-india-1-laws-policies-cases> accessed 16 February 2022

[7] R Ramachandran, 'Public Access to Indian Geographical Data,' (2000) 79 (4) Current Science Association, 450

[8] 'Arunachal fumes over wrong map on iPhone4' (*Deccan Herald*, 04 October, 2010) <https://www.deccanherald.com/content/101784/arunachal-fumes-over-wrong-map.html> accessed 16 February 2022

[9] 'How Google represents disputed borders between countries' (*The Economist*, 04 September, 2014) <https://www.economist.com/the-economist-explains/2014/09/03/how-google-represents-disputed-borders-between-countries> accessed 16 February 2022

THE PROPOSAL OF GEOSPATIAL INFORMATION REGULATION BILL, 2016

The Geospatial Information Regulation Bill, 2016[10] ("Bill") was proposed, however, never passed. A restrictive definition of 'Geospatial Information'[11]: The Bill defined 'geospatial information' to mean geospatial imagery or data acquired through space or aerial platforms such as satellites, aircraft, balloons, or graphical or digital data depicting natural or man-made physical features, phenomena, or boundaries of the earth or any related information including surveys, charts, and maps.

Restrictions on Acquisition and Dissemination of Geospatial Information[12]: The 2016 Bill proposed the establishment of a Security Vetting Authority ("SVA") to vet the security of geospatial information of India. The SVA would have to approve the acquisition of geospatial information first. Persons who had already collected geospatial data would be obliged to seek approval from the SVA and get a licence.

Prohibition of dissemination of geospatial information[13]: Without the SVA's general or particular approval, the dissemination, publication, distribution, and visualisation of geographic data via internet platforms or online services would be forbidden. This prohibition would also apply to the broadcast, publication, or distribution of India's geospatial data beyond the country.

Penalties Imposed Under the Bill[14]: The Bill imposed penalties for non-compliance with its provisions, which included fines ranging from INR 1,00,00,000 (INR 1 crore) to INR 100,00,00,000 (INR 100 crore) as well as imprisonment, depending on the nature of the offence. This effectively prevented private companies from entering the market, and it had an impact on ride-hailing apps and other platforms that offered geo-location-based services. This

[10] Geospatial Information Regulation Bill, 2016
[11] Aadya Misra & Mathew Chacko, 'Key Changes Announced In The Regulation Of Geospatial Data & Data Services - Government, Public Sector - India' (*Mondaq*, 10 November 2021) <https://www.mondaq.com/india/fiscal-monetary-policy/1124090/key-changes-announced-in-the-regulation-of-geospatial-data-data-services> accessed 16 February 2022
[12] *Ibid*
[13] *Ibid*
[14] *Ibid*

Bill[15]threatened to render *all unlicensed maps* in India, illegal. While were are no mapping 'laws' in place in India then, a set of Publication Instructions[16] released by the Survey of India in 2016 enlist map publication-related offences punishable under laws including the Copyright Act, 1957[17], Official Secrets Act, 1923[18], and notifications passed under Customs Act, 1962[19]. As guidelines do not have the force of law, it would have been better if a legislative enactment were to lay down the framework of India's mapping policy.

SPICYIP

Geospatial Data Guidelines, 2021[20]: The Guidelines aim to give geospatial data laws a much-needed breakthrough by requiring the SOI and other government agencies that produce or own maps and geospatial data to take immediate steps to simplify procedures, revise/abolish various forms/licenses, and use modern techniques like cloud, open APIs, and others to make their data accessible online in a usable format.

Open access to Indian entities: Private enterprises, organisations, and people are now allowed to gather, generate, compile, disseminate, store, publish, update, and/or digitise Geospatial Data and Maps and process them without the need for any security approvals or licences under the new standards[21]. Ground-truthing, or the acquisition of knowledge by direct observation, is also permitted. This would allow businesses to collect data using their own digital technology rather than depending on government databases. Seeing as mapping and geospatial data is an indispensable component of various industries – infrastructure, transportation, smart power, logistics, e-commerce, as well as agriculture, environmental protection, and increasingly, healthcare services in the COVID era – this radical change will provide a huge boost to the private sector. This data is a valuable intellectual asset not only for businesses looking to use their mapping technology to create geospatial solutions to support

[15] Geospatial Information Regulation Bill, 2016
[16] 'Instructions For Publication Of Maps By Govt. And Private Publishers' (*Survey of India*, 2016) <https://surveyofindia.gov.in/pages/publication-of-maps-by-publishers> accessed 14 February 2022
[17] Copyright Act, 1957
[18] Official Secrets Act, 1923
[19] Customs Act, 1962
[20] Guidelines For Acquiring And Producing Geospatial Data And Geospatial Data Services Including Maps (n 1)
[21] *Ibid*

their operations but also for open-source mapping projects like Open Street Map and Data Meet, which are part of the greater Open Data movement.

The Guidelines have completely deregulated the sector. Companies no longer require prior approval, security clearances, or licences from any authority for the collection, generation, preparation, dissemination, storage, publication, updating, or digitisation of geospatial data and map data within Indian territory. Private entities are now free to process such data and build applications and solutions in relation to such data. Self-certification mechanisms should be used to demonstrate adherence to the Guidelines.[22] However, the DST will identify and publish a negative list of sensitive attributes that would require regulation prior to acquisition or usage. This will include attributes that cannot be marked on any map.

Exclusion of foreign entities: The new rules also allow foreign companies to use such data by acquiring them from Indian companies but only for the purpose of serving their customers in India. They will not be allowed to reuse or resell such map data.

The negative list[23]: The Guidelines[24] call for the DST to notify a negative list of sensitive qualities ("Negative List") that must be regulated before anybody can obtain and/or utilise sensitive data. The Negative List will include qualities that will not be marked on any map, suggesting that no person or legal entity will associate or identify any location on a map with a prohibited attribute. Different threshold values, as well as regulations, can be set for the properties in the Negative List as needed. It is important to highlight that a Negative List like this would have no negative impact on the ease of doing business because it would be limited to only the most sensitive traits, and the government would only impose what is absolutely necessary. However, a few impediments have been placed in the way. These benefits are only available to Indians, and the government will shortly disclose a negative list of sensitive characteristics for which restrictions will remain in place.

[22] Aadya Misra & Mathew Chacko (n 11)
[23] Guidelines For Acquiring And Producing Geospatial Data And Geospatial Data Services Including Maps (n 1)
[24] *Ibid*

Thresholds:[25]

- On-site spatial accuracy: one meter for horizontal or planimetry and three meters for vertical or elevation.
- Gravity anomaly: 1 milli-gal.
- The vertical accuracy of bathymetric data in territorial waters: 10 meters for up to 500 meters from the shoreline and 100 meters beyond that.

Accessible data: Except for classified geospatial data acquired by security/law enforcement authorities, all geospatial data created with public monies would be made freely available to all Indian entities for scientific, economic, and developmental reasons. Government agencies will have free access to this information. It should be noted, however, that the Guidelines allow for charges to be imposed on others based on "fair and transparent" pricing.

TANGIBLE AND ECONOMIC BENEFITS OF LIBERALIZING THE GEOSPATIAL DATA

A kickstart for innovation: Startups and mapping innovators are expected to self-certify, use sound judgement, and demonstrate adherence to criteria. Furthermore, strategies to encourage the development of Indian geospatial innovations that make use of cutting-edge mapping technology are advocated.

Boost to Digital India:[26] The government hopes that the deregulation of mapping will boost Digital India. The reforms will allow Indian companies to develop apps like Google Earth and Google Maps. Existing Indian navigation companies like MapMyIndia will be able to make changes in their existing database without any approvals from the government.

Precise geospatial data for state initiatives: Locally available and relevant maps and geospatial data will also aid in resource planning and management, as well as better, serve the requirements of the Indian community, according to the guidelines. The rules suggest that maps and precise geospatial data are critical for national infrastructure initiatives such as river

[25] *Ibid*

[26] Sravasti Dasgupta, 'Why Modi govt is liberalising mapping policies & what free access to geospatial data means' (*The Print*, 18 February 2021) <https://theprint.in/theprint-essential/why-modi-govt-is-liberalising-mapping-policies-what-free-access-to-geospatial-data-means/606574/> accessed 16 February 2022

linkages, the construction of industrial corridors, and the deployment of smart power systems. Read the recommendations to learn how emerging exciting projects like Digital India, Smart Cities, eCommerce, autonomous drones, delivery, logistics, and urban mobility necessitate a leap forward in mapping with higher depth, resolution, and precision.

Development in the agrarian sector:[27] Prime Minister Narendra Modi has stated that India's farmers will also be benefited by leveraging the potential of geospatial & remote sensing data and democratizing data will enable the rise of new technologies & platforms that will drive efficiencies in agriculture and allied sectors. Certain possible benefits may be Vegetation management, where through user defined functions (UDFs), geospatial analytics enables those involved in vegetation management to assess water and moisture levels[28].

Fair competition alongside foreign companies: Due to the harshly regulated mapping, e-commerce enterprises have to rely on Google Maps and Google Earth instead of indigenous apps. Previously, it had been an unjust situation. Satellite imagery was displayed on Google Earth, but Indian organisations were not permitted. Furthermore, they had to request authorization from the government for any minor modification, which could result in a days-long wait.

Advance warnings:[29] Through data anomalies, geospatial data can give organizations a heads-up regarding incoming changes set to affect their enterprise.

Deeper understanding:[30] Using geospatial data can provide organizations with evidence of why and how some analytics solutions work well while others don't. Governments can take insights about health, disease, and weather and use them to better advise the public when a natural disaster strikes or an emergency health event occurs.

Heightened efficiency:[31]Organizations can use the numerical precision provided by geospatial

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[27] *Ibid*
[28] 'What Is Geospatial Data?' (*IBM*) <https://www.ibm.com/topics/geospatial-data> accessed 16 February 2022
[29] *Ibid*
[30] *Ibid*
[31] *Ibid*

data to improve the overall efficiency of company operations. Electric utility providers can use data to help predict possible service disruptions and optimize maintenance and crew schedules.

Insurers can do a more accurate job of projecting risks and warning policyholders about potential issues they may soon be facing.

Disaster tracking:[32]

- User defined functions are also useful at helping meteorologists work with incoming data to chart the path of tornadoes that could be moving through an area.
- Having relevant data — such as satellite imagery, census data, and wind forecasts — in one platform lets incident commanders chart wildfire growth and movement.
- Mapping during the covid-19 outbreak.[33]

According to recent scientific research, established transmission pathways of SARS-CoV-2 are said to be both, close contact with patients with COVID-19 and the absorption of droplets through the airways (Tan and Wang, 2020). Therefore, the location of a virus carrier is particularly relevant as its proximity to other people is the main factor of infection.

Security concerns: Security concerns have been expressed despite the new guidelines stating that there will be a bad list that will require government oversight. The armed forces had opposed geospatial mapping of borders and coastlines by private companies. "The new policy is forward looking and a change for the better, however, there are certain concerns along the borders. There needs to be checks and balances so that borders are not wrongly mapped and publicised by private entities," said Lt General Vinod Bhatia (retd), former director general of military operations. "Borders are sensitive and so are certain coastlines. During the course of the last year, we have seen how every satellite imagery expert had demarcated the LAC according to their own perception. And that remains a concern. So some checks and balances

[32] *Ibid*
[33] *Ibid*

and mechanisms to ensure borders are not wrongly publicised is necessary." as quoted by the print[34]

Data protection: Notably, the Personal Data Protection Bill 2019[35], which is still in the works, is expected to have ramifications for geolocation data acquired from persons. The PDP Bill establishes a privacy-based framework for businesses that collect and utilise 'personal data,' or information that may be used to identify the individual to whom it belongs. Tracking the time and position parameters of mobile phone users generates a vast amount of location data, which would almost certainly constitute personal data. Before this can be done, the data principal's consent must be obtained, and the data must be deleted if consent is later revoked. Furthermore, location data is frequently used to uncover personal information such as a person's religious beliefs, political affiliation, or race. This is classified as "sensitive personal data" under the PDP Bill, which also includes additional accountability procedures for data transfers outside of India.

Apart from individual privacy, the aggregation of location data might reveal significant trends that may have security consequences. In an example as to how this may have security repercussions, in 2018, a fitness app released a worldwide heat map that revealed the location of US military officers and, as a result, covert military sites.[36] Businesses will start to seek IP protection for it in order to ensure that their data gives them a true competitive advantage over competitors. IP, on the other hand, is a private right. When IP-protected geographic data is brought under the PDP regime, there may be conflicts. Can a data principal, for example, request that information be removed if it is now the (intellectual) property of the corporation that gathered it? Intellectual property and data protection rules may have a substantial impact on geospatial intelligence.

Intellectual Property: For copyright purposes, mapping involves the maps themselves, and the geographical databases needed to make them. Under Section 2(c) of the Copyright Act,

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[34] Geospatial Infrastructure critical to drive economy to USD 5 Trillion (n 3)
[35] Personal Data Protection Bill, 2019
[36] Adyasha Samal, 'Of Geospatial Data Deregulation, Intellectual Property And Personal Data Protection' (*Spicy IP*, 05 March 2022) <https://spicyip.com/2021/03/of-geospatial-data-deregulation-intellectual-property-and-personal-data-protection.html> accessed 16 February 2022

1957[37], maps are expressly recognised as copyrightable. Because the accuracy of maps determines their value - a characteristic that reduces copyrightability — cartographers have long used a technique known as "map trapping" to prove copyright infringement without sacrificing accuracy. In order to detect copycat maps, they designate their maps with spots that do not exist in reality. These locations could be streets dubbed 'trap streets,' or entire cities dubbed 'paper towns.'[38] In order to enjoy copyright protection, entities must show originality in their geospatial mapping. Post the Supreme Court's decision in the 'exercise of skill, labour, and judgment', is no longer accepted as a threshold of originality. Compilations and databases need to show a 'modicum of protection. Thus, only a unique selection and arrangement of data is protected and not data in its raw form. The 'use of skill, labour, and judgement' is no longer acknowledged as a threshold of originality following the Supreme Court's decision in Eastern Book Company & Ors vs DB Modak & Anr[39]. For protection, compilations and databases must demonstrate a "modicum of creativity". As a result, only a unique selection and arrangement of data, rather than data in its raw form, is secured.

Geospatial data is more likely to be referred to as raw data due to its factual character.[40] Furthermore, even if a dataset is judged to be original in its entirety, other parties are not prohibited from copying its components or non-original subsets, regardless of the expertise and labour used to obtain it or the competitive advantage it provides. Geospatial data could be better secured under a one-of-a-kind database protection law[41], similar to the European Union's Directive 96/6/EC, which extends protection to non-original databases[42]. The little protection provided by copyright for geographical data is also susceptible to fair dealing exceptions[43], which have been construed differently throughout India. Some courts favour a four-factor test[44] that is open-ended (fair use doctrine), while others emphasise strict

[37] Copyright Act, 1957
[38] Adyasha Samal (n 36)
[39] *Eastern Book Company & Ors. v D.B. Modak & Anr* (2017)
[40] Adyasha Samal (n 36)
[41] *Ibid*
[42] Pankhuri Agarwal, 'Does Sui Generis Protection Of Unoriginal Databases Reconcile Access And Incentive To Actualise Public Good?' (*Spicy IP*, 13 January 2019) <https://spicyip.com/2019/01/does-sui-generis-protection-of-unoriginal-databases-reconcile-access-and-incentive-to-actualise-public-good.html> accessed 16 February 2022
[43] Copyright Act, 1957, s 52
[44] *India TV Independent News Service v Yashraj Films Pvt. Ltd.* (2012)

adherence[45] to statutory exceptions. It's impossible to foresee how courts will apply the copyright exceptions to geospatial data, which can be utilised in a variety of businesses ranging from real-world simulations in videogames to aviation training. Furthermore, courts have denied protection[46] to collection datasets customer information.

Data Storage concerns: Many difficulties arise when dealing with huge geographic data sets. As a result, many businesses find it difficult to fully utilise geospatial data[47]. For starters, there's the sheer amount of geospatial data available. Daily, for example, 100 TB of weather-related data is generated, according to estimates. Most businesses will face significant storage and access issues as a result of this alone. Geospatial data is also stored in a variety of files, making it difficult to locate the files that contain the information you need to solve your problem. Furthermore, geographical data is saved in a variety of formats and calibrated according to various standards. Any attempt to compare, aggregate, or map data must first undergo extensive data scrubbing and reformatting.

CONCLUSION

The simplicity with which security clearances and licences may be obtained will expand the commercial applications of such data, and more enterprises will be able to freely develop, aggregate, administer, or produce geospatial data, reviving the entire industry with the introduction of these Guidelines. Geospatial data collecting, on the other hand, intersects with issues of privacy, security, and intellectual property. There is a need for further clarification because these rules are not yet codified as a statute.

[45] *The Chancellor, Masters v Rameshwari Photocopy Services* (2016)
[46] *American Express Bank Ltd. v Ms. Priya Puri* (2006) IIILLJ 540 Del
[47] What Is Geospatial Data? (n 28)