Workshop on Integrated IT Enabled Health Project along with Telemedicine Facility

28th March 2017

PURPOSE

The Department of Medical, Health & Family Welfare (DoMH&FW), Govt. of Rajasthan (GoR) through Department of Information Technology & Communication (DoIT&C), Govt. of Rajasthan and RajCOMP Info Services Ltd. (RISL) intends to implement a state wide Integrated IT Enabled Health Project along with Telemedicine Facility.

For this RISL is conducting a technical workshop with various stakeholders on Tuesday, 28th March 2017 for discussions on various aspects pertaining not only to government health care system, but also the linkages with private health care ecosystem.

The information gathered through this workshop shall be used to define an integrated technical solution capable of meeting current and future needs, and to design an Request for Proposal (RFP) that promotes vendor competition and creative technical solutions that will meet business and constituent needs.

BACKGROUND

Arogya Online, a software application for Health Management System (HMS) was started in selected hospitals by Government of Rajasthan in the year 2009. Till December 2016, about 50 Medical College Hospitals/ District Hospitals are using this software. Use of this software has resulted in accelerated processes and has increased the efficiency of hospitals for patient management. Government of Rajasthan has taken a decision to design and launch a comprehensive Health Management System for capturing data on health and health-related events and parameters. This comprehensive Health Management System will be a superset of Hospital Management System and will ensure capturing health related data and events of a person in the form of an Electronic Health Record. The project also aims to build a telemedicine and PACS solution (Picture archival and communication system) through which outreach of quality health services are enhanced and services reach till last mile.

This Software Application for Integrated Health Management System shall be available to government hospitals and health centres from Medical College Hospitals through to the Sub-centres, and also be available to ANMs / ASHAs for Outreach Centres. It may also be made available to interested private institutions (Dispensaries, Nursing Homes, Small / Big / Corporate hospitals, Private Laboratories, private Blood Banks, private Radio-imaging Centres and private Ambulance providers) for their involvement in this intervention. The Software Application shall capture data related to an individual from all possible sources of data entry and collate and consolidate the same in the form of an Electronic Health record, which any individual / hospital would be able to access / generate using his / her Aadhaar / Bhamashah Card.

RISL has been given the task of getting an application platform developed for this purpose. RISL is going to engage a technology partner for development of application and management of the central stack along with the application. The application would be used by any hospital of Rajasthan (government or private), private Laboratories, private Blood Banks and private Radio diagnosis and Imaging Centers. RISL will be the technology implementer for this intervention.
OBJECTIVES

The overall objective of the project is to link the health record of patient with his / her unique identity i.e Aadhaar/ Bhamashah number and provide Electronic Health Record across the state of Rajasthan. Further the project is aimed to deliver below mentioned objectives:-

- To facilitate implementation of Integrated Health Management System-
  - To design a web-based application for implementation of Integrated Health Management System.
  - To link the web-based application for Integrated Health Management System with following important applications – (i) Bhamashah Database Hub, (ii) UIDAI Database Hub, (iii) e-Aushadhi, (iv) e-Mitra, (v) Bhamashah Swasthya Bima Yojana, (vi) e-Vault and (vii) e-Health Card / Arogya Rajasthan (legacy data shall be linked with the new designed Integrated Health Management System.
- To increase efficiency and effectiveness of Hospitals / related institutions like Laboratories / Blood Banks / Radio-imaging Centers / Ambulance Service Providers-
  - To deliver services to beneficiaries with minimum waiting time and involving minimum physical visits to the hospital.
  - To increase efficiency of the process of registration of beneficiary and thereby help prevent delay in treatment, especially in emergencies.
  - To increase efficiency of processes of inpatient care by process reengineering and reducing paper based processes to minimum.
  - To increase networking between hospitals for improved health care by linking them through Telemedicine
- To create transparency and reduce complexity-
  - To enhance accountability, transparency and responsiveness to patient’s needs in the hospital.
    - To provide efficient and real-time Integrated HMS to Department of Health and Family Welfare.
    - To generate Electronic Health Record / Electronic Medical Record of patient entering the Integrated Health Management System

EXPECTED PROJECT OUTCOME

The expected outcomes to be achieved from the project are as follows:

- Availability of online Electronic Health Record (EHR) of individuals linked to their Bhamashah Card / Aadhaar Card
- Efficient processes of registration of patients for outpatient / inpatient care at the Hospitals.
- Real time Integrated HMS for improved decision making for improving access, effectiveness and efficiency of medical care provided by government and private hospitals.
- Establishment of a network hospitals linked as Telemedicine Centres with PACS
- Establishment of a system of inventory management of Medical Equipments and their management
- Establishment of a system of inventory management of Drugs and their distribution to patients based on recommendations of the treating doctor(s)
- Establishment of a system of management of ambulances and vehicles by participating hospitals
- Smooth and efficient referral of patients by government and private hospitals.
- Improving transparency in functioning and efficiency of medical care services for better monitoring by Department of Medical, Health and Family Welfare.
- Efficient and transparent service delivery mechanism through Web Portal, Mobile Application, Payment Gateway and SMS.
- Extended reach to all stakeholders (residents, government hospitals, DHFW, etc.)

**Scope of Work, Roles and Responsibilities, Deliverables and Timelines**

1. **Approach for Development and Implementation of Integrated Health Management System Solution**

The project scope involves customization/development and FMS of application platform for implementation of Integrated Health Management System (HMS) for the State of Rajasthan on behalf of Medical, Health & Family Welfare and Medical Education Departments of Govt. of Rajasthan. Integrated health management solution shall be implemented in phases and subsequently in groups. Components of Integrated Health Management Solution have been divided into two phases of three groups each (Group-1, Group-2 and Group-3 of Phase-1 and Group-4, Group-5 and Group-6 of Phase-2) and group each consisting of certain modules.

Selected Bidder shall deploy the team onsite. A centralized onsite team for design, customization / development of integrated HMS software solution, located at Jaipur, shall be provided for customization of integrated health solution as per the requirement of RISL / DHFW / ME Dept. Selected Bidder shall follow agile methodology wherein multiple sprints shall be executed by the team. Every sprint will have Requirement gathering, SRS, Design, Customization/Development, UAT, Training, Go-Live etc. for each group. Support and maintenance shall start from the Go-Live of all groups of the two phases.

It is expected that Selected Bidder shall execute sprints of multiple groups simultaneously which may be at different stages of Software development life cycle (SDLC). Selected Bidder shall deploy requisite team for executing multiple sprints simultaneously to adhere to the timelines.

This approach shall help in implementing the Integrated HMS solution in a time bound manner. The team can customize / develop integrated HMS while they’re gathering requirements for some other groups; it provides various stakeholders recurring opportunities to release various components of Integrated HMS in a phased manner for completing the project on time further enabling optimum utilization of resources in implementation of various prioritized services of DHFW / ME Dept.

The proposed Integrated HMS solution for this project should be a web-based application for Integrated HMS.

Successful Bidder shall provide web-based application (along with mobile application) for implementation of Integrated HMS. This application shall also be integrated with following existing State-Level applications implemented in the State of Rajasthan:

- Bhamashah Database Hub (BDH)
- UIDAI Database
- State GIS application
- e-Mitra
- 108 ambulance
- Payment Gateway
- SMS Gateway
- E-Mail Solution
- Raj SSO
- E-Vault
Integrated HMS shall primarily have two different applications (One Web Portal for Citizen and One Web Application for Hospital and their staff for backend processing).

For Instance, Facility of Registration and for Appointment Scheduling shall be available through the Web Portal and also through mobile application. The patient shall have the option of getting registered, prior to visit to the hospital, through an e-Mitra counter or through a mobile application through which a unique (Acknowledgement) number shall be issued – this shall help avoid needless queueing and delay in the hospital. Patient unique number may be asked for identification, like Aadhaar Card ID or Bhamashah Card of the family.

2. **Scope of Work**
   The broad scope of work for the Selected Bidder during the period of contract/engagement would include:
   - Development/Customization, Testing and Deployment of Integrated Health Management System (HMS) Application (including Telemedicine and PACS) Software Solution (Web Application & Web Portal)
   - Data Migration, System Integration with other applications as per requirement (UAT)
   - Training on Integrated HMS Application

<table>
<thead>
<tr>
<th>Name of Phase</th>
<th>No. of Module</th>
<th>Name of Module</th>
<th>Group No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase-1</td>
<td>1</td>
<td>User Management</td>
<td>Group-1</td>
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<tr>
<td></td>
<td>2</td>
<td>Emergency</td>
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<td></td>
<td>3</td>
<td>OPD (Out Patient Department)</td>
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<td></td>
<td>4</td>
<td>Enquiry Module</td>
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<td></td>
<td>5</td>
<td>HMS Web-Portal/ Online Appointment Module</td>
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<tr>
<td></td>
<td>6</td>
<td>Electronic Health Record (including Electronic Medical Record)</td>
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<td></td>
<td>7</td>
<td>Transport</td>
<td>Group-2</td>
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<td>8</td>
<td>Investigation &amp; Billing</td>
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<td></td>
<td>9</td>
<td>Inpatient Management</td>
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<td></td>
<td>10</td>
<td>Operation Theatre</td>
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<tr>
<td></td>
<td>11</td>
<td>Central Sterile Stores Department</td>
<td></td>
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<tr>
<td></td>
<td>12</td>
<td>Stores Management</td>
<td></td>
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<td></td>
<td>13</td>
<td>Pharmacy Module</td>
<td></td>
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<tr>
<td></td>
<td>14</td>
<td>Blood Bank</td>
<td></td>
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<tr>
<td>Phase-2</td>
<td>15</td>
<td>Telemedicine and PACS Module</td>
<td>Group-4</td>
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<tr>
<td></td>
<td>16</td>
<td>Wellness and Risk Factors Module</td>
<td></td>
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<tr>
<td></td>
<td>17</td>
<td>Patient Medical Record Department</td>
<td></td>
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<td></td>
<td>18</td>
<td>Bio Medical Waste</td>
<td>Group-5</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Diet Kitchen</td>
<td></td>
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<tr>
<td></td>
<td>20</td>
<td>Laundry</td>
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<tr>
<td></td>
<td>21</td>
<td>Estate And Facility Management</td>
<td></td>
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<tr>
<td></td>
<td>22</td>
<td>Purchase &amp; Offline Procurement</td>
<td></td>
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<td></td>
<td>23</td>
<td>Eligible Couple &amp; Family Planning Module</td>
<td></td>
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<td></td>
<td>24</td>
<td>Antenatal Care, Intranatal and Postnatal Care</td>
<td></td>
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<tr>
<td></td>
<td>25</td>
<td>Bio-Medical Equipment Department / e-equipment</td>
<td></td>
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<tr>
<td></td>
<td>26</td>
<td>Rajasthan Medicare Relief Society</td>
<td></td>
</tr>
</tbody>
</table>

- Commissioning (Go-Live)
- Support and Maintenance (FMS)
- Development of Mobile application

Integrated Health Management Solution shall be developed in three components as depicted in figure below:-
Components described above have been grouped in two phases (Phase-1 and Phase-2) of three groups each (Group-1 to Group-6) comprising of different modules. The details of modules under each group and phase are mentioned in table below and shown in a pictorial manner in subsequent pages.

The Selected Bidder shall work in parallel on all the groups of each phase simultaneously. The deployed team shall be divided by Selected Bidder for each group respectively.

- **Minimum Team Size during design and customization / development of Integrated HMS shall be as follows:**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Role</th>
<th>No. of Team Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Team Lead</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Domain/ Subject Matter Expert (SME)</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>QA and Testing Engineer</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>Database Administrator</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Senior Developers (heading each component)</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Developers</td>
<td>15</td>
</tr>
<tr>
<td>7.</td>
<td>Business Analysts (One for each component)</td>
<td>3</td>
</tr>
</tbody>
</table>

- **Minimum Team Size for Maintenance & Support Services after Go-live of all groups shall be as follows:**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Role</th>
<th>Number of Team Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Team Lead</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Business Analysts</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>QA and Testing Engineer</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Database Administrator</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Senior Developers (heading each component)</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Developers</td>
<td>12</td>
</tr>
<tr>
<td>7.</td>
<td>Helpdesk Executive</td>
<td>12</td>
</tr>
</tbody>
</table>

- The minimum required technical qualifications and experience details for the onsite resources shall be provided during the workshop.
- Also, it would be the responsibility of Selected Bidder to retain the deployed manpower for the entire Contract/ Project duration or in the event of a resource leaving the employment with Selected Bidder, the same shall be immediately replaced with another resource of equivalent minimum qualifications and experience. All such events should be notified prior to RISL and should be in accordance with the SLAs.
- During and after the end of the project period, the Selected Bidder shall refrain from canvassing RISL and any of its associates with any claim for employment of the Selected Bidder’s personnel deployed under the project.
- As Hindi is Official Language of the Government of Rajasthan, the Selected Bidder shall appoint personnel having proficiency with Hindi language.
- The staff provided by the Selected Bidder will perform their duties in accordance with the instructions given by the designated officers of RISL from time to time. RISL will examine
the qualification, experience etc. of the personnel provided before they are put on positions. The Selected Bidder has to take approval from RISL for the proposed staff before their deployment. RISL has every right to reject the personnel, if the same is not acceptable, before or after commencement of the awarded work/ project.


Broad scope of activities to be performed by Selected Bidder shall include development/configuration of complete application stack from requirement study to go-live stage. Selected Bidder shall adopt a time-bound approach in implementing the proposed system for Integrated HMS as described and detailed out in subsequent section of this chapter. The Integrated HMS application development/customization/testing/deployment/Go-Live and other parts of scope of work including training and maintenance has been divided into two phases and proposed modules in Integrated HMS application have been grouped under the two phases and further divided under various groups as discussed above. The grouping has been done based on the business needs and priorities of DHFW. Indicative functional requirement specification is mentioned in Annexure-1.

Please note that Agile Methodology will be followed for implementing each group in Phase-1 and in Phase-2 and hence design, customization, deployment, implementation and maintenance of Integrated HMS and all the activities mentioned below in Section 4.2.9 shall be followed iteratively for each group in Phase-1 and in Phase-2.


Selected Bidder shall conduct a detailed System Study of process flows suggested for Integrated HMS, find gaps in the proposed processes and suggest re-engineering of proposed processes (if required). Under this section, the Selected Bidder is required to visit at least two empanelled hospitals (one public hospital, not below the level of a District Hospital and one private hospital, with not less than 100 bed strength) in different districts to thoroughly understand the function and operational processes envisaged for the scheme. The names of the two hospitals to be visited shall be given by RISL. Details of the web services will be made available at the time of development. The Successful Bidder must carry out the following tasks during these visits -

- Interacting with concerned stakeholders
- Studying the existing systems, applications, and e-Aushadhi and Arogya Online systems in public hospitals
- Detailed study of requirements of Integrated HMS Software solution
- Understanding / assessing data inputs and outputs requirements
- Assessment of existing applications from the perspective of integration with core application; understanding / assessing requirements for providing an interface with the suggested databases / applications, namely Bhamashah and Aadhaar Database Hub, e-Mitra, 108, etc.
- Collecting all relevant input forms, registers and reports formats of DHFW

The Selected Bidder shall be responsible for preparation of Software Requirement Specification (SRS) to be developed based on an independent assessment of the requirements of Integrated HMS and the functional requirements. The System Requirement Specifications (SRS) should be prepared as per the latest version of the IEEE Standard / Template provided by RISL for drafting the SRS. The Selected Bidder shall obtain sign-off of SRS from the designated authority of RISL / DHFW / ME Dept.
The Selected Bidder shall be responsible for preparation of detailed Software Requirement Specification (SRS) based on in-depth assessments. The Selected Bidder will be required to engage a domain expert who should be an MBBS doctor/health administrator having experience in Hospital Management Systems, medical coding and medical terminology. The domain expert should be available onsite at the time of SRS and also during development of the software application.

5. Development/Customization of HMS Application (Web Application, Web Portal)
Selected Bidder shall be responsible for Design, Development/Customization, Testing and Deployment of Integrated HMS application (Web Application, Web Portal and Mobile Application) covering the indicative process flows of Integrated HMS. While development and customization of Integrated HMS solution the elected bidder shall keep user interface of important labels in Hindi language also.

Detailed functional requirements and functional design of the Integrated HMS Selected Bidder shall deliver below listed design documents-
- Software Design Document containing:
  - Brief Description of Module/Screen/functionality
  - Description of classes involved with properties and methods
  - Description of database objects—tables, stored procedures, functions etc.
  - Other Miscellaneous objects/business rules involved
- Database design document

Selected Bidder shall also maintain a RTM (Requirement Traceability Matrix) and shall provide the same to RISL, as and when requested for. The Selected Bidder would be required to provide version control and archiving facility for database and for Integrated HMS software solution as strict version control is necessary for legal accountability, and disaster recovery. Versioning should also allow contributors to know whether team is working with the latest version, and allow them to merge changes made in separate versions when needed.

6. User Acceptance Testing (UAT)
The Selected Bidder shall properly test the Integrated HMS application (Web Portal and Web Application) thoroughly and conduct unit and integration testing at his end before deploying the Integrated HMS Software solution for UAT. Selected Bidder shall give a demonstration of different module-wise (for each group) functionalities developed for Integrated HMS application after deploying the Integrated HMS Software solution at RSDC. RISL shall conduct functional testing of application once the functional demonstration of Integrated HMS Software solution is over.

The Selected Bidder shall also be responsible for:
- Preparation and submission of Test Strategy, UAT test cases and Test Results
- Assist Purchaser in carrying out user acceptance of solution.
- Rectifying issues of Integrated HMS Application (including the web application and web portal) issues/bugs reported during the UAT.
- Final approval/user acceptance of the Integrated HMS application (Phase Wise/GroupWise) shall be given by RISL/M&H Dept. This is the responsibility of the Selected Bidder to obtain the UAT approval from the RISL/M&H Dept.

7. Safe to Host Certification-
The Selected Bidder shall get the Safe to Host Certification done for Integrated HMS application (Web Application and Web Portal) (including all the pages) from the Cert-in empanelled vendors
as a pre-requisite for Go-Live. Selected Bidder shall remove the vulnerabilities identified during the Safe to Host certification and then deploy the Integrated HMS Software solution at RSDC.

8. Assistance to Third Party Auditor (TPA) appointed by RISL-
RISL may appoint Third Party Auditor (TPA) at its own cost to conduct the technical review and audits of work performed by Selected Bidder. Selected Bidder shall provide access of the systems as required by TPA for conducting the audits etc. Gaps/ issues identified by the TPA will be decided mutually between RISL and Selected Bidder and shall further be taken up for resolution by Selected Bidder.

9. Deployment/ Configuration/ System Integration and Commissioning (Go-Live) of Integrated HMS Application &Web Portal

Selected Bidder shall integrate the system software and Integrated HMS Software solution. DHFW will be responsible for providing adequate network connectivity at public hospitals for running the application in consultation with RISL.

- The Selected Bidder shall install and host/configure the application at RSDC to host the Integrated HMS application.
- The Selected Bidder shall be responsible to coordinate with RSDC operator to host, install and configure web portal and web application at RSDC, Jaipur. Selected Bidder shall comply with the policies of RSDC.

10. Training on Integrated HMS application and Handholding Support

Training of staff is essential for ensuring that the application developed is actually put to use. Selected Bidder shall ensure a proper hands-on training to Trainers through Training-of-Trainers Programme for Integrated HMS on the Web portal, Web Application and Mobile Application developed by it so as to make them well conversant with the functionalities, features and processes built in the Integrated HMS application. The trainers so trained (on an average 10 trainers per district for 33 districts) will be required to train the end-users on the use of Integrated HMS (Web portal, Web Application and Mobile Application). Training-of-Trainers programme will be conducted at Jaipur and one ToT will usually be of one day for each group and will have about 25 participants; this implies that there will be a total of about 13 ToTs for each of the six groups of modules – three groups of Phase-1 and three groups of Phase-2.

- The Successful Bidder will conduct trainings at Jaipur for trainers identified from respective districts to be trained in ToT programme. Successful Bidder will be required to depute trainer(s) from the firm to be available for facilitation during trainings to be conducted at Jaipur. For the group that has the module on Telemedicine and PACS, the Successful Bidder will also have to make trainers available at the remote site for demonstration and training on the use of telemedicine and PACS module.
- The content of the training plan and schedule shall be decided by RISL and the Selected Bidder later at an appropriate time. The Selected Bidder will be responsible for providing updated version of content, if any change is effected by the bidder.
- One Training-of-Trainers from districts / hospitals will typically be of two sessions of four hours’ duration each with sufficient number of trainers in each training course such that knowledge and skills are transferred to the trainees for successful use of the software.
- The requisite training infrastructure like training space, computers, projector with screen and connectivity shall be provided by RISL.
- M&H Dept shall identify respective officers / staff involved in various functional areas / modules related to the Scheme.
- Selected Bidder shall bear all the expenses towards its resource person/ faculty.
- Selected Bidder will conduct full day Training of Trainers (ToT) programmes at Jaipur for each of the six groups. This training will typically be of two sessions of four hours each. Ten trainers from each district will be trained in the ToT. Selected Bidder shall bear all expenses towards its resource person/ faculty. SI shall provide tea and snacks twice and one lunch during the full day training comprising of two four-hour training sessions on each day of the training.

- Selected Bidder shall conduct Training Needs Analysis in the SRS of all the concerned staff and draw a systematic training plan. The training duration should be sufficiently long for effecting meaningful assimilation of training content by an average user. There should be sufficient number of trainers in every training session for conducting the training program.

- Training has been divided in two phases and number of sessions can be finalized by RISL during SRS or later as per requirement:
  - Training of Trainers (ToT) at Jaipur
  - Training of trainees from selected government hospitals at district headquarters by the trainers. Training to end-users of hospitals will be imparted by the trainers trained by the Successful Bidder through ToT programmes.

- Training on the modules of all the three groups of Phase-1 and of Phase-2 shall be completed prior to Go-Live of the respective phases.

- Indicative Training needs identified for DHFW / ME Dept before Go-live phase are:
  - Training of Trainers – This shall be of one-day duration. An estimated 10 Trainers from each of the 33 districts will be trained in each of the six groups of modules (Group-1 to Group-3 of Phase-1 and Group-4 to Group-6 of Phase-2).

11. Integrated HMS Application Support and Maintenance (FMS)

   Selected Bidder shall provide Support and Maintenance (FMS) services for three (3) years for Integrated HMS application (Web application and Web portal) and other products from the date of Go-Live of all the six groups (Group-1 to Group-3 of Phase-1 and Group-4 to Group-6 of Phase-2). The Support & Maintenance services shall start from Go-live of the entire Integrated HMS solution. However, Selected Bidder has to provide FMS services for Groups which are Go-Live between the time of development and customization of other groups and groups which are already Go-Live for which no extra payment shall be released. Full-fledged Go-Live of Integrated HMS shall start after Go-Live of all the Groups as per timelines.

12. Managed Services during Support and Maintenance of group of Integrated HMS

   - **Technical Helpdesk Support (Incident/ Problem Management)**
     - The Selected Bidder shall make use of his own helpdesk management system (web enabled with SMS and e-Mail based alert system) or Helpdesk call management and SLA reporting.
     - Helpdesk should be able to perform:
       - Handle teething issues of the M&H Dept users and citizens.
       - The Helpdesk persons should be accessible to all the project locations and their end-users on telephone/ e-mail.
       - Reply to the queries/ feedback/ suggestions/ complaints from all the stakeholders
     - The end-users should be allowed to create a ticket for any problem faced by him and same should be closed by him after the resolution of the problem.
     - Helpdesk staff shall escalate the problem to designated authority.

   - **Integrated HMS Application Support & Maintenance Services**
     - Overall administration, operations, monitoring, maintenance of the deployed Integrated HMS application (Web portal and Web Application) and the Database to ensure the desired uptime.
During Support & Maintenance (FMS) period RISL may request Selected Bidder, to make necessary changes in the layout, colour schema, MIS reports format, input forms layout etc. However, these changes shall be suggested keeping in view that it should not transform in database schema. The Selected Bidder shall be responsible to make these changes at No extra cost to purchaser.

- Design & Upload content on web portal as per instruction of Purchaser. Content management services includes (content collection, translation, conversion, design of content upload content using CMS),
- Integrated HMS application (Web Portal and Web Application) administration, support & maintenance throughout the project period. The Selected Bidder shall provide support on following activities
  - Minor changes in Integrated HMS Software solution on instruction of RISL
  - Defect Fixing reported by RISL
  - Support required to update Web Portal & Web Application

- Maintain version control and archives of source code, and web site content and database
- Download definitions/ patches/ updates/ service packs of the deployed third party tools/ middle ware Software, this includes infrastructure at RSDC Jaipur,

### Support & Maintenance Reports
- The Selected Bidder shall have to submit certain key deliverables during Support and Maintenance Period which are mentioned hereunder. However, in addition to the reports/ deliverables as indicated below, Selected Bidder shall prepare and submit all other required information in the desirable format as notified by the purchaser related to project.
- The formats for all the reports shall be prepared by the Selected Bidder and submitted to the purchaser for approval. The reports submitted by the Selected Bidder should strictly be in the approved format only which, if required, may be revised from time to time.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Activity</th>
<th>Deliverable</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SLA Support &amp; Maintenance (FMS)</td>
<td>Satisfactory support certificate for the quarter</td>
<td>Quarterly (In Hardcopy)</td>
</tr>
</tbody>
</table>

### Deployment of Onsite Team during Maintenance and Support Period
Minimum number of onsite resources to be deployed once complete Integrated HMS has been go-live is given above in the clause titled “Deployment of Manpower”. Selected Bidder shall however ensure that the requisite numbers of resources are deployed during the period to meet the Service Levels.

### Change Request Management Services
- The requirement for integration with existing and new application(s) shall be finalized in consultation with RISL as and when these application(s) become operational. The required integration shall be done through Change Request Management system. Following are envisaged existing applications but not limited to these to be considered for change request:
  - Any other application

Selected Bidder shall depute following resources at the location specified by RISL from starting day of Go-live to trouble shoot, manage the Integrated HMS Software solution and also lodge complaints as per SLA till end of contract period.
13. Data Migration
Selected Bidder shall migrate data from existing database and application (Arogya Online, e-Aushadhi, e-Equipment) to new applications and databases. RISL will make available the data to the Selected Bidder for migration. Selected Bidder will migrate the existing data and will submit the migrated data to RISL for verification. Selected Bidder shall ensure 100% accuracy in the migrated data and in case any correction identified by RISL in the migrated data shall be corrected by the Selected Bidder. DHFW and ME Dept. have health related data in Arogya Online software and e-Aushadhi which shall be imported by the Selected Bidder to Integrated HMS application. Size of data to be migrated from Arogya Online software is around 40 GB and e-Aushadhi is around 10 GB. Selected Bidder will have to migrate data from these applications related to modules that are made Go-Live. Data migration of related modules is a prerequisite for Go-Live of the respective modules.

14. Supply of hardware for Telemedicine and PACS Solution
Selected Bidder shall supply & install necessary hardware for Telemedicine and PACS Module for functionality testing & demonstration. Hardware shall include medical equipments as mentioned below at the Specialist End and Remote End (Patient):-

<table>
<thead>
<tr>
<th>Name of Medical Equipment</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 lead Digital ECG machine</td>
<td>2</td>
</tr>
<tr>
<td>Digital Electronic Stethoscope</td>
<td>2</td>
</tr>
<tr>
<td>Digital PFT</td>
<td>2</td>
</tr>
<tr>
<td>Digital Blood Pressure Monitor and other Vital Signs</td>
<td>2</td>
</tr>
<tr>
<td>Digital Glucometer with computer interface</td>
<td>2</td>
</tr>
<tr>
<td>Digital Microscope &amp; Camera</td>
<td>2</td>
</tr>
<tr>
<td>X-Ray Digitiser</td>
<td>2</td>
</tr>
</tbody>
</table>

RISL/ DHFW / ME Dept. shall provide requisite space to the Selected Bidder for the deployment of the requisite telemedicine and PACS hardware. Selected Bidder shall supply and deploy the telemedicine and PACS hardware mentioned at Annexure-__ with specification mentioned in Annexure-__ at patient end and specialist end (located in Jaipur district) to demonstrate the telemedicine and PACS solution. Selected Bidder shall commission and install the hardware as per OEM guidelines. The entire hardware and associated software supplied under the project should be branded, interoperable, compliant to standards of DICOM-3, HL7, PACS, HIS, EMR / EHR Solution to build patient e-health card, ICD-10. The Selected Bidder shall supply all the media and manuals, OEM support, updates, patches. Selected Bidder shall supply and install all allied accessories, consumables and fitting assembly and complete all related work for installation and commissioning of hardware. Selected Bidder shall submit Item Delivery & Installation Report duly signed by designated authority. After successful demonstration of telemedicine and PACS solution the entire module for telemedicine and PACS shall be deemed as Go-Live. Selected Bidder shall provide comprehensive OEM warranty for 3 years from the date of Go-Live of Telemedicine and PACS solution.

15. Roles and Responsibilities

- **Responsibilities of RISL:** Role of RISL in the successful implementation of the solution includes discharging the following responsibilities:
  - Contract shall be monitored by RISL from time to time.
  - Coordinate with RSDC Operator, other stakeholders of the project other government agencies.
  - Conduct review meetings at regular intervals to monitor the progress of the project.
  - Provide functional requirement for SRS.
• Deploy hardware and necessary development stack to Rajasthan State Data Centre for development of Integrated HMS solution.
• Review, provide feedback and approve the solution design, software design, implementation approach, and other technical documents submitted by the Selected Bidder.
• Oversee the proposed training plan.
• Process recommendation of change requests to Contract Monitoring Committee with the finalization of efforts estimation, cost estimation, milestone and payment.
• Review and approve payments to the Selected Bidder as per SLA.
• Provide SRS and UAT sign-offs to Selected Bidder.
• Provide any other help/assistance/coordination required for successful implementation and operations of the work/project.

- Responsibilities of Selected Bidder:
  • The detailed role & responsibilities of Selected Bidder has already been described in the scope of work.
  • Provide computing infrastructure to all the deployed team members.

16. Development Stack for the software solution already available in RSDC-
- Database - Oracle 12C with RAC
- App Server - IBM Web Sphere, ORACLE Web Logic
- Mobile App - IBM Worklight
- Forms- Adobe
- CMS- Adobe (AEM) / IBM (WCM)
- DMS- IBM FileNet / Newgen OmniDocs
- Platform- Java / Dotnet

Note- No freeware and/or unsupported open source shall be allowed.

17. Project Duration-
• The expected Contract/Project Period includes 12 months (For Development/Customization, Testing, Deployment, Training, development of Mobile apps and necessary integration with other applications) which shall commence from the date of agreement signing till completion of three years (36 months) of Support & Maintenance of Integrated HMS application. The tenure of project for support and maintenance (FMS) shall be increased as per yearly rates for Support & Maintenance of Integrated HMS application.
• It is responsibility of Selected Bidder to scale up the Support and Maintenance team as and when required to ensure smooth project execution throughout the duration.

18. Project Deliverables & Timelines-
• Selected Bidder is expected to carry out all ground work for implementation including documentation, coordination with RISL and other stakeholders of the project, site survey, etc. These reports or deliverables are to be submitted timely by Selected Bidder to RISL to ensure timely and smooth execution of the project. Certain key deliverables are identified for each of the parts/stages, which are mentioned hereunder. However, Selected Bidder has to prepare and submit any required information in form of Reports / excel sheet / document desired by RISL related to Integrated HMS other than defined hereunder in the table. The milestones and deliverables for the implementation of Integrated HMS will be as follows:-

<table>
<thead>
<tr>
<th>Component</th>
<th>Group</th>
<th>Activity</th>
<th>Deliverables</th>
<th>Timelines (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modules under Group-1</td>
<td>Preparation of SRS for Group-1 of Phase-1 of</td>
<td>Test Cases Report</td>
<td>T&lt;sub&gt;1&lt;/sub&gt; = T&lt;sub&gt;0&lt;/sub&gt; + 100 days</td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>Group</td>
<td>Activity</td>
<td>Deliverables</td>
<td>Timelines (days) (T₀- Date of Signing of Agreement)</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
</tbody>
</table>
| Phase-1 (Group-1 to Group-3) | Integrated HMS Solution.  
- Design, Development,  
  Beta version Testing,  
  Deployment & UAT of Group-1 Modules  
- Integration with necessary applications,  
  Development of Mobile application (Registration-OPD, Lab. Tests and MIS) | UAT of Group-1 with Safe to Host Certificate | | |
- Design, Development,  
  Beta version Testing,  
  Deployment & UAT of Group-2 Modules  
- Integration with necessary applications | Test Cases Report  
- UAT of Group-2 with Safe to Host Certificate | T₂ = T₀ + 150 days |
| Modules under Group-3 | Preparation of SRS for Group-3 of Phase-1 of Integrated HMS Solution.  
- Design, Development,  
  Beta version Testing,  
  Deployment & UAT of Group-3 Modules  
- Integration with necessary applications | Test Cases Report  
- UAT of Group-3 with Safe to Host Certificate | T₃ = T₀ + 180 days |
| ToT for Modules under Group-1 to Group-3 of phase-1 | Training of Trainers (ToT) for Group-1, Group-2 and Group-3 (Phase-1) of Integrated HMS | Attendance Record of various sessions of training conducted | T₄ = T₀ + 190 days |
| Modules under Group-1 to Group-3 | Go-Live of all modules under all groups of Phase-1 of Integrated HMS solution on Internet/ Intranet | Go-Live Report  
- SRS for Group-1, Group-2 & Group-3 of Integrated HMS Solution. | T₅ = T₀ + 200 days |
| Phase-2 (Group-4 to Group-6) | Preparation of SRS for Group-4 of Phase-1 of Integrated HMS Solution. | Test Cases Report  
- UAT of Group-4 with Safe to Host Certificate | T₆ = T₀ + 250 days |
<table>
<thead>
<tr>
<th>Component</th>
<th>Group</th>
<th>Activity</th>
<th>Deliverables</th>
<th>Timelines (days) (T₀ - Date of Signing of Agreement)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Design, Development, Beta version Testing, Deployment &amp; UAT of Group-4 Modules • Integration with necessary applications</td>
<td>• Test Cases Report • UAT of Group-5 with Safe to Host Certificate</td>
<td>T₇ = T₀ + 300 days</td>
</tr>
<tr>
<td>Modules under Group-5</td>
<td></td>
<td>• Preparation of SRS for Group-5 of Phase-1 of Integrated HMS Solution. • Design, Development, Beta version Testing, Deployment &amp; UAT of Group-5 Modules • Integration with necessary applications</td>
<td>• Test Cases Report • UAT of Group-6 with Safe to Host Certificate</td>
<td>T₈ = T₀ + 340 days</td>
</tr>
<tr>
<td>Modules under Group-6</td>
<td></td>
<td>• Preparation of SRS for Group-6 of Phase-1 of Integrated HMS Solution. • Design, Development, Beta version Testing, Deployment &amp; UAT of Group-6 Modules • Integration with necessary applications</td>
<td>Attendance Record of various sessions of training conducted</td>
<td>T₀ = T₀ + 355 days</td>
</tr>
<tr>
<td>ToT for Modules under Group-4 to 6 of Phase-2</td>
<td></td>
<td>Training of Trainers (ToT) for Group-4, Group-5 and Group-6 (Phase-2) of Integrated HMS</td>
<td>• Go-Live Report • SRS for Group-4, Group-5 &amp; Group-6 of Integrated HMS Solution.</td>
<td>T₁₀ = T₀ + 365 days</td>
</tr>
<tr>
<td>Modules under Group-4 to Group-6 (Phase-2)</td>
<td></td>
<td>Go-Live of all modules under all groups of Phase-2 of Integrated HMS solution on Internet/ Intranet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support &amp; Maintenance</td>
<td></td>
<td>Integrated HMS Application Support and Maintenance (FMS)</td>
<td>Quarterly Support and Maintenance reports and Quarterly SLA attainment reports</td>
<td>T₁₁ = T₁₀ + 90 days T₁₂ = T₁₀ + 180 days T₁₃ = T₁₀ + 270 days T₁₄ = T₁₀ + 365 days</td>
</tr>
<tr>
<td>Component</td>
<td>Group</td>
<td>Activity</td>
<td>Deliverables</td>
<td>Timelines (days) (T0- Date of Signing of Agreement)</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------</td>
<td>-------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>Data Migration</td>
<td>As Applicable</td>
<td>Data Migration</td>
<td>• MIS Report indicating amount of data migrated</td>
<td>As described</td>
</tr>
<tr>
<td>Change Request</td>
<td>As Applicable</td>
<td>Additional design and development / integration work as per change request.</td>
<td>• As applicable</td>
<td></td>
</tr>
</tbody>
</table>

- It may also be noted that the time schedule for each milestone shown in the table above would be enforced independently. Any delay in the approval of the deliverable(s) submitted by the Selected Bidder to RISL/ M&H Dept / ME Dept shall not account for the delay on Selected Bidder’s part.
- Selected Bidder has to design and implement a very detailed plan of implementation that seeks to execute several activities in parallel, adopts Critical Path Method and commits additional resources to activities falling behind schedule so as to keep up with the overall deadline of implementation. The time specified for delivery and other activities as mentioned in the table above shall be deemed to be the essence of the contract and the Selected Bidder shall arrange supplies and provide the required services within the specified period.

### QUALIFICATION REQUIREMENTS

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Basic Requirement</th>
<th>Specific Requirements</th>
<th>Documents Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Legal Entity</td>
<td>The bidder can be a company. The company/firm should be registered legal entity in India, under the Rajasthan Shops &amp; Commercial Establishments Act, 1958 or a similar Act of any other State/Union, as applicable OR A company registered under Indian Companies Act, 1956 OR A partnership firm registered under Indian Partnership Act, 1932. OR A Limited Liability Partnership registered under Indian Limited Liability Partnership Act. OR A Parastatal Body / Organization (Note: A self-certified declaration regarding the non-applicability of registration to any Act should be submitted by the bidder)</td>
<td>Copy of the relevant certificates from the bidder.</td>
</tr>
<tr>
<td>2)</td>
<td>Turnover from IT/ ITeS</td>
<td>Average annual turnover of the Bidder from IT/ITeS during last three financial years (2013-14 to</td>
<td>CA Certificate with CA’s Registration Number / Seal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>---</td>
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<td></td>
</tr>
<tr>
<td>3) Net Worth</td>
<td>The net worth of the bidder as on 31 March 2016 should be positive.</td>
<td>CA Certificate with CA’s Registration Number/ Seal</td>
<td></td>
</tr>
<tr>
<td>4) Technical Capability &amp; Experience</td>
<td>The bidder must have successfully completed or is executing at least one project during last Five (5) years (i.e. from 01st Jan. 2012 to 31st Dec. 2016) comprising of “Application software development/ Application software customization/ Application Software Support/ Application Software maintenance services” in Hospital Management System project (HMS) of value not less than Rs. XX Crores. By “executing (the project)” it is implied that the project should have been commissioned or must be in Go Live status as on 31st December 2016.</td>
<td>• Project Reference format as per Annexure – 11 AND • Work Completion Certificates from the client; OR • Work Order + Self Certificate of Completion (Certified by the CA indicating the value of payment received against the work order(s)) (In the above case the value of payment received shall be greater than or equal to the amount mentioned in the eligibility criteria. OR • Work Order + Completion Certificate from the client indicating the amount of payment made against the work order. (Note: The Work Order/ Completion certificate should clearly depict the date, scope of work and the value of Hospital Management System project comprising of “Application software development/ customization/ Software Support/ maintenance services”).</td>
<td></td>
</tr>
<tr>
<td>5) Tax registration and clearance</td>
<td>The bidder must possess a valid certificate as on last date of bid submission: - • VAT/ Sales Tax Registration Certificate as on 31st Dec. 2016 • RVAT/ Sales Tax clearance certificate till 31st Dec. 2016 (if applicable) • Service Tax Registration Certificate • Income Tax Registration/PAN</td>
<td>• Copies of relevant certificates of Registration • RVAT clearance certificate (if RVAT is Applicable) from the Commercial Taxes Officer of the Circle concerned.</td>
<td></td>
</tr>
<tr>
<td>6) Certifications</td>
<td>The bidder must possess valid certification of CMMi Level 3 or above as on last date of bid submission.</td>
<td>Copy of a valid certificate</td>
<td></td>
</tr>
<tr>
<td>7) Blacklisting / Debarring</td>
<td>Bidder should: - a. not be insolvent, in receivership, bankrupt or being wound up, not</td>
<td>A self-certificate letter as per Annexure-6</td>
<td></td>
</tr>
</tbody>
</table>
have its affairs administered by a court or a judicial officer, not have its business activities suspended and must not be the subject of legal proceedings for any of the foregoing reasons;

b. not have, and their directors and officers not have, been convicted of any criminal offence related to their professional conduct or the making of false statements or misrepresentations as to their qualifications to enter into a procurement contract within a period of three years preceding the commencement of the procurement process, or not have been otherwise disqualified pursuant to debarment proceedings;

c. not have a conflict of interest in the procurement in question as specified in the bidding document.

d. comply with the code of integrity as specified in the bidding document.

- Consortium of agencies are not permissible.

**DESIGNATED POINT OF CONTACT**

RSIL’s official single point of contact for this workshop and the delivery point for responses and correspondence is:

1. Mr. Tapan Kumar, ACP & Deputy Director (DoIT&C) (M: 9413387307; email: tapan@rajasthan.gov.in)

2. Dr. Avtar Singh Dua, General Manager (Technical), RISL (M: 8107789255; email: avtarsingh.dua@rajasthan.gov.in)