

National Geospatial Policy [NGP 2016]

Version 1.0

April 2016

1. Title

Taking into consideration the increasing growth of use of **Geospatial Data, Products, Services and Solutions [GDPSS]**, Government of India hereby promulgates a comprehensive “**National Geospatial Policy [NGP] – 2016**” to empower people through geospatial technologies.

2. Preamble

GDPSS is multidisciplinary in nature and important in the context of national development. It is acquired through various tools and technologies (contemporary and emerging) like surveying, remote sensing, aerial surveys, photogrammetry, geodesy, hydrography, Global Navigation Satellite Systems [GNSS], Geographic Information Systems [GIS], mobile phones / devices, Geospatial Web Services [GWS], Location Based Services [LBS], **and** Radio Frequency Identification Devices [RFID], **etc.** **GDPSS** is analyzed, classified and visualized for planning, design, implementation, evaluation as well as for monitoring of various developmental activities. The ever increasing importance of the geospatial information necessitates appropriate guidelines in terms of a national policy to **ensure** data availability, accessibility, **and** quality **to meet** the imperatives of national developmental goals, **in consonance with** issues related to national security and Intellectual Property Rights (IPR). The adoption of NGP is essential for effective use of GDPSS for inclusive growth through efficient, **informed**, transparent and timely decisions.

3. Existing Related Policies

- The wide availability of satellite data and digital forms of map information through networks has rendered the erstwhile policies of restricting map information to citizens obsolete *in many countries*. The mass markets for spatial information has become a reality and this trend is only likely to grow. There has been **exponential** growth of actors involved in the generation and use of geospatial information, often spread in different regions and different legal jurisdictions. While there are some internal MoD policies and guidelines that lay down various restrictions well as provide guidelines for conduct of various surveys and clearances, principally, the undermentioned policies are available in open domain and pertain to different aspects of geospatial data:-
 - **The National Map Policy 2005 (NMP-2005)** defines the scope, distribution and liberalized access of digital Survey of India (SOI) topographic maps to user groups without jeopardizing national security.
 - **The Civil Aviation Requirement (CAR), 2012** detailing procedure for issuance of flight clearances for agencies undertaking aerial photography, geophysical surveys, cloud seeding etc.

- **The Remote Sensing Data Policy (RSDP - 2001 and 2011)** defining the distribution process of satellite images to different category of users.
- **The National Data Sharing and Accessibility Policy-2012 (NDSAP-2012)** providing an enabling provision and platform for proactive and open access to the data generated through public funds available with various departments / organizations of Government of India.

1.4 Principles

- Geospatial data of any resolution being disseminated through agencies and service providers, both internationally and nationally be treated as unclassified and made available and accessible by Indian Mapping and imaging agencies.
- Geospatial data and information be made available in both human readable and machine readable form over web and mobile platforms in an obligatory and time bound output oriented manner, without compromising national security.
- Enable promotion, adoption and implementation of emerging / state of the art technologies for data acquisition, product generation, solutions and services based on geospatial data.
- A very high resolution and highly accurate framework to function as a national geospatial standard for all geo-referencing activity through periodically updated **National Geospatial Frame [NGF]** and **National Image Frame [NIF]** by ensuring open standards based seamless interoperable geospatial data.. This would facilitate exchange of geospatial data amongst geospatial data stakeholders for implementation of policies, standards and technology
- A level playing field for both government and private sectors for ease of business and proactively engaging them in various spheres of geospatial domain.
- Availability of all geospatial data collected through public funded mechanism to all users, and to government agencies at no cost.

1.5 Objectives and Applicability

1.5.1 Objectives

The objective of the policy is to empower people through GDPSS. This would involve creation, management, access, sharing and dissemination of quality assured products, services and solutions through standards to enable government, academic, private organizations and NGOs more effective economic and social benefits.

1.5.2 Applicability

The Policy covers all products, solutions, and services using geospatial data in supersession of the above policies to the extent stated in this policy.

The policy is applicable to geospatial data based products, solutions and services offered by governments, private organizations, NGOs and individuals.

1.6 Access of geospatial data

All geospatial data generating agencies will classify the geo-spatial data, products, solutions and services into restricted, unrestricted **and open** based on features and not on geographies .

a. Open Access

Access to GDPSS be easy, timely, user-friendly and web / mobile platforms based without any process of registration / authorization.

b. Registered Access

GDPSS which are accessible only through a prescribed process of registration / authorization will be available through defined procedures. The users **be** required to register through the web / mobile. Requisite fee, if any needs to be paid through the payment gateway.

Two types of access is proposed under the registered access

- Automatic registered access
- Authorized registered access

b.1 Automatic registered access:-Under this a user needs to fill in the details of registration and an automatic user id / password is generated for use. In this no authorization is given but the id is generated automatically.

b.2 Authorized registered access:-Under this class the registration is done after duly verifying the details submitted by the user. This could be for a limited period or for select datasets as required.

c. Restricted Access

GDPSS classified as restricted, will be accessible only through and under **specific** authorization.

All Government Departments to catalogue, maintain and update the geospatial data in a phased manner to facilitate easy and uninterrupted access of such data.

1.7 Standards and Quality

All GDPSS should conform to national and international standards such as BIS, [LITD22], NSDI, ISO and OGC. Facilitation for certification of Quality and Accuracy of GDPSS be done through an independent agency [**National Geospatial Accreditation Bureau**]for accreditation and quality assurance.

1.8 Implementation Guidelines

- GDPSS should be provided in the standard formats that are needed by the user.
- All clearances / permits, as necessary, for data acquisition and dissemination be through a single window, online portal. These clearances be provided within a time span of 30 days of filing the online request. Otherwise, the clearance is deemed to have been issued.
- As classification is to be done based on features, existing area restrictions will cease for all resolutions (scales). Printed maps will have features obliterated, if classified.
- Cyber security is to be ensured through appropriate methods, including use of Digital Watermarks for authentication of GDPSS.
- Satellite / aerial images of resolution other than those currently made available on websites can only be classified for restricted access.
- For GDPSS, there shall not be any restriction on data acquisition, value addition and dissemination for any of the geographical areas outside the country.
- NGF and NIF will be made available expeditiously through India Geoportal **as** the foundation data for all geospatial activities to facilitate convergence, commonality and interoperability.
- Ground based data collection for surveying, mapping and attributes be permitted as per the guidelines to be made available. Technologically, a Continuously Operated Reference Stations network (CORS) be available with access control based on accuracy as specified in Para 1.6 above.
- International commitments and treaties be taken into consideration while classification of GDPSS and access guidelines are issued.
- NGP **detailed** implementation guidelines will include the do's and don'ts, technical details (like datum, projections etc) and good practices for GDPSS including issues related to national security.
- Role of private sector in all spheres of geospatial domain is recognised and be utilized. This would be facilitated by guidelines and templates for partnership with geospatial industry.
- To strengthen the research and capacity building in geospatial technology in private sectors, NGP will ensure their active participation in application development.
- Mechanisms to be put in place to evaluate / audit GDPSS creation, consumption and distribution. A framework to be put in place to assess the data collection versus its utilization towards government program and socio-economic development.
- A programme be launched to encourage innovation and start ups looking into geo value chain for development of apps.
- NGP encourages technology independent solutions for inclusive development.

- Data duplication and data deluge be avoided and mechanisms for data discovery through Metadata and Catalogue services be made available.
- Revenue generated through data taxation (geospatial cess), licensing etc be ploughed back into geospatial activities.
- GDPSS will be inclusive of all emerging and contemporary technologies such as UAVs, LIDAR, Mobile Mapping, Terrestrial LIDAR, GPR, crowd sourcing and geospatial cloud, etc.
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1.9 Implementation Committees

a. Steering Committee

To enable coordination between various Government departments / agencies and to promote and coordinate access to and sharing of GDPSS the Steering Committee (SC) is to be constituted **with** following members:

- Chaired by a former Secretary level officer of Government of India (GOI)
- Representative of NSCS
- Four Technical experts to be members of the committee
- One officer of the level Joint Secretary in GOI as **Member Secretary**

b. Implementation Committee

To develop and design collection, access, management, sharing and effective utilization of GDPSS a Committee to oversee the implementation mechanism is to be constituted as under:

- Co-Chaired by Secretary DST and DOS
- Four independent technical experts
- Member Secretary from DST – Head NSDI

c. Oversight Committee

An oversight committee be constituted under the chair of Deputy NSA for providing strategic vision as well as security aspects related to geospatial domain including inter-ministerial / departmental coordination and convergence.

1.10 Pricing of Shared Geospatial Data

Government institutions / agencies are mandated to make geospatial data available to all other government institutions / agencies at no cost. For others pricing of data will be decided by the respective data owners in a rational manner. **All Departments to form a Data Dissemination Cell (DDC) for sharing and publishing of geospatial data on their web portal.**

1.11. Capacity building

A National Geospatial University be created to strengthen research, education and training **in the domain of GDPSS**. The geospatial industry would need to play an active role in this endeavor alongwith the government .

1.12 Legal Aspects

All the Geospatial data generating agencies / departments will adhere to the provisions available under the policies i.e. (i) IPR / Copyright and neighboring rights, (ii) Data Protection, (iii) Confidentiality/ Data privacy, (iv) Competition Law, (v) Licensing, (vi) Consumer protection / fitness for purpose, (vii) Product and services liability, (viii) Censorship and other information content related issues, (ix) Health and safety legislation, and (x) Patent law **to** be covered under various Acts such as IT Act, RTI, National Cyber Security Policy etc.

1.13 Partnerships with Industries

Formation of a public-private partnership mechanism to harness industry and government participation **to** enable utilization of expertise and resources available outside the government for realization of national objectives of inclusive growth and development.

1.14 Budget provision

All government department must use GIS technologies for better decision making and efficient project management. Towards this a GIS cell must be created with adequate infrastructure and trained technical staff. Data requirements where necessary for initial seeding could be provided by DST to facilitate the creation. A Geospatial Advisory Cell would be created by DST to facilitate this process. For effective and efficient implementation of this Policy a separate budget provision be made in each department / ministry to ensure **effective** utilization of GDPSS. Exclusive budget provisions be made in the nodal ministry for online clearance / permit mechanisms.

1.15 Definitions

- **BIS:** Bureau of Indian Standards (BIS) is the national Standards Body of India working under the aegis of Ministry of Consumer Affairs, Food & Public Distribution, GoI
- **CORS:** The National Geodetic Survey (NGS), National Ocean Service of NOAA, manages a network of Continuously Operating Reference Stations (CORS) that provide GNSS data consisting of carrier phase and code range measurements in support of three dimensional positioning, meteorology, space weather, and geophysical applications. The CORS network is a multi-purpose cooperative endeavor involving government, academic, and private organizations.
- **Geospatial Analysis:** is an approach to applying statistical analysis and other analytic techniques to data which has a geographical or geospatial aspect. Such analysis employs software capable of rendering maps processing spatial data, and applying analytical methods to terrestrial or geographic datasets, including the use of GIS. It includes both Surface analysis, Network analysis and geo visualization.

- **GDPSS:** Geospatial Data, Products, Solutions and Services – It includes all physical parameters all features on,above or below the surface of earth,
- **Geographic Information System (GIS):** is a set of multi-disciplinary technologies system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data. GIS applications are tools that allow users to create interactive queries (user-created searches), analyze spatial information, edit data in maps, and present the results of all these operations.
- **Geospatial Data / Spatial data:** is used to indicate that data that has a geographic component to it. This means that the records in a dataset have locational information tied to them such as geographic data in the form of coordinates.
- **Geospatial technology:** is the technology used to acquire, manipulate, and store geographic information. GIS is one form of geospatial technology.
- **GNSS:** Global Navigation Satellite System, and is the standard generic term for satellite navigation systems that provide autonomous geo-spatial positioning with global coverage. This term includes e.g. the GPS, GLONASS, Galileo, Beidou and other regional systems
- **GWS:** Geospatial Web Services permits users to dynamically access, exchange, deliver, and process geospatial data and products on the World Wide Web, irrespective of platform or protocols used
- **ISO:** An organization, which sets standards in many businesses and technologies, including computing and communications.
- **LBS:** Location Based Services are a general class of computer program-level services that use location data to control features. As such LBS is an information service and is critical to many businesses as well as government organizations to drive real insight from data tied to a specific location where activities take place.
- **LIDAR:** is a surveying technology that measures distance by illuminating a target with a laser light. Lidar stands for Light Detection And Ranging, Lidar technology is used to make high-resolution maps, with applications in geodesy, geomatics, archaeology, geography, geology, geomorphology, seismology, forestry, atmospheric physics etc.
- **Meta data:** It is data about data and includes information about the quality, content, condition, and other characteristics of data.
- **NGF – National Geospatial Frame:** refers to a frame depicting background reference information or features such as roads, rivers, railway lines, landforms, landmarks, names and administrative boundaries, onto which other thematic information is placed. The NGF is essentially meant for geo-referencing and it shall include a geodetic control network as part of its structure suitable for mapping on scale 1:10,000. The NGF is a frame to which GIS data layers are registered and rescaled.
- **NIF – National Image Frame:** refers to a frame model for images on the lines of coverages. It deals with a schema for image geometry, image products and image time series, integration of Earth imagery with geographic information system (GIS) technology. It is concerned with Earth imaging information technologies as OGC Web Mapping/Feature Service (WMS, WFS), KML Standards. Periodically updated NIF co registered with NGF enables overlay of NGF and NIF. This would need to be in best possible resolution with best possible accuracy that technology can offer from time to time.
- **NSDI:** National Spatial Data Infrastructure

- **OGC:** Open Geospatial Consortium is an international industry consortium of companies, government agencies and universities participating in a consensus process to develop publicly available interface standards.
- **Owner:** The ownership of the GDPSS would remain with the concerned Department / Agency / Organization / Autonomous Body / Public Authority and would be responsible for geospatial data maintenance and decisions.
- **RFID:** Radio Frequency Identification Device is a technology that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency (RF) portion of the electromagnetic spectrum to uniquely identify an object, animal, or person.
- **Surveying:** the process of collecting basic “raw” data in a systematic manner either on the ground or aerial (and other) platforms and using specific instruments (like Total Station, GPS devices, Ground Penetrating Radars (GPR), Lidars, Imaging Camera etc) or by enumeration / inventory/tabulation of different parameters (like population, consumers, market etc)
- **Unmanned Aerial Vehicle (UAV):** is a type of aircraft which has no onboard crew or passengers. UAVs include both autonomous drones and Remotely Piloted Vehicles (RPVs). A UAV is capable of controlled, sustained level flight and is powered by a jet, reciprocating, or electric engine.