

Clarifications for the EOI for ePIS

Q1. Consortium

1. Please let me know if we can work in a **consortium**?
2. In case it's a Joint Consortium, Do Vendor need to submit any specific document.
3. Since there are many components\products asked in the ePIS, we request to allow limited or conditional consortium so that prominent technology solution bidders can partner and provide the best out of the class solution to TTPL
4. As per our understanding of these A) B) and C) category interpretation is TTPL looking mainly a Partner from any of these categories who can develop jointly or shall provide existing product or can form a Technology consortium to give solution to TTPL.

CLARIFICATION

Consortium may be allowed provided there is a lead firm and the collaborating firms bring in specific expertise or technology solutions in the relevant specific modules of ePIS.

Q2. Alternate Open Source Technology

1. In ePIS document it mentioned Java and other technology choices such as Juul, Postgres, & Redis. Are these only open source technologies or companies can propose and bring solutions which are based on other open source technologies?
2. It is mandatory to comply to the technology stack mentioned in the Annexure document. Our Integrated HMIS solution has been developed using a different Open Source Application Development Platform. Can we propose an alternative Technology Stack, kindly clarify.
3. Since the Open source technology, tools and platform comes with multiple options, we request for due consideration for **multi-tenant** architecture model which would be of relevance in the type of deployment of ePIS across the country. Multitenant architecture brings in the flexibility and control to define and implement the SOPs from HQ to locations in a seamless manner which would be of great value and a differentiator for the type of program which we are envisaging under this opportunity.
4. Since the COTS solution provider like us have our own proven architecture and deployment model with open source MEAN Stack technology, we request due consideration to be given in terms of weightage for its advantage and benefit which are inherent in nature.
5. Please let us know if you have any specific API gateway provider in mind. We know of Apigee/Tyk/Zuul.
6. Please let us know which version of Alfresco are you planning to introduce in the ecosystem.
7. Please elaborate on the use of Key Cloak.
8. We would like to confirm that proposed technology in the annexure is preferred or mandatory. Can vendor suggest open source technology of their preference like Python, PHP, .Net Core, Postgre or MySQL etc. We suggest TTPL should permit various open source technologies as it will allow stable, robust, scalable and global healthcare solution to participate and TTPL will have better option to evaluate and choose.
9. Since TTPL here wanted to build\develop ePIS solution for MoH, Bhutan but using Open source platform, technology and tools. So If you see Open Source comes with multiple options, and



what we have seen in the Annexure is Java (Mean stack), so is it fixed (Java based) Open Source Technology Platform TTPL wanted to build or preference would be given to complete solution proposition in Open Source Technology Platform, Microservices Architecture, Open standards for Interoperability or it is emphasized to adopt a robust technical solution, taking into consideration future scalability, high availability, security, privacy, reliability, flexibility/extensibility, maintainability, reusability, interoperability and resilience. best global practice, best workflow driven solution fitment for Bhutan Healthcare landscape with very competitive price point. Hence, we request for due consideration for prominent bidders who are willing to give the best suited solution for Bhutan ePIS project using any latest Open source technology platform using Microservice Architecture.

CLARIFICATION

The source code and ownership of the ePIS solution must be provided to TTPL without any restrictions. The technology stack used for individual services can be decided during RFP phase or inception phase depending on the use cases of the services and further clarifications obtained from Ministry of Health. Our preferred requirement is an open source solution with microservices architecture (with Java/NodeJS/Python). However, bidders may propose other technology stack/s according to their expertise. The decision on choosing the technology stack for the solution will lie solely with TTPL.

Q3. Local Partner

1. Do we need a local partner in Bhutan to participate in the proposal?

CLARIFICATION

No

Q4. Time Extension

1. Is it possible to get couple of weeks of extension to file the proposal?
2. We request you to kindly extend the date of submission by a week to 10 days.
3. We request the TTPL to provide at least 7 to 10 working day time from receipt of clarity on queries to submit our response to EOI

CLARIFICATION

TTPL won't be able to provide time extension for the submission of the EOI.

Q5. Weightage/Mandatory Question

1. As a company, XX is a Single Sector focused company and our Sector of Choice is Healthcare. We do not work in any other sector apart from Healthcare. Also, XX has developed a comprehensive, Fully Integrated Healthcare Product. As a product company, Question 3 is II- Questionnaire is more applicable to us. Can the response to question 1 and 2 be Blank / or can we mention as Not Applicable? Please clarify.
2. Kindly clarify the weightage distribution across A) B) and C) and also the weightage distribution between technical and functional capabilities?



3. Since we are a focused healthcare vendor with extensive expertise and experience (Largest healthcare employer in the world of public health), we are not sure about the significance of other domain related experience/ expertise in this context. The weightage to the non-healthcare domain experience needs to be the least of the lot.
4. We request to consider the appropriate weightage for the number of projects implemented as a COTS solution.

CLARIFICATION

The vendor is expected to choose one or more experience that is relevant from the given three options with Option A being the most preferred option for TTPL. The scores will be allocated considering the experience of vendor and the requirements of the overall solution.

Q6. Source Code Sharing

1. We as a vendor propose the source code sharing mechanism through a mutually agreed escrow agreement so that application development and maintenance can be ensured by us without impacting the traceability and maintainability of our product/solution offerings.

CLARIFICATION

As mentioned in the EOI, TTPL's requirement is the complete and unrestricted ownership of source code; hence escrow agreement shall not be acceptable.

Q7. Recommendations and Suggestions

1. The bidder should be able to provide evidence for large-scale nationwide implementation of their proposed software solutions
2. The bidder should be a financially stable company with a positive net worth and an annual average turnover of Rs. 130.00 Crore from Healthcare Solutions and Services in the last 3 financial years i.e. FY 2016-17, 2017-18 & 2018-19.
3. The bidder should have enabled EMR implementation site certification for EMRAM Stage 6 or better on the HIMSS Analytics Electronic Medical Records Adoption Model (EMRAM).
4. The measure of evaluation for the experience with the COTS solution should be the number of beds covered across COTS implementations. Given the scale of this project is very large (perhaps, the largest in the world!) due weightage should be given to the COTS provider of having similar technology / architecture capability for meeting the functional and technical parameters of the requirements. Also, the deployments of this scale and nature should be verified with solution capability in terms of number of beds- deployed solution for functional feature verification and typically the multi-tenant architecture model to represent the nationwide implementation of this scale. The number of installations in similar region to represent the functional features of the solution makes relevant impact to validate the capability.
5. We suggest TTPL should include following point in the evaluation criteria to ensure right vendor is short listed from EOI or during RFP:



1. Vendor having experience of large projects in terms of multi-location across different healthcare facilities within a city, districts, states or country wide.
2. Vendor should have past or present working experience encompassing all the 3 level of health sector i.e. Primary (BHU's), Secondary (District or Specialty Hospital) & Tertiary Hospital with associated Medical college.
3. Vendor should prior experience of working as OEM/Consortium with different System Integrator (as TTPL will play role of SI in ePIS project)
4. The proposed vendor should have certificate like ISO 9001, ISO 20000, ISO 27001 & CMMi 3 (Dev) that cover protocol set for IT & Security services and SDLC. These certifications should specifically cover development centre of the organization and should be at least 2 yrs. old to ascertain that the policy & protocol advised by these certification bodies are followed and imbibed within the organization and its development centre. It is important to check & consider bidding entity's and its OEM credentials not from parent company or sister company.
6. We suggest TTPL should give extra marks to vendor who has prior experience of undertaking any such project where it has provided provide Service or COTS product with customization and have transferred technical knowledge with source code and relevant documentation. Also, it is of MOST IMPORTANCE that the proposed end-to-end product to TTPL with source code and IPR should be free any past or future legal binding from its past or existing customer. TTPL should seek formal NOC from all such customer.
7. Also, we request and recommend always since we are participating in ePIS project previously also that It is most important for any be-spoke or COTS product\solution proposed to TTPL with source code and IPR should be free from any past or present or futural legal binding from its past or existing customer. TTPL should seek formal NOC from all such customer. This will make TTPL complete owner or the product\ solution to run, develop, manage and scale as per their need independently in future.
8. Bidder must have proven track record of executing successfully similar size of projects in past with any Govt organisation in Healthcare. E.g. more than 300+ health facilities in single instance which must have Hospital, BHU (Primary\Secondary Health facility), Dispensary, Maternity Homes or should min 2 multilocation project which have min 20+ Hospitals and must have experience of executing 10K beds so far in Healthcare project, trained more than 5K+ plus healthcare end users.
9. Some extra weightage or due consideration should be given to bidder who can provide entire or most critical components of the entire solution in Open source technology platform not only HIMS\EHR in Open source and rest from third party like back office ERP to manage financial, inventory, HR, supply chain, PACS, Telemedicine and BI Dashboard. If one single party will take entire responsibility and ownership from Source code, IPR, Tech docs, Technology Transfer, Training (Tech and None Tech end users), DB ER document. Then this would be better from TTPL from contract and control perspective to manage the bidder as well as success of project.
10. We strongly recommend for Microservice architecture development whether bespoke or COTS, last time also during ePIS RFP we were the only bidder who proposed entire solution on Microservice architecture and always advocate for such condition where Connectivity, Power and Terrain is challenging in that scenario for achieving 100% BCP from application uptime solution provider should use latest tech and architecture of Microservices where there is large scope of Horizontal and vertical scalability without major dependency on Centralised server.



CLARIFICATION

Several suggestions have been made as part of the clarifications raised. The responses to these suggestions including suggestions on EOI evaluation criteria and recommendations on other solution architectures will not be addressed as part of the clarifications. It is advised that these recommendations or suggestions be included in the EOI responses of the respective Bidders.

The suggestions/recommendations may be reviewed by TTPL during the EOI evaluation and incorporated in RfP if found relevant or appropriate.

Q8. Modules:

1. Please elaborate scope of “Finance Management” module/process.
2. What is the scope of for PACS system? Does vendor have to provide a new PACS system or is it just required to integrate with existing PACS system available?
3. Please elaborate the scope of tele-health module.
4. What is expected to be delivered as part of Bay & Queue Management (Token system module)? Only software functionality and integration with display units or even supply of display devices? Does the vendor need to recommend the required technical specification for procurement of required hardware?
5. What is the functional scope of ePIS Lite application?
6. Please elaborate on how light the e-PIS Lite will be, which modules will be supported and which will not be. This is crucial info to design offline web application named e-PIS Lite.
7. What is the expectation from the ePIS vendor in terms of scope of the modules for the modules that are outside the ePIS core modules such as Supply chain, repositories etc. (As mentioned in section 3.1.3. Additional Functionalities and Features of Annexure A)
8. Does Biometrics scope of work include only functionality or functionality & integration with available biometric devices? Or does it even include supply of required biometric devices and does the vendor need to recommend the required technical specification for procurement of required hardware?
9. Is it only for reading Bar Code, QR, RF for patients and system users or generating, printing & reading also? What about Bar Code, QR printers and reading devices? Does the vendor need to recommend the required technical specification for procurement of required hardware?
10. Is speech to text feature envisaged only for doctor module or for the entire system? Does the vendor need to recommend the required technical specification for procurement of required hardware?
11. Does the OCR technology need to be part of the Document Management System or the entire solution?
12. Indexed Document Management System is required in order to handle the load of the scanned documents or Typical Document Management System (Upload Documents -Non-Indexed) is required?
13. DMS - "The proposed solution would support the search functionality within the content. It would support search criteria like search by metadata fields, content objects, document content, pages, etc. It would support full text search on image and electronic documents." - Do they need OCR?
14. Table 1- List of processes for Medical Care Services - Are they expecting the Specialty EMR for each specialty? E.g. Traditional Medicine
15. Parking and Protection - Need More Clarity on this module



16. Please elaborate if this refers to the interface with Finance Modules/ERP
17. Does Annexure A: 7.a Page 16 of 101 refer to Health Education Management Modules?
18. For Annexure A: 3.1.3, Page #23 of 101, Inbuilt GIS required or 3rd Party GIS Solution to be integrated

CLARIFICATION

The details for the modules including process flows shall be made available in the RFP. The annexure is attached to provide an overview of the ePIS solution. If any of this specific information are to be used as inputs for preparing the EOI, bidders may make assumptions and qualify them wherever it is used. The evaluation will be mainly based on the questions being asked in the EOI form.

Q9. Connectivity

1. Since the product/ solution deployment is on cloud architecture, the internet connectivity (last mile connectivity) in the remote parts of Bhutan becomes essential and critical. Who would be providing the last mile connectivity, if so, what is the assumed bandwidth as an SLA for the service provider? This will help us to envisage the ePIS Lite application scope/design.
2. When there is no network connectivity on a certain hospital's premise, the user authentication must happen through at least LAN connectivity (i.e. intranet) without access to external internet. This authentication must be integrated windows authentication.

CLARIFICATION

The details of the ePIS Lite solution shall depend on the services each health care facility provides. Therefore, Bidders may make assumptions and qualify them, if it is required for the submission of EOI.

Q10. Legacy and Integration

1. What are the technical details of existing legacy systems, in terms of database and the application development platform? Can you please provide the accurate list of equipment to be integrated with make and model in the scope of the implementation? Please share location wise list of equipment/devices which are to be considered for interface/integration as a scope.
2. Does vendor require to provide data entry / scan services for all available non-digitized legacy data? If Yes, what is the quantity of non-digitized records available for upload?
3. What are the technical details of existing legacy systems, in terms of database and the application development platform? Detail scope of data migration in terms of quantum, duration and the specificity of data to be considered for migration are required for better estimates. Can you please elaborate on the functional scope of data migration?
For Example,
 - Patient demographics data (patient name, DOB, gender, address, phone numbers, etc.)
 - Patient encounter data (encounter type OP/IP, visit date, doctor, discharge date).
 - Patient drug allergies.
 - Patient diagnosis.
 - Inpatient expenses details on the day of cut over
4. Which all transactions will happen in E-BMSIS (ELECTRONIC BHUTAN MEDICAL SUPPLIES INVENTORY SYSTEM) and ePIS from Inventory Standpoint?



CLARIFICATION

If any of the above-mentioned queries are important to determine the EOI submission, Bidders may make assumptions and qualify them, in EOI response.

Q11. Infrastructure

1. Please elaborate on the scalability and availability assumptions as per customer for the Disaster Recovery site. Will it be 24/7 hot back-up, high availability for the solution deployment? Or will it be a scale down model of disaster recovery where there will be specified SLA to make the backup solution availability as an option?
2. Please elaborate on whether this cluster will be an always on failover cluster.

CLARIFICATION

If any of the above-mentioned queries are important to determine the EOI submission, Bidders may make assumptions and qualify them, in EOI response.

However, the details shall be provided during the RFP and/or project inception phase.

Q12. Training

1. In this centralized deployment model, training as a deliverable will be considered as a centralized training on super users, who in turn will train the end users. Please clarify if our understanding is correct. Will the training (projectors, training rooms etc.) infrastructure be provided by TTPL?
2. Is the End User Training for MoH is part of the scope for Vendor? If Yes, Is Train the Trainer approach acceptable? If Yes, what are the Approximate number of users expected to be Trained?

CLARIFICATION

TTPL is looking for two categories of trainings:

- Training of TTPL Team
- Training of End users.

The details shall be provided during the RFP. If this has any impact on the EOI submission, Bidders may make assumptions and qualify them, in EOI response.

Q13. Health Information Exchange

1. Is Health Information Exchange (HIE) as a platform to be considered as a part of scope of ePIS solution or an integration requirement?
2. Is Govt of Bhutan using some other EHR\HIMS system or there are some private Healthcare facilities or any disparate health data sources which they wanted to bring to one exchangeable platform? Because if there is one single system (HIMS\EHR) across all the health facilities with



same DB and repository then where is the requirement of HIE. We recommend TTPL to please revisit this and also some few global HIE vendors (All Script, Oracle, Orion Health) and also validate their price and they will never agree to give Source code or IPR and their product is also no in Open Source. So, we would like to understand the need of HIE here in ePIS project.

CLARIFICATION

The implementation of Health Information Exchange (HIE) has been proposed to Ministry of Health (MoH). The final requirement to include HIE as part of ePIS project shall depend on the decision of MoH. The RFP will have clarity on this matter.

Q14. Others

1. Request for provision of application wise minimum committed transaction volumes/ concurrency and Year on Year growth to size the minimum hardware and application software to estimate the performance requirement.

CLARIFICATION

The concurrent user based on information sizing as per the Annual Health Bulletin, MoH, 2018 is as below:

SN	HF	NO	HP	Beds	Case Load
1	JDWNRH	1	947	350	525,521
2	Regional Referral Hospital	2	782	300	185,989
3	Hospital	23	1,652	647	710,642
4	BHU I	23	568	250	262,522
5	BHU II	220	610	856	805,948
6	NTMH + TMUs	71	170	15	144,306
	Total	341	4,500	2,418	2,634,837

NOTE:

1. Caseload as per Annual Health Bulletin, MoH 2018. These numbers may vary as RGoB intends to upgrade few and construct few Health facilities.
2. HR projection based on 12 FYP HR projections from HRD, MoH & JDWNRH.
3. Not all in the list might be using the software
4. MoH has around 400 employees out of who need to use the HR module for attendance and some will be using other modules for management and reporting.



2. Do Vendor needs to submit any supporting / specific documents regarding Firm's Incorporation, Financial Statements, Registrations, Testimonials etc - as EoI do not mention it clearly.

CLARIFICATION

Bidders are advised to provide the incorporation certificates and the last audited financial statement as proof of authenticity of the firm.

3. For Evaluation of Vendors during EoI Stage, Will there be any Presentation or Demo applicable? The EoI indicates that the evaluation will be purely based on Proposal review by TTPL.

CLARIFICATION

The requirement of presentation or demo may be decided during the evaluation stage by the evaluation committee. Further, bidders will be contacted if there is any clarification required.

4. Is there any high-level visibility on by when the RFP Stage will be started?

CLARIFICATION

The RFP stage shall most likely start within September.

5. Is there any fixed duration by when the results of EoI stage will be declared?

CLARIFICATION

The EOI results shall be declared by the end of August or early September.

6. The Annexure refers to a Table 7 which shows Data Quantum however it is missing for reference. Kindly provide the same. Table 7 refers to Implementation Plan. Kindly provide missing information.

CLARIFICATION

Typo in table 7 for data integration in annexure. It can be referred to as Table 6 for integration of Application.

7. The term "Offline" indicates the Distributed Architecture Implementation as well.

CLARIFICATION

Yes, a lighter ePIS solution shall be deployed in the health facilities depending on the services being provided. The ePIS Lite in health facility shall work independent of the ePIS central data center whenever there is a network failure.

8. Master Index shall be available on Local Application Server. How that can be synced to manage the "Indexing" of the data? It must be on Centralized Server only.

CLARIFICATION

The details of implementation shall be decided during the inception and/or implementation phase.



9. ePIS Web Portal Intends to Patient Portal?

CLARIFICATION

Yes, but not limited to just “Patient Portal”

10. Guidelines of Teleconsultation from Govt of Bhutan is required

CLARIFICATION

The details may be provided during the RFP. If this has any impact on the EOI submission, Bidders may make assumptions and qualify them, in EOI response.

11. Need Clarification on HR/Payroll Standards (Abbreviated Terms)

CLARIFICATION

GSP and ESP refers to General Service Personnel and Elementary Service Personnel respectively. They are categories of basic service-oriented personnel working in Royal Government of Bhutan.

12. Please elaborate the Engagement model sought from vendor in the project. Will the vendor be providing only software supply of code, training on the solution or TTPL expect vendor to be part of project for 3-5 yrs. for supporting in solution development, implementation & support.

CLARIFICATION

The Bidder shall be responsible for the Supply, Implementation and Support of the ePIS System from end to end. TTPL team will be working alongside the Vendor during the entire Project cycle so that adequate Knowledge Transfer takes place in order for TTPL to take over major support post implementation. An Annual Maintenance Contract (AMC) of 2-3 years shall be signed with the vendor on need basis. More details on specific responsibilities will be provided during RFP Stage.

