

# Terms of Reference

E-Government Procurement System Development  
For Public Procurement Policy Division,  
Ministry of Finance

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## **1. Background:**

1.1 The Public Procurement Policy Division (PPPD) under the Ministry of Finance was established in August 2008, whose status and tasks are set out in the chapter VIII of the Procurement Rules and Regulations 2009. Currently the division has seven permanent staffs and is entrusted with colossal mandates.

1.2 For more details, interested bidders may visit [www.pppd.gov.bt](http://www.pppd.gov.bt) or refer policies, regulations and other related documents.

1.3 The Royal Government of Bhutan (RGoB) annually in average spends around Nu. 13 billion approximately which is equivalent to US\$ 203 million in procurement of Works, Goods and Services.

1.4 The Royal Government of Bhutan has embarked on the e-Governance initiatives during the 10th five year plan. The Electronic Government Procurement (e-GP) road map (master plan) was developed with assistance from the World Bank in June 2007, furthermore viewing as a critical project it was incorporated in e-Government master plan developed in 2012.

1.5 The technical assistance to scope the e-GP was provided by IDA International, Singapore under the funding support of Temasek Foundation and Royal Government of Bhutan. Currently, the PPPD, MoF has procurement portal website to disseminate information to line agencies and Bidders.

## **2. Objective of Project:**

2.1 To promote transparency, efficiency and value for money, e-GP shall also be utilized in the conduct of Procurement Process. The e-GP system shall serve as single window and a primary source of information and communication technology in all Government procurement. And support through e-tendering and e-purchasing shall assemble and congregate reports and status of entire Government Procurement.

2.2 Moving Government towards online/electronic is expected to benefit government through efficiency gains and cost savings, the suppliers through easy and equitable access to information and opportunity for participation, and public at large through enhanced transparency and accountability.

2.3 It's also a national strategy to foster better business partnerships and relations with the private sectors. Further, the potential for fraud and corruption in the procurement process is expected to considerably reduce by the e-GP.

2.4 The e-GP Project is spearheaded by Public Procurement Policy Division (PPPD), Ministry of Finance, Bhutan.

### 3. Electronic Government Procurement System (e-GP)

3.1 e-GP shall be a secured web based system, serving both the Government and Businesses in Bhutan.

#### 3.2 Terminologies

##### 3.2.1 For ease of read, terminologies used in this document are:

e-GP - Name of Bhutanese Government Procurement System

PA - Procuring Agencies, Government users of e-GP

Bidders - Business taking part in Government Tenders

Developer - The potential e-GP vendor bidding for the project or the appointed vendor who will eventually be developing e-GP

Development - Customization of e-GP modules

#### 3.3 Proposed Strategy

3.3.1 The proposed e-GP strategy is to procure a packaged solution and for the appointed Developer to Develop/Customize the solution and to maintain it minimally for a year, up to maximum period of 3 years.

3.3.2 e-GP will be hosted at a Government Appointed Data Center and will use Government's SMS gateway but developer have to configure email service for notification. e-GP will also be interfaced with other Government Systems.

#### 3.4 To manage project complexity, e-GP will be implemented in three phases. Refer Annexure I

#### 3.5 e-GP Cost Submission (Financial Proposal)

3.5.1 Developers bidding for the project will have to quote for all Phases and by modules with running cost of the project over the next three years. The Developer must also quote for per man-day rate.

3.5.2 The Developer shall provide costing in accordance to financial proposal forms, and failure to quote accordingly may lead to disqualification

3.5.3 The e-GP project will be evaluated based on total cost of all the phases.

3.5.4 However, the Government reserves right to award e-GP to the same Developer in Phases/parts.

### **3.6 e-GP Project Schedule (Refer Annexure I for the project phases)**

3.6.1 The tentative timeline includes e-GP development/customization of all the phases and Implementation of system. However, the second and third phase's development/customization will depend on how successful and satisfactory in the earlier phase is.

3.6.2 The proposed e-GP project Schedule is as follows:

#### **Phase 1**

Development/Testing (4 months) : December 2015 – March 2016

Launching in Phases from April 2016 – June 2017

#### **Phase 2**

Development/Testing (4 months): October 2017 – January 2018

Launching in Phase from February 2018 – June 2019

#### **Phase 3**

Development/Testing (4 months): October 2019 – January 2020

Launching in Phases from February 2020 – June 2021

### **3.7 Sizing Information**

3.7.1 For the purpose of sizing for the project, the following are the estimated figures

No. procurement a year : 3000

Growth percentage per year : 10%

No of e-GP users (Bidders) :15000

No of e-GP users (PA) :1000

No of concurrent users (Peak) : 5

Average Size of each submission (in pages) : 200

## **4. Scope of e-GP Tender:**

- i. Developer shall supply, design, develop/customise, install, testing, implement and maintenance of a fully operational e-GP, based on the requirements stated in this tender document;

- ii. Developer shall provide quotations for infrastructure including maintenance and licenses for all hardware, software, network, facilities, applications and all other additional components necessary for a fully operational System.
- iii. The Developer shall recommend the Hardware requirements for the e-GP system and provide quote for the hardware.
- iv. Recommended to provide development and unit testing environments at local partner's locations.
- v. The Developer shall liaise and work with any third party vendors for hosting, facility management and any other vendors appointed by Government
- vi. The Developer shall provide maintenance and support services during the Launch, Warranty and Maintenance periods including a support structure to answer users' queries, problem escalation and processing of Service Requests.
- vii. The Developer shall Ensure Business Continuity with all the necessary services including backup and recovery processes/procedures.
- viii. Ensure that the system meets the security requirement as stated in this Tender Document
- ix. The Developer shall provide proposed e-GP System Demo as part of the Tender Evaluation.
- x. Provide and update User Manual and Technical Information throughout the duration of the Contract

## **5. Functional Requirements5.1**

### **5.1 e-GP Homepage**

5.1.1 The e-GP Homepage will be the landing page. The Developer will work with the Government to secure the necessary domain name. The Homepage will carry the System Name/Branding, to provide login access for PA and Bidders as well to provide e-GP related information. The Developer shall propose an effective layout to present the function/information described above.

5.1.2 Information/Functions displayed on the homepage shall include the following:

- Login Validation for PAs and Bidders
- News and Advertisements of procurement opportunities/activities of Government Agencies
- Sort/filter the Advertisements by Procurement Types, Agency Name, Districts, Gewogs, Dates etc
- Publish Circulars, Amendments, Instructions/Guidelines related to Public Procurement
- Display Award Notifications and details of winning bidder by providing information such as type of contract, procuring agency, name of bidder, name of contact, contract amount, contract duration, date of award
- Search Award Notice by Work ID

- Publish Bid Opening Information
- Publish Bid Evaluation Result, Technical Scores (for two envelop system)
- Debarment information
- Links to other Procurement related website, decided by MOF.

5.1.3 The Homepages shall also provide online user manuals and FAQ. The Developer will develop the user manuals and to work with PPPD on the FAQs.

## 5.2 Bidder and PA Homepage

5.2.1 If a Bidder Logs in via the e-GP Homepage, the Bidder will be directed to a Bidder Homepage. If a PA logs in via the e-GP Homepage, the PA will be directed to a PA Homepage. Both Bidder and PA Homepage will have store relevant information/instructions as well as to provide access to the respective Bidder and PA's information (such as bid history, outstanding tasks, completed tasks etc.)

5.2.2 The Bidder and PA Homepage will be the starting page all functionalities stated in this Tender document.

## 5.3 Password Retrieval Function

5.3.1 e-GP shall have automated password retrieval functions for both Bidders and PAs.

## 5.4 Registration

5.4.1 The information on the e-GP homepage will be accessible to all Internet users. However, Bidders and PA required to register on e-GP before being able used the system

5.4.2 Before the System integration, eligibility verification for Bidders and PAs registration will be done offline by a e-GP Administrator.

5.4.3 When the Registration is successful, a notice will be given with the User id and Password. When users login for first time e-GP will be prompted to change password before being able to use the system.

5.4.4 e-GP shall have options to change and retrieval of password.

### Bidders' Registration

5.4.5 During the bidders registering, e-GP may capture information such as:

#### **Company Detail/Firm/proprietary Details**

- Name of Company
- Trade licenses no. (Submit with Attachment)
- Statutory Certificate No. (Submit with Attachment)

- Taxpayer Number (TPN)
- Bidder types (International/national)
- Country of origin
- Procurement Types (Works, Goods and Services)
- Legal Registered /correspondence address
- Telephone no
- Fax no
- Company email address
- Dzongkhag

#### **Company Owner Details**

- Name
- CID No.
- Personal Details
- E-mail Address
- Mobile no
- Office No

5.4.6 The Bidder shall be able to indicate in a field that they comply with the terms set, before being allowed to proceed (Declaration statement)

5.4.7 When the Bidder clicks submit, the Bidder Registration Information will be sent to the e-GP Administrator. The e-GP Administrator will check off line for eligibility. The e-GP administrator can either Approve or Reject a Registration.

5.4.8 When a Bidder Registration is approved, a system generated User id and Password will be send via email and SMS to the Bidder with instructions on how to login. The Bidder shall login to the system via e-GP Homepage.

5.4.9 If a Bidder Registration is rejected by the e-GP Administrator, a notification will be sent to the Bidder with the reasons attached. The Administrator shall be able to select from a list of predefined reasons for rejection.

### **Password Reset for Successful Bidder Registration**

5.4.9 As part of security, for the first login, e-GP will prompt for password reset. The reset will use a two way validation (password and SMS).

5.4.10 Only when the password is successfully reset, the Bidder will be able to use the system and update company information.

### **PA Registration**

5.4.11 All PAs have to be registered before they are able to use the e-GP. PAs are from all Government Agencies.

5.4.12 The PA registration may capture information such as:



- Name of the concerned officer of the PA
- Employee ID of the concerned officer
- Email ID
- Mobile Number
- Contact Address
- Designation of the concerned officer
- Attachment of the nomination or acceptance from the head of the Agency
- The PA shall be able to indicate in a field that they comply with the terms set, before being allowed to proceed (Declaration statement)

5.4.13 e-GP Admin will verify the information offline.

5.4.14 If accepted, an email and SMS notification will be sent to the PA with the user id and password. The PA will be promoted to change the password before he can proceed to use e-GP. The password resent will be done via two way validation (Password and SMS)

5.4.15 If rejected, the e-GP Admin will select the reasons from a predefined list and to send an email and SMS notification to the applicant.

## 5.5 Tendering (Refer Annexure II for Tendering Process Diagram)

5.5.1 These are 5 different procurement methods used by the Government of Bhutan, namely:

- Open bidding
- Limited bidding
- Limited inquiry
- Direct contracting and
- Framework Contract

Please refer to Bhutan's Procurement Rules and Regulations at [www.pppd.gov.bt](http://www.pppd.gov.bt)

5.5.2 The above methods are applicable to procure:

- Goods
- Works
- Consultancy Services

### PA to Advertise Tender

5.5.3 Every procurement starts when the PAs' enters the information of the Tender to be advertised in e-GP.

5.5.4 The Tender information to be entered is such as:

- Type of Procurement (Goods or Works or Consultancy Services)
- Lot No (for Goods)
- Option to select International Competitive bidding (ICB) or National Competitive bidding (NCB)

- Name and brief description of the Goods/Works/Services
- Office Timing
- Location of the project
- Name, address and contact details of the dealing person
- Tender available date
- Closing date and time
- Bid opening date and time
- Bid security amount/Bid securing Declaration
- Estimated bid cost

5.5.5 e-GP shall generate Unique ID for every specific Tender. The ID will contain information of the PA's Agency.

The PAs will upload the tender documents based on their nature of procurement.

5.5.6 The PA will indicate if the Tender is a One Envelop, Two Envelop or that of a Two Stage Tender process. e-GP will provide the necessary fields/instructions and workflow for the different type Tenders indicated.

5.5.7 Two Envelope Tender is where the Technical Proposal is first opened and evaluated, followed by Financial Proposals. To enable Two Envelope Tender process, e-GP will request the Bidder to submit the Technical and Financial proposals separately.

5.5.8 For a Two Stage Process, the first stage will be the submission of Technical Proposal only. e-GP will then be triggered automatically to enable the subsequent submission of the Technical and Financial Proposals.

5.5.9 As the Tender is a 2 way process, e-GP shall have the provision to publish addendum and clarifications. e-GP shall be able to provide notification of addendum or clarifications to the Bidders.

5.5.10 e-GP shall allow the PAs to publish Corrigendum and Amendments. e-GP shall alert the Bidders when Corrigendum and Amendments are issued via email/SMS.

5.5.11 e-GP shall have options alert the Bidders 5 days before the submission deadline via email/SMS. The notification of alert shall be configurable for only desired Bidders.

5.5.12 e-GP shall disable the option to upload tenders after the deadline of closing date and time.

## **Bidder to Respond to Tender**

5.5.13 e-GP shall allow the Bidders to respond to the Tender, in accordance to the format specified by the PAs. e-GP shall also provide the appropriate information screens in accordance to what the PA have specified and the different procurement methods/types such as two stage etc.

5.5.14 Bidders are allowed to make changes to their submission before the closing date and time of the Tender.

5.5.15 e-GP shall not allow Bidders to make submissions after the closing date and time. Appropriate messages shall be displayed.

5.5.16 e-GP shall capture Bidder's Pricing details from Bid Submission Sheet format by the PAs.

5.5.17 e-GP shall also capture Bidder's Declaration such as Integrity Pact

5.5.18 The Uploading of the final bid shall two-way validation. e-GP shall issue one time code via sms and email to validate the authenticity of bidders.

## **Tender Closing/Publication of Tender Submission Results**

5.5.19 The publication of Tender Submission Results can be automatically or manually triggered.

5.5.20 For One Envelop Tender, the system shall publish, as predefined by the PA, e.g. the bid price for each lot.

5.5.21 e-GP shall be able to send alerts via SMS/email to the Bidders who all have participated when the Tender Submission Results is published.

5.5.22 For Two Envelop Tenders, e-GP will allow the PAs to have access to the Technical Proposal only at the initial stage.

5.5.23 For Two Envelop Tenders, e-GP shall have the additional function to capture the Technical Scores and open the Financial Proposal for those which are technically qualified.

5.5.24 The e-GP shall publish the consolidated results of technical and financial proposals.

## **Tender Award Notice**

5.5.25 The Evaluation of the Tender will be done manually (Offline). Upon the selection of the successful Bidder, PA will publish the Award Notice in e-GP.

5.5.26 The Award notice may include information:

- Name and Address
- Bid amount
- Status (intent, not awarded, contract signed)

5.5.27 SMS/email Alerts will be sent to all participant bidders.

5.5.28 The contract signing and award will be done manually

## **5.6 Debarment (Refer Annexure III for Debarment Process Diagram)**

5.6.1 To maintain integrity in public procurement activities, Bidders may be debarred from Bidding for Government Tenders for a specific period of time. e-GP shall maintain the debarment information and to disallow debarred Bidders from participating in Government Tenders during the debarment period.

5.6.2 e-GP shall disable user credentials for debarred Bidders during the period of debarment.

5.6.3 To Debarment module shall capture the following information.

- Name of the debarred firms
- The period for debarment (Once the period is over, system issue a notification automatically to PA and Bidder)
- Reasons for debarment.
- Name of agency that debarred the firm/ contractor.
- Nature of debarment in procurement.

5.6.4 e-GP homepage shall provide access Debarment Information on the Internet.

5.6.5 The e-GP homepage shall also facilitate search for Debarment Information via :

- Company/Firm Name
- Proprietors/ Director's Name (by ID)
- Type of Procurement
- Period of Debarment

## **5.7 Procurement Plan (Refer Annexure IV for Procurement Plan Template)**

5.7.1 e-GP shall provide a provision (template) for the PAs to feed in their Procurement Plan.

## **5.8 e-GP Reporting**

5.8.1 e-GP shall generate the following reports and access to reports shall be at the Agency or Business Level.

5.8.2 PPPD will have full access to all the reports.

5.8.2 The reports may include with search option using multiple parameters:

- Dates
- PAs
- Contract Amounts
- Type of Procurement

- Class/Category of Contracts and by CDB No
- List of contracts awarded (Contract amount) by type of procurement /agencies
- Corrigendum issued
- List of Bidders participated in the bidding process
- Annual contract report (Name of Contractor, Value, period, Type, agency wise, contract on hand)
- Audit trail for all users
- List all contract prices for data analysis to project prices
- List of bid win ratio by bidders
- List of bids rejected
- No. of PA and bidders by location
- Access control matrix or user rights' report

## 5.9 e-GP Admin

5.9.1 e-GP shall have administrators from PPPD, MOF. These administrators will verify and approve the accounts for PA and Bidders.

5.9.2 e-GP shall also have functions to update and delete users.

5.9.3 This Administrator shall also be able to assign system level access by Agency, Company, Roles, Functions and Fields. Role based access control to authorize e-GP users to access functions and fields based on roles and responsibilities.

5.9.4 e-GP shall capture the news/events of PPPD and procurement in general.

To update info/status of the Debarment module shall only be accessed by this admin.

## 5.10 eLearning

5.10.1 The Developer shall develop an online Training Module for PAs and Bidders to use e-GP. The online Training should be designed using case studies, interactive audio visual and quiz.

5.10.2 The e-learning should capture all the process in eGP such as :

- Bidder registration process
- Bidding process
- PA registration process
- e-GP functions and benefit
- Evaluation Process for PAs (Phase III)
- Purchase order process for PAs (Phase III)
- e-Invoice /e-Payment process for bidders and PAs (Phase III)
- Contract Management process (Phase III)

## **Procurement Reform (Business Process Reengineering)**

The developer must have a procurement expert/specialist to review the current PRR and SBDs and do business process reengineering to reduce turnaround time of the procurement and necessary reforms required to adopt e-GP. The recommended reforms report should be submitted to PPPD for endorsement.

The proposed e-GP system should align/comply to reforms endorsed. The PPPD will provide a counterpart staff to review and make the procurement reform.

The Procurement Expert /specialist shall review the current PRR and SBDs in the first one month of the development stage of the e-GP system.

During the business process re engineering, the procurement expert/specialist shall work with the local consultant of Bhutan recruited by the World Bank to review on the Procurement Rules and Regulations and Standard Bidding Documents.

### **5.11 Grievance Redressal /Complaints**

5.11.1 This module is the enhancement of the Award module. From the date of award notice publication, there is a 10 day period where other Bidders can file their Complaints as Aggrieved Bidders.

5.11.2 To manage Grievance and complaints, the e-GP may capture the following information

- Name of the complainant/aggrieved bidder
- Reasons for complaint
- Date of complaint
- Name of agency that received the complaint
- Nature of complaint in procurement

5.11.3 e-GP homepage shall provide access to complaints and grievance Information on the Internet.

### **5.12 System Integration**

Refer Annexure V for details of central systems

5.12.1 The integration with Department of Civil and Census Registration System shall verify the authenticity of personal information of PA and bidders.

5.12.2 The integration with Civil Service Information System (CSIS) shall verify the authenticity of PA as civil servant

5.12.3 The Integration with Multi Year Rolling Budget (MYRB) will authenticate and validate budget availability, and is the enhancement of Procurement planning module.

5.12.4 The Integration with following systems are enhancement of bidder registration and bid uploading function:

- Revenue Administration Management information System(RAMIS)
- Licenses Registration System
- Contractor Registration and Performance System(CRPS/e-tool )
- Certificate issue agencies (BICMA, Drug Regulatory Authority/RICB/RSTA)

5.12.5 e-GP shall verify the validity of tax clearance, license, clearance etc. while bidders upload the bids.e-GP shall automatically disallow the upload of bid if the documents are found invalid.

### **5.13 Reporting**

5.13.1 The Developer shall propose enhancement of the phase 1 report module. The proposed methodology should be clearly indicated with detail information and add-on new reports.

### **5.14 Catalogue**

5.14.1 e-GP shall capture a list of item.

5.14.2 The information from the catalogues may include:

- Name of item
- Item specifications/descriptions/item code
- Image of item
- Rate of the item
- Bidder who is supplying (Name and address)
- Add in/delete features as per the access rights
- Performance Feedback ratings
- Area of distribution
- Validity of the offered rate
- Price Ceiling
- Delivery Schedule

5.14.3 e-GP shall have function to search items from the catalogue. The parameter of the search may be by Name of items, validity dates, Agencies, Company name and etc.

### **5.15 Purchase Order (PO)**

5.15.1 e-GP shall issue PO and alert the bidder via sms/email.

5.15.2 e-GP shall standardise the PO template based on the nature of procurement such as works/goods/service

5.15.3 e-GP shall provide PA to opt goods to issue PO to Bidder

5.15.4 The PO may include following details:

- List of goods with price against suppliers
- Options to quantify items (increase/decrease)
- Option to add/delete items
- Delivery date and time by bidders

5.15.5 e-GP shall have option to submit and cancel the purchase order by PAs.

5.15.6 e-GP shall have acknowledgement of correspondences – mail delivered/seen/received

5.15.7 e-GP shall issue e-Invoice to the PAs with reference to the PO issued by PA. The e-Invoice shall have necessary information to make online payment to the bidder,

5.15.8 e-GP shall verified the authenticity of e-invoice and option the forward to the Accounts Section for e-payment to the bidders.

## **5.16 Evaluation**

5.16.1 The evaluation of the tender will be online for the procurement of Goods, Works and Consultancy Services. The online evaluation cycle includes invitation of bids, opening, evaluation and award.

5.16.2 The e-GP system will be automated and capture bid data sheet, BoQ, Bid Forms, List of goods and delivery schedules, Price schedule. Therefore, this is enhancement to both bid preparation and bid submission functions.

5.16.3 Evaluation is a process where the bids are evaluated based on preferred price and quality. The evaluation is done by the nominated evaluation committee.

5.16.4 e-GP shall generate temporary user account for evaluation committee. PA shall issue the user credential after evaluation committee is nominated. e-GP shall have configurable validity of user credential to be issued to evaluation committee.

5.16.5 The Evaluation committee members shall login with their user credential to get access to bidding documents. However, the committee members shall not have access to any their bids accept for which they are nominated to evaluate.

5.16.6 e-GP shall capture quantitative and qualitative evaluation criteria such as human resources requirement, credit line, equipments and etc. as desired by PA.

5.16.7 e-GP shall consolidate quantitative criteria marks and qualitative marks. The consolidated marks/results will be published online. This is enhancement to the award notice function.

## **5.17 Contract Management**

5.17.1 e-GP shall capture the details of contract when the bid is successfully awarded to the winning bidder. This module is also the enhancement of annual procurement plan.

Details may include the following but not limited to:

- Duration of contract



- Cost of the contract

5.17.2 e-GP shall have provision to extend the contract period after the approval. The extension of approval will be sought offline, however, e-GP shall capture approval details such as approval no, date and minutes.

5.17.3 e-GP shall have provision to terminate contract. The reason and details of termination of contract shall be captured by e-GP.

5.17.4 e-GP shall have provision to capture additional cost of the contract when the cost escalation request is approved by management. The total cost of the contract shall be accordingly amended/updated.

5.17.5 e-GP shall capture time, cost and overrun details based on project, agency, type of contract, nature of procurement, etc. There should be search function based on above parameter.

5.17.6 e-GP shall capture the penalty imposed for delays and termination of contract.

5.17.7 e-GP shall notify to the bidder for deliverables as per the contract terms. The notification should be configurable for only desired contractors.

5.17.8 e-GP shall have overall dashboard to display progress and status of all awarded contract and specific tenders.

## **5.18 Reverse Auction**

5.18.1 The bidder's offers price for specific goods at a real time and PAs would solicit with the lowest offered rate.

## **5.19 Integration**

5.19.1 The Government will provide e-payment infrastructure where technical details will be provided during the integration of e-GP with e-payment.

5.19.2 Any payment related to procurement can be made electronically by either party.

5.19.3 The bidders shall make payment on bid security, performance security and any others electronically. This is the enhancement of the bid submission.

5.19.4 The PAs will make e-payment on the bills, advances and any others electronically by integrating with Public Expenditure Management System (PEMS) (Ministry of Finance).

The system shall integrate the stock entry from the Purchase order module to update the stocks in the Government Asset Inventory Management System.

## **5.20 Reporting**

5.20.1 The Developer shall propose enhancement of the phase 2 report module. The proposed methodology should be clearly indicated with detail information and add-on new reports.

## 6. Training

### 6.1. Developer shall:

- 6.1.1. Training of Trainers (ToT) to at least 15-20 users for all the three phases
- 6.1.2. Propose training duration but should not exceed one week
- 6.1.3. Prepare training contents and course deliverables

### 6.2. PPPD shall:

- 6.2.1. Identify Trainees
- 6.2.2. Arrange logistics such as venue, refreshment, working lunch, training materials such charts, marker pen, whiteboard and etc
- 6.2.3. Process Developer Trainers Permits and VISA (if required)
- 6.2.4. Facilitate the training program

## 7. Technical Requirements

### 7.1. General Requirements

The proposed e-GP shall comply/adhere to following technical requirements/functionalities, but not limited to:

- 7.1.1 Use Responsive Web Design technologies, (HTML 5, CSS3)
- 7.1.2 Implement data validation for both client and server (eg: AJAX technologies, JavaScript, etc)
- 7.1.3 Implement Search, Save, Create, Read, Update, Delete (SCRUD) operations and auto save if the users are idle for 60 seconds
- 7.1.4. Maintain consistent aesthetics and UI of the software;
- 7.1.5. Ensure compatibility to all the browsers (Mozilla Firefox, Internet Explorer, Google Chrome, Opera, Safari, etc.);
- 7.1.6. The e-GP should be scalable and upgradeable as and when the number of users and contents increases; Up to 1000 PAs User and 15,000 Bidders and up to 50,000 transactions per year with increment of 10% annually.

- 7.1.7. Maintain and ensure that the web-based software system supports maximum up to 5 concurrent users;
- 7.1.8. The e-GP should have provision to support English and Dzongkha and interactive maps. This requirement can be provisioned both from front-end APIs and backend database system design by incorporating appropriate UTF based locale support.
- 7.1.9. The e-GP shall have status bar to guide user step by step to use the system (e.g during registration, stage of registration have to guide by status bar)
- 7.1.10. The e-GP shall have capability to notify via Email and SMS wherever necessary either to specific group or individual. e-GP shall use Government SMS Gateways.

## **7.2. System Performance, Availability and Reliability**

- 7.2.1. The maximum response time for the system shall not exceed 15 seconds 95% of the time on a PC connected to a network with minimum bandwidth of 512 kbps. The bidders shall develop the necessary test programs to verify the response time. All necessary testing tools required for such performance testing shall be provided by the bidders for the purpose of the testing at no additional to the client. The availability of the system can be recommended by developer
- 7.2.2. The scheduled operating hours for the system shall be twenty-four hours a day, seven days a week, including Sundays and public holidays;
- 7.2.3. The developer shall state any scheduled downtime required but limited to only 3-4 rounds of scheduled downtime a year for maintenance unless approved by clients. The downtime shall be scheduled up to 3HRs and planned on non working hours.
- 7.2.4. The Developer shall ensure the reliability of the System by incorporating the following features:
  - 7.2.4.1. Failure of any transaction shall not affect integrity of the data captured / stored in the System.
  - 7.2.4.2. Failure of a transaction at a workstation or an internet session shall not affect users at other workstations or internet sessions.
  - 7.2.4.3. The effect of a failed transaction on the database shall be automatically and dynamically backed up and recorded.
- 7.2.5. The System shall be able to recover all data stored up to the last completed transaction before a system failure occurs.
- 7.2.6. The Developer shall ensure that any rectification, enhancement or change to the System shall not affect its system reliability

## 7.3 Security Requirements

### General

- 7.3.1 The components of the e-GP that are responsible for maintaining security shall meet Confidentiality, Integrity and Availability requirements
- 7.3.2 The e-GP shall comply Information Management and Security Policy (IMSP) during deployment.
- 7.3.3 To ensure confidentiality and integrity of the System, the bidder shall propose solutions to protect the data from being accessed, altered or deleted without proper authorization.
- 7.3.4 The e-GP shall maintain time series data so that information is not lost with passage of time and repeated updating.
- 7.3.5 The e-GP shall have up-to-date CAPTCHA program as a remedy to stop spam and other intrusions wherever required.
- 7.3.6 The forms shall have Input validation to prevent attacks such as buffer overflows, cross-site scripting, SQL Injection.

## 7.4 System Security

- 7.4.1 The bidders shall minimally provide Access control, Authentication and accountability security mechanisms for backend operations of the System.
- 7.4.2 The security solution proposed shall be scalable should not affect the performance by creating a bottleneck or single point of failure to the overall system.
- 7.4.3 The system should provide tamper-proof audit trails and logs for administrator or auditor to check for the actions committed by users. The audit trails shall consist of following details but not limited to:
  - 7.4.3.1 Login and logout
  - 7.4.3.2 Attempts to access unauthorized resources
  - 7.4.3.4 User profile changes
  - 7.4.3.5 Past audit events.
  - 7.4.3.6 Track all actions performed on documents attached/uploaded.
  - 7.4.3.7 The system should have provision to assign the access rights of other resources on need basis to authorized users.

- 7.4.3.8 Information in the System that is deemed to be sensitive shall be encrypted and protected from accidental and/or unauthorized modification.
- 7.4.3.9 The System shall provide automatic session disconnection for inactive user after session time [Proposed best practice session time] is over.
- 7.4.3.10 The system shall protect the audit trails from being modified by unauthorized personnel or privileged users.

## **7.5 Access Control**

- 7.5.1. The access to the different modules within the System shall be via a common logon. The bidder shall propose an efficient, faster and easier login page for the users.
- 7.5.2. The system shall have provision for the management of access rights for the user either individual or group level.

## **7.6 Recommended Development Platform:**

- 7.6.1 The consultant shall comply with the Electronic Government Interoperability Framework (e-GIF) during the development of e-GP for customised solution.
- 7.6.2 The e-GP system development is recommended to be implemented using Open Source Languages framework based on Java, PHP, Ruby, etc.
- 7.6.3 The application is recommended to be implemented using MVC (Model View Controller) based web frameworks, address protocols and standards including application security and manageability. If the developer has alternative development proposal, developer may provide the details on the proposed language
- 7.6.4 The database for the application is recommended to be implemented using Open Source Database such as MySQL, PostgreSQL, etc.
- 7.6.5 The consultant shall comply with e-GIF Data standards such as Table naming conventions, data modeling, data types, codes, etc. during the customization of e-GP.

## **7.7 Development/Customization Methodology:**

- 7.7.1 Modular based approach and Agile SCRUM methodology must be used for the design and customization of the e-GP to ensure all requirements and feedbacks of the client are identified and incorporated.

- 7.7.2 Bidder may provide once in two weeks updates to clients (functional features, presentation of views, demos, etc. of the portal). Bidder may recommend suitable reporting period based on their best practices.
- 7.7.3 Bidders may carry out at least 2 iterations of requirement or specification reviews for each sprint before implementation of next module from the product backlog.

## **8. Deliverables:**

The activities/deliverables of the assignment and Work Schedule is indicated for reference in Annexure VI.

## **9. Responsibilities:**

### **9.1 Procuring Agency (PA)**

- 9.1.1 Shall ensure once in every two weeks updates are reviewed and comprehensive requirement specifications are provided within review period;
- 9.1.2 Shall maintain the delay register and notify the Developer of all delays in writing;
- 9.1.3 S hall appoint the point of contact or project focal person(s);
- 9.1.4 Inform the stakeholders and arrange for joint sessions with developer;

### **9.2 Developer**

- 9.2.1. Shall set up a dedicated development environment at developer premise with proposed team members working on the project.
- 9.2.2. Shall ensure timely delivery of deliverables;
- 9.2.3. Shall provide the e-GP development platform acceptable to client;
- 9.2.4. Shall maintain the delay register and inform the client on the delays;
- 9.2.5. Shall appoint a team leader who shall be the point of contact; and
- 9.2.6 Shall recommend and supply suitable infrastructure (server specifications and other necessary hardware) to host the e-GP safely and efficiently.

## **10. Warranty (Phase wise)**

- 10.1 e-GP warranty shall be quoted for every phases.
- 10.2 The Developer shall be support during the Launch.
- 10.3 Provide one year of warranty after the user acceptance signoff. During this period, the Developer is responsible for technical support such as update patches; fix bugs, correct defects without any additional cost.
- 10.4 Make some minor changes such as changing of label names, adding simple labels on the page and tweaking color.
- 10.5 Tuning the application for performance and maintenance related activities which includes installation and configuration for a period of 12 months

## **11. Ownership of Source Code**

- 11.1 PPPD shall be the owner of the source code for customized function of e-GP, Intellectual Properties and patent rights. Developer may propose their business modality of the ownership.

## **12. Maintenance and Support**

- 12.1 The details of the maintenance and support is indicated for reference in Annexure VII

## **13. Request Management**

- 13.1 Details on the Request Manage will be indicated for reference in Annexure VIII

## **14. Back up and Recovery**

- 14.1 Details on the Backup and Recovery will be indicated for reference in Annexure IX

## **15. Problem Management**

- 15.1 Details on the Request Manage will be indicated for reference in Annexure X

## 16. Key Professional Staff

All experts who have a crucial role in implementing the contract are referred to as key experts. The profiles of the key experts for this contract are as follows:

### 1. Team Leader

Qualifications and skills

- Masters in computer engineering/computer science/Management/ or equivalent

General professional experience

- at least 10 years sound professional experience, including:

Specific professional experience

- Must have international experience as team leader in software on at least one e-GP (similar to the size and complexity) project in developing countries
- must have excellent expertise in communicating technical information, project status to the client and project team to deliver the quality software as specified in TOR
- E-GP experience is preferred

### 2. System analyst

Qualifications and skills

- Graduate in computer engineering/computer science/ or equivalent

General professional experience

- Desirable years of professional experiences-5years

Specific professional experience

- Extensive hands-on experiences in system analysis, design, documentation.

### 3. Web Developer/Programmer/Coder

Qualifications and skills



- Graduate in computer engineering/science/application or equivalent

#### General professional experience

- Desired minimum of 5 years of experience

#### Specific professional experience

- International experience with extensive hands-on experience in web technology and interoperability skills.
- Experience in programming in web services ajax, open architecture, writing source code, implementing solution to the assigned task.

### **Procurement Specialist/Expert**

#### Qualifications and skills

- University degree
- Fluency in English

#### General professional experience

- Minimum 10 years experience in procurement field

#### Specific professional experience

- Minimum of 5 years experience in e-procurement
- Must have international experiences

### **Local Partner**

- The developer must have a local partner if the developer is from outside Bhutan
- The key technical professional staff of the local partner should have a minimum of 3 (Three) staff involvement in the system development as system analyst or web developer.

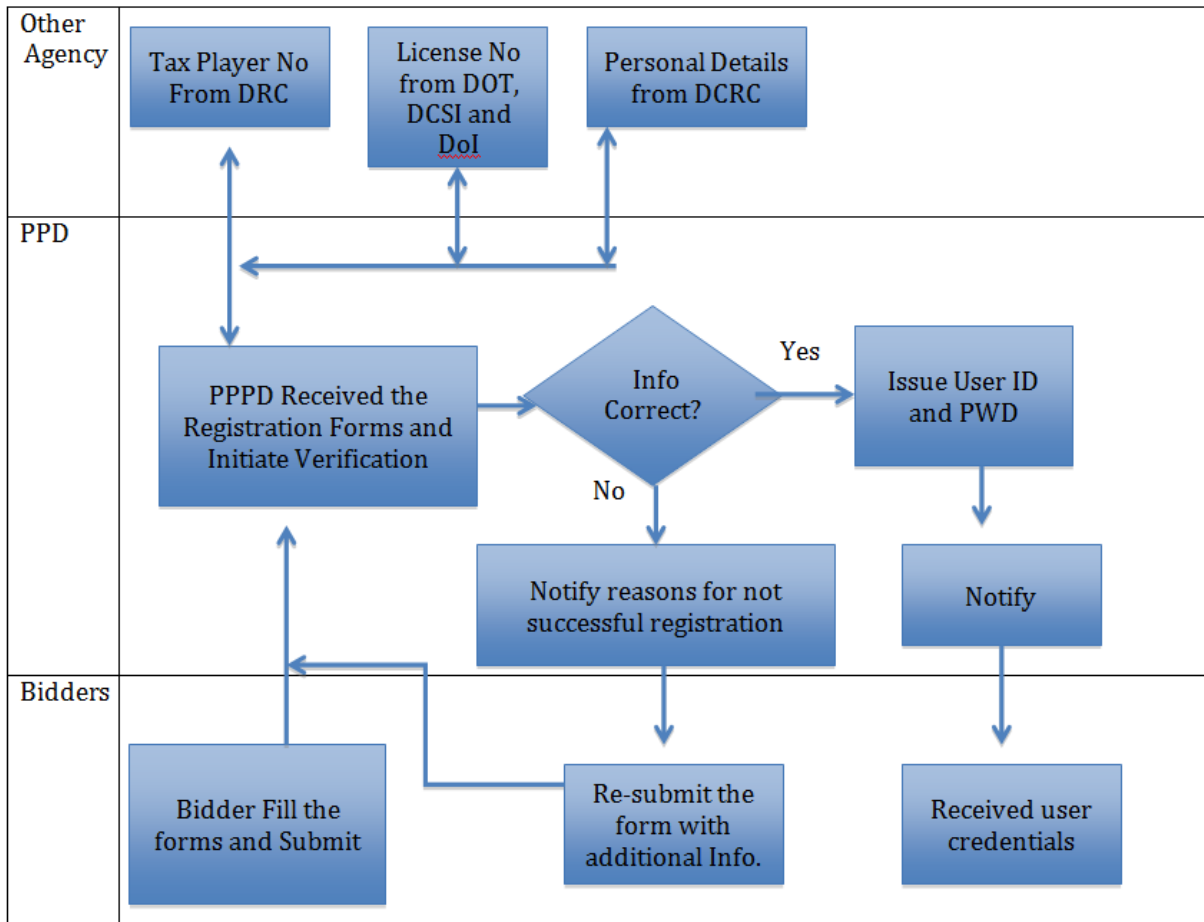
## Annexure I : Procurement Phases

<b>Phase I</b>	<b>Phase II</b>	<b>Phase III</b>
<ol style="list-style-type: none"><li>1. e-GP Homepage</li><li>2. Registration</li><li>3. Tendering</li><li>4. Debarment</li><li>5. Annual Procurement Plan</li><li>6. Reporting</li><li>7. Admin</li><li>8. e-Learning</li><li>9. Procurement Reform (business process re-engineering)</li></ol>	<ol style="list-style-type: none"><li>1. Grievance Redressal/Complaints</li><li>2. System Integration</li><li>3. Enhancement to Registration</li><li>4. Reporting</li></ol>	<ol style="list-style-type: none"><li>1. Catalogue</li><li>2. Purchase Order</li><li>3. Evaluation</li><li>4. Contract Management</li><li>5. Reverse Auction</li><li>6. System Integration</li><li>7. Integration to e-Payment and e-invoice</li><li>8. Reporting</li></ol>

## Annexure II : Tendering Process Diagram

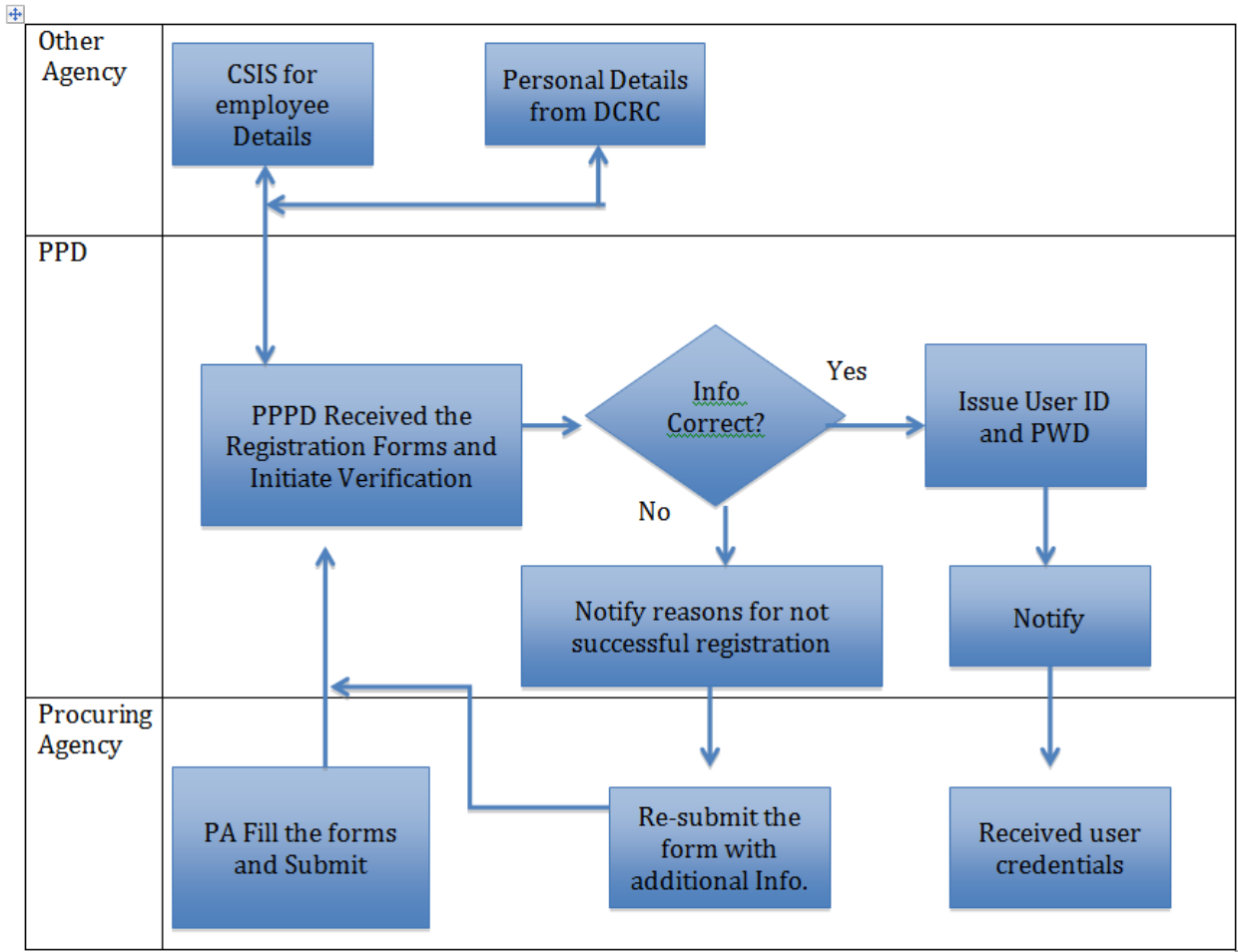
The Tendering processes diagrams are as-is processes and Developer shall recommend to-be processes diagram reduce turnaround time, however PPPD shall decide approve or reject the processes. The processes shall re-valid during software requirement specification study.

Bidder Registration Annexure:|

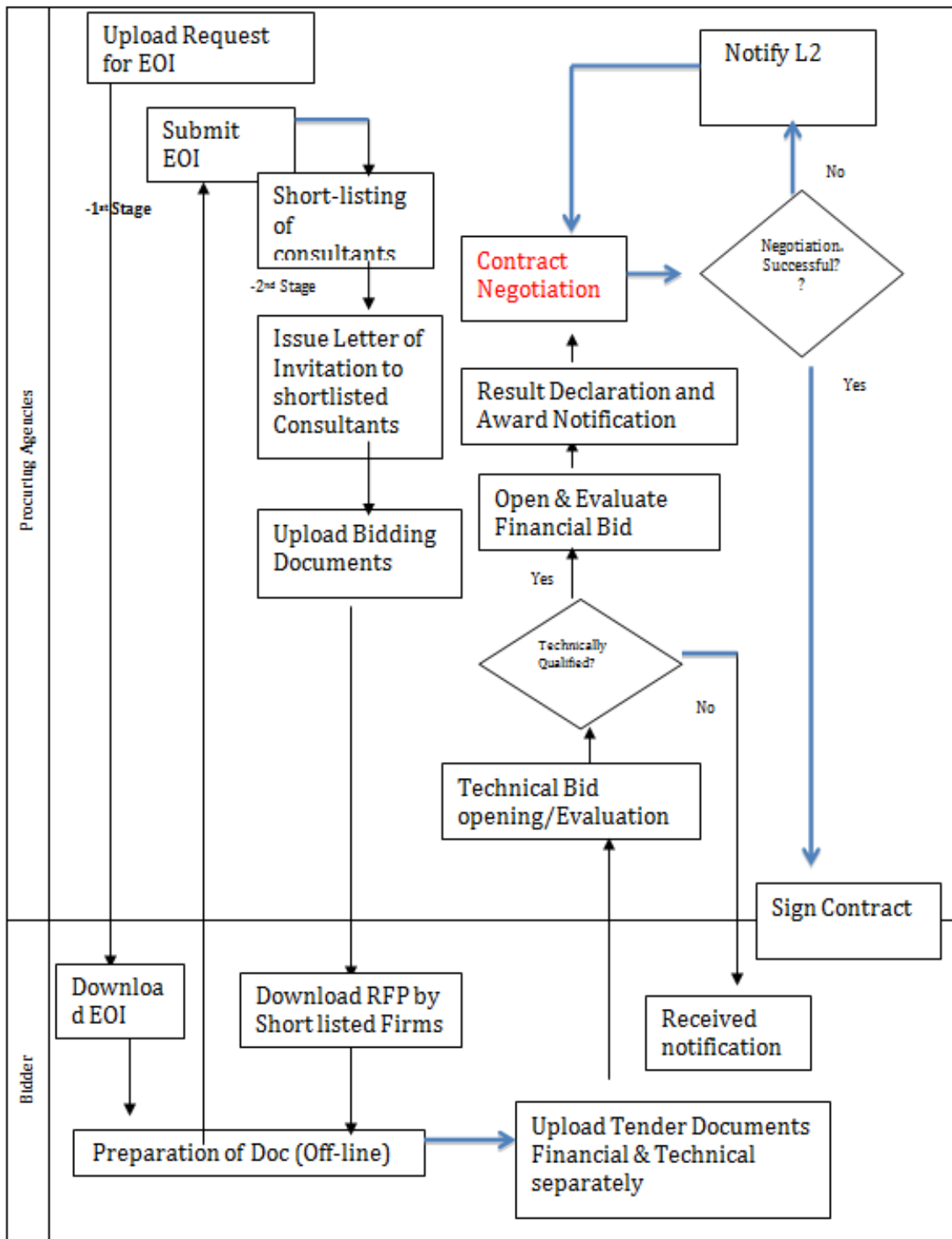


PA registration process

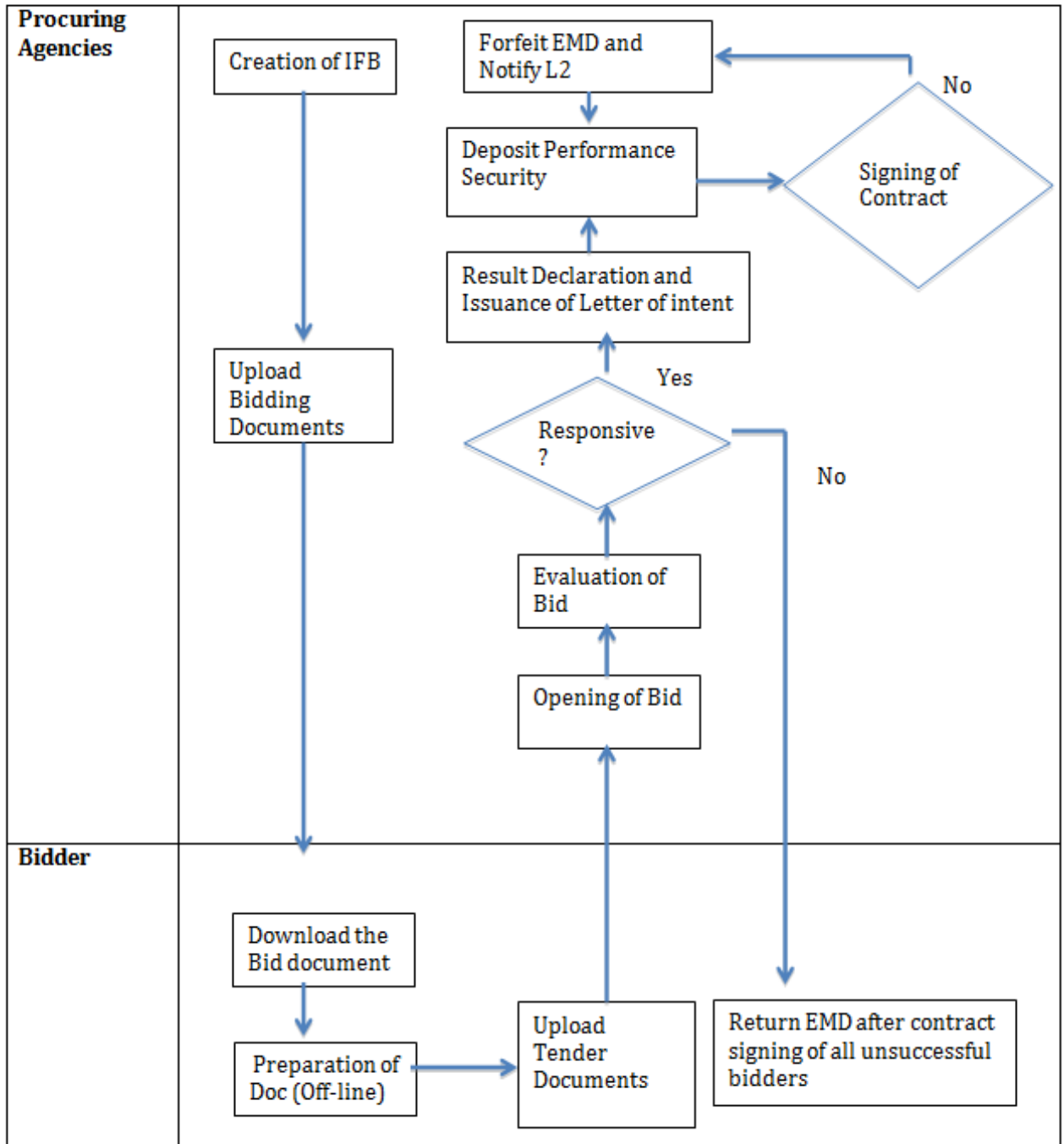
Procuring Agency Registration



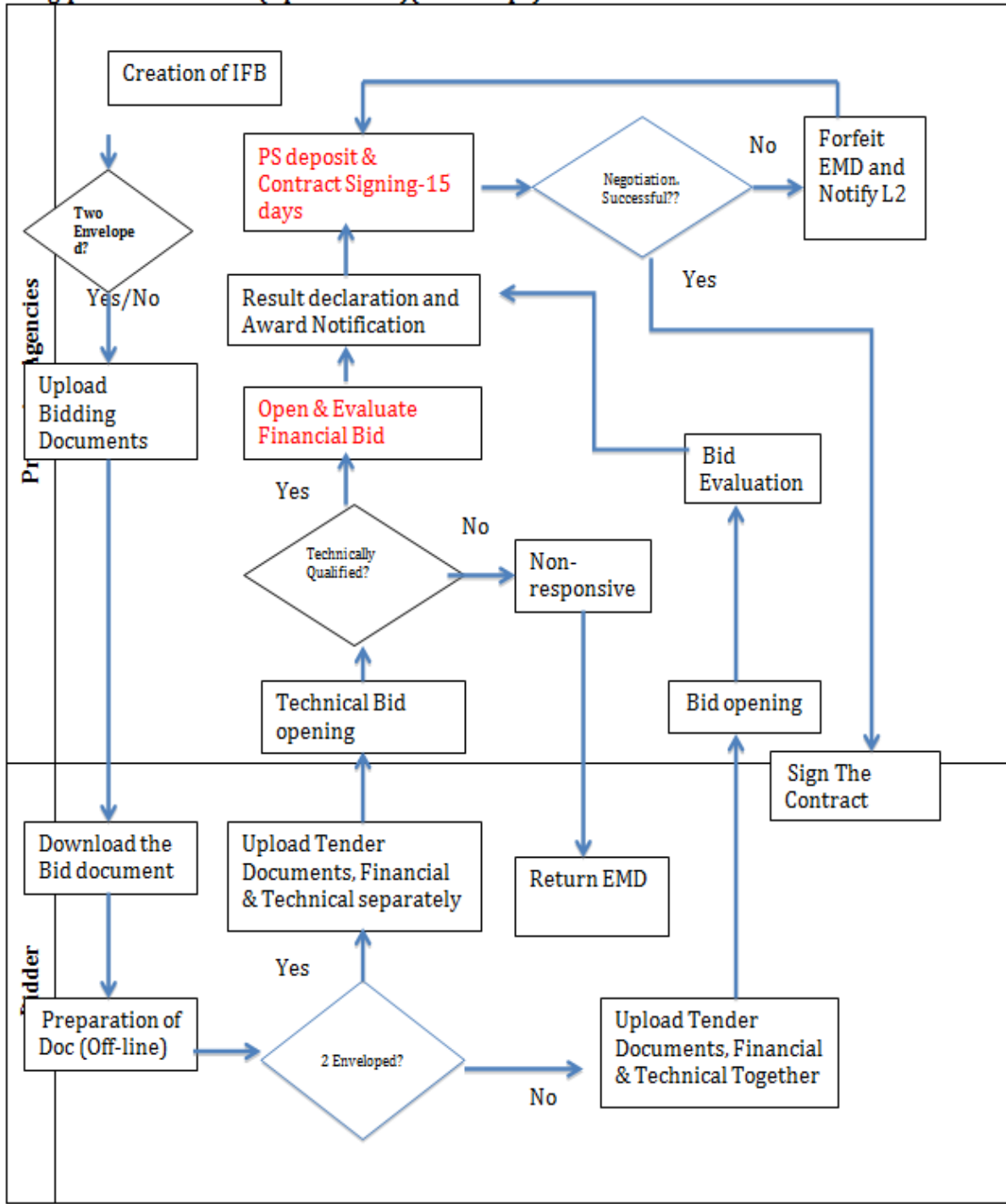
### Tendering process for Consultancy (Open Tender)



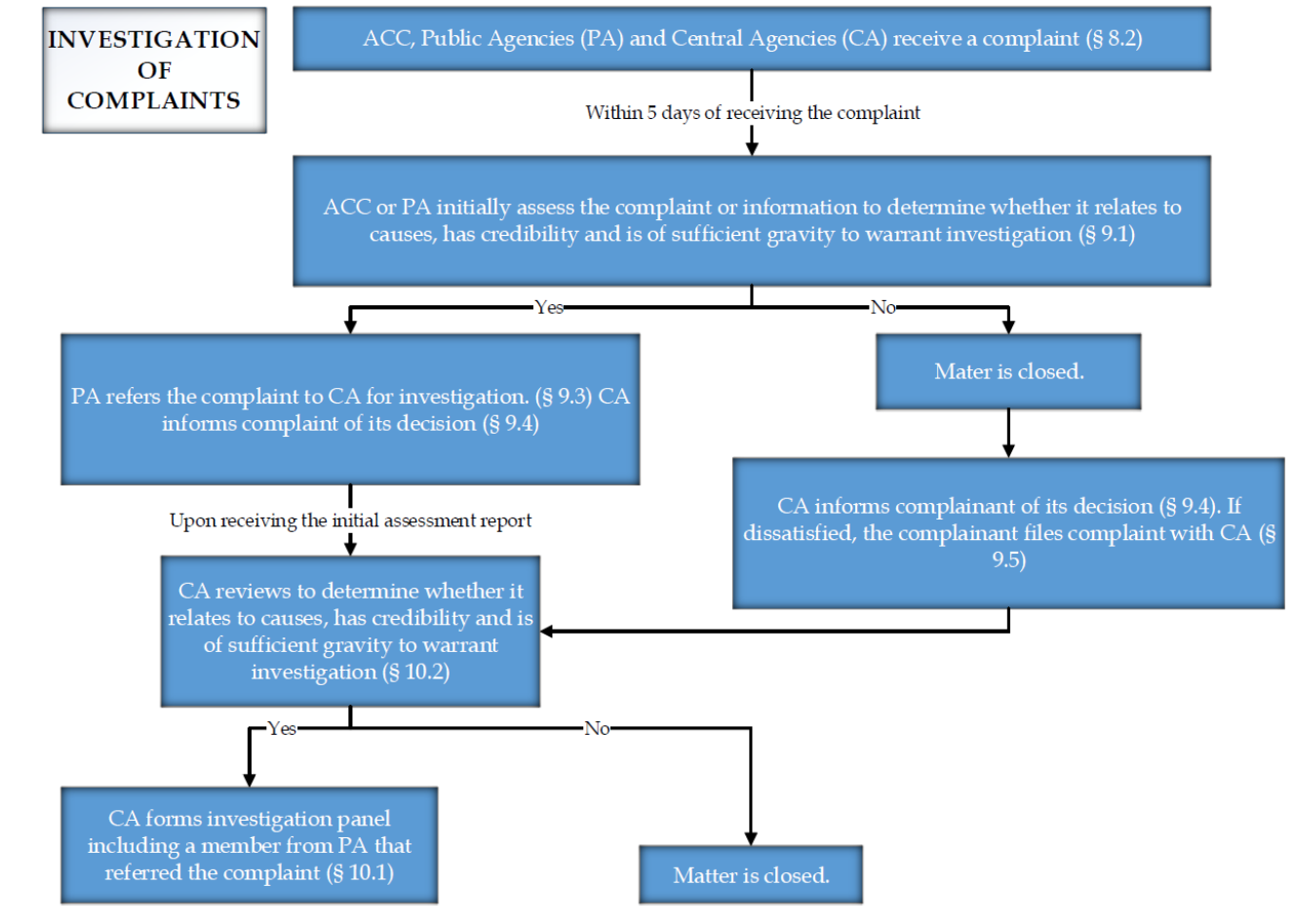
**Tendering process for Goods (Open Tender)**



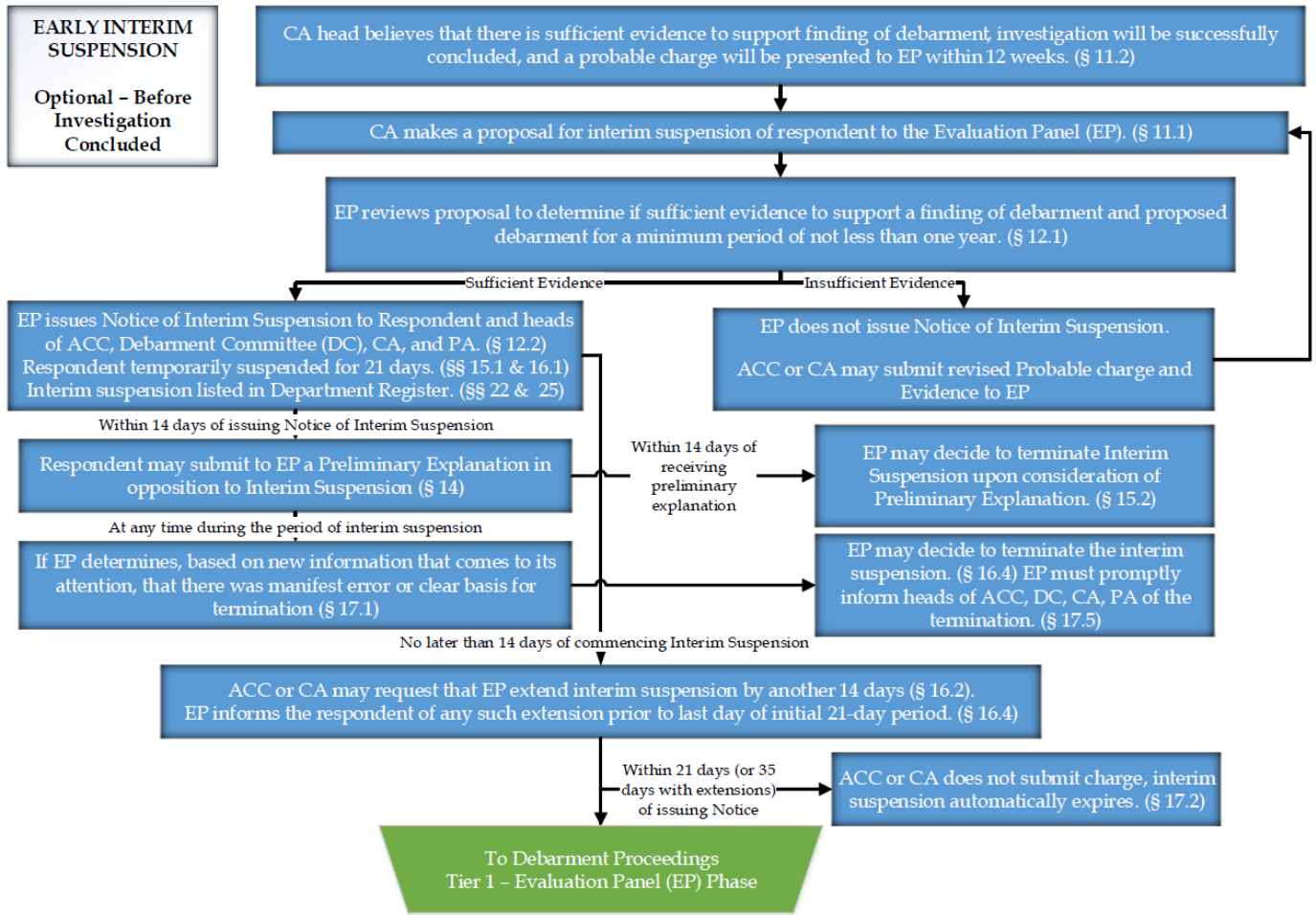
**Tendering process for works (Open Tender)(2 Envelope)**

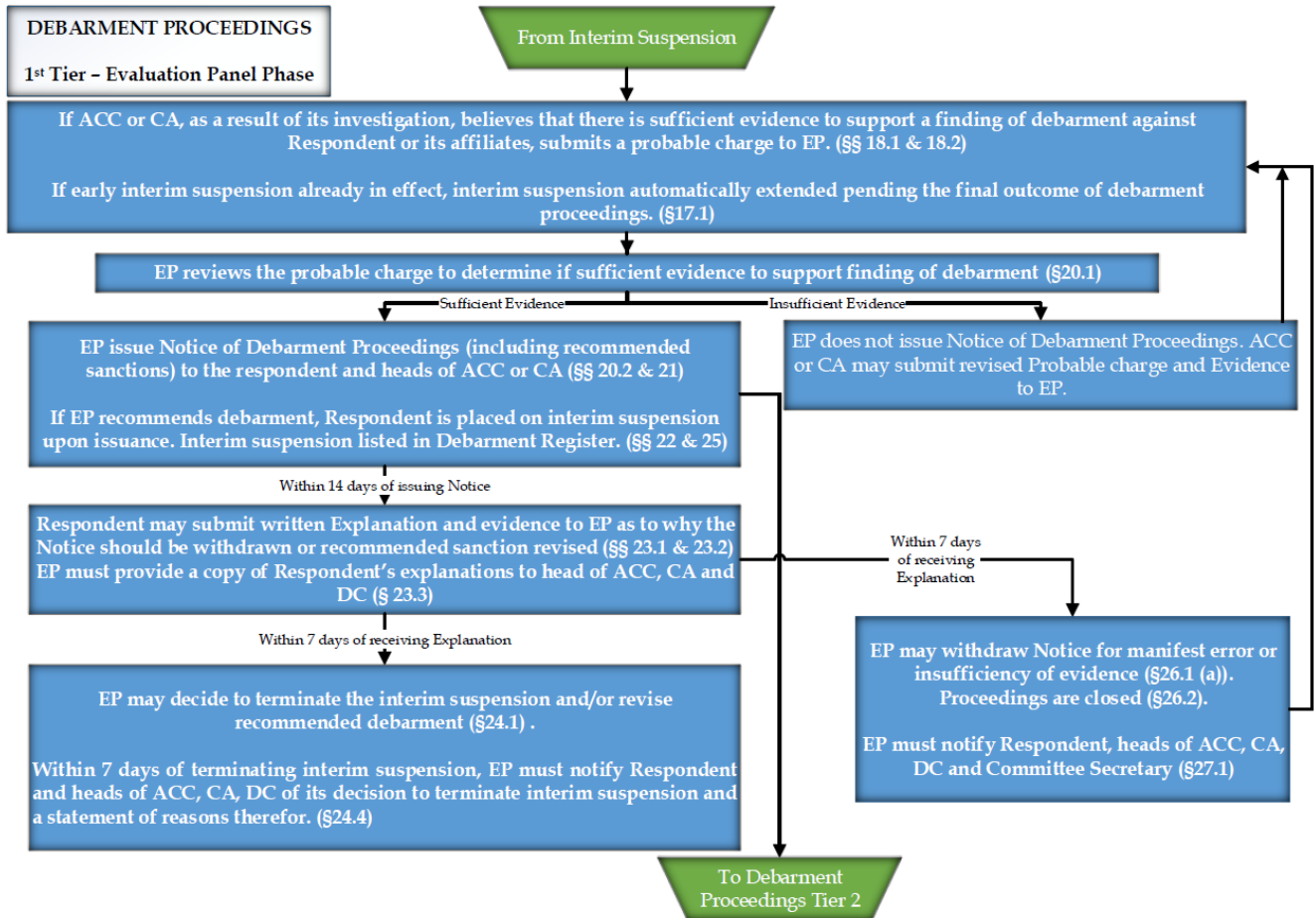


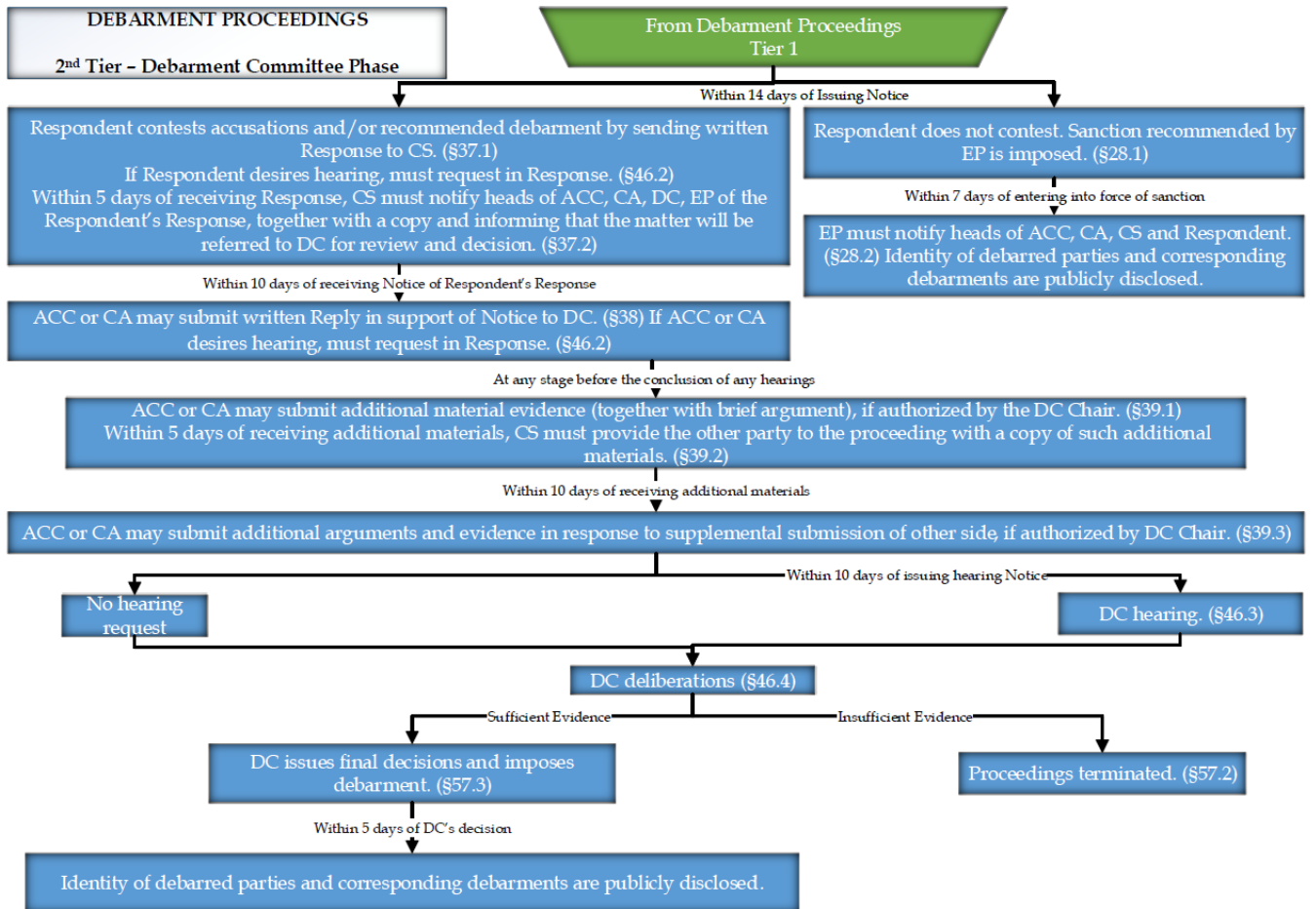
## Annexure III : Debarment Process Diagram











## Annexure IV : Annual Procurement Plan Template

### PROCUREMENT PLAN FOR WORKS AND GOODS TO BE SUBMITTED TO DNB AND PUBLICATION ON THE PA's WEBSITES

PA Name :  
Financial Year:

S/No	Description of procurement	Currency (Nu. or three easily convertible)	Estimated cost (Nu. In Millions)	Source of funding (RGOB or Donor)	Procurement method	Contract Type	PRE-QUAL (Yes or No)	INVITATION OF BIDS AND AWARD OF CONTRACTS				Contract signing date	Completion date
								Bid invitation date	Bid closing/ Opening date	Approval evaluation report date	Award notification date		
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)				(J)	(K)
1 Plan	Construction of Secretariat Building at Chubachu, MOF	110.00	110.00	RGOB	Open	Works	No	July 2015	August 2015	October 2015	October 2015	November 2015	December 2017
Actual													
2 Plan	Heavy duty Server, MOIC	7.00	7.00	ADB	Open	Goods	No	August 2015	September 2015	October 2015	October 2015	November 2015	January 2016
Actual													
3 Plan	Northern East West Highway (Semtokha-Dochula, 18KM), MOWHS	180.00	180.00	GOI	Open	Works	Yes	October 2015	November 2015	January 2016	February 2016	March 2016	September 2017
Actual													
4 Plan	X-ray machines for two referral hospitals, MOH	6.00	6.00	WHO	Open	Goods	No	November 2015	December 2015	January 2016	February 2016	February 2016	April 2016
Actual													

Approved by: Head of PA Signature :

### PROCUREMENT PLAN FOR CONSULTANCY SERVICE FOR SUBMISSION TO DNB AND PUBLICATION IN THE PAs WEBSITE

Procuring Agency Name:

Financial Year:

S/N	Description of Consultancy	Currency (In Nu. Or three easily convertible currencies)	Estimated cost (Nu. In Millions)	Source of funding (RGOB or Donor)	Selection Method	Request for Expression of Interest			Invitation of proposals and approval for award					Completion date
						Invitation of Expressions of Interest date	Closing-Opening date	Approval of shortlist	Invitation of proposals date	Submission/ opening date	Approval of final evaluation report	Notification date	Contract signing date	
1 Plan	Feasibility study of water management, NEC	2.50	2.50	ICIMOD	QCBS	August 2015	September 2015	September 2015	October 2015	November 2015	December 2015	January 2016	January 2016	June 2016
Actual														
2 Plan	Research on Bid Rigging, PPPD, MOF	3.60	3.60	World Bank	FBS	September 2015	October 2015	October 2015	November 2015	December 2015	January 2016	January 2015	February 2016	May 2016
Actual														
3 Plan	DPR, Sukoshi II, MOEA	47.50	47.50	GOI	QCBS	July 2015	August 2015	September 2015	November 2015	December 2015	February 2016	March 2016	April 2016	March 2018
Actual														

Approved by : Head of PA

Signature :

## **Annexure V: System Integration Information**

### **1. Department of Civil and Census Registration System**

- To verify the census details of the national bidders through citizenship identification number using Get Citizen Details Web Services.
- CID No/SRP No
- Name (First Name, Middle Name, Last Name)
- Dzongkhag
- Gewog
- Village,
- Household No
- Thram No

### **2. MYRB, PEMS, RAMIS (Ministry of Finance)**

- To verify approved budget for procurement planning
- For e-payment or payment transaction
- TPN Number for verification, for tax payment and validity of Tax clearance certificate
- RAMIS
- Database for RAMIS: MySQL
- Front End: Jsp, html, css and javascript
- Web server: jBoss
- MYRB & PEMS
- Front End : Dotnet 2.0, ASP c#
- Database :MS SQL 2005
- Reporting Tool : Crystal report 11

### **3. Licenses Registration System (Ministry of Economic Affairs):**

- Verification of Trade License Number.

### **4. CRPS/e-tool (CDB, Ministry of Works and Human Settlement)**

- Verification of CDB registration certificate status, CDB number.
- Front End : PHP, CSS
- Database :My SQL
- Reporting Tool : Crystal report 11

### **5. Certificate issuing agencies (BICMA, Drug Regulatory Authority/RICB/RSTA)**

- verification of registration certificate status , BICMA
- verification of registration certificate status , DRA

#### **6. Financial Institutions Association of Bhutan (FIAB))**

- Verification of certificates issued by banks. (EMD,BG,PS, Line of Credit, Cash warrant)

#### **7. Civil Service Information System (CSIS, RCSC)**

- Verification of civil servants status and details using GetCivilServant Detail web service which is exposed in the TWAN.

#### **8. Government Asset Inventory Management System**

- Front End : JAVA, PHP ,jboss
- Database : SQL

## **Annexure VI: Deliverables**

### **Deliverables:**

1. Review & Reform of PRR and SBDs.
2. Customized/Developed e-GP system as per the requirement/Specification and scope awarded in the contract;
3. Software architecture design document and customization methodology applied;
4. User requirement document;
5. Application maintenance manual and data recovery manuals;
6. Source codes for customised solution, database scripts, and any relevant documentations to the client;
7. User training and manuals
8. Monthly project status report ( Status, issues)
9. Project completion report
10. The guidelines for the role and responsibilities for different users.

### **Documentation**

The Developer shall supply and deliver full documentation on all aspects of the System including but not limited to the following:

- (a) Project Plan including Risk Management and Schedule
- (b) Progress Reports
- (c) Technical Architecture Specifications with Asset lists/records
- (d) Functional Requirement Specifications which include items such as system overview, system environment, functional hierarchy, detailed functional requirements, interface requirements, system performance requirements, system security requirements, report formats and error messages exception handling
- (e) Design Specifications, which include items such as application architecture, screen design / captures, navigation paths, report layouts, file layouts, system security design specifications, database architecture, data model, database schema, data dictionary, database design diagram, table and field definitions and description.
- (f) Installation and Implementation Plan
- (g) User Acceptance Test Plan, Package, Report

- (h) System Test Plan, Package, Report
- (i) Performance Test Plan and Report
- (j) Training Plan, Training Guide and materials
- (k) Configuration Management
- (l) Exit, Transition and Handover Plan
- (m) System Operation Manual, including system operation, database archival, configuration, database backup and recovery, etc.
- (n) Interface Design specifications which includes items such as data mapping and transformation specifications, data conversion, mapping test plans, test scenario and results
- (o) User Guide/User Operation Manual
- (p) Post Implementation Support Plan
- (q) Maintenance Plan
- (r) Transition / Exit Plan

The Developer shall maintain a copy of all the documentations and provide any other additional documentation as and when required during the contract period.

## **Annexure VII: Details on Maintenance and Support**

### **Details on Maintenance and Support**

The Developer shall provide comprehensive maintenance for all components propose.

Response time:           Within two (2) hours from the time a service call is lodged.

The Developer shall provide e-GP Maintenance and Support Services that include the following:



- (a) Ensure and support the smooth running of the entire System.
- (b) Provide corrective maintenance, troubleshoot and isolate software defects, including diagnosis and correction of all latent errors in the Application Software.
- (c) Provide interim solutions in the event while awaiting the corrective measures to correct any errors in the System.
- (d) Investigate and correct defects in the application system as reported by e-GP users within the service levels. The resolving effort includes resolving errors through developing, testing and implementing changes to the System.
- (e) Fine-tune and improve the performance of the e-GP.
- (f) Manage, support and implement, at the request of e-GP users, Service Requests, for the purpose of operational enhancements and e-GP upgrades.
- (g) Recover lost data, restore and repair damaged data and correct erroneous data to the extent possible.
- (h) Assess impact of new releases, upgrades or patches of e-GP and recommend updates or patches for production environment (eg: operating system and security patches).
- (i) Ensure that all modifications to the e-GP and Application software are properly integrated with the necessary components (hardware, software, firmware etc) and that the system performance is not degraded.
- (j) Provide solutions for problems encountered in the installation of all the software or both server and clients for the System to function properly.
- (k) Implement and operate a problem tracking system to log and track the progress of problem resolution.
  
- (l) Implement, at the request of e-GP users, software change requests, for the purpose of operational enhancements. The Developer shall prepare technical feasibility proposal including impact analysis for the e-GP change requests raised by the users.
- (m) Make modifications to the Application when requested and to perform system tests to ensure system integrity after modifications.
- (n) Ensure that all program source codes and executable codes are properly maintained (especially the versioning) and backed up.

- (o) Implement and enhance operational procedures as and when needed.
- (p) Produce ad-hoc reports when requested.
- (q) Produce and update technical and user documentation for the Application.
- (r) Monitor the Application to ensure data integrity and efficient performance and provide expert advice on applications performance monitoring and tuning.
- (s) Train personnel (with Administrator Role) on the software changes to enable them to be competent and self-reliant in the operation of the System.
- (t) Plan daily operations to ensure optimisation of resources and batch windows utilization.
- (u) Schedule and ensure successful completion of ad hoc, daily, weekly, monthly and other batch processing jobs in the System.
- (v) Provide application systems support services, including technical advice and assistance to ensure continuity, availability and accessibility of the System.
- (w) Ensure that the system operation is well protected in data security and disaster recovery.
- (x) Maintain all standards and procedures applicable to the System (e.g. generic modules or reusable component etc).
- (y) Work with Facility Management (FM) vendors and any other third parties to implement proposed procedures for back-up / recovery services, application deployment, system monitoring for the System.
- (z) Produce and update technical and user documentation on the System and Application Software.
- (aa) Attend to user queries and provide assistance to them in the operation of the System.
- (bb) Provide System briefings and support to users when needed.
- (cc) Provide advice, guidance and training to PPPD in the use of the System.
- (dd) Handle escalated Helpdesk calls where problem reported is related to the Application software and to work closely with Helpdesk to resolve all application systems problems within the service level.

- (ee) For problems pertaining to the System which require third party vendors or external organisations for troubleshooting and rectification, the Developer shall be the single point of contact and follow through with the third party vendors or other Developer appointed by PPPD and provide a feasible recommendation and solution to PPPD. These third-party vendors shall include FM vendor, or any other vendor that provides a service or product that has of relevance to the System.
- (ff) Assist Facilities Management Developer in the performance of software installation of the System and any new releases/upgrades.
- (gg) Prepare monthly progress and status report, supplementary documentation subject to review and approval by PPPD.
- (hh) The Developer shall update PPPD of all known software bugs and its problem resolution on a monthly basis or earlier if necessary.
- (ii) So long as the proposed software is in use by PPPD, the Developer shall inform PPPD, of any new releases of the application software, databases and development tools and provide information in the capabilities of the new version of the software and the impact analysis on the existing system.

## **Annexure VIII: Request management**

### **Request management**

The Developer shall implement all Service Requests raised by PPPD for the purpose of System operational enhancements such as

- (i) changes in business policy,
- (ii) to support new functionality,
- (iii) new business rules or
- (iv) for System upgrades including hardware, software and infrastructure services.

For each Service Request raised, the Developer's scope of work shall include the following but not limited to:

- (a) Make an assessment on the Service Request and submit reports to PPPD for written approval. The report shall detail the impact analysis and estimated effort required. This assessment and report will be considered as part of the operations support and therefore not chargeable;
- (b) Carry out design, programming and testing work to modify the affected System in order to meet requirements of the Service Request. Where necessary, PPPD reserves the right to request the Developer to re-test the affected System;
- (c) Ensure all modifications to the System are properly integrated with the necessary components (hardware and/or software) and that the system performance is not degraded and to ensure system and data integrity are not compromised after modifications;
- (d) Ensure all modifications to the system do not affect existing e-GP/PPPD applications;
- (e) Comply with the System Acceptance requirements;
- (f) Handover to Operations with sufficient briefings and support; and
- (g) Prepare / update all relevant technical, user or any other affected documentation to reflect changes made to the System.
- (h) Maintain the records of Service Requests, its status and relevant documentations to be produced during audits.

## Annexure IX: BACKUP AND RECOVERY

The Developer shall in his proposal submit a backup and recovery strategy and methodology for the System. The methodology shall include hardware and software used, types of backup, frequencies of backup, as well as procedures for performing the backup and recovery.

The Developer shall add and quote for any additional backup software licenses required for future expansion of the proposed servers for the System.

The Developer shall note that the System recovery shall be within 24 hours when situations arise e.g system failure. “Data” is of utmost importance and there shall be “no loss” of data at any instance. The Developer shall work out a data backup plan (including backup and restoration procedures) for all software used in the System and test it to ensure data recoverability before the commissioning of the System. The Developer shall present the test plan/results to PPPD for approval.

The detailed backup and recovery plan shall include the following areas:

- (a) Overview of backup and housekeeping strategy;
- (b) Time and resources required for backup for each of the transactions;
- (c) Detailed backup and recovery procedure;
- (d) Time and resources required for recovery for each of the transactions;
- (e) Data retention periods, frequency of backup, types of backup (such as incremental and full backup), the data to backup (such as application data files, system files);
- (f) Process of system recovery from the backups following a system failure; and
- (g) Roll-back procedures.

The data backup plan shall ensure that the backup and recovery process recovers all transactions and data up to latest data backup transaction before the system failure occurred. The transaction and database logs at the point of failure shall be backed up. As a general guideline to practice where operationally feasible:

- (a) Daily full data backup or incremental data backup shall be done on all systems for data protection and recoverability;
- (b) Minimally, weekly full backup must be done;
- (c) Minimally, six (6) generations of backup data shall be kept for the daily backup, recycled weekly;
- (d) Minimally, five (5) generations of backup data shall be kept for the weekly full backup, recycled monthly;
- (e) Minimally, twelve (12) generations of backup data shall be kept for the monthly full backup, recycled annually;

- (f) The latest backup shall be sent to government approved off-site storage on the following day for Disaster recovery. At any point in time, a full set of backup data i.e. full weekly backup plus daily incremental backup including the latest one, shall be stored at the off-site location for a full system recovery in time of need; and
- (g) Backup media lifespan must be tracked for prompt replacement of media to avoid loss of data.

The Developer shall ensure that the documentation remains up-to-date and all or any changes to the plan must be sent to PPPD for approval at least one (1) month before the changes are to be executed.

The Developer shall perform daily data backup for the System, on-site and off-site media management, and data recovery activities.

The Developer shall perform quarterly data recoverability tests to ensure the recoverability of all data stored on the backup media.

The Developer shall keep an inventory list of all backup media and conduct 6-monthly inventory checks on the backup media to ensure their completeness, clear labeling and to housekeep the obsolete media. The Developer shall present the findings to PPPD within 1 week upon the completion of check.

The Developer shall ensure that all manuals, documentation and quality records for the System (e.g. forms) are being organized/filed in a well-structured manner and kept centrally. The Developer may on the request of PPPD store the softcopy of the manuals, documentation and quality records at an off-site location identified by PPPD.

The Developer shall ensure that the backup process/operation is not run during the PPPD working hours in any month. If required to run during that period, it should not affect the system performance.

The Developer shall ensure that the System continues to operate during the period when back-up activities are running.

The System shall also provide for functions, which allows the System Administrator to perform database backup. The process of backup should be automated with user defined parameters.

The backup and recovery plan shall meet Disaster Recovery and Data storage requirements as specified in this section.

## Annexure X: Problem Management

### SERVICE LEVELS

The Developer shall ensure that all Helpdesk calls are attended to as per Service Levels defined below. Calls made outside operating hours should be routed

to a voice mail and acted upon at the start of operation hours the next working day.

The problem resolution times shall depend on the severity level of the problem. The definition of the Business Impact /Severity Levels is as follows:

<b>Business Impact / Severity Level</b>	<b>Definition</b>
Severity 1	Defect that affects the System such that required operational objectives cannot be achieved, e.g. when a program crash or “hang” and the entire System has to be restarted.
Severity 2	Defect that affects operational objectives and workaround is available. However, business can continue in a restricted manner.
Severity 3	Defect that affects a particular form of operation but does not affect any operational objectives as there may exist a temporary work around solution.

The call response time for ALL types/severity levels of problems shall be within two (2) hours of notification.

In addition to guidelines stated in the Conditions of System Maintenance and Support, the Service Level for Problem Analysis and Resolution shall be as follows:

<b>Severity Level</b>	<b>Resolution Time</b>	<b>Frequency of Status Reporting</b>
Severity 1	Within ONE (1) calendar day	Every ½ hour for problems that happens on the critical days of application peaks; otherwise, the frequency shall be every four (4) hours
Severity 2	Within THREE (3) calendar days	Daily
Severity 3	Within FIVE (5) calendar days; or within a period mutually agreed upon between the Developer and PPPD	End of problem resolution

These Service Levels shall apply to the System during implementation, system warranty and maintenance period.

In the event of changes resulting from defective products, the Developer will be responsible for incorporating the changes at no cost to PPPD. The Supplier shall be held solely liable for any time delay or damage, if such defects are not rectified. The Developer shall continue to work with the relevant parties to resolve the problem.

The Developer shall produce the consolidated report of all problems and show evidence that the overall response time and the other specified Service Levels are met. The report shall be submitted to PPPD on a monthly basis or as and when requested by PPPD.

For Severity 1 problems, the Developer shall provide in writing a preliminary report to explain the incident the following working day. Subsequently the Developer shall provide a post incident review report to explain in detail the cause of the incident, the corrective actions taken and the solutions to prevent the incident from recurring, within five (5) working days after the incident has been rectified.

For Severity 2 and 3 problems, the post incident review reports shall be submitted within five (5) working days after the incident has been rectified.

The Developer shall note that the severity of a problem may be escalated based on circumstances such as high impact to user's operations.

The Developer shall provide a mechanism and substantiate to PPPD that the Service Levels are met. There must be proper acknowledgement and monitoring of all reported defects and problems by the Developer.

The Developer shall be responsible to ensure that PPPD Representative is kept updated on the latest status of the reported defects or problems without being prompted.

In the event of any dispute on the cause of the problem, the Developer shall demonstrate and prove why the element within the scope of this Contract and/or services rendered within the scope of this Contract is not the cause of the problem.

In the event that the cause of the problem is traced back to the unsatisfactory resolution of the problem, the problem start date shall commence from the start date of the original "Problem Resolution Time".

The Developer shall schedule problem reviews to track unresolved problems and provide rectification efforts to prevent problem from reoccurring. Frequency of such reviews shall be specified by PPPD.

PPPD will review the form used by the Developer to capture the problem, and may propose its own form to use. This problem reporting form is to be submitted to PPPD once a problem is reported.

The Developer shall perform a thorough analysis of the problem which includes identification of the cause of problem, the Systems affected, the data or any loss suffered and the recommended solution.



The Developer shall maintain a master list of all the problems, including at least the ticket number, the description of the problem, the caller, and the status, etc. PPPD may request for this list at any point in time for review.

The Developer shall state the types and categories of change that are chargeable and indicate the cost involved.

The Developer shall take full ownership of all problems related to the availability of the System. In the case that the problem is traced to component(s) not supplied by the Developer, the Developer shall work with PPPD to work with Bidders or procuring agencies to ensure that the problem is resolved, within the stipulated turnaround times.

The Developer shall have a mechanism to manage problem reporting of the System during the implementation, System Warranty and maintenance periods.

The Developer shall work with all parties designated by PPPD and take whatever actions to resolve all problems and minimize system downtime.

The Developer is required to co-operate with third party vendors providing IT support services to PPPD. If necessary, the System's operations management procedures will have to be refined by the Developer to accommodate the third party systems.

For problems that require third party contractors for troubleshooting and rectification, the Developer shall follow up with the third party contractors(stakeholders like RCSC, MoF, CDB, MoEA and others).

The Developer shall have to make sure the third-party Developers' support personnel meets the corresponding service levels specified in, or are in accordance with, the current maintenance contract terms with the third-party Developers. The Developer shall obtain these service levels, as specified in the current maintenance contracts, for all the hardware and software from PPPD.

It is the responsibility of the Developer to update and provide the updated copy of the Frequently Asked Questions (FAQs) and train the Developer's Helpdesk to support the System if the problem received necessitates such a change or update.

The Developer shall prepare and update all relevant technical, user or any other affected documentation to reflect changes made to the System. Updates in documentation shall be sent to PPPD for review and approval.

A case is considered resolved when the reporting party is informed of the resolution by the Developer, but only closed upon successful completion and acceptance of User Acceptance Testing (if applicable).