EoI Reference No.: EIII/64(6) /Revamp/2021

Expression of Interest (EoI) for

Selection of System Integrator for

Design, Development, Implementation and Maintenance of Foreign Trade Statistics System for

DGCIS

Directorate General of Commercial Intelligence and Statistics
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February, 2023

Contents

1. Letter of Invitation

The Directorate General of Commercial Intelligence and Statistics (DGCIS), M/o Commerce and Industry, invites prospective & eligible participants for their Expression of Interest (EoI) for "Selection of a System Integrator for Design, Development, Implementation and Maintenance of Foreign Trade Statistics System".

DGCIS desires to leverage the state-of-the-art technologies to revamp and modernize its entire IT systems which includes its FTSS software, its website, dashboard, Business Intelligence Module, data dissemination portal, its mobile app as well as the associated hardware infrastructure. In order to execute the same, DGCIS desires to conduct the selection of the System Integrator in two steps. The first step would constitute soliciting proposals on Expression of Interest (EoI), which is an openly advertised competitive shortlisting process giving equal opportunity to all interested bidders to be considered for shortlisting. In this step bidders would be shortlisted on the basis of their responses to the EoI. In the next step, the Request For Proposal (RFP) would be shared with the shortlisted agencies and a bidder will be selected amongst them, as per the QCBS criteria mentioned in the RFP document, as the System Integrator for this project.

Interested Service Providers who meet the pre-qualification criteria may furnish their Expression of Interest with all the necessary documents on or before the date and time

mentioned in the Critical Dates sub-section of this section **through the Central Procurement Portal** (https://eprocure.gov.in) **only.**

1.1. Single Point of Contact person

Bidders are required to direct all communications related to this EoI, through the nominated Single Point of Contact (SPOC) person, mentioned below:

Name: Shri Srijan Acharya	**Email ID:** s[dot]acharya[dot]dgcis[at]gov[dot]in
Designation: Deputy Director	**Contact number**: 98737 25055

1.2. Critical Dates

Sl. No.	Critical Dates	Date	Time
1.	Publishing Date	21.02.2023	As per CPP portal
2.	**EoI Submission End Date**	**14.03.2023**	**18:00 Hrs**
3.	EoI Opening Date	15.03.2023	11:00 Hrs

The EoI document download start date is same as the Publishing Date. The document download end date is same as the Submission End Date. Bid Submission Start Date is same as the Publishing Date.

2. Introduction

The Directorate General of Commercial Intelligence and Statistics (DGCIS), M/o Commerce and Industry, is the premier organisation for compilation and dissemination of all trade related statistics of India. For this task, over time, it has created a Data Centre (DC) and a Data Recovery (DR) centre and has been implementing IT solutions for day-to-day work through the FTSS software package developed and maintained by its own officers. It also has a number of channels for dissemination of information such as the website, Data Dissemination Portal, the Exim Analytics Dashboard, and the mobile app -DGCIS Exim.

2.1. Project Background

In light of the current advancements in terms of Open-Source Technologies and applications of emerging technologies, the Directorate General of Commercial Intelligence and Statistics (DGCIS) desires to revamp its present IT system.

The major focus areas of this initiative concerning digital transformation of DGCIS' IT system are to re-develop its legacy Foreign Trade Statistics System (FTSS) application in Open-Source Technologies, migrate its databases from Oracle to PostgreSQL or any other Open-Source Relational Database system, migrate all its legacy applications to Open-Source Technologies, host all or some of its applications and databases to any MeitY empanelled cloud, and incorporate Artificial Intelligence / Machine Learning principles while modifying / redeveloping its application, The key rationale behind this initiative is to make the IT Systems cloud-ready, futuristic, more efficient, secure, cost effective and up to date.

2.2. Project Objectives

DGCIS intends to select a System Integrator (SI) for the re-development of its legacy Foreign Trade Statistics System (FTSS) application in Open-Source technologies, migrate its existing databases from Oracle to an open-source database system, host all or some of its other applications and databases in any MeitY empanelled cloud, and incorporate Artificial Intelligence / Machine Learning principles while modifying / redeveloping its application, **without compromising on the efficiency and security aspects of the applications and databases**. The contract duration would be for a period of 5 years (15 months for Development and Go-Live + 45 months of Operations & Maintenance) on TCO basis with the following objectives and envisaged outcomes that the Service Integrator has to ensure throughout the contract period. The contract shall be renewable for two (02) more years after expiry of five years on mutually agreed terms.

✓ Establish effective and efficient Infrastructure monitoring & management practices to ensure reliability, availability, quality of services and security of the Information systems in on-premises as well as cloud environment
✓ Design and Develop the Foreign Trade Statistics System (FTSS) application in Open-Source Technology (Java and Python) stack
✓ Procure, Supply, install, commission, maintain, manage and support the IT infrastructure required for the DC site and DR-backup
✓ Procuring, setting up, installation, configuration, management of application servers, database servers/storage in the cloud environment.
✓ Incorporate/adhere the security and Interoperability guidelines, i.e., MeitY guidelines for safety and security norms, during the contract
✓ Ensure compliance to the audits and the observations of regulatory bodies.
✓ Observe best practices required to Operate, Maintain, Manage, Support and Service

It is expected that the SI should give its best performance as required by DGCIS for successful completion of this project.

2.3. Overview of DGCIS's ICT Infrastructure

Currently, DGCIS has centralized setup with Data Centre [DC] and Disaster Recovery [DR] Site at its premises in Kolkata. All applications are hosted at Data Centre, Kolkata and are accessed by all end users over LAN. All the sections/units of the DGCIS office are connected through LAN. Following provides a brief overview about DGCIS's present IT infrastructure:

A.   **Network:** The network infrastructure of DGCIS primarily consists of the following items

- **Core-Switch:** Core switches are backbone of whole network system of DGCI&S and are responsible for routing and forwarding at the highest level. DC to DR connectivity is established by DC to DR site core switch. The core switch is configured in VSS (Virtual Switching System) mode which provides fault tolerance and high availability.

- **Fortinet Firewall:** Fortinet Firewall is configured in High Availability mode; it provides security and protection to whole DGCI&S network with its rich set of security policies and antivirus feature, cisco ASA is between server farm switch to core switch which provides add-on security to server.

- **DMZ:** All web applications are broadcasted to public network via DMZ network of firewall in order to provide security to web applications.

- **Active Directory:** All clients are joined in domain and each user is authenticated with AD server and different authorization and access level are defined at this server.

- **Oracle Database:** Production and Warehouse oracle database is configured as 2 node RAC (Real Application Cluster), which provides High Availability, Fault Tolerance and Load balancing.

- **Oracle Golden Gate:** Database objects are being replicated with Oracle Golden Gate utility between DC and DR.

- **Oracle WebLogic:** Oracle Forms and Business Intelligence Application runs on the WebLogic (middleware) Server

- **SPARC T7-1 Server:** DGCIS has four SPARC M7 processor based T7-1 servers for Production Environment.

- **Oracle FS1-2 Storage:** DGCIS currently has two FS1-2 Storage for DC-DR environments.   The Oracle   FS1-2 flash storage system   delivers   enterprise-grade storage capabilities that are optimized for flash media and engineered with Oracle software.

- **Symantec NetBackup:** It is backup solution from Symantec v7.7.3, which is used to run automated backup and restore functions in Tape devices. Oracle X5-2 server is used as a backup Server & SL150 as a tape drive.

- **LDOM: Solaris:** LDOM is a server virtualization and partitioning technology that is used to host multiple instances of Solaris virtual machines (VMs) on an Oracle server. Solaris 11.3 is used as OS in production environment.

- **Brocade SAN S/W:** SAN switch is used to connect servers, storage and tape library in SAN environment.

- **LDAP:** LDAP Server is used to authenticate Internet Users.

- **Wide Area Network**

  Presently DGCIS has two connectivity modes, through primary (Tata) and secondary (Sify) Internet Service Providers (ISPs).

- **Local Area Network**

  In DGCIS' office the LAN is based on Layer 3 and Layer 2 switches. The switches used at the different floors of the office buildings are managed. All switches are property of DGCIS and are under AMC with respective vendors.

The following diagrams provide a broad overview of the ICT Infrastructure currently at work in DGCIS:

IT Infrastructure Diagram (DC/DR)

DGCI&S NETWORK DIAGRAM
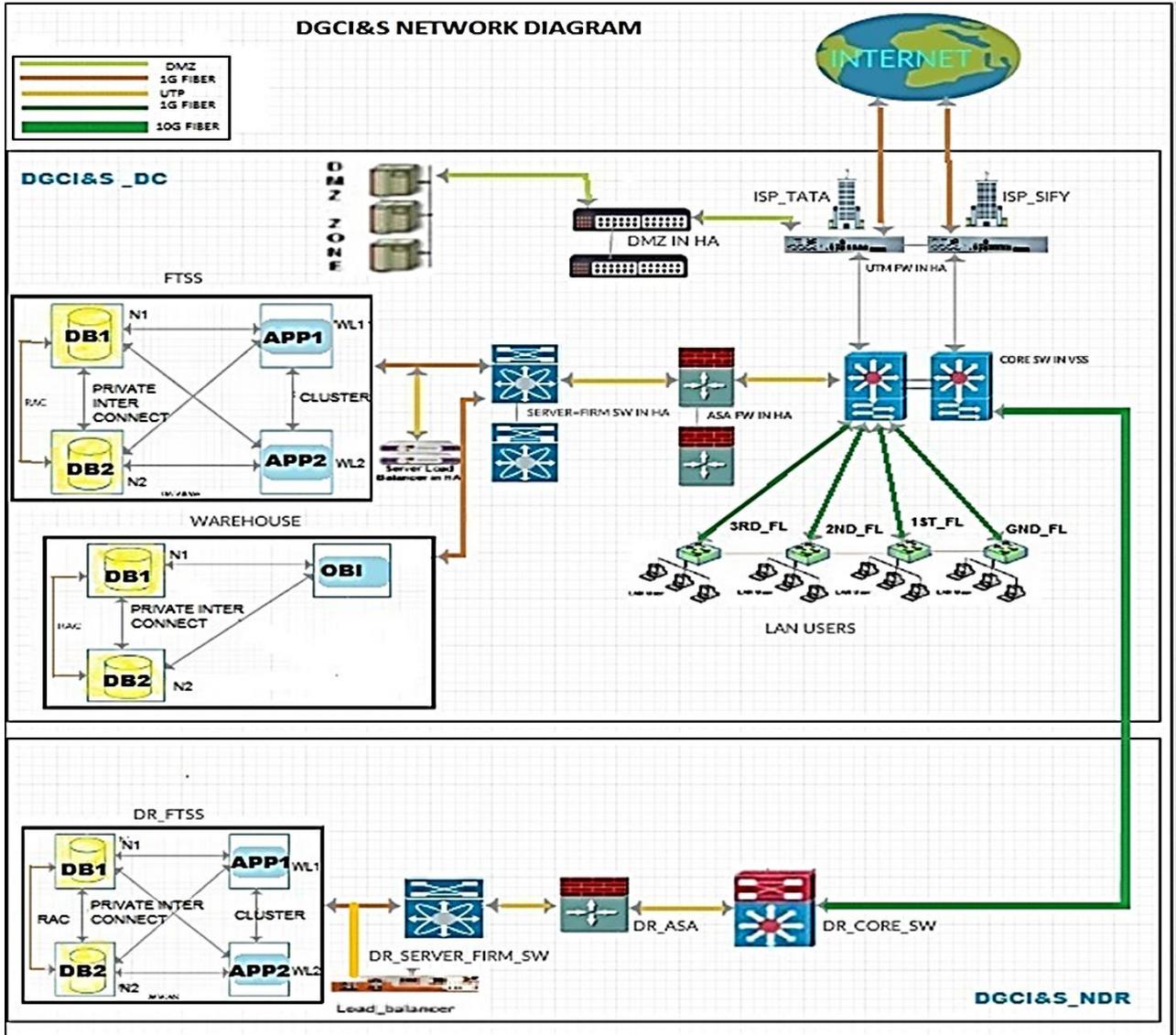
Production & Warehouse Database and WebLogic Application Server Architecture
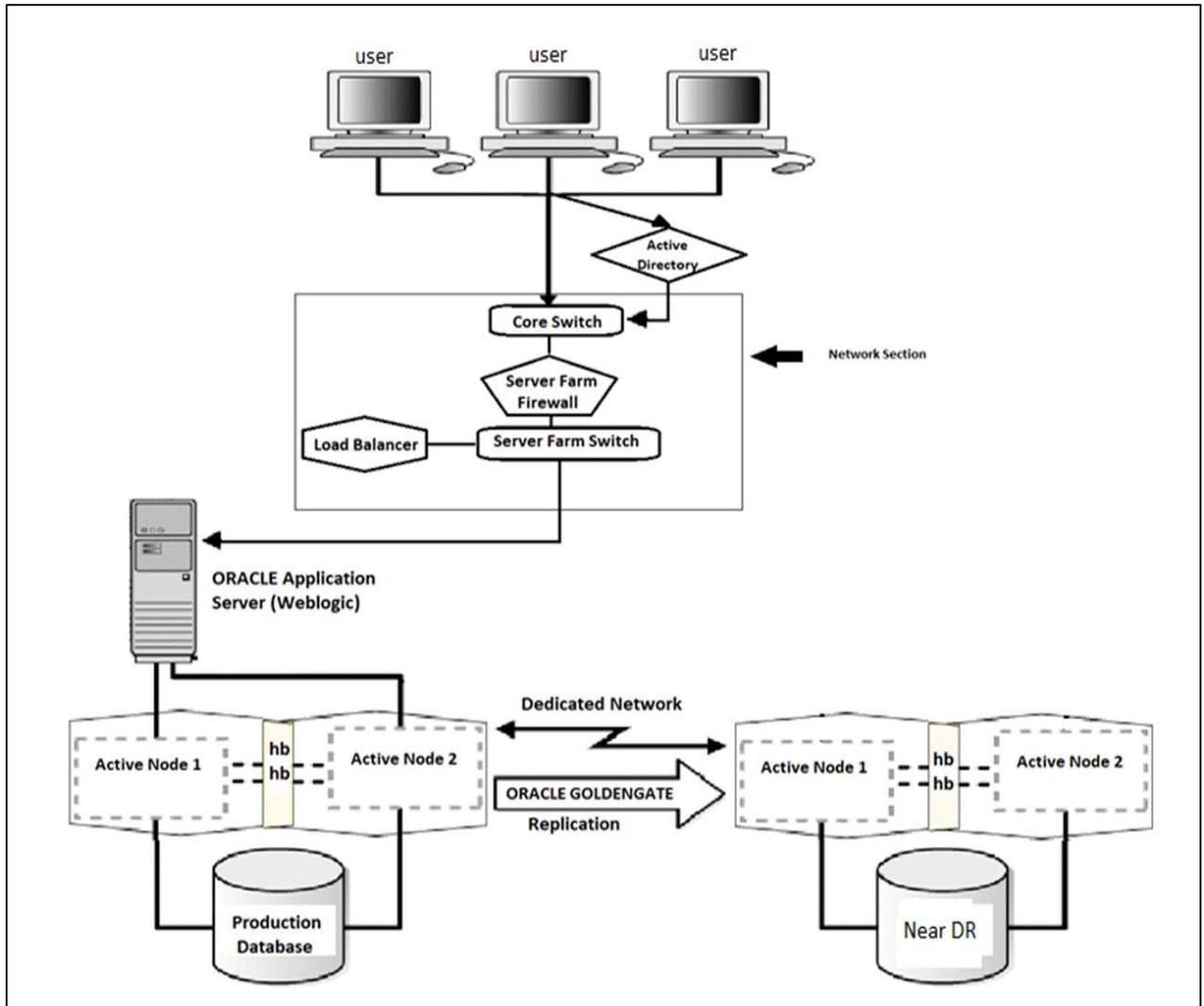
Server & Storage Architecture- DC
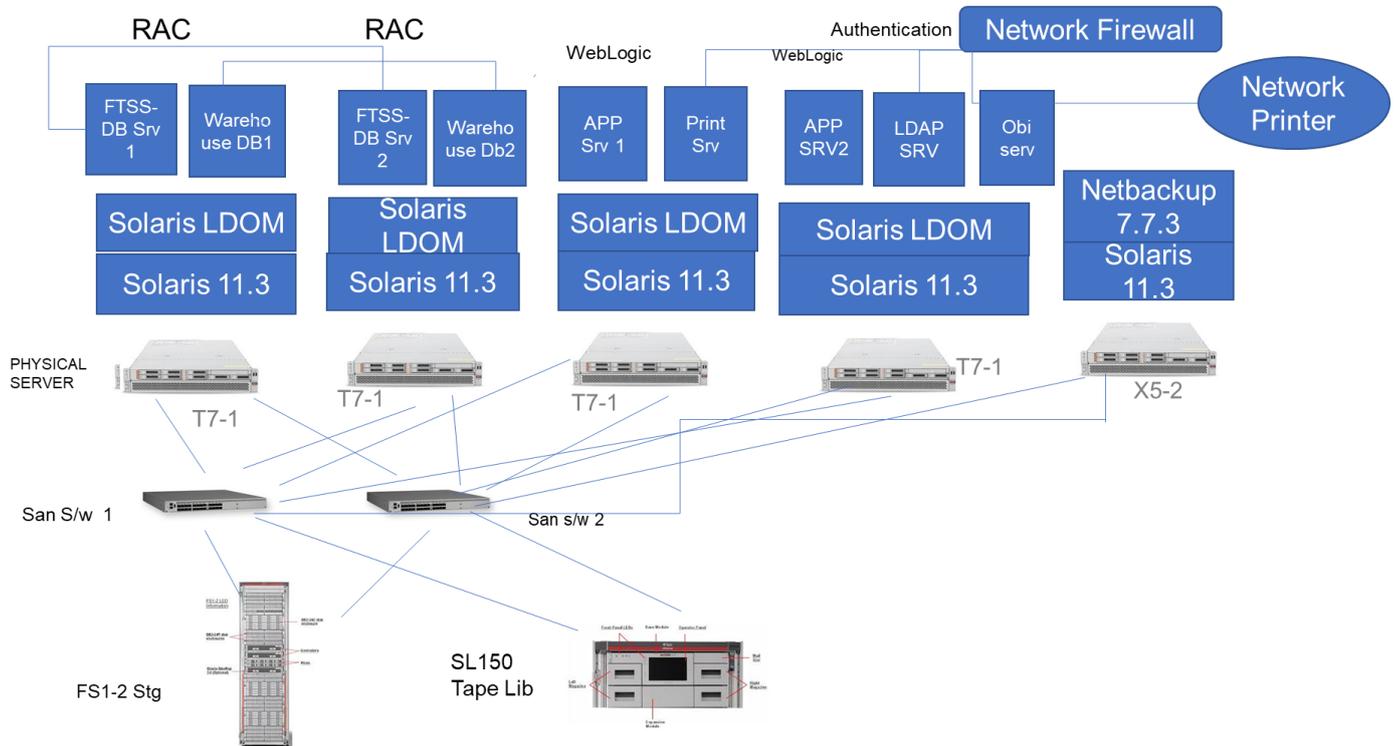
B.   A brief on the data processing work

On a daily basis, Foreign Trade Data are received by DGCIS from Customs and SEZs in the form of Daily Trade Returns (DTRs) which are part of Shipping Bills (for Export) and Bills of Entry (for Import). After validation, foreign trade data are disseminated in various ways – in the form of Quick Estimates and Press Note released by the Department of Commerce on the 15th of every month for the preceding month, Principal Commodity Group by country level information for the Brochure publication, 8-digit commodity level publication for Monthly Statistics of Foreign Trade of India (MSFTI) and quarterly 8-digit level publication SFTIC (Statistics of the Foreign Trade of India by Countries).

Following is a workflow-based representation of the data processing mechanism being followed: The current IT application landscape of DGCIS consists of the following elements,

```
Bill of Entry              Shipping Bills
(Import Data)              (Export Data)

            Daily Trade Return
                 (DTR)

Electronic Data      Data from Email/      Handwritten hard
Interchange (EDI)    CD  (Non - EDI)            copy

                                        Scrutiny

         Data Upload to Oracle DB
         through Data Entry Package

                 Scrutiny              FTSS
                                       Package
            Generation of
               Reports

                 Scrutiny          RR Online Package

            Correction of          Inv Online Package
               Records
                                        GDS

            Summary Tables

            Corrected Reports
```

C.   Software packages

Internal Data Processing Software packages include:

Sl. No.	Package Name	Functionality
1.	FTSS RAC	The FTSS RAC package is used to prepare the exception reports, summary tables and reports as well as upload the approved data into the system.
2.	RR_Online	The package is used for tallying record to record entries in trade data corresponding to Standard units, Quantity and Rate errors.
3.	Inv_Online	Used to identify and correct Invalid Country and Commodity Code errors in trade (Export and Import) data.
4.	Group Dump System	Used to correct errors in trade data corresponding to Standard units, Quantity and Rate errors which may have been missed at RR stage.
5.	Data Entry Package	Used for uploading manual data into the Export and Import DTR Table.

D.   Database Licenses

Sl. No	Product Description	License Type	Version	RAC Cluster
1	Oracle Database Enterprise Edition ATS for Oracle 10g software, oracle database EE Processor perpetual license	Perpetual license	12.1.0.2.0	Yes
2	Oracle Database Enterprise Edition (Perpetual License)	Perpetual license	12.1.0.2.0	Yes
3	Oracle Database Enterprise Edition (Oracle Business Intelligence Suite Foundation Edition - Processor Perpetual License)	Perpetual license	12.1.0.2.0	Yes
4	Oracle Database Standard Edition (Oracle ATS of Oracle Database SE Oracle 1 - Click Ordering Programmed U0073er plus Perpetual License with Back Support	Perpetual license	11.2.0.1.0	No
5	Oracle Database Standard Edition		11.2.0.1.0	No

	Oracle ATS for providing on-site maintenance support of SUN Fire X4170 server			
6	Oracle Database Enterprise Edition (Web logic) (Perpetual License) Golden Gate (Perpetual License)		11.2.0.1.0	No

E.   Data Dissemination Channels

Currently, DGCIS has the following channels for dissemination of finalized data for the public:

1. Data Dissemination Portal
2. Exim Analytics Dashboard
3. Business Intelligence Module
4. DGCI&S Website
5. Exim Mobile App

1. Data Dissemination Portal: The Data Dissemination Portal is the main channel for dissemination of finalized data to the public. The application is connected to an Oracle database containing the finalized MSFT data (ITCHS wise, country wise and port wise export and import figures) for each month till the latest month. Any user can login to the portal as a guest, run a query on the database and see the number of records fetched by the query. Thereafter, the user is given an option to pay, through BillDesk for the data on a per-record basis, and once the payment is made the data can be downloaded from the portal. Frequent users can have credentials created by DGCIS and make advance payments for data downloading. The charges for downloading for frequent users is automatically debited from their account.

Portal link - `http://ftddp.dgciskol.gov.in/`

2. Exim Analytics Dashboard: This, as the name suggests, presents a dashboard with basic charts and diagrams related to Exim trade. The user can analyse various scenarios by deep diving into the data through this dashboard.

Portal link - `http://www.eximanalytics.dgciskol.gov.in/dgcis/EXIM-Analytics#/home?_g=()`

3. Business Intelligence Module: This module runs on Oracle BI platform and provides an opportunity to users to do trade analytics on the platform itself, with the help of indicators / indices. It uses the trade data of India from DGCIS as well as world trade data from the Comtrade platform to arrive at indicators.

Link: `http://da.dgciskol.gov.in/bi-security-login/login.jsp`

4. DGCI&S Website: The website is main channel of dissemination of information regarding DGCIS. Apart from information, few publications, which are not disseminated through other channels, are also disseminated through the website. There is an admin dashboard which is used internally for uploading of files and other information to the website, as well as for periodic maintenance of the website.

Link: `http://www.dgciskol.gov.in/`

5. Exim Mobile App: This is the app version of the Exim Analytics Dashboard. The name of the app is DGCIS EXIM. Through the app a user can mine through current and historical data pertaining to commercial intelligence and statistics on the go. It provides information in the form of numbers and figures, graphs and plots and one can simply browse through years of data, and compare information from various periods and sources. If one wants such data offline, this app has a facility to email the reports.

Available at -
`https://play.google.com/store/apps/details?id=com.dgcis.exim&hl=en_IN&gl=US`

3. Instruction to Consultants

3. Instruction to Consultants / Bidders

3.1. General

a) The Bidder is expected to examine all instructions, forms, terms and specifications in the bidding documents. Failure to furnish all information required by the bidding documents may result in the rejection of its bid and will be at the bidder's own risk.

b) All costs and expenses incurred by the Bidders in any way associated with the development, preparation, and submission of responses, including but not limited to; the attendance at meetings, discussions, demonstrations, etc. and providing any additional information required by DGCIS, will be borne entirely and exclusively by the Bidder.

c) No binding legal relationship will exist between any of the Bidders and DGCIS until execution of a contractual agreement.

d) Each Bidder acknowledges and accepts that DGCIS may in its absolute discretion apply selection criteria specified in the document for evaluation of proposals for short listing / selecting the eligible System Integrator. The EoI document will not form part of any contract or arrangement, which may result from the issue of this document or any investigation or review, carried out by a Bidder.

e) Every Bidder will, by submitting his Bid in response to this EoI, be deemed to have accepted the terms of this EoI and the Disclaimer. However, if there are any critical suggestions the same may be discussed with DGCIS.

f) Bidders are advised to study all instructions, forms, terms, requirements and other information in the EoI documents carefully. Submission of the bid shall be deemed to have been done after careful study and examination of the EoI document with full understanding of its implications.

g) Failure to comply with the requirements of this paragraph may render the Proposal noncompliant and the Proposal may be rejected. Bidders must:
   - include all documentation specified in this EoI;
   - follow the format of this EoI and respond to each element in the order as set out in this document; and
   - comply with all requirements as set out within this document.

h) Bidders are required to direct all communications related to this EoI, through the nominated Single Point of Contact (SPOC) person, mentioned below:

Name: Shri Srijan Acharya	**Email ID:** s[dot]acharya[dot]dgcis[at]gov[dot]in
Designation: Deputy Director	**Contact number**: 98737 25055

i) DGCIS may, in its absolute discretion, seek additional information or material from any Bidder/s even after the EoI closes and all such information and material provided must be taken to form part of that Bidder's response.

j) Bidders should provide details of their contact person, telephone, fax, email and full address(s) to ensure that replies to EoI could be conveyed promptly.

k) If DGCIS, in its absolute discretion, deems that the originator of any query will gain an advantage by any response to such query, then DGCIS reserves the right to communicate such response to all Bidders.

l) Queries / Clarifications, if any, may be taken up with the contact persons detailed above before the deadline for submission of bids between 09.30 am to 6.00 pm on any working days (Monday to Friday, except holidays).

m) Bidder should not have been blacklisted / debarred from participation in the Bid process by any of the Govt. Departments (Central or State)/ PSUs/ DGCIS/ Financial Institutes in India.

n) DGCIS will notify all short-listed Bidders in writing or by mail or by publishing in its website as soon as practicable about the outcome of their EoI. DGCIS is not obliged to provide any reasons for any such acceptance or rejection.

3.2. Publication of EoI Document

The EoI document will be made available on Central Public Procurement Portal (CPPP): https://eprocure.gov.in and also on DGCIS' website, http://www.dgciskol.gov.in/.

3.3. Pre-bid Meeting & Clarification

a) For the purpose of clarification of doubts of the bidders on issues related to this EoI, DGCIS intends to hold an online Pre-Bid meeting. The date, time and online link of the meeting will be communicated through email to the consultants who have sent their queries to DGCIS SPOC. The queries of the Bidders, in writing, should reach by e-mail to the e-mail id of SPOC, **within five working days** after publication of the EoI.

b) It may be noted that no queries of any bidder shall be entertained received after the Pre-Bid meeting. Clarifications on queries will be given in the Pre-Bid meeting. Only the authorized representatives of the bidders, will be allowed to attend the Pre-Bid meeting. For each bidder, maximum of two representatives are allowed. The representatives should be employees of the Bidding Company

c) The responses will be transmitted to the prospective bidders through appropriate means. However, it will be bidder's responsibility that they collect all responses. Non-attendance at the Pre-Bid meeting will not be a cause for disqualification of a Bidder. The queries should necessarily be submitted in the following format in editable MS Excel workbooks.

#	Section	Page Number(s)	Content of EoI requiring Clarification(s)	Points of clarification	Suggested Clause (if any)
1.					
2.					
3.					
4.					

d) DGCIS shall not be responsible for ensuring that the bidders' queries have been received and / or addressed by them. Any requests for clarifications after the indicated date and time may not be entertained by DGCIS.

e) At any time, prior to the date of submission of Bids, DGCIS may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify this document by means of amendments or corrigenda.

f) Any such corrigendum shall be deemed to be incorporated into this EoI Document.

g) The amendments shall be notified on DGCIS website and these amendments will be binding. The bidder is not supposed to change any clause in tender document downloaded from website.

h) In order to afford prospective bidders reasonable time to take the amendment into account in preparing their bids, DGCIS may, at his discretion, extend the deadline for the submission of bids suitably.

i) Date and time of Pre-bid meeting: **Tuesday, 28th February, 2023 at 15:00 hrs**. Link for online pre-bid conference: https://meet.google.com/qvy-szpx-sdo

3.4. Consortium & Sub-Contracting Conditions

Bidders are allowed to participate as a Consortium or Joint-Venture, clearly indicating Lead Bidder in the partnership agreement. The lead partner should have the maximal contribution in the project with respect to intellectual input (or input from human resources / skilled manpower). In such a case, the maximum number of partners, including the lead partner, should not exceed three (03).

- The lead partner must qualify all the Minimum Eligibility Criteria and the ISO / CMMi certifications.

- The other partners must qualify point (a) of Minimum Eligibility Criteria, i.e., "*The bidder must be a Company registered under Companies Act, 1956/2013 or a partnership firm registered under LLP Act, 2008.*"

- All other criteria, such as work experience and manpower, may be applicable to the partners jointly.
  Among all the partners of the consortium, only the lead partner would be the party responsible and accountable for the success of the project.

3.5. Statement of Confidentiality

This document contains information that is proprietary and confidential to Directorate General of Commercial Intelligence and Statistics (DGCIS), which shall not be disclosed outside the bidder's company, transmitted, or duplicated, used in whole or in part for any purpose other than its intended purpose. Any use or disclosure in whole or in part of this information without explicit written permission of DGCIS is prohibited. This document is provided to the Bidder on the basis of the undertaking of confidentiality given by the Bidder to DGCIS. DGCIS may update or revise this document or any part of it. The Bidder acknowledges that any such revised or amended document is received subject to the same terms and conditions as this

original and subject to the same confidentiality undertaking. The Bidder will not disclose or discuss the contents of this document with any officer, employee, consultant, director, agent, or other person associated or affiliated in any way with DGCIS or any of its customers, suppliers, or agents without the prior written consent of DGCIS. Any use or disclosure in whole or in part of this information without explicit written permission of DGCIS is prohibited.

In this context it may be noted that the bidder who is finally selected after the RFP phase shall be required to sign a Confidentiality-cum-nondisclosure agreement with DGCIS.

3.6.   Amendment to the EoI document

a) At any time prior to the deadline for submission of Bids, DGCIS, for any reason, may modify the EoI document, by amendment or corrigendum.

b) The amendment will be posted on DGCIS' website, http://www.dgciskol.gov.in/.

c) All Bidders must ensure that all amendments/enhancements (if any) in the EoI have been considered by them before submitting the Bid. DGCIS will not have any responsibility in case of any omission by Bidder/s.

d) DGCIS at its discretion may or may not extend the deadline for the submission of Bids.

e) DGCIS shall not be liable for any communication gap. Further DGCIS reserves the right to scrap the tender or drop the tendering process at any stage without assigning any reason.

3.7.   Language of Proposal

All proposals are to be submitted in English. In case any original document is not in English, then it should be accompanied by an English translation of the same, and in case of ambiguities, the intent of the English version, as interpreted by DGCIS, shall be taken as final.

3.8.   Period of Validity of Proposal

The offer for EoI as per this document shall be valid for a period of six (06) months, which may be extended further, if required, by DGCIS

In exceptional circumstances DGCIS may solicit the Bidders' consent for extension of the period of validity. Any such request and response thereto shall be made in writing.

3.9.   Deadline for submission of Bids

a) The Bids must be received online by DGCIS at the website specified, not later than the last date of Bid submission as indicated in the section 1, "Letter of Invitation".

b) DGCIS may, at its discretion, extend the deadline for submission of Bids by amending the Bid documents with intimation on the mentioned website, in which case, all rights and obligations of DGCIS and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

c) DGCIS shall not be responsible for non-receipt / non- delivery of the Bid documents due to any reason whatsoever.

3.10. Clarification of Proposals

During evaluation of Proposals, DGCIS, at its discretion, may ask the Bidder for clarification of its proposal. The request for clarification and the response shall be in writing (e-Mail), and no change in the substance of the proposal shall be sought, offered or permitted.

The decision of DGCIS is final towards evaluation of the proposals.

3.11. Proposal Ownership

The proposal and all supporting documentation submitted by the Bidder shall become the property of DGCIS unless DGCIS agrees to the Bidder's specific request/s, in writing that the proposal and documentation be returned or destroyed.

3.12. Proposal Preparation Costs

The Bidder shall be responsible for all costs incurred in connection with participation in the EoI process, including, but not limited to, costs incurred in conduct of informative and other diligence activities, participation in meetings/discussions/presentations, preparation of proposal, in providing any additional information required by DGCIS to facilitate the evaluation process, and in negotiating a definitive contract or all such activities related to the bid process.

DGCIS will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

3.13. Acknowledge of Understanding of Terms

By submitting a proposal, each bidder shall be deemed to acknowledge that it has carefully read all sections of this EoI, including all forms, schedules and annexure hereto, and has fully informed itself as to all existing conditions and limitations.

3.14. Banned or Delisted Bidder

Bidders have to give a declaration that they have not been banned or delisted by any Government, PSUs and its subsidiaries. If this declaration is not given, the Bid will be rejected

as non-responsive. This declaration will be submitted in the EoI Covering Letter Annexure – B.

3.15. False / Incomplete statement

Any statement/declaration made by the Bidder, if proved wrong or false or incomplete or such as to withhold any information relevant to shortlisting of bidders, at any stage of the shortlisting process or in the event of his proposal having been accepted shall render his/their proposals liable to be cancelled/rescinded.

3.16. Right to Terminate the Process

DGCIS may terminate the bid process at any time and without assigning any reason. DGCIS makes no commitments, express or implied, that this process will result in a business transaction with anyone.

This EoI does not constitute an offer by DGCIS. The Bidder's participation in this process may result in DGCIS selecting the Bidder to engage in further discussions and negotiations towards the execution of contract. The commencement of such negotiations does not, however, signify commitment by DGCIS to execute a contract or to continue negotiations. DGCIS may terminate negotiations at any time without assigning any reason.

4. Qualification Criteria

4.1. Bid Evaluation Methodology

The objective of evaluation methodology is to shortlist service providers on the basis of the responses submitted by them.

To meet DGCIS's requirements, the shortlisted agency must have the requisite experience in providing services in the field of ICT, the technical know-how, and the financial wherewithal that would be required to successfully set-up the required infrastructure and provide the services sought by DGCIS, for the entire period of the contract.

DGCIS reserves the right to modify the evaluation process at any time during the EoI process (before submission of responses by prospective bidders), without assigning any reason, whatsoever, and without any requirement of intimating the Bidders of any such change. Any time during the process of evaluation DGCIS may seek specific clarifications from any or all Bidders. Further, DGCIS reserves the right to reject any proposal in case same is found incomplete or not submitted in the specified format given in this EoI document.

4.2. Qualification Criteria and their weightages

Minimum Qualification Criteria

a) The bidder must be a Company registered under Companies Act, 1956/2013 or a partnership firm registered under LLP Act, 2008.

b) The bidder should have been operating in the area of software development, implementation, IT consulting, procuring and providing IT infrastructure for last ten (10) years before date of submission of bid.

c) The Bidder should have average annual turnover of INR 200 Crores from IT/ ITeS and other IT related services (excluding sale of hardware) in the last three financial years viz. 2020-21, 2019-20 and 2018-19 and should not have incurred loss in last three (03) financial years

Qualification Criteria for shortlisting

Sl. No.	Technical Qualification Criteria	Break up of Parameters	Weightage/ Score	Max. Score
A.	Criteria about the organization – 75%			
1.	Relevant experience of executing integrated software project(s) (Project Design and implementation) involving complex business processes, rule engine & workflows or have worked for application development projects of similar nature in the last 5 years (min. 2 projects)	2 to 5 projects	5	15
		6 to 10 projects	10	
		> 10 projects	15	
2.	ISO certifications (ISO 27001 or ISO 20000 and CMMi Level 5 & above)	ISO 27001	2	10
		ISO 20000	2	
		CMMi level 5	6	
3.	Number of qualified professionals on payroll of bidder holding BE / B.Tech / MCA / M.Sc. (IT) degree and having experience of working in at least one of the following domains: (i) Application development, (ii) web portal design / development, (iii) AI and ML based applications, (iv) implementation of cloud solution, (v) System Integration, (vi) Data Centre setup, (vi) project management and planning, (vii) system	500 to 1000	5	10
		>1000 <=2000	7	
		> 2000	10	

	architecture design (min. 500 employees)			
4.	Experience of handling large integrated IT projects (>40 crores) for Government Clients (at State and National Level) in the last 5 financial years (central/state government / PSU*.)	2 to 5 projects	5	10
		6 to 7 projects	7	
		8 projects or more	10	
5	Project Experience of implementing at least 2 projects involving development of a large software.	2 projects	4	10
		3 to 4 projects	7	
		>=5 projects	10	
6.	Project Experience in emerging area of AI-ML (min. 2 projects).	2 projects	1	5
		3 - 5 Projects	3	
		>= 6 projects	5	
7	Relevant experience of application hosting and maintenance on cloud platform and providing support on Cloud Data Centre management (min. 2 projects)	2 projects	1	5
		3 - 5 Projects	3	
		>= 6 projects	5	
8	Two write-ups each on points 4,5, and 6 of this Technical Criteria.			5
9	Has Delivery Centre in Kolkata with at least 500 technical employees			5

The term PSU also includes Nationalised Banks and Govt. Financial Institutions.

C.	Criteria about overall financial strength - 25%				
Sl. No.	Description	2018-19	2019-20	2020-21	Average (Mean)
1.	Turnover figures (in Rs. Crores)				
2.	Net profit figures (in Rs. Crores)				

The bidders are also required to submit a small write-up (within 200 words) on two **most relevant** projects each for points 4, 5 and 6 of Table A above:

Client Name	Cost of Project	Brief Description of Project (within 200 words for each project)

Minimum qualifying marks is 75%.

The bidders must disclose any conflict of interest that they know may impact objective performance and impartial advice for their services.

No legal documents such as certificates of incorporation of the firm, powers of attorney, financial statements, or translations of standard brochures is being requested at this stage of EoI; responses are to be made solely on the basis of self-declaration. However, in the next stage, during submission of tender documents in response to the RFP all supporting documents of the declarations made herein would be requested for and verified by DGCIS.

5. Scope of Work

5. Scope of Work

5.1. An Overview

The scope of this project on Revamping of IT systems of DGCIS consists of two parts – software application development part and infrastructure part. The software application part again consists of two parts. The first part consists of revamping and rebuilding the core FTSS package -used for in-house data processing - afresh, as well as migration of the existing databases to open-source database. The FTSS application is to be hosted from newly procured in-premise infrastructure. In the other part of software application development, the different dissemination channels such as website, Data Dissemination Portal, the Exim Analytics Dashboard as well as the mobile app – DGCIS Exim – are to be revamped and hosted in cloud infrastructure. The databases of the existing applications are also to be migrated as per requirement. In the infrastructure part of the scope, the vendor is to procure appropriate infrastructure – hardware and cloud – to develop, host and test the applications. Thereafter, the

thus revamped IT applications as well as the infrastructure are to be maintained for a period of three (03) years and nine (09) months[1].

While the new FTSS application is to be hosted from in-premise infrastructure, the aim is to develop it in such a way that it is cloud native, and can be easily migrated to the cloud infrastructure as and when the need arises (**cloud native applications**).

Further, in future there might be a need to migrate from one cloud platform to another and, hence, the technology used to develop these **applications should be cloud agnostic** so that the applications are readily portable to any MeitY empanelled cloud.

5.2. Revamping of IT Infrastructure

At present both the DC and DR are located in DGCIS premises. All the applications, except the website, are hosted from the Data Centre. A hybrid-model is envisaged in the revamped scenario, where the core application for data-processing, the FTSS package, will be hosted on on-premises infrastructure, while the other applications which are used for dissemination of data to public – shall be hosted from cloud infrastructure. The procurement of the on-premise hardware and cloud infrastructure is to be made by the SI, ensuring the ownership of DGCIS on the in-premise infrastructure.

5.3. Migration of databases

At present all the data of DGCIS is stored in Oracle databases, in the on-premises servers of DGCIS. The details of the databases are provided in the 'As-Is Report', included as an addendum to this EoI Document.

All the databases are to be migrated to PostgreSQL or any similar open-source relational database. *The database which is to be procured must have support from enterprises and should not be community supported products.* There might be a need to make minor alternations and modifications in the present table structures before or after migration, whichever is convenient. Thereafter, the databases containing sensitive transactional data are to be located in on-premise infrastructure, while the databases containing finalized aggregated data for the public, which are the bases for the dissemination channels, are to be migrated to the cloud infrastructure. Appropriate data masking and security measures are to be taken to migrate the data in the cloud. Further, the databases that are on-premises should be created in a cloud-ready manner.

Clarification on type of database

The database for the data processing part should be a relational database which should be SQL based, i.e., one should be able to work on it with SQL. Further, it should be an open-source Database with managed services which is suitable for large database.

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[1] The project is conceived to be of a total of five (05) years – 15 months for development of applications and 45 months for maintenance. Thereafter, the contract will be extendable by 2 years on mutually agreed terms.

However, the published data which is stored in cloud may be in any database which the SI finds suitable.

As stated in this EoI, the database(s) which are to be procured must have support from enterprises and should not be community supported products.

5.4. Revamping of the FTSS package

The FTSS package is the core application through which day-to-day data processing is done by officials of DGCIS. This application was developed by in-house officers of DGCIS and is maintained by their successors. Now there is a need to modernize the application. However, the business processes remain almost same and hence, the functioning of the application would be similar. Details of the present application is given in 5.37. DGCIS's current Application: Module-wise description. The SI has to prepare a new version of the application - FTSSv2 - after system requirement study and prepare SRS & SDS, System Due diligence and submission of detailed report and obtaining of due approvals.

5.5. Revamping of the dissemination channels

The (1) Data Dissemination Portal, (2) Exim Analytics Dashboard, (3) Business Intelligence Module, (4) DGCIS Website and (5) Exim Mobile App consist the data dissemination channels of DGCIS. All data for public is disseminated through these applications / channels. The online links to these channels are given in Section 1 of this EoI document, through which the reader can have a first-hand idea of the portals and dashboards.

The idea is to revamp and integrate all the data dissemination channels into one platform using open-source technology. The DGCIS website will be the main platform to be visited by the user. From there the user may visit the new dashboard, through a link created in the website, for the purpose of segmenting, visualizing and analyzing the data, etc. Thus, the new dashboard would be integrated to the new DGCIS website. The mobile app should be a mobile/tablet version of the dashboard with all or most of the functionalities of the dashboard.

5.6.   Schedule of Services

This schedule of services sets out precise list of services that the SI will be providing as part of this project for meeting the project goals. The schedule of services also contains various deliverables, schedule, reports and product details that are to be provided by the SI as part of this project.

SI will be required to provide quality and timely services to DGCIS for the successful design, development, and implementation of FTSSv2 (i.e., the revamped FTSS application). All the activities performed by the SI during different phases of the project shall be closely monitored by DGCIS. The SI is strongly advised to carefully read the Schedule of Services and prepare their proposal accordingly.

It is expected that SI will carry out an assessment of number of resources required to undertake the scope of services under this engagement. However, at any time, a minimum of three (03)

resources will have to be deployed by the SI to deliver the services as proposed in this scope. For any services defined beyond the scope of services, DGCIS may ask for additional resources from SI as per rates to be submitted with commercial proposal of RFP.

The broad schedule of services for the SI during the contract period would include, but not limited to:

a) Performing a system requirement study and prepare SRS & SDS, System Due diligence and submission of detailed report.

b) Design and development of the dissemination channels of DGCIS as outlined in section 5.4 of this chapter, 5.4. Revamping of the dissemination channels.

c) Design and Development of FTSSv2 (application software):

Design and Develop the Foreign Trade Statistics System (FTSS) application in Open-Source Technology (Java and Python) stack.

- Development of the Project Implementation plan.

- Design, Installation, Configuration, Customization of Software Related solution for DGCIS as per requirements outlined in scope of work.

- Quality Review, reporting and approval.

- Project and Product Documentation.

- Detailed Post Implementation documents for each and every module and sub-modules to be prepared and submitted to the client. Approval of the same from the client to be taken.

- Developing and designing of Operational Handbook for each and every module and sub modules, in simple and clear language.

- Patch and update management.

d) Migration of databases of existing applications – FTSS, applications of dissemination channels, etc. to PostgreSQL or any other open-source relational database.

e) Supply, installation, configuration and commissioning of IT hardware and Network Components for Data Centre Site and DR-backup & installation of required system software for FTSSv2 application hosting.

f) All procurements, including all non-IT components, should be made in the name of DGCIS. Original invoices of procurement of all hardwares and softwares, including all non-IT components, should be submitted to DGCIS.

g) Migration of data from existing (old) FTSS to the proposed (new) FTSSv2

h) Application Testing i.e., unit testing, integration testing, system testing, load testing

i) User Acceptance Testing (UAT)

j) Commissioning of FTSSv2

k) Go-Live of FTSSv2

l) Training & Capacity Building

m) Operation & Maintenance of FTSSv2

     i. Application and Infrastructure support including modifications and integration with future systems.

     ii. Bug Fixes and Management.

     iii. Software Change and Version Control.

     iv. User Support and Annual Maintenance of the application to SLA.

     v. Application monitoring and Compliance to SLA.

     vi. Database Administration.

     vii. User Administration.

n) Conducting a Review Meeting every fortnight with DGCIS to apprise the progress of the project and resolve any issues that requires decision making from the DGCIS side.

5.7. Business Process Analysis

SI shall assess the existing business processes of DGCIS to supplement the understanding gathered from the high-level business processes included in the Functional Requirement Specifications (FRS) of this document. The selected bidder's objective shall be to develop comprehensive solution to support all the business needs of DGCIS in detailed manner along with other functional requirements as stated in the RFP document.

5.8. System Requirement Study and Preparation of SRS & SDS

a) Although an indicative FRS, TRS and Schedule of Service have been provided in the EoI and RFP document, the SI shall carryout an independent and detailed assessment study of functional, technical, and operational requirements of DGCIS.

b) The SI is responsible to carry out an independent system study at DGCIS Office to thoroughly understand the function and operational process of department by

     i. interacting with concerned section officials and understanding the entire setup, process flows, and business logics involved,

     ii. reviewing the existing systems, process, and existing application software,

     iii. detailing various use cases scenarios where AI/ML or any other technology driven innovation can be applied,

     iv. understanding/ assessment of data migration requirement and strategy,

     v. understanding/ assessment of data inputs and outputs requirements by collecting all input forms, registers and report formats of DGCIS,

vi. understanding/ assessment of existing applications from perspective of integration with proposed application,

c) Based on the above study, preparing the System Requirement Specifications (SRS) as per the latest version of the IEEE Standard for drafting the SRS, and obtaining Sign-off of SRS from DGCIS.

d) The SI should try to create an 'agile' SRS, whereby the SRS document remains a flexible document and making small changes are easy.

e) Based on the approved SRS, preparing the Software Design Specification (SDS), based on the principles of Enterprise Architecture (EA).

f) Preparation and submission of Project Implementation Plan in compliance to the project schedule (to be provided later in the RFP document).

5.9. Design and Development of FTSSv2 (Application Software)

The scope would include the following.

a) Development of the departmental FTSSv2 application based on the approved SRS and SDS, including the AI/ML module for data processing.

b) **Agile standard development methodology** should be adopted for Software Development, covering the entire SDLC (Software Development Life Cycle).

c) The applications should be cloud native, i.e., it should exploit the advantages of cloud computing delivery model.

d) The development should be based upon automated workflow system & open standards.

e) SI may use any workflow management software for building all the required workflow features in the application software. *All the applicable licenses (if any and as applicable time-to-time) shall be provided by SI and procured in the name of DGCIS.*

f) The SI should identify and integrate the new application with all internal and external systems and services as per the requirement of the proposed system.

g) The FTSSv2 must have integrated security/ monitoring features with the following:

   i. Definition of Roles/ user group/ user type and Users

   ii. Define Role-wise add/ edit/ view/ delete rights for each Entry Form/ Report in all modules

   iii. Digital Time and User Stamping of each transaction

   iv. Online monitoring of the User activities using user activity logs

   v. Encryption of data wherever required

h) The information and forms collected from various sources and the development of the application software will have to be converted into appropriate electronic open standard format(s) as mentioned in 'Interoperability Framework for E-Governance in India'- v1.0

issued by Ministry of Electronics & Information Technology (MeitY), Government of India.

i) The audit trail should provide a facility to trace the path of changes in application software.

j) The SI would also ensure that the hosting services should be portable to another vendor without any changes to hosting environment.

k) The SI should configure specific system modules and third-party applications, if and when required.

l) The SI should carryout testing of the FTSSv2 including unit testing, integration testing, system testing, etc. along with User/ Final Acceptance Testing and share test reports.

m) The SI should conduct various testing including Load Testing, Performance Testing etc. and making necessary changes to the proposed IT system based on such test results. SI shall share such test reports.

n) All tools required for load testing and performance testing should be standard. In case any third-Party tools are required, the same are to be arranged by the SI for this project on its own cost.

o) The SI should undertake any other work required to complete the proposed revamped IT system as per requirement of DGCIS.

p) **The SI is required to provide detailed profile of the team proposed for application development phase in their response to the RFP (after it is published) which shall not be alterable under general circumstances.**
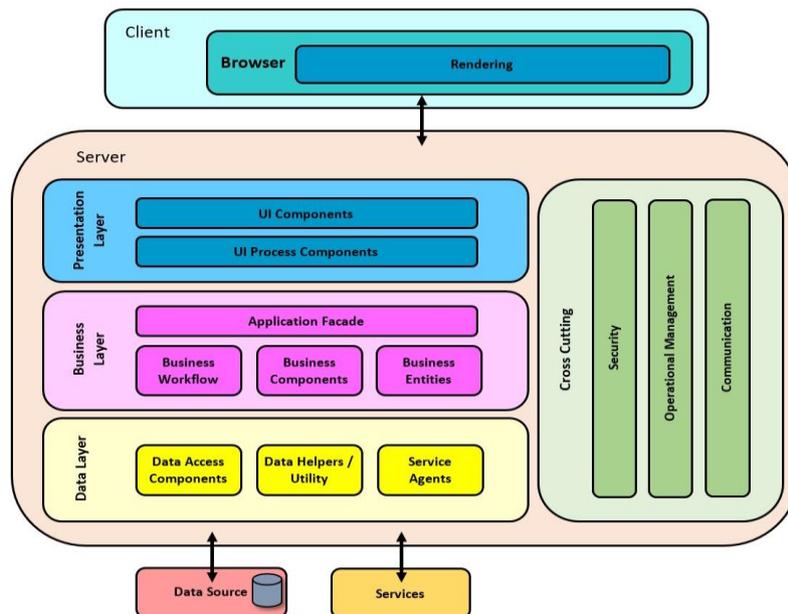

Figure 1: Web Application Architecture

5.10. Integration of FTSSv2

a) The SI will be responsible for integration of FTSSv2 with CBIC ICEGATE SFTP Server, SEZ SFTP Server (NSDL), through development of appropriate programs and APIs.

b) Identify the data/ services which is to be exchanged between the FTSSv2 and the other internal/ external systems and DGCIS website and develop relevant programs.

c) Identify integration touch points for ensuring seamless integration with these internal/ external systems and DGCIS website.

5.11. Design and Development of Applications for Dissemination channels

Integrated Dashboard: The new dashboard will be the main platform for a user to visualize, analyze and, thereby, gather insights from the data as well as download the data as per their requirements. With the help of GUI tools, the user should be able to create graphs and charts as per his / her necessity. In order to analyze the data, the user should also be able to do a **drill down** of the data – i.e., instantly shift from an overview of the data to more detailed and granular view within the same dataset by clicking on a metric in the dashboard. The user should also be able to **add-on** several columns for analyzing the data. For descriptive analysis, data-segmentation tools such as pivot-tables, graphs and charts, should be present. For predictive analysis, basic tools such as fitting of trend-lines and regression lines should be available with the help of GUI. The dashboard has to be made efficient in regard to speed of performance and incorporation of user-friendly features.

Additionally, there should be an option to display similar economic indicators through the process of web-scraping. For example, if the user is interested in the trade of tea, then after analyzing the data of tea he/ she would like to know few economic indicators such as annual production, domestic annual consumption, etc. about tea. This information on economic indicators should then be made available through web-scraping or any other technique.

The dashboard should be a combination of the present Exim Analytics Dashboard, Data Dissemination Portal and the Business Intelligence Module and more. That is, the functionalities of the new dashboard should include all the functionalities of these three portals /modules. Additionally, it may include one or two extra modules, the idea of which may crop up during discussion of the design with the SI and/or as suggested above.

Integration of Payment Platform with the Dashboard: At present, the users of the Data Dissemination Portal can use a query to select the data they want and then purchase the data by paying through a BillDesk Payment gateway - which is integrated with the portal. Therefore, the new Dashboard should have an option for the users to select the data they require and have multiple payment channels, including UPI, integrated with the Dashboard through which they can purchase the data. This functionality should be made and added to the dashboard in a modular nature, so that as and when there is a decision to make data downloading free for

users, this functionality can be turned off easily. Further, there should be some functionality to collect statistics on visitor count, number of downloaders, amount of data downloaded, total amount received by DGCIS from users, etc..

Chat-bot or AI Assistant: There should be a chat-bot in the dashboard to assist the user to cull out the data they desire. There should be a counter to count the number of issues resolved by the solely by the chat-bot.

Key Requirements of Dashboard

a) Intuitive and easy to Navigate -The design should be visually appealing, user-friendly, have a unified look and feel and provide easy navigation throughout.

b) Design - Dashboard should be developed utilizing modern design and standards, compatible with all the modern browsers (Mozilla, Firefox, Safari, Chrome, Internet Explorer, Opera etc.) while providing graceful degradation for older browsers.

c) Search mechanism - Dashboard should have an AI-powered search function with various attributes to choose from. Sub-searches should also be available based upon various filters.

d) Presentation of Data - Dashboard should present data in various forms such as pie-chart, graphs etc. Data should be print friendly and user should be able to share the desired data via email, social media channels etc. User should also be able to download the desired data in various formats such Word, Excel, pdf etc.

e) Multi-platform support - The dashboard should be developed as Responsive, supported on major hardware platforms such as desktops, mobiles and hand-held devices, etc. The solution should automatically render a mobile-friendly view when opened on a browser of a mobile device.

f) Integration with website - The dashboard needs to be integrated with the DGCIS website.

g) User Management – Admin: The admin should be able to manage the overall content of the Website and Dashboard through a customized dashboard (as is the case at present) and also should have the option to edit/ delete contents. Through the Admin panel, the administrator should be able to make small amount of changes in the dashboard. The administrator should be able to create users as per the requirement and assign necessary permissions to update/delete/modify the content, similar to the current application.

Website: The architecture and functionalities of the website will primarily be the same as the present website. The look and feel of the website, along with the display of banner images as well as the design of the home page and all other pages are to be revamped.

Mobile App: The mobile app should contain the functionalities of the new dashboard, as many as possible, suited to ease of access through mobile devices.

The website and the mobile app should be cloud native applications and should not use any proprietary services of the Cloud service provider. They should be cloud agnostic so that they are readily portable from one cloud to another.

Key requirements of Mobile App

a) The Mobile Apps should provide an intuitive and user-friendly GUI that enables users to navigate and apply actions with ease. The GUI should be responsive with very little or no delays or time lag at launch or whilst navigating through screens.

b) The Mobile Apps should enable ease of configuration and changes to existing GUIs, and support the introduction of new screens.

c) The Mobile Apps should provide on screen tips and online help to aid users while interacting with it.

d) Should make use of data available in the existing Database and reduce duplicate data entry

e) Provide way for users to provide feedback on the mobile apps, a quick way to report bugs, and provide suggestions.

f) For a feedback mechanism, incorporate analytics to track and identify users experience and actions.

g) Apps should be easily customizable

h) Network level security, traffic should be encrypted using secured connectivity

i) Should provide mobile Apps download based on phone OS and services

j) Apps should structure overall content with proper tagging to make them screen reader friendly.

k) Apps should ensure Compatibility with all platforms like windows, Android, Blackberry & Mac iOS etc.

l) Apps solution should develop Resolution independent design structure i.e. Mobile Apps should adjust itself automatically as per the screen resolution of the Mobile i.e. 1024*768, 1200*800 etc.

m) Mobile Apps should work flawlessly across different platforms

n) There should be minimum use flash contents so that home page should be loaded quickly.

o) It should not occupy excess RAM of the client device.

p) There should be a mechanism to collect statistics on the usage of the app by various users.

Important Parameters for design of Dissemination channels

a) Performance of the dashboard, i.e., speed with which the results will be displayed, is of paramount importance in designing of the dashboard.

b) <u>Security</u> of data and the dissemination platforms - It should conform to standard industry security guidelines such as Guidelines for Indian Government Websites (GIGW),

c) <u>Accessibility</u> – It should conform to industry accessibility guidelines such as World Wide Web Consortium (W3C) Web Content Accessibility Guidelines (WCAG) 2.0.

5.12. Data Migration

The System Integrator shall perform the data migration from existing online portal/existing database to an open-source relational database platform such as PostgreSQL, etc.. *The database which is to be procured must have support from enterprises and should not be community supported products.* The Data Migration to be performed by the System Integrator shall be preceded by an appropriate Data Migration strategy & methodology prepared by System Integrator and approved by DGCIS. Even though DGCIS is required to provide formal approval for the Data migration strategy, it is the ultimate responsibility of System Integrator to ensure that all the data sets which are required for operationalization of the agreed user requirements are migrated and validated. Any corrections identified by DGCIS, during Data Quality Assessment and Review, in the data migrated by System Integrator, shall be addressed by System Integrator at no additional cost to DGCIS.

Broadly, data migration will consist of the following activities:

   i.   Conduct Data migration study and submission of data migration report
  ii.   Define all the specifications that are needed to populate the data into the new system
 iii.   Prepare uniform codification of all data sets
  iv.   Develop the data migration templates/ Forms/ Format and facilitate the migration of legacy and new data elements into the new system.
   v.   Profiling the data present in the legacy systems to identify what data is available and/or needs transformation
  vi.   Extracting the required data from the legacy system
 vii.   Transforming the extracted data to the form/format as required
viii.   Cleansing the transformed data of any inconsistencies and errors
  ix.   Loading the cleansed data into the proposed system
   x.   Arranging for a hands-on training of the officials of DGCIS on how to use the new relational database platform such as PostgreSQL.

5.13. Testing of FTSSv2 and all other applications

a) Preparation and submission of detailed testing plan and strategy.
b) Prepare and share various use cases and scenarios regarding testing, etc.
c) Performing unit testing, integration testing, system testing, load testing and security testing. Security testing (safe to host audit) shall be carried out by CERT-In empanelled agencies.
d) Conducting testing of various components/ modules of the FTSSV2, as per the latest version of the IEEE 730 standards. The bidder shall be required to share the testing

documents and standards with the designated software testing team, wherever applicable/ required.

e) Taking corrective steps based on the testing reports i.e., rectifying the software issues/ bugs reported during the testing.

5.14. User Acceptance Testing (UAT)

a) The SI will conduct User Acceptance Tests (UATs) to ascertain whether the proposed IT system or any sub-system(s) is capable of meeting the functional and technical requirement as per the RFP and Performance requirements.

b) Preparation and submission of detailed UAT plans.

c) Submit Test Cases along with results with DGCIS for review and verification at the time of UAT.

d) Prepare and submit various use cases, scenarios along with results with DGCIS for carrying out UAT.

e) The SI shall conduct orientation workshop(s) for the users before handing over the application to DGCIS for UAT.

f) The orientation workshop shall be conducted at the location(s) prescribed by DGCIS.

g) UAT shall be done jointly by DGCIS, SI and PMU (appointed by DGCIS). SI shall assist DGCIS and PMU in carrying out UAT of FTSSv2.

h) Rectifying the application software (FTSSv2) issues/ bugs reported during the testing to be compliant with the test case outcomes.

i) DGCIS may reject any module/ system or any part thereof that fails to pass any test or do not conform to the specifications/ DGCIS requirements. The SI shall rectify such rejected item/ module or parts thereof or make alterations necessary to meet the specifications and shall again perform the testing, all these activities shall be performed at no additional cost to DGCIS.

j) DGCIS will provide full co-operation to the SI in conducting the UAT which shall be carried out on the development server.

k) Final approval/ user acceptance of the application software shall be given by DGCIS after successful implementation and testing. This is the responsibility of the SI to obtain the UAT approval from the DGCIS.

l) All the costs towards testing and commissioning to be borne by the SI.

5.15. Final Acceptance Testing

Pre- requisite of Final Acceptance shall include submission of the following:

i. Software supplied under the RFP including customization & deployment of Software Related solution for DGCIS application, integration, etc.

ii.   All documentation related to the developed solution and relevant acceptance test document (including IT Components, Non-IT components).

iii.   Installation and commissioning shall include:

      a) Installation and Commissioning of IT, non – IT components.

      b) For both IT & Non-IT equipment's software manuals / brochures / Data Sheets / CD / DVD / media are supplied to DGCIS.

iv.   Availability of all the defined services shall be verified and mutually agreed between DGCIS and the selected bidder.

v.   Testing must demonstrate that the new systems satisfy the operational and implementation performance criteria mentioned in the RFP document (which is to be published later).

vi.   The SI shall be required to demonstrate all the features / facilities / functionalities as mentioned in the RFP (which is to be published later).

5.16. Code Level Audit Review

DGCIS will apply for code level audit (within 1 month from Go-Live) from Cert-In empanelled vendor after Go-Live of the solution. System Integrator shall support DGCIS during such activities. Audit cost will be borne by the selected bidder. **The code level review shall be carried out thoroughly for all modules/sections of the entire application from security and performance perspective and if any kind of vulnerability is pointed out by the auditor, the same shall be rectified/ fixed by the bidder.**

5.17. Performance Review

Performance is another key requirement for the Project and DGCIS shall validate and review the performance of the deployed solution. Performance Review will be a regular activity conducted quarterly for the first year after Go-Live during the stabilization period and subsequently half-yearly for the remaining support periods. Ongoing Performance Review is to be done after Go-Live at the above-mentioned periodic interval of time during the contract period or as decided by DGCIS. This review will be done against certain key parameters defined in SLA, to validate the compliance to all service conditions agreed. DGCIS or its representatives may carry out all the tests detailed in the acceptance test schedule to confirm that the performance of the different modules, subsystems, and entire installation satisfies the specified requirement of specifications including service performance for DGCIS to validate the performance; the SI needs to demonstrate the tests and their results to DGCIS during the testing phase. Such parameters include request-response time, workflow processing time, concurrent sessions supported by the system etc.

The SI shall make available the software programs and test cases required for carrying out the acceptance tests as per the schedule. Any additional test equipment deemed required

during validation shall be arranged by the SI at no cost to DGCIS, so as to complete the validation as per the specified time schedule in this document. The SI shall indicate whether the software package includes programs for testing under full load conditions and overload conditions by creation of artificial data in consultation with DGCIS. Such test program shall be provided by the SI for the limited purpose of testing. Any deficiency found during validation in performance of the system as per the requirement shall be rectified by the SI immediately. Any component or module failing during the acceptance tests or requiring alterations necessary to meet specification requirements shall be replaced at no extra cost to DGCIS at site by the SI. These shall be done within two weeks of the initial reports.

5.18. Post Implementation Services

Following are the post implementation services to be provided by the on-boarded system integrator (given in details in next section of this document);

User Support and Maintenance of the application

The scope of application support and modifications and integration with future systems covers the following activities

i. enhancement / modifications with respect to new / enhanced / enriched functionality,
ii. ensuring the desired functioning of the interface / integration,
iii. preparation of test scripts and interim application testing,
iv. installation of application and testing whenever required,
v. modification or preparation of new reports as per requirement,
vi. providing technical support on system parameters and requirement for newly implemented system,
vii. management and administration of databases in accordance with agreed standards,
viii. present relevant information and training if applicable and necessary regarding the use and functions of new products and services to a defined number of relevant users designated by DGCIS, and
ix. providing handholding support to end users in carrying out the business process transactions.

5.19. Bug Fixes and Management

Bug Fixes and Management is an important activity and based on the severity level, it becomes highly critical. There should be committed involvement in resolution of bugs based on following.

- Problem definition
- Request Analysis
- Priority Categorization
- Logging Bugs and tracking to resolution

It should address all the errors/bugs/gaps in the functionality offered by the offered solution (vis-à-vis the FRS) during the operations & maintenance period. It should identify and resolve

application problems like system malfunctions, performance problems, data corruption etc. due to which the software related solution for DGCIS may not be able to achieve the desired performance There should be a defined responsibility matrix for the following:

a) updating all available patch/ updates,
b) providing handholding support to end users,
c) ensuring proactive and timely support in identification and provision of solutions including support for resolution,
d) timely logging of Bugs/Problems, and
e) submitting Daily / Weekly / Monthly Status Reports to DGCIS.

5.20. Software Change and Version Control

The Software Capacity Building & Version control process must be defined and approved.

a) The version control and configuration information for the operational system and other application software (if any) must be maintained.

b) All configuration changes or minor customizations to the application which requires development effort should be documented in detail.

c) Changes in the application, which are mandatorily required for complying with any of the predefined requirements, FRS or To-be Functional solution should be treated as extremely important, and hence are to be completed and documented in detail.

d) All changes during the stabilization or support & maintenance phase shall be subjected to the comprehensive & integrated testing to ensure that the changes implemented in the system meets the desired and specified requirements of DGCIS and doesn't impact any other function of the system.

e) A Quarterly Report on the changes performed on the application and resolution of malfunctions carried out should be submitted.

f) Troubleshooting of all possible problems, monitoring of erratic behaviour through the Application Logs should be carried out at the earliest after detection.

g) All planned changes to application systems shall be coordinated within established Change Control processes to ensure that:

a) Appropriate communication on change required has taken place or proper approvals have been received.

b) Schedules have been adjusted to minimize impact on the production environment.

h) For any changes to the software, a document indicating proposed changes impact to the system in terms of functional outcomes/additional features added to the system etc. should be submitted and verified by the technical team. The team have to changes/update in portal/application as per instruction given by DGCIS; no extra cost will be paid for change request before Go-live.

i) Approval from DGCIS should be made mandatory for all the proposed changes before implementation of the same into production environment and such documentation is subject to review at the end of each month/quarter.

j) All such documentation should be preserved up to date to reflect the latest enhancements/modifications made to the application. All documentation should be prepared as per latest industry standards and should incorporate necessary version control mechanism.

5.21. Hand-over all required documentation to operate and maintain the system

System Integrator will supply DGCIS the following:

a) System Software / Application including error free source code *(only for bespoke development)* shall be handed over to DGCIS before Go-Live of the applications and finally before expiry of the Contract.

b) Information relating to the current services rendered and data relating to the performance of the services; entire documentation relating to various components of the Project, any other data and confidential information related to the Project;

c) All other information (including but not limited to documents, records and agreements) relating to the products & services related to the project to enable DGCIS to carry out due diligence in order to transition the provision of the Project Services to DGCIS or its nominated agencies, or its replacing Selected bidder (as the case may be). Such information would also include licences, licence keys, etc. procured in the name of DGCIS.

d) Further, the SI may use any item in the project for which it possesses the IPRs, but it should be used in such a manner that there is no vendor lock-in with respect to usage of that item. Moreover, any bespoke development would be an Intellectual Property of DGCIS and DGCIS should receive adequate royalty if the SI uses any item developed during the course of this project on any project of any other organization.

5.22. Commissioning of FTSSv2 and all other applications

a) Only after the successful completion of UAT and Security Testing from the CERT-In empanelled agencies, the application software shall be deployed on the production environment. The responsibility, both administrative and financial, to get the applications audited shall solely rest with the SI.

b) The SI shall be responsible for installation, integration, testing and commissioning of the hosting environment on the on-premises infrastructure and the additional systems on the cloud platform, along with all the allied equipment, software, updates, patches etc. at the production environment as and when needed.

c) Only after successful deployment of FTSSv2 on production environment, FTSSv2 would be deemed to have been commissioned.

Hosting Requirements

i. SI will be responsible for installation of all the software required for the successful hosting of the FTSSv2.

ii. In case there is any requirement of application specific server at any point of time, the SI shall be required to provide the same also without any additional cost to DGCIS.

iii. Infrastructure should provide sufficient capacity in terms of data processing, data storage and network bandwidth to handle the overall load and traffic coming to the FTSSv2 without compromising the overall performance of the system. The infrastructure should provide dedicated IP, dedicated SSL/ TLS certificate.

iv. It will be the responsibility of SI to prepare the specification for infrastructure i.e., servers, CPUs, RAM, storage, required software, other equipment, and the network requirements for running the FTSSv2 efficiently. Whatever infrastructure is needed shall be clearly accounted in the bid document.

v. Appropriate redundancies shall be built in IT infrastructure as per standard industry practices. The SI shall inform DGCIS about the cost of hosting of FTSSv2 on on-premises infrastructure and share the appropriate documentary proof.

vi. The SI shall formulate an effective Back-up Strategy and Disaster Recovery Plan and shall be responsible for implementing the same at the time of commissioning of FTSSv2.

vii. It is mandated that the SI shall host the DGCIS applications other than FTSSv2 on the MeitY empanelled CSPs.

viii. SI shall be configuring the DGCIS provided domain name on its servers.

5.23. Go-live of FTSSv2 and all other applications

a) After successful commissioning of FTSSv2, FTSSv2 would be declared as Go-Live and enter into AMC phase, and the SI would be issued a Go-live certificate by DGCIS.

b) SI shall share all the passwords/ access rights/ addresses along with all relevant details of the application/ server/ database/ hardware (if any) with DGCIS from the day of Go-live.

c) SI shall also handover complete, fully tested/ audited, bug free, final version of FTSSv2 source code *(only for bespoke development)* (in softcopy format) along with the signed hash of the final source code printed on the SI letter head and complete details of technology and software (with versions) used for the development of FTSSv2.

5.24. Documentation

DGCIS shall review the project documents developed by SI including requirements, design, installation, training and administration manuals, version control etc. Any issues/gaps identified in any of the above areas, shall be addressed to the complete satisfaction of DGCIS.

a) Preparation of the documents, like but not limited to, Software Requirement Specification (SRS), screen layouts, Software Design Specifications (SDS), Change Management Plan, Training Plan, Test Cases, Scenarios & Results, Software Code (softcopy), User Manuals, Training manuals, Operations & Maintenance Manual, Administrator Manual, Security Policy, etc. as per acceptable standards.

b) Updating all above mentioned documents time to time, specially whenever there is any change, update in the FTSSv2. Submit all the updated documents to DGCIS

c) Obtaining sign-off for all the documents from DGCIS.

d) Provide OEM documentation with every unit of the equipment supplied. The language of the documentation should be in English. The technical documentation should include illustrated catalogues/ reference manuals/ technical manuals and operation manuals.

e) The Selected bidder will provide all software related documentation, Indicative list of documents include:

- High Level Design Document.
- Low Level Design Document.
- SRS Documents.
- User Manual.
- Training Manuals.
- Unit Test Cases.
- UAT Report.
- Performance Test Report.
- Various Reports during the O&M phase like utilization, issue report, performance, etc.
- Knowledge Transfer.

5.25. Training and Capacity Building

Training of key stakeholders is essential for ensuring that the software developed is actually put to use. Hence, the SI shall ensure a proper training to the designated end-users on the system so as to make them well conversant with the functionalities, features and processes built in the proposed system.

a) Training Plan: The selected bidder shall provide comprehensive and detailed training plan describing the proposed approach & methodology, calendar/ timelines, course contents, course duration, training materials, training tools, training logistics, etc.

b) The content of the training plan and schedule shall be prepared by the SI in consultation with DGCIS at an appropriate time period. The SI shall submit the final document for approval of DGCIS before initiating the training activity.

c) Training Overview: The training overview shall be provided to DGCIS's Steering Committee and PMU members (if proposed) before beginning of each training phase. SI shall incorporate the changes suggested/ inputs provided by the DGCIS during the training overview. The overview sessions will not be counted in total number of training sessions.

d) The selected bidder shall arrange separate training sessions for different categories of participants in batches (Approx. Batch size: 20+ participants).

e) Training could have multiple sessions as per the need and requirement of the project/ application. Hence, the SI shall conduct Training Needs Analysis of all the concerned staff and chalk out a systematic training plan. There should be sufficient number of trainers in every training session for conducting the training program.

f) Re-training of the above staffs whenever significant changes are made in the FTSSv2 and/ or personnel.

g) Assessment of Training Effectiveness: Evaluate effectiveness of training programs and workshops by obtaining formal feedback from each participant after completion of each training program/ workshop. The SI will be responsible for re-conducting the training of the whole batch in case the average score is less than 70% and the additional cost of such re-training sessions shall be borne by the SI.

h) The requisite training infrastructure like space, seats, projector with screen etc. shall be provided by DGCIS in consultation of SI.

i) The training shall be organized by the SI wherein specialised logistics and supportive facilities (if any), apart from the above-mentioned facilities, should be arranged by the SI only, and all associated cost shall be borne by the SI.

j) SI shall conduct training at the location(s) prescribed by DGCIS

k) The SI shall provide training material like handouts, user manual (role base), the language of training manual shall be in English.

l) The training content and mode of delivery must be approved by DGCIS. Training material should be provided in hard and soft copies both. The SI shall ensure that all the training documentation in Hardcopy and Softcopy is in place (user training, operation procedures, visual help-kit etc.) before beginning each training session.

m) The cost incurred on carrying out the training at prescribed location(s) shall be borne by the SI which includes trainer's and other support team member's fees/ salary along with all incidental expenses like travelling, lodging-boarding, local conveyance etc.

n) DGCIS will bear its own expenses related to travel and lodging of its personnel.

o) SI should also provide online help corner for the users and upload user manuals, self-running demos, save and maintain FAQs online so that users can obtain system specific

technical/ functional help online as and when required. The system should also maintain module-wise online user Feedback database.

5.26. Supply of Software/ Application/ RDBMS/ Other related Software/ Licenses

a) SI shall supply all the software with adequate number of licenses procured in the name of DGCIS, required for the proposed system. The ownership of the softwares should rest with DGCIS. Original invoice of procurement of all hardwares and softwares should be submitted to DGCIS.

b) The software provided should have the OEM/ vendor support for a period of not less than 5 years from the date of go live.

c) Software tools for implementation, Data Migration, testing etc. shall be part of the offered solution and shall be arranged by the SI without any additional cost to DGCIS.

d) All support services including updates, upgrades and patches for all software modules shall be provided by the SI till the end of the AMC period.

5.27. Authorization, Security and Access

a) The SI shall assist DGCIS in formulating appropriate security/ authorization, control policy to prevent unauthorized access to the DGCIS network, IT on-premise infrastructure as well as to the FTSSv2 components e.g., programs, data, screens and outputs.

b) The SI shall build adequate access rights and control mechanisms into the proposed IT system to prevent any unauthorized access to the FTSSv2 or any of its part/ data/ information.

5.28. Business Continuity Planning

The selected bidder shall prepare and implement the Business Continuity Plan for DGCIS. The strategy should include details of infrastructure, location, operations, management and policies based on Business Impact Analysis carried out in consultation with the DGCIS officials.

5.29. Disaster Recovery Drill

It has been decided that a separate Data Recovery (DR) Centre is not to be maintained for the time being as it would entail unnecessary financial burden. Regular back-ups of all the applications are to be taken and uploaded to a NIC location in a different seismic zone. A periodic drill is to be conducted every quarter whereby the SI is to restore the systems using the backups. This is to ensure that in the event of a disaster the applications can be re-started with the latest backed up data with minimum time lag.

The Disaster Recovery drill will be taken before Go-Live of the applications and successful drill will be an acceptance criterion. Subsequently, a drill is to be taken once every three months. The drill shall ensure that in case of a disaster a smooth and proper transition happens.

5.30. Disaster Recovery and Back-up Policy

a) The SI shall formulate an effective Back up strategy and Disaster Recovery Plan and will be responsible for implementing the same during the contract period.

b) The SI shall revise/ update the backup policy keeping pace with the technological advancement.

c) The SI shall test the effectiveness of the Back-up Strategy.

d) The SI shall submit the DR drill report to DGCIS.

5.31. General Scope

a) The SI must provide comprehensive on-site warranty/ on-site maintenance duly backed up by authentic OEM support for the entire IT infrastructure supplied and installed under the project and thereafter maintenance phase for the entire period of contract as per the agreed SLA.

b) Preventive maintenance services to be carried out at least once in a quarter (3 months).

c) Corrective maintenance services to be carried out as and when required.

d) Asset management services i.e., creation of a database of all the IT hardware (if any) and software assets, record installation and removal of any asset and inform DGCIS even if it is temporary, register all the licensed software with the respective OEMs and maintain the registration details.

e) Configuration management services i.e., maintaining the record of all the hardware and software configurations, to ensure that no unwarranted changes are carried out, version management of the configurations, accessibility of the configurations should be only with the admin and designated officials.

f) Vendor management services i.e., coordination with external vendors/ OEMs/ CSP/ ISP etc., maintaining the database of all the vendors with their contact details.

g) Server management services i.e., administration, performance tuning, patch management, usage statistics, access details, logs, security etc.

h) Backup and recovery of all the system software, application software, database, etc. as per the Standard/ CSP policy.

i) SI should ensure that all the software, hardware, peripherals, accessories, subcomponents required for the functionality and completeness of the solution should also be provisioned according to the requirements of the solution. Also, any additional components, sub-components, assemblies, sub-assemblies that would be required to meet the desired

performance requirements (as per SLA) will have to be provisioned by the SI at no additional cost to DGCIS.

j) To ensure that the application design and implementation takes care of necessary security aspects such as data safety, access controls, integrity, backup measures.

k) Bidder should ensure that none of the quoted components and sub-components is declared end-of-sale, end-of-life, and end-of-support by the respective OEM at the time of bid submission. If, the OEM declares any of the products/ solutions end-of-sale subsequently, bidder should ensure that the same is supported by the respective OEM from its date of deployment till the end of the contract period.

l) SI will be responsible for the generation and submission of necessary documentation required during the entire project by DGCIS.

m) The SI will be responsible for maintaining the required performance levels as per the agreed SLA failing which the penalty, as applicable and as defined in the subsequent sections of the RFP document (to be shared later), shall be imposed on the SI.

5.32. Scope of Work for Cloud Service Management

The System Integrator will be responsible for the following:

i. Bidder shall be responsible for procuring, setting up, installation, configuration, management, upgradation, and migration of application servers, database servers/storage to the cloud environment. The cloud must be a 'MeitY- empanelled cloud'.

ii. The indicative list of DGCIS's applications / portals to be migrated and hosted in the procured cloud environment are given as follows;
   (a) Integrated Dashboard (to be developed)
   (b) DGCIS Website (to be re-developed)
   (c) Exim Mobile App (to be re-developed)

iii. Maintain and manage the required network components for the cloud services procured by the SI for DGCIS. Setup and configure the VMs, storage, Network, Database etc. at DC site meeting requirements of DGCIS.

iv. Service provider shall be responsible for implementation, management and monitoring of Distributed Denial-of-Service (DDoS), Intrusion Prevention System (IPS), Intrusion Detection System (IDS) Services, etc.

v. Service provider will implement anti-malware and conduct regular vulnerability scanning and penetration testing of systems and infrastructure.

vi. Service provider shall have public Services in De-Militarized Zone (DMZ) and High security services in Militarized Zone (MZ).

vii. Service Provider shall configure external connections to the hosting infrastructure required to upload database/files etc.

viii. Service provider is expected to understand the complete architecture of existing applications and processes necessary for smooth migration of applications and databases including interdependencies between applications and data.

ix. Service provider shall be responsible for deployment of Security patches on Hardware and Software.

x. Bidder will be responsible for migrating to cloud and managing the cloud services.

xi. The bidder shall be responsible to monitor the cloud services and ensure 99.9 % uptime of all services as per agreement.

xii. Deployment of specified Applications on cloud, security administration, planning and implementation of cloud management and monitoring portals for complete infrastructure and services procured.

xiii. Provide access to DGCIS for installation/commissioning and management of Virtual Machines. Provisioning of scalable storage capacity as per requirements of DGCIS and availability of such services as per agreement.

xiv. SI shall provide necessary technical documentations, design documentations, standard Operating Procedures (SOPs) required for operations and management of services.

xv. SI shall have provision to provide and support additional VM requirements and related services.

xvi. SI shall provide necessary details including sizing, current loads, utilization, expected growth/demand and other details for scale up/scale down at the end of first year in close coordination with DGCIS.

xvii. Monitoring of performance, resource utilization and other events such as failure of services, degradation of services, availability of network, storage, Database systems, OS etc.

xviii. The applications should be cloud native and should not use any proprietary services of the Cloud service provider, i.e., services which are specific to a particular Cloud Service Provider and are not available with other similar providers. They should be cloud agnostic so that they are readily portable from one cloud to another.

5.33. Project Management

a) Co-ordinate all activities with the Program Management Unit (PMU)/ Steering committee set-up by DGCIS.

b) Ensure timely delivery of all the deliverables related to proposed IT system.

c) Supervise and ensuring delivery, installation and commissioning of IT infrastructure as per BOM supplied with the technical bid.

d) Co-ordinate among various stakeholders and other vendors.

e) Ensure that day to day issues related to the proposed IT system are handled and solved immediately.

f) Monitor risk management related aspects and project delays;

5.34. Project Monitoring and Reporting

a) The Bidder shall describe the proposed project monitoring and reporting methodology in the bid which is to be published later.

b) SI to submit a written weekly progress report to DGCIS for review. The frequency of report submission can be modified mutually during critical phases of the Project.

c) Report exceptions and issues that require immediate attention of DGCIS on a regular basis.

d) The SI's Project Management team will be responsible for updating the Program Management Unit (PMU)/ Steering committee of DGCIS in progress review meetings to be held at periodic intervals.

5.35. Scope of Work for DC installation and Commissioning

The System Integrator will be required to procure and install the in-scope hardware IT infrastructure for DC and thereafter maintain the same as per the scope of work mentioned in this section. The scope shall include procurement, supply, transportation, storage, unpacking, installation, testing, successful commissioning and satisfactory completion for the DGCIS Data Centre.

DGCIS shall provide the necessary minimum constructed space for DC. Data Centre shall be located in DGCIS premises in Kolkata. **The SI shall also be responsible for assistance in procurement of necessary cloud infrastructure from NIC for taking regular backups for Disaster Recovery Drill** as mentioned in Section 5.31. Disaster Recovery Drill.

Any kind of civil and non-IT work such as construction of false flooring, false ceiling, cabling, air-conditioning, etc. remains excluded from the scope of work. Only the portion related to purchase and installation of IT hardware components, including network components, are included in the scope of work related.

The list of work of the SI would include

   i.   Procuring, setting up, installation, configuration, management, upgradation and support the IT infrastructure required for the DC

  ii.   Data Centre IT Management facility (e.g., server, storage, network, security, and allied items) for management and monitoring of the entire DC

 iii.   Consider the following to setup and build the DC:

     a. Scalability   c. Security and
     b. Availability   d. Manageability

iv.   Procure, Supply, install, and commission the required cables, PDUs, sockets, distribution boards etc. as per requirement of the existing electrical system. If required SI shall accomplish the assessment of existing electrical system without any extra cost.

   a.   Check the earthing of each rack connection.
   b.   Check the connectivity of the rack from the UPS
   c.   Test the power failover of racks.
   d.   Perform testing on installed electrical system.
   e.   Perform cable dressing and labelling

v.   Supply, Installation and Commissioning of Network, Network, Server and Storage Equipment:

   a.   The delivery of all equipment / software / services would be accepted only after inspection, testing and approval of the equipment / software / services by the authority specified by the DGCIS, if required so. Inspection charges would be borne by the bidder only and the DGCIS would make no extra payment in this regard. If the equipment's are found to be refurbished, same shall be rejected by DGCIS.

   b.   The bidder shall be responsible for understanding the existing compute architecture and based on that revamp the configuration and architecture after consultation with DGCIS

   c.   The bidder shall be responsible for submitting Post Implementation document to DGCIS which consist of architecture, configuration etc.

vi.   SI should procure, configure and commission all IT hardware, network components and non-IT requirements for setting up the DC and DR-backup.

vii.   The methodology used by SI should ensure that the Data Centre Site Hardware can be rapidly deployed.

viii.   SI must also procure and successfully install all the system software such as operating systems and any other software for using the DGCIS system

ix.   The proposed components must be forward-looking with at least a seven-year horizon to start with; should also accommodate any scaling up requirements necessitated in future.

x.   The SI would provide Installation and Commissioning Report to DGCIS.

Further, the following are to be maintained:

   i.   Infrastructure should provide sufficient capacity in terms of data processing, data storage and network bandwidth to handle the overall load and traffic coming to the FTSSv2 without compromising the overall performance of the system. The infrastructure should provide dedicated IP, dedicated SSL/ TLS certificate.

   ii.   It will be the responsibility of SI to prepare the specification for infrastructure i.e., servers, CPUs, RAM, storage, required software, other equipment, and the network

requirements for running the FTSSv2 efficiently. Whatever infrastructure is needed shall be clearly accounted in the bid document.

iii. Appropriate redundancies shall be built in IT infrastructure as per standard industry practices. The SI shall inform DGCIS about the cost of hosting of FTSSv2 on on-premises infrastructure and share the appropriate documentary proof.

5.36. Change Request

i. DGCIS may at any time, by a written order given to the SI, make changes in scope of the work or schedule of services as specified in the RFP document, which is to be published later.

ii. While approving any change request, if required, DGCIS may ask the SI to deploy the required resources on-site.

iii. The change request/ management procedure will follow the following steps:

a) Identification and documentation of the need for the change: The information related to initiator, initiation date and details of change required, and priority of the change will be documented by DGCIS.

b) Analysis and evaluation of the Change Request: Impact of the change in terms of the estimated effort, changed schedule, cost and the items impacted will be analysed and documented by the SI.

c) Approval or disapproval of the change request: DGCIS will approve or disapprove the change requested including the additional payments (as per the quoted man-month rate), after discussion with SI on the impact of the change on schedule. Any change request where the total man-month effort requirement is upto the 15 man-days shall not be considered as change request, and shall have no financial implications on DGCIS.

d) All changes outside the scope of work or Schedule of Services having financial implications in terms of the overall cost/ time of the project, shall be undertaken by the SI, only after securing the express consent of the DGCIS.

e) Implementation of the change: The change will be implemented in accordance with the agreed cost, effort, and schedule by the SI as mutually agreed upon by the SI and DGCIS.

f) Verification of the change: The change will be verified and tested by the DGCIS on completion of implementation of change request prior to deployment on the production server.

iv. Any change request shall be dealt with in accordance with the Change Control Schedule of the RFP (to be published).

5.37. DGCIS's current Application: Module-wise description

The details of various components of DGCIS's application are presented below:

Data Ingestion Component

This Component handles the input data to the online application. The Foreign Trade data gets generated in customs locations and SEZs in the forms of Daily Trade Return (DTRs) from Bills of Entry (BE) for Imports and Shipping Bills (SB) for Exports submitted by the Importers and Exporters, respectively, in various customs offices and SEZs located all over India.

The DTRs from Customs are received in DGCIS in three different modes, namely,

(i) Electronic Data Interchange (EDI) mode through CBIC ICEGATE SFTP Server and SEZ SFTP Server – The DTRs from SEZs are received online through NSDL Server by DGCIS. This data is hosted on the SFTP host server and accessed through IP and dedicated password. The data is in the form of text flat file with specified data format. This data is formatted in the Database field format and uploaded into the system using a telnet client. Periodicity of this activity is daily, i.e., every day the export and import data of the previous day from each of the SEZs and Ports are updated in the database.

(ii) E-mail (non-EDI) data in the form of Excel files – This data is formatted in the Database field format and uploaded into the system using a telnet client. This activity is done as and when non-EDI data is received from the ports via email.

(iii) Hard copy in handwritten formats – This data received is entered into the Database using a Manual Data Entry module. Except for manual data, all other data are uploaded into the main server by EDP (Electronic Data Processing) Division and separate datasets are maintained for export and import. The manual data are uploaded into the main server by officers of Export and Import after data entry through the Manual Data Entry module. This activity is done as and when non-EDI data is received from the ports via post.
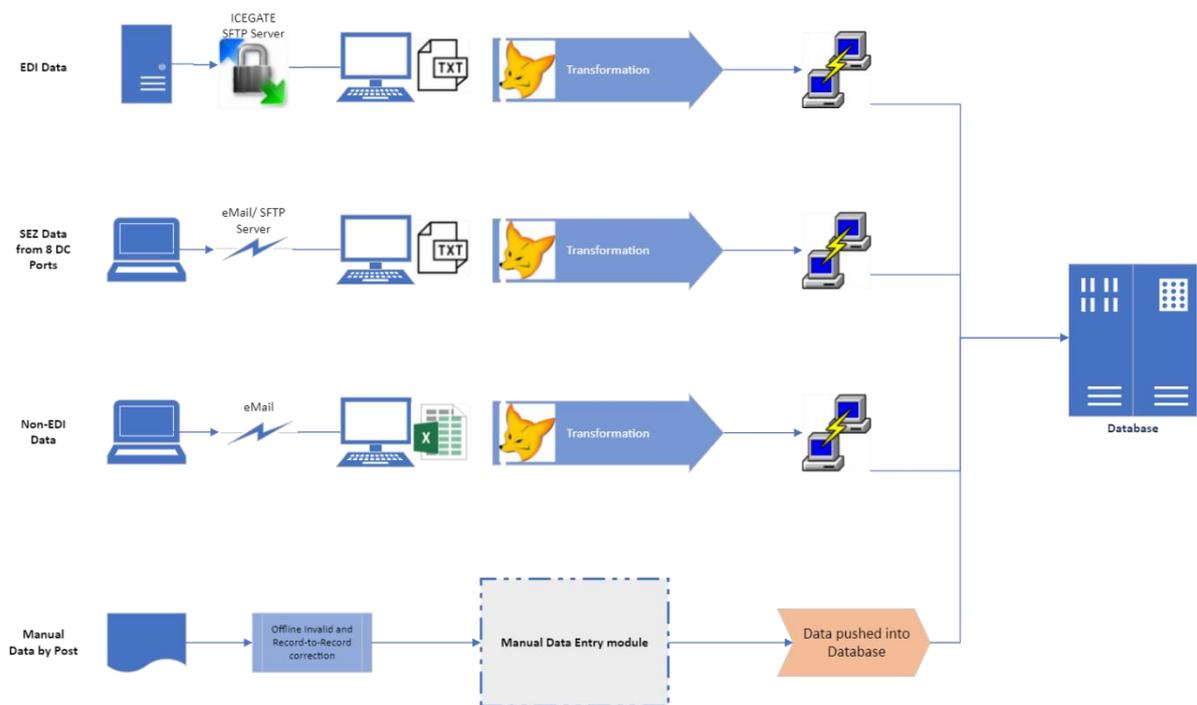
Figure 2: Data Ingestion at DGCIS

Data Record ID (Sequence Number) Generation

After entry into the Database for all DTRs (export and import), a unique Sequence Number is assigned to each entry in the Database. The Sequence number is reset to zero (0) at the beginning of each financial year and each entry in the database is given an incremental sequence number from the last number as present in the Database. Each data entry also contains the date and month of the transaction (Shipping Bill date for export & Bill of Entry date for import).

Invalid Error Generation & Correction Component

After assignment of the Sequence number to each new entry, each of the entries are checked for Invalid Country and Commodity codes (fields in the DTR entry) individually for Export and Import.

User selects the month and year of the database for which the Invalid check is to be run. If the individual Country and Commodity codes in the data entries are not present in the Master Table of Countries and Commodities, a temporary Error table is populated with the Invalid entry for correction.

Error can be of two types:

1. Code does not exist in the Master Table of Commodity/ Country Codes

2. Commodity/ Country Code field is blank

In both the cases, the entries are populated in the temporary table for correction
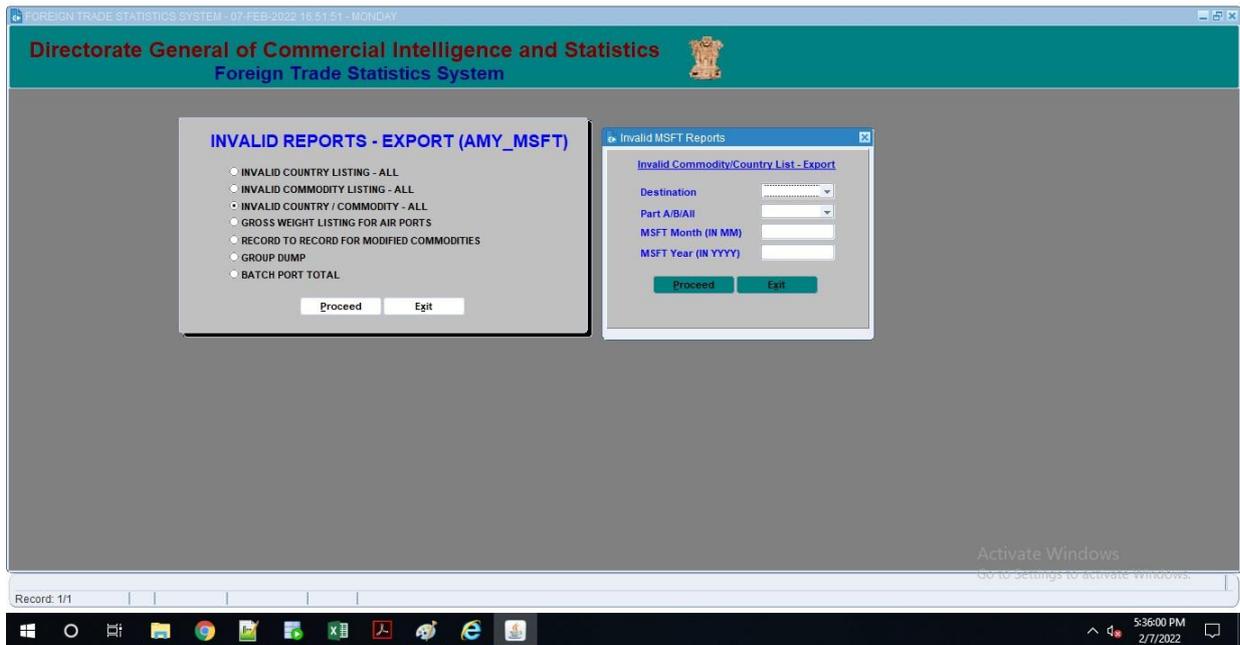
Figure 3: Invalid Error

The temporary table generated for Invalid Country and Commodity codes are distributed for correction amongst the users and the screen for correction is as follows:
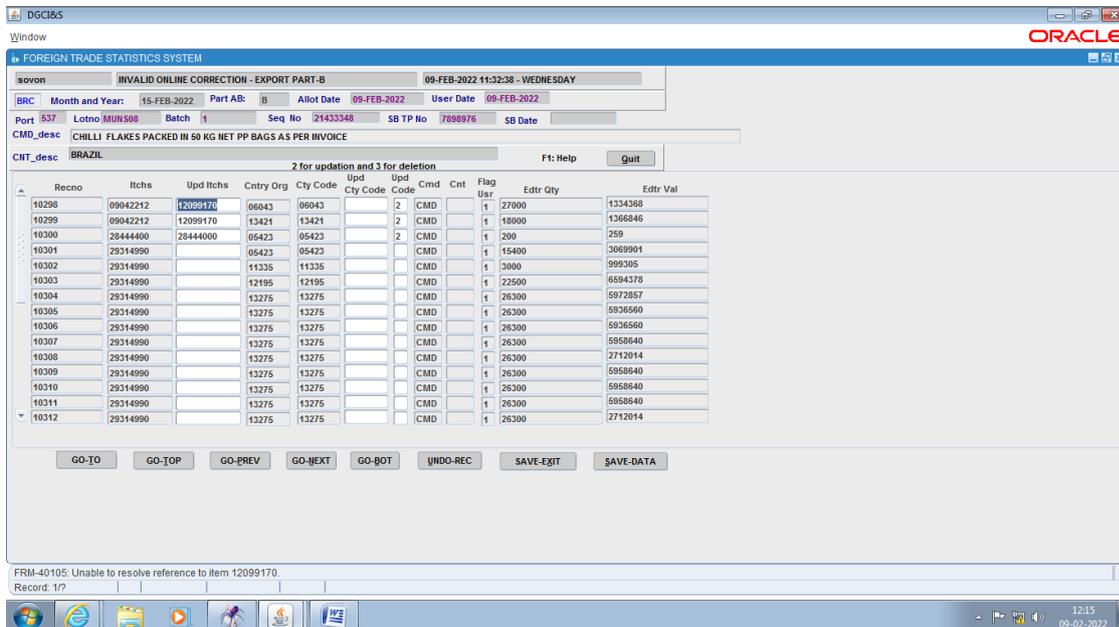

Figure 4: Temporary Table for Error correction

For Invalid Error correction, only Commodity Code (ITCHS) and Country Code are editable for correction, while other fields are non-editable. The user updates the Country and Commodity codes and submits for verification to senior officers and post verification the updated values are pushed into the database corresponding to the original entries.

Error correction for the two error types are as follows:

1. Commodity Code does not exist in the Master Table of Commodity Code – In case of an invalid code entry, the user determines the correct ITCHS Code from the Master Table based on the description of the product or commodity

2. Commodity Code field is blank – In case of a blank code entry, the user determines the correct ITCHS Code from the Master Table based on the description of the product or commodity and updates the Commodity Code for the transaction.

3. Country Code is blank or does not exist in the Master Table of Commodity Code – In case such an error, the user determines the correct Country code based on the description of the item or port of export/ import and updates the Country Code for the transaction.

Auto – Correction/Conversion Component

For each commodity code, a standard measurement unit is defined however, the input data may contain reported unit of quantity different than that of the Standard unit of measurement. In such cases, Stored Procedures are run such that an auto conversion of the unit using the mathematical formula from the reported unit of quantity to the standard unit of quantity.

Group Code Updation Component

All 8-digit Commodity Codes have been classified into 169 Brochure Groups. The commodity codes assigned to each Brochure Group is updated in the beginning of each Financial Year.

After the Commodity Code errors have been corrected, for each individual database entry, Group Code is assigned to the transaction based on the Commodity code, corresponding to the month and year selected.
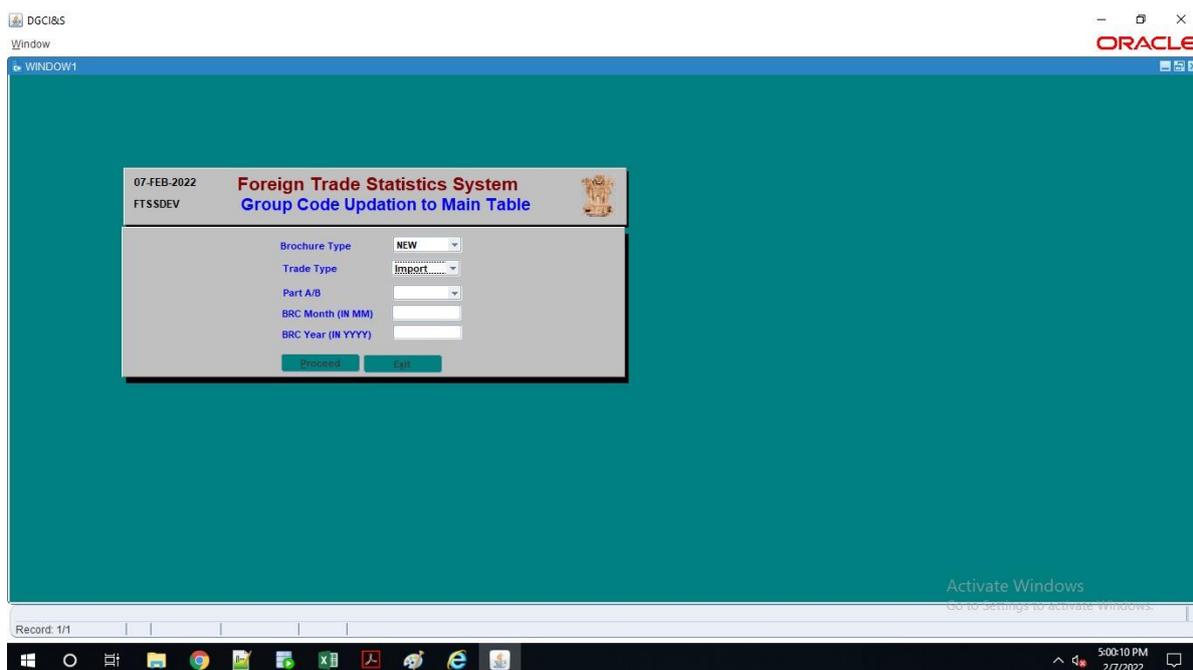
Figure 5: Group Code Updation

Record-to-Record (RR) Error Generation & Correction Component

For all transactions stored in the database, unit value is calculated which is derived by dividing Export/Import Value by the quantity. For all Country Commodity combination, a Historical Mean value is available which are computed on the basis of unit values of historical transactions. The tolerances for each Country Commodity combination are also defined. Upon running of the Record-to-Record check, the transactions where the unit values lie beyond the tolerance range then they are selected for checking.

In this step, those cases are also taken up where the transactions have been reported in units of commercial parlance. These transactions are individually checked, and the reported quantities are corrected to appropriate quantities as per the Standard Unit.

The staff update the quantities of the transactions based on historical reference or if there is a mismatch in the standard units and Commercial units reported based on the description of the commodity provided by the importer or exporter.

Computation of Historical Mean Rates

The benchmark for comparing the current unit values are the historical unit rates. These historical unit rate, which is the mean of the unit values of transactions made in the past months, is computed using the following logic:

1. First the transactions of the past three months are taken for each country x commodity combination. The mean and variance of unit values in these transactions are computed after suitably removing outlier transactions.

2. Then the only those means are taken where the number of transactions is 10 or more. In case 10 transactions are not found in the past three months, then for those country x commodity combinations data for past six months is considered. In case, still there are

less than 10 transactions available, then the means are computed on the basis of past 12 months. If still there are less than 10 transactions, then those country x commodity combinations are dropped.

3. Now, the historical rates are computed only country-wise using the same methodology as elucidated above. These rates are used for those transactions for which the country x commodity combinations have less than 10 transactions and have been dropped earlier.

Group Dump System (Provisional Alpha) Error Correction Component

In this step the unit values are checked country-wise for each commodity against the historical rates. In case the current rates are found to be outside tolerance level then each transaction of that country for the specific time period is checked.

Aggregation of Brochure-MSFT

After successful correction of the errors in the dataset, a month-wise aggregation is run based on the parameters as defined below to the Export and Import data. The transactions corresponding to each of the following parameters are aggregated and collated into a summary table for dissemination.

1. Brochure Code-wise Aggregation

2. MSFT-wise Aggregation

3. State-wise Export data Aggregation

4. Scheme-wise data Aggregation

Master Table creation and Maintenance

The following are the list of Master Tables which are maintained at DGCIS and are updated on a regular basis.

1. Country Code Master Table

2. Commodity Code Master Table

3. Port Code Master Table

4. Brochure Code Master Table

5. State/ Region Master Table

6. Scheme Master Table

7. Lot Master Table

8. Chapter Master Table

9. Unit History Master Table

10. Sensitive Commodity Master Table

11. Section Master Table

12. Dollar Master Table

Application module for Artificial Intelligence and Machine Learning

DGCIS Systems continuously receive, store and process data related to Exim trade from ports concerning all the importers/ exporters across the country. Over a period of time, this data is gathered to provide a lot of statistics comprehension for useful analysis both for compliance as well as to prepare out the interesting patters and exceptions. It is desirable to make use of an appropriate Business Intelligence tool amalgamated with applications of Artificial Intelligence and Machine Learning to analyse and correlate the data and generate reports in various forms which would provide required inputs and enable the policy makers of the DGCIS to develop productive information which will definitely help in better functioning of DGCIS procedures.

The application to be developed by the System Integrator should also have AI-ML components, following are the different AI-ML use-cases basis our initial analysis and discussion with stakeholders:

Case – 1: Blank / Incorrect Country Code

The Data sources for DGCIS' FTSS application are as following:

1. Electronic Data Interchange (EDI) through ICEGATE SFTP Server

2. SEZ Data through e-mail/SFTP server

3. Non-EDI Data through e-mail

4. Manual Data by post

Among the above-mentioned Data sources, the EDI and SEZ data (pts. 1 and 2 above) have pre-decided structures, templates in place and hence the fields are well defined. Thus, the error concerning Incorrect / Blank Country Code does not occur for these data sources. However, for non-EDI and manual data sources, such error may be encountered.

Following are different scenarios under the mentioned case:

a. In the following import data row, the highlighted cell for country code is blank:

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	UoM	Qty	Value	Currency	Rate	Description
1	08133000		Kgs	100	15000	AUD	150	Apple from Australia

Possible application of AI-ML: In the above example, through parsing and analysing the Description field's string or text into logical syntactic components, the AI-ML engine can suggest the COO to be **Australia** and corresponding Country Code can be recommended by the engine by mapping it to be Country Master Table, having the following Structure:

Country Master Table

Code	Country
001	**Afghanistan**
002	**Albania**
003	**Algeria**
004	**Andorra**
005	**Angola**
006	**Antigua and Barbuda**
007	**Argentina**
008	**Armenia**
009	**Australia**
010	**Austria**

Possible Recommendation: The following possible recommendation can be given as an output of the AI-ML engine.

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Recommendation from AI-ML engine	Unit of Measurement	Qty	Value	Currency	Rate	Description
1	08133000		009 (Australia)	Kgs	100	15000	AUD	150	Apple from Australia

If the User accepts the above recommendation, the COO field would be updated, and the AI-ML engine would be trained accordingly.

   b. In the following import data row, the highlighted cell for country code is blank and the description contains misspelled Country description

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate	Description

1	11023447		Kgs	100	7000	EUR	70	Pineapple from **Armnia**

Possible application of AI-ML: In the above example, through parsing and analysing the Description field's string or text into logical syntactic components, the AI-ML engine would identify misspelled country name of **Armenia** and thus suggest the correct COO and corresponding Country Code can be recommended by the engine by mapping it to be Country Master Table.

Country Master Table

Code	Country
001	**Afghanistan**
002	**Albania**
003	**Algeria**
004	**Andorra**
005	**Angola**
006	**Antigua and Barbuda**
007	**Argentina**
008	**Armenia**
009	**Australia**
010	**Austria**

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Recommendation from AI-ML engine	Unit of Measurement	Qty	Value	Currency	Rate	Description
1	11023456		008 (Austria)	Kgs	100	7000	EUR	70	Pineapple from **Armnia**

If the User accepts the above recommendation, the COO field would be updated, and the AI-ML engine would be trained accordingly .

c. In the following import data row, the highlighted cell for country code is erroneous, that is, such country code does not exist the Country master table

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate	Description
1	08133000	**1509**	Kgs	100	15000	AUD	150	Apple from Australia

Possible application of AI-ML: In the above example, the AI-ML engine would look-up the COO Code in the country master table and once found unavailable, the engine through parsing and analysing the Description field's string or text into logical syntactic components, would suggest the correct COO - **Australia** and corresponding Country Code can be recommended by the engine by mapping it to be Country Master Table.

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Recommendation from AI-ML engine	Unit of Measurement	Qty	Value	Currency	Rate	Description
1	08133000	**1509**	009 (Australia)	Kgs	100	15000	AUD	150	Apple from Australia

If the User accepts the above recommendation, the COO field would be updated, and the AI-ML engine would be trained accordingly.

Case – 2: Blank / Incorrect Commodity Code

Following are different scenarios under the mentioned case:

a. In the following import data row, the highlighted cell for commodity code is blank:

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate	Description
1		009	Kgs	100	15000	AUD	150	Apple from Australia

Possible application of AI-ML: In the above example, through parsing and analysing the Description field's string or text into logical syntactic components, the AI-ML engine could suggest the Commodity to be **Apple** and corresponding ITCHS code can be recommended by the engine by mapping it to be Commodity Master Table.

Possible Recommendation: The following possible recommendation can be given as an output of the AI-ML engine.

S. N o.	Commod ity Code (ITCHS)	Recommenda tion from AI-ML engine	Count ry of Origin (COO)	Unit of Measurem ent	Qt y	Val ue	Curren cy	Rat e	Description
1		08133000 (Apple)	009	Kgs	10 0	1500 0	AUD	150	Apple from Australia

If the User accepts the above recommendation, the ITCHS field would be updated, and the AI-ML engine would be trained accordingly .

   b. In the following import data row, the highlighted cell for commodity code is blank and the description contains misspelled Commodity description

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate	Description
1		009	Kgs	100	15000	AUD	150	**Aple** from Australia

Possible application of AI-ML: In the above example, through parsing and analysing the Description field's string or text into logical syntactic components, the AI-ML engine could suggest the Commodity to be **Apple** and corresponding ITCHS code can be recommended by the engine by mapping it to be Commodity Master Table.

Possible Recommendation: The following possible recommendation can be given as an output of the AI-ML engine.

S. N o.	Commod ity Code (ITCHS)	Recommenda tion from AI-ML engine	Count ry of Origin (COO)	Unit of Measurem ent	Qt y	Val ue	Curren cy	Rat e	Description

| 1 | | 08133000 (Apple) | 009 | Kgs | 100 | 15000 | AUD | 150 | **Aple** from Australia |

If the User accepts the above recommendation, the ITCHS field would be updated, and the AI-ML engine would be trained accordingly.

    c. In the following import data row, the highlighted cell for Commodity code is erroneous, that is, such ITCHS code does not exist the Commodity (ITCHS) master table

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate	Description
1	**081335673**	009	Kgs	100	15000	AUD	150	Apple from Australia

Possible application of AI-ML: In the above example, the AI-ML engine would look-up the ITCHS Code in the Commodity master table and once found unavailable, the engine through parsing and analysing the Description field's string or text into logical syntactic components, would suggest the correct Commodity –**08133000 (Apple)** and corresponding ITCHS Code can be recommended by the engine by mapping it to be Commodity Master Table.

S. No.	Commodity Code (ITCHS)	Recommendation from AI-ML engine	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate	Description
1	**081335673**	08133000 (Apple)	009	Kgs	100	15000	AUD	150	Apple from Australia

If the User accepts the above recommendation, the ITCHS field would be updated, and the AI-ML engine would be trained accordingly.

Case – 3: Deviation of Commodity Unit Rate beyond acceptable limits

At present, for a particular Country-Commodity combination, DGCIS records historic Commodity Unit Rate and stores such rates as Historic Mean Rates derived from at least ten such transactions for the particular Country-Commodity combination.

For a given trade record, if the unit rate falls beyond the acceptable limits (defined by 10% to 1000% of the Historic Mean Rate), then the quantity of the commodity is manually adjusted by DGCIS officials to bring the unit rate within the acceptable limit range.

In the following import data row, Rate (highlighted) is less than 10% of Historic Mean Rate for Import of Country-Commodity Combination and hence does not fall within the acceptable limits:

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate (Value /Qty)	Historic Mean Rate for Import of Country-Commodity Combination
1	08133000	009	Kgs	100	15000	AUD	150	1600 AUD/Kgs

Possible application of AI-ML: In the above example, the AI-ML engine would adjust the quantity of the commodity in such a manner that the unit rate falls within the acceptable range (10% to 1000% of the Historic Mean Rate)

Possible Recommendation: The following possible recommendation can be given as an output of the AI-ML engine.

S. No.	Commodity Code (ITCHS)	Country of Origin (COO)	Unit of Measurement	Qty	Value	Currency	Rate (Value /Qty)	Historic Mean Rate for Import of Country-Commodity Combination
1	08133000	009	Kgs	75	15000	AUD	200	1600 AUD/Kgs

If the User accepts the above recommendation, the Quantity field would be updated, and the AI-ML engine would be trained accordingly.

From the next such transaction onwards, the AI-ML engine would be trained towards modifying the quantity for that particular Country-Commodity Combination in similar manner.

The above-mentioned probable applications of AI-ML is summarized as following:

Blank/Incorrect Country Code

- **Blank Country Code**: AI/ML engine to learn from the product description to suggest the correct country code

- **Blank Country Code & Misspelled Country Description**: Identification of misspelled country name to suggest country code by breaking the description string into logical syntactic components

- **Erroneous Country Code**: Suggest the correct country code based on the text description of goods

Blank/Incorrect Commodity Code

- **Blank Commodity Code**: AI/ML engine to analyze the product description to suggest the correct commodity code

- **Blank Country Code & Misspelled Commodity Description**: Identification of misspelled commodity name to suggest commodity code through parsing & analyzing the description string

- **Erroneous Commodity Code**: Suggest the correct commodity code based on the text description of goods

Deviation of Commodity Unit Rate beyond acceptable limits

- Based on historic Commodity Unit Rates and depending on the Country-Commodity combination, AI-ML engine would recommend adjusting the quantity of the commodity, such that the unit rate falls within the acceptable range

6. Scope of Work during Operations and Maintenance Phase

6.1. An Overview

DGCIS is looking forward for the delivery of the following broad areas of services under this project:

1. IT Infrastructure Management services

2. Application Management services

3. Server Administration & Management

4. Storage Administration & Management

5. Network & Security Management services

6. Backup/Restore Management for Servers, Database, Applications etc.

7. Configuration, administration, customization, upgrade/ patch/ new release deployment

8. BCP Planning and Disaster Management

9. Reporting & Documentation

10. Help Desk Management

11. Training, knowledge sharing for DGCIS employees.

12. Project Management

6.2. IT Infrastructure Management services

The Successful Bidder shall offer Infrastructure Management Services at the Data Centre for DGCIS as part of the scope of work. These are described below:

- System administration and server management.
- Perform all software installations and updates for software considered under the RFP.
- Develop, maintain, and update processing policies, procedures and documentation related to DC and DR-backup IT Infrastructure.
- Coordinate with the DGCIS on process and procedures changes.
- Prepare, maintain, and ensure adherence to batch job or scheduled processing activities.
- SAN and storage management.
- For remote monitoring and management bidder to provide the link and required network components. This cost should be included as a part of services
- Three personnel – Database Administrator, Network Administrator and Server & Storage Administrator shall be deployed full time in DGCIS premises during the maintenance phase of the project.

6.3. Annual Maintenance Contract (AMC) of FTSSv2 and other applications

- During maintenance phase, the selected SI is required to carry out modification (related to scope of work) / additions / deletions of module / functionality to the Integrated Application without any additional costs.
- The support shall address all user level queries, fixing bugs, enhancements, changes to configurations, customizations, patch updates, upgrades, database administration, security, management of day-to-day task related to Domain / System / Database / Application / VC /Network Administration etc.
- The services covered under post implementation support include:
  - o Comprehensive Annual Technical Support Services (ATS) on all the licensed software (DGCIS application, associated software components, database, Anti-Virus, operating systems, etc.) has to be provided by the SI for the O&M period from the date of Final Go live.
  - o Applications Functional Support (AFS) for the O&M period for the DGCIS application shall cover all the solution components.

Maintenance of the software for all the applications & related solutions provided to DGCIS should be maintained as per the industry standards. The services covered under post implementation support include: -

i.   Operations & Maintenance Services from the date of Final Go-Live.

ii. Helpdesk and Client-Side Support services from the date of Final Go-Live.

iii. Software maintenance and support services from the date of Final Go Live.

iv. Application functional (operational) support services for implemented solution from the date of Final Go-Live.

a) The SI shall provide post implementation support for entire AMC period of 45 months post Go-Live which includes maintenance support, technical support, and implementation and deployment of Change Request raised by DGCIS.

b) If any OEM is involved in the process, the SI shall arrange the support from OEM also for the same period.

c) During the AMC phase the SI shall deploy sufficient manpower to ensure seamless operation of the FTSSv2 system whenever required.

d) SI shall transfer the ownership of the FTSSv2 along with the latest version of source code i.e., all software developed/ customized/ configured/ procured etc. and all the procured licenses and support related documents in the name of DGCIS.

e) Post completion of the 3 years and 9 months of maintenance period, DGCIS in its own discretion, may extend the maintenance contract for two (02) years on mutually agreed basis.

f) During AMC phase, DGCIS may request SI, to make necessary changes in the layout, colour schema, content, MIS reports format, input forms layout etc. However, these changes shall be suggested keeping in view that it should not impact the database schema. The selected bidder shall be responsible to make these changes at no extra cost to DGCIS.

g) The SI shall be responsible to maintain version control and archives of source code, content and database.

h) During entire AMC phase, the SI shall submit the detailed monthly compliance report including system generated report from EMS and HMS in hard and softcopy format to DGCIS within first calendar week of the next month, and on need basis as and when required by the DGCIS. The final format of the report shall be finalized by the SI in due consultation with DGCIS.

Maintenance and Technical Support

i. The SI is required to provide detailed profile of the team proposed for AMC in the technical bid of the RFP (to be published later).

ii. The SI shall make available and implement all upgrades of proposed FTSSv2 and related tools during the AMC period.

iii. The SI shall be responsible for deploying additional manpower for smooth functioning of the project and at no extra cost to DGCIS.

iv. During the entire AMC period the SI shall be responsible for (including following, but not limited to):

A. SI shall be responsible for handling all the issues/ problems faced by the users.

B. Installation of new versions/ software/ releases (including next generation release) upgrades, bug fixes, functionality enhancements, patches to cater to changes (including tax, legal, statutory and policy requirements), any modification or enhancement to existing business processes, changes to configurations, customizations, database administration, data back-up and archiving, security and other technical assistance.

C. Overall administration, operations, monitoring, and maintenance, definitions/ patches/ updates/ service packs, backup, recovery, etc. of the deployed IT Hardware and Software infrastructure at the cloud platform and to ensure the desired uptime.

D. Overall monitoring of the deployed network bandwidth/ links so as to ensure the desired uptime. In case of downtime/ link failure, reporting immediately the same to the Internet Service Provider (ISP) and tracking until the link is restored and services are operational as required.

E. In the event of onsite deployed resource(s) leaving the project/ employment, the same shall be immediately replaced with another resource of equivalent minimum qualifications and experience. All such events should be notified to the DGCIS well in advance.

F. At no time, the provided manpower should be on leave or absent from the duty without prior permission from the designated nodal officer of DGCIS. In case of long-term absence due to sickness, leave etc. the SI shall ensure replacements and manning of all manpower posts by without any additional liabilities to DGCIS. Substitute will have to be provided by the SI against the staff proceeding on leave/ or remaining absent and should be of equal or higher qualifications/ experience.

G. Update, modify, re-build, replace any module, feature of the application, at SI's sole cost, to keep the system free from any defect or deficiency in any aspect that prevent the FTSSv2 and/or any of its sub-systems(s) from fulfilling the functional or technical requirements.

H. DGCIS may request SI, to make necessary changes in the layout, colour schema, MIS reports format, input forms layout etc. However, these changes shall be suggested keeping in view that it should not transform in database schema. The

selected bidder shall be responsible to make these changes at no extra cost to DGCIS.

6.4.Server Administration & Management:

The service provider is expected to provide the Server Administration & Management services as follows-

- Service provider shall provide the "Server Administration service" to keep servers stable, reliable and their operation efficient.
- Administrative support for user registration, User ID creation, maintaining user profiles, granting user access, authorization, user password support, and administrative support for print, file, and directory services.
- Setting up and configuring servers and applications as per configuration documents/ guidelines provided by DGCIS.
- Installation/ re-installation of the server operating systems and operating system utilities.
- OS Administration including troubleshooting, hardening, patch/ upgrades deployment, BIOS & firmware upgrade as and when required/ necessary for Linux or any other O.S proposed as part of this solution whether mentioned in the RFP or any new deployment in future.
- Ensure proper configuration of server parameters, operating systems administration, hardening and tuning.
- Regular backup of servers as per the backup & restoration policies stated by DGCIS from time to time.
- Regularly monitor and maintain a log of the status of critical services, performance of servers including but not limited to monitoring of CPU, disk space, memory utilization, I/O utilization, etc.
- Regular analysis of events and logs and maintain the reports for future audit purposes.
- Managing uptime of servers as per SLAs.
- Take appropriate steps to comply with the audit observations made by various internal/ external auditors.
- Depending on the nature of applications deployed, Service provider shall suggest/ implement appropriate security measures on various servers, especially the Web, Application and Database servers.
- Co-ordinate with SSL Certificate service provider for issuing and deployment of SSL certificates.
- Maintenance of Microsoft's Active Directory (AD) & Additional Domain Controller (ADC).
- Preparation/ updating of the new and existing Standard Operating Procedure (SOP) documents on servers & applications deployment and hardening.

6.5. Storage Administration and Management: -

- Installation and configuration of the storage system.
- Management of storage environment to maintain performance at desired optimum levels.
- Development of storage management policy, configuration and management of disk array, SAN fabric / switches, etc.
- Configuration of SAN storage whenever a new application is hosted in the Data Centre Site. This shall include activities such as management of storage space, volume, RAID configuration, LUN, zone, security, business continuity volumes, performance, etc.
- Preparation of Standard Operating Procedure (SOP) document for the Storage Administration.
- Regularly monitor and log the state of complete cloud solution including but not limited to Servers, Operating System, Storage, Networking, Backup operations, Disaster recovery drills.
- Service provider shall provide L1, L2, L3 & subject matter expert level of support for any issues related to proposed infrastructure to DGCIS at primary Data Centre site.
- Service provider will coordinate with DGCIS to resolve any problems/issues as per SLA.
- Suggest/Help DGCIS on implementing Data Centre best practices as per industry standards.
- Co-ordinate with DGCIS in implementing any changes that might be required towards the deployment/placement within the Data Centre.
- Compliance to IT Security policies of DGCIS/ Statutory bodies.
- Adherence and maintenance of the user access controls as advised by DGCIS.

6.6. Network & Security Management Services:

Service provider will have to provide complete managed services for all networking components proposed as part of the solution like, switches, routers, firewall, load balancers and links. Configure, manage & modify configuration of the network devices / firewall policies as and when required.

Monitoring & Fault Management of:

- Monitoring & management of Internet, P2P, and IPsec VPN Tunnels proposed as part of this solution.
- Bandwidth utilization, latency, packet loss etc.
- Call logging and co-ordination with VPN, Internet Service Providers, Point-to-point line service providers for restoration of links, if need arises.

Configuration Management:

- Configuration of L2 switches for administration and L3 Switches (If any) for VLAN creation / hardening / routing /load sharing etc.

- Maintaining / Updating of Network diagram.
- Maintaining complete details of network hardware along with interfaces, IP address etc.
- Redesigning of network architecture as and when required by DGCIS.

Security Management Services:
- Addressing the ongoing needs of security management including, but not limited to, monitoring of various devices / tools such as firewall, intrusion protection, content filtering and blocking, virus protection, and vulnerability protection through implementation of proper patches and rules.
- Maintaining an updated knowledge base of all the published security vulnerabilities and virus threats.
- Ensuring that patches / workarounds for identified vulnerabilities are patched / blocked immediately.
- Ensure a well-designed access management process, ensuring security of physical and digital assets, data and network security, backup, and recovery etc.
- Quarterly (or as required by DGCIS) review of domain level rights and privileges; Modifying access permissions of existing security policies on existing firewall.
- Adding/ Changing network address translation rules of existing security policies on the firewall.
- Diagnosis and resolving problems related to firewall, IDS /IPS.
- Managing configuration and security of Demilitarized Zone (DMZ) Alert / advise DGCIS about any possible attack / hacking of services, unauthorized access / attempt by internal or external persons etc.
- Implementation of IT security policies as advised by DGCIS/ Statutory bodies.
- Resolution and restoration of services in case of any possible attack and necessary disaster management.
- Shutdown of critical services to prevent attack (internal or external) in coordination with DGCIS.
- Event and correlation.
- IPv6 configuration, if required.

Internet & Web Security & Administration
- Coordination with ISPs for installation / configuration of links.
- Monitoring of Internet links and co-ordination with ISPs for restoration of failed link(s).
- Monitoring bandwidth utilization.
- Carrying out configuration changes on router as per the DGCIS requirements.
- Backup, up gradation and restoration of OS, configuration files etc.

- To ensure working of all the DGCIS's URLs and Internet applications from outside DGCIS's Intranet.
- Backup /restoration/synchronization of configuration files of devices.
- Maintaining static NAT table of ISPs.
- Installation/configuration/management/up gradation of the devices / appliances.
- Successful bidder should provide the DDoS mitigation solution which can handle the attack of 1 Gbps.

6.7. Backup/Restore Management for Servers, Database, Applications etc.:

- To perform backup and restore management in coordination with DGCIS's policy & procedures for backup and restore, including performance of daily, weekly, monthly, quarterly, and annual backup functions (full volume and incremental) for data and software maintained on the servers and storage systems using Enterprise Backup Solution.
- To recover from a crash / other local failure at the DR site, without affecting the primary system or replication process in any way. The full backup shall be taken at the end of the week, whereas incremental backups shall be taken every day and log backup of every 4 hours.
- Ensure proper storage and handling of media to prevent data loss.
- Backup and restoration of Operating System, application, databases, and file system etc. in accordance DGCIS with defined process / procedure / policy.
- Monitoring and enhancement of the performance of scheduled backups, schedule regular testing of backups and ensure adherence to related retention policies.
- Ensuring prompt execution of on-demand backups & restoration of volumes, files and database applications whenever required.
- Real-time monitoring, log maintenance and reporting of backup status on a regular basis. Prompt problem resolution in case of failures in the backup processes.
- Installation, re-installation, upgrade, and patch deployment of the Operating System in the event of hardware/ Software failure, OS issues, release of new version or patches by the OEM etc.
- Generating and sharing backup reports periodically.
- Coordinating to retrieve off-site media in the event of any disaster recovery.
- Periodic Restoration Testing of the Backup.
- Maintenance log of backup/ restoration.
- Update/ Maintain Standard Operating Procedure (SOP) documents.

6.8. BCP Planning and Disaster Management:

In view of providing continuous availability of the applications along with complete managed services and disaster recovery services in case of disaster at primary site, DGCIS desires to take regular backups and upload them onto a NIC location in a different seismic zone as detailed in the section on Disaster Recovery Drill.

6.9. Service Maintenance:

The bidder requires to operate and maintain the cloud infrastructure at NIC location (DR site) as per the scope mentioned in scope of work

1. Monitoring of backup status.
2. Lag in backup due to any unforeseen errors.
3. Network monitoring
4. Security monitoring and analysis
5. Reporting if any issue is arising in replication.
6. Daily backup at DR end

6.10. DR Drills:

- During the DR drill, the SI needs to arrange the full DR team with sufficient resources and expertise and complete the activity under the supervision of senior resource for co-ordination.
- DR drills should be planned and executed periodically, minimum once in a quarter.
- Drills should be carried out over a minimum period of 24 hours each time. Drills can be conducted for all applications together which could simulate the failure of all systems.
- Each application's DR system shall be accepted by DGCIS only after a successful DR drill has been conducted.
- The exact process of the DR drill should be formulated in consultation with the DGCIS team in a way that all elements of the system are rigorously tested, while the risk of any failure during the drill is minimized. The process should be documented by the successful bidder as part of the disaster recovery plan.
- The date, time, duration, and scope of each drill shall be decided mutually between DGCIS and the successful bidder. Extreme care must be taken while planning and executing DR drills to ensure that there is no avoidable service interruption, data loss, or system damage at DC.
- Provide Event Analysis Reports for the disaster recovery solution as a part of the services.

6.11. Reporting and Documentation

SI should submit reports on a regular basis in a mutually decided format that is daily / weekly and monthly uptime/downtime report. Softcopy of these reports shall be delivered automatically via email at specific frequency and to the pre-decided list of recipients.

Submit information as part of periodic review as and when required by DGCIS. Following is the indicative list of reports:

Reporting

- Service provider shall transfer data back to DGCIS either on demand or in case of termination of contract for any reason.
- Summary of component wise Data Centre uptime.
- Summary of changes in the Data Centre.
- Log of preventive / scheduled maintenance undertaken.
- Configuration Management summary report.
- Change Management summary report.
- Service Level Management – priority/severity wise response and resolution.
- Service Failure Analysis, listing out escalations and downtime/outages, if any.

Incident Reporting

- Detection of security vulnerability with the available solutions / workarounds for fixing.
- Hacker attacks, Virus attacks, unauthorized access, security threats, etc. – with root cause analysis and the plan to fix the problems.
- Standard Operating Procedure (SOP) for DR-backup, System Documentation/ User manuals have to be prepared and maintained up to date with version control.

Documentation

Preparation/ Updating of System Documentation of support requirements, upgrade, patching, cloning & migration in detail with version control. This will also include preparation of System document for complete infrastructure/facilities available in datacentre including Server, storage, network, network security configuration and deployments initially complete document and thereafter regular updating of the same with version controls. This documentation should be submitted as the project undergoes various stages of implementation. Indicative list of documents includes:

- Detailed Project Plan
- Project Management Plan
- Details of complete solution deployed for DGCIS in DR-backup site.

6.12. Training, knowledge sharing and skills development for DGCIS employees: -

- Identification of training needs, evaluation of knowledge transfer requirements on the software tools, technologies proposed under this contract.
- Training on system, implemented customizations & personalization. Periodical training need assessment and training to the existing users on the implemented solution as and when required.
- Training Material should be provided which shall include the presentations used for trainings and also the required relevant documents for the topics being covered.

6.13. Help Desk Support:

Bidder is required to create and maintain Help Desk / hotline that will resolve problems and answer queries related to any issues, problems, concerns occurring in systems.

The help desk support to users shall be provided on 24x7x365 basis. The details regarding telephonic support will be carefully considered, as this will have effect on the support response to DGCIS system end-users. The Bidders response and resolution time will be the basis for end- user support time in DGCIS"s service level agreements with the Bidder.

During the entire period of the contract commencing from the date of Letter of Award, any charges incurred on transport / shipping of hardware / equipment from and to the Bidder's DC Site will be borne by the bidder. No claims will be entertained in this regard. The entire responsibility of covering for damage in transit, making good the damaged parts lies solely with the bidder.

The selected bidder shall document all the installation and commissioning procedures and provide the same to DGCIS within one week of the commissioning of the DR site and within one week of successful execution of DR drill for DR Site. The selected bidder shall be responsible for documenting configuration of all devices / equipment and keeping back up of all configuration files, so as to enable quick recovery in case of failure of devices

6.14. Other Services

- Provides network link, RPO, RTO and performance monitoring tool dashboard access to DGCIS for real time basis monitoring.
- The service provider shall provide necessary training to DGCIS personnel to monitor the various SLAs, monitor the dashboard in event of switchover/switchback at the time of disaster (planned/testing or otherwise).
- Service provider must make the DC site up with the latest data and applications at DR-backup after a disaster (planned / unplanned / drill) has happened.

6.15. Project Management

Successful bidder's responsibilities include, but are not limited to the following:

- Successful bidder shall nominate a Project manager for entire period of the contract for
- interacting with DGCIS nominated person for all the activities under scope of this project.
- Successful bidder shall submit a detailed project implementation plan and clearly spell out important milestones of project immediately after the award of work.

- Successful bidder will submit the BCP plan and details of BCP committee member from bidder side.
- Be responsible for delivery of services and act as a primary interface to DGCIS for all matters.
- Maintain project communications and provide documentation and adhere procedural standards approved by DGCIS for the execution of the project.
- Prepare a service management plan for meeting the desired performance.
- Management of documentation/deliverables as described under the SOW. Measure, evaluate and report on progress against the project plan.

Annexures

Annexure 'A' - (Bidder Information)

Please provide following information about the Company (Attach separate sheet if required): -

S. No.	Information	Particulars / Response
1.	Company Name	
2.	Date of Incorporation	
3.	Type of Company [Govt. / PSU/ Pub. Ltd / Pvt. Ltd / partnership/proprietary]	
4.	Registration No. and date of registration. Registration Certificate to be enclosed	
5.	Address of Registered Office with contact numbers [phone /fax]	
6.	GSTIN	
7.	PAN No	
8.	Contact Details of Bidder authorized to make commitments to DGCIS	
9.	Name	
10.	Designation	
11.	FAX No.	
12.	Mail ID	
13.	Company Head Office and Addresses Contact Person(s) Phone Fax E-mail Website	
15.	Whether the Bidder is blacklisted/ debarred at the time of submission of this Tender, by Government of India or Central PSU/PSE/PSB/FI/Regulatory Bodies. If yes, please give details	Yes/No/Comments (if option is 'Yes') (If option is 'Yes' Bidder may Not be considered)

Authorized Signatories
(Name & Designation,
seal of the company)
Date:

To
The Head of Office,
Directorate General of Commercial
Intelligence and Statistics (DGCIS),
565, Anandapur, Ward No. 108
Sector– 1 , Plot No. 22, ECADP,
Kolkata, West Bengal 700107   Date :

Subject: Expression of Interest notice for "Selection of a System Integrator for Design, Development, Implementation and Maintenance of Foreign Trade Statistics System".

Dear Madam / Sir,

Having examined the Expression of Interest (EoI), the receipt of which is hereby duly acknowledged, I/we, the undersigned, intend to submit a proposal in response to your Expression of Interest (EoI) as mentioned in subject above. I/we attach hereto the response as required by the EoI, which constitutes our proposal.

2.   I/we certify that the information contained in this response or any part thereof is true, accurate, verifiable and complete to the best of my / our knowledge. This response includes all information necessary to ensure that the statements therein do not, in whole or in part, mislead the department in its short-listing process.

3.   I/we fully understand and agree to comply that on verification, if any of the information provided here is found to be misleading during the short-listing process, we are liable to be dismissed from the selection process or termination of the contract during the project, if selected to do so.

4.   It is hereby confirmed that I/we are entitled to act on behalf of our company/ corporation/ firm/ organization and empowered to sign this document as well as such other documents, which may be required in this connection.

5.   I/we hereby certify to the best of our knowledge and based on documents available that Our Agency/Society/Company/Trust, including our partners in Joint-Venture / Consortium, if any, has not been blacklisted or delisted by any Government, PSUs and its subsidiaries, which may have an adverse impact on the performance of services.

6. I/we understand you are not bound to accept any proposal you receive.

Yours faithfully,

For *<Name of Company>*

<Signature of Authorized Signatory>

Name:

Designation:

Annexure 'C' - (Technical Response Template)

Sl. No.	Technical Qualification Criteria	Break up of Parameters	Please mention the following in the space provided in the next column	Score of Bidder
1.	Relevant experience of executing integrated software project(s) (Project Design and implementation) involving complex business processes, rule engine & workflows or have worked for application development projects of similar nature in the last 5 years (min. 2 projects)		No. of projects	
2.	ISO certifications (ISO 27001 or ISO 20000 and CMMi Level 5 & above)	ISO 27001	Y / N	
		ISO 20000	Y / N	
		CMMi level 5	Y / N	
3.	Number of qualified professionals on payroll of bidder holding BE / B.Tech / MCA / M.Sc. (IT) degree and having experience of working in at least one of the following domains: (i) Application development, (ii) web portal design / development, (iii) AI and ML based applications, (iv) implementation of cloud solution, (v) System Integration, (vi) Data Centre setup, (vi) project management and planning, (vii) system architecture design (min. 500 employees)		No. of such personnel	
4.	Experience of handling large integrated IT projects (>40 crores) for Government Clients (at State and National Level) in the last 5 financial years (central/state government / PSU.)		No. of projects	
5	Project Experience of implementing at least 2 projects invoving development of a large software.		No. of projects	
6.	Project Experience in emerging area of AI-ML (min. 2 projects).		No. of projects	

7	Relevant experience of application hosting and maintenance on cloud platform and providing support on Cloud Data Centre management (min. 2 projects)		No. of projects	
8	Two write-ups each on points 4,5, and 6 of this Technical Criteria.			
9	Has Delivery Centre in Kolkata with at least 500 technical employees		Y / N	

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