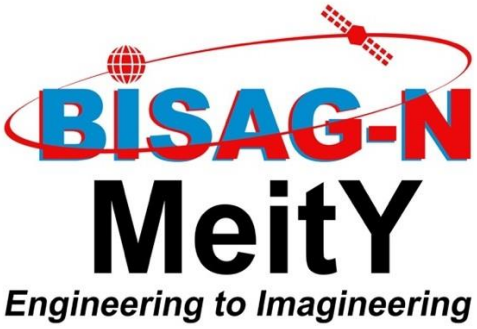

Bhaskaracharya National Institute for Space Applications and Geo-Informatics

Ministry of Electronics and Information Technology

Government of India

Proposal for "Design, development and deployment of Next Generation Portal (Portal-NG) of Geological Survey of India (GSI), migration of legacy data of OCBIS Portal, Go-Live of Portal-NG and Operation and maintenance (O&M) of Portal-NG for 3 years after Go-Live"

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I. Introduction to the Project

The Geological Survey of India (GSI) has been operating the Online Core Business Integrated System (OCBIS) since Field Season (FS) 2016-17. This system has facilitated the efficient governance and automation of GSI's scientific and administrative processes, significantly improving the organization's operational efficiency. OCBIS was taken up as 7-year project (September 2015 to August 2022) after approval from Ministry of Mines (MoM) for providing GSI the firm platform for furthering its organizational IT enablement process. M/s Accenture Solutions Pvt. Ltd. was selected as the Implementation Agency (IA) for Development, implementation, Operation and Maintenance (O&M) of OCBIS business modules including infrastructure at physical Data Centre (DC), GSI, Kolkata and Data Recovery Centre (DRC) at GSI, Hyderabad. The different modules – Core modules, Support modules and eGov modules were developed based on input from stakeholders from GSI along with regular changes as per request from users as well as stakeholders. After completion, the O&M phase of M/s Accenture Solutions Pvt. Ltd. as IA was first extended for a period of 6 months and then in next phase it was extended as per approval from MoM for Development, implementation, migration and Operation and Maintenance of OCBIS in OCI cloud as well as O&M of existing DC and DR of GSI till complete migration for another three years was awarded to Accenture till 28.02.2026 with a clause that GSI should speed up the development of Next Generation Portal by BISAG-N during the period and inform MoM the status of progress on regular basis.

However, with rapid advancements in technology and the increasing complexity of geological data management, GSI now aims to develop a Next Generation Portal (Portal-NG). The goal of Portal-NG is to enhance the ease of use, introduce new methodologies, and ensure seamless integration of modern technologies into GSI's existing workflows. To achieve this, GSI intends to engage Bhaskaracharya National Institute for Space Applications and Geo-informatics (BISAG-N) as System Integrator (SI) and Implementation Agency (IA) for preparation of SRS document and development of Portal-NG of GSI as well as O&M for 3 years after Go-Live.

II. Background Information

GSI, an attached office to the Ministry of Mines, Government of India, is headquartered in Kolkata. Established in 1851, GSI is a leading geo-scientific organization responsible for generating baseline geological data, mineral resource assessments, and conducting various geoscientific studies. GSI operates through a robust network of regional and state unit offices across India. This organized structure allows GSI to effectively cover the diverse geological landscapes of the country and address region-specific geological challenges.

III. Technological Evolution and Need for Portal-NG

Since the launch of the Online Core Business Integrated System (OCBIS) in 2016-17, GSI has experienced significant improvements in its operational efficiency and data

management capabilities. However, the fast-paced technological advancements and the increasing demand for more sophisticated and user-friendly systems necessitate the development of a Next Generation Portal (Portal-NG). Portal-NG aims to incorporate cutting-edge technologies such as artificial intelligence, machine learning, microservices and advanced geospatial analysis tools to further enhance GSI's capabilities. This new portal will not only streamline GSI's internal processes but also improve accessibility and usability for external stakeholders, including researchers, policy-makers, and the general public. By collaborating with BISAG-N, GSI ensures that the Portal-NG project will be executed with the highest standards of technical expertise and innovation. This collaboration is expected to set a new benchmark in the field of geological data management and dissemination, reinforcing GSI's position as a global leader in geoscience.

IV. Activity Domain of GSI

GSI's functions encompass the entire gamut of earth sciences, including geological mapping, mineral exploration, geoinformatics, fundamental geosciences, and training and capacity building. The organization operates under five missions, and three support systems as detailed in of the document.

Missions of the Geological Survey of India

Mission-I: Baseline Geoscience Data Generation

The primary focus of this mission is to generate comprehensive geoscientific baseline data crucial for understanding the earth's subsurface characteristics. This involves:

- **Geological Mapping:** Creating detailed maps that display the distribution, nature, and age of rock formations at the earth's surface. This helps in understanding the geological history and structure of various regions.
- **Geophysical Mapping:** Using techniques like seismic, magnetic, gravity, and electrical surveys to map the physical properties of rocks beneath the earth's surface. These maps are vital for identifying potential resource deposits and understanding subsurface structures.
- **Geochemical Mapping:** Analyzing the chemical composition of rocks, soils, and stream sediments to detect anomalies indicative of mineral deposits. This data is used for mineral exploration and environmental monitoring.
- **Marine Geoscience:** Studying the geology of the ocean floor through techniques like sonar mapping, sampling, and remote sensing. This is essential for resource exploration, environmental monitoring, and understanding tectonic processes.
- Remote Sensing and Aerial Survey – Analysing satellite based remote sensing data and various data generated from airborne/heliborne geophysical techniques.

Mission-II: Mineral Resource Assessment

This mission aims at systematically exploring and assessing the mineral resources of the country. Activities under this mission include:

- **Identification of Mineral Resources:** Conducting surveys and explorations to locate mineral deposits using geological, geophysical, and geochemical methods.

- **Delineation of Deposits:** Defining the boundaries and extent of discovered mineral deposits through detailed mapping and sampling.
- **Evaluation of Resources:** Assessing the quantity and quality of mineral deposits using drilling, sampling, and laboratory analysis. This includes estimating reserves and potential economic viability.

Mission-III: Geoinformatics

The goal of this mission is to manage and disseminate geoscientific data through advanced geoinformatics technologies. Key components include:

- **Databases:** Creating, Compilation of data in form of maps (hard and soft copy), publications and maintaining comprehensive databases of geological, geophysical, geochemical, and other geoscientific data. These databases enable efficient data storage, retrieval, and management.
- **Geographic Information Systems (GIS):** Using GIS to integrate, analyze, and visualize geoscientific data spatially. This aids in better understanding spatial patterns, relationships, and trends in geological phenomena.
- **Data Dissemination:** Developing platforms and tools for easy access and dissemination of geoscientific data to stakeholders, including researchers, policymakers, and the general public.

Mission-IV: Multi-disciplinary and Fundamental Geosciences

This mission focuses on advancing the fundamental understanding of earth sciences through multidisciplinary research. Areas of study include:

- **Geodynamics:** Investigating the processes driving the movement and deformation of the earth's crust. This includes studying plate tectonics, earthquakes, and volcanic activity.
- **Engineering Geology:** Providing support to all engineering projects in collaboration with other organizations.
- **Seismology:** Analyzing seismic waves generated by earthquakes to understand the structure and behaviour of the earth's interior. This helps in assessing seismic hazards and mitigating risks.

- **Other Fundamental Geosciences:** Conducting research in areas like geomorphology, geochronology, glaciology, meteorite studies, stratigraphy, palaeontology, and hydrology to advance the scientific knowledge of earth systems and processes.

Mission-V: Training and Capacity Building

This mission aims to enhance the skills and capabilities of geoscientists and technical personnel through comprehensive training programs. Initiatives include:

- **Training Programs:** Organizing courses, workshops, and seminars on various aspects of geoscience, including field techniques, laboratory methods, data analysis, and the use of geoinformatics tools.
- **Capacity Building:** Developing infrastructure and resources for advanced training and research in geosciences. This includes establishing training centres, laboratories, and research facilities.
- **Skill Enhancement:** Focusing on continuous professional development to keep geoscientists updated with the latest advancements in technology, methodologies, and scientific knowledge.

V. Geographical Coverage of the Project

The Portal-NG project will be deployed on MeghRaj 2.0, MeitY-approved Cloud Platform (NIC) within India, utilizing Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) models. The project includes development, migration of existing data, and operation and maintenance of the Portal-NG.

VI. Objective

GSI intends to leverage high-end IT tools and practices, including data analytics, to integrate multidisciplinary data, enhance interoperability, and improve knowledge management. The objectives are:

(1) Preparation of SRS document based on requirement gathering from stakeholders which will be mutually agreed by both GSI and BISAG-N.
(2) Identification and acquisition of Cloud infrastructure and software for development of Portal-NG with advanced functionalities which will be mutually agreed by both GSI and BISAG-N.
(3) Development of applications/modules identified for Portal-NG with advanced functionalities.
(4) Migration of data generated in OCBIS Portal to Portal-NG and their retrieval in various applications.
(5) Testing (UAT) and its signoff from stakeholders, Go-Live of Portal-NG
(6) Change requirement analysis post Go-Live in respective modules and changes in module, if required

(7) Operation and maintenance of Portal-NG for three years post Go-Live."
(8) Exit management and knowledge transfer of OCBIS project from present IA.

VII. Broad Scope of Work

1. Current State Assessment (AS-IS) and Gap Analysis:

- Understand the Business Processes in current state (AS-IS) of OCBIS
- Stakeholder Change Requirement Analysis
- Understand Changing Trends and practices in Spatial Data Management
- Current State Assessment of ICT systems and services

2. Functional Requirement Specifications (FRS)
3. Identification of infrastructure to be acquired in Meghraj Cloud and their detailed architecture including network, firewall etc. with an aim to increase the system performance for 4 years.
4. Planning and development of architecture and applications in the acquired cloud infrastructure.
5. Migration of all legacy data existing in OCBIS to Portal-NG
6. Operation and Maintenance activities
7. Change Management (CM) and Capacity Building (CB)
8. Regular VAPT audit of website and Portal-NG by MeitY approved agency.
9. Exit management and knowledge transfer of OCBIS project from present IA (M/s Accenture Solutions Pvt. Ltd.)

VII.(i): Development of Portal-NG and Applications to be developed:

Table No: 1

Module Name	To be developed	Suggestions
FSPMIS	• Fresh development with improved functioning • Workflow to be retained • Provision for direct data migration to NGDR Portal • Data migration from OCBIS	• All applications should be retained with dependency with other modules • Dashboard to be improved based on roles/designation. The workflow should be full proof from starting the FSPMIS then to the Geoportal for prefield study, then data collection, then data preparation and then data parsing to the designated database theme wise. The entire flow should be completed and back to the FSP MIS where everything submitted should be checked

		yes. Detailed requirement will be provided during requirement gathering, but the provisioning must be present.
Borehole	• Fresh development with improved functioning. • Easy access and parsing mechanism to be introduced. Provision of 3d Visualization on the geoportal (NGDR) to be made. Data modification, if required, based on the application requirement or software requirement, should be done by IA. • Workflow to be retained. • Provision for direct data migration to NGDR Portal.	• All applications should be retained with dependency with other modules • Dashboard to be improved based on roles/designation
LMS	• Simplification of the overall module mechanism is necessary with least involvement of workflow • Machine generated lab data to be incorporated in the module as the end product of the workflow mechanism in this module and numeric data to be extracted from the pdf to database using AI/ML algorithms • Mechanism for viewing the data in NGDR • Data migration from OCBIS	• The two sub-modules namely- FSP Sample Processing and Gemstone Sample Processing to develop and migrate the database on priority basis • Dashboard to be improved based on roles/designation
CLIS (Core Library Information System)	• Fresh development (may be in NGDR) with data migration • Modification/ simplification as per requirement	
DMIS (Drilling Management Information System)	• Fresh development with data migration	• Module to be improvised in consultation with the stakeholders/ owner • Inventory- to be kept and improvised

		• Allocation & Daily Drill Run (shifts)- Provision to be made for linking Rig ID to FSPMIS so that the rig status is visible in dashboard. • Give rig status as- Idle, moving, under project & under maintenance- to be incorporated in Dashboard. • POL Consumption, POL Engine consumption, POL Pump consumption, Casing Plan- improvise in consultation with the stakeholders
Geospatial functionalities to be developed	Requirement for FSPMIS (FSP formulation, checking, implementation for field application, Report uploading): 1. Selection of area during FSP creation 2. Viewing of FSP area in dashboard in various levels (RMH, HOD, PSS, CHQ and IPR committee) during approval 3. Selection of all geospatial, geophysical and report data for viewing in field package) 4. After generation of accession no., conversion of all data (pdf, image, shape and table) into NGDR portable format and directly fed to NGDR database. 5. Search provision for accessing GSI reports from Portal-NG	• Applications which have dependency with FSPMIS, Borehole, Map and Field Application modules should be retained • To explore the possibility of linking the FSPMIS Module of GSI to the existing NGDR portal. • To explore the possibility of integrating the Geospatial functionalities of the Next Generation Portal of GSI with the existing NGDR Portal • Raster and vector map services will be published. The services will be made available in both WMS and WFS and to external users through API maintaining the same symbology. • There should be separate login mechanism for the two portals, i.e NGDR and Portal-NG, however, the geospatial data may be fetched through the API based services from the Portal-NG and NGDR. Hence, no login integration will be required. • Requirement of API for linking NGDR Portal and Next Gen

		Portal for enabling data dissemination to stakeholders • Data may be hosted at the GSI end in the Portal of GSI and will be fetched through the API by NGDR in future to avoid duplicity of data. • New Reports should be uploaded in MERT format while uploading in Portal, so that it may be directly linked with NGDR portal in lines of IBM Portal • Application for 3D Visualization of required data • Improved Dashboard
Field Application	• To be re-developed as Mobile APP service /API/Microservice (online and offline).	• Forms to be developed in the application based on Mission/Theme • Applications may have dependency with FSPMIS,LMS, Borehole and Geospatial Module to be developed in NGDR
Maps	• Fresh development (may be done in NGDR) for exporting all hard copy scanned maps prepared by M&C Division • Data migration • Provision for data search in GSI Portal	• Serve as inventory/repository of all scanned maps in NGDR with search page in Portal-NG
Publications	• Fresh development for viewing all the publications made by GSI (except unpublished reports • Data migration	• Module will serve as repository of all publications and data entry to be made as per standard national/ international journals, so that search can done be done from abstract or text and not from metadata.
CGPB	• Fresh development • Data migration	• Remove workflow • Develop the module as a repository for uploading CGPB related documents of the Meetings in Public Domain with search page

Vigilance	• Fresh development • Data migration • Workflow to be retained	• All applications should be retained with dependency with other modules • Dashboard to be improved based on roles/designation
Rajbhasha	• Fresh development • Data migration	• No workflow • Develop the module as a inventory/repository for uploading Inspection Report & Quarterly Report with search page
GSI Reports	• Data migration • Provision for direct data migration to NGDR Portal after accession no. is assigned • Search application for viewing inventory of reports from Portal-NG	• Direct uploading from FSPMIS • Search parameters based on FSP metadata and abstract • Functionalities to be developed so that FSP reports which will be generated in future will be MERT compliant and the shareable open file reports can only be accessed by stakeholders from NGDR Portal through API.
Utilities	• Fresh development • Data migration	• Have dependency of other modules • Role based access • May have added features post Go-Live
VMIS (Vehicle Management Information System)	• Fresh development • Data migration	• More simplified approach • Role based
Geotourism	• Fresh development • Data migration	• GIS based more advanced design
Virtual Museum	• Fresh development • Data migration	• More advanced approach using modern techniques
Rock Texture Atlas	• Fresh development • Data migration	• Same design as per suggestion of stakeholder
Paleontology	• Fresh development • Data migration	• Same design as per suggestion of stakeholder
Landslide/Disaster Management	• Fresh development • Data migration	• Same design as per suggestion of stakeholder
Office Locations	• Fresh development • Data migration	• GIS based more advanced design
Laboratory Locations	• Fresh development • Data migration	• GIS based more advanced design • More advanced search

Geophysical data solution	• Already in NGDR	
HRMS (eGov) to be incorporated as "Modified eGov"	• Requirement is for Basic Info, Monthly Diary, Master Data Service Book and Personal Details (these two applications are used for generating Executive Record which is used by HRD). • All other applications to be acquired by P&A from eHRMS 2.0 • Legacy Data migration and retrieval mechanism	• Action may be initiated by P&A, CHQ after approval by competent authority
Claims (eGov) to be incorporated as "Modified eGov"	• Requirement for Additional Reporting Officer assignment for FSPMIS, redirection of tasks in various modules, Contingent Advance, Field Establishment Allowance/Field preparatory allowance, Master Data and TA on transfer. For Tour application provision to be made in eHRMS for approval to be made from different reporting officer (based on FSP assignment) • All Applications viz. Reimbursement of Newspaper, Telephone Bill, Children Education Allowance, Medical Bill, Computer advance, HBA, LTC to be acquired by P&A from eHRMS 2.0 • Legacy Data migration and retrieval mechanism	• Action may be initiated by P&A, CHQ after approval by competent authority
IFMS (eGov) to be renamed as "GSI Budget"	• Budget to be integrated with FSPMIS as per HOD, CHQ • Provision for online budget allocation and expenditure	To be discussed with HOD, CHQ

MM & e-Procurement	• Fresh development for inventory and requisition of goods and services, uploading and search of bid documents, tenders uploaded in GeM Portal • Data migration.	• No workflow • Develop the applications as a inventory with search page
GSI Mail	• Procuring suitable email services and also make arrangements for successful migration of the present mailboxes for 9000 users. • Migration of data of existing mailboxes for an estimated 9000 users that is presently used by GSI employees. • Presently GSI is using e-mail solution of Microsoft Exchange.	• Existing email data to be successfully migrated if new solution is acquired. • The email service should be secured from any cyber threats.

VII. (ii) Operation and Maintenance

- Operation and maintenance of Portal-NG for three years from March 1, 2026.
- Infrastructure and software upgrades, patching, and change management.

VII. (iii) Knowledge Transfer

- Seamless transition from the current IA (Accenture Solutions Pvt. Ltd.) to BISAG-N.
- Coordination for knowledge transfer and system handover to a MeitY-approved Cloud Platform.
- The exit management of OCBIS project will be initiated from 1st September 2025 till 28th February 2026.
- It will be guided by the Service Level Agreement (SLA) document between GSI and M/s Accenture Solutions Pvt. Ltd.
- The exit management plan will be drafted by M/s Accenture Solutions Pvt. Ltd. and will be implemented by BISAG-N for GSI and a certified report will be submitted to GSI by BISAG-N based on which GSI can provide the completion certificate to M/s Accenture.

VII. (iv) Implementation Plan

- **Development and Migration**

1. **Requirement Analysis**
    - Conducting detailed discussions with GSI stakeholders to understand the current system functionalities and future requirements module-wise.
    - Data migration matched report should be submitted to GSI along with functionality check.
    - Documenting user requirements, system specifications, and desired functionalities for Portal-NG. Document should be mutually agreed by both GSI and BISAG-N.

2. **System Design**
    - Designing the architecture of Portal-NG with an emphasis on scalability, security, and interoperability.
    - Preparation of HLD and LLD diagrams.
    - Preparing detailed design documents covering data flow, system modules, integration points, and user interfaces. Document should be mutually agreed by both GSI and BISAG-N.

3. **Development**
    - Agile development approach with iterative cycles of development, testing, and feedback.
    - During testing in UAT environment, links to be provided to GSI stakeholders for checking and feedback/upgradation.
    - Ensuring all modules are integrated and operate seamlessly with each other.

4. **Data Migration**
    - Sync of database used in OCBIS with that in Portal-NG.
    - Planning and executing the secure migration of existing data from OCI to Portal-NG.
    - After data migration retrieval of same data using applications running in Portal-NG. After successful migration BISAG-N will be responsible for all legacy data migrated from OCBIS.
    - Ensuring data integrity, consistency, and minimal downtime during the migration process.

5. **Testing and QA**
    - Conducting comprehensive testing including unit tests, integration tests, system tests, and user acceptance tests.
    - Ensuring Portal-NG meets all functional, performance, and security requirements.

6. **Go-Live**
    - Deploying Portal-NG to the production environment.

- Conducting final system checks and user training sessions online/offline as proposal by GSI at GSI designated centres after completion of each module/in phases.
- Transitioning ongoing operations to the new portal.
- Post Go-Live Vulnerability Assessment and Penetration Testing (VAPT) of Portal-NG may be done by BISAG-N.

7. **Backup policy:** Ensuring data integrity and availability during web portal development and data migration by implementing full, incremental, and differential backups across all environments. Backups are encrypted, stored securely both on-site and offsite, and retained according to defined periods. Regular testing and monitoring are conducted to verify backup integrity, with restoration procedures in place for disaster recovery. The policy is reviewed quarterly to ensure compliance with relevant regulations and business needs.

8. Measures for getting the GSI-portal's data back to GSI in case the contract terminates in exigency.

   In the event of an exigency where the contract is terminated, ensuring the safe and secure return of the GSI-portal's data:

- These backups should be stored securely in multiple locations, including GSI-controlled servers.
- Secure Data Transfer: Including encryption, secure FTP, or other secure methods.
- The data handover process will be complied with any legal, regulatory, or industry standards that GSI must adhere to.
- After the data has been successfully transferred, all copies of the data on the agencies systems are securely deleted.
- Obtain a certification from GSI confirming that all data has been received, and the transfer process is complete.

- **Operation and Maintenance**

1. **Monitoring and Support**
   - Setting up a dedicated support team for continuous monitoring and user support.
   - Implementing automated monitoring tools to track system performance and detect issues.

2. **Upgrades**

- Regular updates and upgrades to infrastructure and software to keep Portal-NG current with technological advancements.
- Implementing new features and enhancements based on user feedback and emerging needs.

3. Security

- **Regulatory Compliance**
  - Follow CERT-In guidelines.
  - Adhere to IT Act, 2000, and PDPB guidelines.
- **Secure Development**
  - Implement secure coding practices.
  - Conduct regular security audits and penetration testing.
- **Access Control**
  - Use Role-Based Access Control (RBAC).
  - Implement Multi-Factor Authentication (MFA).
  - Regularly update user permissions.
- **Data Security**
  - Encrypt data at rest and in transit.
  - Ensure secure data backups.
  - Practice data minimization.
- **Infrastructure Security**
  - Use secure hosting (e.g., NIC, Meghraj).
  - Implement firewalls and DDoS protection.
  - Regularly update and patch software.
- **Monitoring & Incident Response**
  - Set up real-time monitoring.
  - Maintain an incident response plan.
  - Implement comprehensive log management.
- **User Awareness**
  - Provide regular security awareness training.
  - Conduct phishing simulations.
- **Regular Compliance Reviews**
  - Perform periodic compliance checks.
  - Engage third-party security assessments.

- **Exit Management Strategy**

i. Introduction

This section outlines the exit management strategy for the transfer of responsibilities from **M/s Accenture** to **BISAG-N**.

ii. Objectives of the Exit Management Plan

The primary objectives of this exit management plan are:

- To ensure the seamless transition of services from M/s Accenture to BISAG-N.
- To minimize operational disruptions during and after the transition.
- To protect and properly manage assets, data, and intellectual property.
- To comply with all contractual, legal, and regulatory obligations.

iii. Scope of Exit Management

This exit management plan applies to:

- All services provided by M/s Accenture to BISAG-N.
- All personnel involved in the delivery of these services.
- All data, intellectual property, and physical assets shared or created during the contract period.
- All contracts, software licenses, and third-party agreements related to the services.

iv. Stakeholder Identification and Communication Plan

a. Stakeholders

Key stakeholders in the exit process include:

- **M/s Accenture:**
  - Project Managers
  - IT and Operations Teams
- **BISAG-N:**
  - Project Managers
  - Internal IT and Operations Teams
- **GSI**

b. Communication Plan

- **Initial Notification:** Both organizations will inform all relevant stakeholders about the initiation of the exit process in the supervision of GSI.
- **Regular Updates:** Regular meetings may be held to provide updates on the progress of the exit process.
- **Final Communication:** A formal notification will be sent to all stakeholders once the exit process is complete.

a. Inventory Review

- **Physical Assets:** OCBIS IA will create an inventory of physical assets and hand over to GSI and BISAG-N will check for GSI
- **Digital Assets:** OCBIS IA will create list of all digital assets, including software licenses, databases, and intellectual property used in OCBIS and hand over to GSI and BISAG-N will check for GSI

b. Asset Transfer or Disposal

- **Transfer:** All data assets generated in OCBIS for continued operations will be transferred according to the agreed schedule.
- **Disposal:** Assets that are no longer required will be securely disposed of following industry standards and legal guidelines.

vi. Knowledge Transfer

- **Process Documentation:** OCBIS IA will provide comprehensive documentation of all processes and procedures generated in OCBIS project to GSI and BISAG-N will check on behalf of GSI,
- **Knowledge Transfer Sessions:** OCBIS IA will conduct knowledge transfer sessions for each application and module, infrastructure and architecture and BISAG-N on behalf of GSI will certify that the knowledge they have successfully acquired from Accenture as the functionalities of OCBIS Portal. Any query in this regard will be successfully addressed and clarified by OCBIS IA

vii. Data Management

a. Data Backup

- **Data Integrity:** OCBIS IA will ensure that all data associated with the services is securely backed up before the transition.
- **Backup Transfer:** A copy of the backup will be provided to GSI for their records.

b. Data Transfer and Deletion

- **Data Transfer:** All relevant data will be transferred to GSI in a secure manner in supervision of BISAG-N.

viii. Technology and Systems Transition

a. System Handover

- **Access Credentials:** All necessary access credentials for software and systems will be handed over to GSI.
- **Access Rights:** All system access rights enjoyed by OCBIS IA will be handed over to GSI

ix. Risk Management

a. Risk Identification

- **Operational Risks:** Potential risks to ongoing operations during the transition will be identified.
- **Data Risks:** Risks related to data integrity and security during the handover will be assessed.

b. Mitigation Strategies

- **Contingency Plans:** Both organizations will develop contingency plans to mitigate identified risks.
- **Monitoring:** The exit process will be closely monitored to address any emerging risks promptly.

x. Continuous Monitoring and Reporting

a. Progress Tracking

- **Milestones:** Key milestones in the exit process will be tracked and reported on a regular basis to GSI.
- **KPIs:** Performance indicators will be established to measure the effectiveness of the exit process.

b. Reporting

- **Regular Updates:** Weekly progress reports will be shared with senior management in both organizations.
- **Final Report:** A comprehensive final report will be prepared at the end of the exit process.

xi. Closure and Documentation

a. Closeout Documentation

- **Archiving:** All relevant documentation, including contracts, reports, and communications, will be archived securely.
- **Access:** Both organizations will agree on access protocols to this archived information.

1. **Training**
    - Conducting on-site comprehensive training sessions at GSI Regional and State Units by BISAG-N for GSI personnel on the new Portal-NG systems and processes.
    - Providing detailed user manuals and documentation.
2. **Final Handover**
    - Ensuring a seamless transition with no disruption to GSI operations.

- Completing the handover process with thorough knowledge transfer and support.

VIII. Technical Specifications

- **Cloud Infrastructure**
  - Cloud Service Agreement will be between Cloud Service Provider (NICSI) and GSI. However, the payment made by GSI to BISAG-N for the cloud Infrastructure.
  - Deployment on a MeitY-approved Cloud Platform (NICSI empanelled – MeghRaj 2.0) with robust IaaS, PaaS, and SaaS services.
  - Ensuring high availability, scalability, and disaster recovery capabilities.
  - Presently internal DNS server of GSI is there at OCI which is pointed towards NS server of NIC, we will maintain the same architecture.
  - Since we are using the Linux operating system so the active directory is not applicable to us. The alternate of this AD will be LDAP.
  - For connectivity during data migration, we need more clarity on server architecture so it may be decided during migration.

The list of exiting Cloud software Components (all licensed) will be retained in proposed cloud software components

Existing Cloud software in OCBIS	**Proposed Cloud software in Portal-NG**
Windows Server 2019 Standard, Windows Server 2012 R2 Standard licenses	Latest version of CentOS /Ubuntu
MS SQL Server Standard latest version with service pack/patch upgradation	Postgres 16
Sequent (Geosoft) – DAP Server & DAP MDE (**Not present in OCI**)	In-house / Open Source
ESRI-ArcGIS Components (Server and Enterprise & Desktop)-version 10.8.1	Open Geospatial Consortium Standard, QGIS
Hexagon GIS components (GeoMedia WebMap, GeoMedia Smart Client Professional (GMSC), Intergraph Mobile Mapworks, ERDAS Imagine Professional, GeoMedia Professional, ERDAS Apollo Server)	In-house / Open Source
Oracle DB 19c (19.17.0.0)	Postgres (Latest Stable Version)
Oracle suite of products ver. 12.2.1.4.0 (Web Tier, WebCenter suite Plus, WebLogic Server	Geo Web caching, pgAdmin 4, Tomcat

Enterprise Edition, Unified Business Process Management, SOA Suite for Oracle Middleware, WebLogic Suite, Identity and Access Management Suite, WebCenter Sites	server, nginx, Apache solr
Email Solution – Microsoft Exchange 2016	NIC Mail

- **Technology**

Sl. No	Technologies / Platform Used	Remarks
1	Open Source	**Technologies:** JAVA, Python, JavaScript, Spring Framework, Android **Front-end:** QGIS, React.JS, Flutter, OpenLayers **Back-end:** Thymeleaf **Framework:** Microservices with CI/CD Pipelines (Jenkins), Rabbit MQ, KeyCloak, Elasticsearch, Logstash, Kibana, Gafana
2	Cloud	MeghRaj 2.0, NIC
		Specification for VM **1.** RAM: 64GB **2.** VCPU: 16GB **3.** HDD: 100GB Addl. Storage: As per the requirement
3	Oracle/MSSQL/Other DB	PostgreSQL

Data migration methodology: Data may be shared by GSI as data dump in the prescribed format.

- **Data Security**
  - Implementing stringent data security measures in compliance with Government of India guidelines.
  - Ensuring data encryption, access control, and regular security audits.
- **Scalability**
  - Designing the system to accommodate future growth and technological advancements.
  - Ensuring the portal can handle increasing data volumes and user load.
- **Bilingual Support**

- Providing support for both English and Hindi languages.
- Separate login record for login in Hindi and English to be provided.
- Ensuring all user interfaces and documentation are available in both languages.

IX. Dependencies on the development of Portal-NG

1. Dependency on GSI

The development of Portal-NG is designed to be in collaboration between BISAG-N and Geological Survey of India (GSI). There are technical data and resource (for the guidance) dependencies on GSI for this project. BISAG-N will take responsibility for the information gathering from GSI stakeholders, preparation of SRS document, design & development of the portal.

2. Cost Components

The dependency on GSI is related to financial aspects, as outlined in the cost component section of the proposal. These costs have been clearly defined.

3. Resource Allocation

BISAG-N will allocate dedicated resources for the development, testing, and deployment of Portal-NG. Whenever required, BISAG-N may seek additional resources or data from GSI.

4. Project Timelines

The project will adhere to the timeline specified in the proposal. Any delays or changes in scope will be communicated in advance, with the necessary adjustments made to ensure project delivery within the agreed timeframe between both (BISAG-N & Geological Survey of India).

5. Dedicated Office Space

A dedicated office space for Technical Team & Helpdesk or the Support Team, shall be provided by the Geological Survey of India at Central Headquarters, Kolkata.

X. Approval Sought

Approval is sought for the development of the Next Generation Portal followed by O&M for 3 years, by BISAG-N which will provide GSI with a state-of-the-art platform to manage its vast geo-scientific data efficiently. The project will enhance GSI's capabilities in data integration, analysis, and dissemination, ensuring it remains at the forefront of geological research and exploration.

XI. IT Support Partner

In addition to this, BISAG-N will serve as the IT support partner for GSI, providing comprehensive IT solutions and support for the next **4.0** years (depending on date of

approval) years. This may further be extended as per the mutual consent of both the parties as per the terms and conditions agreed by both the parties. As part of this collaboration, BISAG-N will be responsible for the implementation and operationalization of the Portal-NG system, ensuring its smooth and efficient functioning. Beyond the OCBIS system, BISAG-N will address all other IT requirements of GSI, offering continuous support and expertise to enhance GSI's technological infrastructure and capabilities. This partnership aims to streamline IT operations, improve system reliability, and facilitate the overall technological advancement of GSI.

XII. Service Level Agreement (SLA)

A separate SLA will be prepared jointly by GSI and BISAG-N in agreement after approval and payment will be made based on purchase order and SLA document.

XIII. Roles and Responsibilities

➢ **GEOLOGICAL SURVEY OF INDIA**

- Overall project monitoring
- Domain expertise
- Project Funding

➢ **BISAG-N**

- IT Manpower deployment at designated DC and DR.
- IT Infrastructure (VMs, domain, storage etc.) in Meghraj Cloud.
- Technical support and maintenance in all IT related activities connected with Portal-NG
- Capacity building for stakeholders
- Maintenance of devices (Table - 6) being used at Data Center (DC) at Dharitri building

XIV. Time Estimate

The project will be initiated from the date of approval from MoM or date of purchase order or date of letter of acceptance whichever is agreeable by both parties (T0). The project will be completed on 28.02.2029.

The details are given as Milestone under Cost Estimate.

Development of applications (Timeline Estimate)

Sl. No	Module	Estimated Timeline for Data Migration & Development	Estimated Time for UAT
1	FSPMIS Module	6 Months	2 Months
2	Borehole Module	4 Months	1 Month
3	LMS	4 Months	1 Month
4	CLIS	4 Months	1 Month
5	DMIS	6 Months	1 Month
6	Maps AND Publications	6 Months	1 Month
7	CGPB	6 Months	1 Month
8	Vigilance	3 Months	1 Month
9	Rajbhasha	3 Months	1 Month
10	GSI Reports	6 Months	1 Month
11	Utilities	6 Months	1 Month
12	VMIS	6 Months	1 Month
13	HRMS	6 Months	1 Month
14	Claims	6 Months	1 Month
15	IFMS	6 Months	1 Month
16	MM and Procurement	8 Months	1 Month
17	Bhukosh	4 Months	1 Month
18	Field Application	3 Months	1 Month
19	Virtual Museum	2 Months	1 Month
20	Rock Texture Atlas	1 Month	1 Month
21	Palaeontology	1 Month	1 Month
22	Geo-tourism	1 Month	1 Month
23	Office Locations	1 Month	1 Month
24	Laboratory Locations	1 Month	1 Month
25	Geophysical	8 Month	1 Month
26	Landslide/Disaster Management	10 Month	1 Month
27	e-Governance Portal	12 Month	3 Month

Time will be calculated based on the project requirements and the existing data structure provided by GSI**.**

XV Cost Estimate:

Table no. 2

Milestone	Activities	Timeline	Milestone-wise Cost (Exclusive of GST)	Payment mode
M1	1. Detailed Study, requirement gathering & Documentation 2. Designing of various modules and preparation of SRS document	T0 + T3 Month	₹ 2 Crore	After completion of Milestone
M2	Development of applications (Table No 1) and Technical Infrastructure	T0 + Till 28/02/2026	₹ 20.94 Crore* + 5Crore (Technical Infra#)	After completion of these Milestones (M2-M5)
M3	Migration of Legacy Data			
M4	Testing			
M5	Go-Live			
M6 (Y1 to Y4)	Cloud Infrastructure	T0 + 48 months (1 year development phase till 28/02/2026 + 3 years O&M)	Estimated Cost ₹ 8 Crore / year = ₹ 32 Crore (or will be charged as per actual)	At the beginning of each year from T0 (Y1 to Y4)
M7 (Q1 to Q12)	Adaptive changes/ Change management	T13 + 36 months	₹1.8 Crore (Estimated, however will be charged as per actual)	After completion of each changes
M8 (Q1 to Q12)	Maintenance and Support (3 Years) ***	T13 + 36 months	₹ 4.08 Crore * 3 = ₹ 12.24 Crore	Quarterly after M5
M9 (Q1 to Q12)	Help Desk (3 Years) **	T13+ 36 Months	₹ 1.08 Crore * 3 = ₹ 3.24 Crore	Quarterly after M5
M10 (Q1 to Q16)	Travelling & Accommodation (4 Years)	T0 + 48 Months	₹ 4 Crore	Quarterly from T0
(Q1 to Q16)	Maintenance of devices being used at Data Center (DC) at Dharitri building	T0 + 48 Months	₹ 10 Lakh * 4 = ₹ 40 Lakh	At the beginnig of each year from T0 (Y1 to Y4)

Total Cost			**₹ 81.62 crores** **(Exclusiveof GST)**	
			Tax as on 10/11/2024 is 18%	
			₹ 81.62 Crore + 18% = **₹ 96.31 Crore**	

* Detailed manpower breakup is given in Table no 3
** Detailed manpower breakup is given in Table no 4
*** Detailed manpower breakup is given in Table no 5
# Technical Infra includes the hardware (Laptop/Desktops, Mobile Devices, Tab) to be procured for the development.

Designation wise salary breakup

Table No. 3

Sl. No	Designation	No. of Post	Monthly CTC (in ₹)	Annual CTC (in ₹) (Exclusive of GST)
1	Project Director (GIS / Software)	2	4 Lakh	0.96 Crore
2	Manager	5	3 Lakh	1.8 Crore
3	Team Lead	10	2.5 Lakh	3 Crore
4	Sr. Developer (backend)	10	3 Lakh	3.6 Crore
5	Developer (backend)	10	2.5 Lakh	3 Crore
6	Developer (frontend)	5	2.5 Lakh	1.5 Crore
7	Mobile App (Android & iOS)	4	2 Lakh	0.96 Crore
8	Graphic Designer	2	2 Lakh	0.48 Crore
9	Network Administrator	2	3 Lakh	0.72 Crore
10	Server Admin	2	3 Lakh	0.72 Crore
11	Database Manager	2	2.5 Lakh	0.6 Crore
12	Security Tester	5	2 Lakh	1.2 Crore
13	Quality Assurance	5	2 Lakh	1.2 Crore
14	GIS Expert	10	1 Lakh	1.2 Crore
	TOTAL	**74**		**20.94 Crore**

Designation wise salary breakup for Helpdesk / Year

Table No. 4

Sl. No	Designation	No. of Post	Monthly CTC (in ₹)	Annual CTC (in ₹) (Exclusive of GST)
1	Manager/Supervisor	2	₹ 1.5 Lakh	0.36 Crore
2	Customer Service Representative	6	₹ 0.5 Lakh	0.36 Crore
3	IT Support/Technical Support Staff	4	₹ 0.5 Lakh	0.24 Crore
4	Trainers	2	₹ 0.5 Lakh	0.12 Crore
	TOTAL	**14**		**1.08 Crore**

Designation wise salary breakup for O&M / Year

Table No. 5

Sl. No	Designation	No. of Post	Monthly CTC (in ₹)	Annual CTC (in ₹) (Exclusive of GST)
1	Project Manager	2	3 Lakh	0.72 Crore
2	Project Analyst	2	1.5 Lakh	0.36 Crore
3	Developer (backend)	4	2 Lakh	0.96 Crore
4	Developer (frontend)	2	2 Lakh	0.48 Crore
5	Server Admin	1	3 Lakh	0.36 Crore
6	Security Tester	1	2 Lakh	0.24 Crore
7	Quality Assurance	2	2 Lakh	0.48 Crore
8	Network Admin	1	2 Lakh	0.24 Crore
9	Mobile App Developer	1	2 Lakh	0.24 Crore
	TOTAL	**16**		**4.08 Crore**

Table No. 6 (List of Devices being used at DC**)**

Devices Model	**Function**	**No of Devices**
ASR1002	Internet Router	2
N3K-C3064-X-FA-L3	DMZ Switch	2
ASA5585-S20P20XK9	Perimeter Firewall	2
ASA5585-SSP-SFR20	IPS (firepower)	2
FS750-K9	FireSight	1
WS-C3750X-48T-S	NOC Switch	2
WS-C3750X-48T-S		2
N7K-C7009-B2S2-R	LAN Core Switch	2
ASR1006	Core/MPLS Router	2

Note

Total cost for the design, development & maintenance for the 4 years, sinceproject will be up to 28/02/2029, is **₹ 96.31** ***Crore*** *including applicable taxes (subject to taxes calculated on 10/11/2024).*