सत्यमेव जयते

भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
विज्ञान और प्रौद्योगिकी विभाग
टेक्नोलॉजी भवन, नया महरौली मार्ग
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GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
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No. SM/25/04/2021

dated the 28th November, 2022

Office Memorandum

Sub.: Clarifications/Compliance points in pursuance to Geospatial Guidelines dated 15.02.2021 – reg.

The undersigned is directed to say that under the provisions of Geospatial Guidelines dated 15.02.2021, a Tech Sub-committee was constituted to advise on doubts related to technological matters, address any gaps related to the implementation of the Guidelines and suggest technological solutions for easy compliance of the Guidelines.

2. The sub-committee has given various recommendations which have been accepted by the Geospatial Data Promotion and development Committee (GDPDC) with some modifications. The competent authority in DST has approved to implement the recommendations of the Sub-committee which has been compiled and enclosed at Annexure-A for compliance by all concerned.

3. You are, therefore, requested to disseminate the enclosed compliance note to the Geospatial companies and other stakeholders for compliance and further guidance.

Encl.: Annexure-A

28/11/2022

(Unni Krishnan T)
Under Secretary to the Govt. of India
Tel.: 011-26590422

To

1. All the Secretaries of Ministries/Departments/Chief Secretaries of the State Governments/ administrators of the UTs/ data producing Agencies.

Annexure-A

Clarifications/instructions for Compliance by all concerned in pursuance of Geospatial Guidelines issued vide DST OM No. SM/25/02/2020 (part) dated 15.02.2021

Definition of terms:

i. Derived Products: All such geospatial data products that have been generated or processed based on the original raw data, either from a single or multiple thematic data sets and are coarser than the thresholds and are free from any of the negative attributes.

ii. Indian Entity: Any Indian citizen, Government entities, Societies registered under applicable statutes, statutory bodies, Autonomous Institutions of the Government, or any Indian company or Indian LLP owned by resident Indian citizens or any Indian company or Indian LLP controlled by resident Indian citizens (as defined in the Explanation to Rule 23 of the Foreign Exchange Management (Non-Debt Instrument) Rules, 2019). In addition, since geospatial products are software products and deemed of, implicitly, MeitY regulations apply. So, all private or commercial Indian entities must meet the definition of an Indian Software Product company as per the Software Product Policy and among other regulations have 51% or more Indian ownership.

iii. Negative Attributes: The negative list of attributes includes attributes that shall not be marked on any Map i.e., no person or legal entity shall identify or associate any location on a Map with a prohibited attribute.

Data exchange by Indian Entities with Foreign Entities.

i. Under no circumstance will mapping data or its derived products of quality better than the defined threshold quality will be allowed to be transmitted to or reach the servers of any non-Indian entity in India or abroad.

ii. However, these maps can be served to the users of international entities in the following manner subject to above:

I. Client software provided by international entities to their Indian users (E.g., consumers in India) can query the Indian mapping entity, which will serve only the derived products that satisfy both the spatial data thresholds and not contain any negative attribute as follows:

   a. Image tiles in an image format spanning: Maps, Earth, Traffic, etc.
   b. 2D and 3D derived products can be made available either as a derived product or as a web service.
   c. Search results for Point of Interest data within a specified limit for places, addresses and generally local search.
   d. Directions (driving, transit, walk, bike) from a point to one or more points including real-time updates to respond to traffic, other conditions.

e. Attributes (of significance) that may refer to the data below the threshold has to be curated in a way so as to represent only the major attribute that satisfies the spatial data threshold criteria.
f. Insofar as the user Client receives data better than threshold, the foreign entities software or firmware cannot create any logs or other imprints of the data that reach the international entity in any way for any purpose.

II. International customers of the Indian mapping entity can also be sent intent fulfilment data subject to the derived data being degraded to being coarser and less accurate than the threshold levels. Fulfilment data can include any or all of the above a) to e). The degradation must be carefully randomized with biases such that it is impossible to reconstruct higher precision and accuracy information even with a large dataset. A legally binding contract under Indian law must be signed between the Indian entity and customer with an undertaking that the international customer will only use the map data for the purposes outlined in the contract, be subject to the geospatial policies, guidelines and under no circumstance, accidentally or otherwise will reverse engineer and either try to assemble partial or entire data sets or generate high resolution or accuracy data than what has been given or permitted.

Data Generation and Storage by Foreign Entities

i. All foreign entities including their group and/or sister organisations, that do business and operate in India will be governed by these guidelines.

ii. Foreign entities are allowed to generate and serve maps and imagery layers as they have been doing so far using a combination of satellite imagery, internal mapping tools and user input as long as any such entity will not capture geospatial data nor create/ generate maps and other geospatial products at a finer scale or resolution or accuracy as defined by the threshold in any jurisdiction; in or outside of India and use it to serve users in India or outside.

iii. All such data generated, must ensure that both satellite imagery and user input is degraded without possibility of reverse engineering to be better than the defined "Threshold". However, this liberty is given only to foreign entities from general nations. Entities that are a Company of Concern or owned by residents or citizens from countries of concern cannot engage in Mapping or distribution or have access to any geospatial data as defined from Indian mapping entities.

iv. Storage of Geospatial derived products that are coarser than the defined threshold is allowed on the cloud, either in India or elsewhere. When such products are being served to users in India, at least one serving copy must be in an India located cloud.

Accuracy Threshold and Resolution Threshold*

i. For observed data and derived/derivable data/products the positional accuracy threshold at one RMSE:

- 1.0 m for horizontal position
- 3.0 m for vertical position

ii. Gravity anomaly threshold at one RMSE -- 1 milli-gal

***** To understand the various terms such as accuracy definition, derived data, product accuracy etc., Appendix –A is enclosed.

Additional points for explaining the Threshold values

1. Foreign entities cannot capture data better than the thresholds given above.
2. Foreign entities cannot provide services in India with service accuracy better than the thresholds, irrespective of the mode of data capture and data preparation.
3. All data captured and services provided in India by foreign entities must be referred to the Indian Reference System as defined by the Survey of India irrespective of the accuracy of data.
4. The above thresholds should be satisfied everywhere in the area of coverage. This means the average of the accuracies of multiple observations over an area should also satisfy the above thresholds.
5. Foreign entities will not have access to the corrections from the CORS network.
6. Foreign entities can license data finer than the thresholds from Indian entities through APIs only, without these passing through or being processed by their server for serving the customers in India. It is clarified that no granular data finer than the threshold value may be acquired or hosted or processed or resold or reused or redistributed by foreign entities. Therefore, foreign entities must ensure that any data they get from Indian entities must be devoid of any granular data nor should have been made using equipment capable of collecting finer accuracy data.
7. Foreign entities can work with the data of accuracy better than the thresholds from within the premises of their Indian collaborators, which are physically located in Indian territory. Indian entities are required to inform this in their self-certification.

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Appendix-A

Details of terms employed in Implementation Document

Basics of accuracy definition

Data accuracy can be defined at two stages:

Observed data accuracy

The primary observations are made in the field at a certain accuracy, which is decided by the entity making these observations.

Derived data /product accuracy

The primary observations made are converted through a process of computation into a derived product. Such derived product has its own accuracy which depends on the accuracies of basic observations, other ancillary data, and the process employed in computing the derived product.

There are two types of accuracies of the primary observation or derived product:

Computation of RMSE

The following procedure is used for the computation of RMSE for an observation X,

$RMSE_X = \sqrt{\frac{\sum_{i=1}^{n}(X_i-\mu)^2}{(n-1)}}$, where $\mu = \frac{\sum_{i=1}^{n} X_i}{n}$

Derivation of RMSE from 95% CL accuracy

Sometimes instead of RMSE, 95% CL accuracy (or 95th percentile accuracy) is specified. The RMSE will be derived as follows from this to pair against the thresholds.

$$RMSE = \frac{95\%\ CL\ accuracy\ in\ one\ dimension}{1.96}$$

For example: $RMSEz = \frac{95\%\ CL\ accuracy\ in\ vertical}{1.96}$

$$RMSE\ in\ any\ one\ dimension = \frac{95\%\ CL\ accuracy\ in\ two\ dimensions}{2.447}$$

For example: $RMSEx = \frac{95\%\ CL\ accuracy\ in\ horizontal}{2.447}$

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