



Tender For Consultancy
Service for Development,
Installation, Implementation
and Commission for
Knowledge Hub system

November 2022

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I. SECTION I: INVITATION FOR BIDDERS

Date: 20 Nov 2022

1. Private Agricultural Sector Support Trust (PASS) was established as a project in the year 2000 by the Governments of Tanzania and Denmark to stimulate growth in private sector commercial agriculture and related sectors through Access to finance. It was registered in the year 2007 as a non-profit making and non-governmental organization under the Trustees Incorporation Act, 2002 and is registered as a charitable organization. PASS invites sealed bids from registered and reputable suppliers of the following goods and services:-
2. The Knowledge Hub is an online databank that provides farmers with Access to up-to-date information related to the agricultural sector. The databank will host all sorts of data and information on agriculture as per PASS Trust focus areas. It will contain data on soils, weather patterns, crops distribution, production levels, and records on fishing, animal husbandry, information on markets, as well as financing matters including PASS interventions in the industry.
3. This request for proposal has been addressed to all qualified firms as per the qualification requirement stated in this tender document.
4. A firm will be selected under the quality and cost-based Selection Method (QCBS) and procedures describe in the tender document.
5. A complete set of Tendering Documents in English and an additional set may be obtained by interested Tenderers on the PASS Trust's website.
6. The deadline for submission of the tender is 10th December 2022. Late Tenders, Partial Tenders, shall not be accepted for evaluation irrespective of the circumstances.

Managing Director

Private Agricultural Sector Support Trust (PASS Trust)

1 SECTION II: INSTRUCTIONS TO TENDERERS

A. Introduction

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| 1. | Scope of Tender | 1.1 | PASS Trust invites Tenderers for the supply and installation of information systems as specified in the TDS and Technical Specifications. |
| | | 1.2 | The successful Tenderer will be expected to supply and install the information system within the period stated in the TDS from the start date specified in the TDS. |
| 2. | Source of Funds | 2.1 | PASS Trust has set aside funds for the operations during the Financial Year indicated in the TDS. It is intended that part of the proceeds of the funds will be applied to cover eligible payments under the contract for the supply and installation of information systems as described in the TDS. |
| 3. | Eligible Tenderers | 3.1 | A Tenderer may be natural persons, companies, or firms or public or semi-public agencies of Tanzania and foreign countries, subject to ITT sub-Clause 3.4 or any combination of them with a formal intent to agree or under an existing agreement in the Form of a joint venture, consortium, or association. In the case of a joint venture, consortium, or association, all members shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The joint venture, consortium, or association shall nominate a Lead Member who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture, consortium, or association during the tendering process and, in the event the joint venture, consortium, or association is awarded the Contract, during contract execution. Unless specified in the Tender Data Sheet , there is no limit on the number of members in a joint venture, consortium, or association. |
| | | 3.2 | The Lead Member shall at this time of contract award confirm the appointment by submission of a Power of Attorney to the Procuring Entity. |
| | | 3.3 | Any Tender from a joint venture, consortium or association shall indicate the part of the proposed contract to be performed by each party and each party shall be evaluated or post qualified concerning its |

contribution only and the responsibilities of each party and shall not be substantially altered without the prior written approval of the Procuring Entity.

34. The invitation for Tenders (IFT) is open to all suppliers.
35. A Tenderer shall not have a conflict of interest. All Tenderers found to have a conflict of interest shall be disqualified. A Tenderer may be considered to have a conflict of interest with one or more parties in this bidding process if they:
- have controlling shares in common;
 - receive or have received any direct or indirect subsidy from any of them;
 - have the same legal representative for purposes of this Tender;
 - submit more than one Tender in this bidding process.
36. A Tenderer may be ineligible if –
- the Tenderer is declared bankrupt or, in the case of company or firm, insolvent;
 - payments in favor of the Tenderer is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting, in accordance with the national laws, in the total or partial loss of the right to administer and dispose of its property;
 - legal proceedings are instituted against such Tenderer involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property; or
 - the Tenderer is convicted, by a final judgment, of any offense involving professional conduct.
37. Tenderers shall provide to the Procuring Entity evidence of their eligibility, proof of compliance with the necessary legal, technical and financial requirements.

and their capability and, adequacy of resources to carry out the contract effectively.

3.10 Tenderers shall provide such evidence of their continued eligibility satisfactory to the Procuring Entity, as the Procuring Entity shall reasonably request.

4. **Eligible Information Systems and Services**

4.1 All supplies and related installations to be made under the contract shall have their origin in eligible source countries, and all expenditures made under the contract will be limited to such goods and services. For purpose of this Tender, ineligible countries are stated in the TDS.

4.2 For the purposes of these Tendering Documents, the Information System means all:

(a) the required information technologies, including all information processing and communication-related hardware, software, supplies, and consumable items that the Supplier is required to supply and install under the Contract, plus all associated documentation, and all other materials and goods to be supplied, installed, integrated, and made operational (collectively called "the Goods" in some clauses of the ITT); and

(b) the related software development, transportation, insurance, installation, customization, integration, commissioning, training, technical support, maintenance, repair, and other services necessary for proper operation of the Information System to be provided by the selected Tenderer and as specified in the Contract.

4.3 For purposes of this clause, "origin" means the place where the Information Systems are produced, manufactured, or processed, or through manufacture, processing, or assembly, and other commercially recognized article results that differ substantially in its basic characteristics from its imported components or the place from which the related services are supplied.

4.4 The nationality of the firm that produces, assembles, distributes, or sells the Information Systems and services shall not determine their origin.

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| | | 4.5 | If so required in the TDS, the Tenderer shall demonstrate that it has been duly authorized by the manufacturer of the Information Systems to supply in the United Republic of Tanzania, the goods and services indicated in its Tender. |
| | | 4.6 | To establish the eligibility of the supplier of Information Systems and related services the Tenderer should fill the Country-of-origin declarations in the price schedule including the Tender Forms. |
| 5 | One Tender per Tenderer | 5.1 | A firm shall submit only one Tender, in the same bidding process, either individually as a Tenderer or as a partner in a joint venture. |
| | | 5.2 | No firm can be a subcontractor while submitting a Tender individually or as a partner of a joint venture in the same tendering process. |
| | | 5.3 | A firm, if acting in the capacity of a subcontractor in any Tender, may participate in more than one Tender but only in that capacity. |
| | | 5.4 | A Tenderer who submits or participates in more than one Tender (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the Tenders in which the Tenderer has participated to be disqualified. |
| 6 | Cost Bidding | 6.1 | The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and PASS Trust will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process. |

B. The Tendering Documents

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| 7. | Content of Tendering Documents | 7.1 | In addition to the IFT, the Tendering Documents are those stated below and should be read in conjunction with any addenda issued in accordance with ITT. |
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Section II- Instructions to Tenderers (ITT)

Section III - Tender Data Sheet (TDS)

Section IV- Bids Submission form

Section IV- Terms of references

- 7.2 The number of copies to be completed and returned with the Tender is specified in the TDS.
8. **Clarification of Tendering Documents**
- 8.1 A prospective Tenderer requiring any clarification of the Tendering Documents shall contact PASS Trust in writing or in electronic forms that provide a record of the content of communication at PASS Trust's address indicated in the TDS before the deadline for the submission of Tenders prescribed in ITT sub-Clause 23.1.
- 8.2 PASS Trust will, within three (3) working days respond in writing or in electronic forms that provide a record of the content of communication to any request for clarification provided that the request is received no later than fourteen (14) days before the deadline for submission of Tenders.
- 8.3 Copies of PASS Trust's response will be forwarded to all prospective Tenderers, including a description of the inquiry, but without identifying its source.
- 8.4 Should PASS Trust deem it necessary to amend the Tendering Documents as a result of a clarification, it shall do so following the procedure under ITT
9. **Amendment of Tendering Documents**
- 9.1 Before the deadline for submission of Tenders, PASS Trust, for any reason, whether at its initiative or in response to a clarification requested by a prospective Tenderer, may modify the Tendering Documents by issuing addenda.
- 9.2 Any addendum including the notice of any extension of deadline issued shall be part of the Tendering Documents pursuant to sub-Clause 8.1 and shall be communicated in writing or in electronic forms that provide a record of the content of communication to all who have obtained the Tendering Documents directly from PASS Trust. Prospective Tenderers shall acknowledge receipt of each addendum in writing or in electronic forms that provide a record of the content of communication PASS Trust.
- 9.3 To allow prospective Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, PASS Trust, at its discretion, may extend the deadline for the submission of Tenders, pursuant to ITT 19.2.

C. Preparation of Tenders

10. Language of Tender

The Tender prepared by the Tenderer, as well as all correspondence and documents relating to the Tender exchanged by the Tenderer and PASS Trust shall be written in the language specified in the TDS. Supporting documents and printed literature furnished by the Tenderer may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the TDS, in which case, for purposes of interpretation of the Tender, the translation shall govern.

11. Documents Constituting the Tender

The Tender prepared by the Tenderer shall constitute the following components:

- a) Form of Tender and a Price Schedule completed in accordance with ITT Clauses 15, 16, and 17;
- b) Documentary evidence established in accordance with ITT Clause 14 that the Tenderer is eligible to Tender and is qualified to perform the Contract if its Tender is accepted;
- c) Documentary evidence established in accordance with ITT Clause 14.3(a) that the Tenderer has been authorized by the manufacturer to supply Information Systems in the United Republic of Tanzania, when required and where the supplier is not the manufacturer of those Information Systems;
- d) Documentary evidence established in accordance with ITT Clause 13 that the Information Systems and ancillary services to be supplied by the Tenderer are eligible Information Systems and services and conform to the Tendering Documents;
- e) Written Power Attorney authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT Clause 21;

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| <p>12. Documents Establishing Eligibility of Information Systems and Related Installations and Conformity to Tendering Documents</p> | <p>(12.1) Pursuant to ITT Clause 12, the Tenderer shall furnish, as part of its Tender, documents establishing the eligibility and conformity to the Tendering Documents of all supplies, information systems and related installations which the Tenderer proposes to supply under the contract.</p> <p>(12.2) The documentary evidence of the eligibility of the Information Systems and related installation shall consist of a statement in the Price Schedule of the country of origin of the Information Systems and services offered which shall be confirmed by a certificate of origin issued at the time of shipment.</p> <p>(12.3) The documentary evidence of conformity of the Information Systems and related installations to the Tendering Documents may be in the form of literature, drawings, and data and shall consist of:</p> <ul style="list-style-type: none"> a) a detailed description of the Tenderer's essential technical and performance characteristics of the Information Systems conforming in all material aspects with the Technical Requirements of these Tendering Documents, as well as in regard to the essential technical and performance characteristics of each component making up the proposed Information System; b) an item-by-item commentary on PASS Trust's Technical Specifications and/or Technical Requirements, demonstrating substantial responsiveness of the Information System and related services to those specifications and/or requirements, or a statement of deviations and exceptions to the provisions of the Technical Specifications; c) a written confirmation that the Tenderer accepts responsibility for the successful integration and interoperability of all components of the Information System as required by the Tendering Documents; |
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- 12.4 The required documents and other accompanying documents must be written in English. In case any language than other English has used the pertinent translation into English shall be attached to the original version.
- 13. Documents Establishing Eligibility and Qualifications of the Tenderer**
- 13.1 Pursuant to ITT Clause 12, the Tenderer shall furnish, as part of its Tender, documents establishing the Tenderer's eligibility to Tender and its qualifications to perform the contract if its Tender is accepted.
- 13.2 The documentary evidence of the Tenderer's eligibility to Tender shall establish to PASS Trust's satisfaction that the Tenderer, at the time of submission of its Tender, is from an eligible country as defined under ITT Clause 4.
- 13.3 The documentary evidence of the Tenderer's qualifications to perform the contract if its Tender is accepted shall establish to PASS Trust's satisfaction:
- a) that, in the case of a Tenderer offering to supply Information Systems under the contract which the Tenderer did not manufacture or otherwise have Copyright in, the Tenderer has been duly authorized by the Information Systems Manufacturer or copyright/licence owner to supply the Information Systems or components of it in the United Republic of Tanzania;
 - b) the Tenderer has the financial, technical, and production capability necessary to perform the Contract, meets the qualification criteria specified in the TDS, and has a successful performance history in accordance with criteria specified in the TDS. If a pre-qualification process has been undertaken for the Contract, the Tenderer shall, as part of its Tender, update any information submitted with its pre-qualification.
- 14. Form of Tender**
- 14.1 The Tenderer shall fill the Form of Tender furnished in this Tendering Documents. The Form of Tender must be completed without any alterations to its format and no substitute shall be accepted.

15. Tender Prices

15.1 Unless otherwise specified in the Technical Specifications, Tenderers shall quote for the entire Information System on a "single responsibility" basis such that the total Tender price covers all the Supplier's obligations mentioned in or to be reasonably inferred from the Tendering Documents in respect of the supply and installation of the information systems. This includes all requirements under the Supplier's responsibilities for testing, pre-commissioning, and commissioning of the Information System and, where so required by the Tendering Documents, the acquisition of all permits, approvals, and licenses, etc.; the operation, maintenance, and training services and such other items and services which may be needed for the continued and proper operation of the System as may be specified in the Tendering Documents. Items against which no price is entered by the Tenderer will not be paid for by PASS Trust when executed and shall be deemed to be covered by the prices for other items.

15.2 Tenderers are required to quote the price for the commercial, contractual, and technical obligations outlined in the Tendering Documents.

15.3 Tenderers shall give a breakdown of the prices in the manner and detail called for in the Price Schedules. Where no Price Schedules are included in the Tendering Documents, Tenderers shall present their prices in the following manner:

Separate numbered schedules shall be used for each of the following elements. The total amount from each schedule (1 to 4) shall be summarized in a Grand Summary (Schedule 5) giving the total Tender price(s) to be entered in the Tender Form.

Schedule No. 1: Information Systems Goods (including Mandatory Spare Parts and software licenses) Supplied from Abroad

Schedule No. 2: Information Systems Goods (including Mandatory Spare Parts and software licenses) Supplied

from within the United Republic of Tanzania

- Schedule No. 3 Local Transportation
- Schedule No. 4 Installation Services
- Schedule No. 5 Grand Summary (Schedule Nos. 1 to 4)
- Schedule No. 6 Recommended Spare Parts and Software

154 In the Schedules, Tenderers shall give the required details and a breakdown of their prices as follows:

- (a) Information System Goods to be supplied from abroad (Schedule No. 1) shall be quoted on DDP-named place of destination as specified in TDS. **Note:** The named place destination shall be the site(s) where the information system will be installed. If it is different from the site of installation (project site) it shall be clearly stated in the TDS;
- (b) Information System Goods manufactured or developed within the United Republic of Tanzania (Schedule No. 2) shall be quoted on an EXW (ex-factory, ex works, ex warehouse or off-the-shelf, as applicable) basis and shall be inclusive of all costs as well as duties and taxes paid or payable on components and raw materials incorporated or to be incorporated in the System;
- (c) Local transportation to the named place of destination, as specified in TDS, insurance, and other services incidental to delivery of the Information Systems including any local taxes for transportation services payable in the United Republic of Tanzania as of twenty-eight (28) days prior to the deadline for submission of Tenders. (Schedule No. 3).

[**Note:** When the named place of destination is the project site, the transportation costs for Schedule No. 1 items are covered under DDP and therefore

will not be stated here. This schedule will cover only items in Schedule No.2. If the named place of destination is different from the site of installation (project site), then the transport cost from the named place of destination to project site for Schedule No.1 shall be also included here.]

- (d) Installation Services shall be quoted separately (Schedule No.4) and shall include rates or prices for all labor, contractor's equipment, temporary tools, materials, consumables, and all matters and things of whatsoever nature, including operations and maintenance services, the provision of operations and maintenance manuals, training, etc., where identified in the Tendering Documents, as necessary for the proper execution of the Installation Services and proper and continued functioning of the Information System during the warranty period specified in the Contract, including all taxes, duties, levies, and charges payable in the United Republic of Tanzania up of twenty-eight (28) days before the deadline for submission of Tenders.
- (e) Recommended spare parts and Recommended Software(s) shall be quoted separately (Schedule 6) as specified in either subparagraph (a) or (b) above in accordance with the origin of the spare parts and/or software.

15.5 The prices shall be in accordance with one of the following alternatives, as specified in the TDS:

- a) Fixed Price. Prices quoted by the Tenderer shall be fixed during the Tenderer's performance of the contract and not subject to variation on any account. A Tender submitted with an adjustable price quotation will be treated as non-responsive and rejected.

16. **Tender Currencies**

16.1 Prices shall be quoted in the following currencies:

- a) For Information Systems covered under ITT sub-Clause 16.4 (b) to be supplied from within the

United Republic of Tanzania the price shall be quoted in Tanzanian shillings unless otherwise specified in the TDS.

- b) For Information Systems covered under ITT sub-Clause 16.4 (a) to be supplied from abroad the Tender price shall be quoted in the freely convertible currency of another country. If the Tenderer wishes to be paid in a combination of amounts, it may quote its price accordingly but use no more than three foreign currencies.

16.2 The rates of exchange to be used by the Tenderer in arriving at the local currency equivalent and the proportions mentioned in sub-Clause 17.1 above shall be the selling rates for similar transactions established by the authority specified in the TDS prevailing on the date 28 days prior to the latest deadline for submission of Tenders. If the Tenderer uses other rates of exchange, the provisions of ITT Clause 32 shall apply. In any case, payments will be computed using the rates quoted in the Tender.

16.3 Tenderers shall indicate details of their expected foreign currency requirements in the Tender.

16.4 Tenderers may be required by PASS Trust to clarify their foreign currency requirements and to substantiate that the amounts included in Lump Sum and in the contract are reasonable and responsive to sub-Clause 17.1.

17. Tender Validity Period

17.1 Tenders shall remain valid for the period specified in after the Tender submission deadline prescribed by PASS Trust, pursuant to ITT Clause 19. A Tender valid for a shorter period shall be rejected by PASS Trust as non-responsive.

17.2 In exceptional circumstances, prior to the expiry of the original Tender validity period, PASS Trust may request that the Tenderers extend the period of validity for a specified additional period. The request and the Tenderers' responses shall be made in writing or in electronic form that provide a record of the content of the communication.

- 17.3 In the case of fixed-price contracts, if the award is delayed by a period exceeding sixty (60) days beyond the expiry of the initial tender validity period, the contract price will be increased by a factor specified in the request for an extension. The Tender evaluation shall be based on the Tender price without taking into consideration on the above correction.
18. **Format and Signing of Tender** 18.1 Unless stated on TDS The Tenderer shall prepare an original and the number of copies of the Tender indicated in the TDS, clearly marking each "ORIGINAL" and "COPY," as appropriate. In the event of any discrepancy between them, the original shall prevail.
- 18.2 The original and the copy or copies of the Tender shall be typed or written in indelible ink and shall be signed by the Tenderer or a person or persons duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the TDS and shall be attached to the Tender. The name and position held by such person signing the authorization must be typed or printed below the signature. All pages of the Tender, except for unamended printed literature, shall be initialed by the person or persons signing the Tender.
- 18.3 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person or persons signing the Tender.
- 18.4 The Tenderer shall furnish information as described in the Form of Tender on commissions or gratuities, if any, paid or to be paid to agents relating to this Tender and to contract execution if the Tenderer is awarded the contract.

D. Submission of Tenders

19. **Deadline for Submission of Tenders** 19.1 Tenders shall be received by PASS Trust at the address specified no later than the date and time specified in the TDS.

19.2 PASS Trust may, in exceptional circumstances and at its discretion, extend the deadline for the submission of Tenders by amending the Tendering Documents in accordance with which case all rights and obligations of PASS Trust and Tenderers previously subject to the deadline will thereafter be subject to the new deadline.

20. Late Tenders

20.1 PASS Trust shall not consider for evaluation any Tender that arrives after the deadline for submission of Tenders.

20.2 Any Tender received by PASS Trust after the deadline for submission of Tenders shall be declared late, rejected, and returned unopened to the Tenderer.

E. Opening and Evaluation Tenders

21. Technical Evaluation

21.1 PASS Trust will carry out a detailed evaluation of the Tenders previously determined to be substantially responsive to determine whether the technical aspects are in accordance with the requirements outlined in the Tendering Documents and the terms of reference. To reach such a determination, PASS Trust will examine and compare the technical aspects of the Tenders based on the information supplied by the Tenderers, considering the following factors:

(a) Overall completeness and compliance with the Technical Requirements; deviations from the Technical Requirements as identified in the Tender and those deviations not so identified; suitability of the System offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function, and operation of any process control concept included in the Tender. The Tender that does not meet minimum acceptable standards of completeness, consistency, and detail will be rejected for non-responsiveness.

(b) the detailed Tender evaluation using the same standards for compliance determination in confirms that the Tenders are commercially and technically responsive, and include the hardware, software, related equipment, products, materials,

and other Goods and Services components of the Information System in substantially the full required quantities for the entire Information System.

- (c) They, other Information Technologies that are proven to perform up to the standards promised in the Tender by having successfully passed the performance benchmark and/or functionality tests PASS Trust may require,
- (d) any other relevant factors, that PASS Trust deems necessary or prudent to take into consideration.

F. Award of Contract

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| 22. Award Criteria | <p>22.1. PASS Trust will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tendering based on Documents, quality, and price, provided that such Tenderer has been determined to be:</p> <ul style="list-style-type: none"> (b) <u>is determined to be qualified to perform the Contract satisfactorily; and</u> (c) <u>successful negotiations have been concluded if any.</u> |
| 23. Negotiations | <p>23.1. Negotiations may be undertaken ranking first proposal based on quality and cost of evaluated Tender relating to the following areas:</p> <ul style="list-style-type: none"> a) <u>a minor alteration to the technical details of the statement of requirements;</u> b) <u>reduction of quantities for budgetary reasons, where the reduction is more than any provided for in the solicitation documents;</u> c) <u>a minor amendment to the special conditions of Contract;</u> d) <u>finalizing payment arrangements;</u> e) <u>delivering arrangements;</u> f) <u>the methodology; or</u> g) <u>clarifying details that were not apparent or could not be finalized at the time of bidding.</u> |

- 23.3 Where negotiation fails to result into an agreement, PASS Trust may invite the next ranked Tenderer for negotiations. Where negotiations are commenced with the next ranked Tenderer, PASS Trust shall not reopen earlier negotiations.
- 24. PASS Trust Right to Accept Any Tender and to Reject Any or All Tenders**
- 24.1 PASS Trust reserves the right to accept or reject any Tender and to annul the bidding process and reject all Tenders at any time before contract award, without thereby incurring any liability to the affected Tenderer(s).
- 24.2 Notice of the rejection of all Tenders shall be given promptly to all Tenderers that have submitted bids.
- 24.3 PASS Trust shall upon request communicate to any Tenderer the grounds for its rejection of its Tenders but is not required to justify those grounds.
- 25. Notification of Award**
- 25.1 Before awarding of the contract, the Procuring Entity shall issue a notice of intention to award the contract to all tenderers who participated in the tender in question giving them fourteen (14) days within which to submit complaints to the Procuring Entity (if any).
- 25.2 Where no complaints have been lodged, the Tenderer whose Tender has been accepted will be notified of the award by the Procuring Entity before the expiration of the Tender validity period in writing or electronic form that provide a record of the content of the communication. The Letter of Acceptance will state the sum that the Procuring Entity will pay the successful tenderer in consideration for the execution of the scope of works as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

- 25.3 The notification of award will constitute the formation of the Contract.
- 25.4 If, after notification of award, a Tenderer wishes to ascertain the grounds on which its Tender was not selected, it should address its request to the Procuring Entity. The Procuring Entity will promptly respond in writing to the unsuccessful Tenderer.
26. **Signing Contract**
- 26.1 Promptly after notification, Procuring Entity shall send the successful Tenderer the agreement and Special Conditions of Contract, incorporating all agreements between the parties obtained as a result of Contract negotiations.
- 26.2 Within twenty-eight (28) days of receipt of the Form of Contract the successful Tenderer shall sign and date the Contract Agreement and return it to PASS Trust.

2 SECTION III TENDER DATA SHEET

The following Tender-specific data for the Supply and Installation of Information Systems to be procured shall amend and/or supplement the provisions in the Instructions to Tenderers (ITT). Whenever there is a conflict, the provisions herein shall prevail over those in the ITT.

TDS Clause	ITT Clause	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
A: INTRODUCTION		
1.	1.1	Name of the Procuring Entity: Private Agricultural Sector Support Trust (PASS) The subject of procurement is a consultancy service for Development, Installation, Implementation, and Commission for Online Credit Guarantee and business development service.
	1.2	Period for the supply of information system: 4 Months Commencement date: Within Two Weeks after signing the Contract
2.	2.1	The financial year for the operations of the Procuring Entity: 2021 Name and identification number of the Contract: TENDER for Tender for Consultancy Service for Development, Installation, Implementation, and Commission for Online Credit Guarantee and Business Development System
3.	3.1	The maximum number of members in the joint venture, consortium, or association shall be: 2 members
4.	4.1	Ineligible country(ies) is or are: None
	4.3	Demonstration of authorization by manufacturer: Required
B: THE BIDDING DOCUMENTS		
5.	7.4	Number of Copies shall be: One electronic copy
6.	8.1	The period before the deadline for submission of bids for the Bidders to request clarifications: 7 days

TDS Clause	ITF Clause	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
C- PREPARATION OF TENDERS		
7	03	
	12	<p>Must be a registered legal entity</p> <p>Interested Consultants should provide information demonstrating that they have the required qualifications (Project Manager with at least Master's degree in relevant field, and at least 10 years of experience in project Management, System developer with at least 8 years of experience, system analyst with at least 8 year of experience, database expert with at least 10 years, and system integrator with at least 8 years of experience)</p> <p>Must submit at least 3 similar experiences (provide name, description of the assignment, contract prices, and contact address of Client served) projects that has been undertaken in agricultural value chain and of similar in nature shall add advantage.</p> <p>Must submit the recent audited financial statement for the last 3 years.</p> <p>Submit details technical proposal as detailed in the section III of the bid document.</p>

TDS Clause	ITT Clause	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
9.	13.3 (b)	As stated in the TOR document.
10.	15.4(a)	The DDP destination city is Dar es Salaam.
	15.4(c)	The place of destination is Dar es Salaam
	15.5	The price shall be fixed.
11.	16.1 (a)	For Information Systems and related services originating in the United Republic of Tanzania the currency of the Tender shall be Tanzanian Shillings or other freely convertible currency.
12.	17.1	The Tender validity period shall be 90 days.
13.	18.1	Technical proposal and financial proposal shall be zipped under one folder and named after tender name.
	18.2	Written confirmation of authorization is 'Power of Attorney'
D. SUBMISSION OF TENDERS		
14	19.1 (a)	For Tender submission purposes only, the Procuring Entity's address is: MANAGING DIRECTOR, Private Agricultural Sector Support Trust (PASS) P.O. Box 9094, Dar es Salaam Submission is strictly online through PASS Trust Portal. To submit your application, log onto the website, under the same tender name, and click the APPLY NOW button to upload and submit your proposal. Only the shortlisted/awarded bidders will be contacted. the time and date of submission 1600 hours local time 10 th December 2022 16:00hrs.

3 SECTION III: BIDS SUBMISSION FORMS

3.1 Technical Proposal - Standard Forms

(Provide guidance to the shortlisted Consultants for the preparation of their Technical Proposals; they should not appear on the Technical Proposal(s) to be submitted)

Refer to Reference Paragraph 3.4 of the Data Sheet for the format of Technical Proposal to be submitted, and paragraph 3.1 of Section 2 of the RFP for Standard Forms required and a number of pages recommended.

- TECH-1: Technical Proposal Submission Form
- TECH-2: Consultant's Organization and Experience
 - A. Consultant's Organization
 - B. Consultant's Experience
- TECH-3: Comments or Suggestions on the Terms of Reference and on Counterpart Staff and Facilities to be provided by the Client
 - A. On the Terms of Reference
 - B. On the Counterpart Staff and Facilities
- TECH-4: Description of the Approach, Methodology, and Work Plan for Performing the Assignment
- TECH-5: Team Composition and Task Assignments
- TECH-6: Curriculum Vitae (CV) for Proposed Professional Staff
- TECH-7: Staffing Schedule
- TECH-8: Work Schedule

3.1.1

3.1.2 FORM TECH-1: Technical Proposal Submission Form

Date: _____

To: [Name and address of Client]

Dear Sirs

We, the undersigned, offer to provide the consulting services for _____
_____ [Insert title of assignment] in accordance with your Request for Proposal dated
_____ [Insert Date] and our Proposal. We are hereby submitting our Proposal,
which includes this Technical Proposal and a Financial Proposal sealed under a separate
envelope.

We are submitting our Proposal in association with [Insert a list with full name and
address of each associated Consultant].

We hereby declare that all the information and statements made in this Proposal
are true and accept that any misinterpretation contained in it may lead to our
disqualification.

If negotiations are held during the period of validity of the Proposal, i.e., before
the date indicated in Paragraph Reference 1.12 of the Data Sheet, we undertake to
negotiate based on the proposed staff. Our Proposal is binding upon us and subject to the
modifications resulting from Contract negotiations.

We undertake, if our proposal is accepted, to initiate the consulting
services related to the assignment not later than the date indicated in Paragraph
Reference 7.2 of the Data Sheet.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature [In full and initials] _____

Name and Title of Signatory: _____

Name of Firm: _____

Address: _____

3.1.3 FORMTECH-2: Consultant's Organization and Experience

3.1.3.1 A—Consultant's Organization

[Provide here a brief (two pages) description of the background and organization of your firm/entity and each associate for this assignment.]

3.1.3.2 B - Consultant's Experience

[Using the format below, provide information on each assignment for which your firm and each associate for this assignment, was legally contracted either individually as a corporate entity or as one of the member companies within an association, for carrying out consulting services similar to the ones requested under this assignment. Use 20 pages.]

Assignment Name:	Approx. value of the contract (in current US Dollars):
Country: Location within country:	Duration of assignment (months):
Name of Client:	Total No. of staff-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in current US Dollars):
Start date (month/year): Completion date (month/year):	No. of professional staff-months provided by associated Consultants:
Name of associated Consultants, if any:	Name of the senior professional staff of your firm involved and functions performed (indicate

	most significant parties such as Project Director/Coordinator, Team Leaders;
Narrative description of Project:	
Description of actual services provided by your staff within the assignment:	

Firm's _____

Name _____

3.1.4 FORMTECH-3: Comments and Suggestions on the Terms of Reference and Counterpart Staff and Facilities to be provided by the Client

3.1.4.1 A - On the Terms of Reference:

[Present and justify here any modifications or improvement to the Terms of Reference you are proposing to improve performance in carrying out the assignment (such as deleting some activity you consider unnecessary, or adding another, or proposing a different phasing of the activities). Such suggestions should be concise and to the point, and incorporated in your Proposal.]

3.1.4.2 B - On Counterpart Staff and Facilities

[Comment here on counterpart staff and facilities to be provided by the Client according to Paragraph Reference 1.4 of the Data Sheet, including administrative support, office space, local transportation, equipment, data, etc.]

3.1.5 FORMTECH-4: Description of Approach, Methodology, and Work Plan for Performing the Assignment

(For small or very simple assignments, the Client should omit the following text in Italic)

[Technical approach, methodology, and work plan are key components of the Technical Proposal. You are suggested to present your Technical Proposal (50 pages, inclusive of charts and diagrams) divided into the following three chapters:

- a) Technical Approach and Methodology;*
- b) Work Plan; and*
- c) Organization and Staffing.*

a) Technical Approach and Methodology. In this chapter, you should explain your understanding of the objectives of the assignment, approach to the services, a methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. You should highlight the problems being addressed and their importance, and explain the technical approach you would adopt to address them. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.

b) Work Plan. In this chapter, you should propose the main activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the Client), and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing an understanding of the TOR and the ability to translate them into a feasible working plan. A list of the final documents, including reports, drawings, and tables to be delivered as final output, should be included here. The work plan should be consistent with the Work Schedule of Form TECH-8.

c) Organization and Staffing. In this chapter, you should propose the structure and composition of your team. You should list the main disciplines of the assignment, the key expert responsible, and the proposed technical and support staff.

3.1.8 FORM TECH-8: Team Composition and Task Assignments

Professional Staff				
Name of Staff	Firm	Area Expertise	Positions Assigned	Task Assigned

3.1.7 FORM TECT-6 Curriculum Vitae (CV) for Proposed Professional Staff

1. **Proposed Position** (entry your candidate shall be recommended for each position): _____

2. **Name of Firm** (insert the name of the firm proposing the staff): _____

3. **Name of Staff** (insert full name): _____

4. **Date of Birth:** _____ **Nationality:** _____

5. **Education** (indicate college/university and other specialized education of staff member, giving names of institutions, degrees obtained, and dates of attainment): _____

6. **Membership of Professional Associations:** _____

7. **Other Training** (indicate significant training since degree under 5 - Education were obtained): _____

8. **Countries of Work Experience:** (List countries where the staff has worked in the last ten years): _____

9. **Languages** (For each language indicate proficiency: good, fair or poor in speaking, reading, and writing): _____

10. Employment Record (Starting with present position, list in reverse order every employment held by staff member since graduation, giving for each employment, last actual time before date of employment, name of employing organization, position held.)

From (Year): _____ To (Year): _____

Employer: _____

Positions held: _____

<p>11. Detailed Tasks Assigned</p> <p><i>{List all tasks to be performed under this assignment}</i></p>	<p>12. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned</p> <p><i>{Among the assignments in which the staff has been involved, indicate the following information for those assignments that best illustrate staff capability to handle the tasks listed under part 11.}</i></p> <p>Name of assignment or project: _____</p> <p>Year: _____</p> <p>Location: _____</p> <p>Client: _____</p> <p>Main project features: _____</p> <p>Positions held: _____</p>
--	--

	Activities performed: <hr style="border: 0.5px solid black;"/>
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13. Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

_____ Date: _____
(Signature of a staff member or an authorized representative of the staff) Day/Month/Year

Full name of the authorized representative: _____

3.1.8 FORM TECH-7: Staffing Schedule

N ^o	Name of Staff	Staff input (in the Form of a bar chart) ¹												Total staff-month input					
		1	2	3	4	5	6	7	8	9	10	11	12	X	Home	Field ²	Total		
Foreign																			
1		Home																	
		Field																	
2		Home																	
		Field																	
3		Home																	
		Field																	
		Home																	
		Field																	

FIN-1 Financial Proposal Submission Form

FIN-2 Summary of Costs

FIN-3 Breakdown of Costs by Activity

FIN-4 Breakdown of Remuneration

FIN-5 Reimbursable expenses

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FORM FIN-1: Financial Proposal Submission Form

[Location, Date]

TO [Insert Name and Address of Client]

Dear Sirs:

We, the undersigned, offer to provide the consulting services for [insert title of assignment] in accordance with your Request for Proposal dated [insert Date] and our Technical Proposal. Our attached Financial Proposal is for the sum of [insert amount] in words and figures. This amount is exclusive of the local taxes, which shall be identified during negotiations and shall be added to the above amount.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to the expiration of the validity period of the Proposal, i.e. before the date indicated in Paragraph Reference 1.12 of the Data Sheet.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature (in full and initials): _____

Name and Title of Signatory: _____

Name of Firm: _____

Address: _____

3.2.2 FORM FIN-2: Summary of Costs

	Costs
--	-------

	(Indicate Foreign Currency # 1)	(Indicate Foreign Currency # 2)	(Indicate Foreign Currency # 3)	(Indicate Local Currency)

1. Indicate between brackets the name of the foreign currency. Maximum of three currencies; use as many columns as needed, and delete the others.
2. Indicate the total costs, net of local taxes, to be paid by the Client in each currency. Such total costs must coincide with the sum of the relevant Subtotals indicated in all Forms FIN-3 provided with the Proposal.

3.2.3 FORM FIN-3: Breakdown of Costs by Activity³

Group of Activities (Phase) ¹	Description ²			
	Costs			
Cost component	(Indicate Foreign Currency # 1)	(Indicate Foreign Currency # 2)	(Indicate Foreign Currency # 3)	(Indicate Local Currency)
Remuneration ³				
Reimbursable Expenses ⁴				
Subtotals				

1. Form FIN-3 shall be filled at least for the whole assignment. In case some of the activities require different modes of billing and payment (e.g. the assignment is phased, and each phase has a different payment schedule), the Consultant shall fill a separate Form FIN-3 for each group of activities. For each currency, the sum of the relevant Subtotals of all Forms FIN-3 provided must coincide with the Total Costs of Financial Proposal indicated in Form FIN-2.
2. Names of activities (phase) should be the same as, or correspond to, the ones indicated in the second column of Form FIN-2.
3. Short description of the activities whose cost breakdown is provided in this Form.
4. Indicate between brackets the name of the foreign currency. Use the same columns and currencies of Form FIN-2.
5. For each currency, Remuneration and Reimbursable Expenses must respectively coincide with relevant Total Costs indicated in Forms FIN-4 and FIN-5.

3.2.5 FORM FN-5: Breakdown of Reimbursable Expenses

Group of Activities (Phase): _____								
N ^o	Description ¹	Unit	Unit Cost ²	Quantity	(Indicate Foreign Currency # 2) ³	(Indicate Foreign Currency # 2) ³	(Indicate Foreign Currency # 2) ³	(Indicate Local Currency) ⁴
	Per diem allowances	Day						
	International flights ⁵	Trip						
	Miscellaneous travel expenses	Trip						
	Communication costs between (insert place) and (insert place)							
	Drafting, reproduction, or							
	Equipment, instruments, materials, supplies, etc.							
	Shipment of	Trip						
	Use of							
	Laboratory tests							
	Subcontracts							
	Local							
	Office rent, clerical assistance							
	Training of the Client's personnel							
Total Costs								

1. Form FN-5 should be filled for each of the forms FN-3 provided, if needed;
2. Delete items that are not applicable or add other items according to Paragraph Reference 3b of the Data Sheet;
3. Indicate unit, cost and currency;
4. Indicate between brackets the name of the foreign currency. Use the name definition and characteristics of Form FN-2. Indicate the unit of each reimbursable item in the column of the relevant currency: Unit = Unit Cost x Quantity;
5. Indicate the route of each flight, and if the trip is one- or two-ways;
6. Only if the training is a major component of the assignment, defined as such in the TOR.

4 SECTION IV: TERMS OF REFERENCES (TOR)

1.1. The agricultural sector is pivotal to the economy of Tanzania and holds great promise for economic growth. The agricultural sector share to GDP is about 27.5 percent, employing more than 65 percent of the labour force and generating about 24.7 percent of the foreign exchange earnings from exports of goods in 2020. Climate change risks lower crop yields and can lead to unpredictable droughts, natural disasters, and disease outbreaks. These drivers make the future of agriculture look more uncertain. This uncertainty calls for a more forward-looking analysis and projection of trends. Therefore, national agricultural planning and decisions must be based on quality real-time information.

1.2. In a resource-constrained world, information and communication technologies (ICTs) offer exceptional opportunities for improving agricultural development by ensuring efficient and integrated food systems all along the value chain. This involves designing, developing, and applying innovative technologies, including digital technologies in agriculture. Precision and intelligent farming systems and other modern technologies, data analysis, the Internet of Things, and digital innovations have great potential to help farmers in Tanzania produce food more sustainably. Tanzania, however, is facing some challenges towards digital transformation; small family farms dominate the farming sector with unequal access to knowledge, markets, conditions, and opportunities for innovation. This situation is further exacerbated by fragmented information systems and platforms making planning on a national level difficult.

1.3. This document is a Business Requirements Document (BRD), which outlines the requirements for the PASS digitalization project. It contains both functional and non-functional requirements, an overview of the current process, to be system and technical specifications.

2. Background of the Project

2.1. The governments of Tanzania and Denmark established the Private Agricultural Sector Support (PASS) Trust in November 2000. It became operational in 2001 to increase private commercial farming and agribusiness growth. From the outset,

PASS was established as a project facility. In 2007, PASS was registered as an autonomous corporate body under the trustee laws of Tanzania.

2.2 PASS offers a range of Business Development Services (BDS) and agri-financial services in agriculture development. The content of BDS services provided includes feasibility studies and business plans for prospective bank clients, farmer groups formation, farmers, and agribusinesses capacity building (training), facilitating contract farming and other market linkages, linking guaranteed beneficiaries with other development partners and commercial enterprises in the provision of specialized BDS services such as good agricultural practices (GAP) and extension services.

2.3 PASS also provides credit guarantees for de-risk lending of loans to the agricultural sector by 15 collaborating banks in Tanzania. PASS wishes to extend its credit guarantees to de-risk lending through digital platforms by both Banks and Mobile Network Operators (MNO's).

4.1 Theory for change



3. Project Scope

- 3.1. The PASS Knowledge Hub is a new product that builds upon and complements the business development services PASS already provides. The Knowledge Hub is an online databank that provides farmers with Access to up-to-date information related to the agricultural sector. The databank will host all sorts of data and information on agriculture as per PASS Trust focus areas. It will contain data on soils, weather patterns, crop distribution, production levels, and records on fishing, animal husbandry, information on markets, and financing matters, including PASS interventions in the industry.
- 3.2. Given the PASS beneficiaries' profile, some may not be able to access the data bank through the internet but rather through mobile telephone calls. PASS shall establish a call centre with two (2) staff and a dedicated toll-free telephone number to cater to this. The call center staff shall access the databank in real-time and instantly respond to the beneficiary's queries. The queries may range from Good Agricultural Practices to Access to Markets, finance, etc.
- 3.3. It is envisioned that the databank will be helpful not only to targeted beneficiaries but also to a variety of other users such as researchers, potential investors in the sector, financial services providers, and other stakeholders to whom the information may be relevant. PASS shall also be able to document all lessons learned in the implementation of its program and share them with the general public.
- 3.4. The knowledge hub is a crucial avenue where PASS can create awareness of climate change and environmental challenges and inspire smallholder farmers of green solutions, technologies, and approaches.
- 3.5. The Knowledge Hub is an online databank that provides farmers with Access to up-to-date information related to the agricultural sector. The databank will host all sorts of data and information on agriculture as per PASS Trust focus areas. It will contain data on soils, weather patterns, crops distribution, production levels, and records on fishing, animal husbandry, information on markets, as well as financing matters, including PASS interventions in the industry.

- 3.6. PASS establishes a knowledge hub, an online databank collecting information on the agricultural sector. The knowledge hub will be the basis for providing digital business development support to farmers with focus on green solutions and increasing banks' awareness of farming practices.
- 3.7. Therefore, PASS Trust seeks qualified firm (s) to design, develop and implement the knowledge hub Management system. The Knowledge Hub will be an online databank that provides farmers Access to up-to-date information related to the agricultural sector. The System will be integrated with various data sources that enable farmers to make day-to-day agricultural value chain decisions. The data sources will include those related to access to finance, marketing, agriculture input, agronomy data, weather, crop distribution, crop calendar, soil, fishing, and animal husbandry. The System will be accessible over the internet using multiple devices and, on the features, phones using the USSD method.
- 3.8. The System shall have various dashboards and modules, including Access to the market, finance, farming information, personal information, weather information, and knowledge management. The System should be able to show the service nearby, including extension officers, Input, and Access to market/finance. The System shall be built to integrate the Tanzania farming calendar, mapped based on location and crop types.
- 3.9. The System shall be built to contain dashboards that provide insight into the information mapped from a different source; the dashboard shall provide information to enable the user to answer the common questions directly.
- 3.10. The System shall also be built to ensure integration into the various data sources, including the government data sources and other public sources that chain to aid users in making informed decisions on their day-to-day activities.
- 3.11. The System will be integrated into data sources that contain both structured and unstructured including satellites and drone imaging and process such data to produce a timely decision that improves yield and minimize losses due to unpredictable changes in weather.

- 2.12. The System should be embedded with analytics capabilities such as Investigative (discovery), descriptive (aggregation), predictive (outcomes), and prescriptive (available options). The System must be able to answer common questions such as at the time of planning for the growing season, the farmer takes into account key agronomy inputs, including the long-term weather forecast (when do I plant my crops?), grain price forecast from futures -markets (what crops do I plant?), availability of new agriculture technology, including quality seeds and agrochemicals such as pesticides, herbicides, and insecticides (what technologies do I use to maximize my yields?)
- 2.13. The System should also have a farm calculator that takes into consideration customs input like land acreage, Access to irrigation, labor, location, and other resources combined with another agronomy factor to produce specific decisions for a particular farmer.
- 3.14. The System shall be able to generate various reports in standard formats depending on the user category. The report shall have the ability to be scheduled and shared automatically and electronically.
- 3.15. The System shall be accessed through web browsers, USSD, and mobile applications. It shall allow users to register and access custom dashboards based on other locations, crops and allow the users to receive a specific insight for day-to-day decision-making.
- 2.16. The System shall be able to pull data from various sources, including through API and other forms of data sharing and processing, to provide relevant and timely insight to the users.
- 2.17. The System shall be developed with ability to accommodate IoT and digital enterprise applications, products, solutions, and services through a graphical user interface instead of traditional text-oriented programming.
- 3.18. The programming language must be a full-stack platform that enables secure, reliable, scalable, and high-performance applications with near-zero coding efforts, from device protocol parsing to pixel-level UI customization.
- 2.19. The System must be built in high availability. In distributed architecture, the vendor shall propose the deployment

mechanism that suits the demand of the security performance and availability of the System.

- 3.20. The System shall have roles-based access rights that allow various users to access the System.
- 3.21. The vendors shall develop standards API for the data sources that will be integrated in the future.
- 3.22. The knowledge hub will pull information from other organizations and so integration will be needed between PASS and other organizations.
- 3.23. Insight to answer a question related to crop calendars such as pre-cultivation (land selection, calendar definition, Access to credit), crop cultivation and harvesting information (pest management, water management & fertilizers, input management, land preparation and sowing) post harvests information such as transport, packaging, and food processing)
- 3.24. System must be developed to support among others the ISO 8000 data quality exchange standard.
- 3.25. Web-based Application system responsive to any browser and device independent that can be accessed over the internet or Secured VPN
- 3.26. Easy-to-use interface, Minimum yet secured login procedure, and mobile-friendly interfaces.
- 3.27. The System shall be designed to incorporate analytics capabilities and provide investigative, predictive, and prescriptive information to intended stakeholders.
- 3.28. It has an inbuilt integration capability for data aggregation from multiple sources. The system shall accommodate both heterogeneous and homogenous integration capabilities by accepting data from various sources.
- 3.29. The system shall give a real-time summary of various data as captured and processed by the System. System shall have a consolidated overview of different Key Performance areas.
- 3.30. The dashboard shall provide various summaries in the Form of Charts and graphical presentations, with a direct link to detailed analytical reports.

- 3.31. Reports shall be designed in well-defined formats and presentations that aim at providing drill-down information for decisions making, analysis, monitoring and evaluation. Reports shall be available for printing in pdf and further extraction in csv, text, xml, and other data formats.
- 3.32. Administration module shall include roles, how to set access permissions, how to create groups, users & objects such as Documents/attachments accessibility and manipulations.
- 3.33. System shall be configured as a multilevel and multiservice integration environment, supplied with flexible and multiple mechanisms for interchanging, sharing and integrating data.
- 3.34. The APIs for this database solution will be designed to support interoperability, ensure easy integration with any system, solution or application built on same platform or cross-platform. Built with open standards i.e. SOAP, XML and JSON, these API based Web Services will be available for seamless integration with custom applications.
- 3.35. The need for security must be weighed against the ability for authorized personnel to have quick Access to information.
- 3.36. An Audit trail that records which users have accessed which information and what modifications if any, they have made.
- 3.37. Workflow to route data electronically to the appropriate person or group based on standard rules and procedures.
- 3.38. Application-level security is handled by proactively controlling Access to the System's features, functionalities, and data to implement the user privileges. Authentication on Login, Role-based Access, encryption of user credentials and data security be implemented.
- 3.39. Data Security on Validation input for length, range, format, and type using constrain, reject, and sanitize principles.
- 3.40. SQL Injection vulnerabilities for an attack on database will be implemented for Parameterized APIs for data access will be used.
- 3.41. Session management control functionality will be implemented through a centralized session management control.

- 3.42. For effective prevention of SQL injection vulnerabilities, application will have monitoring feature of database activity on the network.
- 3.43. Database System shall support standard RDBMS e.g. MYSQL, MS-SQL, server, Oracle, etc. and have built-in parallelism, Backup & Recovery feature, Disaster Recovery Feature, recovery for tables, rows accidentally deleted, Queue Mechanism to transfer data across to other database, Database Administrator.
- 3.44.
- 3.45. The supported RDBMS will have fault tolerance, parallel processing, linear scalability, mixed workload capability, recovery, real-time capability, manageability, advice to tune the query, query estimation time features along with end-to-end parallel processing capabilities. Database will also allow parallelism for all operations like loading query, database administration/management operations like backup, restore, creation & updates of index, creation & refresh of materialized views etc.
- 3.46. Database will support dynamic clustering and will provide horizontal scalability in such a manner that a new database node can be added (or removed) dynamically, as and when required in future, without disturbing the normal functioning of production system such as without shutdown.
- 3.47. Database will have provisioning for active-active clustering (for future use) with objectives of scalability and availability. The supported RDBMS will also support option of different partitioning schemes within the database to split large volumes of data into separate pieces or partitions, which can be managed independently. The partitioning should enhance the performance, manage huge volumes of data and should provide foundation for Information Life Cycle Management (ILM).
- 3.48. Database level storage management mechanism will be configured, which will enable availability by means of creating redundancy, automatically balance the data files across the available disks, i/o balancing across the available disks for the database for performance, availability and management.