ODISHA COMPUTER APPLICATION CENTRE

REQUEST FOR PROPOSAL

Enq.No.:-OCAC-SEGP-SPD-0008-2022-22083

OCAC invites Request for Proposal (RFP) for the Selection of Service Provider for Development and Implementation of Automation System of Mega Lift Project, DoWR, Odisha. For details please visit websites www.ocac.in & www.odisha.gov.in. T**he bid shall be submitted in electronic mode only in the portal https://enivida.odisha.gov.in latest by 17.01.2023, 12.00 PM.** OCAC reserves the right to accept/ reject any/ all bids without assigning any reason thereof.

General Manager(Admin), OCAC, Plot No.-N-1/7-D, Acharya Vihar, P.O.-RRL, Bhubaneswar-751013, Ph.-2567280/ 2567064/ 2567295

Request for Proposal

SELECTION OF SERVICE PROVIDER FOR DEVELOPMENT AND IMPLEMENTATION OF AUTOMATION SYSTEM OF MEGALIFT, DOWR, ODISHA

RFP No: OCAC-SEGP-SPD-0008-2022-22083 dated 17.12.2022

Volume II
Terms of Reference

Abbreviations

AA	Administrative Approval
AE	Assistant Engineer
ALF	Area Level Federation
ANSI	American National Standards Institute
BOQ	Bill of quantity
CA	Certified Authority
CERT-In	Indian Computer Emergency Response Team
CLF	Community Level Federation
CO	Community Organizer
DAP	Directory Access Protocol
DDD	Detailed Design Document
DNS	Domain name system
DUDA	DISTRICT URBAN DEVELOPMENT AGENCY
E&IT	Electronics and Information Technology
eMB	E-Measurement Book
EO	Executive Officer
EOI	Expression of Interest
ESI	Employees' State Insurance Scheme
FAQ	Frequently Asked Question
FRS	Functional requirement specification
GIGW	Guidelines for Indian Government Websites
GuDApps	Guidelines for Development of eGovernance Applications
IA	Implementing Agency
IEEE	Institute of Electrical and Electronics Engineers
iFIX	Financial Information Exchange Bus
iFMS	Integrated Finance Management System
IT	Information Technology
IP	Implementing Partner

JE	Joint Engineer
L1	Least cost
MIS	Management Information System
MPR	Monthly Progress Report
OCAC	Odisha Computer Application Centre
OPWD	Odisha Public Works Department
ORSAC	Odisha Space Applications Centre
OSDC	Odisha State data Centre
PO	Purchase Order
QA	Quality Assurance
RDBMS	Relational Database Management System
RFP	Request For Proposal
RWD	Responsive Web Design
SeMT	State e-Governance Mission Team
SFTP	Secure File Transfer Protocol
SMS	Short Message Services
SP	Service Provider
SRS	Software requirement Specification Document
SSL	Secure Socket Layer
SSO	Single Sign-on
TCP	Transmission Control Protocol
TS	Technical Specification
UAT	User Acceptance Testing
UDID	Unique Disability ID
ULB	Urban Local Body
URS	User Requirement Specification
WCR	Work Completion Report
WLC	Ward Level Committee

1 Background

1.1 About the Project

Mega Lift Irrigation System involves the procedure to operate the ongoing schemes and keep tracking of water supplies to each field during both Rabi and Kharif crops. This software enables the execution of a project under different schemes and keeps a track of the scheme from commencement to completion. The main logic of introducing the system is to reduce the intricacy of project execution and keep tracking of projects. The system will monitor the supply of water on a daily basis from outlets to the beneficiary farmers. Implementation of a mobile application to monitor project status in real-time through geolocation and capturing images at the project Location.

An inventory system would help in getting an update on the asset count. The main focus of introducing the concept here is to ease the daily paper works and save utmost time.

For the work process of transparency, eliminating the massive paperwork thereby ushering in an era of efficiency and seamless business operations, the Department of Water Resources, Odisha plans to implement an inter-departmental system primarily for managing all the activities.

1.2 About the Department

The Mega Lift Irrigation System has been instigated by Govt. of Odisha during 2011-12 for providing irrigation to the farmers in the upland areas by lifting water from the river, which could not be irrigated by normal means of flow irrigation.

It is proposed to take up 174 no Mega Lift Irrigation System covering a command area of 2,14,270ha. and grouped into 15 clusters as per the pre-feasibility study done during 2011. The first phase has been taken up in 2012-13 and the scheme is likely to be completed in a period of 3 years ending in 2015. Now DPR for 8 clusters has been prepared which contains 102 schemes against 96 schemes in PFR.

1.3 Objective

The main goal of the ‘Mega Lift Irrigation System' is to provide a computerized End-to-End process flow framework for all Mega Lift Projects of the Water Resources Department. A web-based application system must be developed that would serve as the spine of data detailing and will organize the tracking and monitoring of the project process, monetary information, verifiable data, and other significant content.

To survey all the projects and keep the track of old projects “Mega Lift Irrigation System” requires a programmed web application framework to ease the workflow and keep all data related to the project in a chronological way. In this modern application, the Division and Departmental specialists can effectively start the work and execute it.

2 Scope of work

Scope of work of this project includes software development, testing and QA, training of master trainers, managing database & application services for non-interrupted operation and providing change management & maintenance support service during pilot & rollout of Mega Lift Automation system. This term of reference contains an indicative top-level requirement of envisaged Mega Lift Automation system for reference. The software vendor is desired to deliver a comprehensive bespoke system as per the signed requirement specification for implementation. Accordingly, the scope of services will encompass the following:

a) Preparation of SRS, Detailed Design and other Technical Artifacts
b) Application Development
c) Third party tools and licenses
d) Software Testing
e) Support during User Acceptance Testing
f) Support during Security Audit and Quality Assurance
g) Data Porting
h) Training of Master Trainers
i) Operation & Maintenance Services
j) Change Request Management
k) Project Closure

2.1 Preparation of SRS, Detailed Design and other Technical Artifacts

The Service Provider shall perform a detailed assessment of the service and solution requirements as per the User Requirement Specification (URS) and Functional Requirement Specification (FRS) provided by the department. Based on the assessment, service provider shall develop & finalize the Detailed Design Document (DDD) and the System Requirement Specifications (SRS). While doing so, it is suggested that the SP should:

a) Consult with Water resource department and OCAC officials
b) Engage some domain experts during the study
c) Follow standardized template for requirements capturing
d) Maintain traceability matrix from SRS stage for the entire implementation

Besides SRS and DDD, the service provider shall prepare other necessary technical artifacts at each phase of software development life cycle. Version management with release note of all technical artifacts is mandatory. IEEE standard must be followed while preparing these technical documentations.

2.2 Application Development

The service provider shall identify, design and develop components / functionalities that are required to address the application requirements according to approved SRS and DDD. The service provider shall consider following activities:

2.2.1 Development of Mega Lift Automation system.

The service provider will be responsible for development of Mega Lift Automation system as per top level requirement given in these terms of reference. The software development teamshould operate from their office premises.

2.2.2 Development of Mobile Apps

The Automation System of Mega Lift Projects for Water Resources Department, Odisha will have amobile application for field officers where they can update the work process on daily basis which the geo-tagged photos will be uploaded through Mobile Application. Once updated, information will be sync to web application and that will be reflected to their concern higher authorities as well.

The mobile application will have the following features:

- Work Process Section
- Monitoring
- Photo Upload (Pre-Work, In-Progress, Close Work)
- Real-Time Update Notification

2.2.3 Integration

The service provider is responsible to integrate Mega Lift Automation system with external systems.

a) PROMIS

b) WAMIS

c) GIS Based Asset Management System

d) Farmers Database of water resource department.

e) Enquiry

f) IFMS

2.2.4 Web Design Considerations

The application should be able to support all common browsers (like Internet explorer, Mozilla, Chrome, Safari etc). The Service Provider shall strictly follow Responsive Web Design (RWD) approach for developing user interfaces. At least labels used in the forms, reports etc. in the application shall be bilingual and be available in English and Odia following UNICODE standard.

2.2.5 Notification Facility

Proposed application should issue SMS alerts to the respective users for time bound actions and escalation mechanisms for non-attended activities. The service provider will integrate the relevant modules with messaging gateway provided by OCAC for inbound or outbound SMS for different functionalities. application should support e-mail and popular messaging app integration.

2.3 Software Testing

Testing activities for application will be carried out in iterative manner for each of the module as the service provider keep on developing. Testing activities must be carried out on the testing environment of the server provided by the service provider.

The service provider shall submit the test plan to department/OCAC earlier for testing the developed application (module) along with traceability matrix. The test plan should be in line with the functional requirement specifications. The service provider shall prepare test cases based on duly approved test plan the testing procedures should be carried out for each unit, module and for the system as well. Test reports with defect list should be submitted to department for reference. The service provider shall deliver the tested and fault rectified application to department and deploy the same on the staging server. Staging server shall be provided by the OCAC.

2.4 Support during User Acceptance Testing

User Acceptance Testing will be carried out on the staging server. The service provider shall be responsible to deploy the application on staging server and facilitate Project Management Committee in department to conduct User Acceptance Testing. Selected users from department will carry out the UAT of the developed modules. The service provider will provide necessary training to the selected users for carrying out the UAT. All feedback with respect to functionalities, performance, user experience and reported bugs must be addressed by the service provider concurrently. The department will issue user acceptance certificate to the service provider for further actions.

2.5 Support during Security Audit and Quality Assurance

The service provider shall carry out following activities relating to Security Audit of application.

a) The service provider needs to ensure that the solution is in compliance with the CERT-In Security Policy and Guidelines.
b) The service provider shall appoint CERT-In empaneled auditor who shall be responsible for performing the Security Audit of the solution.
c) The third-party agency shall conduct audit on minimum below mentioned parameters.
d) The cost of audit & rectification of non-compliances shall be borne by the service provider. As per the quantity mentioned in the commercial bid
e) Coordination with the CERT-In empaneled firm for security audit and obtain the compliance certificate.

f) Carryout security audit before go-live of application and obtain the safe-to-host certification
g) Carryout the periodic audit & certification as and when it is required as per the OSDC policy.

2.6 Training to Master Trainer

Train the Trainer model is adopted for imparting training for application. The Service provider shall be responsible for imparting training to the master trainers on developed modules. The resource person of the service provider responsible for training, shall work under the supervision of Water resource department officials.

2.6.1 Training Content

a) The Service provider shall ensure that the training content is relevant to the target trainees depending upon the role played by them in the system. There should be separate training materials for different level of users. The training material should be illustrative enough for easy understanding of the user and smooth adaptability of the software.

b) The Service provider shall submit the training content to department for approval. It shall be submitted at least 20 days in advance before the conduction of the training. The department will review and provide comments to the service provider on the training content within 7 days of the submission of draft training content. The Service provider shall incorporate and implement changes suggested by department in training delivery and content.

c) The service provider should prepare pre-training content separately. These pre-training content should be circulated among the trainees 7 days prior to the training program. The purpose of such pre-training content is to make the trainees prepared for receiving the training.

d) Providing hard copies of training material to participants shall not be responsibility of the software vendor.

2.6.2 Training Calendar

Objective of the training is to ensure proper adaptation and use of the software by the end users. To meet this objective, the service provider shall prepare training calendar for each phase of software development in consultation with the department. The software vendor shall set up training environment for hands on practice on the modules of the application.

2.6.3 Training Venue

Training of the master trainers shall take place virtually through MS Teams/ Zoom/Google Meet. In case of physical training requirement, the training shall be conducted centrally at Bhubaneswar and Cost of travelling of trainees for attending the training will be borne by the department. The department shall provide the venue including furniture, Internet, projector, work station essential for the training.

2.6.4 Training Participants

a) Indicative number of master trainers to be trained is 100 (One hundred).

b) Department shall identify the participants (master trainers) for the training.

c) Each batch should not have more than 20 (twenty) participants.

2.6.5 Post-Training Assessment

a) The service provider needs to submit training completion report at end of training of each phase separately.

2.6.6 Language for Delivery of Training

The language of training delivery shall be in English and Odia.

2.7 Online Help/Reference with Search Option

a) It is also proposed that the training contents / user manuals be made available to users in downloadable (PDF) format so that the users may refer / download it for their own personal reference as and when needed.

b) It is envisaged that any user will be able to search and read the directions / information for the right content. On entering the key words for search criteria, the system should pull out and display the links to the content as mapped.

c) The system should support dynamic search facility i.e. as soon as the key words are changed; a new set of content links with page shall be displayed to the user.

2.8 Deployment and Configuration

It is also the responsibility of the service provider to deploy the developed modules on the staging server for testing by the state level and division level users. The service provider should comply with all the feedback reported by the selected users of department. Once the module gets cleared and accepted by selected user groups it should be deployed on training and production environment.

a) The Service Provider's team should submit deployment plan in advance and get it approved by the department/ocac.

b) Each deployment should carry a release note for the users.

2.9 Application Roll out

On successful UAT the application will be rolled out across the state.

2.10 Operation and Maintenance:

The SI have to provide operation and Maintenance for 3 years and that can be extended for another 2 years upon satisfactory services. The department have to give the satisfactory confirmation as well as request letter to OCAC to extended the operation and Maintenance for another 2 years with charges as derived by this tender.

2.10.1 Application Support

Application support includes, but not limited to, production monitoring, troubleshooting and addressing the functionality, availability and performance issues, implementing the system change requests etc. The Service provider shall keep the application software in good working order; perform changes and upgrades to applications as requested by department. Key activities to be performed by the service provider in the application support phase are as follows:

a) Enhancement of Analytical MIS report as per the requirement

b) Database query report management on emergency

c) Optimization of the already developed reports

d) Tuning of transactions

e) User & access management

f) The service provider shall ensure compliance to SLAs as indicated in this RFP and any upgrades / major changes to the software shall be accordingly planned by the service provider ensuring the SLA requirements are met at no additional cost to the department.

2.10.2 Software Maintenance

a) The service provider shall provide support through Telephone / Email as required as per the service window defined in the RFP

b) The service provider shall address all the errors / bugs / gaps in the functionality in the solution implemented by the service provider (vis-à-vis the FRS and SRS signed off) at no additional cost during the support phase.

c) Any changes/upgrades to the software performed during the support phase shall subject to the comprehensive and integrated testing by the service provider to ensure that the changes implemented in the system meets the specified requirements and doesn'timpact any other function of the system.

d) Tuning of products / applications, databases, third party software's and any other components provided as part of the solution software including reconfiguration of the system in the event of any hardware/ network failures/ if any hardware/ network components have to be replaced, shall be the responsibility of the service provider.

e) Issue log for the errors and bugs identified in the solution and any change done in the solution shall be maintained by the service provider and periodically submitted to the department.

2.10.3 System/Infra Support

2.10.3.1 Database Administration

a) Regular monitoring & management of all the applications installed / re-installed and databases hosted as and when it required for the project
b) Installation & configurations the RDBMS software
c) Database administration, optimization and trouble Shooting
d) Database & file back-up as per the policy of OSDC
e) Application Load balancing and Database Clustering
f) Perform Database, event & system log analysis

2.10.3.2 Security Administration

a) Regular analysis of events and logs generated
b) User ID and group management services

2.10.3.3 Backup and Restore Management

a) Preparation of backup plan
b) Backup of operating system, database and application as per OSDC policy
c) Monitoring and enhancement of the performance of scheduled backups

2.10.3.4 System/Network Administration

a) Network configuration
b) Patch update
c) System Administration and Trouble Shooting
d) Application & System Software Administration (including performance tuning)
e) Application and database level performance tuning

2.10.4 Change Request Management

It may be so required to customize the application to accommodate revise guidelines and betterment of the application evolving time and again. Any such customization will be considered as change request.

a) Major enhancement to the existing modules which may affect the application process & database (To be agreed by technical committee)
b) Development of new Module/Form/Report
c) Any changes in the Workflow/data flow or Core application framework
d) Any new integration with other system
e) System Administration

Change requests from the stakeholders of MI Automation shall be collected on regular basis. Change requests collected shall be discussed in the PMC, considered for implementation on priority basis and assigned to the service provider to work upon. The service provider should adapt following procedure to implement assigned change requests into application.

a) To understand change requests and to analyze impact of desired change on existing modules.

b) To prepare effort estimate on the basis of overall-person-days to bring desired changes in the application. The estimate of effort to implement the change requests must be approved by PMC before the vendor takes it up for implementation.

c) To revise requirement specifications, design document prepared earlier including traceability matrices, test plan, test cases and other related technical artifacts to incorporate desired change.

d) To revise the existing source code in related modules according to the revised design document, conduct test with test cases and recording of test results.

e) To revise all related manuals and preparing release notes.

f) To redeploy upgraded version of application onto the staging, training and production environment.

g) To close change-request-ticket after receiving note of satisfaction from the department.

2.10.5 Project Management

The envisioned project is a multi-disciplinary initiative. An effective Project Management Plan and commitment to adhere to it is a mandatory requirement. The project plan should also include the resource, task and time plan for the entire duration of the project.
The service provider shall employ best practices in project management methodology to ensure that the envisioned project components are developed and implemented within the defined time period. A copy of the project management Plan (both soft and hard copy) shall be handed over to water resource department to keep track of the progress of the project.

2.11 Hand holding support:

One Technical resource to be deployed on the client premises for a period of one year to provide hand holding technical support to the concerned officials or end users.

2.12 Project Closure

The last month of the project is considered as Project Closure period. Department will not assign any new tasks or change request during the project closure period. During the project closure, the service provider shall clear all pending work as follows.

a) To ensure that all the feedback, issues, complaints, change requests received from the users are resolved to the satisfaction of department.

b) To ensure that all technical artifacts delivered meets the quality standard and comply with the feedback of the third-party quality auditor.

c) To ensure that the final version of all the artifacts including source code of the application is

handed over to water resource department technical team.

d) To ensure proper transfer of knowledge to the department technical team.

2.13 Project Documentation

The service provider shall share below list of documents to OCAC during the project contract period.

Milestone	Documentation
Preparation of SRS, Detailed Design and other technical artifacts	– System Requirement Specifications (SRS) – Detailed Design Document (DDD)
Testing	– Test Plan, – Test Cases, – Test Results, – Defect List, – Traceability Matrices
Training	– Training calendar – Training Manual – Operation Manual, – User Manual
Exit Management	– Programme Source Code, – Programmers Manual, – Installation Manual,

2.14 Project Timeline:

Sl#	*Activity*	*Tentative Deliverables*	*Timeline*
a)	System Study & Prototype Design	– Detailed Team Structure with team members – Point of Contact – FSR/SRS Document – Screen prototypes	T+4 Weeks
b)	Design, Development & Implementation	– Source Code – Test Plans & Test Cases – Operation Manual – FAQs – Load Testing report – Hosting in staging environment	T+ 16 Weeks

c) `	UAT, Training & Go live	– Preparation Test Cases – UAT certificate – Training to users and provide training completion report. – Movement of application from Staging to Production environment – Safe to host certificate issued by Cert-in empaneled firm	T+ 20 Weeks
Sl#	*Activity*	*Tentative Deliverables*	*Timeline*
d)	Operation & Maintenance	– Issue Logs – Quarterly Activities report	Three years from thedate of Go live
e)	Hand holding support	– Monthly Attendance Sheet	One year from the date of Go live

2.15 Service Level & Penalty

Sl#	Major Area	Parameter	Requirements	Penalty
a)	Customization & Implementation	Major milestone during development and implementation as per project timeline.	As per project timeline	Rs. 500/- per day delay
b)	Response time for bug fixing	Time taken (after the request has been informed) to acknowledge problem	Within 24 hours from the time the bug is reported.	Rs. 100/- per hour delay
c)	Resolution Time (Only for Bug fixing)	Time taken by the service provider to fix the problem	Problems with severity within 48 hours from the time of reporting.	Rs. 500/- per hour delay
e)	IT Helpdesk	Start of service	As per project timeline	Rs. 2,000/- per day delay

In case, the delay is more than 24 weeks and the cause of delay is attributable to System Integrator, authority reserves right to increase the penalty value and/ or take appropriate action against the bidder such as cancellation of contract etc.

Application Availability

The Application covering all the features shall remain operational during the scheduled operation time

Measurement	Reporting Period	Target	Penalty
Daily	Monthly	> 98%	> 98%
		Nil	Nil
		> 95% but <98%	> 95% but <98%
		0.5% of Quarterly billed value of Application Maintenance Support	0.5% of Quarterly billed value of Application Maintenance Support

a) Performance of system refers to the proper and timely functioning of the system's functionalities. The application should be available and performing as per functionalities
b) The non-availability for application service is measured on monthly basis and excluding the scheduled maintenance shutdown and incidents.

Application availability and performance will be monitored, and reports will be generated as per the monitoring system deployed at OSDC

2.16 Bill of Material & Quantity

Sl#	Category	Items	Qty
a)	Study, Design, Development / Customization, Testing, Deployment / Implementation	Application development as per requirement mentioned under clause no. 3 of this document.	5 months
b)	Operation & Maintenance of the application	Application Support, Software Maintenance, System Support, etc mentioned in this document.	3 Years
c)	Handholding support executive Deployment	Deployment of Manpower as specified	1 Year
d)	SSl certificate	As per the scope	3 years
e)	Cyber Security Audit	As per the scope	06 Nos

2.17 Payment Terms

<table>
<tr><th>Sl#</th><th>Category</th><th colspan="2">Payment Terms</th></tr>
<tr><td>a)</td><td>Design, Development and Implementation</td><td colspan="2">– 20% payment of Application development on SRS Approval
– 30% payment of Application development on completion of UAT.
– 30% payment of Application development on receipt of security audit certificate and Go-Live Certificate.
– Balance 20% of application development will be paid after 6 months of successful Go-Live of the application.</td></tr>
<tr><td rowspan="3">b)</td><td rowspan="3">Operation & Maintenance</td><td>Application Support</td><td rowspan="3">100% cost of this item equally divided into 12 quarters</td></tr>
<tr><td>Software Maintenance</td></tr>
<tr><td>System/Infra Support</td></tr>
<tr><td>c)</td><td>Security Audit cost</td><td colspan="2">100% payment on submission of Safe-To-Host Certificate</td></tr>
<tr><td>d)</td><td>SSl certificate</td><td colspan="2">100% payment on submission of configuration report</td></tr>
<tr><td>e)</td><td>Integration with Other application</td><td colspan="2">100 % payment after successfully integration and go live of each Integration, the payment will be made as per actual number of integrations.</td></tr>
<tr><td>f)</td><td>Hand holding support cost</td><td colspan="2">Monthly after receiving MPR</td></tr>
<tr><td>g)</td><td>Additional Modules / Change Request</td><td colspan="2">100% payment on Go-Live of the additional modules / change request upon approval</td></tr>
</table>

3 Functional Requirements of the Automation System of Mega Lift Project, DOWR, Odisha

Scope of Work:

The broad scope of the project includes development and implementation of below Major Modules:

- **Real-Time Interactive Dashboard**
- **IoT Based Operational Scheme & on-going scheme Tacking and Monitoring**
- **Location Based Water Discharge Report based on Ravi & kharif**
- **Inventory Management System**
- **Real-Time Weather Update**
- **Asset Management System**
- **IoT Based Power Management System**
- **Citizen centric Grievance Information System**
- **GIS Based Work monitoring**
- **Future Scheme Plans**
- **Location Based Scheme, Canal, Block, Village, Pani Panchayat & Farmers Information**
- **IoT Pilot Testing**
- **Single Sign-on Implementation**
- **Third-Party Integration**
    - PROMIS
    - WAMIS
    - Farmers Database
    - GIS Based Asset Management
    - Grievance Management System
    - Weather Tracking System
    - Integration With ODIIS
- **Mobile Application**
    - Interactive Dashboard
    - Real-Time Push Notification
    - Ability to Work Offline
    - Location Based Information
    - IoT Based Update on Operational Schemes
    - Real-Time Weather Update
    - Inventory Management
    - Scheme Tracking & Monitoring
    - Citizen Grievance Information
    - Location Based Asset Information
    - IoT Based Power Management System

3.1 Division Officer Module:

The purpose of this module is to develop various sections for division officers such as,

- IoT based update on Operational schemes i.e., Volume of water discharged from outlets on daily basis during irrigation through automated system.
- Real-time status and condition update of Assets in each scheme.
- Location based detailed input on volume of water released for total Ayacut covered during Rabi & Kharif crop.
- Inventory system provides the actual asset count over a geographical manner where each asset count can be managed by the respective Division Officer.
- A detailed information of TAC, HPC, budget, feasibility report etc. is provided for future scheme plans of Mega Lift Irrigation.
- Weather update on daily basis at the time of Irrigation for respective operational schemes.
- IoT based detail meter reading input on power supply from assigned pump houses.
- Grievance System provides Location based platform to visualize block & scheme wise grievances coming from citizens.
- A detailed information of schemes from initiation to execution, closing & reporting.
- Tracking & Monitoring of all schemes related Work Status, Payment & Approval information.
- Location based access to Schemes, Canals, Farmers, Blocks, Villages, Pan Panchayat information's.

3.1.1 Module Features:

Real-Time Interactive Dashboard:

- Officers will have view options from different perspective which includes many features such as Drill-down interaction with chart, indicators, tables and display sub tables, zoom in & out of charts, move time scales, group by months, quarters, years all in a single click.

Provides Departmental information's such as:

- IoT Based Update on Operational Schemes
- Asset Information
- Inventory Information
- IoT based Power Supply Information
- Grievance Information
- Information of division and respective sub-divisions, sections & Pani Panchayat

- Real-Time Daily Weather update
- Total number of Schemes
- Number of villages & farmers benefited
- Number of completed Schemes
- A graphical view of scheme status & history
- Location based Map of Division consisting of Blocks & Schemes
- Total budget of schemes
- Total payment released against schemes
- Total designs & certified Ayacut of rabi & khariff crops.

List of Schemes:

- Location based detailed information of various schemes such as cluster no, name of scheme, name of river/reservoir, name of basin, assembly constituency, G.P, District, Block etc., can be displayed along with Divisional officer's access to initiate, execute, close & reporting of work.
- The application would have a filter functionality to search the data river or reservoir wise.
- Each scheme would have an action panel where divisional officers can view the data in detail.
- On click of "view" button, divisional officers can see physical information, financial information & RA bill information of selected scheme.

Location based on-going Scheme Tracking & Monitoring:

- This involves tracking of a scheme's metrics, progress, and associated tasks to ensure everything is completed on time, on budget, it's approval (TAC, EoT, Deviation, Price Escalation) and according to scheme requirements and standards. Scheme monitoring also includes recognizing and identifying roadblocks or issues that might arise during the scheme's execution, and taking action to rectify these problems.
- The application would have filter functionalities to monitor the data scheme, division, river/reservoir wise.
- Once selected any scheme or all scheme, detail history will be displayed on screen such as scheme name, scheme start date, scheme end date, total budget of selected scheme, total amount released for the selected scheme, RA bill information, scheme duration, scheme approvals (TAC, Admin, EOT, Deviation) & contractor name etc.

IoT Based Operational Scheme Update during Irrigation:

- Update on operational scheme status i.e., volume of water discharged from outlets to farmers on daily basis through automated system and the same would be updated at the time of Rabi & Khariff crop.
- The application would have a provision to add detail data on daily basis such as; Date of Irrigation, Cluster No, Name of Scheme, Total CCA (Ha.), Source, Name of District, Name of Block, Total Number of pumps excluding standby, Total number of pumps operated, Trash rack bottom level, Water level at intake point, Irrigation hours, Water given through number of outlets, Total number of outlets, Pump working hours, Max. covered data till date, CCA Covered.
- Division officer can track each record of operational schemes by clicking on the "view" option.

- In view panel, the application would have a filter functionality to search the data as per date wise.

Note:

As per the discussion, IoT devices will be implemented on pilot mode. And the modules would be designed and developed so that IoT devices could be integrated in future.

Pani Panchayat Detail:

- Scheme wise detailed update on the total number of farmers benefited under pan panchayat with covered ayacut area is provided.
- The application would have detailed information of pani panchayat such as cluster no, name of the scheme, river/reservoir name, name of basin, district, block, assembly constituency etc.
- This section can be filtered as per selected sub division, section & scheme wise.
- Officers would have two choices to see detail pan panchayat data: Single scheme wise, all scheme wise.

Future Scheme Plans:

- List of future scheme plans for allotted areas of Division Officer such as detailed information relating to Scheme Name, TAC, HPC information, budget, feasibility report etc. can be accessed.
- The application would have a filter functionality to search the data as per scheme wise or all scheme wise.

Asset Management System:

- Update on scheme wise assets in the application where officers can track & monitor the condition of all the assets (which are used in any scheme) in real-time through automated systems.
- The application would have a section where division officer can add each asset detail when a scheme being started for irrigation.
- Officers can track & monitor the condition of asset once all the asset information's are added under a scheme.
- At the time of asset maintenance following information would be update on timely basis Cluster Number, Scheme Name, District, Block, Asset Name, Asset Type, Asset Serial Number, Asset Installation Date, Asset Maintenance Date etc.
- Each asset can be tracked through asset serial number and system will display the history of asset installation and maintenance period.

Inventory Management System:

Inventory Management:

- This module provides centralization for your most basic and necessary warehouse functions. With it, Officers are able to see complete inventory details like stock levels, stock history and other specifications. This data syncs to all other parts of your system, so all your functions can run using the same information. This is an important factor in breaking down data silos within your operations.

- The officers would have the provision of adding & updating stocks (which are unused) information and machineries for a better understanding to ease the daily paper works and save utmost time for stock tracking.

- The application would have a section where officers can add & update each stock detail which are not used in any scheme.

- This information will be reflected to the controlling authority once all the stocks are added to the system; Stock Categorization, Stock Measurement, Stock History, Stock Inquiries, Warehouse Location, Automatic Stock-Out Report

Inventory Tracking:

- Inventory Tracking is important at every stage. Systems allow you to track your inventory by serial numbers, tags, barcodes, and other IDs in which stocks are not being used in any scheme.

- These tools make it easy to quickly process inventory data when it first arrives in your warehouse.

- They also provide an audit of all inventory movements. If an officer needs to recall a certain stock, traceability allows you to recall only the stocks affected.

- Systems provide traceability built with pick and put away in mind. A quick scan of the tracking tags tells the location of stock in your warehouse. Then, the system uses that information to optimize the pick and put away processes by creating efficient routes for your workers such as Stock Tracking, Advanced Inventory Tagging.

Stock Transfer Management

- Transfer management enables you to track your inventory as it moves to different locations and facilitates the overall transfer process.
- Some modules offer specialized systems like pick-to-light and voice picking to facilitate this. These systems can help guide and direct your workforce to reduce any confusion and streamline their efforts.
- The system will update notifications to the division officer panel in case of any stock needed to install in another location.

- This update will be coming from the controlling authority and the division officer will update the stock as per the requirement coming from the controlling authority such as Multi-Location Tracking, Stock Transfer, Voice Picking and Pick-To-Light (PTL).

Stock Purchasing

- Purchasing is an incredibly important feature to any warehouse that heavily relies on vendor goods to produce their own. This feature mainly works to help users create and manage purchase orders (POs). The system includes features that automatically populate with existing data from other parts of the system. Users may also find it helpful to email suppliers directly from their inventory control system, which reduces the amount of time spent switching screens.
- Some inventory software allows users to add items to the PO through barcode scanners. You may wish to opt for an inventory system that automatically generates POs when an item is low in stock to prevent a stock outage. Purchasing also involves receiving partial orders and tracking backorders.

Inventory Alerts

- When inventory levels drop below the user's present threshold, alerts are created and sent to them via SMS or emails. This way, one knows when it's time to restock in advance.

IoT Based Power Management System:

The Power Management System (PMS) in Mega lift irrigation is in charge of controlling the electrical system. Its task is to make sure the system is safe and efficient. This system or the module is required to be developed to resolve the current issues about storing information into the parent system. The module is to ensure about the complete system and its work flow.

MSDSS (Main Step-Down Subtraction Substation)

Always there is a substation separately designed and installed for the Pump houses. And This is always separately connected to the Grid. Grid shared the power to the substation and spreads to the pump houses. It is always a hectic process to collect the meter reading, recording the voltage, load shadings, Power consumption etc. This is now being collected on off record and then communicating with authorities manually. This module will help to bring the complete system into it enabled. Will store the data into the parent system, will be used to get the detailed report, defines the variation of power consumption, load shadings in a graph. The module will have the following features for divisional officers

- Post login, Division users can find the list in his/her dashboard.
- There would be provisions to enter meter readings.
- List can be viewed month and data wise.
- A detailed report on the power transferred and power consumed and a detailed report would be generated for the same.

- Graphical representation available of all the data entered on a monthly manner.
- Application would be designed for IoT device integration where IoT devices can be installed at substations, meters to read the data and to push the data to the system.

Note:

As per the discussion, IoT devices will be implemented on pilot mode. And the modules would be designed and developed so that IoT devices could be integrated in future.

Real-Time Weather Update:

- It provides attractive and illustrative graphics indicating different time and weather conditions, accurate hourly update on rainfall, cloud condition. It also supports Geo-Positioning, retrieving the latest weather conditions for current Location.
- Weather API will be provided by the department.

Citizen Grievance Information:

- This provides Location based platform to visualize block & scheme wise grievances coming from citizens on a timely basis.
- The application would have a section where detailed grievance information will be displayed such as; Total Number of Grievance, Pending Grievance, Resolved Grievance, block wise grievance count & detail, Scheme wise grievance count & detail, List of service name where most grievances are coming, Total Action taken for the resolved grievance and Beneficiary feedback detail
- This provides Location based platform to visualize block & scheme wise grievances coming from citizens on a timely basis.

Location Based Work Status and History:

- A graphical representation of reports on the previous scheme history & on-going scheme status is projected here.
- Application will have a section where the list of work history will be displayed.
- This section will be projected by block wise and scheme wise.
- On click of each block, number of schemes will be displayed.
- On click of each scheme there will have a detailed history such as; Previous Scheme Start Date & End Date, Total Duration Taken, Total Budget, Contractor Name, RA Bill Information, TAC Information, Administrative Approval, EoT Detail and Deviation

IoT Based Water Discharge Report based on Ravi & Khariff:

- Input on Volume of water released i.e., Design Ayacut covered and certified Ayacut covered at the time of Ravi & Khariff crops.

- This module provides following information to view the total design & certified ayacut covered during rabi & Khariff; Name of Scheme, Gram Panchayat, District, Block, Category, River/Reservoir, Catchment in Sq, Designed Ayacut Covered During Khariff, Certified Ayacut Covered During Khariff, Designed Ayacut Covered During Rabi and Certified Ayacut Covered During Rabi.

Note:

As per the discussion, IoT devices will be implemented on pilot mode. And the modules would be designed and developed so that IoT devices could be integrated in future.

Scheme wise Payment Information:

- A complete information of RA bills released during the work, is being displayed in the application avoiding any third-party interference.

3.1.2 Solution Highlights:

- Disabled access for unauthorized users
- Real-Time updates on Timely Basis
- Location based Information's
- Easy search and update necessary records
- Potential to track & monitor different type of Schemes, Assets, etc.,
- Role wise access for essential records

3.2 Controlling Authority Module:

The purpose of this module is to develop various sections for controlling authority such as,

- IoT based updates on division wise operational schemes i.e., Volume of water discharged from outlets on daily basis during irrigation through automated system.
- Division wise real-time status update regarding the condition of Assets in each & every scheme through automated system.
- Location based detailed information of all schemes total ayacut covered during Rabi & Khariff crop.
- Inventory system provides the actual asset count over a geographical manner where each asset count can be represented by the controlling authority.
- Division wise detailed information of TAC, HPC information, budget, feasibility report etc. is provided for future plans of all Mega Lift Irrigation Schemes.
- Weather Forecasting on daily basis at the time of Irrigation for all operational schemes.
- Grievance Management System provides Location based platform to visualize district, block & scheme wise grievances coming from citizens.

- IoT based division wise detailed monthly meter reading report on power supply from all pump houses.
- A detailed information of all schemes from initiation to execution, closing & reporting.
- Tracking & Monitoring of all schemes related Work Status, Payment & Approval information.
- Division wise access to Schemes, Canals, Farmers, Blocks, Villages, Pani Panchayat information's.

3.2.1 Module Features

Real-Time Interactive Dashboard:

- Officers will have view options from different perspective which includes many features such as Drill-down interaction with chart, indicators, tables and display sub tables, zoom in & out of charts, move time scales, group by months, quarters, years all in a single click.

  Provides Departmental information's such as:

  - IoT based division wise update on Operational Schemes
  - Asset Information of all divisions
  - Division wise Inventory Information
  - IoT based Power Supply Information of all divisions
  - District/Block wise Citizen Grievance Information
  - Information of all division and their respective sub-divisions, sections & Pani Panchayat
  - Real-Time Daily Weather update
  - Total number of Schemes
  - Number of villages & farmers benefited
  - Number of completed Schemes
  - A graphical view of scheme status & history
  - Location based Map of all Division consisting of Blocks & Schemes
  - Total budget of all schemes
  - Total payment released against schemes
  - Total design & certified ayacut of rabi & kharif crops.

List of Schemes:

- Location based detailed information of various schemes such as cluster no, name of scheme, name of river/reservoir, Name of basin, assembly constituency, G.P, District, Block etc., can be displayed along with all Divisional officer's update of initiate, execute, close & reporting of work.
- GIS based MAP will be provided to this module to access the scheme detail by clicking on the location.
- The application would have a filter functionality to search the data division, river and reservoir wise.
- Each scheme would have an action panel where officer can view the data in detail.

- On click of “view” button, officer can see physical information, financial information & RA bill information of selected scheme.

Location based on-going Scheme Tracking & Monitoring:

- This involves tracking of a scheme’s metrics, progress, and associated tasks to ensure everything is completed on time, on budget, it’s approval (TAC, EoT, Deviation, Price Escalation) and according to scheme requirements and standards. Scheme monitoring also includes recognizing and identifying roadblocks or issues that might arise during the scheme’s execution, and taking action to rectify these problems.
- GIS based MAP will be provided to this module to access the tracking & monitoring of scheme detail by clicking on the location.
- The application would have filter functionalities to monitor the data scheme, division, river/reservoir wise.
- Once selected any scheme or all scheme, detail history will be displayed on screen such as scheme name, scheme start date, scheme end date, total budget of selected scheme, total amount released for the selected scheme, RA bill information, scheme duration, scheme approvals (TAC, Admin, EOT, Deviation) & contractor name etc.

IoT Based Operational Scheme Update during Irrigation:

- Division wise update on operational scheme status i.e., volume of water discharged from outlets to farmers on daily basis through automated system and the same would be updated at the time of Rabi & Khariff crop.
- IoT devices will be integrated for this module to access the operational schemes during irrigation.
- The application would have a provision to view detail data on daily basis such as; Date of Irrigation, Cluster No, Name of Scheme, Total CCA (Ha.), Source, Name of District, Name of Block, Total Number of pumps excluding standby, Total number of pumps operated, Trash rack bottom level, Water level at intake point, Irrigation hours, Water given through number of outlets, Total number of outlets, Pump working hours, Max. covered data till date, CCA Covered.
- Controlling Authority can track each record of operational schemes by clicking on the “view” option.
- In view panel, the application would have a filter functionality to search the data as per date wise.

Note:

As per the discussion, IoT devices will be implemented on pilot mode. And the modules would be designed and developed so that IoT devices could be integrated in future.

Pani Panchayat Detail:

- Scheme wise detailed update on the total number of farmers benefited under panipanchayat with covered ayacut area is provided.
- GIS based MAP will be provided to this module to access the pani panchayat detail by clicking on the

location.

- The application would have detailed information of pani panchayat such as cluster no, name of the scheme, river/reservoir name, name of basin, district, block, assembly constituency etc.
- This section can be filtered as per selected division, sub division, section & scheme wise.
- Officers would have two choices to see detail pani panchayat data such as Division wise, Single scheme wise and All scheme wise.

Future Scheme Plans:

- List of future scheme plans for allotted areas of Division Officer such as detailed information relating to Scheme Name, TAC, HPC information, budget, feasibility report etc. can be accessed.
- GIS based MAP will be provided to this module to access the future plans detail by clicking on the location.
- The application would have a filter functionality to search the data as per division, scheme wise or all scheme wise.

Division Wise Asset Management:

- Update on scheme wise assets in the application where officers can track & monitor the condition of all the assets (which are used in any scheme) in real-time through automated systems.
- GIS based MAP will be provided to this module to access the asset management detail by clicking on the location.
- Controlling authority can track & monitor the condition of asset once all the asset information's are added under a scheme.
- At the time of asset maintenance by the concerned division officer following information would be update on timely basis such as Cluster Number, Scheme Name, District, Block, Asset Name, Asset Type, Asset Serial Number, Asset Installation Date and Asset Maintenance Date etc.
- Each asset can be tracked through asset serial number and system will display the history of asset installation and maintenance period.

Inventory Management System:

Inventory Management:

- This module provides centralization for your most basic and necessary warehouse functions. With it, Officers are able to see complete inventory details like stock levels, stock history and other specifications. This data syncs to all other parts of your system, so all your functions can run using

the same information. This is an important factor in breaking down data silos within your operations.

- Real-Time update on asset (which are unused) information's and machineries for a better understanding to ease the daily paper works and save utmost time for asset tracking.
- GIS based MAP will be provided to this module to access the inventory management detail by clicking on the location.
- The application would have a section where controlling authority can view the detailed list of assets which are unused by the division officer.
- This information will be reflected to the controlling authority once all the stocks are added to the system such as Stock Categorization, Stock Measurement, Stock History, Stock Inquiries, Warehouse Location and Automatic Stock-Out Reports.

Inventory Tracking:

- Inventory Tracking is important at every stage. Systems allow you to track your inventory by serial numbers, tags, barcodes and other IDs in which stocks are not being used in any scheme.
- These tools make it easy to quickly process inventory data when it first arrives in your warehouse.
- They also provide an audit of all inventory movements. If an officer needs to recall a certain stock, traceability allows you to recall only the stocks affected.
- Systems provide traceability built with pick and put away in mind. A quick scan of the tracking tags tells the location of stock in your warehouse. Then, the system uses that information to optimize the pick and put away processes by creating efficient routes for your workers.

Stock Tracking

Advanced Inventory Tagging

Audit Trail

Stock Transfer Management

- Transfer management enables you to track your inventory as it moves to different locations and facilitates the overall transfer process.
- Some modules offer specialized systems like pick-to-light and voice picking to facilitate this. These systems can help guide and direct your workforce to reduce any confusion and streamline their

efforts.

- System will send an update to the division officer panel in case of any asset needed to install in other location.
- Concerned division officer will update the asset as per the requirement coming from controlling authority.

Multi-Location Tracking

Stock Transfer

Voice Picking

Pick-To-Light (PTL)

Stock Purchasing

- Purchasing is an incredibly important feature to any warehouse that heavily relies on vendor goods to produce their own. This feature mainly works to help users create and manage purchase orders (POs). The system includes features that automatically populate with existing data from other parts of the system. Users may also find it helpful to email suppliers directly from their inventory control system, which reduces the amount of time spent switching screens.
- Some inventory software allows users to add items to the PO through barcode scanners. You may wish to opt for an inventory system that automatically generates POs when an item is low in stock to prevent a stock outage. Purchasing also involves receiving partial orders and tracking backorders.

Inventory Alerts

- When inventory levels drop below the user's present threshold, alerts are created and sent to them via SMS or emails. This way, one knows when it's time to restock in advance.

IoT Based Power Management System:

The Power Management System (PMS) in Mega lift irrigation is in charge of controlling the electrical system. Its task is to make sure the system is safe and efficient. This system or the module is required to be developed to resolve the current issues about storing information into the parent system. The module is to ensure about the complete system and its work flow.

MSDSS (Main Step-Down Subtraction Substation)

Always there is a substation separately designed and installed for the Pump houses. And This is

always separately connected to the Grid. Grid shared the power to the substation and spreads to the pump houses. It is always a hectic process to collect the meter reading, recording the voltage, load shadings, Power consumption etc. This is now being collected on off record and then communicating with authorities manually. This module will help to bring the complete system into it enabled. Will store the data into the parent system, will be used to get the detailed report, defines the variation of power consumption, load shadings in a graph. The module will have the following features for divisional officers

- Controlling Authority will do the login and can find division wise list of pump houses.
- Can see meter readings data which is entered month wise, date wise.
- There would be provision to view detailed report of power transferred, power consumed and power used.
- Controlling Authority will be able to see the detailed report of all the substations and pump houses.
- Graphical representation would be there for the entered data, date wise, month wise.
- Application would be designed for IoT device integration. IoT Devices would be installed at substations, meters to read the data and to push the data to the system.

Note:

As per the discussion, IoT devices will be implemented on pilot mode. And the modules would be designed and developed so that IoT devices could be integrated in future.

Real-Time Weather:

- It provides attractive and illustrative graphics indicating different time and weather conditions, accurate hourly update on rainfall, cloud condition. It also supports Geo-Positioning, retrieving the latest weather conditions for current Location.
- Weather API will be provided by the department.

Citizen Grievance Information:

- This provides Location based platform to visualize district, block & scheme wise grievances coming from citizens on a timely basis.
- This module includes Location based platform to visualize block & scheme wise grievances coming from citizens on a timely basis.
- The application would have a section where detailed grievance information will be displayed such as; Total Number of Grievance, Pending Grievance, Resolved Grievance, District wise grievance count & detail, Block wise grievance count & detail, Scheme wise grievance count & detail, List of service name where most grievances are coming, Total Action taken for the resolved grievance and Beneficiary feedback detail

Location Based Work Status and History:

- A graphical representation of reports on the previous scheme history & on-going scheme status is projected here.
- Application will have a section where the list of work history will be displayed.
- This section will be projected by district wise, block wise and scheme wise.
- On click of each district or block, number of schemes will be displayed.
- On click of each scheme there will have a detailed history such as; Previous Scheme Start Date & End Date, Total Duration Taken, Total Budget, Contractor Name, RA Bill Information, TAC Information, Administrative Approval, EOT Detail and Deviation

IoT Based Water Discharge Report based on Ravi & Khariff :

- Input on Volume of water released i.e., Design Ayacut covered and certified Ayacut covered at the time of Ravi & Khariff crops.
- This module provides following information to view the total design & certified ayacut covered during rabi & khariff; such as Name of Scheme, Gram Panchayat, District, Block, Category, River/Reservoir, Catchment in Sq, Designed Ayacut Covered During Khariff, Certified Ayacut Covered During Khariff, Designed Ayacut Covered During Rabi and Certified Ayacut Covered During Rabi.

Note:

As per the discussion, IoT devices will be implemented on pilot mode. And the modules would be designed and developed so that IoT devices could be integrated in future.

Scheme wise Payment Information:

- A complete information of RA bills released during the work is being displayed in the application by-passing any third-party interference.

3.2.2 Solution Highlights

- Disabled access for unauthorized users
- Real-Time updates on Timely Basis
- Location based Information’s
- Easy search and view of necessary records
- Potential to track & monitor different type of Schemes, Assets, etc.,

- District wise access for essential records

3.3 Admin Console

3.3.1 User & Master Management

a) Conception of master data

b) User creation

c) Badging user types with User

d) Creating and managing the login credentials

e) Profile updating of users by admin or by individual users

f) Power Management System

I. Manage the Power Grids
II. Manage the Substations
III. Manage the Pump Houses, Meters
IV. Manage the users those will manage the Power management system
V. Admin will have the provision to assign the pump houses to users

3.3.2 Roles and Rights

a) Provide access rights to the users

b) Tagging of departmental users with respect to the designation and role

c) User access management

d) Assign roles and rights to the users

3.4 IoT Pilot Testing:

As far as the IoT is concerned in some modules, Pilot testing is a must. During pilot testing, the system will be exposed to a limited number of IoT devices in the real field. Based on the feasibility and outcomes, IoT devices could be integrated in future.

3.5 Mobile Application:

Mega Lift Irrigation System of Water Resources Department, Odisha will have a mobile application for officers with various significant features to ease the work process and make it more efficient.
Following are the features below;

- **Interactive Dashboard:** Officers will have view options from different perspective which includes

many features such as Drill-down interaction with chart, indicators, tables and display sub tables, zoom in & out of charts, move time scales, group by months, quarters, years all in a single click.

- **Real-Time Push Notification:** Officers will be notified through automated push notification when they need updates on Ongoing Works Status, EoT & Deviation of Works, Current Asset Stocks, Probability of Rainfall, Recent Grievances from Citizens, Operational & Defunct Outlets, Future Scheme Plans, Payment Released Information etc.

- **Location Based Information:** This includes view of departmental information in a single MAP such as Citizen's grievances, Asset Information, respective division's Location, ongoing scheme's Location, Block, Pani panchayat & outlet Locations etc.

- **IoT Based Update on Operational Schemes:** Real-Time update on operational scheme status i.e., volume of water discharged from outlets to farmers on daily basis through automated system and the same would be updated at the time of Rabi & Kharif crops.

- **Real-Time Weather Update:** It provides hourly weather update using high resolution weather model output such as Real-Time Temperature, Relative Humidity, Sea Level Pressure, Probability of Rainfall, Cloud Condition, Wind Speed and direction for a specific Location etc.

- **Ability to Work Offline:** Officers would have the provision to upload geo-tagged photos (Pre-Work, In-Progress & Close) even if they are offline and the same would be synchronized to the web application once the application has internet connectivity.

- **Inventory Management:** The officers would have the provision of adding & updating asset information's and machineries for a better understanding to ease the daily paper works and save utmost time.
- **Scheme Tracking & Monitoring:** This involves tracking of a scheme's metrics, progress, and associated tasks to ensure everything is completed on time, on budget, it's approval (TAC, EoT, Deviation, Price Escalation) and according to scheme requirements and standards. Scheme monitoring also includes recognizing and identifying roadblocks or issues that might arise during the scheme's execution, and taking action to rectify these problems.

- **Citizen Grievance Information:** This provides Location based platform to visualize district, block & scheme wise grievances coming from citizens on a timely basis.

- **Location Based Asset Information:** Update on scheme wise assets in the application where officers can track & monitor the condition of all the assets in real-time through automated systems.

- **IoT Based Power Management System:** The officers would have the provision of adding detailed meter reading data of power supply from assigned pump houses.

3.6 Third-Party Integration

a) PROMIS
b) WAMIS
c) GIS Based Asset Management
d) Farmers Database
e) Grievance Management System
f) Weather Tracking System
g) Integration with ODIIS

3.6.1 Integration with PROMIS: -

Background

Department of Water Resources procure a wide variety of goods and services and undertake execution of works in pursuance of their duties and responsibilities. Department of Water Resources prepared a set of categories such as Procurement of Work, Procurement of Good & Procurement of Service or all require approval at various level of authority. The process of approvals is Administrative Approval (AA), Technical Sanction (TS), Technical Bid, Financial Bid, Tender Cancellation, EoT, Deviation and Price Escalation etc. Currently the application for any approval is initiated at Division Level. Such projects either approved at Division Level or moved to the appropriate (higher) level through proper channel. At higher level, the system gets approved or returned for compliance by sub-ordinate office or sometimes may not get approved at all due to obvious reasons.

Integration

- When a work is processed in PROMIS application then each update will go to Mega Lift Irrigation System application as a notification. The information/data will be saved in the system in every update. The information needs to be sent from PROMIS approval levels like Administrative Approval (AA), Technical Sanction (TS), Technical Bid, Financial Bid, Tender Cancellation, EoT, Deviation and Price Escalation etc. and their status will be pushed to Mega Lift Irrigation System application. API can send other information's like cost estimation at different approvals.
- Work extension required information can be sent from Mega Lift Irrigation System application to PROMIS application through API.

3.6.2 Data Sharing from WAMIS: -

Background

The department integrated computerization of accounts system in field offices in line with other engineering departments of the state. The application named WAMIS (Works and Accounts Management Information System) is being implemented in offices so as to further streamline accounts procedures. Presently, 154 offices from all sectors are able to submit their account through WAMIS.

Integration

- The purpose of integration with WAMIS application is to monitor the different works awarding contracts payment information. All the information of projects can be fetched through API, this work can be monitored and tracked in Mega Lift Irrigation System application.

3.6.3 GIS Based Asset Management: -

Integration

- The purpose of Location system integration is to capture, store, manipulate, analyze, manage, and present all types of geographical data as per the works. With help of this Location system officers can see the exact Location of the works and this Location system will be implemented in all types of report section as well.

3.6.4 Integration with Farmers Database: -

- The purpose of Farmers Database application integration is to synchronize all required information from Mega Lift Irrigation System application to farmers database application through API. Similarly, Mega Lift Irrigation information's are present, so if any information needed from farmers database, that will also be fetched from farmers database application through API.

3.6.5 Integration with Weather Tracking System: -

- The purpose of Weather Tracking System integration is to receive all required weather information to Mega Lift Irrigation System application through API.

3.6.6 Integration with Grievance Management System: -

- ❖ The purpose of Grievance Management System integration is to receive all grievance information of citizens to Mega Lift Irrigation System application through API.

3.6.7 Integration with ODIIS:

Detail of the feasibility will be studied during the SRS creation, based on that compatibility & other studies will be done whatever possible in terms of the integration to this proposed technology & parameters.

ODIIS is the Geographical database for irrigation network of WR department. At present data of Dept. of Water Resource (Major, Medium, Minor, OLIC and Mega Lift projects) are collected in from of map and attributes are processed and converted into GIS database.

Once this would be integrated then the achievements and progress path would be visible on the dashboard.

Note:

In addition to this, few other points were discussed in the meeting & following are the details which needs be incorporated.

- Real-Time contractor information with financial details
  - Information will be displayed using pert chart & based on the availability & feasibility this module will be developed.
- Contractor Management
  - Time delay Report (Letter will be issued to the contractor regarding time delay)
  - Contractor feedback report of ongoing projects
- Beneficiaries data to be obtained in the system using Mobile App
- As per the discussion IoT devices will be implemented on pilot mode. And the modules would be designed and developed on the basis, so that IoT devices could be integrated in future.

3.7 Implementation of Single Sign-on: -

- Single sign-on (SSO) is basically a technique to authenticate users and user sessions. This authentication service allows users to use the same credentials comprising the name and password for accessing several applications.
- SSO can benefit department to reduce the negative impact on productivity created by different usernames and passwords for a variety of applications.

The login flow usually looks like this:

- A user browses to the application or website they want access to the Service Provider.
- The Service Provider sends a token that contains some information about the user, like their email address, to the SSO system as part of a request to authenticate the user.
- The Identity Provider first checks to see whether the user has already been authenticated, in which case it will grant the user access to the Service Provider application.
- If the user hasn't logged in, they will be prompted to do so by providing the credentials required by the Identity Provider. This could simply be a username and password.
- Once the Identity Provider validates the credentials provided, it will send a token back to the Service Provider confirming a successful authentication.
- This token is passed through the user's browser to the Service Provider.
- The token that is received by the Service Provider is validated according to the trust relationship that was set up between the Service Provider and the Identity Provider during the initial configuration.
- The user is granted access to the Service Provider.

4 Role and Responsibility of different stakeholders:

4.1 Responsibility of the Directorate of Water Resource:

Department of Water Resources shall play an important role in the fruition of the envisioned system. The following are the roles and responsibilities.

- Provide information on Business Process / Domain related issues to the SI.
- Provide data /documents that need to be digitized and brought to the system provide and validate all users' requirement documents.
- Review the deliverable (interim and final) submitted by the SI.
- Identify Officers for different training needs.
- Approve the SRS/FRS in accordance with OCAC.

4.2 Responsibilities of OCAC:

- OCAC will supervise and monitor project implementation, and coordinate with to facilitate smooth implementation of the project, and, for meeting the administrative requirements pertaining to the project.
- Co-ordinate with Automation Process of Mega Lift Scheme for Department of Water Resources, other departments and SI for all the activities needed for successfulrollout of the project
- Approving Project Management Plan and Project Inception Report submitted by the SI to implement the project within a defined timeline.
- Approving the project reporting formats submitted by the SI to monitor and analyze

the progress of the project.

- Monitor the Project Implementation in terms of managing the project timelines, quality of deliverables by close coordination with SI.
- Conducting Weekly / Monthly project review with the SI in regards to the progress of the project
- Monitoring key metrics and SLA compliance by SI as per RFP terms
- Reviewing and approving/organizing approvals for all the deliverables such as SRS, SDD, Design Documents etc. submitted by the SI within a defined timeline throughout the implementation phase in consultation with Department.
- Project tracking and monitoring for ensuring to timeline.
- Establishing appropriate processes for notifying the SI of any deviations from the norms, standards or guidelines at the earliest instance after noticing the same to enable them to take corrective action
- Reviewing the UAT readiness & overseeing the UAT and the results thereof
- Overseeing the progress of user training and coordinate signoff activities
- Review and monitor the completeness of the solution with respect to requirements and performance/acceptance expectations from the solution.
- Direct and supervise the activities needed for stabilizing the system and tuning the system for meeting the performance expectations during the early phase of O&M post-go live.
- Coordinating and overseeing procedures for undertaking quality audits of the system on a periodic basis
- Timely risk analyses.
- Review and provide recommendations on the change requests identified by the SI and assist Department in approving/modifying/rejecting such requests

4.3 System Integrator

- Prepare and submit the Integrated Project Management Plan (IPMP) for implementation of the project. The IPMP shall comprise of the all the components of deliverables prepared for Inception
- Prepare the project reporting formats to report the progress of the project to OCAC for approval
- Participate in Weekly / Monthly project review in regard to the progress of the project
- Identify and escalate issues/risks OCAC and provide the mitigation plan
- Adhere to the directions of OCAC as and when provided.
- Prepare and deliver for approval all the deliverables such as SRS, SDD, and Design Documents etc. within a defined timeline, as agreed in the IPMP and to the satisfaction of OCAC / Department, throughout the implementation phase.
- Install/configure/deploy all the components of system and get approval from OCAC.
- Provide detailed training plan to OCAC and Department and train the personnel identified by the I & ESI department and report the results.
- Ensure UAT readiness & conduct the UAT and report the results thereof to OCAC and obtain acceptance thereof. The UAT report should also include the feedback of the UAT participants.
- Ensure completeness of the solution with respect to requirements and performance,

acceptance expectations from the solution and get signoff from appropriate authority through OCAC.

- Coordinate with System Integrators of other relevant system for ensuring that system seamlessly exchanges data with them.
- Deploy and manage hand holding support for addressing the issues and incidents raised by users; resolve such issues and report the status OCAC on a periodic basis
- Prepare SLA report based in the SLA parameters given in RFP on a continuous basis and deliver it to OCAC for review and necessary action.