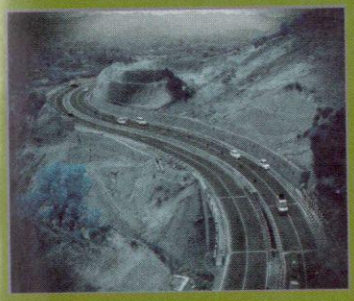
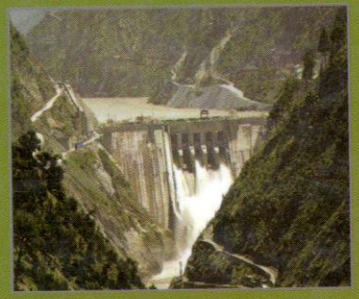
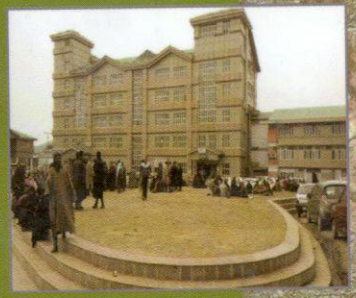
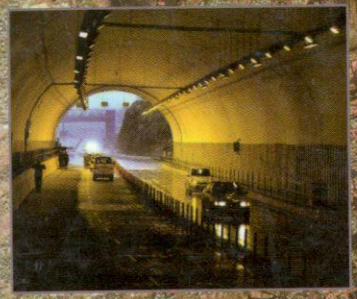
THE VISION DOCUMENT

STATE SPATIAL DATA INFRASTRUCTURE J&K STATE GEOPORTAL

A tool for good governance

Government of Jammu and Kashmir

DEPARTMENT OF ECOLOGY, ENVIRONMENT AND REMOTE SENSING

Srinagar office: SDA Colony Bemina Srinagar, Kashmir-190018

Jammu office: Paryawaran Bhawan, Gladni, Narwal, Jammu - 180010

January, 2019

® **Government of Jammu and Kashmir**
DEPARTMENT OF ECOLOGY, ENVIRONMENT AND REMOTE SENSING
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GOVERNOR
JAMMU & KASHMIR

RAJ BHAVAN
JAMMU-180001

M E S S A G E

I learn that the Remote Sensing Centre of the Department of Ecology, Environment & Remote Sensing, with support from Department of Science & Technology (DST), Govt. of India, is bringing out the "**J&K Geoportal-Vision Document".**

Geographical Information System (GIS) is an emerging tool laden with the capabilities of providing near real time accurate synoptic coverage of spatial content of the ground reality.

It is my considered view that there is an emerging need to provide user oriented online Decision Support Services (DSS) to different departments for improving their efficiency in planning, management and monitoring and hope that this vision document will provide the desired insight to achieve that objective.

I wish success to the Department in realizing this dream for the State.

14 Nov. 2018, Jammu

Satya Pal Malik

Satya Pal Malik

K. Vijay Kumar, (IPS Rtd.),
Advisor(K) to Hon'ble Governor,
Jammu & Kashmir State
Srinagar/Jammu

M E S S A G E

Economically available, accurate and near real time geospatial information is an important tool for achieving good governance. In a state like Jammu & Kashmir, where populations are scattered across hilly terrain, such information comes handy for planning equitable access to natural and manmade resources by one and all. Recently, a universal understanding has dawned about the importance of data as an important infrastructure in itself, for it enables timely administrative interventions in planning and management of these resources for achieving sustainable development.

It is a matter of satisfaction that the Department of Ecology, Environment & Remote Sensing is establishing State Spatial Data Infrastructure, which, after the implementation of project period sponsored by Govt. of India, shall finally enter its State Mission-Mode to continue provide online geospatial data services to Line Departments through its J&K State Geoportal.

The vision document formulated on the subject is right action in the right direction for which the Scientists involved in the endeavor deserve appreciation. I hope the document shall serve as a guide not only for the department involved in implementation of SDI but also for the Line Departments to understand and analyse their spatial data needs so that online access to useful user oriented geospatial data is provided by the SDI through its geoportal for enhancing efficiency of planning, management and monitoring of natural resources and public service delivery system to achieve good governance in the State.

K. Vijay Kumar

B.V.R Subrahmanyam, IAS

Chief Secretary,
Jammu & Kashmir

M E S S A G E

I am happy to learn that the Department of Ecology, Environment & Remote Sensing has come up with a vision document for operationalizing State Spatial Data Infrastructure (SSDI) in the State that will allow seamless online access to a Standardized and organized spatial data relating to resources and facilities available across the state.

The existing system of database management suffers from many inherent deficiencies and incompatibilities. It is, therefore, imperative that sincere efforts are made to convert data maintained in the form of tables, maps, etc. into a standardized digital format devised by the National Spatial Data Infrastructure (NSDI). This data will be processed, catalogued, integrated and then made available online on the J&K State Geoportal.

The State Spatial Data Infrastructure (SSDI) has already released its first experimental beta version of the J&K Geoportal for online access by the line departments for their sensitization, hands-on experience and feedback especially related to their spatial and non-spatial data needs. The final version of the J&K Geoportal, expected to be completed by March 2019, will have high end functionalities for standardized geospatial data sharing among the line departments.

It is hoped that the vision document prepared by the department will guide the implementation process of SSDI in Jammu & Kashmir. I wish that the department continues with its good efforts in this field in future also.

B.V.R Subrahmanyam

Jammu: 0191-2546773,2544338, 2546188(F)
(Nov-April)

Srinagar: 0194-2506033, 2506233, 2506133(F)
(May-October)

P.S Acharya
Head & Chief Executive Officer (CEO)
National Spatial Data Infrastructure (NSDI)
Department of Science & Technology (DST)
Government of India, New Delhi

M E S S A G E

Sustainable development demands an integrated approach to planning of resources and meeting aspirations and needs of local people. At the heart of this approach, remains an easy and quick access by all the stakeholders, to a detailed set of spatial and non-spatial data in various sectors of governance covering natural resources, demography; agro-economy; and infrastructure etc. In this context, access to an efficient near real-time and accurate database assumes an overwhelming importance. The approach demands data sets in interoperable format to remain integrable and utilisable on a standardised, published and shared platform amongst stakeholders and their life cycles appropriately managed by seamless data acquisition and updation on a continuous mode. Towards this goal, several initiatives have been launched in the recent years at the national level by various Agencies for operationalizing sectorial databases. The National Spatial Data Infrastructure (NSDI) Initiative has been one such initiative launched by the Department of Science & Technology (DST), Government of India to provide a single window mechanism of a Geo-Portal for accessing these sectorial databases. The State Spatial Data Infrastructure (SDI) Initiatives have been launched in several States to establish a similar mechanism at the State level. In Jammu & Kashmir (J&K), the Remote Sensing Application Centre has launched the initiative of building the State SDI under the collaborative support of the Department of Science & Technology, Government of India and the J&K State Science, Technology and Innovation Council. I am happy that the State SDI of J&K is finally taking a concrete shape in the coming few months.

State Geo-Portal development, being a complex and IT-intensive task, requires high-end skills and experience from the domain of Geo-Information & Communication Technologies (Geo-ICT). This demands engaging a Total Solution Provider (TSP) under the supervision of Scientists of State Remote Sensing Application Centre for successful implementation and maintenance of this prestigious IT infrastructure in Jammu & Kashmir State. It is a matter of great satisfaction that the J&K State SDI Project Team has developed and demonstrated an experimental (beta) version of the Geo-Portal and gained the necessary insights and expertise for managing the final version of the Geo-portal.

I hope the State will soon establish an operational and robust Spatial Data Infrastructure (SDI) comprising of the required institutional mechanism (policies), standardised data assets; hardware, software, and connectivity; trained manpower; and a recurring financial support to extend online geospatial data /decision support services to the Line Departments for real-life planning and decision-making using Geographical Information Systems (GIS). This endeavour needs to be taken on a mission-mode for supporting good governance in the State and ushering in the era of sustainable development.

P S Acharya

P.S Acharya

Manoj Kumar Dwivedi, IAS
Commissioner/Secretary to Govt.,
Forest Environment & Ecology Department
Civil Secretariat, Srinagar/Jammu

FOREWORD

The Spatial Data Infrastructure(SDI) provides a web based platform for easy access, retrieval, analysis, and use of geographically referenced spatial data for planning, management and monitoring of natural resources and facilities. The aim is to achieve sustainable eco-development and equitable access to natural and manmade resources. The initiative involves participation of a large number of stake holders for policy formulation, spatial data sharing, institutional mechanism for coordination, development of skillful manpower to handle SDI etc. In a scenario, where different departments are fulfilling their data needs by themselves collecting data using their own formats which hardly or partly satisfy the data needs of other departments despite having spent lot of resources on its collection. Then there are issues of data sharing among the departments and usually organizations avoid sharing data collected by them. Therefore, establishment of a common Spatial Data Infrastructure at the State level by the Department of Ecology, Environment & Remote Sensing is timely action in the right direction.

I am happy that the Department has come up with this wonderful vision document for operationalizing Spatial Data Infrastructure in the State. Apart from dealing with some technical details, the document provides a bird's eye view of the indicative Spatial Data Needs of few important government departments. This effort is expected to sensitize the departments in the subject so that they develop an understanding of the SDI concept and come forward in providing more insight to the SDI Managers so that the system moves ahead in the right direction for achieving desired results.

The Department has also included the requirements of policy intervention, staffing, recurring budget and an insight into the various types of applications and online Decision Support Systems that could be built up in the near future and this aspect needs to be considered for smooth and successful implementation of SDI in a mission-mode from April, 2019 after the expiry of project-mode period sponsored by Govt. of India.

I appreciate the efforts of Mr. Humayun Rashid, Principal Investigator/Head, SSDI-JK Project and his team for drafting this useful publication within a record time of less than three weeks. I also hope the user departments to come forward and coordinate in making SDI a real tool for achieving good governance in the state.

Manoj Kumar Dwivedi, IAS

B. Siddhartha Kumar, IFS
Principal Chief Conservator of Forests/Director,
Ecology, Environment & Remote Sensing,
J&K Govt., Jammu/Srinagar

P R E F A C E

The establishment of Spatial Data Infrastructure (SDI) in Jammu & Kashmir state aims at providing an online facility for access of standardized spatial data by planners at grass root level so that they are able to plan their activities on the basis of near real time and accurate ground information. Therefore, the first prerequisite is to know the data needs of the various departments. In order to develop an understanding on the subject, an effort has been made to underline the spatial and non-spatial data needs of the users. But, there may be gaps in information which will be bridged as the concept of SDI goes on evolving among the user departments and as more and more departments feel its importance in planning their activities. The aim at the moment is to sensitize the users so that they themselves come forward with their requirements of various types of spatial and attribute information. Since, the line departments are already having lot of information in tabular format, this information can be shared to allow its integration with the spatial data already available with the Department of Ecology, Environment & Remote Sensing so that it not only becomes available to the organization which had collected it in the beginning but also to other users in a standardized uniform format.

The formulation of this vision document was felt necessary to guide implementation of Spatial Data Infrastructure (SDI) in the state for easy and shared use of geospatial data for achieving efficiency in planning at grass root level. The Total Solution Provider has drafted the spatial data needs and requirements of Decision Support Systems (DSS) for various line departments in the state which too has been included in the document to make it more useful for the line departments.

I hope the document will generate necessary awareness about SDI and encourage the user departments to make use of geospatial data in planning, management and monitoring of natural resources and public utilities.

18/12/2018

B. Siddhartha Kumar

Humayun Rashid

Scientist /Principal Investigator,
State Spatial Data Infrastructure Project
Department of Ecology, Environment & Remote Sensing
Bemina, Srinagar

ACKNOWLEDGEMENTS

I express my deep sense of gratitude to Mr. M.K. Dwevedi, IAS, Commissioner/Secretary to Government, Forest, Environment & Ecology Department for his guidance and keen interest in realizing the dream of Spatial Data Infrastructure in the state both as former Commissioner/Secretary, Science & Technology Department as well as in his present capacity. I also thank Dr. P.S Acharya, Head/CEO, NSDI, DST, Govt. of India for his continued technical support, magnanimity, encouragement and guidance in running the Spatial Data Infrastructure Project without which project objectives could not have been achieved. Mr. B. Siddhartha Kumar, PCCF/Director, Department of Ecology, Environment & Remote Sensing for his guidance and support. Thanks are also due to Mr. Saurab Bhaghat, IAS, former Commissioner/Secretary to Government, Forest, Environment & Ecology Department for his support. I express my sincere indebtedness to Mr. O.P. Sharma, IFS, Addl. PCCF / former Director, Department of Ecology, Environment & Remote Sensing for his support. Thanks are also due to Mr. Suresh Chugh, IFS and Mr. Ravi Kesar, IFS former Directors of the Department of Ecology, Environment & Remote Sensing for their encouragement and support.

I express my deep sense of gratitude to Mr. Atal Dulloo, IAS, the then Commissioner/Secretary to Govt., Science & Technology Department for guiding me in formulating the initial proposal on establishment of State Spatial Data Infrastructure in Jammu & Kashmir for DST funding.

I express my sincere thanks to Dr. Mushtaq Ahmad Bhat, Joint Director, ST&I Council for his overwhelming support. Thanks are also due to Dr. Hemant Kumar, Principal Investigator, Karnataka SSDI for his valuable suggestions whenever he was asked for. Thanks are also due to Mr. Ram Savek, Addl. Secretary, Forest for his support. I also thank the team at Scan Point Geomatics Pvt. Ltd., Gujarat, for assisting in making assessment of the spatial data needs of various line departments in J&K which enriched this report. I thank the project-mode staff of SSDI-JK Project; Mr. Sajad Hamid, Mr. Manzoor Ahmad, Mr. Asim Gulzar, Mr. Muzaffar Ahmad Mala, Mr. Nissar Ahmad and Mr. Muzaffar Ahmad for their support during compilation of this report. I also thank Mr. Irfan Ahmad Rather, Manager, IT, J&KeGA for support.

Lastly, I thank my colleagues; Mr. Hafizullah Mir, Mr. Ghulam Hassan Mir, Mr. Majid Farooq, Mr. Ravinder Kumar Bhat, Mr. Akhtar Ali, Mr. Zahoor Ahmad Akhoon, Dr. Tasneem Keng, Ms. Mtr. Abida W.Deva, Ms.Shama Roohi, Mr. Saleem-u-Rehman, Mr. Kuldeep Kumar, Mr. Ajaz Ahmad Bhat, Mr. Anil Sapru, Mr. Jehangir Ahmad, Mr. Sheikh Sajid, and Mr.Sheikh Shah Nawaz and many others who provided a backend support and whose contribution I may have been unable to recall.

Humayun Rashid

VISION STATEMENT

Supporting good governance, sustainable development, environmental conservation and efficient service delivery system in Jammu & Kashmir through online geospatial Decision Support Services (DSS)

Abbreviations

SSDI-JK	State Spatial Data Infrastructure- Jammu & Kashmir
NRDMS	Natural Resources Data Management System
RFP	Request for Proposals
SOI	Survey of India
NSDI	National Spatial Data Infrastructure
SDI	Spatial Data Infrastructure
UML	Unified Modeling Language
GIS	Geographical Information System
SDO	Spatial Data Object
ISO	International Standard Organization
OGC	Open Geospatial Consortium
WMS	Web Mapping Service
WFS Web	Feature Service
WCS	Web Coverage Service
WRS	Web Registry Service
CSW	Catalogue Service on Web
QA/QC	Quality Analysis/ Quality Checking
COTS	Commercial Off The Self
ESRI	Environmental Systems Research Institute, Inc.
GML	Geographic Mark-up Language
JSR	Java Specification Requests
FTP	File Transfer Protocol
PDA	Personal Digital Assistant
HDD	Hard Disc Drive
PDF	Portable Document Format
LU/LC	Land Use / Land Cover
PC	Panchayat Constituency
ULB	Urban Local Bodies
LAC	Legislative Assembly Constituency
PHC	Primary Health Centre
CHC	Community Health Centre
SHC	Sub Health Centre
RDBMS	Relational Database Management System
DEERS	Department of Ecology, Environment & Remote Sensing
LAWDA	Lakes & Waterways Development Authority
RDD	Rural Development Department
NRSC	National Remote Sensing Centre

Dedicated to the citizens of this state who aspire equal accessibility to resources through good governance

CHAPTER-1: INTRODUCTION

In order to evolve J&K as a knowledge society, lot of emphasis needs to be given to Information Technology and "transparent" e-governance. Amongst the variety of datasets that are necessary in e-governance initiative, the spatial (or map) information is of major importance. In a bid to evolve a sound, area specific and responsive mechanism to local people's needs and aspirations, the practice of planning needs to be decentralized to lower administrative units of districts, tehsils, blocks and villages. Micro-level planning is a complex and information intensive job as the various sectorial and spatial inter-dependencies play a vital role. For resolving conflicting interests and evolving comprehensive planning of the local areas, there is a need to adopt an integrated approach to developmental strategy. For evolving such a planning mechanism, the state needs to have near real time accurate data/information of all the sectors on a common platform so that it is made easily accessible to all stake holder user departments / organizations for informed decision making at various levels of governance.

In fact, the spatial data provides a backbone support for taking sound decisions at the local, regional and state level, besides, implementing action plans for infrastructure development, disaster management, natural resource conservation and business development. Presently, different organizations are generating digital databases both in tabular form as well as in the form of maps using different formats, codifications and projection parameters which lead to incompatibility to share such datasets by different user agencies. Besides, it leads to duplication of efforts and resources for generating one and the same

thing. Since there is no standardization where different government agencies could use data for different applications within the uniform framework of standard formats, an understanding has evolved to improve spatial data management in the country within the frame work of Spatial Data Infrastructure. Since, the cost of creating and maintaining spatial data is high, it is particularly important that data created at considerable cost and effort be made shareable and the costly data collection not be duplicated, and that the collected data should be fully utilized by different agencies of the government. In order to ensure optimum use of the spatial data, the National Spatial Data Infrastructure (NSDI) mooted by the Department of Science & Technology, Govt. of India in collaboration with Indian Space Research Organization (ISRO) has already taken shape at the National level and some states have made tremendous strides in this direction.

NSDI activity at the State level is visualized as State Spatial Data Infrastructure (SSDI). In Jammu & Kashmir, the Spatial Data Infrastructure(SDI) activities are being coordinated by various stake holder organizations for establishing state of art, 'State Spatial Data Infrastructure' to be managed by a cadre of GIS experts, programmers and network administrators. The suggested model has many advantages as standards and data formats shall be professionally managed and shared by all the state departments for evolving micro-level management plans, annual plans and action plans based on near real time baseline information. Due to the direct control of the Government, data sensitivity and security can be easily managed and enforced. The establishment of such a state level repository of the Spatial Data Infrastructure shall ensure production, easy access to and shared use of accurate, high quality spatial data which can be made sharable through internet among the different user departments for evolving decentralized micro-level planning besides, launching the much needed, "J&K State Geo-portal" for easy access of the spatial data by various users via internet.

The Department of Ecology, Environment & Remote Sensing has, over the last 30 years, developed skills and expertise in the field of remote sensing applications and has built up a GIS database of resources which are of immense value and

importance to various Line Departments for improving efficiency in planning, management and monitoring at grass root level. However, it has been observed that the Line Departments have not been availing the services of the Department in a big way and the data generated has not been utilized to that extent. It is in this perspective that the Department of Ecology, Environment & Remote Sensing with financial and technical support from Department of Science & Technology, Govt. of India is in the process of establishment of State Spatial Data Infrastructure in Jammu & Kashmir. The aim is to achieve good governance for equitable access to resources, environmental conservation and sustainable development.

1.1 Present Scenario of J&K State and Strategy for Planning and Development

Troubled by history and geo-politics, the State of Jammu & Kashmir has remained one of the most backward regions of the country. The trauma of partition of the country in 1947 not only took the State backwards, but also placed hurdles on future economic progress. Due to harsh climate and limited working season there is little opportunity to grow. Most parts of the state remain inaccessible during winters. The State could not develop and keep pace with other states due to poor infrastructure and volatile situation.

The people of the State aspire to see their state emerge peaceful, strong and confident, and ready to be part of the country's development strides. They want to march towards economic, social and cultural progress. The gap between the region and the country in terms of various developmental outcomes, productivities and capacities of people and institutions is large and growing, and has to be bridged.

The economic progress of the state is dependent upon the good governance and good governance can be assured if near real time spatial data is made available for micro-level planning on a continuous basis in user friendly formats. Data relating to demography, natural resources and public utility services is widely regarded as one of the important infrastructures of the state upon which the planning of other sectors is dependent. It is in this direction that the State Spatial Data Infrastructure is being developed as a centralized geospatial data bank which would store, analyse, standardize, interpret and provide gateways for sharing the spatial data for efficient micro-level planning so that the state proceeds towards peace, economic progress and sustainable development. In future, it is expected that the Spatial Data Infrastructure(SDI) shall also develop Spatial Decision Support Systems(SDSS) for improving efficiency of governance.

1.2 Existing Database Management System in J&K State and SDI Initiative

In J&K State, different organizations are maintaining data of various types in hard copy as well as digital format. The main organizations being J&K State Remote Sensing Centre of the Department of Ecology, Environment & Remote sensing, Planning & Development Department, Town Planning Organization, Forest Department, PHE Department, Mechanical Engineering Department, Health Department, Education Department, Public Works Department etc. The existing system of database management has certain inherent problems for usage through interdepartmental data sharing to achieve good governance. Some of the major issues are:

i. The administrative machinery is involved in centralized planning without taking into account specialized local requirements.
ii. No arrangements are available through which complex location specific problems are studied.
iii. Data requirements for local area planning have not been fully identified.

iv. Conventional methods of data collection/ collation, storage is amenable to quick updating, retrieval and integrated analysis.
v. Inter sectorial data flow mechanisms are not efficient.
vi. Lack of compatible/ standardized procedures for data collection and validation inhibit integration
vii. Non- availability of institutional back up at the local and state level fully equipped with required tools and skills.

In this project, effort will be made to interact with all possible sources that are maintaining data in their raw format and bring them into standardized digital format. Discussions will be held to agree upon to standardize the available data for putting into format of the National Spatial Data Infrastructure (NSDI). This data will be processed, catalogued and integrated for making it readily available for all state partners to plan and execute various developmental activities in the state.

Major initiatives to be undertaken include; development of SSDI-JK by creating a distributed electronic network of data producers and users; development of standards for data documentation, collection, and exchange; formulation of procedures and partnerships to ultimately result in creation of a national digital geospatial data framework that would include important basic categories of data significant to a broad variety of users; and development of new relationships that allow organizations and individuals from all sectors to work together to share geospatial data.

Formulating development plans is an information intensive task. But, the data management system that exists at the state, provincial or district or Panchayat level is not either fully geared or even not available to address the information needs for integrated micro or macro developmental planning. The conventional methods of data collection and storage are not

favourable for data updation, retrieval and analysis. The incompatible and non-standard datasets inhibit integration. There is insufficient inter-sectorial data exchange and lack of information on quality, completeness and lineage of data.

An integrated approach to planning requires detailed information on the interrelations and interdependencies among various sectors to resolve conflicting demands. This demands an efficient data management and adequate sectorial data in digital format on natural resources, demography, socio-economic parameters and public utility system. This underlines need for appropriate data generation, updation, handling, analysis, integration and standardization and its efficient exchange among partners and other user community.

It is in this direction that certain initiatives have been taken at the national level to create awareness on the usefulness of these technologies amongst planners and decision makers. In the year 2001 Secretaries of Government of India (GOI) from SOI, ISRO, NIC, FSI, GSI, NBSSLUP, NATMO and many other private and academic institutions underlined the importance of having the National Spatial Data Infrastructure (NSDI) in the country. The purpose of the initiative was towards; working together of spatial data agencies, sharing spatial data among users, using spatial data for good governance, integrating images and maps for GIS solutions, common standards for spatial data, good spatial data policies, partnerships and GIS enterprises, collective good of all data generating agencies. It was envisaged that NSDI Metadata/Exchange/Agency-Server/Network/Applications standards will be published; NSDI and Map Policy will be redefined; NSDI Portal will be established for NSDI Data and application services and India would move to position many ENTERPRISE-GIS and enable a vibrant and world leading SPATIAL-BUSINESS sector of images, maps, services and solutions and finally products.

This project focused primarily on public outreach, standardization of procedures, developing a national geospatial metadata clearinghouse and building institutional relationships to create a community of data-sharing stakeholders.

1.3 Objectives

The major objectives of State Spatial Data Infrastructure are:

i. To make geographic information easily accessible to the Line Departments.
ii. To create a centralized geo-database for online access by the users.
iii. To reduce duplication of efforts and resources in generating geographic data.
iv. To improve quality of geographic data.
v. To establish key partnerships with stake holders for increasing the use of geographic data for improving quality of life.
vi. To formulate policies for pricing and shared use of geographic data.

1.4 Expected benefits

The expected benefits from SSDI-JK include:

a. To have a common state level GIS platform of regularly updated, standardized and seamless GIS data, latest satellite images and geo-linked departmental datasets that would be used by one and all.
b. To base all decisions at highest administrative level as well as at the panchayat level on near real time online Spatial Decision Support systems that would improve planning, management and monitoring under various sectors of governance.

c. To extend the scope of SDI to citizen centric GIS services like online complaints by citizens relating to non-functioning of electric transformers, defunct drinking water supply, crimes, site specific distress calls during natural and manmade disasters. In future, citizen's will have access to geospatial information, enabling a ''Crowd– sourced'' interactive process of citizen involvement in providing feedback/inputs/data as a virtual geographical ingest.
d. Reduction in duplication of efforts, redundancy of GIS data and removal of usage of inconsistent GIS data and un-reliable decisions.
e. Ready availability and accessibility of a collection of standardized, interoperable, seamless and regularly maintained GIS datasets for the whole state.
f. Impetus to private sector participation in GIS activities by offering efficient GIS Applications as an all-inclusive support to State governance and development activities.
g. Positioning of Jammu & Kashmir in a leading role for implementation of proposed National GIS project and enabling the Government of Jammu & Kashmir to play a larger role in this critical technology arena in the country.

CHAPTER-2: COMPONENTS OF SSDI

There are seven major components of Spatial Data Infrastructure which are:-

2.1 SDI Centralized Databank:

The SDI centralized databank shall comprise of a near real time, seamless, state-wide GIS-Ready standardized, updated databank of maps and satellite images to meet the GIS data and application needs of government, citizens and enterprises. The geospatial data content is most important and core to the usage of the WebGIS across wide spectrum of users. GIS data content for SSDI-JK is being generated using GIS technology from satellite images, field surveys and existing maps. The centralized database is being developed in a seamless manner at two-levels:

i. State-wide GIS content at 1:50,000 and/ or 1:10,000 scale.
ii. Priority areas of Jammu & Kashmir at large-scale viz. 1:4000 and 1:2000

A list of GIS data layers envisaged in SSDI-JK are as under:-

- land use / land cover
- Water resources and drainage system
- Agriculture/Horticulture/Plantation (orchard, and Sericulture},
- Infrastructure (Airports, railway stations, major bridges, hydropower stations etc.)
- Transport (Road, Railways, Air, Waterways) and Communication network
- Institutions (Universities; Medical/ Engineering/ Agriculture/ Fishery/ Veterinary Colleges; NIT; R&D organizations; Training Centres, etc.)

- Cities, towns, trade centres.
- Village level Database on demography such as population, STs, SCs, BPL, ethnic groups, literacy level, occupation pattern, income level, health status, availability of amenities / infrastructures, human resource / livelihood pattern and human development index
- Indicative plans/models for optional resource utilization and sustainable management of natural hazards /risks, flood affected areas, etc.
- Tourist destination, Archaeological places, wildlife protected areas, heritage sites, etc.
- Health institutions
- Educational Institutions

After the project period, efforts shall be made to conduct following studies and commit updated spatial data to the Geoportal on a continuous basis:-

i. Proposed layers like Collector's Office, Educational and Health Institutions, Training Centres, Common Facility Centres.
ii. Roads/Railways constructed will be digitized from maps to be obtained from PWD, BRO, etc.
iii. Drainage patterns will be updated from remote sensing imageries.
iv. Grid Lines and Distribution line for electricity will be created from maps to be obtained from the JKPDC
v. Data on Water Resource Projects like Irrigation, Hydro Power, Embankment, Dams, Drainages, Flood Control Sluices, Tanks, will be created using maps from state irrigation department and other concerned department.
vi. Data on other infrastructures like Intercity bus stands, water ways, etc. will be prepared from the available data and GPS survey.

vii. Natural water bodies including wetlands and high altitudinal alpine lakes, abundant river courses will be created from imageries.

viii. An exclusive layer of polygons will be for safron, apple orchards and plantations like Sericulture and willow etc.

ix. Land resources data will be generated as per the guidelines of Dept. of Land Resources (DoLR), Land Use Board & NBSSLUP. Digitization of land records undertaken by Financial Commissionerate(Revenue) shall be obtained to integrate with other databases.

x. Data on Watershed and River basin will be generated as per the guidelines of AISLUS.

xi. Drinking water supply data will be compiled as per the accelerated water supply format and water quality as per the MoWR & MoEF guidelines.

xii. Relevant data for each of the GIS layers will be collected from concerned departments as secondary sources.

xiii. Creation of such digital layers of various resources in GIS format.

xiv. Addition and linking of the attribute database with the created spatial database.

xv. Non-spatial data like National Rural Health Mission, Integrated Horticulture Technology Missions, some innovative State Model, etc. will also be included in J&K State Geoportal in future.

2.2 SDI Portal:-

The J&K State Geo-portal shall be a single gateway access to the SDI centralized databank and SDI Decision Support System (DSS), applications with specialized metadata service, GIS applications service, data capturing service, data sharing service, publishing service etc.

2.3 SDI-Decision Support System(DSS) Applications:-

The SDI-DSS application shall be a suite of GIS applications for decision and work processes of different departments; GIS applications for public services and citizens and also hosting/publishing enterprise GIS solutions.

2.4 SDI-GIS Infrastructure:-

The SDI-GIS Infrastructure shall be a state-of-art "common" state-level computing and networking infrastructure for hosting/serving the Centralized Databank and SDI-DSS Applications.

2.5 SDI Capacity Building:-

The SDI shall make sustained efforts for training and orientation of users/professionals of government departments in the field of GIS through an integrated programme of education and research in GIS.

2.6 SDI Standards, Protocol and Policies

The SDI envisages policy-definition and laying of protocols and standards for success of GIS activity in the state. It is also envisaged that a state Geospatial Data sharing & pricing policy and suitable legislative measures will be necessary to make SSDI a part and parcel of J&K government's governance process and enable Line Departments to contribute their data content to the SDI and to make use of it in planning and monitoring process. The concept of spatial data as a common resource but serving diversified needs of governance, citizens and business enterprises is fast catching the attention of societies who use information and knowledge as transformational tools for rapid growth and development and as competitive edge. The geospatial data sharing policy must be user oriented. Its benefits must be easily accessible and affordable to diverse users in governance, enterprises and citizens. Policy on SDI and its applications should be oriented

to the priorities of the state particularly inclusivity in development and for empowerment through wider use through fixed, mobile and web based platforms. The state should aim to position itself in the forefront of Information Technology arena, encouraging innovations in the field. The policy should aim at developing SDI as a system to make state-wide, seamless, standardized GIS easily available, accessible, usable and, thereby, bringing value-benefit to the state in better governance/development; developing GIS commerce activities and serving to citizens" g-services (GIS-enabled e-services). The SDI should be a state commitment and bring measurable improvements in governance and citizen engagement. All governance decisions must be referred / based on the SDI. This will ensure a level of accountability and integrity of governance on scientific lines. Further, the geospatial data shared through the SDI must follow established international and national data sharing protocols and interoperability across diverse users within and outside the state.

2.7SDI- Human Resource Development

As per the original project proposal document approved by the Department of Science & Technology(DST), Govt. of India, New Delhi, a cadre of regular manpower comprising of various technical posts are required to be created for manning the State Spatial Data Infrastructure(SSDI) after the expiry of project period which of course is March, 2019.

In order to sensitize the SDI project staff in the concepts of Spatial Data Infrastructure, two project mode employees were got trained at M/S Intergraph Pvt Ltd., New Delhi free of cost during November, 2012. The project staff was also got trained in SDI concepts at the Karnataka Spatial Data Infrastructure, Indian Institute of Science, Bangalore during July, 2013. On the recommendation of DST, GoI, two project-mode personnel were also deputed to Indian Institute of Kharagpur, West Bengal during November, 2017 in Cloud Computing for SDI services. During December, 2018, two project-mode personnel were deputed to attend training in foundation dataset creation at ward/panchayat level at ORSAC, Orrisa.

During the project period, a number of workshops and trainings were also conducted for the user community. A national level workshop was conducted at Jammu on 26th of February, 2013 during which the Project was formally inaugurated by the then Hon'ble Chief Minister of J&K who was accompanied by the Hon'ble Forest Minister and the Hon'ble MoS, S&T Dept. besides a host of national level dignitaries and Administrative Secretaries of various government departments. Another programme was conducted at the Department of Economics & Statistics, Planning & Development Department on 10/06/2013 during which district level officers were invited for discussion on Spatial Data infrastructure and applications of remote sensing & GIS. Another training programme was conducted at the Institute of Management, Public Administration & Rural Development, Srinagar during 18-19th of June, 2014 during which training was provided to the officers of Line Departments in spatial data capturing and application of geo-informatics. Another, training programme was conducted for the employees of Health Department, Education Department, LAWDA, Consumer Affairs & Public Distribution Department at Mini Secretariat, Ganderbal district headquarter during 2016 in which the android based mobile application, POINTGIS developed in-house by the project scientists was introduced to the user community and necessary training was imparted to them in spatial data capturing using the App.

Fig.1: Dr. P.S Acharya, Director, CEO, NSDI, DST addressing the gathering

F ig.2: The delegates and experts who participated in the deliberation

Fig. 3. Inaugural workshop held on 26th of Feb., 2013 at Jammu

Fig.4: The glimpse of technical session of the workshop at Jammu

Fig.5: The SSDI-JK sensitization workshop held on 10th of June, 2013

Fig.6: Shri Suresh Chug, IFS, former Director addressing the officers

Fig.7: Officers from line departments during user interaction workshop at IMPA, Srinagar

Fig.8:Hands-on training provided to officers of Line Departments

Fig.9: Workshop on data capturing using POINTGIS Mobile App held at Ganderbal

Fig.10: Interactive hands-on training provided to employees

CHAPTER-3: GEOPORTAL SOLUTION

Though, on the analogy of models followed by other states, the Department has already short listed the Total Solution Provider for Development, Operationalization and Testing of an off the shelf Geoportal Solution with high end capabilities of geospatial data capturing, storage and analysis who is supposed to accomplish the work by March, 2018, the SSDI project team have already developed a prototype beta version of the Geoportal Solution in- house in the Geo-informatics Lab of the Department itself at Bemina, Srinagar. The experimental geoportal solution under beta version has been hosted from the State Data Centre, Jammu for 24x7 online access by the Line Departments. The purpose of this in-house endeavour was an R&D activity aimed at developing technical capability in the SDI staff and to sensitize the different Line Departments in the use of Geospatial data for increasing the efficiency of planning in the state. The URL of the beta version is ssdi.jk.gov.in.

3.1Spatial frame for the SSDI

The spatial framework is a common geographic referenced foundation on which SSDI-JK data layers shall be assembled and maintained. It is a control frame work for latitude, longitude and height throughout the state of Jammu & Kashmir. The Spatial Framework consisting of datum, projection and bounding limits allows accurate registration, transformation and visualization of the spatial information. The data is being stored in UTM WGS84 projection parameters.

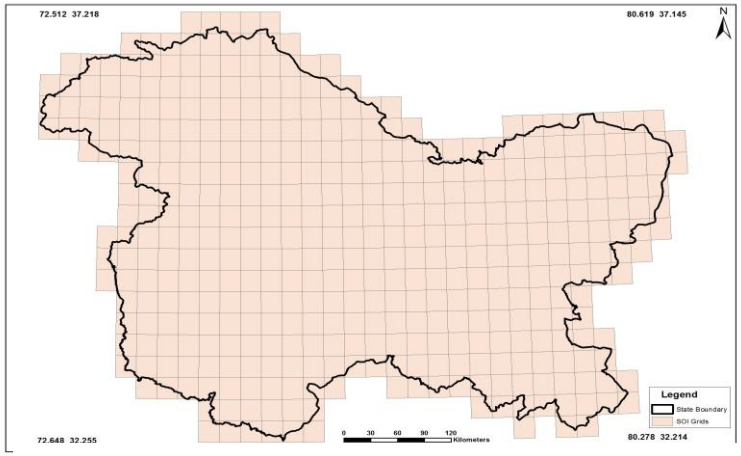


Fig.11: Spatial frame for databases being generated under SDI

3.2 Functionalities of the Beta Version

The beta version has a very impressive user interface with provision for user registration through user name and password. The authorized official of the user / line department submits the important user credentials / details as a new user and obtains User Name and Password from the Network Administrator, SSDI to access the web portal. The various functionalities of the beta version of the geoportal solution include:-

i. Layer select bar
ii. Pixel identification
iii. Search spatial/non-spatial data
iv. Export spatial /non-spatial data in shape/ excel format
v. Selecting a polygon, line and a point feature
vi. Selecting a rectangular area of a map
vii. Measure distance along a feature and measuring aerial distance
viii. Zoom-in and Zoom out the map
ix. Calculate area of a polygon
x. Select multiple map in transparent mode
xi. Identifying a feature using a tool tip
xii. Printing a map or a table with varying resolution
xiii. Downloading a map in pdf or tiff or geotiff format on A4 or A3 size

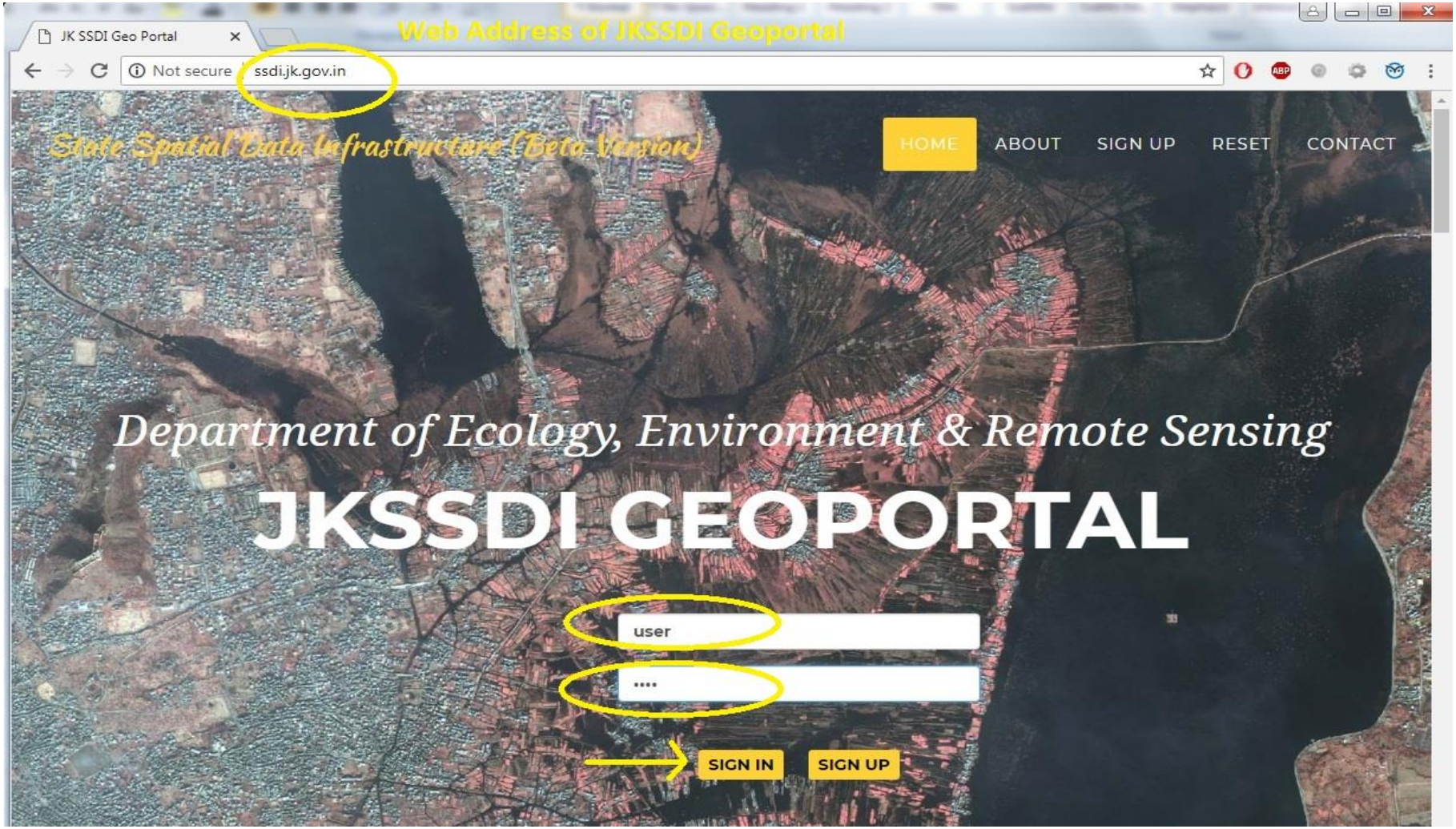


Fig.:12 Interface of the Beta version of J&K Geoportal solution

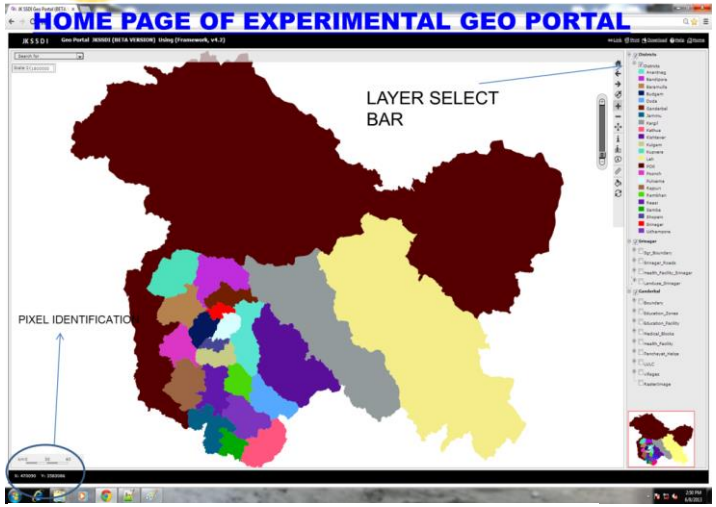


Fig.13: Home page of the Experimental Geoportal

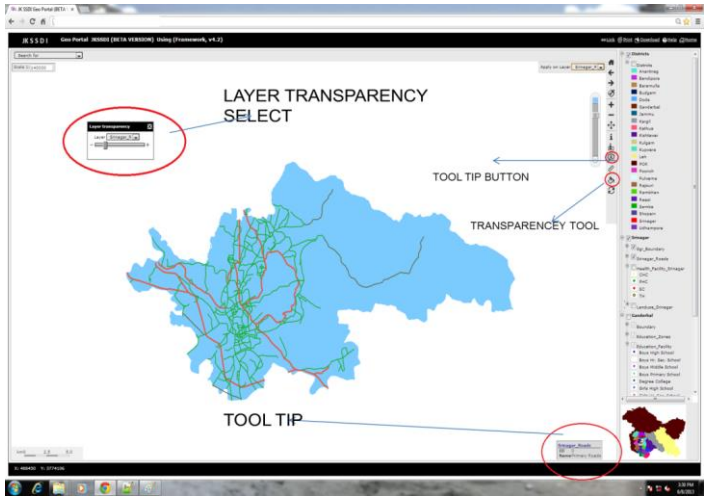


Fig.14: Layer transparency tool of the beta version

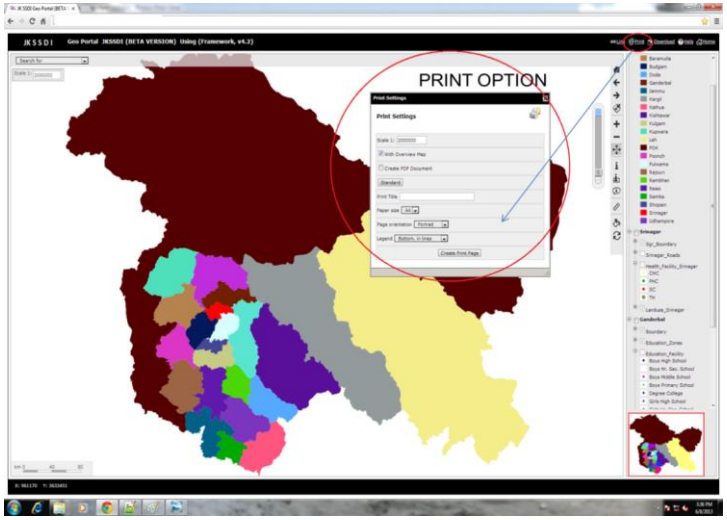


Fig.15: Print option in the geoportal solution

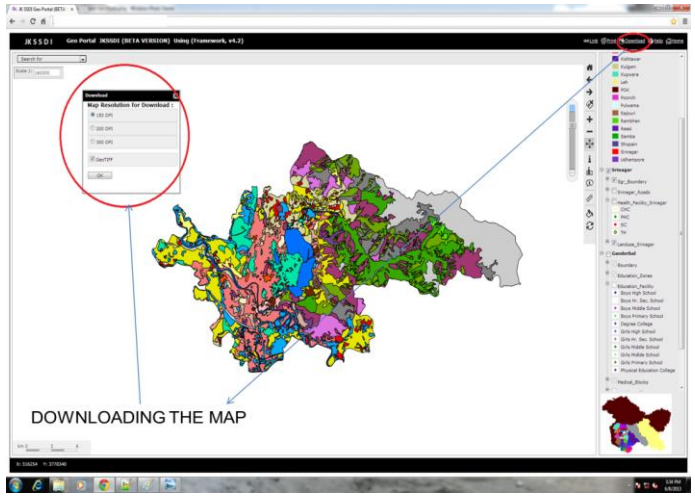


Fig. 16: Downloading option in the beta version

3.3 Layers on the Live SSDI-JK Geoportal (as on November 2018)

The following layers of information have already been uploaded on the beta version of the geoportal solution and these layers are accessible online for Line departments to explore and to provide necessary feedback to improve the solution.

i. Satellite Data
    a. Google Map
    b. Google Image
ii. JK Boundaries
    a. JK State Boundary
    b. JK Division Boundary
    c. JK District Boundary
    d. JK Tehsil Boundary
iii. Roads JK
iv. Rail JK
v. JK Land use/ Land cover
vi. JK Forest
    a. Forest circles
    b. Forest Divisions
    c. Forest Ranges
vii. Electoral Boundaries and Polling Stations
    a. Constituency Name
    b. Polling Stations

viii. J K Health
    a. Existing Health facility
ix. Utilities and Infrastructure
    a. Power projects
    b. Major Educational Institutes
x. Sonamarg Development Authority
    a. Detailed Land use/ Land cover
    b. Major Assets
xi. Baderwah Development Authority
    a. Jurisdiction of BDA
    b. Road network
    c. Tourist Destinations
xii. Detailed Land use/ Land cover of priority Areas
    a. Dal and Nigeen Lake
    b. Dal and Nigeen Lake Catchment Area
    c. Neeru Forest Range
    d. Rakh-i-Arth
    e. Pahalgam
    f. Gulmarg
    g. Mughal Road
    h. Ganderbal

i. Batote- Kishtwar Road

xiii. Geomorphology

xiv. Drainage

xv. Lithology

xvi. Srinagar

a. Development Area Boundary
b. Road network
c. Land Use / Land cover
d. Lanes By lanes
e. City Flood Zone
f. Chinar trees

xvii. Ganderbal

a. District boundary
b. Education Zones
c. Education Facility
d. Medical Blocks
e. Health Facilities
f. Panchayat Halqa
g. Land use/ Land cover
h. Villages

The J&K State Remote Sensing Applications Centre, Department of Ecology, Environment & Remote Sensing has generated voluminous geospatial database for State under different centrally and state sponsored projects at different period of intervals, on different scales using different spatial resolution images. Many existing databases can be integrated to SSDI. Further few of existing layers need to be updated and many more layers to be freshly generated. In this connection, Geospatial data generated by the department in the past is also being fine-tuned for integration with the Centralized Databank of SSDI. Further, efforts shall also be made to obtain the Cadastral layers developed by the Revenue Department under the Land Resource Modernization Programme for integration with the geospatial data on the Geoportal for improving the analytical capabilities of the planners at micro-level.

3.4 Development of Android Based Mobile App for Spatial Data Capturing

In order to save resources and manpower in spatial data capturing, an Android based Mobile Application was developed at the Geoinformatics Lab with functionalities for capturing spatial data and geo-tagging of government assets of different departments with real time recording of attribute information like; Name of the Asset, condition of the Asset, Year of establishment etc. with facilities for capturing the field photo of the asset. The App has provision for capturing spatial data for departments like Health Department, Education Department, LAWDA, and Consumer Affairs & Public Distribution Department etc. The App. has been put in public domain and is freely available on the Google Play Store for download by user departments for use in capturing of the geospatial data.

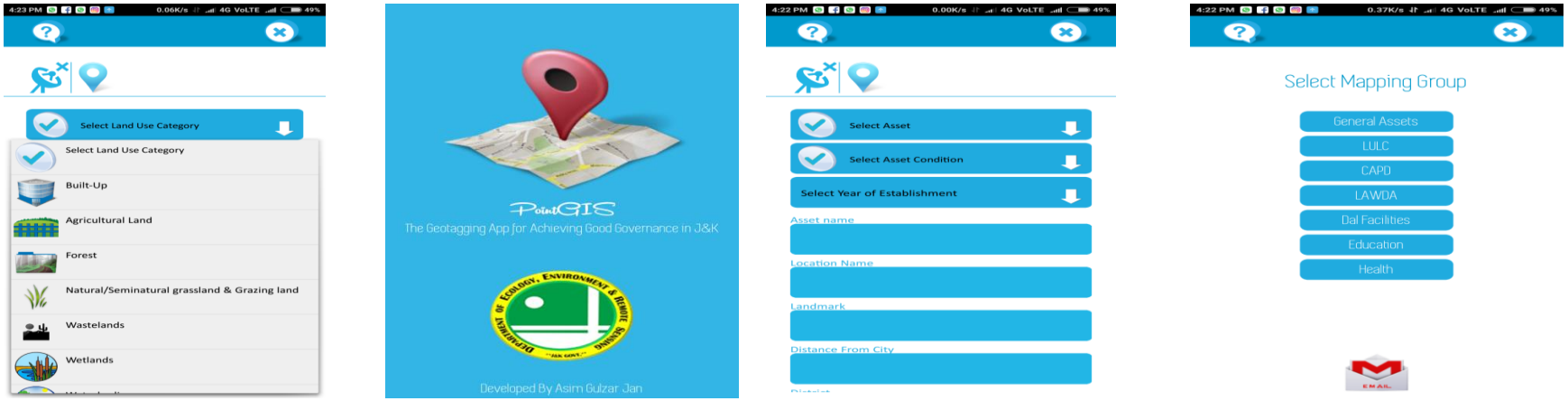


Fig. 13: Interfaces of the Android based Mobile App developed under the SSDI-JK Project

3.5 Final Geoportal (Version-2)

As per established procedure and in view of limited technical knowhow in the field in the country, the National Spatial Data Infrastructure(NSDI) and other State SDI's have or are in the process of appointing a consulting vendor to act as a Total Solution Provider for development, operationalization and maintenance of the SDI's. The same procedure was followed in Jammu & Kashmir State and a detailed RFP was drafted for initiating tendering process as early as 2013. Besides, an evaluation Committee was constituted vide Govt. order No.465-FST of 2012 dated 30/11/2012. But, it was found that the tenderers quoted very high rates. During 2015, the Evaluation Committee recommended that the Evaluation Committee itself be reconstituted with more representation to technically sound persons. Accordingly, the Govt. reconstituted the Evaluation Committee vide Govt. order No.88-FST of 2016 dated 16/03/2016 with following structure:-

1. Director, Ecology, Environment & Remote Sensing, J&K……Chairman
2. CEO, NSDI, DST, Govt. of India, New Delhi…… .Member
3. Representative of Administrative Dept. (Forest Dept.)……..…Member
4. Representative of Science & Technology Dept……...Member
5. Principal Investigator, Karnataka, SDI, IIS, Bangalore……Member
6. CEO, JAKeGA, Jammu & Kashmir……..Member
7. Accounts Officer, Env., Ecology& Remote Sensing ……..Member
8. Principal Investigator, SSDI-JK Project, DEERS…….Member Secretary

Besides, during review of the project taken by the Principal Secretary and the CEO, NSDI, Govt. of India in a meeting held on 22/12/2015, it was decided to bifurcate the scope of work and to involve the State Information Technology Department in providing services and server space at State Data Centre, Jammu for hoisting the Geoportal for which necessary funds for procurement of all hardware and software shall be made available out of the project funds. Further, it was decided to limit the scope of work for the Total Solution Provider (TSP) to only development, configuration, operationalization and maintenance of the geoportal solution. Besides, it was also decided to host the experimental geoportal solution developed in-house by the scientists of the Remote Sensing Centre of the Department of Ecology, Environment & Remote Sensing from the State Data Centre. Further, a decision was also taken to develop a Remote Data Disaster Recovery facility with 10mbps fiber optics internet leased line connectivity at the Bemina Campus where a separate SSDI building is being constructed for the purpose. Accordingly, necessary funds were advanced to the Jammu & Kashmir e-Governance Agency, IT Department, a dedicated 10 mbps leased line was installed at Bemina Lab, the experimental Geoportal under beta version-1 was hosted from the State Data Centre, a Pedestal server was installed at Geoinformatics Lab, Bemina for connectivity with the State

Data Centre for updation of the centralized databank. Besides, a fresh RFP was floated for the first time through e-tendering process which was completed successfully and a competent Total Solution Provider (TSP) was selected with proven capability of being an ISRO partner in the field of software development. An agreement was recently signed and the TSP is expected to accomplish the job of development, configuration, operationalization and testing. It is expected to accomplish the entire project by ending March, 2019 with the launch of final Version-2 of the Geoportal Solution.

3.5 Expected functionalities and key features of the Final version-2 of J&K State Geoportal

S. No	**Functions and Key Features**
1	The website user interface would be available in English.
2	The website will have a combination of both static and dynamic pages. By dynamic pages, it is meant, User Response Driven pages, pages which needs user inputs for querying maps, making inputs to the database, feedbacks, etc.
3	The Geoportal would be cross browser compatible and would auto fit to any screen resolution (would have tab and mobile versions). The Geo Portal would be responsive to different devices, i.e., to be able to fit and work properly on desktop and hand held devices, e.g, Tablets, smart phones.
4	Provision would be made to allow the admin to modify and customize user interface at any time. Accessible for customization through industry standard programming languages such as JAVA,C#, NET, Silverlight, Flex, etc.
5	Users would be able to import information from major Geoportals like Google Earth, Bhuvan, etc.
6	Support for multispatial multi attribute queries on existing data.

7	Geoportal would support graphical queries.
8	The geoportal would have an interactive help module
9	Geoportal would provide print facility ranging from A0-A4 or custom size
10	Separate URL would be provided to the admin where the admin can make changes to geoportal through a GUI, e.g migration of data, publishing of data, approving of data updated by the data providers.
11	An embed link or URL would be there on the geoportal (like we have on Google maps) so that the users can embed or use our map in their own websites or portals.
12	Data would be downloadable by only users authenticated by the admin. Admin would be able to give roles and privileges to the different users on geoportal i.e., Access/process/download/modify geo-spatial data.
13	The geoportal would support information in the form of Text, Maps, and satellite images.
14	The geoportal would be developed using contemporary technologies keeping in view that the user community uses a wide variety of operating systems, computer configurations, browsers and band width.
15	Separate domain registration will be made for this geoportal and will be the responsibility of the Department.
16	Provision is to be made for receiving public inputs from registered users through dedicated email and also through query form inbuilt in the website.
17	The interface module would have user friendly facilities for entire system monitoring, administration, back up, data retrieval, etc.
18	Geoportal must have capability to handle data storage, retrieval and update
19	Support scalability, compatibility, interoperability third party integration and business logic development.
20	Support Windows Operating Platform

21	Geo-portal services using OGC compliant and standards based web services like WMS, WFS, (and WFS-T). WCS and CSW for both upload and download of metadata by remote Data Centers.
22	Web Map Service (WMS) for provision of maps (spatial data with colors, styles, legend, annotation etc.). Facilities for preparing and serving maps on the fly from boundary (district, Tehsil, village etc.) data and various collateral attribute fields/ values available in associated tabular data would be provided. User would be able to select and retrieve both spatial and attribute data sets for the map service on line. Support all users by supporting all clients (GIS Platforms, Remote Sensing Platforms, Open Source Clients, Web Clients)…anywhere
23	Web Feature Service (WFS/GML) for upload/ download of OGC's GML data (OGC's GML 2.1.2 or higher specification version would be followed. GML version 3.1's Simple Feature Profile 1 or 2 will be preferred considering to OGC GML Application Schema and other data formats like MapInfo format and ESRI's Shape/coverage/design /drawing format.
24	Web Coverage Service (WCS) for sharing coverage like satellite images from the database server
25	Rule/ login based downloading data using WCS
26	Support standard OGC compliant open source database management systems and other propriety DBMS like Oracle Spatial, ESRI enterprise geodatabase, POSTGIS.
27	Follow open standards, OGC and ISO concepts for describing and delivering the data.
28	In addition to the OGC Web Services, the system would support SLD, the OGC styling language to portray maps from WMS, WFS and WCS services (OGC/ISO)
29	Standardize Geospatial Information (GI) and Metadata into the internationally defined and accepted data model

	(ISO/OGC)
30	Search/locate geospatial data – metadata services
31	Centralized Security
32	Read standard database generally being used by prevailing GIS Software in the Market
33	Download geo-spatial datasets from the database considering to the designed GML application schema to facilitate value addition.
34	Would support authentication compatible to many IT standard technologies like Active Directory, LDAP, Database, CAS, etc.
35	Security Service built on some Latest Industry Standard.
36	Would directly read and serve vectors from file system (shape files, GML, etc.) along with it stored on an open source OGC compliant database.
37	Would have feature of 'polygon masking' that hides the restricted or sensitive information from the end-users. An administrator can configure spatial masking security, and re-sampling resolution.
38	Support for Lossless and time efficient data compression.
39	Would directly read and serve image types like ECW, PNG, IMG, JPEG2000, and TIFF and GeoTIFF and support for multiple coverage data and output formats
40	The system would allow at least 50 concurrent users to login in less than 05 sec each.
41	Very Fast Massive Imagery Delivery regardless of its storage (database, SAN, file systems) deliver in the same interoperable manner.

42	All the data would be able to publish and serve through multiple protocols and the OGC Web Services like WMS, WFS, WCS, etc.
43	There would be an additional support for KML and GeoRSS output formats for most of the services.
44	In addition to the OGC Web Services, the system would also support SLD: the OGC styling language to portray maps from WMS, WFS and WCS services.
45	There would be support for all versions and levels of GML (GML2, GML3, and GML-SF)
46	The JKSSDI logo would be designed by the vendor and would be supplied to the department in custom sizes in .jpeg, .png and .cdr once approved by the Department of Ecology, Environment & Remote Sensing (DEERS).
47	The site map of the geo portal would be designed in both xml and html format for SEO.
48	Proper technical documentation (in both hard and soft copy) would be provided to the department persons to be trained by the vendor.
49	WPS (Web Processing Service) Would provide web method of processing, accessing, finding. User would be able to process the geospatial data (Processing Services).
50	It would allow the users to Clip point, line or polygon or Subset image using a polygon feature and export it.

3.6 Data standardization and Integration Approach

Spatial information - images and maps, forms the foundation and basis for most planning and implementation of developmental activities; infrastructure development; disaster management support; environmental monitoring; natural resources management; business geographic and many other Jammu and Kashmir state activities. Even common citizens require maps and spatial information for their localized decision-making. Generating the information on the nation's / State's natural resources and its infrastructure; updating

and maintaining the information sets and integrating these with administrative and social datasets provides the most optimal and scientific decision alternatives in support of development.

Standards are a fundamental requirement for the successful GIS implementation in state. These standards enable technologies – imaging, GIS, GPS and applications – thematic mapping, services and outputs etc to work together. Standards are important not only to facilitate data sharing and increase interoperability, as is understood from many international efforts, but also to bring a systematization and "automation" into the complete implementation process of mapping and GIS itself.

Realization of the standardization process we can follow any one of the national GIS standards or combination of multiple national standards like NRIS, NUIS, NNRMS etc for various application-oriented datasets.

3.7 Scale of Layers

Scale represents the relationship of the distance on the map/data to the actual distance on the ground. Source scale is the scale of the data source (i.e. aerial photo or satellite image) from which data is digitized (into boundaries, roads, landcover, etc. in a GIS). Scale of layers are depending as application requirement and its extent. Application for urban analysis and management requires large scale GIS dataset whereas topographical mapping and analysis can be performed with small scale GIS dataset. Monitoring of agriculture conditions and analysis of crops can be performed with medium scale dataset for the planning and management at regional level, and for parcel level monitoring, analysis; GIS dataset should be prepared in large scale. The various types of layers and their corresponding scales of mapping is described as under

Layers / Application	**Scale**	**Reference / Remark**
GIS Database of Underground Utilities	1:1000	Arial Photography, Image
CITY BASE MAP, Parcel Mapping,	1:2000	Arial Photography, Image

Master Plan Generation and Monitoring, Village boundary etc.	1:10000	Satellite, Stereo
District level, Taluk level mapping of topographical features.	1:25,000	Satellite, Stereo
Hydrology, Topographical features, LULC, Surface Water, Soil, lithology/rock type and structure, Geomorphology, Transport, network, drainage, settlements etc.	1:50,000	Satellite, Stereo, SOI
Country level layers.	1:250,000	Satellite, Stereo, SOI

3.8 Required Web Services

Web services provides a standard means of interoperating between different software applications, running on a variety of platforms. A web service is a mechanism that provides some kind of data and/or functionality over the Web. Provides access to GIS data or functionality over the internet in a standardized way and GIS web service is NOT an internet mapping application. A service can be consumed by, or integrated into, a web application. A web service can be thought of as an Interface, by which your application accesses the data or functionality. GIS services can provide geographic data, geoprocessing tasks, such as address matching, routing, or geocoding through standard internet protocols. Using the Web-GIS services data does not need to be housed locally and may come from many sources, and maintained by the hosting entity. Web-GIS Services uses standard formats regarding how they can be accessed and what capabilities they have. Interoperability - can work across different platforms and applications and over networks. Various layers are value added dataset can be used by inline departments for management planning to fulfil their specific need, for that requirement specific services can be shared with partnering agencies or departments.

OGC Standard services:

- WMS - Web Map Service
- WFS - Web Feature Service
- WCS - Web Coverage Service
- WPS - Web Processing Service
- WS -Common - Web Services Common
- CSW- Catalogue services for the web
- Proprietary services

Based on the requirement of department and inline departments GIS data (layers) can be shared in the form of various services listed above.

CHAPTER - 4: SPATIAL DATA NEEDS ASSESSMENT

In order to develop a comprehensive Spatial data infrastructure in the state, it is necessary to undertake a broader consultation with the major user groups and communities so that a larger level of input-gathering is achieved. Such consultation process is to be undertaken with key government departments who are major user groups of GIS activities so as to obtain a more systematic and agency-oriented perspective towards SDI Vision in the state. Before, such a process is set into motion, it is necessary that a user needs assessment is initiated to sensitize the user departments about the technology benefits so that they themselves come up with their problems for obtaining WebGIS based solutions.

There are a total of 38 Administrative Departments in J&K State. Out of these 38 departments, nearly 30 departments have a direct or indirect linkage to use of GIS or benefit from GIS usage. At the same time, all those departments that can embed GIS data into their already existing activities were also identified. Out of these 30 departments, nearly 12 departments are already using GIS and have shown extensive interest in GIS usage in past few years.

The implementation process of SDI in Jammu & Kashmir began with conducting of a national level conference at Jammu on 26th of February, 2013 inaugurated by the then Hon'ble Chief Minister of the State. This followed a series of workshops on SDI across the state to sensitize the government departments about utility of SDI in their respective domain of governance. A brief user needs assessment report was also formulated and distributed among the user community at that point of time. However, it has been observed that there is little or no feedback from the users. Therefore, it has been decided to analyse the user needs of the various departments and to allow users to respond with suggestions to improve upon same in future for filling the gaps in information on geospatial data needs.

Therefore, the data needs and applications suited for various departments are discussed in the following part of this document. Besides, an effort has been made to identify the raw data sources and gaps that need to be filled through data generation in the near future so that the vision for GIS based planning is achieved in the next five to seven years in an operational mode for at least the major departments which are directly linked to public service delivery system, natural resource monitoring and disaster management.

4.1 Department of Horticulture

Jammu & Kashmir State is predominantly an agrarian economy with about 80% of its population engaged in agriculture and allied sectors. The Agro-climatic diversity of the State varying from sub-tropical in Jammu, temperate in Kashmir and cold arid in Ladakh, makes it ideal for varied cultivation. With importance of the department with respect to food and fodder along with economy, it is compulsory to integrate maximum agricultural dataset in geo-portal that will enhance to analysis, monitor and assessment and agricultural conditions.

Horticulture is the backbone of the State's economy with a large chunk of population directly and indirectly dependent on it. Presently, it provides direct and indirect employment to about 23.00 lakh people and most of them earn their livelihood from this sector. Presently, an area of 1.21 lakh ha. is under fruit cultivation in Jammu Province with an annual production of 1.87 lakh M.T. (2014-15). Horticulture has been declared as a thrust area by the State Government and various developmental schemes have been taken by the Department under State Sector and Central Sector for promotion of this sector and give further boost to it.

The Department of Horticulture was working under the joint command of Directorate of Agriculture up to 1967-68. Thereafter, Directorate of Horticulture was created at State level. In April 2004, two separate Directorates were created for Jammu and Kashmir divisions. This has facilitated formulation of policies and programmes at province level.

During the last few years, the horticulture sector has seen tremendous progress through introduction of high density cropping. Lot many new varieties of fruit trees have been introduced in the state which is expected to revolutionize the horticulture industry. The web based GIS applications can help the industry to efficiently plan, manage and monitor the resources.

4.1.1 User Needs Assessment – Horticulture Department

Name of the Department	Department of Horticulture
Contact Person	To be nominated by the concerned department
Major Functions of the Dept.	The state of Jammu & Kashmir is known for its horticulture potential and the department of Horticulture directs the development of Horticulture in the state and helps to implement the state component of National Horticulture mission, contributes to programme of horticulture crop improvements, promotes exports, and improves post-harvest infrastructure and management. It also engages in extension services, plant protection schemes for horticulture crops and assists in marketing of produce.
Major perspectives for GIS	GIS based planning, implementation and monitoring ofHorticulture development in J&K. Satellite based monitoring of Horticulture crops to develop a Horticulture Data Bank. GIS Apps relevant to land suitability analysis for horticulture development Census of crops dynamically, early detection for plant protection, Decision support in distribution of Inputs, post-harvest infrastructure development, marketing of horticulture produce, export promotion etc.
GIS data requirements	A table of Images/maps/geo-tagged attributes required for the Dept. of Horticulture
GIS application needs	The Application needs include GIS support for horticulture crops monitoring.
Capacity building needs	Orientation for SDI usage for state and district level officials is important.
Any other salient input	

4.1.2 GIS Data Requirements for Department of Horticulture

No.	GIS Data	Details/description of content	Update cycle	Primary/Alternate Source
A.	**IMAGE**			
1	High-res image as a backdrop for applications	Latest High-res images as a backdrop (in a seamless manner)	As required	DEERS/Google
2	Real-time/ Season images from IRS LISS 3/4 for	Seasonal images for key horticulture areas	Seasonal every 2 year	DEERS through NRSC funded by Horticulture dept.
B.	**MAPS DATA**			
1	Administrative	State/district/Tehsil/village boundary	When new district formed	SoI or DEERS GIS database
2	Seamless Cadastral maps	Parcel boundaries as per revenue village maps with survey numbers; geo-referenced and seamless to state	As and when required	DEERS seamless Cadastral data based on SSLR individual village maps
3	Watershed boundaries	Micro watershed boundary	Every 5 year	RD&PR Dept
4	Road network	Road transport network NH/SH/DR/VR/Tracks	Every 2 year	DEERS, PWD, NHAI
5	Rail Network	Rail lines – all lines details	Every 2year	DEERS and Railways
6	Command Areas	Command area determined for river valley projects/tank command	Every 5 year	RD&PR Dept.
7	Settlement	Village settlement location points	Every 2year	DEERS from Census

8	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Every 5 years	DEERS using SOI/NRSC images
9	Land Degradation	Status of land degradation – physical, chemical degradation	Every 5 year	DEERS and Dept of Horticulture
10	Surface water bodies	All surface water bodies (reservoir, rivers,tank, pond, lakes etc) – extent/water spread	Every 2 year	DEERS using SOI/NRSC images
11	Drainage network	All drainage network (river, streams, nala – up to 1st order streams)	5 year	DEERS using SOI/NRSC Images
12	Ground water prospects	Different classes of ground water prospects in the state equivalent to existing 50k maps of DEERS	5 year	DEERS
13	Canal network	All canal system : main, branch, distributaries	5 years	Irrigation Dept
14	Wastelands	wastelands in the state	5 year	DEERS
15	Land use / Land cover	Up to Level – 3/4 Land use /Land cover	5 year	DEERS
16	Soil	Up to phases of soil series (alternate level of Association of series is also useful)	20 year	DEERS, Horti. Dept, AISLU
17	Wetlands	Wetland information equivalent to 50k wetland maps	2 year	DEERS
18	High Res Image (Back drop)	Latest High Res Image in color to serve as back drop for querying & applications	As required	DEERS
C.	**GEO-TAGGED MIS/ ATTRIBUTES**			

1	Weather data	Rainfall, temp, humidity data collected thru weather collection points network and aggregated to weekly data into weather layers	Weekly	IMD network and processed by DEERS Climate Change Centre
2	Horticulture crop area statistics	Crop area and other attributes on vegetables,flowers and other horticulture plantations, including area and state of mango flowering	Every 2 year	MIS data from Dept. of Horticulture and imaging surveys. DEERS need to discuss this with the dept.
3	Pest and Disease incidence	Seasonal occurrence of pests and diseases, area and extent of crop damage etc.	Every year	Dept. of Horticulture
4	Soil fertility data from field	Soil fertility data collected in field – geo-tagged to cadastral survey numbers	5 years	Dept. Agri& Dept. Of Horticulture.
5	Input supply and service centers	Centers providing/selling inputs like manures & fertilizers, plant protection chemicals and also farm machineries/ equipment	Every year	Dept. of Agri/ Dept. of Horticulture
6	Post-harvest tech centers	Fruits and vegetable processing units	Every year	Dept. Horticulture
7	Amenities	Banks, Agri/ Horticulture Univ.	As required	

4.1.3 GIS Application Requirements for Department of Horticulture

N	App. Name	Functions	Description	Remarks
A	**BASIC GIS APPS**			
1	Display Modules	Display	Display of line, point, polygon (vectorized) and raster data in the form of maps and pictures, attribute data and query results	
2	Query Module	Query	Spatial and non-spatial queries to display the results required	
3	Data Ingest Module	Data Ingest	Encoding (collection of data by geographic area/ input of spatial and	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**HORTICULTURE GIS DSS APPS**			

1	Soil Fertility GIS App	To get the soil Fertility spatially	A GIS App for establishing soil fertility data on survey number basis and developing an application for fertility map status display/query	This can be taken up as a pilot based on state-wide cadastral maps available with Revenue Dept. and then linking soil fertility data from field.
2	Horticulture Site Suitability Analysis and Advisory GIS	To assist the grower in Finding suitable sites For specific crops	GIS based analysis of suitability for horticulture crops and advising farmers for horticulture crops. GIS analysis based on suitability of soils, climate, market, storage and transportation and availability of agricultural area and Production estimates of horticulture crops are also required –but a pilot application on this can be taken up to establish the viability.	Based on data available with DEERS the site suitability analysis and helping Horticulture Department for planning horticulture and monitoring can be quickly taken up.
3	GIS based Watershed Horticulture DSS	Decision support system for horticulture development plans	To characterize and identify micro-watershed development plans – in terms of land and water resources conservation and better land use practices/maximizing productivity etc.	
4	GIS App for Horticulture MIS	App for Linking GIS and MIS	A GIS App for Horticulture department MIS – by geo-enabling all MIS data of the department can be taken up	Internal to Horticulture department

5	Citizen GIS for Horticulture Advisories	Citizens app for real time status of horticulture, advisories	A GIS App for citizens/farmers on general potential sites, present areas, advisories of horticulture crops can be given. A Mobile GIS APP can also be developed for citizens to provide real-time horticulture sites status information.	Citizen GIS App
6	Any other (to be identified)			

4.2 Department of Agriculture

Jammu & Kashmir State is predominantly an agrarian economy with about 80% of its population engaged in agriculture and allied sectors. The agro-climatic diversity of the State varying from sub-tropical in Jammu, temperate in Kashmir and cold arid in Ladakh, makes it ideal for varied cultivation. The goal before the Agriculture Production Department is to enhance the income of farmers and to generate employment in agriculture and allied sectors. The strategy adopted for this purpose is to increase production and productivity of the crops and to enable farmers to diversify their crop production so as to take advantage of market opportunities. The main role of the department is to help farmers to adopt better technology and to facilitate establishment of infrastructure for farm production and marketing. New avenues are being explored for investment. The department is also promoting diversification of agricultural crops to motivate farmers to move towards low volume-high value crops like vegetables, medicinal plants and niche products like saffron, rajmash, zeera, mushrooms etc. Agriculture has, after a very long time, occupied centre stage in the economic and administrative discourse in the State at a time when all seemed lost due to the dwindling interest of the younger generation in agriculture activities. The concerted efforts of the Agriculture Production Department have triggered a new hope among the people, which promises profitability and dignity in the agriculture as an occupation.

Livelihood of the majority of the population of the Jammu & Kashmir State revolves around the agriculture and allied sectors. These sectors constitute the mainstay of the State's economy and contribute nearly 50 per cent to GSDP. Over70 per cent of the population, of more than 1.25 crores depends, directly or indirectly, on agriculture and its allied sectors. The diversification in the physiographic features and agro-climatic variation at macro- and micro-level, involving cold arid, temperate, intermediate and sub-tropical zones, within a small geographical area of 2.22 lakh sq. km indicates the inherent

agricultural potential of the State. The net sown area (NSA) of 7.35 lakh ha (2009-10) is 35 per cent of the reported area as against the national average of 46 per cent. About 70 per cent of the net sown area is under the food crops. The average size of holding is very small (0.545 ha/holding) as compared to 1.66 ha at the national level with more than 93% of owners of these farm holdings subsisting on agriculture and allied activities.

4.2.1 User Needs Assessment– Agriculture Department

Name of the Department	Department of Agriculture
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	• Extension and Advisory Service • Trials and Demonstrations • Training and Farmers Education • Crop Development and Crop protection • Input supply (Seeds, Manures, Fertilizers and Plant protection Chemicals, Agricultural Machinery) • Farm Information Service, Soil Testing The department needs to enable realization of the long-term vision of the state is to ensure sustained higher growth of agriculture and allied activities to increase rural incomes. The twin objectives include increase in agricultural productivity as well as production along with strategies for reducing impact on livelihoods of agricultural labour.
Major Prospective of GIS	Crop yield assessment using RS&GIS Assessment and monitoring of crop vigour and crop stress Application of remote sensing in crop insurance
GIS Data Requirements	• Detailed Land use / Land cover dataset • Crop types, crop yield dataset, cropping pattern, major crop growing regions etc. • Slope, Soil properties, DEM, Water resources, Irrigation infrastructures etc.

	• Administrative boundaries along with parcel dataset. • Weather and climatic dataset (Rainfall, temperature and moisture etc.)
GIS Application needs	➢ Crop monitoring and analysis ➢ Crop forecast and assessment ➢ Acreage estimation and yield assessment ➢ Drought and damage mapping and analysis. ➢ Pest and deceases control management.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.2.2 GIS Data Requirements for Department of Agriculture

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers; georeferenced and seamless to state.	Parcel no., owner, and village code, village name, water resource, utilization type etc.	Whenever required	Financial Commissioner, Revenue department

3	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD, remote sensing mapping, NRSC, CWCI
4	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
5	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
6	Command Area Boundaries	Command area determined for river valley projects/tank command	Command area name, area coverage, etc.	5 years	Irrigation Dept./DEERS using SOI/NRSC images
7	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
8	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
9	Land Degradation	Status of land degradation – physical, chemical degradation	Type of degradation, vulnerability level, reason etc.	5 years	DEERS and Dept. of Agriculture / NRSC
10	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc.) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA

11	Drainage Network	All Drainage network (river, streams, nala - upto 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
12	Ground Water Prospect	Different classes of ground water prospects in the state equivalent to existing 50k maps of NRSC/DEERS	Availability of water depth, categories, zones etc.	5 years	CGWB/NRSC/DEERS/Irrigation Dept/ NRSC thematic maps
13	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
14	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
15	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
16	Soil	Up to phases of soil series (alternate level of Association of series is also useful)	Soil type, soil productivity, physical properties of soil etc.	5 years	NBSS and LUP, DEERS, AISLUS, agriculture department, NRSC etc
17	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
18	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B.	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Well location	Well locations as points	Attributes of wells (depth, water level, water quality etc.)	5 years	Agriculture Department /

2	Weather data	Rainfall, temp, humidity data collected thru weather collection points network and aggregated to weekly data into weather layers	Vector data for specific parameters, Satellite data with high temporal and spatial resolution	weekly	Climate Change Centre / IMD network / MOSDAC / NOAA etc.
3	Crop area statistics	Seasonal cropped area / irrigated crops at village level – to be geo-tagged to village map	Cropped area, area covered by specific crops, irrigated crops along with area and production.	Every years	Dept. of Agriculture / Department of statistics / Department of food and civil supplies.
4	Pest and disease incidents	Occurrence of pests and diseases in crops at village units for all seasons	Disease affected crops, area covered by disease, applied pest control. Etc.	Every yearly	Dept. of Agriculture
5	Farm level data	Farm level data of crops grown, irrigation source, cropping practice production from village records	Farm level, cropping pattern, cycle of crops, no. of crops etc.	Every yearly	Dept. of Agriculture
6	Soil fertility	Fertility Classes of soils mapped from fertility measurement points data	Classes of soil based on fertility index. Etc.	5 years	Dept. of Agriculture / NBSS & LUP / NRSC
7	Agri-amenities points	Point locations and attributes of agri. Amenities / facilities	seed centres, banks, fertilizer centres, market yards etc.	As required	Dept. of Agriculture / Cooperative department / census department
8	Agri Market data	Agri market information – prices, locations, facilities etc.	Base price of specific crop types etc.	As required	Dept. of Agriculture / Department of statistics / Department of food and civil supplies.

9	Workforce data from census	Agricultural workforce Details on village unit from Census.	Labour class, small scale farmers, large scale farmers.	5 years	Census / Dept. of Agriculture
10	Cattle / animal census data	Cattle/Animal census Data at village unit from Animal Husbandry Department	Types of cattle and their product etc.	5 years	Dept. of Agriculture / Department of Animal and husbandry.
11	Watershed / Agriculture Development projects and schemes	Details of location and attributes of all watershed and agricultural development projects with costs and responsible agencies etc.	Types of project, start year, development prospects etc.	5 years	Dept. of Agriculture/RD & PR Dept.

4.2.3 GIS Application Requirements for Department of Agriculture

No.	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical	Provides help when the user faces problem in running the application	

		descriptions etc.		
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**AGRICULTURE GIS (DSS APPS)**			
1	Farm Advisory GIS	Farm Advisory	Farm advisory service based on information on land use, water, soils, weather, agricultural practices and marketing.	The idea is to enable a Farm Advisory service for Dept of Agri so that any farmer can get a diagnostic for his farm and advise on best practices to be employed.
2	Watershed development DSS	Action Plans	To characterize and identify micro-watershed specific soil and water conservation measures and cropping; to prepare action plans, monitoring of programmes and impact assessment, portal development & capacity building.	The idea is to be able to generate action plans for watershed on real time basis and also provide action plans for implementation.
3	Crop Suitability DSS	Crop Suitability Analysis App	Determine crop suitability based on soils, fertility, drainage, amenities etc. so that which are suitable areas for specific crops can be determined / recommended	Module will help to identified the suitable areas for particular crops to get better productivity.
4	Agriculture Statistics Mapping DSS	Agri-statistics	A GIS Application to generate web-maps of agri. statistics – either on village/tehsil/district units agri. workforce, small/marginal farmers, production etc.	System would be able to generate yearly / seasonal and long-term production / loss statistics in defined geographical area

4.3 Department of Animal / Sheep Husbandry

Jammu & Kashmir State is ideally suited for rearing of sheep and goats owing to its Agro-climatic and geo-physical conditions. The pastoral area of state lies both in sub-tropical zone of Jammu, temperate, sub-alpines and alpine areas of both Jammu and Kashmir divisions. Nature which has bestowed this state with high mountains to low hills and vast meadows, provide enormous scope and excellent atmosphere for sheep and goat rearing. Department is responsible to improve the production of wool and mutton both qualitatively and quantitatively so as to improve the socio- economic status of sheep rearing communities on one hand and to meet the demand of wool and mutton to maximum level on other hand by way of extensive cross breeding programme. To study the problems of Sheep Husbandry Sector in respect of feeding, management & Disease control and to implement the programmes accordingly.

Spatial technologies are able to cope with the challenge of the identification of endangered breeds, potential market zones, infrastructure setups, network analysis for optimum route identification etc. An interactive Web-GIS platform will facilitate in decision-making which would favour sustainable use and conservation of livestock breeds via the integration of wide variety of spatial, MIS data, socio-economic and environmental data.

Real time data dissemination on availability of potential / vigorously growing alpine grass lands based on multi date and multiseason satellite imagery will help the nomads to direct their cattle and other livestock to best locations. Educational and health facilities will also be ensured enroute for these migratory tribes to improve their socio-economic condition.

4.3.1 User Needs Assessment– Department of Animal / Sheep Husbandry

Name of the Department	**Department of Animal and Sheep Husbandry**
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	The Department is responsible for overall control of matters relating to production, protection and improvement of livestock, dairy and poultry. The department is pivotal to evaluate and access Central Acts, Schemes, and developmental Programs for their implementation in the state through the line departments. Advise and direct subordinate directorates in the formulation of policies and programs in the field of animal and sheep husbandry, dairy development and Poultry. • Development of requisite infrastructure in the state for improving animal productivity • Promoting infrastructure for handling, • processing and marketing of milk and milk products, • Preservation and protection of livestock through provision of health care.
Major Prospective of GIS	❖ GIS based mapping and analysis of available infrastructure for animal productivity. ❖ GIS based analysis for Spatial distribution of milk and meat production. ❖ Potential market zones identification for milk, and meat using GIS. ❖ Best routes identification for nomads to reach alpine pastures
GIS Data Requirements	• Spatial distribution of animals along with their species types. • Available infrastructures for animal husbandry.

	• Potential market zones in GIS formats along with distribution details. • Major milk producer zones, villages and or districts with production capacity. • Vegetation vigour maps of alpine pastures.
GIS Application needs	➢ Interactive map distribution over the web for animal distribution. ➢ Basic GIS functions for map browsing and rendering. ➢ Query and analysis of various layers from departments. ➢ Spatial decision support system development for production and distribution analysis.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration along with understanding of various spatial analysis.
Any other Silent Inputs	

4.3.2 GIS Data Requirements for Department of Animal / Sheep Husbandry

No.	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				
1	Administrative	State/district/tehsil/village boundary	State code, District code, tehsil code, village code, district name, village name, etc.	When New district formed	SOI / District Administration of concerned districts
2	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and	5 years	RDD/CWCI

			physical properties etc.		
3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI / NRSC/ NNRMS / Mapping from satellite data.
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5	Command Area Boundaries	Command area determined for river valley projects / tank command.	Command area name, area coverage, etc.	5 years	Irrigation Dept./DEERS using SOI/NRSC images
6	Settlement Point	Village settlement location points	Village name and code, along with census information.	2years	SSDI/DEERS from Census settlements
7	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
8	Land Degradation	Status of land degradation - physical, chemical degradation	Type of degradation, vulnerability level, reason etc.	5 years	DEERS and Dept. of Agriculture / NRSC

9	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) -extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
10	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
11	Ground Water Prospect	Different classes of ground water prospects in the state equivalent to existing 50k maps of NRSC/DEERS	Availability of water depth, categories, zones etc.	5 years	CGWB/NRSC/DEERS/Irrigation Dept/ NRSC thematic maps
12	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
13	Wastelands	23 Classes of wastelands in the state.	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
14	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
15	Soil	Up to phases of soil series (alternate level of Association of series is also useful)	Soil type, soil productivity, physical properties of soil etc.	20 years	NBSS and LUP, DEERS, AISLUS, agriculture department, NRSC etc
16	Major / Minor Cities	Cities location with categories and their population	City name, population, grade of city etc.	5 years	Urban authorities, census department
17	Animal details	Area, village, taluk and district wise animals' details along with their species and possible	Geographic area wise no of animals their types and	5 years	Animal census, department of statistics, Department of animal and husbandry etc.

		products.	approximate production capacity along with type of products.		
18	Animal husbandry infrastructures	Available infrastructure details for husbandry development like medical resources, breeding centres etc.	Details of breading centres, vaccination centres along with location name, location of animal shelter houses etc.	5 years	Animal census, department of statistics, Department of animal and husbandry etc.
19	Fodder / grass lands / grazing land	Available fodder / grass lands for animals and sheep	Classified maps indicate area of each polygon, class, subclass etc.	5 years	Department of agriculture, NRSC, Satellite data mapping.
20	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
21	Details of Veterinary hospitals and doctors	Spatial distribution of Veterinary hospitals along with type details	Type of medical facility, location name, no. of doctors, available transportation facility etc.	5 years	Animal census, department of statistics, Department of animal and husbandry etc.
22	High resolution Images (Backdrop)	Latest High-Resolution Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)

			visualization.		
B.	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Soil fertility	Fertility Classes of soils mapped from fertility measurement points data	Soil fertility index, test date, advisory if any etc.	5 years	Dept. of Agriculture
2	Dairy and Poultry product Market data	market information – prices, locations, facilities etc for dairy and meat products.	Potential markets, historical trends etc.	5 years	Dept. of Animal husbandry
3	Workforce data from census	Population engaged in Dairy and poultry business as an employment details on village unit from Census	Population engaged in specific occupation like sheep, poultry, dairy etc at village, district, tehsil level.	5 years	Census/Dept. of Agriculture
4	Cattle / animal census data	Cattle/Animal census Data at village unit from Animal Husbandry Department	Census of Animals in various geographical jurisdiction.	5 years	Dept. of Agriculture / Animal census
5	Animal / sheep Development projects and schemes	Details of location and attributes of all development projects related to animal and husbandry with costs responsible agencies etc.	Project year, funding agency,	5 years	Dept. of Animal and husbandry.

4.3.3 GIS Application Requirements for Department of Animal / Sheep Husbandry

No.	App Module	Functions	Description	Remark
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**ANIMAL & SHEEP HUSBANDARY GIS (DSS APPS)**			

1	Potential zone identification for dairy and meat market	Market Analysis App	To identify potential markets for diary and meat	Module will be helpful to in development planning and management.
2	Identification and analysis of Grazing lands	App for finding potential grass lands for grazing	To characterize and identify grazing lands for more accurate acreage estimation, identification of possible vulnerability to fodder. That information can be distributed via web GIS application over the internet.	The idea is to be able to generate action plans for animal and sheep movement to fulfil fodder requirement.
3	Identification of Decease extents	Generation of disease maps	A GIS Application to generate web-maps of coverage of specific deceases in animals at village/tehsil/district level.	Emergency planning and management
4	Network analysis and spatial distributions of Veterinary hospitals	Measuring physical accessibility to veterinary hospitals	A Web GIS based maps will help to identify nearest locations of veterinary hospitals along with shortest/ optimal roots.	Identification of optimal routes and to reduce transportation cost.
5	Miscellaneous			

4.4 Cooperative Department

Cooperative societies are aimed to Open and voluntary membership and its foundational architecture based on democratic Administration. Cooperatives as an economic system has been termed as the Balancing factor between the two (private and public) economic systems, with the capacity to neutralize the drawbacks of the both. Cooperative Institutions as commercial entities are supposed to be guided by the principle, "Each for all and all for each" and the work done to be guided by the principle, Morality applied to business. In other term cooperative among co-operatives. Major functions of cooperative societies are spread in various sectors Co-operative Bank, Co-operative Marketing Societies and Union's Cooperative Processing Societies and Industrial Co-operatives. Role and responsibilities of cooperative societies includes Control of Warehousing Corporation, Land Development Bank and Cooperative Marketing Union, Control of all officers serving in the Cooperative Department, Administrative charge of all buildings occupied by Cooperative Department.

Spatial information system will help to Maintain and manage a common base of information, maps, technical expertise, knowledge, hardware and software in order to avoid unnecessary duplication. Integration of GIS technology with cooperative departments will increase public information and awareness of local geography, plans, and location potential. System will also Increasing strategic planning for emergency preparedness, mitigation and response time, strategic planning for technical infrastructure leading to greater productivity and lower costs. Aiding in economic development efforts by improving information for businesses interested in location or expansion and more effective use of marketing expenditures. Contributing to new knowledge by combining information using the latest technology for better planning, management and delivery of government services. Spatial technology could be beneficial for better targeting of human services programs and improving integration of human services with other government activities. Improving deployment of police, fire, and emergency responders. It will also improve rapid response and allocation of scarce resources to areas identified as needing more attention. Improving management of natural resources and improving environmental quality by improving the quality and dissemination of information about public health threats.

4.4.1 User Needs Assessment– Cooperative Department

Name of the Department	Jammu and Kashmir Cooperative Department
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	Cooperatives are defined as "an autonomous Association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise". Cooperatives as an economic system has been termed as the Balancing factor between the two (private and public) economic systems, with the capacity to neutralize the drawbacks of the both. Cooperative Institutions as commercial entities are supposed to be guided by the principle, "Each for all and all for each" and the work done to be guided by the principle, Morality applied to business. Cooperative Principles are the guiding force for every cooperative while transacting business in the name of Cooperative. the Internal Cooperative Alliance (ICA) has ratified/ approved seven reformulated principles are: ➢ Voluntary and open membership. ➢ Democratic Member Control. ➢ Member economic participation. ➢ Autonomy Independence. ➢ Education Training and Information. ➢ Cooperation among Cooperatives. ➢ Concern for community.

	Major Responsibilities of Cooperative Department ❖ Registration of Cooperative Societies/Cooperatives. ❖ Registration of amendments to the Bye-laws of Cooperative Societies ❖ Ensure timely conduct of Election to the Managing Committee in Cooperative Societies by the incumbent managements; ❖ Ensure proper investment of funds by Cooperative Societies as per Act and Rules; ❖ Conduct audit, order inspection, enquiry and also initiating surcharge proceedings against negligent functionaries of cooperative societies; ❖ Settlement of disputes of Cooperative Societies through the process of arbitration ❖ To function as an appellate Court in respect of orders passed by lower arbitration courts; ❖ Enforcement/execution of Orders, Awards and Decrees of subordinate Arbitration Courts; ❖ Order winding up and cancellation of registration of defunct/ non-functional Cooperative societies. ❖ Advise for creation of Cooperative Education Fund for training, education, and publicity programmes for the development of Cooperative Movement. ❖ To take steps for framing/amending Cooperative Societies Act/Rules, from time to time, as per requirement.

	❖ To frame, implement execute and monitor various schemes approved by the Central /State Govts, including financial assistance to various sectors of Cooperatives
Major Prospective of GIS	❖ GIS based mapping of Cooperative societies headquarters, branches and integration of MIS dataset. ❖ Spatial distribution of beneficiaries from particular society (Re-settlement, new infrastructures, Bank beneficiaries etc.) ❖ Spatial coverage and connectivity of cooperative product distribution.
GIS Data Requirements	❖ GIS data for Cooperative Societies e.g. head offices, Zonal offices, branches. ❖ Types of cooperative societies and no of beneficiaries from each branch. ❖ Coverage of branches in GIS data formats. ❖ Socioeconomic data integration with Cooperative society's branch offices.
GIS Application Needs	❖ Visualization and distribution of spatially distributed cooperative societies branches and head offices along with their types. ❖ Geographical distribution of beneficiaries from individual cooperative societies. ❖ Spatial decision support system development for production and distribution analysis.
Capacity building needs	Yes, Training regarding data preparation, application use and analysis from advanced modules.
Any other Silent Inputs	

4.4.2 GIS Data Requirements for Cooperative Department

No.	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**MAP / SURVEY DATA**				
1	Administrative	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
3	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc	2 years	SSDI/DEERS and Railways
5	Settlement Point	Village settlement location points	Village name and code, along with census information.	2years	SSDI/DEERS from Census settlements

6	Cooperative societies	Spatial data of headquarters, zonal offices, branches etc. for each cooperative type.	Society branch, Zonal office, Head-office, Type, Location Name etc.	5 years	Department of cooperative / Planning department / socio-economic census / statistics department
7	Beneficiaries	Details of beneficiaries with their spatial location and types of benefits	Branch level no of beneficiaries, spatial distribution, type of grant / help, benefitting year etc.	5 years	Department of cooperative / Planning department / socio-economic census / statistics department
8	Major / Minor Cities	Cities location with categories and their population	Major/ Minor cities with population details, City name, population, grade of city etc.	5 years	Urban authorities, census department
9	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B.	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Workforce data from census	Village, taluk, district wise Socio-economic data.	Labour class, small scale farmers, large	5 years	Census / Statistics department / Panchayat raj

			scale farmers.		department etc.
2	Cooperative societies MIS information	Budget, distribution amounts, and development plans	Budget, distribution amounts, and development plans	5 years	Dept. of cooperative / planning department / Concerning district development headquarters.

4.4.3 GIS Application Requirements for Cooperative Department

No.	App Module	Functions	Description	Remark
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	

5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
8	Potential cooperative beneficiary's analysis	To identify potential beneficiaries spatially	Beneficiaries employment identification, living status, type of benefits, current status etc.	
9	Spatial area identification for new infrastructure setup	To identify potential areas for setting up cooperative societies	A Web GIS based maps will help to identify potential zones for new branch, zonal office setup etc. with reference to population and other factors.	

4.5 Department of Food, Civil Supplies and Consumer Affairs

The Department of Food, Civil Supplies and Consumer Affairs previously known as "Consumer Affairs and Public Distribution Department" is one of the oldest Department in the State entrusted with the responsibility of distribution of essential commodities namely Rice, Wheat, Sugar, Kerosene Oil under the Public Distribution System. The objective of department is to provide access to adequate quantity of quality food at affordable prices. The Department also plays an active role in managing the supplies of other essential commodities. The Department is also committed to protect and guard the interest of the consumers in the state. The Department also has a Legal Metrology Wing responsible for bringing, uniformity in respect of Weights and Measures in trade and commerce and regulate sale of goods in package form. The Officers of Legal Metrology Wing are authorized to institute complaints in the Consumer Forum on behalf of aggrieved consumers.

With the advancement in Information Technology (IT) and Geographical Information System (GIS) synchronizes new applications to be centralized so that planners, policy makers and citizens can use it in day-to-day decision-making process. The underlying concept is that better decisions are made if the best available information is presented in a manner most appropriate to the defined issues. Spatial technologies are able to cope with the challenge of the Public distribution system, network analysis for optimum route identification, Identifying the available infrastructure facilities for warehouses and FP Shops Outlets, To monitor the movements of vehicles for the distribution of PDS commodities from ware houses to FP Shop outlets, A delivery model of Food stock for Emergency Operations, Analysis on PDS resources and demands to propose the most optimized routes for accessing the resources, Bifurcation of Fair Price Shops based on Socio Economic Indicators etc. An interactive Web-GIS platform will facilitate in decision-making to get desirable outcomes via the integration of wide variety of spatial, MIS data, socio-economic and environmental dataset.

4.5.1 User Needs Assessment– Department of Food, Civil Supplies and Consumer Affairs (FCSCA)

Name of the Department	Department of Food, Civil Supplies and consumer affairs (FCSCA)
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	Department of Food, Civil Supplies and consumer affairs (FCSCA) in the State entrusted with the responsibility of implementing one of the prime social sector programmes of providing "Food Security" to one and all in general and to the vulnerable sections of the Society in particular by way of providing food grains like rice, wheat, and Atta and other essential commodities like Sugar, Kerosene oil and Petroleum Products besides, protecting the consumer rights. The Department of Food, Civil Supplies and Consumer Affairs has been performing the following prime functions. ❖ Public Distribution System. ❖ Regulation of Supplies, LPG and other Petroleum Products etc. ❖ Price/Market Control. ❖ Redressal of Consumer Grievances and Protection of Consumer Rights. ❖ Consumer Awareness Programme.
Major Perspective of GIS	❖ Spatial data distribution and analysis regarding to PDS, Consumers, Compliant etc. ❖ Interactive Web-maps for Distribution centres. ❖ GIS based Warehouse locations with distribution coverage ❖ Spatial location of and distribution coverage of shops.

GIS Data Requirements	❖ Spatial dataset with attribute information about public distribution centres. ❖ Spatial distribution of population and living status. ❖ Village wise Socio-economic census data in GIS formats. ❖ Administrative boundaries along with associated attribute information.
GIS Application needs	❖ Network analysis for optimum route identification. ❖ Mapping and analysis of the available infrastructure facilities for warehouses and Shops Outlets. ❖ GIS based monitoring and analysis of the movements of vehicles for the distribution of PDS commodities from ware houses to FP Shop outlets. ❖ A delivery model of Food stock for Emergency Operations. Analysis on PDS resources and demands to propose the most optimized routes for accessing the resources. ❖ Bifurcation of Fair Price Shops.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.
Any other Silent Inputs	

4.5.2 GIS Data Requirements for Department of Food, Civil Supplies and Consumer Affairs (FCSCA)

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
3	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
4	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
5	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
6	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc.) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA

7	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
8	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
9	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
10	Warehouses	Spatial distribution of warehouses with storage capacity and command area etc.	Name of warehouse along with location name, storage capacity, command area / distribution extent, no. of nodes, responsible person etc.	5 years	FCSCA / District headquarters /
11	Government distribution Shops	Spatial distribution of shops along with location name etc.	Lease owner Name, no of card holders, classification of cards, product types, monitoring agency etc.	5 years	FCSCA / District headquarters / Census / department of statistics.
12	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B.	**GEO-TAGGED MIS/ ATTRIBUTES**				

1.	Workforce data from census	Agricultural workforce Details on village unit from Census.	Labour class, small scale farmers, large scale farmers.	5 years	Census / Dept. of Agriculture
2.	Socio-economic survey data at various scale	Socio-economic distribution of population	Name of locality, population, employed, un-employed, BPL, occupational categories etc. in (village, taluk, District etc.).	5 years	Census / Dept. of statistics / Food, Civil supply and consumer affair department.

4.5.3 GIS Application Requirements for Department of Food, Civil Supplies and Consumer Affairs (FCSCA)

No.	App Module	Functions	Description	Remark
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	

6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**FCSCA (DSS APPS)**			
8	Mapping and analysis of the infrastructure facilities.	Map visualization with GIS functionalities	Spatial distribution of Shop outlets, warehouses and other infrastructures etc.	
9	Food Delivery system	Planning and implementation strategies	Design and development of analytical models to find out suitable delivery model for distribution of food at the time of emergency.	This tool will also helpful in zonal analysis for new shop outlet setup based on various spatial and MIS dataset.
10	Network analysis for optimum route identification.	Network Analysis	Network analysis module will be facilitating for identification of optimum routes for food items transmissions from warehouses to shop outlets.	
11	Consumer Module for complain and suggestions	Grievance Redressal	Module will help in complain registration regarding distribution, fraud, prices, and irregularities in measurement of items to concerning agencies or officials.	Module will also help in to track complain or suggestions applied to the departments.
12	Miscellaneous			

4.6 Disaster management Relief, Rehabilitation, and reconstruction department

State of Jammu & Kashmir is vulnerable to natural and manmade disasters. All disasters are spatial in nature. GIS techniques act as a decision support tool. Decision making can possible by analysis of different GIS layers. Currently socio-economic and geo-spatial data is useful for management and planning of disasters as well as tackling of disastrous condition. Disaster management relief, rehabilitation, and reconstruction department from Government of Jammu and Kashmir is responsible for the disaster management in state and is working towards achieving disaster resilient Jammu and Kashmir through techno-centric, inclusive, innovative and multi hazard risk reduction strategies. The purpose of the Geo-spatial technology is to enhancing the capacity of Government of Jammu and Kashmir to use geo-referenced information for disaster risk reduction and management, including risk identification, preparedness, response planning, post-disaster assessment and recovery planning. Implementation of Geo-Spatial technology would be facilitating for GIS based data pooling, analysis and creating spatial services for State level and District level disaster operational assistance to Government of Jammu and Kashmir. Components of disaster management strategies are mentioned below.

Mitigation: Emergency is the discipline of dealing with and avoiding risks. It is a discipline that involves, steps taken to contain or reduce the effects of an anticipated or already occurred disastrous event.

Preparedness: It is how we change behaviour to limit the impact of disaster events on people.

Response: An effective plan for public health and other personnel during a disaster would outline activities designed to minimize the effects of the catastrophe. These efforts can be summarized as closely situation analysis and response.

Disaster Recovery: The aim of the recovery phase is to restore the affected area to its previous state. Recovery efforts are concerned with issues and decisions that must be made after immediate needs are addressed.

Spatial technology will facilitate simultaneous data sharing across the departments and presenting the data for risk informed decision making through enterprise GIS system. Analysis of the data from multiple departments in Jammu and Kashmir with domain specific inputs of sector specific experts which will enable value added situation planning, preparedness, mitigation measures and emergency response. Various departments and agencies who are stakeholders using GIS in the disaster management process. GIS, RS & GPS is useful in disaster management applications & for decision making.

4.6.1 User Needs Assessment– Disaster Management relief, rehabilitation and reconstruction department

Name of the Department	Disaster Management relief, rehabilitation and reconstruction department
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	State Disaster Management Authority is established with vision to build a safer and disaster resilient state by a holistic, pro-active, technology driven and sustainable development strategy that involves all stakeholders and fosters a culture of prevention, preparedness and mitigation. J&K SDMA is mandated to lay down the policies, plans and guidelines for Disaster Management to ensure timely and effective response to disasters. Major responsibilities of J&KSDMA with Disaster Management Relief, Rehabilitation and reconstruction department are listed below. ➢ Lay down policies on disaster management;

	➢ Approve the State and National Plan. ➢ Approve plans prepared by the Ministries or Departments of the Govt. of Jammu and Kashmir / Government of India in accordance with the State / National Plan. ➢ Lay down guidelines to be followed by the State Authorities in drawing up the State Plan. ➢ Lay down guidelines to be followed by the different Ministries or Departments of the Government for the Purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects. ➢ Coordinate the enforcement and implementation of the policy and plans for disaster management. ➢ Recommend provision of funds for the purpose of mitigation. ➢ Provide such support to other States /countries affected by major disasters as may be determined by the State / Central Government. ➢ Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with threatening disaster situations or disasters as it may consider necessary. ➢ Lay down broad policies and guidelines for the functioning of the Disaster Management Agencies and departments.
Major Perspective of GIS	❖ Spatial data distribution and analysis related to Disaster events, forecast,

	damage assessment, and extent of event etc. ❖ Interactive Web-maps for spatial data distribution related to various disaster events. ❖ GIS based Disaster impact analysis for specific events. ❖ Spatial location of and distribution of past events. ❖ GIS based Verification of disaster damages for regulating compensation.
GIS Data Requirements	Spatial location of past disaster events Damage intensity and their geographical extents. Forecast / advisory data using station data, remote sensing data, model data etc.
GIS Application needs	• Network analysis for optimum route identification at time of disaster, relief and rehabilitation. • Mapping and analysis of the available infrastructure facilities. • GIS based monitoring and analysis of the potential risk zones for particular disaster type (flood, earthquake, landslides etc.) • GIS based dissemination of alerts and awareness • Manage and monitor emergency response centre. • Spatial data and services sharing with line departments
Capacity building needs	Yes, Capacity building for the understanding of various modules and data

	integration.
Any other Silent Inputs	

4.6.2 GIS Data Requirements for Disaster Management relief, rehabilitation and reconstruction department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements

6	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
7	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) -extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
8	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
9	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
10	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
11	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
12	Soil	Up to phases of soil series (alternate level of Association of series is also useful)	Soil type, soil productivity, physical properties of soil etc.	20 years	NBSS and LUP, DEERS, AISLUS, agriculture department, NRSC etc
13	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.

15	Past disaster damage extents	Detailed damage extent maps from past events.	Name and type of disaster, geographical coverage,	As required	J&KSDMA/ NRSC/IMD etc.
16	Past disaster events	Spatial distribution of disaster with different categories.	Disaster type, location name, date of occurrence, loss of lives, loss of properties, relief, rehabilitation exercise etc.	As required	NDMA / J&K SDA / IMD / ISRO / MOSDAC / NOAA etc.
17	Disaster Risk zones	Risk zones regarding earthquake prone zone, flood pane, drought prone areas etc.	Type of risk, mitigation plans and advisory etc.	As required	NDMA / J&K SDA / IMD / ISRO / MOSDAC / NOAA/ District administration etc.
18	Industrial layers	Information about various industries and hazardous infrastructures to identify manmade disasters.	Type of industry, categories (chemical, mechanical etc.), spatial locations etc.	5 years	NDMA / J&K SDA / industries and commerce department/ census/ department of statistics / department of urban planning etc.
19	Emergency Response centre	Spatial location of Emergency centres like (fire stations, State, district disaster management centres etc.)	Spatial locations of centres, Specialities, resources etc.	2 years	NDMA / J&K SDA / District / State / National Disaster Management Authority etc.
20	Weather data	Rainfall, temp, humidity data collected thru weather collection points network and aggregated to weekly data into weather layers	Vector data for specific parameters, Satellite data with high temporal and spatial resolution	weekly	Climate Change Centre / IMD network / MOSDAC / NOAA etc./ NDMA/ J&KSDMA etc.
21	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view

			visualization.		etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Census information	Village, taluk and District level census information.	Population, societal status etc.	5 years	Census / Dept. of statistics etc.
2	Industrial environmental impact reports	Environmental impacts and risk information	Type of industry, establishment year, safety majors etc.	5 years	NDMA / J&K SDA / industries and commerce department/ census/ department of statistics / department of urban planning etc.
3	Socio-economic survey data at various scale	Socio-economic distribution of population	Name of locality, population, employed, un-employed, BPL, occupational categories etc in (village, taluk, District etc.).	5 years	Census / Dept. of statistics / Food, Civil supply and consumer affair department.

4.6.3 GIS Application Requirements for Disaster Management Relief, Rehabilitation and Reconstruction Department

No	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	

3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output.	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**GIS DSS APPS**			
8	Mapping and analysis of the available infrastructure facilities	Map visualization with GIS functionalities	Spatial distribution of various infrastructures like fire stations, police station, warehouses and other infrastructures etc. as required by department.	
9	Network analysis for optimum route	Network analysis	Network analysis module will be facilitating for identification of optimum routes for food items transmissions, response reachability from	

	identification.		warehouses, response centres at the time of emergency.	
10	Spatial data distribution and analysis related to Disaster events, damage assessment, and extent of event etc.	Overlay analysis	Various disasters and their history specific to geographic location will be distributed to help in decision making process for damage assessment and rehabilitation plans.	
11	Forecast / advisory data using station data, remote sensing data, model data etc.	Alarm and warning system	Distribution of alerts, warnings and advisories for specific disaster or events specific to geo-locations that will be helpful to prevent loss of lives and properties.	
12	Miscellaneous			

4.7 Tourism Department

Jammu and Kashmir are northernmost state of India major tourist attractions in Jammu and Kashmir are Srinagar, the Mughal Gardens, Gulmarg, Pahalgam, Patnitop, Jammu, and Ladakh. Some areas require a special permit for non-Indians to visit. Major tourist regions and attractions are listed below.

- Jammu — Jammu is the winter capital of state and known for its temples, particularly The Vaishno Devi Temple in Katra which is visited by over 1 crore (10 million) pilgrims every year, making Jammu the most visited part of Jammu and Kashmir State.
- Kashmir Valley — is visited for its gardens, lakes, and pristine streams and landscapes. Kashmir Valley consists of many ancient temples and shrines which makes it an important site for Hindus and Buddhists.
- Ladakh — consists rivers like Indus river. The peaks in the Ladakh Range are at a medium altitude close to the Zoji-la (5,000–5,500 m or 16,000–18,050 ft) and increase toward the southeast, culminating in the twin summits of Nun-Kun (7000 m or 23,000 ft).

Support to the private sector industry in the form of incentives for settings up various tourist facilities as well as for promotion and marketing of their products and services. The Department of Tourism has Tourist Offices in all the tourist resorts of the State. In addition, there are 6 promotional offices outside the State, one each at New Delhi, Mumbai, Ahmedabad, Hyderabad, Chennai and Kolkata. Also, there is one provincial Director of Tourism each for Jammu and Kashmir Divisions. The Department also has Engineering Division under its control for the implementation and execution of various schemes for formulating and monitoring the plan schemes, the Department has a Planning Wing and for overall marketing and promotion, the Department has a Publicity Wing.

4.7.1 User Needs Assessment– Department of Tourism

Name of the Department	Department of Tourism
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	The Department of Tourism, J&K is the main developmental, promotional and regulatory arm of the J&K Government. Its main role comprises of overall planning and execution of schemes for the development, up-gradation and improvement of the tourism infrastructure in different parts of the State. The Department of Tourism, Jammu and Kashmir is the main tourism development, promotion and regulatory arm of the state Government. Find information on travel destinations, various adventurous activities like skiing, trekking, mountaineering, shikara boat rides, mountain cycling, water rafting, para gliding etc. Details about traditional cuisines, street food and list of restaurants are given. User can also access details of accommodation and mode of travel in the state. Information on foreign registration office, tourist network, contact details of tourist offices etc. is provided.
Major Prospective of GIS	❖ GIS is used in tourism sector in different ways in the different countries. In general, the most common use of GIS in tourism is

	location analysis and related to transport and accommodation. In general, the following results can be achieved by queries in GIS Design and Application for Tourism. ❖ Determination of important and necessary places for tourism. ❖ Determination of historical and tourist places. ❖ Determination of the best suitable hotel. ❖ Determination of the optimum plan for sightseeing places. ❖ Determination of the shortest distance between the selected places. ❖ Analysis and management of cultural and historical heritage. ▪ The use and application of GIS in the tourism sector can be divided into the following three categories: Tourism planning. Tourism development and research. Tourism marketing.
GIS Data Requirements	Spatial location of cultural and historical sites Spatial distribution of hotels with details of facility Location of Emergency response services (fire, hospitals, police stations etc.) Road network, railway network and other transportation layers. Weather and climatic data set. Public buildings, commercial zones and tourist offices etc.

	➢ Political boundaries ➢ Hydrological layers (watershed, basin, rivers, Nalas etc.)
GIS Application needs	Network analysis for optimum route identification from one location to another. Mapping and management of the cultural and historical sites. GIS based dissemination of alerts and awareness Manage and monitor emergency response centre. Spatial data and services sharing with line departments. Identification of best suitable hotels.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.
Any other Silent Inputs	

4.7.2 GIS Data Requirements for Tourism Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD / Central ground water board, remote sensing mapping, NRSC, CWCI
3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
6	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.

7	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) -extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
8	Drainage Network	All Drainage network (river, streams, nala - upto 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
9	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
10	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
11	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
12	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
13	Disaster Risk zones	Risk zones regarding earthquake prone zone, flood pane, areas etc.	Type of risk, mitigation plans and advisory etc.	2 years	NDMA / J&K SDA / IMD / ISRO / MOSDAC / NOAA/ District administration etc.
14	Industrial layers	Information about various industries and hazardous infrastructures to identify manmade disasters.	Type of industry, categories (chemical, mechanical etc.), spatial locations etc.	5 years	NDMA / J&K SDA / industries and commerce department/ census/ department of statistics / department of urban planning etc.

15	Emergency Response centre	Spatial location of Emergency centres like (fire stations, State, district disaster management centres etc.)	Spatial locations of centres, Specialities, resources etc.	2 years	NDMA / J&K SDA / District / State / National Disaster Management Authority etc.
16	Cultural and Historical Sites	Spatial location of cultural and Historical sites along with natural tourist spots.	Name, ID, Locations, maintaining body, nearby facilities etc.	5 years	Department of Cultural Affairs / Department of tourism
17	Weather data	Rainfall, temp, humidity data collected thru weather collection points network and aggregated to weekly data into weather layers	Vector data for specific parameters, Satellite data with high temporal and spatial resolution	weekly	Climate Change Centre / IMD network / MOSDAC / NOAA etc./ NDMA/ J&KSDMA etc.
18	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B		**GEO-TAGGED MIS/ ATTRIBUTES**			
1	Census information	Village, taluk and District level census information.	Population, societal status etc.	5 years	Census / Dept. of statistics etc.
2	Industrial environmental impact reports	Environmental impacts and risk information	Type of industry, establishment year, safety majors etc.	5 years	NDMA / J&K SDA / industries and commerce department/ census/ department of statistics / department of urban planning etc.

3	Climatic dataset	Historical climatic conditions and present weather information	Historical climatic conditions and present weather information	5 years	IMD / ISRO / MOSDAC / State agencies etc.
4	Socio-economic survey data at various scale	Socio-economic distribution of population	Name of locality, population, employed, un-employed, BPL, occupational categories etc in (village, taluk, District etc.).	5 years	Census / Dept. of statistics / Food, Civil supply and consumer affair department.

4.7.3 GIS Application Requirements for Tourism Department

No	App Module	Functions	Description	Remark
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions	Provides help when the user faces problem in running the application	

		etc.		
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output.	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**GIS DSS APPS**			
8	Mapping and analysis of the available infrastructure facilities	Map visualization with GIS functionalities	Spatial distribution of various infrastructures like fire stations, police station and other infrastructures etc as required by department.	
9	Network analysis for optimum route identification.	Network analysis, Tracking routes etc.	Network analysis module will be facilitating for identification of optimum routes from one location to another.	
10	Forecast / advisory data using station data, remote sensing data, model data etc.	Alarm and warning system	Information distribution regarding weather conditions. Distribution of alerts, warnings and advisories for specific disaster or events specific to geolocations that will be helpful to prevent loss of lives and properties of the tourists	
11	Cultural and Historical Site Management	Monitor and	The strength of tourism planning can be enhanced by GIS applications. Site monitoring	

		management	and management could be performed by GIS techniques. Association of data like maintaining agencies, date of routine maintenance etc.	
12	Miscellaneous			

4.8 Department of Forest, Environment & Ecology

The forests in the state of Jammu and Kashmir are not only one of the important habitats for wildlife, but also the home for many other rare and endangered species. However, the vegetation, which form the home of those rare and endangered species, on the Mountains has been experiencing various extends of logging and land use conversion for a long term. This caused the obvious decreasing of the area of wildlife's habitat and has produced strong influences on wildlife's survival and distribution. As human and natural forces modify the landscape, resource agencies find it increasingly important to monitor and assess these alterations. Changes in vegetation affect wildlife habitat, fire conditions, aesthetic and historical values and ambient air quality. These changes, in turn, influence management and policy decisions. Department of forest has been stablished to preserve natural and manmade forests with the above-mentioned benefits.

The Forest Department has prime duty of the management of forests on the scientific lines as per the prescriptions of the Working Plan. Due to ban imposed by the Hon'ble Supreme Court on green felling, the yield from the forest is not exploited as per Working Plan prescriptions. Now the forests are maintained mostly for the environmental and ecological purposes with removal of dry, diseased & fallen trees to meet local requirement of Timber / Fire Wood to some extent. The degraded forests are also rehabilitated through the in-situ and ex-situ conservation measures. The effective steps are being taken to evict the encroachment of forest land where it has taken place. The forest boundary is maintained by placing boundary pillars. The creation of fire lines is carried out to restrict the forest fires. The inspection paths are also constructed for inspection and visit to interior forest areas.

The various sister departments include; Soil & Water Conservation Department, Social Forestry Department, Wildlife Protection Department, Forest Coorporation, Ecology, Environment & Remote Sensing Department, Integrated Watershed Development Project, Forest Protection Force, SPCB, etc.

4.8.1 User Needs Assessment– Department of Forest

Name of the Department	Department of Forest, Environment & Ecology
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	• Protection and conservation of natural forests. • Reforestation and afforestation • Soil and water conservation • Wildlife Protection • Preserve and enhance the quality of the natural environment, including water, air and soil quality • Enforce environmental Acts and Rules • Coordinate various environmental policies and programs. • Environmental awareness, EIA, Env. Advisory
Major Prospective of GIS	GIS and Remote sensing can be used for forest mapping and analysis in different ways. In general, the most common use of GIS in ecosystem mapping and monitoring is temporal analysis. Temporal analysis of forest can be used for potential degradation or health monitoring and analysis. Checking of forest encroachments has been emphasized along-with

	updation & maintenance of demarcation record in digital format on GIS using remote sensing technology. - Forest Fire Alert System. - Monitoring of habitat status, population variance. - Mapping and Monitoring of patrol camps. - Temporal and spatial database of wildlife sightings. - Temporal and Spatial mapping of Wildlife Conservation and Migration besides, man-animal conflict models - Watershed Treatment on Forests. - Planning and mapping of Eco-Tourism Development - Forest inventory planning and stock management.
GIS Data Requirements	- Spatial coverage of forest. - List of Revenue products from forest. - Spatial layer of Market for sustainably produced forest products - Eco-Tourist places and transport network. - Classified Forest maps. - Forest fire risk zonation maps - Monitoring afforestation and other schemes
GIS Application needs	• Patrol camps mapping and monitoring • Forest fire alarm system and Forest fire zonation

	• Detailed classified forest products • Encroachment and de-forestation analysis. • Monitoring and analysis of forest health. • View shed analysis for watch tower identification sites • Man-Animal Conflict Analysis • Wild animal Corridor Analysis • Wildlife habitat suitability analysis • Forest density stratification • Vegetation type mapping
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.
Any other Silent Inputs	We need to have SDI as a common platform with proper policy for data sharing & access. It is important to have interoperable open standards, reduction of duplication of activities by Photointerpretation Division of Forest Department and the DEERS. We need large scale training & capacity building of forest officers in the use of mobile application developed by DEERS by the name of POINTGIS so that all assets of forest department are captured for generating a comprehensive database sharable by all stake holders.

4.8.2 GIS Data Requirements for Forest Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SOI / District Administration of concerned districts
2	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD / Central ground water board, remote sensing mapping, NRSC, CWCI
3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
6	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.

7	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) -extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
8	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
9	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
10	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
11	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
12	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
13	Forest Boundary	Forest boundaries in Jammu & Kashmir State.	Area, Species, zone, area officer, tourism sites etc.	5 years	SOI / FSI Dehradun/ Forest department Jammu & Kashmir
14	Patrol Camps	Tracking records and details of forest officers and patrolling teams.	Id, No. of officers, Head, Zone etc	5 years	Forest department Jammu & Kashmir / DFO
15	Wildlife Sights	Spatial locations of potential sites of wildlife.	Id, major species, preferred time of the day etc.	5 years	WLP department Jammu & Kashmir/ DFO

16	Ware house or Stock locations	Major products in stock, quantity etc.	Major products in stock, quantity etc.	5 years	FSI Dehradun/ Forest department Jammu & Kashmir
17	Cultural and Historical Sites	Spatial location of cultural and Historical sites along with natural tourist spots.	Name, ID, Locations, maintaining body, nearby facilities etc.	5 years	Department of Cultural Affairs / Department of tourism
18	Weather data	Rainfall, temp, humidity data collected thru weather collection points network and aggregated to weekly data into weather layers	Vector data for specific parameters, Satellite data with high temporal and spatial resolution	weekly	Climate Change Centre / IMD network / MOSDAC / NOAA etc./ NDMA/ J&KSDMA etc.
19	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B		**GEO-TAGGED MIS/ ATTRIBUTES**			
1	Census information	Village, taluk and District level census information.	Population, societal status etc.	5 years	Census / Dept. of statistics etc.
2	List of forest products	Timber and non-timber products that generates revenue for government.	Product id, Product Name, Category etc.	5 years	Dept. of statistics, Forest department
3	Climatic dataset	Historical climatic conditions and present weather information	Historical climatic conditions and present weather information	5 years	IMD / ISRO / MOSDAC / State agencies etc.

4.8.3 GIS Application Requirements for Forest Department

No	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module		Facilitates obtaining report/output.	
7	Export/Import Module	Raster formats / Vector data formats import and	Facilitates import/export of data from one program to other and in integrating datasets from different sources	

		export		
B	**GIS DSS APPS**			
8	Forest fire Alarm system	Map visualization with GIS functionalities	Spatial distribution of various fire disaster and information distribution via various channels.	
9	Network analysis for optimum route identification.	Network analysis, Tracking routes etc.	Network analysis module will be facilitating for identification of optimum routes from one location to another.	
10	Forest inventory planning and stock management System.	Management system	System will help to decision makers and managers in planning and management of forest products and stock.	
11	Wildlife Information System.	Information System	System contains information regarding wildlife species, count etc.	
12	Eco-Tourism Site Management	Monitor and management	The strength of tourism planning can be enhanced by GIS applications. Site monitoring and management could be performed by GIS techniques. Association of data like maintaining agencies, date of routine maintenance etc.	
13	Miscellaneous			

4.9 Rural Development & Panchayati Raj Department

Jammu and Kashmir Government is committed to provide a transparent, clean and responsive administration to the people of state who are its citizens. The Department of Rural Development and Panchayati Raj is responsible for implementing Poverty Alleviation Programmes and other Socio-Economic developmental schemes for rural upliftment and for strengthening institutions of local self-government i.e. Panchayats. The objective of Rural Development is to provide responsive, accountable, transparent and people friendly administration. Objective of the department are listed below:

- Generate employment opportunities by way of implementing various employment generation schemes.
- Provide rural infrastructure i.e. rural roads, school buildings, rural huts, paths, Lanes & Drains community Medical centres, Animal care centres, Common facility centres, tanks ponds etc.
- Raise the standard of living in rural areas by ways of implementing poverty alleviation programmes effectively and efficiently.
- Decentralize the process of planning by giving Panchayats liberty to administer their own matters at Panchayat level and at village level.

4.9.1 User Needs Assessment– Rural Development Department and Panchayati Raj Department

Name of the Department	Rural Development and Panchayati Raj Department
Contact Person	To be nominated from by the concerned department
Major Function of the Department	▪ Generate employment opportunities by way of implementing various employment generation schemes. ▪ Provide rural infrastructure i.e. rural roads, school buildings, rural huts, paths, Lanes & Drains community Medical centres, Animal care centres, Common facility centres, tanks ponds etc. ▪ Raise the standard of living in rural areas by ways of implementing poverty alleviation programmes effectively and efficiently. ▪ Decentralize the process of planning by giving Panchayats liberty to administer their own matters at Panchayat level and at village level. ▪ Promote people's participation in the developmental process. ▪ Capacity building by way of imparting training at various levels to the elected representatives and the officers and officials of the Department. ▪ Bring Transparency and Accountability in administration by way of constituting vigilance cells in each district. ▪ evolution of Financial and Administrative powers to Panchayats. ▪ Provide Information System and connect all Panchayats through NICs. ▪ Provide healthy and clean environment by launching & implementing

	Total Sanitation campaign in all the Districts of the province.
Major Prospective of GIS	➢ Mapping and representation of Rural infrastructures like. rural roads, school buildings, rural huts, paths, Lanes & Drains community Medical centres, Animal care centres, Common facility centres, tanks ponds etc. ➢ Spatial distribution of rural social and economic parameters. ➢ Spatial distribution of Employment opportunities under various development schemes.
GIS Data Requirements	• Administrative boundaries along with Village boundaries dataset. • Weather and climatic dataset (Rainfall, temperature and moisture etc.)
GIS Application needs	Food insecurity analysis and management. Water scarcity analysis and management Soil erosion analysis Livestock services and infrastructure mapping and analysis
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.9.2 GIS Data Requirements for Rural Development & Panchayati Raj Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers; georeferenced and seamless to state.	Parcel no., owner, and village code, village name, water resource, utilization type etc.	As required	Financial Commissioner, Revenue department
3	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD / Central ground water board, remote sensing mapping, NRSC, CWCI
4	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
5	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow	2 years	SSDI/DEERS and Railways

			gauge etc.) railway zones etc.		
6	Command Area Boundaries	Command area determined for river valley projects/tank command	Command area name, area coverage, etc.	5 years	Irrigation Dept./DEERS using SOI/NRSC images
7	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
8	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
9	Land Degradation	Status of land degradation – physical, chemical degradation	Type of degradation, vulnerability level, reason etc.	5 years	DEERS and Dept. of Agriculture / NRSC
10	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc.) -extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
11	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
12	Ground Water Prospect	Different classes of ground water prospects in the state equivalent to existing 50k maps of NRSC/DEERS	Availability of water depth, categories, zones etc.	5 years	CGWB/NRSC/DEERS/Irrigation Dept/ NRSC thematic maps

13	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept./DEERS/ NRSC thematic maps
14	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
15	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
16	Soil	Up to phases of soil series (alternate level of Association of series is also useful)	Soil type, soil productivity, physical properties of soil etc.	20 years	NBSS and LUP, DEERS, AISLUS, agriculture department, NRSC etc
17	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
18	Drinking water infrastructures	Spatial distribution of Drinking Water resources like wells, tube wells,	Resource type, id, owned by, supply capacity etc.	5 years	
19	Rural Development Projects	Spatial distribution of Ongoing / Proposed / completed development projects under various state / central government schemes etc.	Project ID, project name, employment scope, conservation or development objective, funding agency, budget etc.	5 years	Department of Panchayat Raj / Rural development / Department of statistics /

20	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B		**GEO-TAGGED MIS/ ATTRIBUTES**			
1	Well location	Well locations as points	Attributes of wells (depth, water level, water quality etc)	5 years	Agriculture Department /
2	Weather data	Rainfall, temp, humidity data collected thru weather collection points network and aggregated to weekly data into weather layers	Vector data for specific parameters, Satellite data with high temporal and spatial resolution	weekly	Climate Change Centre / IMD network / MOSDAC / NOAA etc.
3	Agri-amenities points	Point locations and attributes of agri. Amenities / facilities	seed centres, banks, fertilizer centres, market yards etc.	5 years	Dept. of Agriculture / Cooperative department / census department
4	Agri Market data	Agri market information – prices, locations, facilities etc.	Base price of specific crop types etc.	5 years	Dept. of Agriculture / Department of statistics / Department of food and civil supplies.
5	Workforce data from census	Agricultural workforce Details on village unit from Census.	Labour class, small scale farmers, large scale farmers.	5 years	Census / Dept. of Agriculture

6	Cattle / animal census data	Cattle/Animal census Data at village unit from Animal Husbandry Department	Types of cattle and their product etc.	5 years	Dept. of Agriculture / Department of Animal and husbandry.
7	Rural Development Projects	Statistics, budgets, and employment scope of each project with funding agencies, location name etc.	Project id, project name, village name, budget, funding agency, sanction or completing year, status etc.	5 years	Department of statistics / Department of rural development / district authorities etc.
8	Watershed / agriculture Development projects and schemes	Details of location and attributes of all watershed and agricultural development projects with costs and responsible agencies etc.	Types of project, start year, development prospects etc.	5 years	Dept. of Agriculture/RD&PR Dept.

4.9.3 GIS Application Requirements for Rural Development & Panchayati Raj Department

No.	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	

4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Village wise report generation	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**RD&PR GIS DSS APPS**			
1	Vulnerability analysis	Socio-economic Analysis	Physical and socioeconomic vulnerability analysis at village level, to identify potential risk and support for development planning.	
2	Census information system	Spatial census population profiling App	Facility to visualize spatial distribution of census information like population, category, labour class distribution and employment opportunities etc.	
3	Food and fodder information system	F&F facility App	Determine the demand and supply pattern of food and fodder for the survival of livelihoods at the time of drought, flood disasters.	
4	Employment resource	Employment	Representation and distribution of employment	

	information system	Resource System App	allocation at every village by various development plans.	
5	Miscellaneous			

4.10 Power Development Department

The Power Transmission and Distribution Sector of J&K State is looked after by Power Development Department which is one of the departments of J&K Government. This sector has seen significant growth since its formation. The Power Development Department (PDD) of Government of J&K was earlier responsible for generation, transmission & distribution of electricity in the State of J&K. Subsequently, the Power Development Corporation (JKPDC), a fully owned Government Company, was established in the year 1995, when the operation and maintenance of existing generating stations and setting up of future generating stations were entrusted to this corporation except one small hydel power station of 4 MW and few very small diesels stations totalling 24.92 MW remain with PDD, besides the Transmission and Distribution Sector. The Department is meeting the Power requirement of the state through following sources:-

- Purchase from generation of the powerhouses being operated by the State Power Development Corporation.
- Power purchased from Central Public Sector Undertakings.
- Purchases from other sources including Over drawls under UI (Unscheduled Interchanges). These over drawls usually take place in winter because of very low availability.

4.10.1 User Needs Assessment– Power Development Department

Name of the Department	Power Development Department
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the	➢ Its own generation which is mostly from DG sets.

Department	➢ Purchase from generation of the powerhouses being operated by the State Power Development Corporation. ➢ Power purchased from Central Public Sector Undertakings. ➢ Purchases from other sources including Over drawls under UI (Unscheduled Interchanges). These over drawls usually take place in winter because of very low availability. ➢ The activities related to Transmission and Distribution are looked after by various wings of the department as under.
Major Prospective of GIS	✚ Utility mapping and spatial distribution. ✚ Power plants mapping and coverage area analysis. ✚ Mapping and analysis of potential power generation plants ✚ Planning and monitoring of distribution system.
GIS Data Requirements	• Administrative boundaries along with Village boundaries dataset. • Watershed boundaries • Spatial distribution of existing power development plants and assets. • Power development and distribution Zone maps. • Transport network layers • Topographical Layers
GIS Application needs	➢ Visualization of distribution network. ➢ GIS based Power development planning and monitoring tool

	➢ Assets management system.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.10.2 GIS Data Requirements for Power Development Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD / Central ground water board, remote sensing mapping, NRSC, CWCI
3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction,	2 years	SSDI/DEERS, PWD, NHAI

			maintenance body etc.		
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5	Command Area Boundaries	Command area determined for river valley projects/tank command	Command area name, area coverage, etc.	5 years	Irrigation Dept./DEERS using SOI/NRSC images
6	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
7	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
8	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
9	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
10	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps

11	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
12	Department location layer	Spatial distribution of Power Development department offices, category etc.	ID, name, Location, Zone, Type, Contact person	5 years	
13	Transmission network Layer	Power Transmission layer with capacity and	ID, Type, Capacity	5 years	
14	Power generation plant	Spatial distribution of power plants along with type of plant and capacity along with distribution coverage area.	ID, Name, Location, Zone, Capacity, energy source etc.	5 years	Power Development Department
15	High resolution Images (Backdrop)	Latest High Res Image in colour to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Assets Information	Asset details, make, capacity, Manufacturing year, maintenance agency, ID etc.	ID, Name, Make, Mfd. Year, responsible agencies, capacity and location etc.	5 years	Power Development Department / Stores Procurement Department, J&K.

2	Customer Information	Customer information to know about the demand and supply pattern, and the information could be used for type of customers and potential zones for development and distribution.	No of industrial Customer, type, demand, power consumption etc.	5 years	Department of statistics / Power Development Department / Department of industrial policies and promotion. / district authorities etc.

4.10.3 GIS Application Requirements for Power Development Department

No.	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	

6	Output/Report Module	Village wise report generation	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**PDD GIS DSS APPS**			
1	GIS based Power development planning and monitoring tool	View shed analytical tool for planning location of transmission towers	Power transmission network visualization and analysis, System will be used for planning and monitoring power generation resources.	
2	Assets management system.	Spatial analysis and planning of assets of PDD	Sophisticated spatial analysis is useful for determining optimum generation potential, formulating what-if scenarios, studying environmental impact, and managing facility assets.	
3	Miscellaneous			

4.11 Housing and Urban Development Department

The Housing and Urban Development Department is mandated to frame policies, prepare plans and schemes for growth of urban areas and to provide civic amenities in urban areas. Further, the Department is also entrusted with the responsibility of strengthening Urban Local Self Governments enabling them to discharge their functions effectively in terms of providing quality Municipal services to the people. The Department is also responsible for framing of Housing policy, create Legal, Institutional and Procedural changes to encourage investment in housing sector and to facilitate creation of adequate housing stock etc.

Major objectives of the department are listed below:

- ✓ Policy framing and planning for urban development.
- ✓ Birth / Death Registration and certificate distribution
- ✓ Building Permission
- ✓ Public grievance management

4.11.1 User Needs Assessment– Housing and Urban Development Department

Name of the Department	Housing and Urban Development Department
Contact Person	To be nominated by the concerned department
Major Function of the Department	▪ Policy framing and planning for urban development. ▪ Birth / Death Registration ▪ Building Permission ▪ Public grievance
Major Prospective of GIS	➢ Mapping and representation of urban infrastructures like. roads, school buildings, rural huts, paths, Lanes & Drains community Medical centres, Common facility centres, tanks ponds etc. ➢ Spatial distribution of Hospitals. ➢ Spatial distribution of Government buildings, residential and commercial buildings. ➢ Building permission using spatial analysis.
GIS Data Requirements	• Administrative boundaries along with Village boundaries dataset. • Urban infrastructures, utilities etc. • Various building construction in different schemes.

	• Locations of hospitals (Government / Private)
GIS Application needs	Location based Birth / death registration. Location based building permission management system Visualization and distribution of Urban development plans Spatial distribution of health facilities.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.11.2 GIS Data Requirements for Housing and Urban Development Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village/ Urban/ city boundary	State code, District code, tehsil code, Village code, district name, village name, city name etc.	When New district formed	SoI / District Administration of concerned Districts / Urban development department
2	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers;	Parcel no., owner, and village code, village name, water resource, utilization	As required	Financial Commissioner, Revenue department

		georeferenced and seamless to state	type etc.		
3	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD / Central ground water board, remote sensing mapping, NRSC, CWCI
4	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
5	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
6	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
7	Building footprints	Building footprints under urban development departments	Id, name, type, zone, ward, owner, construction year, development scheme etc.	2 years	Housing and Urban Development Department
8	Urban Utilities	Maps of various urban utilities in separate layers.	Id, utility name, capacity, source and destination, type etc.	2 years	

9	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
10	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
11	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
12	Ground Water Prospect	Different classes of ground water prospects in the state equivalent to existing 50k maps of NRSC/DEERS	Availability of water depth, categories, zones etc.	5 years	CGWB/NRSC/DEERS/Irrigation Dept/ NRSC thematic maps
13	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
14	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
15	Land Use / Land Cover	Up to Level – 3/4 Land use / Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
16	Soil	Up to phases of soil series (alternate level of Association of series is also useful)	Soil type, soil productivity, physical properties of soil etc.	20 years	NBSS and LUP, DEERS, AISLUS, agriculture department, NRSC etc

17	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
18	Drinking water infrastructures	Spatial distribution of Drinking Water resources like wells, tube wells etc.	Resource type, id, owned by, supply capacity etc.	5 years	PHE / Department of Urban development / Municipal office etc.
19	Urban Development Projects	Spatial distribution of Ongoing / Proposed / completed development projects under various state / central government schemes etc.	Project ID, project name, employment scope, development objective, funding agency, budget etc.	5 years	Department of Urban development / Department of statistics / District Administration etc.
20	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Birth / Death Records	Birth and death records from various hospitals as well as from departments	Id, DOD / DOD, Name, Address, Hospital, etc.	2 years	Health department / Department of Housing and urban development /
2	Proposed / Completed Housing schemes	Various housing development schemes under central, state, district plan etc.	Id, Name of Scheme, proposed / Completed, Funding Agency, Budget etc.	5 years	Department of Housing and urban development
3	List of beneficiaries under Urban	List of people who are benefited under various housing schemes.	Id, name, housing scheme, number of beneficiaries	5 years	Department of Housing and urban development / District headquarters.

	Housing Schemes		etc.		

4.11.3 GIS Application Requirements for Housing and Urban Development Department

No.	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Village wise report generation	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import	Facilitates import/export of data from one program to other and in integrating datasets from different	

		and export	sources	
B	**HUDD GIS DSS APPS**			
1	Geo-tagged Building permission Management system	Spatial monitoring of buildings under constructions	System will help in monitoring permission of constructions in urban jurisdiction.	
2	Housing development management system	Geospatial monitoring of housing and other schemes	Support system for spatial information visualization and distribution of various housing ongoing and developed programmes.	
3	Public Grievance analysis system	Peoples app for grievance redressal	System supports for online complaint registration and status visualization in various aspects.	
4	Miscellaneous			

4.12 PHE, Irrigation & Flood Control Department

The water is an essential commodity for all the living creatures. The intended purpose of PHE Department Jammu, is to ensure drinking water facility to all the habitations, Rural as well as Urban. The salient objectives and functions of PHE Department, Jammu are as under: -

- To investigate, plan and implement water supply schemes to extend drinking water facility to Rural and Urban population.
- Besides the quantity of water as per the National norms, the quality of the water is also closely monitored by way of establishing drinking water quality testing labs at the division as well as sub-division level.

Irrigation department is aimed to provide irrigation facilities in entire state. Department is also aimed for Optimal sustainable development, maintenance of quality and efficient use of water resources to match with the growing demands of this precious natural resource of the State. To develop policies, programmes and practices, which would enable the efficient and effective use of the state's water resources in an equitable and sustainable manner with active involvement of all stakeholders:

- To develop policies, programme and practices which would enable mitigation of floods and control the river bank;
- To put into place systems and practices, which would result in sustained increase in water use efficiency;
- To disseminate information skills and knowledge which would help in capacity building and mass awareness.

Public Health Engineering Department is to improve health of people by providing potable and adequate drinking water supply and improving environmental hygiene by proper sanitation. To achieve this objective, the department undertakes planning, execution, operation and maintenance of works related to water supply and sanitation in both rural and urban areas.

Department is also responsible to follow preventive majors on flood control, policy making, strategic plan development for flood control.

4.12.1 User Needs Assessment– PHE/Irrigation & Flood Control Department

Name of the Department	PHE/Irrigation & Flood Control Department
Contact Person	To be nominated by the concerned department
Major Function of the Department	▪ To enhance the agriculture production and productivity by providing sustainable and adequate irrigation facilities in the state ▪ To create additional irrigation potential by construction of new irrigation canals, improvement, extension of existing irrigation system. ▪ To minimize the gap between potential created and potential utilized through Renovation/ Remodelling & Modernization of the existing irrigation schemes. ▪ Food, drinking water quality demand and supply monitoring and management. ▪ Flood plain zone mapping ▪ Flood inundation analysis and damage mapping.
Major Prospective of GIS	➢ Mapping and representation of irrigation infrastructures. ➢ Agricultural losses due to lack of irrigation resources. ➢ Mapping and representation of drinking water resources

	➢ Loss of lives due to drinking water shortage. ➢ Mapping of potential flood zones. ➢ Mapping and analysis of flood inundated areas. ➢ Damage intensity analysis due to flood
GIS Data Requirements	• Administrative boundaries along with Village boundaries dataset. • Existing irrigation infrastructures • Drinking water resources. • Maps of potential Flood zones as per the past experiences.
GIS Application needs	Spatial distribution of Irrigation resources and coverage area Spatial distribution of drinking water resources Geographical Analysis of drinking water quality and mineral contamination. Spatial distribution of potential flood zones
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.12.2 GIS Data Requirements for PHE/Irrigation & Flood Control Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village/ Urban/ city boundary	State code, District code, tehsil code, Village code, district name, village name, city name etc.	When New district formed	SoI / District Administration of concerned Districts / Urban development department
2	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers; georeferenced and seamless to state.	Parcel no., owner, and village code, village name, water resource, utilization type etc.	As required	Financial Commissioner, Revenue department
3	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD / Central ground water board, remote sensing mapping, NRSC, CWCI
4	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
5	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad	2 years	SSDI/DEERS and Railways

			gauge, Narrow gauge etc.) railway zones etc.		
6	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
7	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
8	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
9	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
10	Ground Water Prospect	Different classes of ground water prospects in the state equivalent to existing 50k maps of NRSC/DEERS	Availability of water depth, categories, zones etc.	5 years	CGWB/NRSC/DEERS/Irrigation Dept/ NRSC thematic maps
11	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
12	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
13	Ground water	Ground water map	Id, location, depth, status	5 years	

			etc		
14	Land Use / Land Cover	Up to Level – 3/4 Land use / Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
15	Soil	Up to phases of soil series (alternate level of Association of series is also useful)	Soil type, soil productivity, physical properties of soil etc.	20 years	NBSS and LUP, DEERS, AISLUS, agriculture department, NRSC etc
16	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
17	Drinking water infrastructures	Spatial distribution of Drinking Water resources like wells, tube wells etc.	Resource type, id, owned by, supply capacity etc.	5 years	PHE / Department of Urban development / Municipal office etc.
18	Climatic data	Rainfall, temperature etc. for flood estimation and climatic variability analysis	Location ID, monthly rainfall, monthly temperature etc.	5 years	IMD / RS data / District offices etc.
19	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Water quality data	List of people who are benefited under various	Id, quality parameters (ph., minerals, hardness,	5 years	PHE, Health, SOI, local governing body.

	(Sampled)	housing schemes.	nitrogen etc.), sampling methods etc.		
2	Census information	Information would be used for damage analysis due flood and drought disasters.	Location id, location name, taluk, district, Population etc.	5 years	Census of India / District offices / department of statistics.
3	Miscellaneous				

4.12.3 GIS Application Requirements for PHE/Irrigation & Flood Control Department

No.	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	

6	Output/Report Module	Village wise report generation	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**PHE/I, FCD GIS DSS APPS**			
1	Irrigation Resource Management system	Irrigation demand and supply analysis system	System will help to identify potential irrigation resources in deficient zones along with demand and supply analysis.	
2	Drinking water resources mapping and information system	Drinking water information system	Support system for spatial information visualization and distribution of various drinking water resources like wells, tube wells, hand pumps, municipal water supply etc. along with demand and supply analysis.	
3	Flood mapping and management system	Flood hazard zonation	System supports to identify potential flood zones based on past experiences. System will also support for damage analysis due to flood disaster.	
4	Miscellaneous			

4.13 Transport Department

The Transport Department is charged with the responsibility of looking after the functioning of J&K Motor Vehicle Department, J&K State Motor Garages and J&K State Road Transport Corporation. The department of Transport has a clear vision of providing quality services in transport to the citizens of all the geographical locations at a reasonable and affordable cost and for this the department has adopted policies/programmes commensurate with the needs in various sectors of the economy. The department is making all efforts to improve the road safety and ensuring that only trained drivers and mechanically fit vehicles ply on the roads thus minimizing any chance of a road accident and pollution. The department is also keeping an eye on the increasing fare at which the private transporters tend to run commercial vehicles and for this State Transport Authority is saddled with the responsibility of fare fixation periodically in consultation with public representatives and private vehicle owners and thereby exercise control on otherwise demands for exorbitant increase in the bus fares.

All activities relating to decision making pertaining to Transport are being carried out in transport Secretariat. The administrative department issues Instructions, Orders, Notifications, Guidelines, etc. makes policies, spells out objectives to the field functionaries for the delivering of public services in an efficient manner.

4.13.1 User Needs Assessment– Transport Department

Name of the Department	Housing and Urban Development Department
Contact Person	To be nominated by the concerned department
Major Function of the Department	▪ Implementation of Motor Vehicles Act 1988 and Rules. ▪ Framing of policies aiming at Road Safety and efficient transport management in the State. ▪ To implement the schemes for computerization of the working of the Transport Department and safe keeping of records and quick verification system. ▪ Data collection and analysis for an efficient management of transport system in the State. ▪ Creating public awareness among Stake holders including Drivers, Motor Vehicle Inspectors, Checking Squads and public in respect of Road Safety and passenger care. ▪ Operation of Passenger Welfare Fund and quick response system for the benefit of affected people in road accidents. ▪ Legal action/prosecution of cases registered against the violators of law, pertaining to violations of Motor Vehicles Act and Rules. ▪ Collection of fees, fines, rates, taxes etc. during

	performing of all the above functions. - Monitoring and review of utilization of funds, both plan and non-plan. - Evaluating the outcomes of schemes for their constant improvement.
Major Prospective of GIS	➢ Spatial representation of Road network. ➢ Spatial distribution of rail network. ➢ Optimum / shortest route analysis ➢ Analysis for new transport network development. ➢ Route Condition analysis and representation.
GIS Data Requirements	• Mapping and representation of transport network layers like road with categories (national highways, state highways, district roads, village roads etc.), rail network, air network etc. • Spatial distribution of bus stands in Jammu and Kashmir state. • Spatial Distribution of Airports and defined air routes • Geographical locations of Railway stations in various categories.
GIS Application needs	- Transport planning and design analysis. - Visualization and information distribution of transport

	network. - Traffic management system. - Maintenance and work management system. - Optimum route identification and analysis.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.13.2 GIS Data Requirements for Transport Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.					
1	Administrative boundaries	State/district/tehsil/village/ Urban/ city boundary	State code, District code, tehsil code, Village code, district name, village name, city name etc.	When new district formed	SoI / District Administration of concerned Districts / Urban development department
2	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers; georeferenced and seamless to state.	Parcel no., owner, and village code, village name, water resource, utilization type etc.	As required	Financial Commissioner, Revenue department

3	Watershed boundaries	Micro watershed boundary	Type of watershed, location name and physical properties etc.	5 years	Central Ground Water Board (CGWB), RDD / Central ground water board, remote sensing mapping, NRSC, CWCI
4	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
5	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
6	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
7	Urban Utilities	Maps of various urban utilities in separate layers.	Id, utility name, capacity, source and destination, type etc.	2 years	Urban development departments
8	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
9	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
10	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images /

					UEED
11	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
12	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
13	Land Use / Land Cover	Upto Level – 3/4 Land use / Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
14	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
15	Drinking water infrastructures	Spatial distribution of Drinking Water resources like wells, tube wells etc.	Resource type, id, owned by, supply capacity etc.	5 years	PHE / Department of Urban development / Municipal office etc.
16	Airports	Spatial locations of existing and proposed airports in state of Jammu and Kashmir	ID, location, etc.	5 years	Department of aviation
17	Railway Stations	Spatial locations of railway stations, zone, type etc.	ID, name, zone, type, connectivity etc.	5 years	Railway office / transport department

18	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B					
1	Road transport vehicles	Buses and other transport vehicles	ID, Vehicle Type, Make, owner type, wheels, route name	5 years	Transport department / Road and building department / Department of Housing and urban development / National Highways authorities / District offices etc
2	Zonal /district offices	Managers or responsible person at various administrative level.	.ID, Name, Phone, Mail ID etc	5 years	Department tourism
3	Promotional schemes	List of Promotional schemes for food crops, fodder crops, fruits, vegetables, etc. along with funds and subsidy	Id, scheme name, subsidy, type etc.	5 years	Department of Agriculture / department of Horticulture / department of statistics / district welfare office / block development offices etc.

4.13.3 GIS Application Requirements for Transport Department

No.	App Module	Functions	Description	Remark
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query	

			results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Village wise report generation	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**TRANSPORT DEPT GIS DSS APPS**			
1	Transport planning and design analysis.	Transport DSS	System will help in transport planning and management in automated manners.	
2	Visualization and information distribution of transport network.	DSS for Transport network	System will have interactive visualization capability and distribution facility.	

3	Traffic management system.	Traffic management	Traffic management system would be able to analyse near real time manners based on the sensor data and crowed sourcing.	
4	Optimum route identification and analysis.	Shortest routes within a network	Spatial analysis of optimum / shortest route analysis would be useful at the time of emergency, route diversion during disaster, or any other activity.	
5	Maintenance and work management system.	Management of transport network	System supports to monitor and manage maintenance work of transport network	
6	Miscellaneous			

4.14 Department of Culture

The culture of Jammu and Kashmir is a comprehensive mingling of customs and practices of its three distinct regions, Kashmir, Jammu and Ladakh. Apart from its demographical variations, specific cultural diversions of its elements are what make the culture of Jammu and Kashmir remarkable. Music, dance, cuisine, lifestyle, festivals all these only highlight the diversities prevalent in these provinces. Unity is restored when a common thread of cultural tradition binds them together thus making it a part of Jammu and Kashmir as a whole. Culture of Jammu and Kashmir is therefore an interesting reflection of color, zest, harmony and concord which makes Jammu and Kashmir to stand apart with its distinct features of age old tradition and deep ethnicity. The Jammu and Kashmir State has an unparalleled treasure of cultural and natural heritage. The cultural heritage wealth of the state in the form of tangible and intangible is enormous and all the three divisions are known for their unique cultural assets. The Culture Department with its primary mandate to preserve, develop and promote the tangible and intangible cultural heritage of the State came into existence in the year 2008 with the Administrative control.

4.14.1 User Needs Assessment– Department of Culture

Name of the Department	Department of Culture
Contact Person	To be nominated by the concerned department
Major Function of the Department	❖ Maintenance and conservation of heritage, historic sites and ancient monuments ❖ Administration of libraries ❖ Promotion of literary, visual and performing arts. ❖ Observation of centenaries and anniversaries of important national personalities and events. ❖ Promotion of institutions and organizations of Buddhist and Tibetan studies. ❖ Promotion of institutional and individual non-official initiatives in the fields of art and culture. ❖ Entering into cultural agreements with foreign countries. ❖ The functional spectrum of the Department ranges from creating cultural awareness from the grass root level to the international cultural exchange level.

Major Prospective of GIS	▪ Determination, representation and spatial information distribution of important and necessary places like heritage, historic sites and ancient monuments. ▪ Spatial distribution of libraries information. ▪ Spatial information of cultural art events. ▪ Determination of the best suitable sites to organise cultural events. ▪ Analysis and management of cultural and historical heritage.
GIS Data Requirements	▪ Spatial location of cultural and historical sites ▪ Spatial distribution of hotels with details of facility. ▪ Spatial distribution of Libraries in state / city / districts. ▪ Location of Emergency response services (fire, hospitals, police stations etc.). ▪ Spatial distribution of past cultural events. ▪ Road network, railway network and other transportation layers. ▪ Weather and climatic data set. ▪ Public buildings, commercial zones and cultural offices etc. ▪ Political boundaries (district / taluk / city / state).

	Hydrological layers (watershed, basin, rivers, nalas etc.).
GIS Application needs	• Network analysis for optimum route identification from one location to another. • Mapping and management of the cultural and historical sites. • GIS based dissemination of alerts and awareness • Manage and monitor emergency response centre. • Spatial data and services sharing with line departments.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.
Any other Silent Inputs	

4.14.2 GIS Data Requirements for culture Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts

3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
13	Disaster Risk zones	Risk zones regarding earthquake prone zone, flood pane, areas etc.	Type of risk, mitigation plans and advisory etc.	5 years	NDMA / J&K SDA / IMD / ISRO / MOSDAC / NOAA/ District administration etc.
15	Emergency Response centre	Spatial location of Emergency centres like (fire stations, State, district disaster management centres etc.)	Spatial locations of centres, Specialities, resources etc.	5 years	NDMA / J&K SDA / District / State / National Disaster Management Authority etc.
16	Cultural and Historical Sites	Spatial location of cultural and Historical sites along with natural tourist spots.	Name, ID, Locations, maintaining body, nearby facilities etc.	5 years	Department of Cultural Affairs / Department of tourism
17	libraries	Spatial location of libraries		5 years	Department of Cultural Affairs / Department of tourism
19	High resolution Images	Latest High Res Image in color to serve as back drop	RGB natural color composite for background data	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite

	(Backdrop)	for querying & applications	verification and interactive visualization.		Images (Quick bird, world view etc.)
A	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Census information	Village, taluk and District level census information.	Population, societal status etc.	5 years	Census / Dept. of statistics etc.
2	Past cultural events	Historic cultural events	ID, event name, Date, organisers, participants etc.	5 years	Department of culture / department of Tourism
3	Cultural assets and heritage information system	Museums, libraries, forts, historical gardens	Id, name, date of establishment, historical importance	5 years	Department of culture

4.14.3 GIS Application Requirements for culture Department

No	App Module	Functions	Description	Remark
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	

4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module		Facilitates obtaining report/output.	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**CULTURAL DEPT GIS DSS APPS**			
1	Mapping and analysis of the available infrastructure facilities	Map visualization with GIS functionalities	Spatial distribution of various infrastructures like fire stations, police station and other infrastructures etc. as required by department.	
2	Network analysis for optimum route identification.	Network analysis, Tracking routes etc.	Network analysis module will be facilitating for identification of optimum routes from one location to another.	
3	Cultural and Historical Site Management	Monitor and management	The strength of tourism planning can be enhanced by GIS applications. Site monitoring and management could be performed by GIS techniques. Association of data like maintaining agencies, date of routine maintenance etc.	

4.15 Education / Higher Education / Technical Education Departments

J&K education department is the aimed with education to all in state along with teachers training and school education. Education department is also responsible to manage and monitor government and public-school education along with content generation of text books.

J&K Higher Education Department is the controlling authority for all the Higher Education Institutions of the State It has 07 Universities and numerous numbers of Government. and Non-Government Colleges to look after. J&K State Higher Education Department has multifarious tasks to perform i.e. Planning, Implementation, Monitoring and Evaluation of the functioning of all the Institutions under its domain. It regulates Administrative, Academic, Quality and Monitory aspects of all the Government Institutions.

The development of Technical Education, contributes substantially to the Socio-sustenance of the industrial sector, is entirely dependent upon the availability of trained manpower to perform the multidimensional activities needed to keep the wheel of industry running. The Technical Education Department aims towards making available these trained technically qualified hands to serve the industry and society. Technical education system is thus made flexible enough to adapt to rapid change. In the state, the Department of Technical Education plays a lead role in the Technical education sector.

Thus, the Department of Technical Education has envisioned creating a Human resource pool with spectrum of Technical competencies at cutting edge levels and is achieving its goals by expanding access to Technical Education & Training to all through expansion and up-gradation while improving the quality standards of Education & Training by regular revision of curriculum through strong industry interaction.

4.15.1 User Needs Assessment– Education / Higher Education / Technical Education Department

Name of the Departments	Education / Higher Education / Technical Education Department
Contact Persons	To be nominated by the concerned department
Major Function of the Department	▪ Education from pre- primary to Higher secondary school. (in Non-Trible areas only). ▪ Arrangement of Non-formal Education. ▪ Grant -in-Aid to Private schools. ▪ Arrangement for the training of teachers, to improve quality in teaching and teacher training. ▪ Innovation in education and researches. ▪ To arrange facilities of physical education and sports. ▪ Prescription of syllabus in school classes. ▪ Arrangement of printing and distribution of text books. ▪ Removal of illiteracy in age group 15-35. ▪ To arrange the facilities of post literacy and continuing education. ▪ Education of handicapped children. Education for all. ▪ Monitor and management of Higher education institutes like Universities, Govt./ Private collages.

	➢ Monitor and manage Higher education quality and regulate administration etc. ➢ Department of technical education is aimed to produce technical manpower to fulfil industrial requirement. ➢ Department of technical education is also responsible to monitor and manage technical institutions. ➢ Quality technical education and industry interaction.
Major Prospective of GIS	➢ Mapping and representation of Schools in entire J&K state. ➢ Mapping of universities and colleges in State ➢ Spatial distribution of Technical education / Training centres. ➢ Spatial suitability analysis for school, Universities, ITI's and Polytechnics etc.
GIS Data Requirements	• Administrative boundaries along with Village boundaries dataset. • Spatial locations of schools along with properties. • Spatial distribution of Universities and Colleges. • Spatial distribution of technical education centres (ITI's, Polytechnic etc.).

GIS Application needs	▪ GIS based School information System. ▪ Location based University Information System. ▪ GIS based Higher Education Collage Information System ▪ GIS based Technical education Information System
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.15.2 GIS Data Requirements for Education / Higher Education / Technical Education Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**MAP / SURVEY DATA**				
1	Administrative boundaries	State/district/tehsil/village/ Urban/ city boundary	State code, District code, tehsil code, Village code, district name, village name, city name etc.	When New district formed	SoI / District Administration of concerned Districts / Urban development department
2	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers;	Parcel no., owner, and village code, village name, water resource,	As required	Financial Commissioner, Revenue department

		georeferenced and seamless to state.	utilization type etc.		
4	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
5	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
6	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
7	Schools	Spatial locations of schools	Id, name, type, zone, ward, managed by, establishment, Students etc.	2 years	Department of Education / Census / District office
8	Universities	Spatial distribution of Universities in J&K state	Id, name, departments, chancellor, governing by, establishment year etc.	2 years	Department of Higher Education / Census / District office
9	Colleges	Spatial distribution of Higher education collages.	Id, name, capacity, type, courses etc.	2 years	Department of Higher Education / Census / District office

10	Technical education centres	Spatial distribution of technical education centres.	Id, name, capacity, type, courses etc.	2 years	Department of Technical Education / Census / District office
11	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
12	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
13	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
14	Ground Water Prospect	Different classes of ground water prospects in the state equivalent to existing 50k maps of NRSC/DEERS	Availability of water depth, categories, zones etc.	5 years	CGWB/NRSC/DEERS/Irrigation Dept/ NRSC thematic maps
15	Land Use / Land Cover	Upto Level – 3/4 Land use / Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
16	Drinking water infrastructures	Spatial distribution of Drinking Water resources like wells, tube wells etc.	Resource type, id, owned by, supply capacity etc.	5 years	PHE / Department of Urban development / Municipal office etc.

19	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	University Details	Details about University departments, teachers, officials, students, type etc.	ID, Name, VC, Staff, Department, Budgets etc..	5 years	Department of Higher Education / Census / District office / Department of HRD
2	School details	Details about school name, teachers, students, development division etc.	ID, Name, Principal, Staff, students, establishment year etc..	5 years	Department of Education / Census / District office / Block development offices etc.
3	Technical Education details	Details of technical education centres along with trade / branches	Id, name, trades, principal, governing agency, establishment year etc.	5 years	Department of Technical Education / Census / District office etc.

4.15.3 GIS Application Requirements for Education / Higher Education / Technical Education Department

No.	App Module	Functions	Description	Remark
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Village wise report generation	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	

B	**EDUCATION DEPTs GIS DSS APPS**			
1	GIS based School information System.	Physical accessibility to schools, colleges	System will help to analyse spatial distribution of schools in geographical areas along with suitability analysis for new school setups.	
2	Location based University and collage Information System.	Visualization of thematic information on universities /colleges	Support system for spatial information visualization and distribution of various universities in J&K state along with colleges that provides higher education in state.	
3	GIS based Technical education Information System	Locational information of technical education centres	Supports system would help to identify demand of technical manpower for industrial requirement and available resources along spatial information of centers.	
4	Miscellaneous			

4.16 Election Department

Election department is aimed to improve the communication between the electors of Jammu and Kashmir on one side and the Department of Election, Government of Jammu and Kashmir on the other. The aim is to provide accurate and relevant information about the office of the Chief Electoral Officer and various activities performed by the department.

Complete information about Electoral Rolls, Statistics, Functionaries, Notifications, Candidates and Affidavits, Model Code of Conduct as well as useful reference and archival material are available with the department.

4.16.1 User Needs Assessment– Election Department

Name of the Department	Election Department
Contact Person	To be nominated by the concerned department
Major Function of the Department	❖ To supervise, direct, control and conduct all elections to Parliament and State Legislatures as also to the office of the President and Vice- President of India. ❖ To set down general rules for election. ❖ To determine constituencies and to prepare electoral rolls. ❖ To give credit to political parties. ❖ To allot election symbols to different political parties and individual contestants. ❖ To appoint tribunals for the decision of doubts and disputes

	arising out of or in connection with election to parliament and State Legislatures.
Major Perspective of GIS	❖ Delineation of Parliament and Assembly constituency boundaries. ❖ Preparation of location specific GIS maps containing information on polling stations, villages, district & block head Qtr., police set up, health centre and mobile network etc. ❖ Showing connectivity and accessibility with road network. ❖ Query based buffering and proximity analysis, route information like shortest route, alternate route, traffic analysis etc. during emergency like natural disaster, movement of civil authorities during election etc. ❖ Application strategy for assigning polling stations and query-based route information services like shortest route, alternate route, finding closest facility etc.
GIS Data Requirements	➢ Political boundaries (district / taluk / city / state). ➢ Parliament and Assembly constituency boundaries. ➢ Panchayat boundaries (local election) ➢ Road network, railway network and other transportation layers.

	➢ Public buildings, commercial zones and cultural offices etc. ➢ Spatial distribution of census information.
GIS Application needs	• Network analysis for optimum route identification from one location to another. • Mapping and management of the political jurisdiction (Parliament, Assembly). • GIS based dissemination of alerts and awareness at the time of polling. • Spatial data and services sharing with line departments.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.
Any other Silent Inputs	

4.16.2 GIS Data Requirements for Election Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				

1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
3	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
4	Electoral boundaries	Spatial coverage of various electoral boundaries like Parliament / Assembly/ Nagar Palika / Nagar Nigam / Panchayat etc.	Id, name, candidates, population etc	5 years	Election department / census / district offices etc.
5	Police Stations	Spatial Locations of Police station for effective	Id, name, Head / In charge, resources etc.	5 years	Election department / District Offices
6	Polling booth	Spatial location of polling booths for network analysis and effective management.	ID, booth name, police station, village or locality etc.	5 years	Police department / District Offices / Census / SOI etc.
7	Settlement Point	Village settlement location points	Village name and code, along with census information.	5 years	SSDI/DEERS from Census settlements
8	Slope	Slopes derived from 20m contours OR 2.5m Cartosat	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing

		DEM			dataset.
9	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) -extent/water spread	Water body type, location, description etc.	5 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
10	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
11	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Census information	Village, taluk and District level census information.	Population, societal status etc.	5 years	Census / Dept. of statistics etc.
2	Representatives	Spatial mapping of elected members in past elections.	Id, Name, Year etc.	5 years	Election department / District Offices
3	Socio-economic survey data at various scale	Socio-economic distribution of population	Name of locality, population, employed, un-employed, BPL, occupational categories etc in (village, taluk, District etc.).	5 years	Census / Dept. of statistics / Food, Civil supply and consumer affair department.

4.16.3 GIS Application Requirements for Election Department

No	App Module	Functions	Description	Remarks
1	**Display Module**	**Display**	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Constituency-wise report generation	Facilitates obtaining report/output.	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	

8	Mapping and analysis of the available infrastructure facilities	Map visualization with GIS functionalities	Spatial distribution of various infrastructures like fire stations, police station and other infrastructures etc as required by department.	
9	Network analysis for optimum route identification.	Network analysis, Tracking routes etc.	Network analysis module will be facilitating for identification of optimum routes from one location to another.	
10	Miscellaneous			

4.17 Estates Department

The Estates Department came into existence in the year 1968. Prior to this all these Government Bungalows/ Buildings/ Quarters/ Commercial units were controlled /managed by Housing Division of PWD (R&B) circle in both Jammu and Srinagar divisions.

In the year 1972 Estates Department was re-organized and two posts of Deputy Director Estates Jammu and Srinagar were created. Both the Deputy Directors are divisional head who administer the Estates Department in both divisions. The Maintenance and Repairs of Bungalows/Quarters including Civil Secretariat is done by Executive Engineer Estates vision both Jammu and Srinagar and Director Estates is the Head of the Department.

At present total 3167 nos. of quarters are in Jammu and 1248 nos. of quarters are in Srinagar are looked after by the Estates Department.

4.17.1 User Needs Assessment– Estate Department

Name of the Department	Estate Department
Contact Person	To be nominated by the concerned department

▪ Major Function of the Department	▪ The estate department maintains Civil Secretariat, Jammu/Srinagar, Legislature Complex Jammu/Srinagar (old), Old Secretariat Complex, Srinagar residential quarter/bungalows. Also provide adequate facilities both in Civil Secretariat and residential units owned by the department. ▪ Maintain and supervision of Estates Colonies. ▪ Allotment of accommodation in different Estates Colonies to Move and Non-Move employees. ▪ Allotment of accommodation to Hon'ble Ministers, Hon'ble Judges of High Court, Legislators etc. ▪ Revenue realization from Government Quarters and other commercial properties. ▪ Regular repair and renovation of Government building by Engineering Wing.
Major Prospective of GIS	❖ Spatial distribution of Estates locations ❖ Topography mapping and analysis. ❖ Determination of boundaries of influence for building / Project ❖ Resource Mapping and Analysis. ❖ Effect of neighbourhood on estate projects. ❖ Site selection / Site suitability analysis.
GIS Data Requirements	▪ Topographic layers (DEM, Contour etc.) ▪ Road network, railway network and other transportation layers.

	✚ Infrastructure and facilities layers. ✚ Public buildings and commercial zones etc. ✚ Political boundaries (district / taluk / city / state). ✚ Hydrological layers (watershed, basin, rivers, nalas etc.).
GIS Application needs	• Network analysis for optimum route identification from one location to another. • Mapping and management of the infrastructure and facilities. • Parcel level maps of area • Estate buildings / colonies maps. • Detailed Land Use / Land Cover maps.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.

4.17.2 GIS Data Requirements for Estate Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				
1.	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2.	Seamless parcel data	Parcel data for site selection and construction.	Id, parcel no., owner, survey year etc.	As required	Financial Commissioner, Revenue department

3.	Building foot prints	Building foot prints along with associate details.	Id, parcel no, building type (commercial/ residential), maintained by, owned by etc.	5 years	Revenue department / Estate department etc.
4.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	5 years	SSDI/DEERS, PWD, NHAI
5.	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	5 years	SSDI/DEERS and Railways
6.	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
7.	Emergency Response centre	Spatial location of Emergency centres like (fire stations, State, district disaster management centres etc.)	Spatial locations of centres, Specialities, resources etc.	2 years	NDMA / J&K SDA / District / State / National Disaster Management Authority etc.
8.	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1.	Assets of Estates Dept	Spatial location	asset type, MIS information etc., capacity, class	5 years	

4.17.3 GIS Application Requirements for Estate Department

No	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Reports on assets	Facilitates obtaining report/output.	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**ESTATE DEPT GIS DSS APPS**			
1.	Mapping and analysis of the available	Map visualization with GIS functionalities	Spatial distribution of various infrastructures like fire stations, police station, Water supply, electricity etc. as required by department.	

	infrastructure facilities			
2.	Network analysis for optimum route identification.	Network analysis, Tracking routes etc.	Network analysis module will be facilitating for identification of optimum routes from one location to another.	
3.	Building maintenance and management System	Routine maintenance and management along with quarter distribution.	Building Management system would support for routine maintenance and quarter allotment procedure etc.	
4.	Suitability Analysis	Suitability analysis for new construction	System will support to identify the potential zone, suites for commercial or residential development along with facilities etc.	
5.	Miscellaneous			

4.18 Health and Medical Education Department

Department of Health and Medical Education is aimed at bringing about dramatic improvement in the health system and the Health status of people especially those living in rural areas of the country. It seeks to provide access to equitable, affordable and quality health care, reduction of IMR and MMR, population stabilization and gender and demographic balance which in turn help in achieving goals. Department Mission is on empowering people through effective mechanism of NRHM, Rogi kalyan Samiti etc. Decentralized planning and implementation, strengthening of physical infrastructure and ensuring fully functional facilities at the doorsteps of the people not withstanding odds of topography and situational constraints.

The Department of Ecology, Environment & Remote Sensing undertook a study titled, ‘Measuring Physical Accessibility to Heathcare Network and Population Coverage Modeling using Geoinformatics’. The study was sponsored by the State Health & Medical Education Department over a period of three years.

The study involved use of multiple parameters like population distribution, road connectivity, topography, travel time of patients, mode of transportation, physical barriers etc. and the scaled up network provided a scenario where patients across the state could access the health facilities within a predetermined travel time.

The study won the prestigious National e-Governance Award for the year 2013.

4.18.1 User Needs Assessment– Health and Medical Education Department

Name of the Department	Health and Medical Education Department
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	▪ Launching, operationalization and monitoring of family welfare programs. ▪ Policy framing for health improvement in state. ▪ Provide access to equitable, affordable and quality health care. ▪ Monitoring and management of Hospitals in Jammu & Kashmir State ▪ Monitoring and Management of Medical institutions.
Major Prospective of GIS	➢ Spatial representation of Road network. ➢ Spatial distribution of rail network. ➢ Mapping of Hospitals and coverage area ➢ Spatial distribution of medical education institution. ➢ Route Condition analysis and representation.
GIS Data Requirements	• Mapping and representation of transport network layers like road, rail network, air network etc. • Spatial distribution of hospitals, at village, district, taluk level. • Spatial locations of medical education institutions.

GIS Application needs	✚ Geospatial Hospital information system ✚ Visualization and information distribution of transport network. ✚ GIS based Medical education information system ✚ Optimum route identification and analysis.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.18.2 GIS Data Requirements for Health and Medical Education Department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**MAP / SURVEY DATA**				
1.	Administrative boundaries	State/district/tehsil/village/ Urban/ city boundary	State code, District code, tehsil code, Village code, district name, village name, city name etc.	When New district formed	SoI / District Administration of concerned Districts / Urban development department
2.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI

3.	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
4.	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
5.	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
6.	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) - extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
7.	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
8.	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream, canal type, controlling agency	5 years	Irrigation Dept/DEERS/ NRSC thematic maps
9.	Land Use / Land Cover	Upto Level – 3/4 Land use / Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
10.	Drinking water	Spatial distribution of Drinking Water resources	Resource type, id, owned by, supply capacity etc.	5 years	PHE / Department of Urban development / Municipal office etc.

	infrastructures	like wells, tube wells etc.			
11.	Airports	Spatial locations of existing and proposed airports in state of Jammu and Kashmir	ID, location, etc.	5 years	Department of aviation
12.	Railway Stations	Spatial locations of railway stations, zone, type etc.	ID, name, zone, type, connectivity etc.	5 years	Railway office / transport department
13.	Hospitals	Spatial distribution of hospitals at various scale.	ID, Name, Capacity, type, owned / Managed by, speciality etc.	5 years	Department of health and medical education
14.	Medical education institutes	Spatial distribution of medical institutes	ID, Name, Branches, type, students, faculties etc.	5 years	Department of health and medical education
15.	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1.	No. of students in Medical college	Students details in each branch associated with each college	ID, branch, students etc.	5years	Department of health and medical education
2.	List of	List of hospitals along	ID, Name, No of doctors, other staff, specialization,	5years	Department of health and medical

	Hospitals	with properties.	beds etc.		education
3.	Implemented / Proposed health schemes	List of Promotional schemes for health improvement	Id, scheme name, subsidy, type, Agency etc.	5years	Department of health and medical education / department of finance etc.

4.18.3 GIS Application Requirements for Health and Medical Education Department

No.	App Module	Functions	Description	Remarks
1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Village wise report generation	Facilitates obtaining report/output	

7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**MEDICAL EDUCATION DEPT. GIS DSS APPS**			
1.	Geospatial Hospital information system	Spatial distribution of health institutions	System will help in Hospitals planning and management in automated manners, people can know there best hospitals with list of doctors and specialization.	
2.	Optimum route identification and analysis.	Network analysis	System will have interactive visualization capability and distribution facility.	
3.	GIS based Medical education information system	Spatial distribution of medical institutes	System support in decision making for new unfractured development with respect to the medical facilities and it will also help to citizens / students to find out nearest collage / institution in jurisdiction.	
4.	Miscellaneous			

4.19 Industries & Commerce Department

It is well recognised fact that Jammu and Kashmir is one of the most beautiful part of the world and is blessed with the salubrious climate. Natural factors are more conducive for handicrafts ,village and small scale Industries and less to large and heavy Industries. However, J&K have always a very strong handicrafts sector with our Shawls, Carpets, Paper Machie and wood carving Products being popular all over the world.Jammu & Kashmir had started the process of new Industrialization in 1970 when many Industrial Complexes and Estate were created and a fairly good infrastructure was setup to attracts investors.

The industry sector has been declared as the main vehicle for accelerating economic activity besides providing employment to the educated unemployed youths in the state .Development of industrial infrastructure has been the focus of special attention during the last few years . At present we have 51 industrial estates and many more are in the process of being developed across the State. The efforts made by us over the past few years have started bearing fruits Presently, registered Small Scale Industrial units are operational in the State and have provided employment. Medium and Large Industrial development always remains a thrust area in the Governments Agenda. In the perspective of Industrial growth, Industries and Commerce Department has been established with a system for carrying its activities effectively for concentrating to attract investment in the State. The Industries & Commerce Deptt. of Jammu and Kashmir Govt. Came into existence in year 1970 with 4 Directorates, 8 Corporations & 4 training institutes.The Directorates are as Directorate of Industries & Commerce, Directorate of Handicrafts Development Deptt., Directorate of Handloom Dev. Deptt., and Directorate of Geology & Mining. The Directorate of Industries & Commerce was bifurcated in year 2007 into two Directorates i.e One for Jammu Division & Other for Kashmir Division. The corporations/Boards are SIDCO, SICOP, J&K Handicrafts (S&E) Corporation, J&K Handloom Development Corporation, J&K Cement Ltd, J&K Minierals ltd., J&K Industries, J&K Khadi & Village Industry Board.Training Institutes are as:-Craft Development Institute, Indian Institute of Carpet technology, J&K Entrepreneurship Development Institute, School of Designs.

4.19.1 User Needs Assessment– Industries & Commerce Department

Name of the Department	Department of Commerce & Industries
Contact person	To be nominated by the concerned department
Major functions of the dept.	➢ Developing infrastructure, Technology innovation ➢ and skills ➢ Policy Initiatives for Industrial Development. ➢ Industrial Promotion and Monitoring. ➢ Project clearance and monitoring through Single ➢ Window clearance system. ➢ New scheme approvals. ➢ Institutional support to Institutions associated with industrial development. ➢ Monitoring and Implementation of Government ➢ Orders issued by the State and Central ➢ Government. ➢ Co-ordination with other Departments and Offices of the Government. ➢ Participation in national and international trades and exhibitions to showcase the state in attracting investment. ➢ Administrative issues of the Department.
Major perspectives for GIS	• Comprehensive GIS database for Industrial infrastructure, Input/output trends and Mining sectors • GIS Decision support application for site suitability, zonal planning, and mining activity monitoring and impact assessment. • The Industries department has already developed a portal through a private vendor
GIS data requirements	As mentioned in table below
GIS Applications needs	As mentioned in table below

Capacity building needs	Orientation for SDI usage for State and District level officials Hands-on training will be provided to the Department Customized training on Remote Sensing & GIS.
Any other salient input for SDI	

4.19.2 GIS Data Requirements for Industries & Commerce Department

No	GIS-DATA	Details/Description of Content	Up	Possible Source
A]	**IMAGE DATA**			
1	High-res image as a backdrop for applications	Latest High-res images as a backdrop (in a seamless manner)	Latest (yearly)	DEERS/Google
B]	**MAP/SURVEY DATA**			
1	Administrative maps	State/district/Tehsil/village boundary	When new district formed	SoI / DEERS GIS database
2	Road network	Road transport network – NH/SH/DR/VR/Tracks	2 year	SSDI/DEERS, PWD, NHAI
3	Rail Network	Rail lines – all lines details	2 year	DEERS and Railways
4	Surface water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) – extent/water spread	2 year	DEERS using SOI/NRSC
5	Drainage network	All drainage network (river, streams, nala - upto 1st order streams)	2 in year	DEERS using SOI/NRSC
6	Canal network	All canal system : main, branch, distributaries	5 years	DEERS/Irrigation Dept

7	Settlement points	Village settlement location points	2year	DEERS from Census
8	Electrical	Transmission lines Location and load details	As and when upgraded	PDD
9	Forest Administrative Boundaries	Administrative boundary, RF boundary, National parks	5 years	DEERS/JK Forest Dept.
10	Land use /Land cover	Land use / Land cover database	5 years	DEERS
11	Ground water prospects	Different classes of ground water prospects	5 year	DEERS
12	Mineral Locations	Locations of minerals and their estimates	Once	DGM
13	Slope	Slopes derived from 20m contours OR	5 years	DEERS using
14	Heritage Locations	Locations of heritages	5 years	DEERS
15	Mining Leases	Mining Lease areas and details	As specified by	DMG
16	Wastelands	23 Classes of wastelands in the state	5 years	DEERS
17	Seamless Cadastral	Parcel boundaries as per revenue village	As and when	Revenue Dept.
18	Industrial Amenities	Details of industrial amenities – points with	2 year	DEERS/ I&C Department
19	Industries Map	Locations of all industries in state with	As and when	KSRSAC and I&C
20	Industry Board	Detailed map of KIADB areas and with	As and when	I&C Department and
C]	**GEO-TAGGED**			
1	Existing/Proposed	Details of existing/proposed industries –	As and when	I&C
	Any others.			

4.19.3 GIS Application Requirements for Industries & Commerce Department

No	App Name	Functions	Description of App	Remarks
A]	**BASIC GIS APPS**			
1	Display Modules	Display	Display of line, point, polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and	

2	Query Module	Query	Spatial and non-spatial queries, customizable to departmental needs, to display the results required	
3	Data Ingest Module	Data Ingest	Input of spatial and non-spatial data in to Geodatabase.	
4	Administrative Module	User management, data updating etc.	System/user administration & MIS report generation	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Area wise report generation	Facilitates obtaining report/output in standard formats	
B]	**Industries GIS DSS**			
1	Web based GIS Application for Siting of Industries	To identify potential sites for industries	GIS Application for identifying suitable locations for siting new industries (of different types) based on physical, economic & social data. This application should allow customizable criteria (distance, proximity, occurrence, existence & Boolean) to be defined by the user & superimposition of cadastral & administrative information for generating suitability maps for industries	GIS based site location will provide the most suitable patches of land for industries depending upon size and land requirements, costs & industry details further criteria analysis can help in identifying the most suitable site or provide a comparative analysis of different sites

2	GIS for Industrial Estate Management	GIS based MIS for management of industrial estates	The Dept. requires a specific GIS database & applications for its various industrial estates – integrated into SDI. Industrial estate GIS will be a very detailed layout plan & implementation plan & database (industrial properties, roads, amenities, production, ownership etc.) & application for estate management in (Allocation, vacancies, MIS & other utilities)	

4.20 Planning, Development & Monitoring Department

Main functioning of Planning Development & Monitoring Department

1. Workout a comprehensive long term development strategy and take steps to address development challenges and concerns in the medium term and short term requirements.
2. Finalize a comprehensive Public Expenditure Policy.
3. Documentation of best practices: knowledge sharing and dissemination.
4. Finalizing capital budget allocations based on discussions with the line departments: allocation/release of funds relating to the Capital Expenditure Budget; mid course review of expenditure.
5. Implementation of announcement/commitments of the Hon'ble Chief Minister.
6. Finalization of allocations in respect of annual District Capex budget; allocation/release of funds relating o the Capital Expenditure Budget.
7. Conduct of the meetings of the District Development Boards (DDBs).
8. Implementation of decisions taken by District Development Boards.
9. Formulation of DPRs of projects of more than Rs. 10 crore.
10. Empanelment of consultants for preparation of DPRs in respect of projects relating to various sectors.
11. Standardisation of type designs and building specifications (by way of specifying norms and working out templates).
12. Dealing with cost escalations.
13. Road map for meeting liabilities.
14. Programme Evaluation.
15. Direct project monitoring (mega projects) on a regular basis.
16. Oversight and monitoring of projects (above Rs. 10 crore)

17. Provision of feed back to line departments.
18. Ensuring mid course correction wherever required.
19. Nodal point (support) to Chief Secretary on all issues relating to prestigious projects relating to Railways, development of highways, IT network, gas pipelines etc.
20. Back stopping support on PRAGATI.
21. Coordination for time bound completion of Centrally Sponsored Schemes (CSS) and mega Flagship programme.
22. Capacity building efforts - comprehensive plan and strategies for upgradation of available human resource.
23. Initiatives for institution building and revival.

4.20.1 User Needs Assessment– Planning, Development & Monitoring Department

Name of the Department	Dept. of Planning, Development & Monitoring
Contact Person	To be nominated by the concerned department
Major Functions of the Dept.	□ Prepare short-term and long-term state Plans for development, Financial planning for state plan and projectisation a n d Resources allocation for state activities. □ Assess and monitor Human Development in state - track changes in the poverty and quality of life of the people, impact of various economic reforms being Implemented in the state. □ Monitor and track progress in the implementation of the planned developmental process of the State – especially state and central-funded schemes and performance evaluation of the projects. □ District Planning and distribution of outlays, earmarking outlays for programmes, integrating District plans with the State Plan

Major perspectives for GIS	Planning Department needs GIS in support of their planning, financial allocation, performance monitoring, human development assessment activities and also for generation of overall developmental scenarios as GIS dashboards. The following thrust areas are identified: • GIS for Regional Imbalance assessment based on a parametric analysis and indices generation at village-unit levels. • Generation of District Plans based on natural resources, social and economic assessment. • GIS for Project/Programme monitoring and performance evaluation– milestone/expenditure performance, various criteria such as rural-urban divide, gender equity etc. • GIS for Public Asset monitoring and planning - linking up financial and physical parameters • GIS for Human Development Index (HDI) assessment real-time and generation of various HDI reports/maps/perspectives and also a HDI dashboard.
GIS data requirements	Refer – As per table below
GIS application needs	Refer – As per table below
Capacity building needs	Planning Department officials

4.20.2 GIS Data Requirements for Planning, Development & Monitoring Department

No	GIS-DATA	Description	Update Cycle	Possible Source
A]	**IMAGE DATA**			
1	High-res image as a backdrop for applications	Latest High-res images as a backdrop (in a seamless manner)	As required	DEARS/NRSC
B]	**MAP/SURVEY DATA**			

1	Administrative maps	State/district/tehsil/village boundary In urban areas, City Survey maps with wards/ULB/TAC	Whenever new districts formed	DEERS based on SOI Topo maps/District maps/SMC/JMC/TAC/ULB
2	Watershed boundaries	Watershed boundaries	5 years	RD&PR/Agrl.Dept/Soil Cons
3	Forest Boundaries	RF and forest boundaries	5 years	Forest Dept/DEERS
2	Road network	Road transport network –	2 years	DEERS/PWD/RDD
3	Rail Network	Rail lines – all lines details	2 years	DEERS and Railways
4	Surface water bodies	All major surface water bodies (reservoir, rivers, tank, pond, lakes etc.) – extent/water spread	2 years	DEERS using SOI/NRSC Images/LAWDA/WUCMA
5	Drainage network	All drainage network (river, streams, nala - upto	5 years	DEERS using SOI/NRSC images
6	Canal network	All canal system : main, branch, distributaries	5 years	DEERS
7	Seamless Cadastral data	Seamless state-wide cadastral data based on geo-referencing and mosaicking done under LRMP project	As required	Revenue
8	Settlement points	Village settlement location points	2 years	DEERS from Census settlements
11	Land use /Land Cover	Land use and land cover database	5 years	DEERS/NRSC
12	GW Potential	GW Potential map	5 years	DEERS/NRSC
13	Soils	Soil series Association/Series with their characteristics	20 years	NBSSLUP
14	Slopes	Slope categories from 20 m contours or DEM from Cartosat 2.5 images	5 years	DEERS
15	Wastelands	Wasteland – 23 levels categories	5 years	DEERS/NRSC
16	Irrigation/Well points	Point locations of irrigation sources and wells	5 years	Irrigation & Flood Control
17	Tanks	Tanks and their spread and details	5 years	Irrigation

18	Public Assets point locations	Point locations of Public Assets – schools, hospitals, anganwadi and others	2 years	RDPR/UD/Planning Dept/DEERS
19	Project locations	Locations of state projects	2 years	Planning Dept/DEERS
C]	**GEO-TAGGED MIS/ATTRIBUTES**			
1	Census data	Village unit Census data – demography, work-force, amenities etc	5 years	Census/Planning Dept.
2	Weather data	Real-time weather data – rainfall, temp etc	weekly	IMD/Climate Change Cell
3	Crop area statistics	Area under different crops at village units	yearly	Revenue/Agri Dept
4	Irrigation data	Details of Irrigation and well data	5 years	Irrigation dept
5	Public Assets details	Details of all Public Assets geo-tagged to point locations	2 years	Planning/RDPR/UD
6	Planning Project MIS	Project details – including financial, contractual data etc geo-tagged to project locations	2 years	Planning
7	HD data	Village-unit HD data – demography, health, nutrition, employment, housing,	5 years	Planning
8	Any other (to be determined)			

4.20.3 GIS Application Requirements for Planning, Development & Monitoring Department

N	App Name	Functions	Description of Applications	Remarks
A]	**BASIC GIS APPS**			

1	Display Modules	Display	Display of line, point, polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries, customizable to departmental needs, to display the results required	
3	Data Ingest Module	Data Ingest	Input of spatial and non-spatial data in to Geodatabase.	
4	Administrative Module	User management, data updating etc.	System/user administration & MIS report generation	
5	Help Module	User manual, technical	Provides help when the user faces problem in running the application	
6	Output/Report Module	Area wise report generation	Facilitates obtaining report/output in standard formats	
B]	**PLANNING DEPARTMENT GIS**			
1	GIS App for District Planning	GIS based app for Decision Support to generate Action Plans based on demand and supply of resources in a district	GIS Application for generation of District Plans based on assessment/integration of natural resources, social and economic data and making financial allocation assessment. Specific GIS modules for sectoral demand and need analysis, Aspirations mapping, Development impact analysis	
2	GIS App for HDI Assessment	Assessment of HDI	GIS App for assessment and generation of HDI on village by integrating resources, social, economic parameters as per criterion and development of various scenarios of HDI	

3	GIS App for Public Asset Monitoring	Monitoring public assets	A GIS App for Public Asset monitoring – planning new programmes/development and determining any local/regional imbalances	
4	GIS App for Project Monitoring	Monitoring of project progress	A GIS App for monitoring all plan projects and status determination; planning new projects	
5	Plan Performance GIS Dashboards	Real time performance	A GIS dashboard app for obtaining plan and project status real-time – abstracted at different levels for different officers	
6	Plan View GIS Dashboards	Allocation monitoring	A GIS dashboard app for viewing plans and their allocations	
7	Citizen Interface to Planning GIS App	Demand assessment and feedback	A GIS App for citizen interface to obtain inputs of needs/demand assessment and later obtaining feedback on plans and any other public participation activity	A Citizen GIS App for supporting planning and public participation
8	Any other (to be defined)			

4.21 Revenue Department

The State Jammu and Kashmir comprises two Divisions, 22 Districts, 67 Sub-divisions, 217 Territorial Tehsils and 551 Niabats. Besides maintenance of land records the department is responsible for land reforms, settlement operations and preparation of records of rights, recovery of arrears of land revenue. The State Revenue Department functions as a nodal agency for acquisition of land by Government Departments for development projects, administration of Nazool land, conducting census operations, conducting assistance and providing relief and rehabilitation measures constitute other important functions of the development.

The functions of the office of Financial Commissioner Revenue are as under:-

- **Revenue Administration-Its function**
  - Custodian of Land Records
  - Custodian of State, Kahcharai and Shamilat Lands
  - Maintenance of various documents and their regular updations
  - Implementation of various laws, policies and acts
  - Survey and Settlement
- **Land Records Maintenance**

  Maintenance, preservation and updations of land record are done in accordance with Revenue Acts of the Jammu and Kashmir State. These acts are guiding factor for making new records at the time of new Settlement. In the present structure, Revenue Department maintains the following necessary and major type of documents;
  - Record of Rights (RoR)
  - Jamabandi
  - Girdawari
  - Mutation Register (Intikal)

- **Record of Rights**

  The records prepared at the time of settlement operations in an estate or village is called Record of Rights.(Misalhaquat).It contains the details of persons who are land holders, tenants or assignees of Land revenue, rates, cesses or other payments due from such persons. It also contains genealogical tree (Shajranasb), map of estate, village etc. This is the most important record so far as the evidential value is concerned.

- **Jamabandi**

  It is the amended edition of the Record of Rights and actually that part of ROR which gives the list of land holders and tenancy holders with details of fields, rents paid by each tenant and land revenue paid by each land holder. It is prepared after every four years and is called annual record or Jamabandi Chaharsala.

- **Girdawari**

  Known as harvest inspection is conducted twice in a year for Kharief and Rabi crops. It is carried out by the Patwaris after spot inspection of each field for recording the condition of the standing crop including kharaba.

- **Mutation Register**

  It is printed register with Patwari, separately maintained for each village consisting of normally 100 leaves. Each leaf has a foil and counterfoil and is duly numbered. The title page depicts the name of village, Tehsil, District and date of issue etc. The foil is known as “Parat –Sarkar” and counterfoil as “Parat-Patwar”. The parat-Patwar has to be entered by the Patwari as per the existing entries of the Jamabandi and Parat- Sarkar are made as per the orders passed by the Revenue officers on mutations. There are as many as twenty five categories of mutations and before writing up of Jamabandi of any village or

mauza, all changes which have taken place in record since the previous Jamabandi, are updated through the orders passed on mutation.

4.21.1 User Needs Assessment– Revenue Department

Name of the Department	Department of Revenue & Financial Commissionerate(Revenue)
Contact person	To be nominated by the concerned department
Major functions of the dept.	▪ Revenue department is responsible for maintenance of Land Records, Tenancy rights and maintaining state's land records ▪ Land Records Modernization Programme ▪ Simplifying the process of Registration of documents and generation of various MIS (Management Information System)/Reports for the use of the Department/Policy makers ▪ Maintain and service citizens with various certificates – State Subject, caste, encumbrance etc.
Major perspectives for GIS	Most crucial need of GIS is for land records – mapping and GIS database. Land records modernization is being taken up using various GI technologies, TS/GPS survey, aerial images and satellite images. Dept of Revenue recognizes importance of a state- wide, seamless, land records GIS (with precision and accuracy) – especially as taxation, land acquisition planning, land asset value maps etc. can be generated easily. Further, this would also be useful for citizens to access land records and project- specific land cadastral data. Linking of Cadastral maps to SDI data is essential to link area and dimensionality information – which is available in land records can be geo-tagged and alternatively used for Land Records-GIS.
GIS data requirements	As per table below
GIS Applications needs	As per table below
Capacity building needs	➢ Training and capacity-building in RS/ ➢ GIS and images, advanced surveying using GPS etc. ➢ Training for using SDI Apps for Revenue Department.

Any other salient input for SDI	Revenue department appreciated the concept and usefulness of GIS – especially if land records maps and GIS is organized for whole state with accuracy and precision. This data will be very essential for planning and use by many departments and can also enable SDI for a citizen service.

4.21.2 GIS Data Requirements for Revenue Department

No	GIS- Data	Details / Description of content	Update cycle	Possible Source
A]	**IMAGE DATA**			
1	High-res image as a backdrop for applications	Latest High-res images as a backdrop (in a seamless manner)	As required	DEERS/Google
B]	**MAP/SURVEY DATA**			
1	Administrative maps	State/district/Tehsil/village boundary In urban areas, City Survey maps with wards/ULB/TAC etc	Whenever new districts formed	DEERS/ULB/SMC/JMC/JDA/ SDA
2	Watershed boundaries	Watershed boundaries	5 years	RD&PR
3	Forest Boundaries	RF and forest boundaries	5 years	J&K Forest Dept.
4	Road network	Road transport network – NH/SH/DR/VR/Tracks	2 years	DEERS/PWD
5	Rail Network	Rail lines – all lines details	2 years	DEERS and Railways
6	Surface water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) – extent/water spread	2 years	DEERS using SOI/NRSC images
7	Drainage network	All drainage network (river, streams, nala - upto 1st order	5 years	DEERS using SOI/NRSC images
8	Canal network	All canal system : main, branch, distributaries	5 years	DEERS and Irrigation Dept.
9	Seamless Cadastral data	Seamless state-wide cadastral data generated from SSLR village maps based on geo-referencing and mosaicing	As required	Revenue Dept.

10	Settlement points	Village settlement location points	2 years	DEERS from Census settlements
11	Land use /Land Cover Map	Land use and land cover database	5 years	DEERS
12	GW Potential	GW Potential map	5 years	DEERS
13	Soils	Soil Association/Series with their characteristics	20 years	SLUSI
14	Slopes	Slope categories from 20 m contours or DEM from Cartosat 2.5 images	5 years	DEEERS
15	Wastelands	Wasteland – 23 levels categories	5 years	DEERS
16	Irrigation/Well points	Point locations of irrigation sources and wells	5 years	Irrigation Dept./RD&PR Dept.
17	Tanks	Tanks and their spread and details	5 years	RD&PR Dept./DEERS/ Revenue Dept.
C]	**GEO-TAGGED MIS/ATTRIBUTES**			
1	Census data	Village unit Census data – demography, socio economic data, work-force,	5 years	Census/Planning Dept.
2	Public Assets details	Details of all Public Assets geo-tagged to point locations - Banks, Co-operative	5 years	Planning/RDPR/UDD
3	Tank details	Details of tank data – water-level, quality, maintenance etc	5 years	RDPR
3	Cadestral data	Village-wise database generated under NLRMP	5 years	Revenue Dept.

4.21.3 GIS Application Requirements for Revenue Department

N	App Name	Functions	Description of App	Remarks
A]	**BASIC GIS APPS**			
1	Display Modules	Display	Display of line, point, polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries, customizable to departmental needs, to display the results required	
3	Data Ingest Module	Data Ingest	Input of spatial and non-spatial data in to Geodatabase.	
4	Administrative Module	User management, data updating etc.	System/user administration & MIS report generation	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Area wise report generation	Facilitates obtaining report/output in standard formats	
B]				
1	Land Records GIS Apps	Interface of GIS and cadastral data	GIS Applications for Cross-referencing of land records by linking property/ownership data; GIS analysis and Unique ability to visualize survey data on state frame and transfer GIS data to land survey	Revenue Dept. needs to furnish the Cadastral data
2	GIS App for Emergencies/Disasters	Disaster Management	GIS Applications for a state-wide Emergency / Disaster vulnerability analysis, State/District Disaster Emergency Plans; damage Assessments etc	Disaster Management Dept.

3	GIS App for Village Accountants	Visualization of village level maps	A GIS App for Village Accountants on handheld devices by which local-village maps/images/data can be viewed/queried/displayed and enable data collection.	An internal GIS app for Revenue Department
4	GIS App for Revenue MIS interface	GIS based MIS	A GIS App for geo-linking MIS of Revenue department and creating revenue dashboards for different officers	An internal GIS App for
5	GIS App in support of NRLMP and UPOR operations of SSLR	GIS based app for data collection	A GIS App that allows SSLR to use/base NRLMP/ UPOR operations/data collection etc. on SDI frame	An internal GIS App for Revenue Department
6	Any other (to be defined)			

4.22 Public Works Department

An effective communication network is essential not only to cater to the needs of travel and transport but also for Socio-economic development of a State and the country. In case of J&K, the same is all the more important for promotion of tourism as well. Revival of Tourism and restoration of damaged infrastructure, which had become the target during the period of disturbance in the State has been a priority of the State Government.

The State Government, with the supplementation of Central resources, made concerted efforts in rebuilding of destroyed infrastructure in the shape of roads, bridges, school buildings and the social infrastructure, etc. With this objective in view, special schemes were launched, besides giving a boost to the on-going schemes of the Department.

ROAD CONNECTIVITY (as on 01-01-2011):

Total length maintained by R&B Department : 26711.27 kms.

- Blacktopped : 12054.94 kms
- Metalled : 2514.95 kms
- Shingled : 3650.87 kms
- Fair weather : 8300.06 kms
- Jeepable : 190.45 kms

4.22.1 User Needs Assessment– Public Works Department

Name of the Department	Public Works Department
Contact person	To be nominated by the concerned department
Major functions of the dept.	Plan, Design, Construct and Maintain the Public Buildings, Roads & Bridges Mandate: Plan, design, construct and maintain a safe and cost effective core road network at par with National Highways Standards for uninterrupted flow of traffic with better safety features. Enhanced connectivity to remote and far flung and isolated areas with Major District Roads and construction of bridges. Utilization of natural resources viz., solar energy, rainwater harvesting etc in the public and residential buildings to minimize power consumption. Adoption of modern technology for roads and buildings.
Major perspectives for GIS	Precision mapping of all roads and state-wide Road Information System Road planning and connectivity / alignment analysis using GIS application for land acquisition planning Geo tagging of all PWD assets
GIS data requirements	As per table below
GIS Applications needs	As per table below
Capacity building requirement	Orientation and Hands-on training for SDI usage for State and District level officials. Customized training in applications of Remote Sensing & GIS in preparation/revision of Master plans.

4.22.2 GIS Data Requirements for Public Works Department

No	GIS-DATA	Description	Update Cycle	Possible Source
A]	**IMAGE DATA**			
1	High-res image as a backdrop for applications	Latest High-res images as a backdrop (in a seamless manner)	As required	DEARS/Google
B]	**MAP/SURVEY DATA**			
2	Administrative maps	State/district/Tehsil/village boundary	When new district formed	SoI / DEARS GIS database
3	City Administrative maps / Habitation Boundary	LPA/Town/Block/ward	As required	SDA/SMC/JDA/JMC
4	Road Network	Road transport network – NH/SH/DR/VR/Tracks Carriageway, Right- of- Way	2 years	PWD, NHAI
5	Rail Network	Rail lines – all lines details	2 years	Railways
6	Surface water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) – extent/water spread	2 years	DEARS using SOI/NRSC images
7	Drainage network	All drainage network (river, streams, Nala - upto 1st order streams)	5 years	DEARS using SOI/NRSC images
8	Canal network	All canal system : main, branch, distributaries	5 years	Irrigation & FC
9	Settlement points	Village settlement location points	2 years	DEARS from Census settlements
10	Forest Administrative Boundaries	Administrative boundary, RF boundary, National parks	5 years	DEARS/Forest Dept.
11	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	5 years	DEARS using SOI/NRSC images
12	Contour Map	Contours derived from Cartosat-1m image adapted to 1 m interval	As required	DEARS using NRSC Images

13	Seamless Cadastral	Parcel boundaries as per revenue village maps with survey numbers; georeferenced and seamless to state	As and when required	Revenue Dept.
14	PWD Asset points	PWD Asset points in forms of points of interest – PWD project sites, buildings, toll-gates, bridges, culvert, ports etc	5 years	PWD
15	Land use/land cover	Details of latest land use/land cover data	5 years	DEARS
C.	**GEO-TAGGED MIS/ATTRIBUTES**			
1	MIS data	PWD MIS data for projects, assets – geo-tagged	As required	PWD
2	Attributes for PWD Asset points	Details of PWD Assets - PWD project sites, buildings, bridges, toll-gates, culvert, ports etc.	As decided by department	PWD
3	Demographic data	Village-wise demographic data	5 years	PWD
4	Road attribute information	Road length, Name, condition of road, Name of contractor, year of macdemization, Amount spent, name of Executive Engineer	2 years	PWD
5	Any other information			

4.22.3 GIS Application Requirements for Public Works Department

No	App Name	Functions	Description of Applications	Remarks
A]	**BASIC GIS APPS**			

1	Display Modules	Display	Display of line, point, polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and	
2	Query Module	Query	Spatial and non-spatial queries, customizable to departmental needs, to display the results required	
3	Data Ingest Module	Data Ingest	Input of spatial and non-spatial data in to Geodatabase.	
4	Administrative Module	User management, data updating etc.	System/user administration & MIS report generation	
5	Help Module	User manual, technical descriptions etc	Provides help when the user faces problem in running the application	
6	Output/Report Module	Area wise report generation	Facilitates obtaining report/output in standard formats	
B]	**PWD GIS DSS APPS**			
1	GIS based Road Information System	GIS information on roads and their attributes	GIS Application for monitoring Roads –existing and development of new roads. Analysis of connectivity needs/demand, alignment, terrain analysis etc. Further, MIS data of roads – laying dates, contractor, maintenance, costs etc. to be linked to get MIS reporting in GIS.	This will be an integrated GIS applications for PWD department, senior officers etc

2	GIS Road Atlas (online and real-time)	Giving real time road information	A GIS based live Road Atlas application that provides state-wide road information in good atlas mode and printable formats	This application can also be for Citizens
3	GIS-based PWD MIS app	GIS based MIS	A GIS-based integrated MIS for PWD internal process for project planning, sanctions, allocations, performance	Internal GIS app for PWD
4	PWD Assets GIS App	Providing online access to information of assets of the PWD	A GIS App for monitoring all PWD Assets – based on integrated PWD Assets point data and their details. This will include GIS App for monitoring and status of all assets and for planning new assets/maintenance etc	This will be an integrated GIS applications for PWD department, senior officers etc. A part of this can also be open for citizens
5	PWD Land Acquisition Plan GIS App	GIS providing interface to cadastral information along alignment of roads	A GIS App that will help PWD to localize cadastres/survey numbers for land acquisition for projects and help planning new projects. This will be based on Seamless Cadastral data of	Internal to PWD

4.23 Department of Finance

The Finance Department, Government of Jammu & Kashmir is responsible for management of finances of the State Government. It is concerned with all economic and financial matters affecting the State including mobilisation of resources and allocation of resources for infrastructural development, social welfare, human development and administrative purposes. Prior to introduction of any new scheme / proposal, the approval from the Finance Department is sought. The Finance Department gives approval after taking into consideration all the financial aspects.

The Finance Department of Jammu & Kashmir mainly deals in allocating annual Budget to various departments, managing their releases, monitoring expenditure, re-appropriation of funds, interaction with Treasuries and Accounts and Accountant General, issuing Loans & Advances to employees of the State, Monitoring of Ways & Means Position of the state, Issuing instructions related to Pension, DA, Foreign tours, study abroad and on other Economy control measures, giving sanctions to new posts, vehicles, issuing POL Coupons to all the Departments for running their vehicles.

Finance Department also acts as a guide to various departments in matters relating to financial rule, framing of rules, amendments thereto in keeping with the changing times to bring about efficient financial administration.

4.23.1 User Needs Assessment– Finance Department

Name of the Department	Department of Finance
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	• Prepare the annual fiscal budget and issue adequate regulations for its execution. • Manage government financial assets. • Propose bills related to the management of government employees, particularly bills related to staffing, salaries, benefits and pensions. • Amortize debt and coordinate financial activities carried out within the scope of its power, for the different ministries and their related entities. • Be aware of and report on any initiative of a financial nature involving public expenditure and indebtedness before it is debated by Congress.
Major Prospective of GIS	Plotting of treasuries, different banking, financial institution buildings etc. Preparation of location specific GIS maps containing information on tax payers, employment, occupation etc. GIS integration of fiscal reforms programme for providing fiscal and financial stability to the State. Spatial distribution to fulfilment of Public needs scheme.
GIS Data Requirements	• Geo-tagging of treasuries and banks • Census data • Distribution of Tax payers. • Geographical distribution of proposed/implement development schemes etc • Administrative boundaries along with parcel dataset. • Spatial distribution of state, district, block boundaries etc.

GIS Application needs	➢ Identification of service areas of treasuries ➢ GIS integration of census data with financial institutions ➢ Boundaries mapping of different banking, financial institution etc. ➢ Layer integration, Query analysis & overlay analysis ➢ Monitoring and management of different financial scheme.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.23.2 GIS Data Requirements for Department of Finance

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				
1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers; georeferenced and seamless to state.	Parcel no., owner, and village code, village name, water resource, utilization type etc.		Financial Commissioner, Revenue department
3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.		SSDI/DEERS, PWD, NHAI
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow		SSDI/DEERS and Railways

			gauge etc.) railway zones etc.		
5	Settlement Point	Village settlement location points	Village name and code, along with census information.		SSDI/DEERS from Census settlements
6	Tax payer	Village/city/state/district wise tax payer employee	Tax payer type, name, id etc.		
7	Government schemes	Village/city/state/district wise public and government scheme.	Name of the scheme, types, id etc.		Department of finance, planning commission.
8	Financial/Banking institution	Banking/financial institution for public and government.	Name of the banking/financial institution, types, id, work etc.		Department of Finance, RBI etc.
9	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards		DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
10	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.		SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Revenue collection information system.	Revenue collection of tax payers in different time.	Attributes of name, id, types, region wise tax payers etc.		Finance Department
2	Distribution of government scheme	Government scheme based on population, type, location based etc.	Type, Name, id, coverage people etc.		Census / Dept. of Finance / department of planning / department of statistics etc.

4.23.3 GIS Application Requirements for Department of Finance

No.	App Module	Functions	Description of Applications	Remark
1	**Display Module**	**Display**	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and	

			attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
1	Tax Payer information system	GIS integration based on tax payers.	Facility to visualize spatial distribution of employee, their work, type etc.	
2	Mapping and analysis of the available financial/banking infrastructure facilities	Map visualization with GIS functionalities	Spatial distribution of various infrastructures like banking, financial institution, revenue department.	
3	Miscellaneous			

4.24 Home Department

The Home Department is the Administrative Department of Police, Prisons, Fire & Emergency Services, Sainik Welfare and Defence Labour Procurement Departments. The Department functions under the supervision and guidance of the Chief Minister (Minister in-charge, Home Department) and the Administrative Secretary of Home Department, who at present is of the rank of Principal Secretary to Government.

Departments under the administrative control of Home Department

1. J&K Police Department and its sub-departments Criminal Investigation Department, Home Guards/Civil Defence, Traffic, Crime Branch, Forensic Science Laboratory, Railway Police, Prosecution and J&K Police Housing Corporation.
2. Fire & Emergency Services Department.
3. Prisons Department.
4. Defence Labour Procurement Department.
5. Sainik Welfare Department.

Subjects assigned to Home Department

The Home Department deals with the following subjects:-

- Service matters pertaining to IPS.
- Cadre management of J&K Police Gazetted Service, Gazetted Services of Prisons, Fire & Emergency Services, Sainik Welfare and Defence Labour Procurement Services.
- Policy Matters pertaining to these Departments.
- Internal Security, crime, law and order.
- Prosecutions and detention under PSA and other laws.
- Civil Military Liaison.
- Liaison with the Ministry of Home Affairs, Government of India.

- Issuing of 'No Objection' for grant of visa, extension of visa and grant of 'No Objection to Return to India' (NORI).
- Ex- gratia relief, rehabilitation and compassionate appointments under SRO-43 pertaining to the departments under its administrative control.
- Issues relating to requisition and acquisition of land.

4.24.1 User Needs Assessment– Home department

Name of the Department	Home Department
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	• Internal Security, crime, law and order. • Prosecutions and detention under PSA and other laws. • Civil Military Liaison. • Liaison with the Ministry of Home Affairs, Government of India. • Issuing of 'No Objection' for grant of visa, extension of visa and grant of 'No Objection to Return to India' (NORI). • Ex- gratia relief, rehabilitation and compassionate appointments under SRO-43 pertaining to the departments under its administrative control. • Issues relating to requisition and acquisition of land.
Major Perspective of GIS	❖ Spatial data analysis related to assistance during Disasters ❖ GIS based Crime analysis ❖ Mapping of Police jurisdictions

GIS Data Requirements	As per table below
GIS Application needs	• Network analysis for optimum route identification at time of disaster • Mapping and analysis of the available infrastructure facilities. • GIS based Traffic management • GIS based dissemination of alerts and awareness • Locating suitable sites for emergency response centre. • District-wise Crime zonation
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.
Any other Silent Inputs	

4.24.2 GIS Data Requirements for Home department

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A	**MAP / SURVEY DATA**				

1	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, Police jurisdictions etc.	When New district formed	SoI / District Administration of concerned districts/ Police Dept.
3	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
4	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
6	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
7	Surface Water bodies	All surface water bodies (reservoir, rivers, tank, pond, lakes etc) -extent/water spread	Water body type, location, description etc.	2 years	DEERS / SOI / NRSC / Mapping from Satellite images/LAWDA/WUCMA
8	Drainage Network	All Drainage network (river, streams, nala - up to 1st order)	Order of drainage, id, branch name or subsidiary name etc.	5 years	DEERS/ SOI/NRSC/ Mapping from Remote sensing images / UEED
9	Canal Network	All canal system: main, branch, distributaries	Canal name, source stream,	5 years	Irrigation Dept/DEERS/ NRSC

			canal type, controlling agency		thematic maps
10	Wastelands	23 Classes of wastelands in the state	Type, class etc.	5 years	DEERS/NRSC/ VEDAS/ Mapping from satellite Images / Land record department
11	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
12	Wetlands	Wetland information equivalent to 50k wetland maps	Type of wetland, class etc.	2 years	DEERS/NRSC/Ministry of environment and forestry.
13	Past disaster damage extents	Detailed damage extent maps from past events.	Name and type of disaster, geographical coverage,	As required	J&KSDMA/ NRSC/IMD etc.
14	Past disaster events	Spatial distribution of disaster with different categories.	Disaster type, location name, date of occurrence, loss of lives, loss of properties, relief, rehabilitation exercise etc.	As required	NDMA / J&K SDA / IMD / ISRO / MOSDAC / NOAA etc.
15	Disaster Risk zones	Risk zones regarding earthquake prone zone, flood pane, drought prone areas etc.	Type of risk, mitigation plans and advisory etc.	As required	NDMA / J&K SDA / IMD / ISRO / MOSDAC / NOAA/ District administration etc.
16	Emergency Response centres	Spatial location of Emergency centres like (fire stations, State, district disaster management centres etc.)	Spatial locations of centres, Specialities, resources etc.	2 years	NDMA / J&K SDA / District / State / National Disaster Management Authority etc.

17	Weather data	Rainfall, temp, humidity data collected thru weather collection points network and aggregated to weekly data into weather layers	Vector data for specific parameters, Satellite data with high temporal and spatial resolution	weekly	Climate Change Centre / IMD network / MOSDAC / NOAA etc./ NDMA/ J&KSDMA etc.
18	Crime data	Past & present crime data	locational information, type of crimes, Accidental data	2 years	Police dept.
19	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B	**GEO-TAGGED MIS/ ATTRIBUTES**				
1	Census information	Village, taluk and District level census information.	Population, societal status etc.	5 years	Census / Dept. of statistics etc.
2	Police stations	Location, personnel, etc.	Crime data, census data etc	2 years	Police dept
3	Socio-economic survey data at various scale	Socio-economic distribution of population	Name of locality, population, employed, un-employed, BPL, occupational categories etc in (village, taluk, District etc.).	5 years	Census / Dept. of statistics / Food, Civil supply and consumer affair department.

4.24.3 GIS Application Requirements for Home Department

No	App Module	Functions	Description	Remarks

1	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2	Query Module	Query	Spatial and non-spatial queries to display desired results	
3	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4	Administrative Module	User management, data updating etc.	System administration	
5	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output.	
7	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
B	**GIS DSS APPS**			

8	Mapping and analysis of the available infrastructure facilities	Map visualization with GIS functionalities	Spatial distribution of various infrastructures like fire stations, police station, warehouses and other infrastructures etc. as required by department.	
9	Network analysis for optimum route identification.	Network analysis	Network analysis module will be facilitating for identification of optimum routes for from response centres at the time of emergency.	
10	Spatial Crime Information	Map visualization	Distribution of crime incidents spatially	
11	Miscellaneous			

4.25 Department of Law, Justice & Parliamentary Affairs

The Law and Parliamentary Affairs Department performs multifarious functions which are related to legal, administrative and the dispensation of administration of justice in the State. The main functions of the department are:

I. Legal Affairs: Files relating to legal opinion received from different Government Departments, Corporations and other Public Sector Undertakings are examined and legal opinion / advice tendered. Recommendations of various committees, commissions are also examined, and agreement / deeds executed by the State Government with different organizations / bodies / companies etc. are drafted.

ii. Legislative Affairs: All proposal for drafting any Bill, Ordinance and vetting of rules, notifications, regulations are handled by this branch. It monitors passage of every Bill and Ordinance including introduction, printing, proof reading, obtaining assent of the Governor.

iii. Parliamentary Affairs: being the Administrative Department of the State Legislature, this department deals with all matters relating to the State legislature including summoning and prorogation of the sessions and grant of housing / car advances in favour of Members of State legislature. The Salaries, Allowances, pensions and other privileges of the member of the State Legislature / Ex-Legislators are also within the administrative domain of this department.

iv. Judicial Affairs / Litigation: being the administrative department of State Judiciary, all matters relating to High court and Subordinate Judiciary are being dealt by Law Department. The matters relating to State Legal Services Authority, holding of Lok Adalat, providing of legal aid is also being monitored by this department. It also exclusively deals with all court cases involving interest of the State Government right from the lowest court to the Apex Court. Engagement of Lawyers, Standing Counsels, Public Prosecutors and Notaries, examination of the proposals to file appeals, revisions including appeal against acquittal and Special Leave Petitions are the main functions of the Branch.

4.25.1 User Needs Assessment– Department of Law, Justice & Parliamentary Affairs

Name of the Department	Department of Law, Justice & Parliamentary Affairs
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	▪ To examine various issues received from different departments/corporations of the Government and to tender legal advice to the concerned Departments. ▪ To examine legislative proposals and to draft the same which include Bills, Ordinances, notifications, rules and regulations etc.; ▪ To draft agreements/deeds to be executed by the State Government with different Organizations / Bodies / Companies etc; ▪ To discharge the functions of administrative department in respect of the secretariats of the two Houses of the State legislature as also to summon and prorogue its sessions and grant housing / car advances in favour of the Hon'ble members of the State legislature. ▪ To make all necessary arrangements for conduct of cases in different courts in which the State or any of its Departments/functionaries is a party; ▪ To appoint Standing Counsels for various Department / institutions of the State so that timely advice/legal assistance is provided to the Departments for proper conduct of cases; ▪ To examine cases for filing of appeals, reviews and revisions and SLPs before the competent courts ▪ To appoint Notaries in different Courts and to confer powers of executive magistrates on various officers of the State administration on the recommendations of Divisional Commissioners/ District Magistrates etc.

Major Prospective of GIS	➢ GIS based mapping and analysis of available government infrastructure, judicial Institution (High Court, subordinate court, District court, civil court, Various Tribunals Judiciary etc), etc. ➢ GIS based mapping of different emergency service like police station, fire station, hospital etc. ➢ GIS based analysis of human rights commission data & national crime record bureau etc. ➢ Spatial distribution of road, rail networks, courts and other legal infrastructure etc.
GIS Data Requirements	➢ Spatial distribution of Administrative boundaries of judicial and legislative infrastructure. ➢ Spatial location of police station, fire station, hospital etc. ➢ Spatial data of human rights commission & National crime record bureau. ➢ Mapping and representation of transport network layers like road with categories (national highways, state highways, district roads, village roads etc.), rail network, air network etc.
GIS Application needs	✓ Interactive map distribution of different government building. (State Legislature, high court, state legal service authority etc.) ✓ Basic GIS functions for map browsing and rendering. ✓ Visualization and information distribution of transport network. ✓ Query and analysis of crime data and human rights information.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration along with understanding of various spatial analysis.
Any other Silent Inputs	

4.25.2 GIS Data Requirements for Department of Law, Justice & Parliamentary Affairs

No.	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				
1.	Administrative	State/district/tehsil/village Boundary/High court/state legislature	State code, District code, tehsil code, village code, district name, village name, etc.	When New district formed	SOI / District Administration of concerned districts
2.	Location Point	Judicial office /Court/Police station/Fire station/Hospital	code, name, types of police station, fire station code, name	2 years	
3.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI / NRSC/ Mapping from satellite data.
4.	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5.	Emergency service Location Point	Police station, fire station, hospitals etc.	Police station/Hospitals etc name, type, id code, function etc.	2 years	State and District Administration of concerned districts
6.	Settlement Point	Village/City/District/Taluka settlement location points	Village/City/District/Taluka name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
7.	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
8.	Major / Minor Cities/village	Cities location with categories and their population	City/village name, population, grade of city etc.	2 years	Urban authorities, census department
9.	High resolution Images (Backdrop)	Latest High-Resolution Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As and when required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)

B. GEO-TAGGED MIS/ ATTRIBUTES					
1.	State/Zonal /district offices	High court, legislative, judiciary infrastructure details	ID name, Phone, Address, Email ID etc.	2 years	Dept. of Law, judiciary & public affairs.
2.	Workforce data from NCRB/SHRC	Crime data details from national crime record bureau and human rights data	Types of crimes, road accident, etc.	2 years	Dept. of Law, judiciary & public affairs.

4.25.3 GIS Application Requirements for Department of Law, Justice & Parliamentary Affairs

No.	App Module	Functions	Description of Applications	Remark
1.	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2.	Query Module	Query	Spatial and non-spatial queries to display desired results	
3.	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4.	Administrative Module	User management, data updating etc.	System administration	
5.	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6.	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7.	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	

GIS DSS APPS				
1.	Potential zone identification for crime		Based on NCRB information, identify crime location area.	Spatial crime pattern analysis and hotspot identification.
2.	Visualization and information distribution of transport network.		System will have interactive visualization capability and emergency support facility provided.	Emergency planning and management
3.	Network analysis and spatial distributions of hospitals, police station, fire station etc.		A Web GIS based maps will help to identify nearest locations of hospitals, police station, fire station along with shortest/ optimal roots.	Identification of optimal routes and to reduce time and transportation cost.
4.	Miscellaneous			

4.26 Department of Hospitality and Protocol

The Department of Hospitality and Protocol has been very important wing of the Jammu and Kashmir Government to extend the courtesy from the Government to the VVIPs higher dignitaries and other State Guests, National and providing International Delegation regarding reception, transport and providing of accommodation to these dignitaries in the state. The visitors include high dignitaries like HE the President, the vice President, the Prime Minister and his ministerial colleagues, the Chief Ministers, Ministers of other states, Judicial officers and other officers of other states and other important functionaries in Government, politics, socio economic field also the foreign dignitaries.

4.26.1 User Needs Assessment– Department of Hospitality and Protocol

Name of the Department	Department of Hospitality and Protocol
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	The Hospitality and Protocol Department also caters to the requirement of hospitality and sumptuary on the occasion of Independence Day, republic day other festivities and official parties hosted by H.E the Governor, Hon'ble Chief Minister and other Hon'ble Ministers. • Besides this the department also decides for national/state level conferences, seminars and events on behalf of various ministries. • To extend organizational and logistical support for holding National level conferences and seminars in the State. • To maintain Guest Houses, circuit Houses and other Properties used for Lodging VIPs, State Guests and paying guests. • To organize reception, transport, security and stay of the State Guests and Paying guests Government officers / officials.

	• To Keep and maintain inventory of stocks in Departmental stores at Jammu / Srinagar like shamiyanas, carpets, furniture & fixtures, linen, crockery & cutlery etc.
Major Prospective of GIS	❖ Spatial data distribution government building (State legislature, governor house, CM house, Minister house etc.) ❖ Spatial distribution of hotels/guest house etc. ❖ Optimum and suitable route (road, rail and air networks). ❖ Easily and suitable optimum route path to connectivity.
GIS Data Requirements	Spatial dataset with attribute information about government building (ex. CM house, Governor House, guest houses etc.) Spatial distribution of transport connectivity. Spatial location of hotels along with type and functionalities. Administrative boundaries along with associated attribute information.
GIS Application needs	✓ Network analysis for optimum route identification. ✓ Mapping and analysis of the available infrastructure facilities. ✓ Query and overlay analysis. ✓ Information system for available resources, utilities and stocks with government departments in various zones, district, taluk etc.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration.
Any other Silent Inputs	

4.26.2 GIS Data Requirements for Department of Hospitality and Protocol

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				

1.	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
3.	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
4.	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
5.	Hotels/Guest house	Spatial distribution of hotels, guest house etc.	Name of hotels, guest house along with types of hotels/guest house, location name, capacity responsible person etc.	2 years	FCSCA / District headquarters /
6.	Government building	Spatial distribution of government building along with location name, type etc.	Types of building, function of building,	2 years	FCSCA / District headquarters / Census / department of statistics.
7.	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As and when required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B. GEO-TAGGED MIS/ ATTRIBUTES					
1.	Workforce data of Hotels/guest house etc.	Hotels/guest house, types, Details	Name of the hotels, id, type etc.	2 years	
2.	Past / future events dataset	Spatial distribution of past and future planned govt. events.	No. of guest, hosting agency, location, year, funding agency	2 years	

4.26.3 GIS Application Requirements for Department of Hospitality and Protocol

No.	App Module	Functions	Description of	Remark
1.	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2.	Query Module	Query	Spatial and non-spatial queries to display desired results	
3.	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4.	Administrative Module	User management, data updating etc.	System administration	
5.	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6.	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7.	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
GIS Based DSS for Department of Hospitality and Protocol				
1.	Mapping and analysis of the infrastructure facilities.	Map visualization with GIS functionalities	Spatial distribution of resources, utilities and stocks of government.	
2.	Network analysis for optimum route identification.		Network analysis module will be facilitating for identification of optimum routes.	

3.	Accommodation facilities system		Spatial distribution of hotels, guest houses and there availability along with facilities available.	
4.	Event information system		All the events organised or conducted by various departments in the state, spatial distribution of past and future events along with associated information.	
5.	Miscellaneous			

4.27 Department of Tribal Affairs

Tribal population of Jammu & Kashmir is among the nascent Tribal Groups joining the main stream of planned development, to which they have brought a distinct and colourful cultural variety. Their economy is closely linked with the forests and they are living a substandard life because of their primitive mode of livelihood.

Majority of them are placed below the poverty line, possessing meagre assets and are exclusively dependent on wages, forest produce and farming, that too in a traditional way which leads to non-remunerative returns. The peculiar aspect of tribal of our state is their scattered population who inhabit the difficult and remote geographic terrains which poses a severe threat to their speedy development.

In J&K state the following communities have been declared as scheduled tribes 1. Balti, 2. Beda, 3. Bot, Bota, 4. Brokpa, Drokpa, Dard, Shin, 5. Changpa, Garran, 6. Mon, 8. Purigpa, 9. Gujjar, 10. Bakerwal, 11. Gaddi and 12. Sippi.

4.27.1 User Needs Assessment– Tribal Affairs

Name of the Department	Department of Tribal Affairs
Contact Person	To be nominated by the dept.
Major Function of the Department	➢ Social security and social insurance to the Scheduled Tribes ➢ Tribal Welfare: Planning, project formulation, research, evaluation, statistics and training ➢ Promotion and development of voluntary efforts on tribal welfare ➢ Development of Scheduled Tribes ➢ Identification of scheduled Areas ➢ Monitoring of ST Welfare Grants. ➢ Promoting social and economic empowerment of Scheduled Tribe. ➢ Development and Marketing of Tribal products/Produce' from State Tribal Development Cooperative Corporations (STDCCs).
Major Prospective of GIS	GIS based mapping and analysis of boundary of tribal area. Spatial distribution of demographic data. Mapping and monitoring of various development plans for tribes. Spatial distribution of education centre in tribal areas. Infrastructure, facilities mapping and monitoring in tribal areas. Spatial mapping of transport and communication layers in tribal areas.
GIS Data Requirements	Political boundaries (district / taluk / city / state etc.). Census data Spatial distribution of transport connectivity Social infrastructures and utilities facilities etc. Institutional and educational centre.

GIS Application needs	❖ Network analysis for shortest route identification ❖ Location based academic institution and training centre map. ❖ GIS based dissemination of alerts and awareness programme for tribes.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration
Any other Silent Inputs	

4.27.2 GIS Data Requirements for Department of Tribal Affairs

No	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				
1.	Administrative boundaries	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2.	Seamless Cadastral Data	Parcel boundaries as per the revenue village maps with survey numbers; georeferenced and seamless to state.	Parcel no., owner, and village code, village name, water resource, utilization type etc.	As required	Financial Commissioner, Revenue department
3.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
4.	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5.	Settlement Point	Village settlement location points	Village name and code, along with census information.	2 years	SSDI/DEERS from Census settlements

6.	Slope	Slopes derived from 20m contours OR 2.5m Cartosat DEM	Degree of slope etc.	5 years	DEERS using SOI/NRSC, Mapping from Remote sensing dataset.
7.	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
8.	Development scheme	Name of the government scheme, funding agencies, targeted groups etc.	Attribute information of government scheme, type, id etc.	5 years	Department of tribal affairs / Department of Finance / Planning Department / District Headquarters etc.
9.	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As per requirement	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B. GEO-TAGGED MIS/ ATTRIBUTES					
1.	Workforce data from census	Village, taluk, district wise Socio-economic data.	Labour class, small scale farmers, large scale farmers.	5 years	Census / Statistics department / Panchayat raj department etc.
2.	Socio-economic survey data at various scale	Socio-economic distribution of population	Name of locality, population, employed, un-employed, BPL, occupational categories etc in (village, taluk, District etc.).	5 years	Census / Dept. of statistics
3.	List of beneficiaries Schemes under ministry of tribal affairs	List of people who are benefited under various tribal schemes.	Id, name, tribal scheme, number of beneficiaries etc.	5 years	Department of Tribal affairs

4.27.3 GIS Application Requirements for Department of Tribal Affairs

No.	App Module	Functions	Description of Application	Remark
1.	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2.	Query Module	Query	Spatial and non-spatial queries to display desired results	
3.	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	

4.	Administrative Module	User management, data updating etc.	System administration	
5.	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6.	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7.	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
GIS Based DSS for Tribal Affairs				
1.	Potential scheme beneficiary's analysis	Government scheme for tribe people.	Beneficiaries employment identification, living status, type of benefits, current status etc.	
2.	Spatial area identification for tribes.	Tribes area.	GIS based maps will help to identify potential zones for tribes with reference to population and other factors.	
3.	Census information system	Tribal information from census data.	Facility to visualize spatial distribution of census information like population, category, distribution and employment opportunities etc.	
4.	Transport facility	Network analysis, Tracking routes etc.	Network analysis module will be facilitating for identification of optimum routes from one location to another.	
5.	Miscellaneous			

4.28 Department of Labour and Employment

The state of Jammu and Kashmir as a constituent of republic is committed to the welfare of the working class and to the empowerment of the Labourers to enable them to play their role in the institution building of the state. It is with these ideals in view that the state of Jammu and Kashmir has adopted 22 central legislations relating to the Labourers and which take care of regulatory mechanisms for implementation of these laws and social security measures to improve socio-economic conditions of the working class. These welfare measures include Provident fund, Medical insurance, a package of Welfare schemes for building and construction workers, Rehabilitation of Child Labourers and Bonded labourers, conciliation between employees and employers in case of a dispute etc. The state has also enacted three state legislations dealing with the welfare of the working class in the state.

The state government has also placed a well-knit institutional mechanism to implement these legislations through the State Labour Department, Provident Fund Organisation, State Insurance Corporation (ESIC) and Jammu and Kashmir Building and Other Construction Welfare Board.

4.28.1 User Needs Assessment– Department of Labour and Employment

Name of the Department	Department of Labour and Employment
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	The Department performs the following functions of legal and administrative nature: - The primary responsibility of implementation of the legislation vests with the department of Labour headed by Labour Commissioner and having persons at divisional and district level. The mandate of the department includes to ensure: - • Compensation to workers for injury or death in course of employment and out of employment. • Payment of wages gratuity, bonus, maternity benefits, Health insurance and provident fund. • Settlement of disputes of workers with employers. • Health Safety and other welfare measures of the workers. • Improving working conditions and ensuring safe and congenial atmosphere at workplace. • Regulating working conditions. • A special measure for the welfare of building construction workers regulating trade unions by registering the union's employees ensuring safety of workers by implementing Factory Act and Labour Act, Abolishing Bonded Labour wherever it exists in any form and manifestation implementing the child labour to ensure that no child is implicated in

	hazardous works.
Major Prospective of GIS	➢ GIS based mapping and analysis of available employment opportunities in government, judicial Institution, finance, banking, insurance, industries and commerce sectors ➢ Spatial distribution of employee / Labour with respect to state, district, village etc. ➢ GIS based analysis of demographic data with socio-economic development. ➢ Labour movement and migration for employment. ➢ Monitoring and managing various development plan for employment.
GIS Data Requirements	➢ Spatial distribution of Administrative boundaries of state, district, city, village, taluka etc. ➢ census information data at various level like village, taluk and district etc. ➢ Spatial distribution of government scheme for labour and employee. ➢ GIS data of transport network layers like road with categories (national highways, state highways, district roads, village roads etc.), rail network, air network etc.
GIS Application needs	✓ Information visualization and distribution of various industries ✓ Engagement of labours / employees at various agencies and ongoing government schemes. ✓ Temporal analysis (Seasonal / Monthly / Yearly) of workforce movement. ✓ Information distribution of various proposed / planned employment schemes or opportunities. ✓ Spatial distribution of zonal/ district level employment offices. ✓ Spatial decision of employees/ labour welfare plans or schemes.
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration along with understanding of various spatial analysis.
Any other Silent Inputs	

4.28.2 GIS Data Requirements for Department of Labour and Employment

No.	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				
1.	Administrative	State/district/tehsil/village Boundary/High court/state legislature	State code, District code, tehsil code, village code, district name, village name, etc.	When New district formed	SOI / District Administration of concerned districts
2.	Location Point	Police station/Fire station/Hospital	Police station code, name, types of police station, fire station code, name	2 years	Concerned depts. / Mapping using Mobile App
3.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI / NRSC/ NNRMS / Mapping from satellite data.
4.	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones etc.	2 years	SSDI/DEERS and Railways
5.	Settlement Point	Village/City/District/Taluka settlement location points	Village/City/District/Taluka name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
6.	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
7.	Major / Minor Cities/village	Cities location with categories, their population, employment etc.	City/village name, population, grade of city etc.	5 years	Urban authorities, census department
8.	Labour & Employment offices	Spatial location of labour employment offices.	State, Zonal, district level offices along with responsible person, contact details, registered persons and provided employment information etc.	2 years	

9.	Training and development capacity building	Location of the training centre.	Type of training programme, name, id etc.	2 years	Department of labour & employee department/ministry of skill development & entrepreneurship/ National skill development corporation
10.	High resolution Images (Backdrop)	Latest High-Resolution Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As and when required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B. GEO-TAGGED MIS/ ATTRIBUTES					
1.	State/Zonal /district wise employee categories	Categories details of employee	ID name, Phone, Address, Email ID etc.	2 years	Dept. of labour & employee.
2.	Socio-economic survey data at various scale	Socio-economic distribution of employee	Name of locality, population, employed, un-employed, BPL, occupational categories etc in (village, taluk, District etc.).	5 years	Census / Dept. of statistics / Food, Civil supply and consumer affair department.
3.	Distribution of skill development centre.	Category of skill development	Types of skill development centre, name, id etc.	2 years	

4.28.3 GIS Application Requirements for Department of Labour and Employment

No.	App Module	Functions	Description of Application	Remark
1.	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2.	Query Module	Query	Spatial and non-spatial queries to display desired results	
3.	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4.	Administrative Module	User management, data updating etc.	System administration	

5.	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6.	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7.	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
GIS Based DSS for Labour and Employment				
1.	Employment information system		Spatial distribution of employee & employment sector at various level state/district/village etc. and government employment scheme and welfare fund for labour & employee.	
2.	Support system for migration analysis		Facility to visualize spatial distribution of migration of people one place to another.	
3.	Training & skill development information system		Spatial distribution of training centre and skill development programme along with location and types.	
4.	Miscellaneous			

4.29 Social Welfare Department

Social welfare is the process of social development through which the potential of the people is stimulated to promote the effective participation in the process of social change and improving the quality of life. Social Welfare Department over the period has played a key role in the socio-economic upliftment of under privileged, poor and vulnerable section of the society.

The Directorate of Social Welfare Jammu came into existence in the year 2003 after the bifurcation of erstwhile Directorate into two separate Directorates at the Provincial level. The Directorate is headed by the Director who is assisted by Deputy Director (Administration), Assistant Director (Administration), Assistant Director (Schemes), Deputy Director (Planning), Chief Accounts Officer and other allied staff.

4.29.1 User Needs Assessment– Social Welfare Department

Name of the Department	Social Welfare Department
Contact Person	To be nominated by the Dept.
Major Function of the Department	The main functions of Social welfare Department are: - ❖ Providing scholarship to the deserving students belonging to SC/ OBC / Physically Handicapped / Minority categories for their educational upliftment. ❖ Providing Social Security and Financial Assistance to Orphans, Widows, Destitute ladies Old age persons and Physically Handicapped persons through various schemes /Programme run by the Department. ❖ Provision of Training, rehabilitation services for economically, socially vulnerable group such as disabled, poor, women and children in distress for ensuring their dignified life. ❖ Mobilising Community resources for meeting the social need and solving the local problems in rural areas. ❖ Encouraging Non-Govt. Voluntary Organisations/ Social activist to work for the welfare of Women/ Children /Old age/Physically Challenged people by providing financial assistance to them. ❖ Providing residential facilities to the students belonging to under-privileged classes.
Major Prospective of GIS	GIS based mapping of boundary state, district, city, village etc. Spatial distribution of demographic data. Mapping and monitoring of various socio-economic development plans. Spatial distribution of educational & training centre. Infrastructure, facilities mapping and monitoring. Spatial mapping of transport layer.

GIS Data Requirements	▪ State, district, village etc boundary data. ▪ Transport network layer. ▪ Census data. ▪ List of development plan for SC/ ST/ OBC / Physically Handicapped / Minority categories etc.
GIS Application needs	➢ Mapping of state, district, village, city etc. boundary. ➢ Mapping and analysis of the available social infrastructure facilities. ➢ Mapping and analysis of transport networks for optimum route identification. ➢ GIS integration for socio economic development plans. ➢ Geotagging of orphanages, NGO Offices, training/skill devp. centres for poor
Capacity building needs	Yes, Training regarding data preparation, application use and analysis from advanced modules.
Any other Silent Inputs	

4.29.2 GIS Data Requirements for Social Welfare Department

No.	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				
1.	Administrative	State/district/tehsil/village boundary	State code, District code, tehsil code, Village code, district name, village name, etc.	When New district formed	SoI / District Administration of concerned districts
2.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI
3.	Settlement Point	State/District/city/taluka/ Village settlement location points with categories and their	State/District/Village etc. name and code, along with census information.	2 years	SSDI/DEERS from Census settlements

		population.			
4.	Socio economic development plans.	List of people who are benefited under various schemes.	Id, name, type, scheme, number of beneficiaries etc.	5 years	Department of social welfare / District headquarters.
5.	Social infrastructure facilities	Details of social infrastructure facilities.	Id, name, type, location, etc.	2 years	Department of social welfare / District headquarters.
6.	High resolution Images (Backdrop)	Latest High Res Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B. GEO-TAGGED MIS/ ATTRIBUTES					
1.	Census information	Village, taluk and District level census information.	Population, societal status etc.	5 years	Census / Dept. of statistics etc.
2.	Socio-economic survey data at various scale	Socio-economic distribution of population	Name of locality, population, employed, un-employed, BPL, occupational categories etc in (village, taluk, District etc.).	5 years	Census / Dept. of statistics / Food, Civil supply and consumer affair department.

4.29.3 GIS Application Requirements for Social Welfare Department

No.	App Module	Functions	Description of Application	Remark
1.	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2.	Query Module	Query	Spatial and non-spatial queries to display desired results	

3.	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4.	Administrative Module	User management, data updating etc.	System administration	
5.	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6.	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7.	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
GIS Based DSS for Social Welfare Department				
1.	Development plan information system	Government scheme for people.	Providing social security and financial assistance to orphans, widows, Old age persons, physically handicapped persons, SC/ST/OBC through various beneficiary's schemes, type of benefits, current status etc.	
2.	Social infrastructure information system.	Map visualization with GIS functionalities	Spatial distribution of various social infrastructures facilities like school, college, training centre, health centre etc. as required by department.	
3.	Optimum route identification and analysis.	GIS network Analysis	Spatial analysis of optimum / shortest route analysis would be useful at the time of transportation, emergency, route diversion during disaster, or any other activity in region.	
4.	Miscellaneous			

4.30 Department of Science and Technology

The Science and Technology Department is engaged in utilization of New and Renewable Sources of Energy for meeting the needs of people with focus on un-electrified villages/hamlets and other deficit areas besides harnessing the potential of Science & Technology as instrument of Socio-Economic change. The Science and Technology has two wings under its Administrative Control viz J&K Energy Development Agency (JAKEDA) and J&K State Science, Technology & Innovation Council.

The schemes/ programmes of the Science & Technology aim at development of Science and Technology infrastructure, enlarging /generating the poll of science and technology manpower, promoting and stepping up support to research and development for socio-economic development. Nurture young students to take up higher studies for pursuing scientific research as a career. Establishing globally competitive research facilities and centre of excellence apart from these crucial areas of S&T sector, the Council devotes to popularization of Science & Technology to evolve methods of promoting applied Scientific and technological research which will stimulate the optimum utilization of the State's potential including all natural, human and material resources. Catalysing industry academia collaborations for development and flow of technologies from laboratory to the market place and for the industry to invest more in science and technology infrastructure in the state.

4.30.1 User Needs Assessment– Department of Science and Technology

Name of the Department	Department of Science and Technology
Contact Person	To be nominated from each wings/Sub-Depts.
Major Function of the Department	The major function of department of science and technology are listed below. ✓ The schemes/ programmes of the Science & Technology aim at development of Science and Technology infrastructure, enlarging /generating the poll of science and technology manpower, promoting and stepping up support to research and development for socio-economic development. ✓ Nurture young students to take up higher studies for pursuing scientific research as a career. ✓ Implementation of rural electrification and renewable Energy Programmes. ✓ Catalysing industry academia collaborations for development and flow of technologies from laboratory to the market place and for the industry to invest more in science and technology infrastructure in the state.
Major Prospective of GIS	➢ Administrative boundaries, road, railway, and major settlement etc. ➢ Electricity and other energy network layers (planned and existing) ➢ Spatial distribution of industrial and academic research centres. ➢ GIS technology used to determine the optimal route for extending the network to specific areas. ➢ GIS based mapping of electrified and un-electrified villages / hamlets.
GIS Data Requirements	➢ Administrative boundaries of state, district, city, village etc. ➢ Spatial distribution of electrified and un-electrified city/district/village data. ➢ Spatial distribution of energy resource at various scale. ➢ Spatial location of research academic, institutional and training body.

	➢ GIS data of transport network layers like road with categories (national highways, state highways, district roads, village roads etc.), rail network, air network etc.
GIS Application needs	✓ GIS based mapping of administrative boundaries of state, district, city, village etc. ✓ GIS based analysis of renewable/non-renewable energy resource. ✓ Basic GIS functions for map browsing and rendering. ✓ GIS based academic research education Information System
Capacity building needs	Yes, Capacity building for the understanding of various modules and data integration along with understanding of various spatial analysis.
Any other Silent Inputs	

4.30.2 GIS Data Requirements for Department of Science and Technology

No.	GIS Data	Details/ Description of contents	Attributes	Update cycle	Primary / Alternate source
A.	**Map / Survey Data**				
1.	Administrative	State/district/tehsil/village Boundary/High court/state legislature	State code, District code, tehsil code, village code, district name, village name, etc.	When New district formed	SOI / District Administration of concerned districts
2.	Location Point	Scientific Institutions, Projects	code, name, types	2 years	
3.	Road Network	Road transport network	Road name, source and destination, type of road, material used in construction, maintenance body etc.	2 years	SSDI/DEERS, PWD, NHAI / NRSC/ NNRMS / Mapping from satellite data.
4.	Rail Network	Rail lines – all lines details	Rail line route name, Source and destination points, lines type (broad gauge, Narrow gauge etc.) railway zones	2 years	SSDI/DEERS and Railways

			etc.		
5.	Settlement Point	Village/City/District/Taluka settlement location points	Village/City/District/Taluka name and code, along with census information.	2 years	SSDI/DEERS from Census settlements
6.	Land Use / Land Cover	Up to Level – 3/4 Land use /Land cover	Attribute information as per the NNRMS standards	5 years	DEERS/NRSC thematic maps/ Mapping from Remote sensing Data / VEDAS.
7.	Academic research and institutional centre.	State/city/village etc	Attribute information of academic body, type, name etc	2 years	
8.	Electricity network Layer	Established electrical network layers and service coverage.	ID, Source, destination, Name, Zone, Distribution office, capacity, type, etc.	2 years	Science and Technology Department / Energy department / State & District concern.
9.	Energy Resources	Possible energy resources at various scale, like hydro thermal, nuclear, wind, solar etc.	ID, Name, Zone, Distribution office, capacity, type, etc.	2 years	Science and Technology Department / Energy department / Zonal offices
10.	High resolution Images (Backdrop)	Latest High-Resolution Image in color to serve as back drop for querying & applications	RGB natural color composite for background data verification and interactive visualization.	As and when required	SSDI / DEERS / NRSC-ISRO / other High-resolution Satellite Images (Quick bird, world view etc.)
B. GEO-TAGGED MIS/ ATTRIBUTES					
1.	State/Zonal /district wise academic and institutional centre	Categories details	ID name, Phone, Address, Email ID etc.	2 years	State and district concern
2.	Energy Distribution details at house hold level	Details of household size, electricity consumption, prices of electricity etc.	Energy company ID name, Phone, Address, Email ID etc.	2 years	Science and technology department / Power development department
3.	Census information	Village, taluk, district wise Socio-economic data.	Population, societal status etc.	5 years	Census / Statistics department / Panchayat raj department etc.

4.30.3 GIS Application Requirements for Department of Science and Technology

No.	App Module	Functions	Description of Application	Remark
1.	Display Module	Display	Display of line, point, Polygon (vectorised) and raster data in the form of maps and pictures, attribute data and query results (both map and attributes)	
2.	Query Module	Query	Spatial and non-spatial queries to display desired results	
3.	Data Ingest Module	Data Ingest	Insertion of spatial and non- spatial collected data into the system.	
4.	Administrative Module	User management, data updating etc.	System administration	
5.	Help Module	User manual, technical descriptions etc.	Provides help when the user faces problem in running the application	
6.	Output/Report Module	Report, chart, graph etc.	Facilitates obtaining report/output	
7.	Export/Import Module	Raster formats / Vector data formats import and export	Facilitates import/export of data from one program to other and in integrating datasets from different sources	
GIS Based DSS for Science and Technology				
1.	GIS based electrification information System.		System will help to analyse spatial distribution of electrified area along with suitability analysis for new electrification.	
2.	Research and Training Information system.		System will have interactive visualization capability of which type of institution, type, category etc	Ministry of science and Technology
3.	Miscellaneous			

CHAPTER-5: VISION FOR STATE SDI

The project period of the State Spatial Data infrastructure (SSDI-JK State Geoportal) is ending in March, 2019. The Spatial Data infrastructure is not only an R&D activity sponsored by the Department of Science & Technology, Govt. of India but a user oriented geospatial data service aimed at revolutionizing the entire planning and monitoring process in the state. A meeting was convened by the then Chief Secretary with Commissioner/Secretary to Govt., Forest, Environment & Ecology Department, Commissioner/Secretary to Govt., Science & technology Department and major HoDs of the stake holder departments on 15th of March, 2012 to discuss the smooth implementation of the State Spatial Data Infrastructure in J&K State. As per the minutes of meeting, the Planning & Development department was asked to provide funding for the SSDI building and after successful implementation of the SSDI project, it was contemplated to integrate the Spatial Data Infrastructure with the state plan for ensuring continuity in geospatial services to the Line departments. For this, recurring budget was also proposed after the expiry of project period. Therefore, a vision for putting in place a robust SDI in place after expiry of the project period in March, 2019, the various proposals are aspects of the state SDI are discussed here as under:-

5.1 Institutional Framework

In order to harness the potential of SDI for achieving efficient planning, management and monitoring system, we needs to have a comprehensive institutional framework that would ensure committing of spatial and non-spatial data by user departments, proper management of metadata, cataloguing services, coordination between the user departments, data

generating departments and the SDI manager. Besides, we need to have an interdepartmental coordination at the highest administrative level for achieving the objectives of SDI in J&K State. For now, the J&K Govt. has, on the directions of central government, constituted a high level project implementation committee headed by the state chief secretary as a dedicated institutional framework to oversee implementation of the SDI in Jammu & Kashmir.

Under instructions from Government of India, the Govt. of Jammu & Kashmir vide Order No. 518-GAD of 2012 dated 16/05/2012 constituted the High Level State Implementation Committee headed by the Chief Secretary to oversee the implementation of SDI in J&K state. The structure of the Committee is as under:-

i. Chief Secretary .....Chairman
ii. Commissioner/Secretary to Govt., Planning & Development Dept.... .....Member
iii. Commissioner/Secretary to Govt., Forest Dept.....Member
iv. Commissioner/Secretary to Govt., Revenue Dept..... ..Member
v. Commissioner/Secretary to Govt., S& T Dept.....Member
vi. Commissioner/Secretary to Govt., Urban Devp. Dept.....Member
vii. Commissioner/Secretary to Govt., Agriculture Dept.....Member
viii. Commissioner/Secretary to Govt., PWD Dept.....Member
ix. Commissioner/Secretary to Govt., Health Dept.....Member
x. Commissioner/Secretary to Govt., Education Dept.....Member
xi. Commissioner/Secretary to Govt., Rural Development Dept.....Member
xii. Commissioner/Secretary to Govt., Irrigation &FC Dept.....Member
xiii. Commissioner/Secretary to Govt., Tourism Dept.....Member
xiv. Director, Remote Sensing Dept.....Member Secretary

The terms of reference of the Committee are as under:-

i. To oversee building up of database on socio-economic profiles and Infrastructure like road network (up-to mouza level), Health Centres, Schools, Drinking water sources, Irrigation facilities, natural resources like land, water, forest, mines and minerals available in the state on the basis of Remote Sensing data, which would ultimately help in the planning process and monitoring developmental and administration activities in the Standard GIS tools and applications shall be used -to develop digital database and resource maps on various themes.

ii. To suggest a portfolio of Action Pan, corresponding measurable objectives and financial requirements for completion of the project in time bound manner.

iii. To oversee the implementation and coordination between various stakeholder departments for timely completion of the project.

iv. To build institutional relationships to create a community of data-sharing stakeholders.

v. To review the progress from time to time to ensure better planning & monitoring of the project.

vi. To assess capacity building & up gradation of infrastructure from time to time as per user needs.

vii. To assess the needs of the line departments and make them aware of capabilities of geo-spatial databases in planning and decision-making.

viii. To facilitate the collection and compilation of information for spatial data activities from varied sources.

ix. To assist in the development and adoption of common standards and definitions of data elements, data content, format, accuracy for spatial date for use by an agencies.

x. To assist in establishing and publishing consensus standards and specifications for spatial data, and recommend priorities for producing data sets.

xi. To reduce duplication of efforts among agencies, improve quality and reduce costs related to geographic Information, to make geographic data more accessible to the public, to increase the benefits of using available data, and to establish key partnerships with other institutions, organizations, states etc.

xii. To further help in development of high performance networks and communication- technologies for efficient data handling, distributed and federated repositories, human-centered visualization, and applications to improve web-based geospatial services and analysis.

xiii. To suggest ways of imparting special policy focuses on development sustainable use of geospatial databases.

xiv. To make recommendations for an effective and efficient paradigm for SSDI for the state based on a National Science & Technology policies and taking into account the Issues related to institutional, legislative and enforcement structures.

xv. The Committee may propose policy and administrative measure to ensure that the SSDI effectively result in the desired focus on the policy proprieties in the State.

xvi. Apart from a coordination mechanism at the highest administrative level, we need to have Geographical Information System(GIS) cells at each district headquarter headed by the Chief Planning Officer of the District. The chief Planning Officer would coordinate with Head, SSDI-JK and provide him information relating to Geospatial Data needs at the district level.

5.2 Formulation of Geospatial Data Sharing Policy for J&K State.

Well Jammu & Kashmir State is a sensitive boarder state and geospatial data of particular resolution and type is either secret or restricted. However, keeping in mind the planning and development needs and the utility of Geospatial technology in providing better conservation solutions and better public service delivery systems, the need of the hour is to strike a balance between the planning, management and monitoring needs and the security considerations. The Govt. of India has

already formulated its National Mapping Policy. There is also a National Geospatial Data Sharing Policy and some states have also made strides in this direction, therefore, J&K State also needs to formulate a comprehensive Geospatial Data Sharing Policy. The Policy documents already formulated in the country are being examined and it is expected to formulate the Draft Geospatial Data Sharing Policy in the immediate future.

5.3 Sanctioning of bare minimum posts for manning the Core Spatial Data Infrastructure

The various posts proposed to be created for SSDI-JK are as under:-

S. No.	**GAZETTED**		
1	Principal Scientist cum Joint Director (HQ) 37400-67000+ GP8900	1	One existing sanctioned vacant post of Scientist (15600-39100+GP7600) may be upgraded and re-designated as Principal Scientist cum Joint Director(HQ) to head the Spatial Data Infrastructure
2	GIS Database Administrator 9300-34800/GP5200	1	One existing sanctioned vacant post of Junior Scientist(15600-39100/GP6600) may be downgraded and re-designated as GIS Database Administrator(9300-34800/GP5200)
	NON-GAZETTED		
3	GIS Engineer 9300-34800/4600	1	Post needs to be created for GIS Database Management and administration of networking, Spatial data needs assessment of Line Departments and Database design and data reengineering using interoperable formats
4	GIS Application Developer 9300-34800/4600	2	Post needs to be created for Programming and Development of applications and Decision Support Systems for different Line Department for improving decision making at highest administrative level.
5	Geospatial Data Analyst 9300-34800/4600	2	Post needs to be created for creation of GIS data and Geospatial analysis for application development

6	GIS Data Bank Manager 9300-34800/4200	1	Post needs to be created for safe keeping and management of Hard copy and soft copy data resources lying in the Data Bank
7	MGTVL Driver 5200-20200/1900	1	Post needs to be created for driving the Mobile Ground Truth Verification Lab Vehicle for collection of ground truth data

Further as per the approved project proposal document, the criteria for recruitment is as under:-

S. No.	Post	Mandate	Eligibility criteria	Mode of recruitment
1	Principal Scientist/ Joint Director Head (SSDI-JK)	Overall control of the State Spatial Data Infrastructure. Also, control of establishment, estates, administration, finances and accounts besides coordination with Central and State Departments in the field of SSDI related activities.	M. Tech (RS&GIS)/ Masters degree in Geographical Information systems / Geo-informatics with 15 years' experience in the field of GIS and spatial technology.	By deputation from any Govt. Dept. Preference may be given to persons from Remote Sensing Centre having already worked on SDI.
2	GIS Database Administrator	Networking, Database management, Protocols, Permissions /access control	MCA with five years experience in the field. Preference may be given to persons having worked on	By direct recruitment. If not available then by deputation from any govt. department

			SDI	
3	GIS Engineer	Post needs to be created for GIS Database Management and administration of networking, Spatial data needs assessment of Line Departments and Database design and data reengineering using interoperable formats	MCA or MS(computer Science), BE/ B.Tech M.Sc(IT) (Computer Science) with 3 years experience application development preferably in GIS. Preference to be given to persons with certificate course in GIS	By direct recruitment. If not available then by deputation from any govt. department
4.	GIS Application Developer	Development of user specific applications/ customized software packages/ uploading of geospatial data and System Administration	M.Tech (RS&GIS) with three years experience in Software development/ programming or (Masters degree in Computer/ Software Engineering) or (MCA) with five years experience in the development of software	By direct recruitment. If not available then by deputation from any govt. department

			packages and programming	
5.	Geo-spatial Data Analyst	Analysis of the spatial databases, updation and rectification of the data bases as per NSDI standards	M. Tech in Remote Sensing & GIS/Masters degree with PGD in Remote Sensing/GIS or M.Sc (Remote Sensing)/(Geo-informatics) with five years experience in the job	By direct recruitment. Preference may be given to persons having already worked on SSDI in Remote Sensing Centre. If not available then by deputation from any Govt. dept.
6	GIS Databank Manager	Procurement of satellite images and other data and its management, storage and issueance	Graduation with certificate course in remote sensing. Higher qualifications to be prefered	By direct recruitment. If not available then by deputation
6	Accounts Asst.. cum cashier	Maintenance of the finances		By deputation from Finance department
6	Driver	Driving of the Mobile Ground Truth Verification Lab	Matric with hill driving license	By direct recruitment
7	Orderly		Matric	By direct recruitment

For reference, the sanction of posts of Kerala State Spatial Data Infrastructure (KSSDI) issued by Govt. of Kerala is attached with this document as Appendix-I.

5.4 Physical Infrastructure

Under instructions from Department of Science & Technology (DST), Government of India, New Delhi, the State Government funded the construction of the SSDI building in the campus of the Department at Bemina. The constructions was carried out by the Jammu & Kashmir Housing Board and is in its final stage. It is expected that the Spatial Data Infrastructure shall shift to the new building shortly. Though SDI has also a Bolero Vehicle but in the coming years, we need to have at least two more vehicles for data collection and updation from across the state. Besides, the SDI has already been provided with 10mbps fiber optics leased line internet connectivity and a Pedestal Server. The other servers and Graphic Processing Unit is being installed at the State Data Centre, Jammu where a dedicated server space is being provided by the Information Technology Department in addition to the Remote Recovery and data updation Site at Bemina, Srinagar.

Fig.14: SSDI-JK building under construction at Bemina Office campus

5.5 Manpower capacity building

It is proposed that the Core Group of the SDI at Bemina Campus shall be provided capacity building through trainings and workshops at National and International Institutions of repute so that the knowledge and skills of the persons who manage the SDI is enhanced on a regular basis. Apart from training the SDI core group, trainings and workshops shall be conducted for the employees of the Line Departments in handing the online databases and the Decision Support Systems so that planning becomes easy and more meaningful by using near real time accurate geospatial data.

5.6 Development of Applications and online SDSS for Line departments

This would be the third version of Geoportal Solution where applications shall be developed for the Line Departments for achieving good governance in the State. Once the Version-2 of the Geoportal Solution is released by ending March, 2019, RFPs shall be formulated for development of Decision Support Systems by consulting vendors keeping in view the application requirements of the Line Departments. The application requirements of the Line Departments are conceptualized in the following tables.

5.7 Proposed recurring Budget(in lacs)

An annual recurring budget of nearly 40 lacs is required for the SSDI-JK for enabling it to provide geospatial data services and online Decision Support Services to the Line Departments under the Non-Plan budget. However, under state Plan, Rs 30.00 lacs shall be required to plan the activities like; development of Decision Support Systems/Apps, capacity building and training of Line departments etc. which shall be generated from the user departments. The details of recurring budget are discussed here as under:-

S. No.	Item	Approx. annual recurring budget
1	Development of Applications/Decision Support Systems for Line Departments	10.00
2	Salary of SSDI staff	30.00
3	Internet and other rentals	5.00
4	TA/DA/Ground Truth collection/ consumables/ data	6.50

5	Training and workshops	2.50
6	AMC/repairs/ maintenance	2.00
	Total	**56.00**

Web GIS

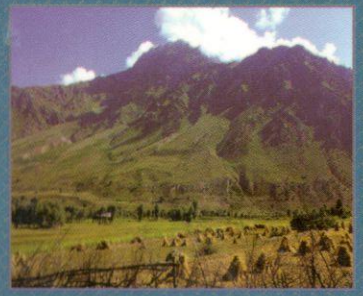
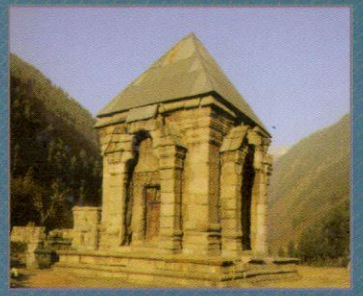
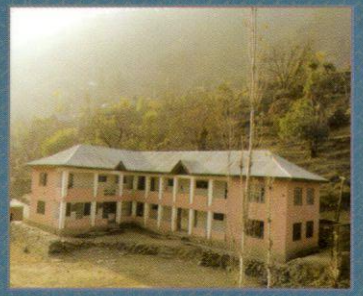
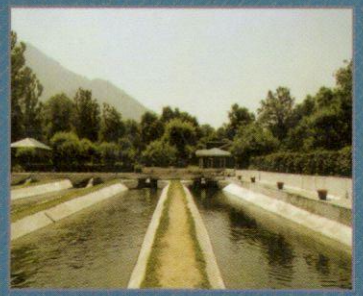
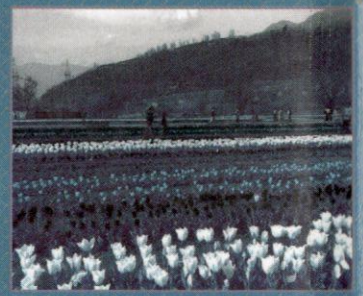
Easy Availability

Easy Access

Data Security

Data Integrity

Good Governance

Sponsoring Agencies:

NRDMS, Department of Science & Technology (DST), Govt. of India, New Delhi

J&K State Science, Technology & Innovation Council