Terms of Reference (TOR)

For

'Hiring a firm for Infrastructure Support and Maintenance of a2i's initiatives'

- **Background of the Project:**

The government of Bangladesh takes a holistic view of e-Governance initiatives across the country. E-Governance is the application of information and communication technology (ICT) for delivering government services, exchange of information, communication transactions, integration of various stand-alone systems and services between government-to-citizen (G2C), government-to-business (G2B), government-to-government (G2G), government-to-employees (G2E) as well as back-office processes and interactions within the entire government framework. Through e-governance, government services are made available to citizens in a convenient, efficient, and transparent manner. This rapid development of government e-Service and internet infrastructure has created a great opportunity for e-Service providers of both public and private sectors to avail services at citizens' fingertips.

Aspire to Innovate (a2i), as the flagship programme of the Digital Bangladesh agenda, developing various e-Governance services. 100+ applications are deployed in the national data center, most of them are nation-wide implemented and deployed in a central data center covering both domestic & international routing mechanisms. Cloud infrastructure/cloud stack deployed in 100+ Physical hardware which is purely virtualized and clustered. Government and citizens are the main customers of the applications. The A2i programme is coordinating the support. Now the programme expresses its interest to invite relevant service providers from Bangladesh to render Managed Service for hosting management.

- **Objective of the Assignment:**

The main objective of this assignment is to provide smooth service of all applications hosted in the different national data centers in around 600 Virtual Servers and prepare uniform technology documentation of standard guidelines, policies, processes, and procedures for system deployment, service monitoring, capacity enhancement. A development service partner develops every application. To keep the service, live & smoother we need to host all those systems in a hosting infrastructure. Managing hosting infrastructure includes infrastructure monitoring, manage, enhancement, backup management, new application hosting, and resource scale-up. In addition, prepare development documents and reports of those services. To meet these requirements a2i is going to purchase a package service as ITSM including infrastructure.

Definition, Acronyms, and Abbreviations:

Term	Explanation
DC	Data Center
DR	Disaster recovery
RTO	**Recovery Time Objective.** RTO refers to how much time an application can be down without causing significant damage to the business

RPO.	Recovery Point Objective. Recovery point objectives refer to your company's loss tolerance: the amount of data that can be lost before significant harm to the business occurs.
ITIL	ITIL stands for Information Technology Infrastructure Library. It is a set of best practices for delivering IT services—it standardizes the selection, planning, delivery, and support of IT services to maximize efficiency and maintain predictable levels of service.
COBIT	COBIT stands for Control Objectives for Information and Related Technology. COBIT is a thoroughly recognized guideline that can be applied to any organization in any industry. Overall, COBIT ensures the quality, control, and reliability of information systems in an organization, which is also the most important aspect of every modern business.
ITSM	ITSM or Information Technology Service Management refers to all managerial aspects of IT businesses. It includes models for IT Planning, Support, Delivery, Security and Infrastructure, and other provisions for better customer service.
MTTA	**MTTA** (mean time to acknowledge) is the average time it takes from when an alert is triggered to when work begins on the issue.
MTTR	**MTTR** (mean time to recovery or mean time to restore) is the average time it takes to recover from a product or system failure.
KEDB	**Known Error Database**. This is a database that tracks and describes all of the known errors within an overall system.
NOC	A network operations center or **NOC** is a centralized location where IT support technicians can supervise, monitor and maintain client networks.
SOC	A Security Operation Center or SOC is a centralized location where IT support technicians can supervise, monitor, and maintain client Services.

- **Scope of Services:**

1.1 Hosting Infrastructure
On a broad level, the Hosting Infrastructure service management of "A2I" at multiple system hosting will be managed by a selected service provider. The scope includes the day-to-day operational activities to proactive actions to reduce the risk of the service outage. The scope will cover independent areas of the existing in systems with 2 categories.

1.2 Platform
These systems are performing in wide scale. Serving huge number end user as per google analytics per day user from 5K to 2M & serving service using cluster server deployment. For example, NPF, doptor, Judiciary, RMS, Teachers Portal, Muktopaath, Ecourt, Prottoyon, NISE, etc. Not limited to platform as of national requirement may need to add more systems.

1.3 System
These systems are as like websites deployed with single server. For example, a2i Website, corona website, Sheikh russell website, OGD, etc, approximately 40 hosting services and upcoming new services.

2.0 Technological documentation

Analyze all deployed systems of a2i to define the activities list for which Technological documentation will be developed in collaboration with the technology team. Develop a unified documents template for all technological products of a2i which can be used as a reference model according to Global Standards (ISO/IEC 27001:2013, ISO 20000-1:2018, ISO 9001:2015, ITIL, COBIT, NIST Cybersecurity Framework, PCI DSS, SOC 2, TOGAF, SSAE 18, etc.). The unified Documents template should cover all standard attributes so that it can be tailored for any initiatives taken by a2i. Developed Documents for significant activities in collaboration with the technology team. The developed documents and Review and enhance them periodically. Arrange Workshops for vetting the documents from stakeholders [Academia, industry experts] along with a2i and then Release the developed documents.

2.1 Guidelines
a) Service Initialization.
b) Service Management.
c) Service Deactivation.
d) Service Handover.
e) Change Management.
f) Service Monitoring.
g) Service capacity enhancement.
h) System security guideline.
i) System development guideline.
j) System Performance guideline.
k) Incident management plan.
l) System capacity load test plan.

2.2 Policy Documents:
- Information Security Policy
- Asset and Data Management Policy
- Human Resource Security Policy
- Information Security Incident Management Policy
- Log Management Policy
- Logical Access Control Policy
- Service Level Management Policy
- Cloud Service Policy
- IT Asset and Data Management Policy
- Data Backup and Restore Policy
- Asset Disposal Policy
- Code Repository Management
- Training Management Guideline

2.3 Process Documents:
- Capacity Management Process
- Change Management Process
- Configuration Management Process
- Continual Service Improvement Process
- Incident and Service Request Management Process
- Internal IT Audit Process
- Release and Deployment Management Process

- Problem Management Process

2.4 Report Documents:
- Data Backup Drill periodically.
- Operating System patch and update details
- Service/System Availability Report
- Data Storage Capacity Report
- Public IP block usage
- Bandwidth consumption
- Server Capacity and Health Check Report
- Network Capacity and Health Check Report
- IT and Security Incident Monitoring Report
- Data Backup Daily Report
- Incident Root cause analysis

2.5 Other Documents:
- Network topology diagram
- IT Asset List
- User access form and process diagram
- Change management form
- Service Request, Incident & Change Documents

3.0 Infrastructure Administration:
The service provider will manage the infrastructure deployed for the "A2I" managed service which includes operating systems, databases, virtualization technologies, load balancer, database replicator, high availability and load balancing cluster solution, storage technology, middleware platforms, etc. to ensure availability, performance, cost-effective utilization and security of the system.

   a. Manage the operating system, database, application, application server, and the integration among them to ensure the availability of an "A2I" managed solution.
   b. Administrate the load balancer, database replicator, cluster software, etc. to ensure high availability computing environment.
   c. The service provider should ensure 99% availability/uptime of service.
   d. Update the security settings and version of the operating system, database, application, and application settings to ensure a secure computing environment and service.
   e. Manage and update the Logical Architecture Diagram, Logical Design Diagram Manage, High-Level Design, Low-Level Design, Physical Architecture Diagram, Physical Design Diagram, etc. as appropriate from the baseline.
   f. Manage IT inventory, configuration management database, etc. to ensure the integrity and consistency of the computing environment.
   g. Backup of the database, application, and server should be performed by the Firm as per the predefined retention policy, Recovery Point Objective (RPO), and Recovery Time Objective (RTO). b. The solution provider will share the security assessment and gap report as per predefined standards.

4.0 Network Administration
To have redundant, improved quality of service, and increase the capacity of the A2I managed system as per service requirement.

5.0 Network Equipment Management:

- Service provider will be responsible for managed solutions including configuration and necessary software for network setting up:
- DR/Secondary Site on-demand integration
- Data Center Server Firm network deployment

6.0 Bandwidth Manage:

The Bandwidth manager is to be up and properly configured as per A2I requirements by the service provider. Therefore, the service provider should be experienced in this and all necessary supports are to be provided for its upkeep and maintenance whenever necessary.

1. Public IP. The service provider must provide necessary peering IP block including minimum Bangladesh Internet Exchange (BDIX) and Bangladesh Telecommunication Limited (BTCL) National Internet Exchange (NIX) traffic. Necessary traffic engineering either through NIX or the Internet needs to be ensured by the provider.
2. Support service for internet connection. The service provider shall provide support for the maintenance of the total A2I network at all times.
3. 99.5% network uptime needs to be ensured.

7.0 IT Service Management

Information Technology infrastructure library (ITIL) service management processes and procedures will be implemented for IT operations management to ensure measurable IT service and re-enforce compliance.

8.0 NOC & SOC Operation:

A 24x7 Network Operation Center (NOC) and Security Operation Center (SOC) operation will be the seat in the client premises to ensure the continuous monitoring of the application availability, infrastructure performance, etc. According to the predefined escalation matrix, NOC will escalate the event to the respective person or team.

a. Monitoring the utilization of computing resources from the operating system layers which include CPU utilization, memory utilization, space utilization, server load average, network interface load, etc.

b. Monitoring the database utilization including the availability of the database, utilization of space (data file, schema, log location, etc.).

c. Monitoring the availability and performance of the application including response time, URL availability, etc.

d. Monitoring the network appliance used as a part of the "A2I" managed solution which includes a load balancer, firewall appliances, etc.

e. Monitoring the solution integrity including database and application connectivity, replication process, availability of the application over the internet and local networks, etc.

f. Documentation of all the monitoring metrics and parameter mapping with threshold point and escalation details.

g. Set the Monitoring KPI in consultation with the Customer and provide the report as mentioned in the reporting section

h. Schedule maintenance for preventing incidents.

i. Security operation on systems.

9.0 Incident Resolution:

The NOC escalated event or any incident escalated by any party should be assessed by the service provider. Also, the event and incident should be resolved by the Firm when that is under the scope, and for the event, that is out of the scope, the Firm should immediately notify the client.

> a. The events and/or incidents should be resolved by the Service provider within a predefined resolution time.
>
> b. The resolutions which are not under the scope of service should be jointly monitored by the service provider and a2i
>
> c. The resolution history should be documented for further reference in the Known error database (KEDB)
>
> d. All the incidents should be recorded, and a summary has to be reported monthly to the client

10.0 Root Cause Analysis:

Reactive problem management focuses on solving problems in response to one or more incidents as they occur; proactive problem management focuses on identifying and solving problems and known errors that might otherwise be missed, thereby preventing future incidents. Should be looking for repeat incidents with the same category, affected service, configuration item (CI), cause, or resolution:

> a. Performing trend analysis of incident records;
>
> b. Detecting duplicate and recurring issues;
>
> c. During major incident management, identifying a risk that an incident could recure.

11.0 Asset Registry and Configuration Items Database:

Covers the identification, recording, and reporting of IT components, including their versions, constituent components, and relationships. A series of reviews and audits that verify the physical existence of Configuration Items (CI) and check that they are correctly recorded in the Configuration management system.

> a. Helps organizations in various activities: To plan, control, manage, monitor, evaluate and provide accountability for IT Assets. To provide accurate asset information for various business processes.
>
> b. Deals with maintaining an up-to-date and verified database of all assets and CIs which are also made available to other service management processes.

12.0 Change Control:

Ensure that standardized methods and procedures are used for efficient and prompt handling of all changes to control IT infrastructure, to minimize the number and impact of any related incidents upon service

> a. patch management
>
> b. management and coordination of Change implementation
>
> c. assessing the impact, benefits, and risks of Changes
>
> d. ensure that changes are recorded, evaluated, authorized, prioritized, planned, tested, implemented, documented, and reviewed in a controlled manner.

13.0 Service Extensions:

Request for service extensions can be done directly through the Firm's business channel which will appropriately guide. The cost for additional services is guided by terms and conditions as agreed by both parties and/or contracts.

14.0 Enhance Existing Infrastructure

The service provider should perform the designing, installation, and configuration operating environment of services preferably using microservice architecture and migration of data, database, application server, and application from the existing environment to a new environment.

  a. Installation and configuration of virtualization environment for server, database, application server, queue management environment, database replicator, etc.

  b. The solution provider should migrate the data and physical files

  c. The solution provider should reconfigure the load balancer, firewall, and router to terminate incoming traffic for the services.

  d. The solution provider should ensure performance tuning of the database, and application server too

  e. The solution provider should follow the infrastructure level change control and management practices to ensure a seamless migration from all the services

15.0 Minimum SLA Terms to comply

Below minimum SLA terms are listed. Firm may propose additional terms and terminologies:

- Availability (Uptime): 99.5% Uptime of provider's network and equipment.
- Others: Technical assistance in provisioning & operations, 24/7 NOC support, Fault handling process with committed MTTA and MTTR, Online CRM, MRTG
- Fault handling process and response time:
  - Firm shall propose the fault handling process and response time in the following format.

Priority Definitions	MTTA	MTTR	Update Intervals
Out of Service	30 Mins	1 Hour	15 Mins
Service Interruptions	30 Mins	4 Hours	15 Mins
Quality	1 Hour	8 Hours	30 Mins
Non-Service Affecting	1 Hour	24 Hours	6 Hours

Beyond working Hours:

Priority Definitions	MTTA	MTTR	Update Intervals
Out of Service	2 Hours	6 Hours	2 Hours
Service Interruptions	2 Hours	10 Hours	2 Hours
Quality	4 Hours	24 Hours	6 Hours
Non-Service Affecting	8 Hours	36 Hours	12 Hours

- **Transfer of knowledge (Training):**

Based on the performance of the existing system, the growth rate of the data and users, technology lifecycle, projection of new office, user integration, etc. the service provider will analyze the requirement of capacity enhancement and share the technical suggestions with the client.

  a. The Service provider has to prepare the requirement proposal for computing capacity enhancement (storage expansion, memory extension, node addition, etc) to ensure the performance and availability of the infrastructure based on the existing growth rate, performance, incident trends, upcoming requirements, etc.

  b. The expansion of capacity which could be done within the managed software and hardware environment without any financial involvement should be done by the service provider.

- **List of Reports, schedule of deliveries, period of performance:**

1.0 List of Reports:

Service Providers should periodically share reports with A2I which will depict the performance, utilization, and capacity of the system, the reason for incidents, required preventive actions, deviation of the system from the baseline, history of corrective action, etc. to ensure transparency of service and deliverables.

 a. The service provider will share a report associated with availability, the performance of the system, and SLA in a pre-approved format with the client

 b. The service provider will share the security assessment and gap report as per predefined standards

 c. The service provider should prepare the on-demand report as requested by the client on the managed devices and software

2.0 schedule of deliveries, period of performance:

Serial	Deliverables	Q1	Q2	Q3	Q4
A. Preparation, Data Collection and Documentation					
A1	Prepare the baseline inventory of existing resources	100%	Continuous monitoring and update		
A2	Prepare LAM/PAM/LLD/HLD, etc. for existing resource	100%	Continuous monitoring and update		
B. Administration, Monitoring and Event Management					
B1	Monitor and administrate the server, database, application etc.	100%	24x7 Monitoring		
B2	Monitor and administrate the network appliance, LB, FW etc.	100%	24x7 Monitoring		
B3	Monitor and administrate the replication process (to BDCCL/any other a2i nominated Data Center)	100%	24x7 Monitoring		
B4	Synchronize the application patch level in all sites	100%	Continuous monitoring and update		
C. Service Management Deliverable Practices [Depending on section B]					
C1	Availability Management including system uptime report	100%	24x7 NOC Support		
C2	Incident Management including monthly reports	100%	24x7 NOC Support		
C3	Infrastructure and Platform Management in the performance report	100%	24x7 NOC Support		
C4	Service Level Management including SLA/KPI reports	100%	Continuous updates and feedback		
C5	Capacity and Performance Management	100%	Continuous updates and feedback		
C6	Change Management	100%	Continuous updates and feedback		
D. Management and Migration					
D1	Manage and migrate to the identified Services	100%	24x7 Monitoring		

Serial	Deliverables	Q1	Q2	Q3	Q4
E. Policy, process and Report					
E1	Draft policy and guideline documents				
E2	Draft Process documents				
E3	a) Data Backup Drill report	Monthly			
	b) Operating System patch and update details -	Monthly			
	c) Service/System Availability Report	Day wise Monthly			
	d) Data Storage Capacity Report	Monthly			
	e) Public IP block usage	Monthly			
	f) Bandwidth consumption	Day wise Monthly			
	g) Server Capacity and Health Check Report	Day wise Monthly			
	h) Network Capacity and Health Check Report	Day wise Monthly			
	i) IT and Security Incident Monitoring Report	Monthly			
	j) Data Backup Daily Report	Day-wise weekly report			
	k) Root cause analysis	Monthly			
E4	a) Network topology diagram b) IT Asset List c) User access form and process diagram d) Change management form e) Service Request, Incident & Change Documents				

5.2.1 Deliverables: Q1

1. Sl.	2. Expected Deliverables	3. Standardization
A. Preparation, Data Collection and Documentation		
A1	Prepare the baseline inventory of all existing resources	ITSM Standard Asset and Configuration Management Report
A2	Prepare the LAM/PAM/LLD/HLD etc. for all existing resources	Report with Standard Source files.
B. Administration, Monitoring, and Event Management		
B1	Monitor and administrate the server, database, application etc.	Daily Scheduled Monitoring and Execution Report
B2	Monitor and administrate the network appliance, LB, FW etc.	Daily Scheduled Monitoring and Execution Report
B3	Monitor and administrate the replication process (to 4TDC/any other a2i nominated Data Center)	Daily Scheduled Monitoring and Execution Report

1. Sl.	2. Expected Deliverables	3. Standardization
B4	Synchronize the application patch level in all sites	Quarterly Summary report
C. Service Management Deliverable Practices [Depending on section B]		
C1	Availability Management including system uptime report	Monthly Scheduled Report
C2	Incident Management including monthly reports	Monthly Reporting following ITSM standard
C3	Infrastructure and Platform Management with the performance report	Monthly Report
C4	Service Level Management including SLA/KPI reports	Quarterly Report
C5	Capacity and Performance Management Forecasting	Monthly Report
C6	Change Management	Quarterly Report
D. Service Management and Migration		
D1	Manage and migrate to the defined services	Monthly Planned Migration as per the Inception report
E. Policy, process, and Report		
E1	Draft policy and guideline documents	Zero draft documents have to be delivered as mentioned in 5.1. F1
E2	Draft Process documents	Zero draft documents have to be delivered as mentioned in 5.1. F2
E3	Report	Weekly and monthly reports have to be delivered to the client as mentioned in clause 5.1. F3
E4	Document	The document has to be delivered as mentioned in 5.1. F4
F. Technological documentation		
	Draft Guidelines & Policies	The document has to be delivered as mentioned in 3.2.1 & 3.2.2

Deliverables: Q2

1. Sl.	2. Expected Deliverables	3. Standardization
A. Preparation, Data Collection, and Documentation		
A1	Update the baseline inventory of all existing resources	ITSM Standard Asset and Configuration Management Report
A2	Update the LAM/PAM/LLD/HLD etc. for all existing resources	Report with Standard Source files.
B. Administration, Monitoring, and Event Management		
B1	Monitor and administrate the server, database, application, etc.	Daily Scheduled Monitoring and Execution Report
B2	Monitor and administrate the network appliance, LB, FW etc.	Daily Scheduled Monitoring and Execution Report

1. Sl.	2. Expected Deliverables	3. Standardization
B3	Monitor and administrate the replication process (to 4TDC/any other a2i nominated Data Center)	Daily Scheduled Monitoring and Execution Report
B4	Synchronize the application patch level in all sites	Quarterly Summary report
C. Service Management Deliverable Practices [Depending on section B]		
C1	Availability Management including system uptime report	Monthly Scheduled Report
C2	Incident Management including monthly reports	Reporting following ITSM standard
C3	Infrastructure and Platform Management with performance report	Monthly Report
C4	Service Level Management including SLA/KPI reports	Quarterly Report
C5	Capacity and Performance Management Forecasting	Monthly Report
C6	Change Management	Quarterly Report
D. Management and Migration		
D1	Manage and migrate to the identified Services	Monthly Planned Migration as per the Inception report
E. Policy, process and Report		
E1	Draft policy and guideline documents	The final draft document has to be delivered as mentioned in 5.1. F1
E2	Draft Process documents	The final draft document has to be delivered as mentioned in 5.1. F2
E3	Report	Weekly, and monthly reports have to be delivered to the client as mentioned in clause 5.1. F3
G. Technological documentation		
	Draft Report Documents & Other Documents	The document has to be delivered as mentioned in 3.2.3 & 3.2.4

Deliverables: Q3

1. Sl.	2. Expected Deliverables	3. Standardization
A. Preparation, Data Collection and Documentation		
A1	Update the baseline inventory of all existing resources	ITSM Standard Asset and Configuration Management Report
A2	Update the LAM/PAM/LLD/HLD etc. for all existing resources	Report with Standard Source files.
B. Administration, Monitoring and Event Management		
B1	Monitor and administrate the server, database, application etc.	Daily Scheduled Monitoring and Execution Report
B2	Monitor and administrate the network appliance, LB, FW, etc.	Daily Scheduled Monitoring and Execution Report
B3	Monitor and administrate the replication process (to 4TDC/any other a2i nominated Data Center)	Daily Scheduled Monitoring and Execution Report
B4	Synchronize the application patch level in all sites	Quarterly Summary report

1. Sl.	2. Expected Deliverables	3. Standardization
C. Service Management Deliverable Practices [Depending on section B]		
C1	Availability Management including system uptime report	Monthly Scheduled Report
C2	Incident Management including monthly reports	Reporting following ITSM standard
C3	Infrastructure and Platform Management with the performance report	Quarterly Report
C4	Service Level Management including SLA/KPI reports	Quarterly Report
C5	Capacity and Performance Management Forecasting	Monthly Report
C6	Change Management	Quarterly Report
D. Management and Migration		
D1	Manage and migrate to the identified Services	Monthly Planned Migration as per the Inception report
E. Policy, process, and Report		
E1	Report	Weekly, and Monthly reports have to be delivered to the client as mentioned in clause 5.1. F3
G. Technological documentation		
	Finalize Guidelines & Policies documents	The document has to be delivered as mentioned in 3.2.1 & 3.2.2

Q4 Deliverables:

1. Sl.	2. Expected Deliverables	3. Standardization
A. Preparation, Data Collection, and Documentation		
A1	Update the baseline inventory of all existing resources	ITSM Standard Asset and Configuration Management Report
A2	Update the LAM/PAM/LLD/HLD etc. for all existing resources	Report with Standard Source files.
B. Administration, Monitoring, and Event Management		
B1	Monitor and administrate the server, database, application, etc.	Daily Scheduled Monitoring and Execution Report
B2	Monitor and administrate the network appliance, LB, FW, etc.	Daily Scheduled Monitoring and Execution Report
B3	Monitor and administrate the replication process (to 4TDC/any other a2i nominated Data Center)	Daily Scheduled Monitoring and Execution Report
C3	Synchronize the application patch level in all sites	Quarterly Summary report
C. Service Management Deliverable Practices [Depending on section B]		
C1	Availability Management including system uptime report	Weekly Scheduled Report
C2	Incident Management including monthly reports	Reporting following ITSM standard

C3	Infrastructure and Platform Management with the performance report	Quarterly Report
C4	Service Level Management including SLA/KPI reports	Quarterly Report
C5	Capacity and Performance Management Forecasting	Monthly Report
C6	Change Management	Quarterly Report
D. Management and Migration		
D1	Manage and migrate to the identified Services	Monthly Planned Migration as per the Inception report
E. Bandwidth Services and their maintenance		
E1	Dedicated Bandwidth 600Mb+	Monthly Utilization Report along with downtime report and evidence
F. Policy, process, and Report		
F3	Report	Weekly and monthly reports have to be delivered to the client as mentioned in clause 5.1. F3
G. Technological documentation		
	Finalize Report Documents & Other Documents	The document has to be delivered as mentioned in 3.2.3 & 3.2.4

- **Data, facilities and local services to be provided by the Client, and Institutional arrangements:**

BDCCL/NDC or any other a2i nominated data center needs to be integrated with the existing system to ensure a cross-site computing environment and cross-site redundancy.

  a. The solution provider should configure the technology stacks from OS configuration, virtualization environment creation, database, and application server installation, etc. in BDCCL upon the availability of computing resources in BDCCL/any other a2i nominated.

  b. The solution provider will configure the logical level replication processes for application and database replication in BDCCL/any other a2i nominated.

  c. The link requirement should be evaluated by the solution provider for the replication purpose.

  d. The replication (of database and application) should be managed and monitored by the solution provider.

  e. Baseline configuration for load balance, router, firewall, etc should be properly replicated by the solution provider.

  f. The solution provider should prepare documents for manual and auto switchover of applications from one site to another

  g. Implementation in BDCCL/any other a2i nominated should be planned by the solution provider considering the baseline standard like BCP, DRP, BIA, and CERT. The respective data center authority must be notified through A2i for access and assistance before work commencement.

- **Work distribution & Team Composition (qualification requirement of team members with rationale. The human resources requirement should be aligned with budget of development & maintenance.):**

Sl	Key Position	No	Responsibilities/Job Description	Required Minimum Qualification
1	Team Leader	1	- Lead an enterprise-level IT operational team specialized in IT service delivery - Play the role of managed service lead to maintain the relationship with the customer - Set the operational strategy to meet the SLA with compliance - Ensure end-to-end delivery including operation management, project management financial control, and human resource management. - Manage the Firm and partner relationship	- Minimum Bachelor in CSE/CS/IT/ICT or B.Sc. in any subject with a post-graduation diploma in CS/IT/ICT 10 years experience in IT/ICT project management. - Have experience in managing at least 2 (Two) enterprise solutions.
2	Infrastructure Expert	01	- Experience with web technologies and building enterprise architecture roadmaps - Experience designing, integrating, and managing complex infrastructure solutions - Knowledge of client-server networking and database management - Ability to provide technical system solutions, determine overall design direction, and provide hardware recommendations for complex technical issues - Experience planning and developing support processes and adhering to best practices - Strong written and oral communication skills, and the ability to effectively communicate with technical and non-technical audiences - Ability to quickly comprehend the functions and capabilities of new technologies - Advanced skills: While most employers did not require the following skills, multiple job listings included them as preferred. Add these to your Infrastructure Architect toolbox and broaden your career options.	- Minimum Bachelor in CSE/CS/IT/ICT or B.Sc. in any subject with a post-graduation diploma in CS/IT/ICT 8 years of experience in IT infrastructure management as infrastructure expert.
3	Senior DevOps	01	- Contributing expertise on information system options, risk, and operational impact - Mentoring junior software developers in gaining experience and assuming DevOps responsibilities - Managing the installation and configuration of solutions - Collaborating with developers on software requirements, as well as interpreting test stage data - Developing interface simulators and designing automated module deployments	- Minimum Bachelors in CSE/CS/IT/ICT or equivalent 6 (Six) years of experience as a DevOps Engineer

Sl	Key Position	No	Responsibilities/Job Description	Required Minimum Qualification
			• Completing code and script updates, as well as resolving product implementation errors • Overseeing routine maintenance procedures and performing diagnostic tests • Documenting processes and monitoring performance metrics	
4	Junior DevOps	01	• Provide support for the application and application server. • Deploy the final release and/or patches in a production environment. • Tune the entire eco-system in Test, UAT, Training, and development environment • Administrate the LAMP environment • Must be skilled in MySQL PHP and HTML	• Minimum Bachelor in CSE/CS/IT/ICT or equivalent • 03 (Three) years of experience in software development and operation.
5	Database Administrator	01	• Provide first and/or second-level support for MySQL databases, replication settings, cluster environment, etc. • Perform schedule and routine database administration tasks including purging, portioning, backup, etc. • Execute preventive and proactive action on the database environment as suggested • Ensure database-level security settings • Administrate the LAMP environment • Must be skilled in MySQL database, Cluster Database, etc. • Build database systems of high availability and quality depending on each end user's specialized role • Design and implement a database by the end user's information needs and views • Define users and enable data distribution to the right user, in the appropriate format, and on time • Use high-speed transaction recovery techniques and backup data • Minimize database downtime and manage parameters to provide fast query responses • Provide proactive and reactive data management support and training to users • Determine, enforce and document database policies, procedures, and standards • Perform tests and evaluations regularly to ensure data security, privacy, and integrity • Monitor database performance, implement changes and apply new patches and versions when required	• Minimum Bachelors in CSE/CS/IT/ICT or equivalent • 05 years of experience as a database administrator

Sl	Key Position	No	Responsibilities/Job Description	Required Minimum Qualification
6	System Administrator	01	• Lead a team consisting of server administrator, Database Administrator (DBA), and Middleware administrator • Ensure the availability and performance of computing by executing proactive activities • Asses the security settings and guide the team to execute corrective action • Determine the root cause of the incident, recurrence event and guide to the team to plan and execute preventive action • Manage the middleware settings and deployment of application	• Minimum Bachelor in CSE/CS/IT/ICT or equivalent • 07 years of experience as a system administrator.
7	NOC & SOC Lead	01	• Lead a 24x7 enterprise-level SOC team • Implement, and integrate various monitoring software • Evaluate the event reports and follow up with the technical team • Coordinate with the technical team to meet the SLA	• Minimum Bachelor in CSE/CS/IT/ICT/APE/ETE/EEE or equivalent • 05 (Five) years of experience in Network Operations Centre (NOC)/Security Operations Centre (SOC) operation.
8	NOC & SOC Support Engineer	02	• Monitor, escalate and follow up on events that appeared in the monitoring system • Implement, and Integrate various monitoring software • Prepare various kinds of reports related to service management • Coordinate with the technical team to meet the SLA	• Minimum Bachelor in CSE/CS/IT/ICT/APE/ETE/EEE • 02 years of experience in the IT/ICT field
9	Documentation Expert	1	• Record Technical descriptions of features, business processes, and user journeys.	• Minimum graduate in any subject. 05 years' experience in writing a technical document.
10	Document Writer	2	• Will write up the technical documents as assisted by the Expert.	• Minimum graduate in any subject. 03 years of experience in writing a technical document.

- **Duration of the Assignment:**
  - Total duration of the assignment is 24 months.
  - Selected service providers will have to sign separate SLA and Non-discloser agreements.
- **Payment Schedule:**

Upon Submission of Inception Report	After the completion of Q1	After the completion of Q2	After the completion of Q3	After the completion of Q4
5%	25%	25%	25%	20%

- **Join venture (JV) modality:**

  Multiple companies having technical and legal competency for developing such products can submit jointly but they must have legal agreement among them where one company needs to be lead. A joint-venture agreement needs to have clear identification about each responsibility matrix along with IPR.

- **Minimum qualifications and experiences**
  1. Must have valid and up-to-date Trade license (2021-2022), Register under joint stock & companies (RJSC) registration (if applicable), VAT certificate, TIN certificate, and updated income tax payment certificate.
  2. Minimum 5 years of experience in ICT business as a registered company/entity in Bangladesh. (Please submit certificate of incorporation or work completion certificate to prove the experience)
  3. Must have the minimum amount of liquid assets in the form of credit line or working capital shall be BDT 50 Lac in last 02 years (Please submit the necessary document in this regard. For example, audited financial documents).
  4. Must have a minimum average annual turnover of BDT 1.20 Crore in the last 2 years. Please submit the last 02 (Two) years audited financial statements (if applicable)
  5. Experience in managing large-scale enterprise infrastructure (minimum 100 VM, 50 Mbps, 10000 user base) in the private/Gov't/Semi-Gov't sector. (What will be documented to prove this criterion)
  6. List of ongoing projects similar to this assignment. (Please provide copy of contract and URL of the live system)
  7. Experience on IT service management for minimum 01 (one) enterprise solution for government of Bangladesh/ any development partner/ International organization/ private sector. (Please provide work completion certificate along with copy of contract and URL of live system)