

**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF
BANGLADESH**

Standard Request for Proposal (National) For Selection of Consulting Firm

Ministry of Religious Affairs

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e-Hajj Management System of Bangladesh and other services related to Hajj for MoRA

Terms of Reference (ToR)

Ministry of Religious Affairs
Government of the People's Republic of Bangladesh
Bangladesh Secretariat, Dhaka

e-Hajj Management System of Bangladesh

6.1 Background

Every year approximately 1,50,000 pilgrims (could be increased over time) are expected to perform Hajj from Bangladesh. The Hajj rituals span only four fixed days, but due to transportation, the pilgrims spend four to six weeks in and around Makkah (Mecca) and Madinah (Medina), the two holiest cities for Muslims. The Hajj is a unique, very complex, challenging and costly exercise to manage as it involves frequent mass movement of more than three million pilgrims. Apart from the religious components, the entire journey from Bangladesh to Saudi Arabia is very complicated. The entire operational management is handled by more than 20 different stakeholders who are interconnected and integrated in operation to ensure smooth movement of pilgrims. The pilgrims have to follow different rules and procedures of Bangladesh Government and Kingdom of Saudi Arabia for this purpose.

e-Hajj management system begins from pre-registration. Round the year the pre-registration process is running. After getting the quota from the Kingdom of Saudi Arabia, according to the serial, the pre-registered pilgrim will be registered and then many other processes after registration of pilgrims such as NID verification, passport integration process in visa, getting air ticket, flight schedule, accommodation management in KSA, etc., are done. In Bangladesh, all such pilgrim management information needs to be captured/updated/uploaded in e-Hajj system, and the same is applicable in KSA as well.

The entire process is time bound. Following all activities according to the Hajj calendar, any lapse or delay will cause impediments in the journey of pilgrims resulting in negative religious sentiments and social unrest among the citizens. Therefore, the stakeholders must be prepared to undertake any necessary activities, to resolve any unforeseen situation(s) and make sure that pilgrims can perform Hajj related activities smoothly. In this context, all the stakeholders should have to perform their own duty properly.

The Government of Bangladesh has formulated a national Hajj policy for proper Hajj management. It is a complete instruction Guide to manage the Hajj by all stakeholders. For good management as per Hajj Policy, what needs to be achieved every year during the Hajj season covers, but not limited to, the following:

- Improvement of total Hajj management system and providing optimum services to the guests of Allah;

- Preparation and declaration of Hajj calendar in well advance of Hajj in every year.
- Execution of Hajj agreement between the Governments of Bangladesh and the Royal Kingdom of Saudi Arabia.
- Execution of different agreements between the Government of Bangladesh and any other organization(s) of the Royal Kingdom of Saudi Arabia.
- Preparation and declaration of Hajj package within the specified time.
- Declaration of schedule for pre-registration and registration within the proper time frame.
- Establishing coordination system between the Government of Bangladesh and any other organization(s) of the Royal kingdom of Saudi Arabia.
- Issuing licenses and publishing qualified licenses to private agencies and managing them for conducting Hajj activities.
- Preparation of database of private Hajj agencies and monitoring their activities.
- Arranging training for Haji's and all stakeholders.
- Finalization of Hajj flight schedules by discussing with civil aviation authorities of Bangladesh and Saudi Arabia.
- Transfer fund to Saudi Arabia through international banking channel(s).
- Determination of responsibility, accountability, and transparency in a Hajj Management system.
- Organize the total Hajj management system in a good order.
- Hiring of accommodation for Haji's and completion of other relevant activities.
- Making planning for transportation and food management for Haji's.
- Coordination with Bangladesh and Saudi immigration, airlines, and Hajj offices.
- Preparation of ID Cards and luggage tags for luggage management.
- Preparation of movement plans for Jeddah-Makkah and Makkah-Madinah.
- Ensuring smooth management at Mina, Arafah, Muzdalifah and Jamarat.
- Providing vaccination, eHealth certificates and primary health services to the haji's.
- Addressing and reducing all kinds of grievances related to performing Hajj., possibly through a hotline and call center
- Development of awareness among the pilgrims about their duties, rights and obligations.

With the above point of view, the Ministry of Religious Affairs has been using Information Technology (IT) for better Hajj Management since 2001. In 2009, an interactive web-based Hajj Management System (www.hajj.gov.bd) was developed for smooth operation of the entire Hajj process. Now, MoRA is looking for engaging a nationally/Internationally reputed IT firm for the Hajj Management System along with its operation and maintenance with the following functionalities and services (not comprehensive):

- Activities: Management of Pre-registration and registration system, transfer & replacement of registered pilgrims, providing pilgrim identification numbers, generating Luggage tag cards, arrangement of training, finalization of flight schedules, management of house allocations as well as food and transportation in Saudi Arabia, passport verification and integration, VISA application processing, fund transfer through international banking channels, development of Hajj and Umrah agency database, integration of Travel Licenses after Hajj functions, management of Umrah, management of vaccination and eHealth certificates maintaining record of primary medical services before and during Haj, lost and found baggage management, lost pilgrim management, easily understandable map generation for Mina and Jamarat, dashboard and display board establishment, establishment of automated management system, mobile apps with all supporting real-time and non-real-time information, customize MIS reports, Hajj portal management and so on.
- Services: Providing ID cards and luggage tags for pilgrims, perforated cards and embarkation forms, preparing electronic wrist belt, 24/7 call center, SMS and e-mail based system development to provide information, development of IT based help desk at Makkah, Mina, Arafah, Madinah, Jeddah and Hajj office, Dhaka, and so on to enable all the above-mentioned activities.

6.2 Objectives

The main objectives of the assignment cover, but not limited to, designing and implementing a comprehensive integrated e-Hajj Management System with the following characteristics

1. Latest technologies are incorporated Aligned and consistent with Saudi Arabian e-Hajj Management System;
2. Updated and relevant information of pre-Hajj, during the Hajj and post-Hajj cases can be provided;
3. A permanent and unified Hajj Pre-registration and Registration platform is incorporated;
4. All Hajj related information and data can be collected and stored in a central database;
5. All Hajj related information and data can be backed up and archived (worth of easily restoring) from the central database;
6. Enable the MoRA, Hajj office, Dhaka, Hajj office Jeddah and other stakeholders for operating all activities related to Hajj efficiently;
7. A secure Hajj portal is incorporated;
8. Strengthen automated Hajj and Umrah management system for MoRA

Related Ministry/Division/organization/Institution in Bangladesh

- Cabinet Division
- Prime Minister's Office
- Ministry of Religious Affairs
- Ministry of Foreign Affairs
- Ministry of Civil Aviation and Tourism
- Health service Division, MOHFP
- Security Services Division, MOHA
- Public Security Division, MOHA
- Bangladesh Election Commission Secretariat
- Bangladesh Bank and other scheduled Banks of Bangladesh
- Hajj office Dhaka
- Islamic Foundation Bangladesh
- Office of the Deputy Commissioner
- Special branch of Police
- Department of Immigration and passport
- NID authority
- Birth registration authority
- National telecommunication Monitoring Center
- Biman Bangladesh Airlines
- Saudi Airlines
- Other Airlines (if applicable)
- Civil Aviation Authority of Bangladesh (CAAB)
- Union Digital Centers (UDC)
- Association of Hajj agencies of Bangladesh
- Hajj Guides
- Bangladesh Scouts
- Embassy of Kingdom of Saudi Arabia, Dhaka.
- IT support providing firm

Related Ministry/Division/organization/Institution in Saudi Arabia

- Bangladesh Mission, Riyadh, K.S.A.
- Ministry of Hajj and Umrah, K.S.A.
- Consulate General office of Bangladesh, K.S.A.
- Hajj office, Jeddah, K.S.A.

- Moassasa, Makkah, K.S.A.
- Adillah Office, Madinah, K.S.A.
- United Agents Office, K.S.A.
- General Car syndicate, K.S.A.
- General Authority of Civil Aviation, K.S.A.
- Sejeltech IT, K.S.A.
- Office of the Consulate General, Jeddah, K.S.A.
- Technical implementation partners over the Hajj area such as EVC (Experts Vision Consulting)

6.3 Scope of Services

The Ministry of Religious Affairs (MoRA) has been using Information technology (IT) for better Hajj Management since 2001. In 2009, an interactive Web-based Hajj Management System (www.hajj.gov.bd) was developed for smooth operation of the entire Hajj management. Since then, pilgrims are being provided services in Saudi Arabia (Makkah, Madinah, and Jeddah) and at Hajj Office, Dhaka through this system establishing IT Help Desk on that location during the Hajj season and round the year. Now, MoRA is looking for engaging a nationally/internationally reputed IT firm for continuing the pre-registration and registration platform and e-Hajj Management System as well as its operation and maintenance with the following details:

6.3.1 Existing Services and Process

Initial Preparation

A. Bilateral Agreement with KSA

Ministry of Hajj and Umrah Saudi Arabia and Ministry of Religious Affairs, People's Republic of Bangladesh sign an agreement at the beginning of every Hajj session on the following issues.

- Pilgrims Quota Limit
- Flight movement process
- Accommodation
- Transportation
- Food Management
- Health Management
- Other services
- New rules and regulations by K.S.A. etc.

B. Hajj / Umrah Agency License Issue and Renewal

- Publish notifications for issue and renewal of Hajj/Umrah licenses
- Manage applications for issuing licenses/renewal of licenses to the Secretary/Minister of MoRA. Necessary documents for applications are,
 - ✓ Nationality certificate
 - ✓ National ID
 - ✓ Passport
 - ✓ Travel agency license
 - ✓ Trade license
 - ✓ Security money
 - ✓ Evidence of office space
 - ✓ Evidence of manpower, etc.
 - ✓ Additional requirement for Umrah: IATA Certificate

C. Publishing List of Valid Agencies for the Respective Hajj Season

- Collect applications from the agencies willing to send pilgrims for that Hajj season.
- Verify applications and select agencies for operating Hajj/Umrah for the respective year
- Publish the list of valid (or selected) agencies and send the list to the Foreign Ministry and Embassy of Saudi Arabia.
- Finalizing quota limits (maximum and minimum) of pilgrim registration for the Hajj agencies depending on the Bilateral Agreement with Saudi Arabia in that particular Hajj season.

D. Upgradation of National Hajj and Umrah Policy

- Upgradation of national Hajj and Umrah Policy according to the new requirements and contexts
- Upgradation of national Hajj and Umrah Policy according to the new bilateral agreement with Saudi Arabia

E. Preparation, Declaration, and Publishing of All Hajj Packages

- Preparation of Hajj packages as per the bilateral agreement with Saudi Arabia
- Declaration and publishing the prepared full Hajj packages for the government-managed pilgrims of that Hajj season mentioning all the costs and facilities in details
- Declaration and publishing of the full Hajj packages by Hajj agencies for privately-managed pilgrims as per rules and regulations set by the government
- Categorization of the Hajj packages such as Package-A, Package-B, Package-C, etc., according to the facilities and costs

Pre-Registration System

In 2016, the number of Hajj pilgrims was more than the quota given by the Saudi Arabian government. As a result, a substantial number of Hajj pilgrims could not perform Hajj in that year. To overcome that situation, the notion of Pre-registration was introduced in the year of 2016. In that year, pre-registration activities were conducted for 4 (four) months. Later, the pre-registration activities started to continue throughout the year and this is still in effect till now.

A. Required Documents and Prerequisites for Pre-Registration

- ✓ National ID for 18+ Pilgrims,
- ✓ Birth registration certificate for below 18 Pilgrims,
- ✓ Related residential document for non-resident Bangladeshis,
- ✓ Mobile Number, etc.

B. Related Organizations and Systems for Government-Managed Pilgrims

- UDC (Union Digital Center)
- District Offices
- Islamic Foundation District Offices
- Islamic Foundation Baitul Mokarram, Dhaka
- Hajj Office, Dhaka
- Hajj Portal (www.hajj.gov.bd)

C. Related Organizations and Systems for Privately-Managed Pilgrims

- Registered agencies approved by MoRA

D. Generation of Vouchers

- NID verification
- Get tracking numbers
- Generate electronic payment vouchers

E. Payment

- Pre-registration fee submission in the selected bank(s)
- Pre-registration certificate preparation from the bank(s)
- Confirmation SMSs generation and dissemination for approved pre-registrations having serial numbers

F. Refund Management

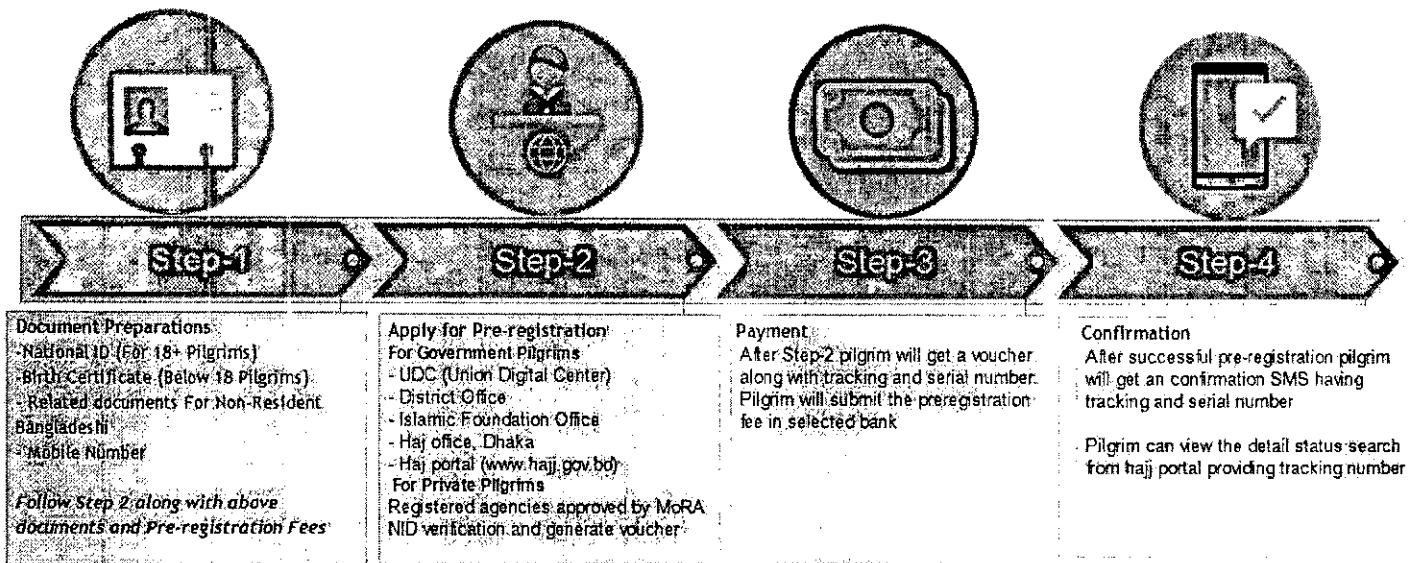
- Submissions of refund requests by pilgrims for cancellation of pre-registrations
- Approval process of the cancellation
- Refund to the requester pilgrims after deducting the mentioned service charges

G. Pilgrim Transfer Management

- Transfer of pilgrims from one private agency to another private agency

- Transfer of pilgrims from a private agency to government management and vice versa
- Transfer approval management
- Forced transfer management

A High-Level Overview on Pre-Registration Management of Pilgrims



Registration System

MoRA calls for registration according to the pre-registration serial numbers based on quota given by KSA. A pre-registered pilgrim who has the serial number within the declared range will be eligible for registration. SMSs to the pre-registered pilgrims will be sent for registration.

A. Document Preparation and Prerequisites:

- ✓ MRP Passport/e-Passport,
- ✓ Pre-registration certificate, etc.

B. Application for Registration

- Selection of the intended Package
- For Government-Managed Pilgrims, relevant organs and systems -
- UDC (Union Digital Center)
- District Offices
- Islamic Foundation District Offices

- Islamic Foundation Baitul Mokarram, Dhaka
- Hajj Office, Dhaka
- Hajj Portal (www.hajj.gov.bd)
- For Privately-Managed Pilgrims
- Registered agencies approved by MoRA

C. Generation of Vouchers

- Passport verification with DIP/ NTMC
- Generation of payment vouchers

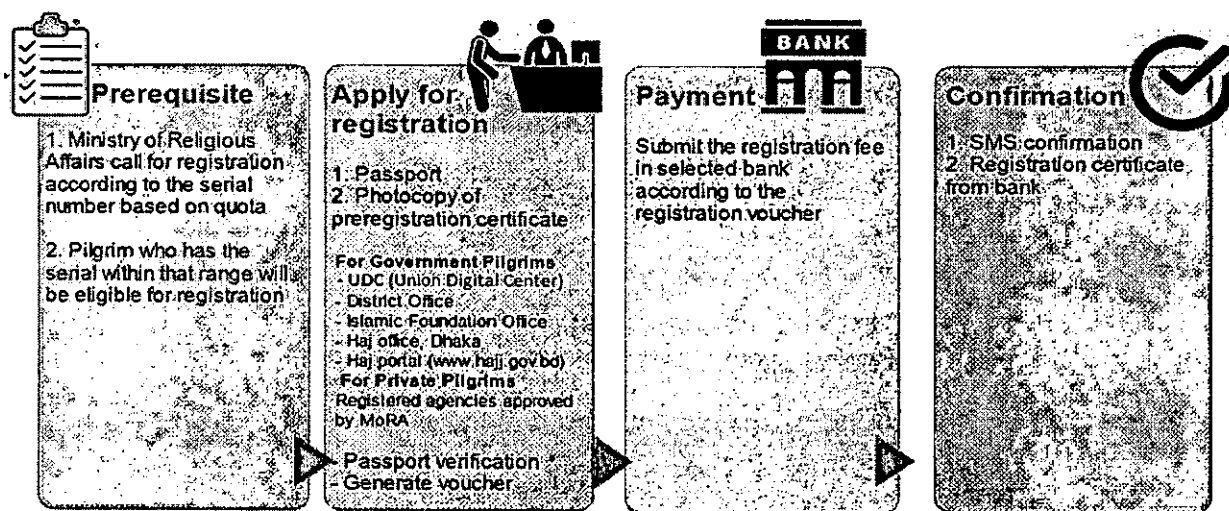
D. Payment

- Submission of the registration fee in the selected banks
- Registration certificates generation from the banks
- Confirmation SMS generation and dissemination after payments for registrations

E. Coordination with Banks

- Coordination and Monitoring

A High-Level Overview on Registration Management of Pilgrims



Post-Registration System in Bangladesh (Pilgrim Management System)

A. ID Management

- Sending SMSs for registration to waiting list pilgrims as per rules and regulations
- Completion of the registration from the waiting list

- Assigning unit-based Pilgrim IDs
 - Assigning unit-based Pilgrims ID with Mahram of corresponding registered pilgrims
 - Hajj management with selection and approval of Hajj guides as per National Hajj and Umrah Policy (NID verification)
- B. Training Management
- Assigning/Selecting Hajj guides for pilgrims
 - Nationwide training preparations (budget preparations, training materials, trainer selection, training schedule, venue selection, sending SMS to the participants, etc.)
 - Training management for all pilgrims and guides
- C. Health Profile Management
- Vaccination and medical examination notifications
 - Vaccination and medical examinations
 - Preparation of medical health profiles for pilgrims
 - Preparation of medical Health certificates
- D. Accommodation Management
- Approval of Tasaria/Tasnif of Home/Hotel in KSA as per Government permission for using as pilgrim residences in KSA
 - Selecting trips and homes for pilgrims
- E. Flight Management
- Allocation of flights by Hajj office, Dhaka for government-managed pilgrims and informing the pilgrims accordingly.
 - Allocation of flights by respective agencies for their pilgrims and informing the pilgrims accordingly
 - Submission of pay-orders of air tickets and PNL (Passenger Name List) of flights in favor of Hajj pilgrims
 - Updating flight information by airlines
 - Informing pilgrims by the Hajj office about their flights via SMS, email, etc.
- F. KSA Communication Management
- Preparing and distributing ID Cards, Embarkations and other necessary cards
 - Service fee payment to KSA by IBAN
 - Capturing information about registered pilgrims, guides, and Muallem, and sending that information to the KSA e-Hajj system
 - ✓ Pilgrim profiles
 - ✓ Visa and passport information
 - ✓ Accommodations
 - ✓ Catering information

- ✓ Pilgrims' flight itineraries
- ✓ Makkah and Madinah movement itineraries
- ✓ Health profiles
- ✓ Any other information required by the KSA government, etc.

G. Passport Management

- Passport information correction and change request management
- Approval management
- For government-managed pilgrims, collection of passports from the pilgrims by the Hajj office and subsequent distribution of the passports after visa and ticket processing.
- For privately-managed pilgrims, collection of passports from the pilgrims by their respective agencies and subsequent distribution of the passports after visa and ticket processing

H. Visa Management

- For government-managed pilgrims, completion of visa lodging by the Hajj Office, Dhaka as well as application for the visas and performing other related necessary activities
- For privately-managed pilgrims, completion of visa lodging by the respective Hajj agencies as well as application for the visas and performing other related necessary activities

I. Hajj Camp Operations Management

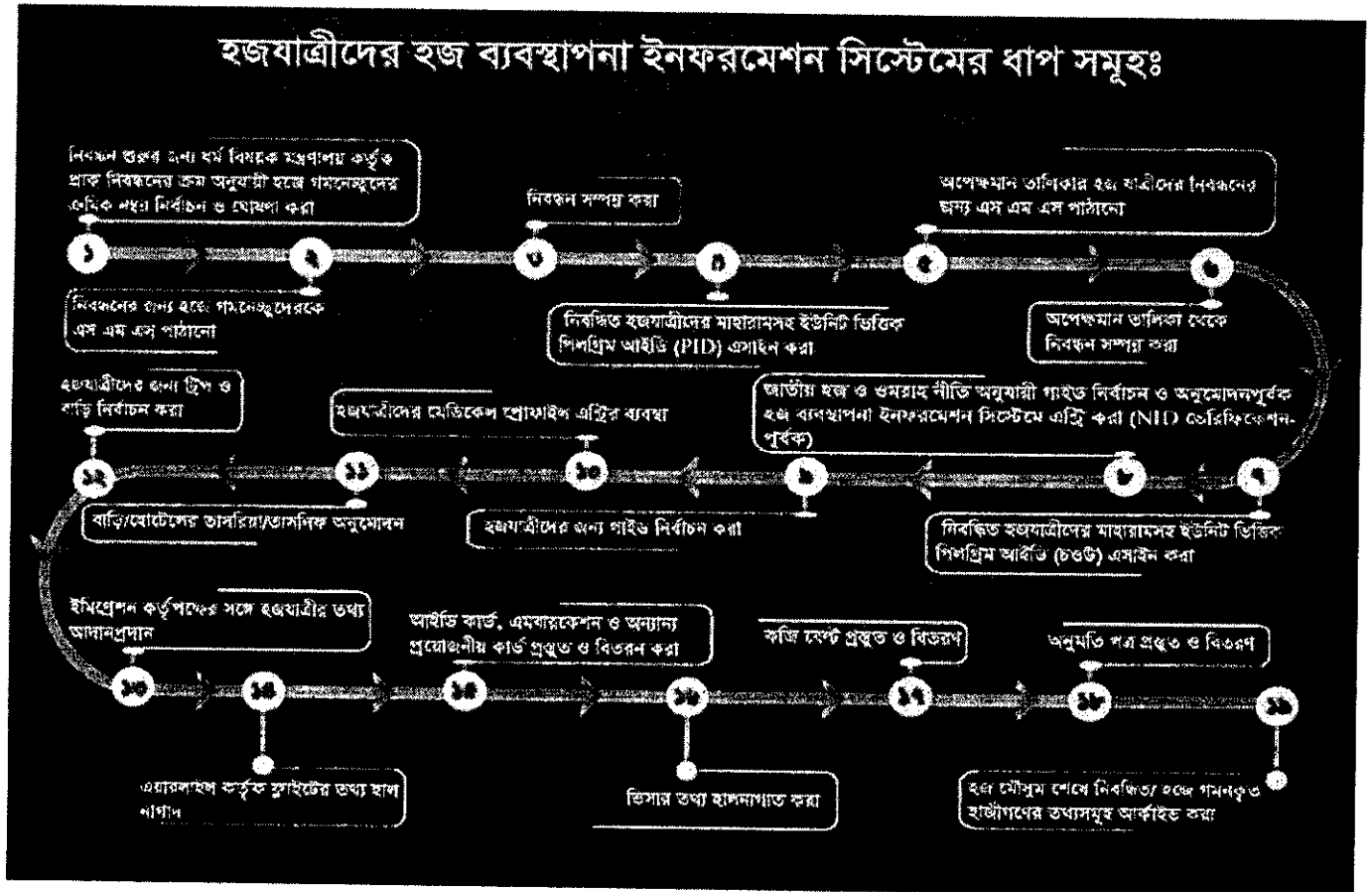
- Recruitment of temporary employees
- Volunteer Committee from MoRA
- Accommodation management
- Employee roster management
- Catering management
- Pilgrim queue management
- Pre-arrival immigration management (route to Makkah and/or Madinah)
- Flight management and monitoring
- Digital display system for showing updates on flight information and other necessary guidelines

J. Pilgrim Replacement Management

- After registration, for pilgrims who cannot perform Hajj due to severe illnesses or death, presenting an option to replace those pilgrims with other pre-registered pilgrims
- Replace application requests management

- Approval process according to the quota mentioned by the MoRA for each agency
- K. Pilgrim Reporting Management
- Preparation and Distribution of Wrist Belts
 - Reporting at Hajj Office, Dhaka or Respective Agencies
 - Managing attendance of pilgrims at the Hajj Office, Dhaka according to the provided schedule and time
 - Reporting by the government-managed pilgrims at the Hajj Office, Dhaka
 - Reporting by the privately-managed pilgrims at the respective agency or guide
- L. Pre-Arrival Immigration Management in Road to Makkah/Madinah
- Performing KSA immigration by the pilgrims at the airports in Bangladesh before heading to Saudi Arabia
 - Providing biometric fingerprints (of 10 fingers) by the pilgrims in Hajj Office, Dhaka before immigration
 - Color tagging of Luggage, ID card and passport as per flights and houses
 - Establishing immigration counter of KSA part in Dhaka Airport for pre-arrival immigration
- M. Flight Monitoring
- Notifications to pilgrims about their flights
 - Coordination with Civil Aviation Authority of Bangladesh
 - Coordination with respective airlines
 - Coordination with immigration authority
 - Coordination with Makkah and Madinah Hajj Mission, Bangladesh
 - Coordination with Jeddah and Madinah control rooms
 - Coordination with United Agent Bangladesh and KSA representatives
 - Coordination with KSA authority, if and as needed
 - Flight change and delay management as well as disseminating related information to the pilgrims

A High-Level Overview on Post-Registration Management of Pilgrims



Post-Registration System in KSA (Pilgrim Management System)

A. Arrival Management at Jeddah/Madinah Airport and Collecting the Luggage

- After landing at Jeddah/Madinah airport, completing immigration by the pilgrims and collecting their luggage, if the pilgrim is not under pre-arrival immigration
- After landing at Jeddah/Madinah airport, directly getting into the buses and collecting luggage from the hotels, if the pilgrim is under the pre-arrival immigration
- Reception of the pilgrims by the Hajj Office, Bangladesh in KSA and assisting them to get into the bus and to do other necessary activities with the coordination with KSA transport authority

- Providing information to the KSA Government approved authorities by the Hajj Office, Bangladesh in KSA.
 - ✓ Ministry of Hajj and Umrah, KSA
 - ✓ United Agent Office
 - ✓ Naqabha (Hajj Transport Authority of KSA)
 - ✓ Airport Security Authority
 - ✓ Flight reports to Bangladesh Hajj Office, Jeddah
 - ✓ Makkah Hajj Control Section
 - ✓ Reports from the Adillah office (Pilgrim management Authority at Madinah, KSA) as per the requirement
 - ✓ Airlines, etc.
 - Establishment of IT Help Desk cum Information Center in Jeddah at King Abdul Aziz Airport
 - Preparing exit passes instantly at Jeddah Airport in case of lost passports.
 - Establishment of IT Help Desk cum Information Center in Madinah Airport/Tarik Hijrat
 - Displaying flight schedule and other necessary information at Hajj Terminal
- B. Stay Management in Makkah
- Accommodation management
 - Food management
 - Private management agencies' house inspections and reporting for ensuring quality
 - Complain management
 - Lost pilgrim information
 - Lost luggage information
 - Pilgrim information
 - House information
 - Agency services
 - Reporting to the Hajj Mission office, Muassasa, Maktab, Saudi Hajj Ministry, etc., according to their needs
 - Displaying and delivering flight schedules and other necessary information at Makkah Office and to pilgrims
 - Flight change management
 - Establishment of IT Help Desk cum Information Center for all pilgrims
 - Coordination with Maktab (KSA approved pilgrim management Agent), Moassasa (Association of KSA approved pilgrim management Agents at Makkah), and other similar agents as needed

- Mina and Arafah management, etc.

C. Search Management and Information Collection

- Searching, finding and printing pilgrim information in case of lost cases and helping them to reach their houses by making phone calls, understanding the maps and location, and taking them to their houses with the help of Hajj Worker/Guide/Agencies
- Searching and printing pilgrim profiles in case of lost luggage, lost air tickets, lost ID cards, etc., for Hajj Office, Agencies, Airlines, and other stakeholders
- Searching and printing pilgrim profiles to refer them to hospitals or get them back to Bangladesh, Hajj Offices, Medical Team etc., for different reasons such as sickness
- Collecting Makkah-Madinah-Makkah / Jeddah-Makkah-Jeddah / Jeddah-Makkah-Madinah-Jeddah movement information of the pilgrims from Saudi Arabian Authority
- Collecting, communicating, and updating death cases information to Hajj Offices, websites, relatives and other stakeholders.
- Collecting flight schedules, Dhaka arrival information, etc., updating them on the website, and communicating all the stakeholders accordingly during the return flights
- Publishing daily news bulletins on a website and circulating to all subscribers.
- Preparing daily reports and circulating them to concerned authorities such as Ministry, Hajj Offices, Ambassadors, Consul General, etc.
- Providing different MIS Reports for Ministry, Hajj Offices, and other stakeholders
- Marking of tent locations at Mina for mobile app
- Preparation and circulation of daily reports on arrival, departure, Madinah movement, IT services, Medical Services, lost Hajis and luggage information, death events, etc.
- Preparation and circulation of daily bulletin both in Bangla and English with latest information and statuses
- Supporting digital display in different houses / locations
- Providing support to the admin, medical tea, technical teams, etc., as and when necessary
- Coordination among different Hajj management team members

D. Transfer and Stay Management for Madinah

- Coordinating with Adillah office (Pilgrim management Authority at Madinah, KSA) and providing the reports as per the requirements
- Coordinating with Saudi Muallem and Adillah office for transport facilities and schedules of pilgrim movement
- Assigning accommodations for the pilgrims
- Others accommodation management

- Food management
- House inspections for privately-managed pilgrims and reporting outcomes of the inspections for ensuring quality
- Complain management
- Lost pilgrim information
- Lost luggage information
- Pilgrim information
- House information
- Agency services
- Reporting and coordinating with Hajj Office, Dhaka and Hajj Mission, Makkah according to their requirements
- Displaying and delivering information on flight schedules and other necessary information at Madinah Office and to pilgrims
- Flight change management, etc.

E. Medical Center Management in Makkah and Madinah

- First Aid treatment in Jeddah Airport
- Installation, operations, and maintenance of KIOSKs to generate treatment cards for pilgrims with queue management
- Providing pilgrim treatment cards using KIOSKs
- Basic medical history in the treatment card
- Patient queue management
- Basic health examinations such as BP, diabetics, temperature, etc.
- Managing doctors' diagnosis and treatments
- Providing free medicine services
- Referral to KSA hospitals, etc.

F. Map Preparation and GIS Management

- Preparation of easy-to-understand maps locating houses and tents of Hajj agents at Makkah, Madinah and Mina-Arafah, and distribution of the maps among Hajjis and other concerns
- Collecting all the resources needed to prepare these maps from KSA and printing in KSA, as the maps get finalized only a few days before Hajj
- Preparation and hoisting of banners, large maps of Makkah, Madinah and Mina
- Collecting locations from KSA Moassasa Office
- Visiting Mina and Arafah for collecting location information
- Preparing soft copies of the maps
- Printing maps

- Distribution of maps
- Integrating maps with GIS locations in mobile Apps, etc.

G. Movement Management during Hajj Rituals

- Coordinating with Saudi Muallem for transport, food, tent management, etc.
- Tent assignment for pilgrims
- Coordinate the movement of pilgrims
- Providing medical facilities
- Giving assistance in case of a pilgrim gets lost on the way to tent at Mina, Arafah, Muddalifah, and Jamarat

H. Return Trip Management for Bangladesh

- Coordinating Saudi Muallem for transport facilities and schedules
- Luggage management
- Immigration process
- Ensuring flight and ticket
- Collecting Zamzam Water

6.3.2 Major Tasks for the Development of e-Hajj Management System

Development methodology, i.e., Software Development Life Cycle (SDLC) plays a very important role to clarify the ultimate project objectives precisely, to present the project requirements, to monitor the progress with measurable deliverables and managing the entire project efficiently. Here, the IT firm is requested to propose and submit a best possible suited SDLC approach for this project considering the project scopes, requirements, objectives, organizational environmental factors and behavior, project timeline, ultimate deliverables, and various resources to be used.

System Requirement Analysis

Requirements finalization will be a very important milestone for the IT firm in its proposed development methodology. Here, the vendor is requested to propose and submit a system requirement analysis plan which must cover the scope of work at this phase, relevant activities to be performed, timelines, deliverables to be produced, dependencies, and resources to be used.

System Design

At this phase, the tasks of detailed functional scope defining and designing as per the standard of software engineering approach for the proposed system are being performed. This is a very vital and important phase of any SDLC. Considering the ultimate development and implementation scope, the proposed system design should be robust, dependable, scalable, user friendly, and interoperable enough. At this system-designing phase, the tasks the vendor needs to perform cover, but not limited to, the following in addition to producing various standard System Designing Documents (SDD):

- Identifying modules, components, tasks, I/O, and functional features
- Specifying technical and functional requirements
- User interface design
- Description of UI and requirements
- Preparing use cases
- Defining scopes of integration and interoperability
- Designing a suitable system architecture
- Determining process and data flow
- Database design
- API design
- Finalizing tools, technologies, and frameworks to be used
- Ensuring security at all steps, etc.

Here, the IT firm needs to cover detailed system designing plans in their technical proposal, which must include all relevant activities, approaches, methods, documentations, and deliverables.

Development

At this stage, IT firm will need to mention all tools, technologies, and framework that will be used for the development of the system application. Here, the IT firm will need to prepare a comprehensive development plan for the whole system, which must include a schedule consisting of all development items along with their start dates, test dates, review dates, completion dates, etc. At the development stage, the IT firm must follow the standard code convention, code level documentations, header of each file, algorithms, interfaces, code compression, and APIs. All of these should be supplied with proper description and documentations. The IT firm must specify and execute all external interfacing requirements such as extranet, NEA integration, etc. All kinds of standard testing tasks (covering performance, scalability, security, etc.) that are required to be performed at the development

phase, must be mentioned in the plan. Considering the scope mentioned in the TOR for this system, the vendor will need to include a preliminary development plan (standard approach) in their technical proposal.

Integration

Considering the above mentioned Integration requirements and scopes of the system, the IT firm will need to include a phase in their proposed development and implementation methodology approach. At this stage, the IT firm will perform all necessary tasks regarding integration to make the whole system interoperable.

Testing

The vendor must propose a testing plan for this system starting from development to deployment. This testing plan should cover all the standard suitable testing approaches for this application which may include phase wise testing activities such as test scripting, test cases, testing tools, testing process, test log, results, and report formats covering expected test deliverables based on the application development requirements. The IT firm will need to submit a testing plan which must include all standard test approaches covering all necessary aspects such as performance, scalability, security, etc.

User Acceptance Test (UAT)

User Acceptance Test (UAT) is a very vital and essential phase in the development lifecycle. At this phase, all types of users must test the developed application by themselves and have to provide a detailed feedback/ test report. Based on the UAT report, IT firm has to update its developed system accordingly to ensure user satisfaction by making it more user-friendly and context-aware. Here, it is expected that, considering the type of users and their roles in the developed system, the IT firm must propose a comprehensive UAT plan in its technical proposal.

Deployment, Implementation, and Maintenance

IT firm will need to propose their deployment, implementation, and maintenance plans covering all the major activities to be performed, all the deliverables to be provided, etc.

6.3.2 Major Components of e-Hajj Management System

At present, an IT firm is working as a service provider of the existing IT system of Hajj under MoRA since 2015 for pre-registration and registration platforms and e-Hajj Management System. Some modifications and enhancements have been applied to the systems for getting better services. However, these were not enough as the IT technology is changing rapidly. With this point of view, MoRA has decided to develop a comprehensive and upgraded system based on the latest Information Technology. Activities and services required by the MoRA for the system covers, but not limited to, the following. However, upon detailed discussion with the selected IT firm, any one or more parts of the terms of reference may be added/amended/deleted/put forward to a subsequent year.

1. Pre-registration and Registration Platform

- To develop an automated system for pilgrim pre-registration and registration
- To develop a training platform for pilgrims and other related concerns, etc.

2. Comprehensive Hajj Management Platform

- To develop an integrated Hajj operations management information system
- To secure data sharing between all related stakeholders
- To create automated analysis and allocation of groups based on
 - ✓ Geographic location of pilgrims
 - ✓ Family grouping of pilgrims
 - ✓ Ensuring the cohesiveness of a family of Hajjis in the nearest possible rooms in the same floor/ building in Makkah and Madinah
 - ✓ Other customized criteria
- Pilgrim's accommodation allocation through the system based on different criteria such as
 - ✓ Types of groups
 - ✓ Package
 - ✓ Category
 - ✓ Hotel capacity
 - ✓ Rooms availability in each hotel
 - ✓ Based on geographic location and district, etc.

3. An e-HMS Portal for Pilgrim's Access

- To update statuses of the pilgrim's Hajj application and to enable the applicants to access this portal to know the statuses of their Hajj applications

- After an application acceptance, to enable the applicants to know regarding their visa statuses, flight information, hotel/room/building allocations, guides, vaccination, eHealth certificates, training, etc.
- Applicant's registration to his/her special needs such as wheelchair or other requirements
- To ensure detailed information availability about the following:
 - ✓ Arrivals at Saudi Airports (Jeddah and Madinah) and transportation services
 - ✓ Induction process, accommodation details, and contact numbers
 - ✓ Saudi Government rules
 - ✓ Hajj rituals and guidelines
 - ✓ Location maps based on accommodations
 - ✓ Maps of Makkah, Madinah, Arafat, Mina, Jamarat, and Mjudalifah
 - ✓ Detailed guides, maps, and information about each step of the Hajj process
 - ✓ Local emergency contact information
 - ✓ Contact details about the pilgrims' guides and groups

4. An Integrated e-HMS Mobile App for Platform-Independent Smart Devices

Features of the Mobile Apps include, but not limited to, the following:

- Login with Haji Tracking No
- Group chatting communication
- News/Bulletin update at regular basis
- Hajj news information update of different newspapers regularly
- Emergency contact lists of BD and KSA
- Hajj related necessary information
- Location tracking
- Lost pilgrim identification, and providing directions and updates locations to them according to the maps in KSA
- Lost luggage tracking
- Some Quranic Dua reading in Bangla/English/Arabic languages
- Time information in BD and KSA in real time
- Prayer times

5. Integration of e-HMS with Other Systems;

The Government has introduced National Enterprise Architecture (NEA) Bus (known as National e-Service Bus) under Bangladesh National Enterprise Architecture (BNEA) framework to ensure interoperability, availability, and reusability of government online services, information, and data. As a government system or e-Hajj Management System,

integration with the required national and Saudi Counterpart systems through the national e-service Bus is very important and essential. Here, the IT firm will need to come up with an integration plan in their technical proposal considering and understanding the scope of e-Hajj. The possible integration scopes of this e-Hajj application are mentioned below as a reference for the vendors:

Service Name	Purpose	Organization
Pre-Registration Management	Verification of NID Data retrieve	Election Commission
Registration Management	Verification of passport data	Department of Immigration and Passports / NTMC
Registration Management, Mobile Apps, Training	SMS IVR	SMS service providers
Payment	Fee submission	Banks
Online Payment	Fee submission Online	Bangladesh Bank, and Saudi Counterparts and Banks
Pilgrim's visa status	Reconciliation	KSA government appointed company such as Sejeltech and KSA
PNL (Passenger Name List) data management	Update of the flight information of pilgrims	Biman, Saudia, and any other airlines as per the arrangement
Flight Schedule	Flight departure and arrival information	Airlines and Civil Aviation Authority Bangladesh (CAAB)
Immigration management	Update data on movement of pilgrims	Immigration department of Special Branch, Bangladesh Police, etc.
Integration with e-Hajj System KSA	Verifying VISA processing , hotel renting, and selection of Muallem	Sejeltech and KSA
Road to Makkah Initiatives	Flight, transport, pilgrim, and luggage management	MoRA, Hajj office Dhaka, CAAB , Airlines, HAAB, Immigration authority of Bangladesh, Immigration authority of KSA, Customs authority and United Agent office of KSA
eNothi	Document approval	a2i

Hajj flight ticket	To get the flight ticket information	Hajj office Dhaka , HAAB, and airlines
For under 18 pilgrim pre-registration	To get the data from Birth Registration server	Birth Registration Authority
Travel Agency License	To verify travel agency license provided by agencies	Ministry of Civil Aviation and Tourism
Travel License, Trade license, and VAT TIN Certificates	To verify certificates provided by agencies	License issuing authorities
Necessary integration and interfaces with Saudi counterparts	To get necessary data from Saudi counterparts	Moassasa Office, Muallem Office, National Adillah, United Agents Office, Saudi Hajj ministry, Sejeltech, Airport Authority, Transport Authority and Saudi Embassy at Dhaka, etc.
Other relevant integration activities with Hajj	As an when required	As required

6.3.3 Solution Architecture

Solution architecture is expected to define and describe a suitable and appropriate architecture of the proposed solution in the context of the mentioned prevailing service delivery process of e-Hajj Management System of Bangladesh being aligned with stable and latest technology. The solution architecture should assist in translation of all the required services to Digital Services. The transformation requirements should be presented into a solution vision, high-level operations and/or ICT application specifications, and a portfolio of implementation scope. The expected architecture of the solution should offer a coherent set of functionalities to its environment. As such, it should concern those properties of a solution that are necessary and should be sufficient to meet its essential requirements. The IT firm shall propose a comprehensive solution architecture on e-Hajj Management System of Bangladesh from which it may cover the descriptive and diagrammatic presentations as required.

6.3.4 Outputs, Modules, and Features

The IT firm will have to provide all required pre-registration, registration, and post-registration pilgrim management services for both Hajj and Umrah to meet the requirements of the Ministry of Religious Affairs, Bangladesh and the Ministry of Hajj and Umrah, Saudi Government for smoothly running the Hajj and Umrah management every year. The following features present a tentative set of requirements of MoRA, however, the IT firm may suggest including any more necessary module(s)/feature(s) or flow diagram(s) for managing the system more efficiently and effectively. Similar features have been aggregated together. The architectural design should identify service components/modules from these features.

1. Hajj Information, Guidelines, and Report Management

- Agency information
- How to perform Hajj
- Daily activities in KSA
- What to do and what not to do in KSA
- Hajj package management
- eLearning platform on necessary rituals
- Report generation, etc.

2. Hajj and Umrah Agency Licensing and Database Management

- Issuing new licenses
- Renewal of old licenses
- Cancellation of licenses
- Declaration of agency lists (year-wise)
- Agency profile management
- Agencies' document management (TIN, certificates, Trade License, etc.)
- Agency information approval management, etc.

3. Hajj Agency Information and Performance Management System

- Dashboard for agencies' historical information
- Trend analysis from different perspectives
- Online complaint submission
- Online feedback

- Hearing and verdict management
- e-Notification for hearing
- e-Rating management
- Dashboards for other required purposes
- Agency criteria, performance, and rating system, etc.

4. Pre-registration Management

- Pilgrim pre-registration and enrollment management from registration point(s)
- Pilgrim's individual pre-registration facility and management (Self pre-registration)
- Pilgrim profile management
- Integration with NID management
- Integration with birth registration
- Pre-registration management for non-resident Bangladeshi
- Integration with CAAB (Civil Aviation Authority Bangladesh)
- Integration with MRP Passport and e-Passport management with DIP/NTMC
- Integration as and when required with any other system
- Money receipt and payment system
- Online payment system facilities
- Voucher generation and payment to bank system
- Pre-registration voucher generation and management
- Bank payment management
- Pre-registration certificate management (confirmation of payment)
- Pilgrims quota and serial management
- Pilgrim group management (Unit)
- Bank management
- API integration management, etc.

5. Pilgrim Transfer Management

- Transfer from private to private management
- Transfer from private to government management
- Transfer from government to private management
- Transfer approval management
- Forced transfer management, etc.

6. Financial Management

- Pilgrim all refunds management
- Cancellation of pre-registration
- Refund application
- Approval process
- Refund confirmation notification
- Refund cheque printing
- Bank management
- Bank fund transfer management
- Bank reconciliation
- Pay order management (including vouchers, certificates, etc.)
- IBAN payment module (including vouchers, payments, etc.)
- Payment management
- Electronic payment management,
- Online payment and reconciliation, etc.

7. Registration Management

- Pilgrim registration and enrollment management from registration point(s)
- Pilgrim profile management
- Integration with MRP Passport and e-Passport management with DIP/NTMC
- Passport management
- Passport information change management
- Integration as and when required with any other system
- Validation management with pre-registration data (NID information)
- Approval management
- Money receipt and payment system
 - ✓ Online payment system facilities
 - ✓ Voucher generation and payment to bank system
 - ✓ Pre-registration voucher generation and management
 - ✓ Bank payment management
 - ✓ Registration certificate management (confirmation of payment)
- Bank Management
- Unique serial numbering management
- Unit/group management

8. Self Pre-Registration, Registration, and Information Management

- Self pre-registration and registration facilities and management
- Verification of pilgrims using mobile phone numbers
- Approval of pilgrims from government and private managements
- User management
- Profile management
- Integration with NID, passport, and birth registration systems
- Generation of vouchers
- Online payment system
- Bank payment system
- Dashboard with required information and visualization
- Management on information about -
 - ✓ Payment statuses
 - ✓ Training information
 - ✓ Health checkup
 - ✓ Vaccination
 - ✓ Flight schedules
 - ✓ Visa statuses
 - ✓ Accommodations
 - ✓ Food
 - ✓ Transports
 - ✓ Feedback etc.

9. Training Management

- Training budget management
- Training schedule management
- Training participants' applications management
- Training attendance management
- SMS notification management (training date, time, venue, etc.)
- Agency training
- Pilgrim training
- Guide training
- Bank staff training
- Other stakeholder training
- Certificate management

- Training budget adjustment and expense management, etc.

10. Hajj e-Learning Platform

- Online registration process
- Online profile management process
- Resource - PowerPoint/PDF
- Video tutorials
- IVR/Audio
- Quiz and question bank management system
- e-Certification
- e-Notification
- Dashboard on e-Learning contents

11. Post Registration Management (Registered Pilgrim Management)

- Registration cancellation management
- Registration transformation management
- Archive management
- Reconciliation management
- Reporting system for all the stakeholders
- Replacement management
- Pilgrim profiles
- PID management
- ID, perforated, and embarkation card management
- Travel permission letter management
- Wristband preparation and management
- Pilgrim ID card preparation, etc.

12. Hajj Camp Operation Management

- Passport management
- Volunteer management
- ID Card and Embarkation card management
- KIOSK reporting management
- Attendance management
- Roster management

- Accommodation management (Dormitory)
- Catering management
- Digital display system management
- Flight monitoring and control room
- Help desk management
- Queue management system for help desk
- Passport management for government pilgrims
- Visa lodgment
- Visa and ticket management for government pilgrims
- Call center management
- Priority list preparation and management, etc.

13. Guide and Monajjem Management

- Guide registration and management
- Guide selection and pilgrim assignment
- Guide profile
- Guide change management
- Guide management for Hajj activities
- Monajjem management, etc.

14. Pilgrim Replacement Management

- Replace application requests
- Prerequisite document management
- Replacement quota management
- Approval management, etc.

15. Food, Transport, and Accommodation Management

- House information with necessary documents
- Tasria/Tasnif approval management
- House allocation
- House allocation change and priority management
- GIS map of all houses with photographs
- Trip information management
- Flight and pilgrim movement management

- Flight scheduling integration with CAAB
- Flight Assignment (both way)
- Flight cancellation or change management along with notifications
- Integration with Airlines PNL (Passenger Name List) and e-Hajj system
- PNL data management for airlines data integration
- Immigration management
- Food management
- Bus management
- Tent management in Mina
- Mina and Arafah (latest) GIS map collection and integration with mobile apps
- Route to Makkah initiatives (Pre-arrival immigration) management, etc.

16. Hajj Medical Management (Bangladesh Part)

- Pilgrims e-health profile management
- Vaccination stock management
- Pilgrims e-health certificate management
- Downloading facility for pilgrims to enable them to download their own health profiles
- Downloading facility for pilgrims to enable them to download their own health certificates
- Doctor profile management
- Doctor examination and capturing health profiles
- Pilgrims' vaccination management
- Report (current and historical) generation and management, etc.

17. Hajj Medical Management (KSA Part)

- Integrated Clinic/Medical Sub-center management
- Clinic profile information (with photographs and GIS)
- Pilgrims' health profiles and prescriptions generation using KIOSK
- Queue management
- Doctor management
- Medicine management
- Stock management
- Chief complaint and diagnosis
- Prescription management

- Laboratory tests or other examination management
- Patient encounters/visits tracking
- Doctor and staff duty roster and activities management
- Call center support (by doctor) management
- Summary reports
- Dashboard, etc.

18. Pilgrim Safety Management

- Luggage Tracking
- Lost pilgrim management
- Rescue during disaster/emergency
- Digital health monitoring
- Passport information details including emergency contact number mentioned in the passport
- Digital fitness tracker, etc.

19. Complain/Feedback and Notification Management

- Complain submissions via online
- Complain via SMSs
- Complain via mobile Apps
- Complain via letters
- Feedback submission
- Hearing and verdict
- Appeal management

20. Agency Legal Case Management System

- Usage of latest laws and regulations
- Filing legal cases
- Tracking and managing results of legal cases, etc.

21. Help Desk and Management

- Help desk operation
- Operator duty rostering

- Support to agencies
- Support to Pilgrims
- Support to Banks
- Support to Guides, etc.

22. Call Center Management

- Comprehensive Call Center management
- 24/7 Support
- Support to any information or technical issues
- Support to pre-registrations and registrations
- Informing any urgent issue to necessary stakeholder(s)
- Support to agencies
- Support to Pilgrims
- Support to Banks
- Support to Guides
- Call center report, etc.

23. Location Map Management

- Capturing tent locations in Mina, Arafah, and Mjudalifah
- Generation and printing the maps
- Integrating map GIS locations in mobile Apps

24. Pilgrim and Luggage tracking

- Tracking using latest technologies
- Luggage tag with address, barcode system, and ID card along with passport barcode should be introduced.

25. KSA Operation Management

- Management and monitoring e-Hajj Management system in KSA
- House and service inspections
- House approval
- Attendance and payroll management for Hajj workers in KSA
- Roster management (Admin team, medical team, Hajj worker, etc.)

- Establishment of an online communication system between Counsellor (Hajj), Consul (Hajj), Seasonal Hajj Officers, Admin team leader, medical team leader, etc.
- Establishment of an MIS cell for Management Information System report
- Meeting management and daily bulletin management during Haj
- Grant management for pilgrims for special case
- Mina and Arafah Tent management
- Govt. pilgrim money refund management
- Death reporting and death Certificate management
- Hajj worker management
- Pilgrim movement management
- Management of death certificates for Pre-Hajj pilgrims after registration for unused Air ticket refund
- Management of death certificates for post Hajj pilgrims with half unused Air ticket refund
- Handshaking with e-Hajj system, etc.

26. Document Management

- Payment voucher generation
- Payment certificate generation
- e-Health profile generation
- e-Health certificate generation
- Implementation of forms for Hajj management
- Newsletter management
- Daily Hajj bulletin
- Hajj training modules resources (document, resources, documentary, etc.)
- Storing and searching documents such as all Hajj packages, notices, bulletin, important guideline etc.
- Workflow management of the document processing for pilgrims to incorporate pilgrim application, house renting, visa lodgment, etc.

27. Agency Management and Monitoring Dashboard

- Agency management and monitoring
- Agency data visualization
- Agency preparation tracking

- Airlines ticket
- KSA accommodation
- IBAN
- Service charge
- Defaulter tracking
- Complain management
- Hearing and punishment management
- Performance management, etc.

28. Operation and Service Dashboard

- Management dashboard
- Hajj activities monitoring
- Data visualization
- Statistical information
- User dashboard
- Necessary pending actions for approvals and other actions, etc.

29. Integrated e-Hajj Mobile Apps

- Profile information of Hajj pilgrims
- Pre-Registration management
- Registration management
- e-Learning on operating the App
- Pilgrim dashboard
- Management dashboard
- Agency complain/feedback/rating
- Agency house inspection and survey
- Necessary Information for the Hajj process
- Directions
- News and information
- Prayer times
- Emergency contacts, information about historical places, and locations in maps
- Nearest health care center locations in maps
- All Surah audio from the Holy Quran in Bangla, English, and Arabic languages
- Weather news of Makkah, Madinah, and Dhaka
- Current times in Bangladesh and Saudi Arabia

- Pilgrim tent locations in maps
- Location tracking and navigation
- Google map integration
- GIS tracking to help find the tents in Mina and Arafah, to help the lost pilgrims, etc.

30. Integrated e-Hajj Web portal

- Search pilgrim information
- Data visualization
- Implantation of forms for Hajj management
- Notices
- Daily bulletin management
- Newsletter publication and management
- Hajj Training documentary and resources
- News and publications
- Several contents related to Haj, etc.

31. Data Analysis and Management

- Comparison analysis over different years
- Statistical reports to help make decisions
- Government management performance comparison over different divisions and districts
- Private management performance comparison over different divisions and districts
- Private management performance comparison over different agencies
- Data visualization
- Data-driven analyses and trend predictions, etc.

32. User Management

- User profile creation
- User profile editing
- User profile deletion,
- Institutional user management,
- Role management, etc.

33. Security Management

- Up to date penetration testing
- Up to date security fixes
- Antiviruses, anti-malware, etc.

34. Information Audit Management

- Reconciliation with information audit requirements
- Generation of information audit reports, etc.

35. Notification Management

- SMSs to all pilgrims regarding pre-registration, registration, training venue, and time information, vaccination and health checkup, flight and accommodation information, pre-arrival immigration information, refund and any other necessary events as and when required
- SMSs to others stakeholders as and when required
- Comprehensive IVR
- SMS push-pull system (Short Code)
- Email alerts and notifications
- Integration with 333 (National Information Call Center), etc.

36. Digital Display Management

- Central display board installation in houses in KSA
- Digital display installation and management in Hajj Offices, KSA
- Digital display installation and management in Hajj Office, Dhaka
- Displaying necessary updated information such as information about flight updates, movement updates, guidelines for pilgrims, etc.

37. Hajj Activities Progress Monitoring

- Generating and disseminating Hajj calendar
- Defining milestones for the tasks of Hajj
- Tracking the project tasks with respect to the milestones, etc.

38. Information Management System

- Custom report generation as and when required
- End user level report
- Monitoring report
- Management level report, etc.

39. Settings and Configuration Management

- Hajj season management
- Pilgrims quota management
- Pilgrims serial management
- Bank and branch management, etc.

40. Data Archive

- All necessary data archiving in a repository
- Periodic backup management
- Historical pilgrim data archiving
- Long-term storage of the archived data
- Restoring the backed-up data when needed, etc.

41. Integration with HAAB

- Integrating with all chapters of HAAB
- Relevant data sharing

Apart from above features and modules, the IT firm will need to develop any necessary feature and module as and when required by the Ministry of Religious Affairs and also according to the new requirement by the KSA. Besides, the whole development and work by the IT Firm must be in line with all the specifications as mentioned in "Attachment-1 - General Requirements.pdf". Nonetheless, the IT firm will need to address relevant requirements from the stakeholders as well as difficulties faced by the stakeholders. Examples in this regard include, but not limited to, the points mentioned in "Attachment-2 - User Feedback.pdf" and "Attachment-3 - User Feedback.pdf".

6.3.5 Integration and Interoperability with e-Hajj System, Kingdom of Saudi Arabia

Apart from the post-registration process for e-Hajj system, Bangladesh, all pilgrim management information needs to be captured/updated/uploaded in e-Hajj system, KSA as well. The vision of the Ministry of Hajj and Umrah, Kingdom of Saudi Arabia is to improve the service provided for the guests of Allah, facilitate their procedures, maintain their rights, fulfill these sublime objectives, and achieve a great turnabout in the service of the international pilgrims. In this light, for better Hajj management, Kingdom of Saudi Arabia has been deploying an e-Hajj system for international pilgrims. It is an electronic system for managing pilgrims' information along with all arrival and departure information, house and food contract, transportation services, visa management, online payment, IBAN, contract with Muallem, etc., and to follow up the services provided to them during their stay in the Kingdom. Without updating the information in this central platform, no pilgrim will be allowed to get a visa and so they cannot perform the Hajj or Umrah.

The IT firm needs to know all the functionalities and business requirements of the e-Hajj system of KSA and provide training to all the end users on how to enter/update/upload data in that system. For government-managed pilgrims, the IT firm will be fully responsible for entry/update/upload/integrate data such as arrival and departure information, house and food contract, transportation services, visa lodgment management (using passport barcode reader), generate MIS reports, etc., and to follow up the services provided to them during their stay in the Kingdom in e-Hajj system, KSA. The IT firm will also be responsible for matching captured data in e-Hajj system, Bangladesh and e-Hajj system, KSA for all pilgrims.



Dashboard of e-Hajj portal, KSA

KSA Hajj Ministry might introduce some updates in the e-Hajj system and so the IT firm needs to incorporate all necessary changes such as data exchange (if required), upload procedure APIs, accordingly.

N.B.: In order to adequately perform the services, the IT firm will develop/upgrade all necessary modules/features at its own expenses incurring no cost to the Project Authority.

6.3.6 Data Entry and Data Migration

Any pilgrim can access Hajj Management System and pre-register themselves as Govt./non-Govt. (non-Govt. implies the privately-managed) pilgrims. The IT firm will be responsible for registration activities of Govt. pilgrims. The non-Govt. pilgrims will be taken care of everything from registration to obtaining Visa to getting on the plane for Saudi Arabia and coming back to Bangladesh by their respective Hajj Agencies.

The registered data and other information of all pilgrims may have to be migrated from existing systems to upgraded systems. In this case, the IT firm has to be ensured that no data will be missing during the migration process and consistency is maintained as well.

According to National Hajj and Umrah Policy, data archiving process will be done by the IT firm. Refund, replacement, and registered pilgrim data need to be archived as season wise and also make sure that data will be backed up in the National Data Center (NDC) of Bangladesh Computer Council (BCC).

Three sets of books in hard copy binding and soft copy containing Pre-Registration pilgrims list as a yearly basis are required to be supplied to the Hajj Office and PM Office, and one copy will need to be kept by the vendor.

6.3.7 Hosting Services

The consulting firm has to provide necessary servers and other infrastructure at Ashkona Hajj Office having LAN and WAN connectivity. The website (www.hajj.gov.bd) and Hajj Management Information System (HMIS) are already hosted there by the previous vendor. The replicas of this system are hosted in data centers in Bangladesh and KSA. For security and reliability reasons, a backup copy of the full Application including the whole database system has been stored at National Data Center, BCC. The IT firm itself or through any other reputed vendor must provide the Internet connection with necessary bandwidth for transferring data securely from and to the users. The IT firm will be responsible for operating and maintaining the services with a high availability and satisfaction to MoRA and other users.

6.3.8 Operation and Maintenance (O&M) Services

The platform must comply with the requirements of the stakeholders. Depending upon the satisfaction of client's demands as per the TOR, the successful IT firm will have to provide operation and maintenance services for 5 (five) years initially. After that, upon successful O&M services, Hajj Management Authority may renew / continue the service for further period of time.

Operational Services

- Content and news updates in regular basis,
- 24/7 support and maintenance,
- Ensure protection from all kinds of security attacks and threats,
- Activation and support to 30,000 (approx.) users or more,
- Perform the IT helpdesk services both in KSA and Bangladesh,
- Perform contact center to provide information services through call center, Skype, WebChat, Facebook and other different media, etc., round the year.

Maintenance Services

- Identify and help to fix any hardware and LAN/WAN related problems within 6 (six) hours,
- Fix any software problems within 48 hours,
- Fix any security issues (including virus attacks and other security problems) within 24 hours,
- Maintain back-up and recovery of data from any point of time within 12 hours,
- Assist the client to maintain and enhance the system through transfer of knowledge as required,
- In addition to the above mentioned works/services, the IT firm will have to perform IT related services/work as required time to time by MoRA,
- 24/7 monitoring of e-Hajj related server operation covering the whole period of Hajj seasons (as applicable) only, etc.

Chart of Duties during Operation and Maintenance Phase:

- Supplying and Installation of hardware, software, network, Internet connectivity, human resources, and other logistics in IT help desk to provide with the required services
- Collection of Information and updating the website with flight schedules, departure plans, etc.
- Instant updating of information for websites, newsletter, SMSs and IVR Services
- Collection of Information and updating of flight-wise departures from Bangladesh (Dhaka, Chittagong, and Sylhet) and arrival at Saudi Arabia (Makkah, Madinah, etc.).
- Providing flight and Muallem wise Haji departure data from Dhaka to United Car Agency/ Train Service Authority at Jeddah Airport so that they can organize the required buses/trains for the respective pilgrims for their movement to Makkah, Madinah, Mina, Arafah, and Mjudalifah

- Time to time communication and delivering information on flight departure, arrival, and Hajj movement related information to Dhaka, Jeddah, Makkah, Madinah Hajj Offices, Ministry, and other stakeholders
- Communicating and delivering the house allocation information to Hajj Offices, admin teams, Hajis, guides, and other stakeholders
- Collecting KSA contact information about guides, and Hajj agencies and updating the database and websites accordingly
- Searching, finding, and printing pilgrim information in case of lost cases and helping them to reach their places by making phone calls as well as understanding the maps and locations, and taking them to their places with the help of Hajj Worker/Guide/Agencies
- Searching, finding, and supplying pilgrim information to their friends and relatives to communicate their statuses
- Searching and printing pilgrims' profiles in case of lost luggage, lost air tickets, lost ID cards, etc., for Hajj Office, agencies, airlines, and other stakeholders
- Searching and printing pilgrims' profiles to refer them to hospitals, Hajj Offices, Medical Team etc., or get them back to Bangladesh in case of sickness, etc.
- Collecting Makkah-Madinah-Makkah / Jeddah-Makkah-Jeddah / Jeddah-Makkah-Madinah-Jeddah movement information of the pilgrims from Saudi Authority
- Helping Madinah Hajj Office for house and room allocations and updating the websites accordingly for Government-managed pilgrims
- Collecting and communicating Madinah movement statuses with the concerned authorities
- Collecting, communicating, and updating death cases information to Hajj Offices, websites, relatives, and other stakeholders
- Preparation of maps locating houses and tents of Hajj agents at Makkah, Madinah, Mina, and Arafah as well as distribution among Hajis and other concerns (all the resources needed to print these maps can be collected from KSA and it can be printed in KSA, because it is finalized only a few days before Hajj)
- Preparation and hoisting of banners, large maps of Makkah, Madinah, and Mina
- During Mina staying, helping lost pilgrims to find their tent by maps, understanding the locations, contacting to their agencies, guide, and finally carrying them to their tent physically
- Collecting flight schedules and Dhaka arrival information, and updating the website and communicating all the stakeholders accordingly during return flights
- Preparing exit passes instantly at Jeddah Airport in case of lost passports
- Taking Hajj related videos and photographs, and publishing them on the website
- Publishing daily news bulletins on the website and circulating to subscribers

- Preparing daily reports and circulating it to concerned authorities such as Ministry, Hajj Offices, ambassador, consul general, etc.
- Internet, email, and phone call services to admin team, medical team, HAAB Members, Hajis, and other stakeholders
- Provide different MIS reports for the Ministry, Hajj Offices, and other stakeholders
- Marking of tent locations for the mobile app
- Installation, operation, and maintenance of KIOSKs to generate treatment cards for pilgrims with queue management
- Preparation and circulation of daily reports on arrival, departure, Madinah movement, IT services, medical services, lost Hajis and luggage information, death reports, etc.
- Preparation and circulation of daily bulletins both in Bangla and English with latest information and statuses
- Supporting in digital displays intended for different houses/locations
- Providing updated information in social media such as Facebook, YouTube, Twitter, etc., and answer the queries accordingly
- Supporting admin, medical, technical, etc., teams as and when necessary, etc.

Nationwide Hajj Training Program:

- Generating lists of eligible pilgrims for training in each district and sending to concerned users
- Generating training schedules according to the time and venue provided by each particular district
- Sending SMSs to all pilgrims for training
- Publishing training time schedules on the website
- Providing support to the end-user for the training management systems such as online training registration, attendance system, etc.
- Providing support to the eLearning platform
- Call center support for training
- Providing supports for divisional and district level training
- Generating MIS reports, etc.

IT Help Desk Support Services

In Dhaka, Bangladesh

The IT firm has to deploy the IT Help Desk services at Dhaka Hajj Office, Dhaka as per requirements of the Director, Hajj Office, Dhaka. All the help desks should be operated for 24/7

that is 24 hours a day and 7 days in a week basis and thus have to ensure information services round the clock and without any interruptions in any user support round the year especially during the Hajj season. The services are mainly as follows:

- Installation of hardware, software, network, Internet connectivity, human resources and other logistics in IT Help Desk to provide the required services
- Activation of 30,000 users or more (approx.)
- Training to all the Hajj Agencies for data entry, Visa lodgment and other operations
- Data entry and necessary support for Govt. pilgrim's pre-registration and registration
- Necessary support for private pilgrim's pre-registration and registration
- Entry of guides' information under Government management
- Print pilgrim lists of all agencies for immigration and police verification report
- Integration of Hajj Management System with the Ministry of Civil aviation and tourism, Election Commission Secretariat, Department of NID, NTMC, Special Branch, Department of Immigration and Passport, etc., for all necessary verifications
- Data entry, photo scan, Hajj Application Form scan, house allocation, flight assignment, Muallem assignment, guides assignment for Government-managed pilgrims
- Assisting the agencies to enter all this information
- Collecting information and updating websites with flight schedules, departure and arrival information, etc.
- Providing information of flight-wise pilgrim departure from Dhaka to Hajj Office several times every day
- Time to time communication with Jeddah, Makkah, Madinah, Hajj Offices, Ministry, and other stakeholders to share the current status of Hajj Management
- Supplying printed pilgrims' information to all guides
- Supplying house allotment letters of Government pilgrims to the selected Banks
- Searching, finding, and printing pilgrims' information for pilgrims and relatives
- Providing direct and over phone support to agencies, pilgrims, and their relatives to communicate and or to know their statuses
- Providing SMS push pull and broadcasting services through the Ministry's short code
- Providing IVR (Interactive Voice Response) services through telephones
- Hanging daily latest news about Haj
- Providing necessary reports for Ministry, Hajj camp, and other stakeholders
- Printing and lamination of ID card along with passport barcode and distribution among the pilgrims
- Printing of embarkation card for the pilgrims
- Printing of perforated cards for the pilgrims

- SMS notifications to the pilgrims on the available status of data entry, vaccination notice, guide assignment, ID card delivery, flight assignment, house allocations, and Visa lodgment
- Providing the services through contact center (phone, WebChat, skype, Facebook, etc.)
- Providing updated information in social media such as Facebook, YouTube, twitter, etc., and answer the queries accordingly
- Providing necessary services in nationwide Hajj training programs, etc.

In Kingdom of Saudi Arabia (KSA)

The main objective is to provide information services to the pilgrims, Hajj Offices, Hajj Agencies, Airlines, Immigration and other stakeholders of the Hajj management. The services cover, but not limited to, the following:

- Supplying and installing the required hardware, network, and Internet infrastructure to operate the IT Help Desk at Jeddah, Makkah, Madinah, Mina, and Arafat during the Hajj period
- Providing required numbers of Internet, telephone, and mobile connections for IT Help Desk in the above places of Saudi Arabia
- Deploying required human resources as mentioned in ITC 23.12 of PDS, who will be responsible for smooth operation of the system and they will perform the following tasks during the Hajj period.
- Collection of Pilgrim and Hajj related information (including images, videos, death cases, missing cases, Hajj related other information, etc.) during the period of Hajj in Jeddah, Makkah, Madinah, Mina and Arafah, as well as update the same in the database and website.
- Providing support to Hajj offices with different MIS reports such as pilgrims list, agent wise pilgrims list, house allocation reports, room wise allocation list, flight wise pilgrim list, deceased and sick pilgrims list, etc.
- Operate help desk services for 24 hours a day in the following places.
 1. Jeddah - IT help desk cum Information Center at King Abdul Aziz Airport and Bangladesh Hajj Office
 - Ministry of Hajj and Umrah, KSA
 - United Agent Office
 - Naqabha (Hajj Transport Authority of KSA)
 - Airport Security Authority
 - Bangladesh Hajj Office, Jeddah (flight reports)

- Makkah Hajj Control Section
 - Airlines
 - Hajj Terminal (Flight schedule and other necessary information display), etc.
2. Makkah - IT help desk cum Information Center in Bangladesh Hajj Office and Medical centers
- Lost pilgrim information
 - Lost luggage information
 - Pilgrim information
 - House information
 - Agency services
 - Report to the Hajj Mission office, Muassasa, Maktab, Saudi Hajj Ministry according to their needs
 - Flight schedule and other necessary information display at Makkah Office and Haji residences
 - Maktab (KSA approved pilgrim management Agent), Moassasa (Association of KSA approved pilgrim management Agents at Makkah), etc.
 - Makkah Medical Center
 - Maintaining medical KIOSKs for pilgrims
 - Providing treatments card to pilgrims
 - Communicating with hospital authorities of KSA, etc.
3. Madinah - IT help desk at Bangladesh Hajj Office, Madinah, and Airport/Tarik Hijrat
- Lost pilgrim information
 - Lost luggage information
 - House information
 - Pilgrim information
 - Maintaining medical KIOSKs for pilgrims
 - Providing treatment cards to pilgrims
 - Agency services
 - Providing reports to the Hajj office according to their needs
 - Providing reports to Adillah office (pilgrim management authority at Madinah, KSA) as per its requirements
 - Displaying flight schedules and other necessary information at Madinah office and Haji residences, etc.

4. Mina - One at Administrative Tent and one or more may be in the position where the Bangladeshi pilgrims stay
 - Pilgrim tent management in Mina and Mjudalifah
 - Pilgrim travel management in Mjudalifah, etc.
 - Lost pilgrim information collection and management
5. Arafah - One in the Administrative Tent and one or more in the entry/exit paths
 - Pilgrim tent management in Arafah
 - Lost pilgrim information collection and management

6.3.9 User Training

The IT firm shall have to provide the following training to the relevant stakeholders as and when required by MoRA. This system has different types of stakeholders. For registration and preregistration data captured from the union level - UDC (Union Digital Center), DC office, District Islamic Foundation Offices, Civil Surgeon, doctors, medical technician, bank personnel, guides, Hajj agency owners, Civil Aviation Authority Bangladesh, respective airlines, immigration, etc. Different types of stakeholders who are currently acting as the system users contribute to a count of more than 30,000.

System User Training

Officers of MoRA and other concerned stakeholders will be included in this category. Training of this class of users will be aimed to promote the overall understanding of operations of the total system and how to benefit from it. They will learn not only to use the specific MIS reports that will be developed within the scope of the system but also conceptualize the role of possible future enhancement of information technology use in policy and decision making activities. Training areas are:

- Presentation on overall concept of the software system and its scope and benefits
- Introduction to software/ database/web applications/security concepts
- Hands on training on basic operating system functionality
- Demonstration on operation of the proposed software system
- Hands on training on how to use the software to extract MIS reports and use them as decision support or monitoring tools
- Other areas as and when required by the relevant stakeholders

End User training

This group will consist of people who will make and keep the system running using their skills every day. Generally, the Hajj Offices in Dhaka and KSA, MoRA, Hajj agency representatives,

district and union level users, banks, immigration, and other stakeholders are included in this category. The trainees will receive hands-on training on the overall functionalities of the total system. Training areas are:

- Presentation on overall concept of the software system and its scope and benefits
- Demonstration on operations of the proposed software system
- Hands on training on how to use the parts of the software they require
- Operating System, MS office, Internet Browsing etc.
- Training on e-Hajj system, KSA
- Other aspects as and when required by the relevant stakeholder, etc.

The service provider shall mention the training schedule and facilities in the technical proposal of RFP

6.4 Transfer of Knowledge

The service provider IT firm shall be responsible for building, operating, and transferring the full system to the MoRA. Therefore, transfer of knowledge to MoRA to enable understanding the system well is very essential. As the firm will design, develop, deploy, and enhance all required modules with the collaboration of MoRA technical team, the following technical documents must be provided to MoRA for better understanding of its technical personnel.

- System architecture
- Data Flow Diagram
- Entity Relationship Diagram
- Use case, Sequence and Class diagram
- Source codes including any external package/library/APIs with definition/commenting
- Database with definitions of all schemas
- Application and database server architecture
- Network architecture
- Operation and maintenance reports (quarterly and yearly basis)
- Any other necessary technical documents as and when required

N.B.: Ministry of Religious Affairs, Bangladesh will be the sole owner of the entire e-Hajj management system application. The IT firm must handover the above mentioned items to the Ministry at the end of its contract. The IT Firm shall install and fully deploy the whole application in the hardware supplied by the Client as and when suggested by the Client.

6.5 Software Quality Assurance (SQA)

Department of CSE, BUET / BCC will act as the consulting entity to perform the tasks of monitoring, supervising, verifying, and testing the system to confirm the expected level of SQA.

in the process of software development, deployment, and operation and maintenance with the following scope of work:

- Reviewing the requirement specifications
- Reviewing the design
- Reviewing the code of important modules
- Reviewing the process unit testing
- Performance testing
- Reviewing the user acceptance test
- Checking the quality of the software from its data
- Monitoring the Hajj management operation
- Reviewing the whole knowledge transfer process and training
- Checking the correctness and quality of deliverables
- Monitor and supervise all the operations and maintenance

The bidder will pay the necessary fees to the consulting entity to do all the above mentioned tasks and the bidder will quote the fees in the price schedule in the specified form of the proposal.

6.6 Deliverables

The following are considered as the part of the overall scope.

- System design and development for the complete e-HMS including core application, database, frontend, e-complaint system, e-helpdesk system, etc.
- System design and development of the e-HMS portal and mobile application
- Supply, implementation, and integration of the whole system including hardware, software, and integration with e-HMS
- System operations, maintenance, enhancements, and support for 5 (five) years
- Management of the e-complaint and e-helpdesk system through e-HMS, etc.

6.6.1 Human resources

Human resources will be deployed in the Hajj Offices both in Dhaka and KSA to run 24/7 operations in Jeddah, Makkah, Madinah, Mina, and Arafat. The support and maintenance personnel will stay not more than 90 days in KSA. The Hajj Office will provide necessary accommodation to the IT team for free of cost. The required number of human resources are more detailed in ITC 23.12 of RFP.

6.6.2 Hardware and Technical Resources

The IT firm shall make available, at its own cost, all necessary equipment, machines, materials, etc., with all necessary settings and configurations as required to adequately perform the services. These include, but not limited to, the following

- Standard data center facilities management
- Servers with all required redundancies and power backup
- Load balancer
- Firewalls, anti-DDoS, anti-malware, and WAF
- Security management at all required levels
- Rack solutions
- Disaster management with Global Server Load Balancing (GSLB)
- Data storage, backup, and recovery management
- Connectivity devices to connect with the stakeholders and third party data sources
- NEA connectivity
- API Gateway
- Sandboxing
- Personal computers with power backup
- Laptops
- Heavy-duty printers
- Color printers
- Scanners
- Multimedia projectors
- Label printers
- Machine readable passport scanners, etc.

The existing Hajj Pre-registration system and HMIS system require hardware (servers, workstations, etc.), data center, and other necessary communication infrastructure. The bidder will quote the required hardware system with technical specification in their proposal for e-HMIS.

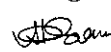





Item	Specification	Quantity	Purpose	Remarks

N.B: proposed equipment, machines, materials, and infrastructure shall be attached with the RFP.

The Ministry of Religious Affairs Bangladesh is the owner of the entire application and management system, for the e-Hajj management system. IT firm have to hand over the entire application system including all source codes, any external package/ library/APIs etc., with definition/commenting, database with definition of all schema and all other necessary application/software, with all necessary technical documents, developed and installed for the whole application system to the Ministry of Religious Affairs.

6.6.3 Key Performance and Scalability Requirements

- The system shall be capable of handling online functionalities for a database as required. Any reference between users and the automated system shall have a maximum response time of around 1 second for a user request and can handle the load with this performance in peak time in pre-registration, registration, and post registration periods.
- The system shall be capable of handling all online functionalities of service recipients, service providers, and system users as required.
- The system shall be capable of handling a minimum of 100,000 concurrent connections (online users) when it ultimately rolls out.
- The vendor must conduct an extensive load testing task taking above factors into consideration and submit a load testing results just after the deployment and at the beginning of (at least one month prior to the starting of) each Hajj session.
- The system should be such that it is available to users 24x7x365 days a year without any unapproved downtime.
- All the downtime planned by the IT firm must be approved by the Project Office. Unless it gets approved by the Project Office, the downtime shall be considered as service outage.
- The maximum duration of planned and approved downtime in a week shall be 6 (six) hours. The maximum duration of planned and approved downtime in a month shall be 16 (sixteen) hours. The maximum duration of planned and approved downtime in a year shall be 144 (one hundred forty-four) hours.
- The system must exhibit a minimum of 99.99% availability maintaining all the performance related clauses mentioned in this RFP at the temporal granularity of a week, i.e., in any week, there can be at most 100 minutes of service outage or service not conforming to all the performance related clauses mentioned in this RFP. This maximum period excludes planned and approved downtimes.
- For any deviation from the 99.99% availability, there shall be a penalty imposed on the IT firm. For each hour (calculated in each week and then rounded) of service outage or

service not conforming to all the performance related clauses mentioned in this RFP, the following shall be imposed as a penalty to the IT firm.

Hours (in a week) of service outage or service not conforming to all the performance related clauses	Penalty to the IT firm (% of the annual payment - shall be imposed on the next immediate payments)
1-5	0.025% for each hour
6-10	0.05% for each hour
11-15	0.075% for each hour
16-24	0.1% for each hour
24-48	0.2% for each hour
48-72	0.3% for each hour
>72	0.5% for each hour

The penalties shall be doubled in case the deviation in performance occurs during the period starting from one month prior to Hajj time up to one month after the Hajj time.

- Page load time, login response-time, on-click load time for the web application should be less than 1 second while this is accessed over the intranet.
- Considering the network infrastructure challenges in Bangladesh, the solution must support low bandwidth conditions for the services defined in the functional requirements.
- In case of mobile application, this should support very low bandwidth even in 2G-enabled Internet connectivity.
- The proposed solution should be highly scalable to accommodate all current and future requirements within the scope mentioned in the TOR.
- The system should be provided with an appropriate caching mechanism to handle very high-traffic scalability.
- Other key performance and scalability requirements as and when required for smoothly running the system with optimum performance must be ensured.
- The vendor may propose here other relevant measures for this system performance, availability, and security, which must not present anything degraded than what mentioned in this RFP.

6.6.4 Miscellaneous

SI	Particulars	Qty / Remarks
1	NID validation	As and whenever the query is made by the registration point
2	Pre-registration voucher with security requirement from banks	As and whenever required by the registration point
3	Pre-registration certificate	After payment confirmation by the bank officer
4	Registration voucher with security requirement from banks	As and whenever required by the registration point
5	Registration certificate	After payment confirmation by the bank officer
6	Pay order voucher with security requirement from banks	As and whenever required by the Hajj agency
7	Pay order certificate	After payment confirmation by the bank officer
8	IBAN voucher with security requirement from banks	As and whenever required by the Hajj agency
9	IBAN certificate	After payment confirmation by the bank officer
10	SMS notification to pilgrims on transaction	As per transaction number when needed
11	SMS broadcasting	As required by MoRA using Bangla character
12	ID card with lace	According to number of the pilgrim
13	Perforated card	According to number of the pilgrim
14	Training certificate	Participants of the training
15	Permission letter	According to the number of the pilgrim of Hajj Office, Dhaka
16	Printing of Hajj visa	According to the number of the pilgrim of Hajj Office, Dhaka
17	Embarkation card	According to the number of the pilgrim of Hajj Office, Dhaka
18	Printing of report	As and when required by the Ministry or Hajj Office in Dhaka / Jeddah / Makkah / Madinah
19	Map (6 ft X 12 ft)	150
	Maps (A4 Size)	120,000 qty to be distributed in KSA
20	Printing support and papers	As required in KSA by the stakeholders
21	Reporting confirmation slip	According to the number of pilgrims of Hajj office, Dhaka

SI	Particulars	Qty / Remarks
22	Luggage tag (at least 2 pieces for each pilgrim)	According to the number of pilgrim
23	Lost luggage tag	As and when required by the Hajj Office in Jeddah
24	Passport tagging for embassy	According to the number of pilgrims of Hajj office, Dhaka
25	Passport delivery challan	As and when required by the Hajj Office in Dhaka
26	Outpasses for returning pilgrims	As and when required by the Hajj Office in Jeddah
27	Outpass for returning pilgrims in accordance with Adillah Office	As and when required by the Hajj Office in Madinah
28	Capacity building for activation of users for pilgrim registration	Up to the union level

6.7 System Technology and Requirements

6.7.1 System Technology:

Architecture:	Latest and updated architecture such as n-tier, cloud-native architecture
Language:	Latest suitable language such as Python/PHP/Java/ASP.Net/C# with updated version
DBMS:	Latest suitable DBMS such as Oracle/MySQL/MongoDB/PostgreSQL with updated and latest version
Mobile Apps platform:	Android/iOS with latest versions as well as having the nature of being cross-platform

6.7.2 System Requirements

Backup, restore, and synchronization

The vendor should ensure the data standard policy on data backup and restore so that anything can be recovered from any point of time and also the data synchronization with the Data Center (DC) and Disaster Recovery (DR). Vendor is requested to propose a comprehensive plan on data backup, restore, and synchronization.

Disaster Recovery

Fault of the system and hardware may cause collapse in the whole system. One server will be kept a warm backup so that faults in one server could be recovered. Hosting of the application outside the country will work as a mirror copy and Disaster Recovery site.

Audit Log

The vendor should ensure application level and database level audit logs.

BNDA Architecture

The system has to follow the standard according to the architecture of BNDA (Bangladesh National Digital Architecture). For more detail, please visit <http://nda.bcc.gov.bd/bnda/>

Interoperability and Data Exchange

The vendor should follow all the standards and protocols of interoperability, integration, and data exchange with other systems. It is expected that the system will be based on open architecture and will be fully interoperable with the current and future systems. In case there would be any licensing fee and/or any other platform related cost incurred for the adopted system architecture, all such costs shall be borne by the IT firm. The following are the key expectations on interoperability requirements:

- The system should be designed for interoperability with all required standard protocols
- System must expose data by Advanced Message Queuing Protocol or any better technique
- All imported data must undergo data validation to ensure full integrity
- Data exchange within the system at different levels via the Internet shall be encrypted
- The system should have functionality to exchange data with other own systems or external organization systems
- The system shall have functionality to export/import files and data based on the standard template defined through web services and/or API

Full API documentation must be provided so that third-party integrators can integrate their system with this system.

System Audit Trail

This system will maintain an audit trail of any change or update made in any information that is considered as vital or sensitive and should maintain the audit log with information such as.

- Log the users who are accessing the system
- Log the parts of the application that are being accessed
- Log the fields that are being modified

- Log the results of these modifications
- Log attempted breaches of access
- Log attempted breaches of modification rights
- Log attempted breaches of any type
- Timestamp, etc.

Ensure an audit trail is kept for all transactions and all audit transactions logged are kept on the trail file or trail database from where the system can generate different audit reports as and when required.

UI/UX

The vendor must propose a UI/UX plan containing UI designing method and tools, prototype or Mockup design (if applicable), UI review method, process for study and analyze UX, collaboration of basic web and mobile UX issues and expected results and outcomes of UX, finalizing the UI/UX design, etc. Apart from these, the vendor should consider the following issues as requirements at the time of developing the UI/UX plan.

- The system interfaces should be highly user-friendly, easy-to-navigate, and fast loading.
- The UI shall be designed by using well-established, supported, and lightweight UI framework so that it follows widely used industry flow patterns.
- UI shall be easily configurable, if any change would be needed.
- Menu, content, and navigation shall be based on the user entitlements, roles, and permissions.

Language Support

The system should support multilingual options, i.e., Bangla and English, for both the Web version and Mobile Apps. All the user interfaces will be able to display and all the input controls will be able to take input both in Bangla and English. System/App users can choose and set his/her preferred language in profile setting for the system interfaces. The system should support Unicode for the Bangla Language.

Coding Conventions

The vendor must follow the standard coding styles to produce high-quality, easy-to-read, easy-to-follow, and easy-to-understand code for further usages of the code in terms of reusability, refactoring, task automation, language factors, etc. The vendor should submit a standard coding convention approach, which may include different conventions such as commenting, indent style, naming, etc., following the best coding practices.

Security

In the whole system, the following security threats as well as any new security threats should be taken into consideration and protections against these threats must be ensured by building networks, infrastructures, and applications safe, dependable, and secure against any such malicious attack.

- **Application and System Security:** It will be programmed within the application itself in order to implement a user group. To eliminate the security threats, authentication and authorization have to be built into the security design of the application with password and/or multi-factor access control that will limit intruders or unauthorized users to retrieve any information, use modules, or generate reports, etc. Following security measures should be considered:
 - Must have self encryption technique
 - Two-step verification
 - Session auto log out
 - Secured Password Policy Platform, etc.
- **Server/Machine Security:** It refers to physical limitation to access a machine and generally would require an additional login in order to gain access.
- **User/User Group-level Security:** Since the system is a web and mobile based application where users are managed by separate managements at different locations, a multi-layered user right policy is needed to be applied.
- **File/Database Security:** Unauthorized user activity at the database resources must be blocked. Both user level security and data level security should be ensured. There must be also a secured document system, etc.
- **Network Security:** To minimize network vulnerability Firewall, DMZ, SSL certificate as well as other appropriate measures should be taken.

6.8 Period of Performance

- Selected IT firm will be appointed for the period of 5 (five) years after issuing the NOA.
- Deployment trail and live operations:
Selected IT firm will need to complete deployment trail and live operations within one month from the date of issuing Notification of Award but not later than **October 31, 2020**.
- Maintenance and Operations:
5 (five) years as per the contract agreement. The Ministry reserves the right to curtail or extend the contract on the basis of necessity without mentioning any cause.

6.9 Mandate Constraints

6.9.1 Solution Constraints

- Should run in LAN and WAN environments
- Should support both Bangla (Unicode) and English languages
- Integration with database should be smooth and seamless
- Should have provisions for incorporating the latest technologies such as Blockchain, AI, IoT, etc. as and when required
- Should have provisions for incorporating data analysis such as data visualizations, big data analytics, machine learning, etc.
- Should be capable of taking inputs from QR code, Barcode, etc.
- Should have standard quality with a robust system
- Source code and entire application will be verified by the SQATC (Software Quality Assurance Testing Center) at Bangladesh Computer Council (BCC) and/or Department of CSE, Bangladesh University of Engineering and Technology (BUET)
- Any interaction between user and automated system shall have a maximum response time of 1 second, which is equally applicable while handling the load in pick time in pre-registration, registration, etc.
- The updates in the system should be fast enough to display the latest information (location, health conditions, etc.) of pilgrims on the web site.
- The system should possess a CMS (Content Management System) designed to simplify the publication of web contents to the web site.
- Open source software and tools will be preferable for optimizing the costing.
- The total system should be secured and free from risks, faults, and damages.

6.9.2 Off-the-Shelf Software

- The IT firm must clearly mention the off-the-shelf software required to support the master software in reply to RFP documents. It can mention these in its submitted documents.

6.9.3 Schedule Constraints

- The offered platform and systems shall have to be deployed within 1 (one) month from the date of issuing Notification of Awards, however, not later than October 31, 2020 with full functionalities required by the stakeholders.
- Since Hajj occurs during a fixed time in each year and its management involves multi-Government and multi-organization concurrent activities, the IT firm needs to ensure that the full system is risk-free as much as possible.
- Before live deployment, the whole systems shall be tested by the stakeholders and/or assigned technical team.

- The project will be implemented on a turn-key basis along with required knowledge transfer and maintenance support.
- The IT firm must submit all the proposals and contract forms in the standard formats as described in Section 5 of the RFP.

6.9.4 Right Constraints

- The IT firm shall not use the documents and software related to this project/contract for purposes unrelated to this project/contract without a prior written approval from the client.
- Proprietary rights on the systems, equipment, and materials furnished by the client must be maintained as per GCC Clause 38.
- After the expiry of the contract, the IT firm shall have to bound to hand over software and entire application system including all source codes including any external package/library/APIs with definition/commenting, database with definition of all schemas and all other necessary application/software, with all necessary technical documents on developed and install whole application system to the Ministry of Religious Affairs as and when required.
- The client shall have the sole right to change/modify any clause of the TOR.
- The HOPE shall have the right to include/exclude any component(s)/part(s)/phase(s) from the offered system without assigning any reasons whatsoever before signing the contract.

6.10 Institutional Arrangements

The services and facilities that the client will provide include the following,

- Available working spaces in Hajj Office, Dhaka, Hajj Mission Makkah, Madinah and Jeddah, Dhaka, Jeddah and Madinah Airports, Administrative Tent in Mina and Arafah, etc.

The services and facilities that the IT firm shall have to provide include, but not limited to, the following, which will be the sole responsibility of the IT firm for the whole period of this contract.

- Required spaces for the help desk-cum-information center and hired tents in Mina, Jeddah, Makkah, Madinah and Arafah, Muzdalifah
- Required work spaces for the professional staff of the consultant in KSA and Dhaka Hajj Office (residential accommodation will be provided at Saudi Arabia)
- All consumables cost and necessary repair/replacement
- All required equipment/accessories/expertise for developing and/or updating the system

FORMAT

LOGO

[Insert Full Contact Details of the Client]

Commencement of Services

Office Memo No:	Date:
To: [Name of the Consultant] [Address] Contract Reference:	

Pursuant to GCC Sub Clause 17.1 of the above mentioned Contract Agreement, this is to notify you that the following precedent conditions have been duly fulfilled:

- (i) the Contract Agreement has been signed; and
- (ii) the advance payment has been made *(delete if not appropriate)*.

You are therefore requested to:

1. Commence carrying out the Services, in accordance with GCC Sub Clause 19.1, within *(specify date)*;
2. take out the insurance against the risks, and for the coverage as specified in the Contract, in accordance with GCC Sub Clause 33.2, within *(specify date)* and maintain.
(delete if not appropriate)

	Signed
	Duly authorized to sign for and on behalf of [name of Client]
	Date:

CONTRACT AMENDMENT

Contract No.	
Amendment No.	
Approval Reference No.	

Contract No. [insert number/year] by and between the [insert Client's name] and [insert Consultant's legal title] for the contract named [insert name of the Consulting Service] is amended as follows:

1. GCC Clause [insert clause no], is hereby revised as _____

2. GCC Clause [insert clause no], is hereby revised as _____

and so on.

The effective date of this Amendment is [insert effective date] or upon execution whichever is later.

**ALL OTHER TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT SHALL REMAIN
IN FULL FORCE AND EFFECT**

THIS AMENDMENT, consisting of [insert number] page(s) and [insert number] attachment(s), is executed by the persons signing below who warrant that they have the authority to execute this Amendment under the original Contract.

IN WITNESS WHEREOF, the Client and the Consultant have signed this Amendment.

[Consultant's Authorized Signatory]

[Client's Authorized Signatory]

Signature _____

Signature _____

Title _____

Date _____

Title _____

Date _____

FORMAT
LOGO

[Insert Full Contact Details of Issuing Authority]

Office Memo no: _____

Date: _____

COMPLETION CERTIFICATE

01	Client Details		
	(a) Division	:	
	(b) Circle/Directorate	:	
	(c) Zone/Region	:	
	(d) Others (specify)	:	
02	Name of Assignment	:	
03	Contract No	:	
04	Consultant's Legal Title	:	
05	Consultant's Contact Details	:	
06	Consultant's Registration Details	:	
07	Reference to LOI to sign Contract with Date	:	
08	Original Contract Price	:	
09	Final Contract Price as Performed	:	
10	Original Contract Period		
	(a) Date of Commencement	:	
	(b) Date of Completion	:	
11	Actual Implementation Period		
	(a) Date of Actual Commencement	:	
	(b) Date of Actual Completion	:	
12	Days/Months Contract Period Extended	:	
13	Special Note (if any)	:	

Certified that the Services under the Contract has been performed and completed in all respects in strict compliance with the "Description of Services" including all modifications thereof as per satisfaction of the Client.

Name and Signature of the Issuing Authority with Designation

please turn over

Details of Services Performed

Consultant: [insert legal title]		
No	Major Components of Assignment	Total Value (in Contract Currency)

Joint Venture

[delete, if not appropriate]

Leading Partner: [insert legal title]		
No	Components/Activities [reference drawn to JV Agreement]	Value (in Contract Currency)

Co-partner: [insert legal title]		
No	Components/Activities [reference drawn to JV Agreement]	Value (in Contract Currency)

Co-partner: [insert legal title]		
No	Components/Activities [reference drawn to JV Agreement]	Value (in Contract Currency)

Note: Figures shown must correspond to Total Value

Sub-Consultant

[delete, if not appropriate]

Sub-Consultant: [insert legal title] [delete, if not appropriate]		
No	Components/Activities [reference drawn to Sub-Consultant Information]	Value (in Contract Currency)

Name and Signature of the Issuing Authority with Designation

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Abbreviations:

MoRA	Ministry of Religious Affairs
DIP	Department of Immigration and Passports
NTMC	National Telecommunication Monitoring Centre
DBA	Database Administrator
ICT	Information and Communication Technology
ID	Identification
IVR	Interactive Voice Response
NID	National Identification
SMS	Short Message Service
UDC	Union Digital Center
333	National Information Call Center
NDC	National Data Center
BCC	Bangladesh Computer Council
BUET	Bangladesh University of Engineering and Technology
UAT	User Acceptance Test
TOR	Terms of Reference
BNDA	National Digital Architecture