**EVALUATION/ INSPECTION SYSTEM**

**Ministry of Education**

Evaluation/Inspection IT System

Submitted By:

VERBANET TECHNOLOGIES L.L.C

**CONTENTS**

[**1** **KEY DETAILS** 4](#_Toc7794077)

[**2** **SCOPE OF WORK** 4](#_Toc7794078)

[**3** **PROJECT SCOPE** 5](#_Toc7794079)

[3.1 PROPOSED SOLUTION MODEL 6](#_Toc7794080)

[3.2 SYSTEM USERS 6](#_Toc7794081)

[3.3 System Features 8](#_Toc7794082)

[3.4 System Architectural Features 9](#_Toc7794083)

[3.5 Technology Preference 9](#_Toc7794084)

[3.6 MICROSERVICES ARCHITECTURE 10](#_Toc7794085)

[3.7 FUNCTIONAL REQUIREMENTS 13](#_Toc7794086)

[3.8 Detailed Requirements 16](#_Toc7794087)

[3.9 NON-FUNCTIONAL REQUIREMENT (OTHERS) 23](#_Toc7794088)

[3.10 PROPOSED SYSTEM ENVIRONMENT 26](#_Toc7794089)

[3.11 TECHNICAL CONFIGURATIONS 27](#_Toc7794090)

[3.12 PROJECT DELIVERY 29](#_Toc7794091)

[3.13 PROJECT ASSUMPTIONS 34](#_Toc7794092)

[**4** **OUT OF SCOPE** 36](#_Toc7794093)

[4.1 CHANGE MANAGEMENT 37](#_Toc7794094)

[4.2 MAINTENANCE & SUPPORT 39](#_Toc7794095)

[4.3 SERVICE LEVEL AGREEMENT (SLA) 39](#_Toc7794096)

[**5** **TERMS & CONDITIONS** 41](#_Toc7794097)

[5.1 ACCEPTANCE CRITERIA 41](#_Toc7794098)

[5.2 WARRANTY 41](#_Toc7794099)

[5.3 SOURCE CODE & INTELLECTUAL PROPERTY RIGHTS 41](#_Toc7794100)

[5.4 GENERAL TERMS AND CONDITIONS 42](#_Toc7794101)

[5.5 GENERAL ADMINISTRATIVE, TECHNICAL & FUNCTIONAL ASSUMPTIONS 43](#_Toc7794102)

[**6** **FINANCIALS** 45](#_Toc7794103)

[6.1 WEB AND MOBILE APPLICATION DEVELOPMENT 45](#_Toc7794104)

[6.2 WINDOWS DEDICATED HOSTING – OPTIONAL 46](#_Toc7794105)

[**7** **ABOUT US** 47](#_Toc7794106)

# **KEY DETAILS**

**PROJECT NAME CLIENT**

Evaluation/Inspection IT System Ministry of Education

**CLIENT CONTACT CLIENT ADDRESS**

Mr. P.O.Box 123

ABC Street

Dubai

U.A.E

**PROPOSAL SUBMISSION PROPOSAL ID NO.**

30.04.19  AD/BP/25042018/1820/2

**PROPOSAL VALID UNTIL ANTICIPATED START DATE**

30.06.19 00.00.00

**PROPOSAL SUBMITTED BY PROPOSED TECHNOLOGY**

ASP.NET

Verbanet Technologies L.L.C

Dubai, U.A.E **APPLICATION TYPE**

+971 4 297 3236 Web Application

+971 50 765 2345

# **SCOPE OF WORK**

* The system shall evaluate EYCC and schools
* The system shall be multilingual starting with English and Arabic
* The system shall provide a link between the MoE and other educational authorities, private and public schools and EYCC in UAE
* The inspection process shall have three sub-process: Pre-evaluation, during and after evaluation process
* The system shall have highest levels of security that even database administrator cannot view other authority’s data
* The Quality framework shall have 3 sub-divided named standards which are:
  + 10 Indicators
  + 36 elements
  + Quality descriptors sub-divided into 108 aspects , each aspect having 5 levels(outstanding, very good, good, acceptable & weak) which will be selected by inspectors during activities

# **PROJECT SCOPE**

In vision to keep up with the latest modern technology systems and UAE’s vision of innovation, seven stars and smart government the evaluation and quality department in the Ministry of Education wants to develop an updated inspection/evaluation framework.

Ministry of Education (hereafter referred to as “Client”) has approached Verbanet Technologies L.L.C., (hereafter referred under its trade / brand name as” Verbat”) to develop an Evaluation/Inspection IT system to be used for the evaluation of the schools aligned with the international standard and quality.

## PROPOSED SOLUTION MODEL

**STAND- ALONE FIXED BID**

Verbat will be following a stand–alone fixed bid solution delivery model wherein the required solution would be devised and a suitable pricing would be offered. Verbat’s solution architects have conducted a thorough research on the requirements and have come to the conclusion that our proposed solution, which is detailed further in this document, will meet the requirements put forth by the client.

**KEY STRENGTHS OF OUR SOLUTION**

* Strong and Scalable platform accommodating to future enhancements
* A framework which acts as a solution accelerator with building blocks that can be re-used in n future for building new components and features.
* Our light weight framework used consumes fewer system resources thereby making the application perform faster.
* All security aspects are considered

## SYSTEM USERS

### **School and EYCC coordinators**

* Work on smart sharing, documents, forms and information with the evaluation authorities.
* Fill, download and submit documents and forms required for the evaluation process
* Fill and submit in the required self-evaluation forms for the school
* Update & submit school calendar

### **IT Functional Support Administrator**

System administration activities including but not limited:

* Users and roles management
* Framework management
* Building forms and reports
* Track activity log and users

### **Evaluators/Inspectors (internal & external)**

Evaluator team:

* Update calendar and inspector profile
* Review the school documents and participate in preparing the pre-evaluation briefing
* Write various evidence on the system(eERF’s) according to the privileges
* Access to view other evaluators evidence forms and records
* Share discussion and viewpoints with the school same teams through chat windows(communication module)
* Shadow evaluators to participate in evaluation process for given responsibilities

Evaluators lead:

* Update calendar and inspector profile
* Manage the privileges to assign the tasks for each evaluator per visit
* Extract reports before throughout the complete evaluation process(pre, during, post)
* Follow-up evaluation process via tools to analyze, communication and give feedback on team
* Update the QA team on daily base
* Review the school documents and participate in the preparation of the pre-evaluation briefing

### **Quality Assurance Evaluators**

* Review documents and PIB of the school, arrange and conduct school visits
* Prepare a report on the school, lead and all teams
* Report back to department on the QA visit

### **Report Editors**

Manage the reports layout and content, as all reports will be customized as per each educational authority

## System Features

* System shall allow users to generate reports with the ability to edit those reports in design and content as there shall be different reports layout per educational authority, with the ability to export those reports to different formats
* Dashboards shall be provided for all users
* A communication system shall allow messages to be passed between the different entities interacting with the system
* System shall work in offline mode when used in tandem with mobile devices. Note that this feature shall not be implemented on the web application
* Archive datasets older than three years
* The framework shall be configurable so that it can turn on and off certain features or elements
* System shall support a comprehensive search feature
* System shall support reminders and notifications

## System Architectural Features

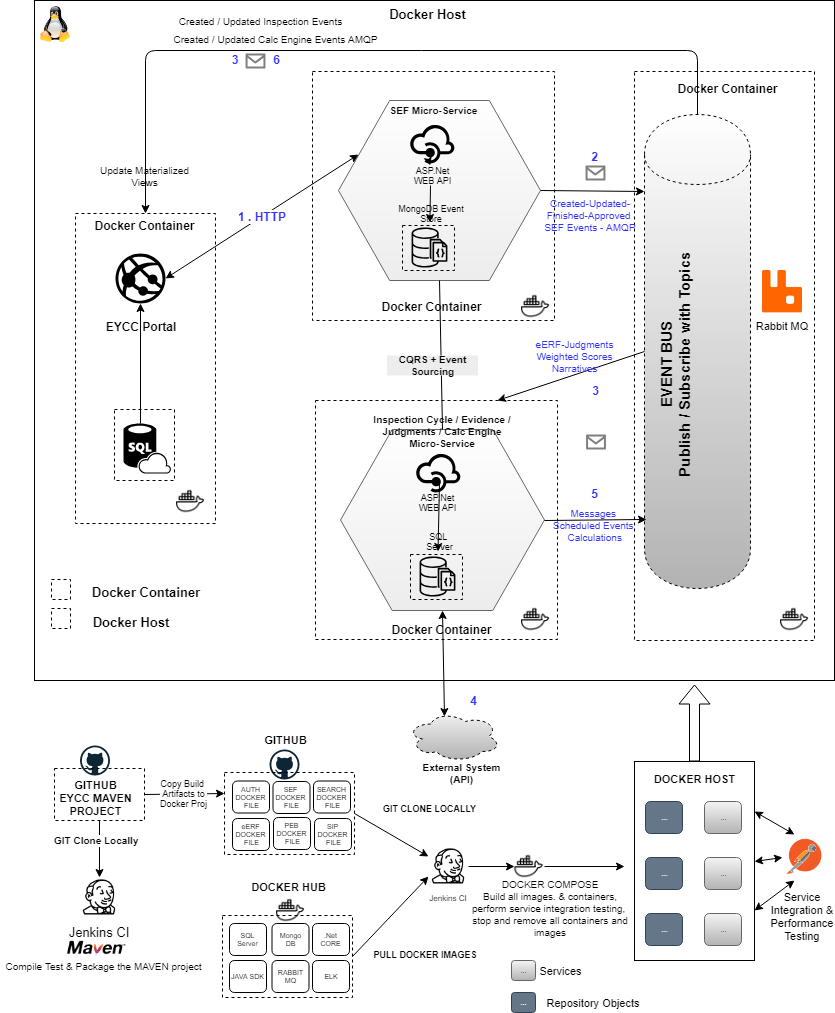
* System shall be packaged as a lightweight container
* System shall be designed as a loosely coupled micro services with clear boundaries and interfaces
* System shall be an API centric application.
* There shall be a clear boundary between configuration and code
* System shall be stateless. State full data shall be saved in the DB. Sticky sessions shall be avoided
* Container services shall be deployed to auto scale the application on demand
* All data shall be held in MOE’s private data center
* The data in transit shall be highly secure

## Technology Preference

Verbat shall adopt the following technologies. The actual technology chosen will vary depending on various factors

* Java with Spring framework or .Net core services with MVC
* Angular and JavaScript framework in the front end
* Native applications shall be developed for IOS and Android
* RabbitMQ shall be used for PUB/HUB communication
* REDIS shall be used for distributed in-memory DB
* Elastic stack shall be used for search and audit logging
* MS-SQL server shall be used as the back-end DB
* Open source shall be preferred to proprietary technology

## MICROSERVICES ARCHITECTURE



All of the components of the system (except the external service) are contained into one single host (But, it does not have to be the norm.

The system components are

* EYCC Portal: Houses the application UI, a responsive angular App. It implements the User contexts, thus delivering different dashboards based on their roles. The website database provides the context to render the UI.
* SEF Micro service: This represents all of the different services that may be implemented (Just like the Inspection Cycle or Evidence micro services). These are deployed onto Docker containers. One or more services may be deployed into a single container or it can split and disseminated to additional containers to manage scalability. The services may be attached to different database instances. One could be MongoDB while another service maybe connected to a SQL server instance

The benefits of using Docker is that it creates Isolation which is key to the creation of a micro service architecture. Isolation makes the environment and its dependencies the same across different deployments (dev, UAT, prod etc.)

Another benefit of Docker is *scalability*. You can scale out quickly by creating new containers, due to a container image instance represents a single process. Docker helps for *reliability* as well, for example with the help of an orchestrator (you can do it manually if you don’t have any orchestrator) if you have five instances and one fails, the orchestrator will create another container instance to replicate the failed process.

 Another feature is that *Docker Containers are faster* compared with Virtual Machines as they share the OS kernel with other containers, so they require far fewer resources because they do not need a full OS, thus they are easy to deploy and they start fast.

This architecture makes use of .Net Core which is cross-platform and has a modular and lightweight architecture. It makes it perfect for containers and fits better with micro services philosophy. .Net Core was our default choice when creating an application based on micro services.

In order to ensure that the services are decoupled from each other, we make use of a message broker. RabbitMQ in this case which also supports the AMQP protocol. Message brokers allow you to establish asynchronous communications between services (Publishers-Subscribers)

**Note:** The EYCC portal by itself does not have to be in a Docker container (Even though it is shown being in a container in the diagram). This is because websites themselves doesn’t process data nor does it contain business logic. Therefore for most instances a few load balancers would be sufficient.

One more thing to consider is the complexity of the application, when a large number of micro services have to interact with each other. One of the biggest challenges that has to be dealt with when working with a micro-service based application is *complexity*. To manage resources *efficiently*, it is important to have *high availability, addressability, resiliency, health, and diagnostics.*  An orchestrator such as Docker Swarm provisions for a stable and cohesive system. Docker Swarm lets you cluster and schedule Docker containers. By using Swarm, you can turn a pool of Docker hosts into a single, virtual Docker host. Clients can make API requests to Swarm the same way they do to hosts, meaning that Swarm makes it easy for applications to scale to multiple hosts. Thus the idea of using an orchestrator is to get rid of infrastructure challenges and focus only on solving business problems.

The diagram above also features a run down on the CB, CI and CD process

1. Continuous Integration: Using Jenkins CI and Maven, automatically compile, test, and package the individual micro services
2. Deployment: Using Jenkins, automatically deploy the build artifacts to the new  Docker project
3. Containerization: Using Jenkins and Docker Compose, automatically build the Docker images and containers from the build artifacts and a set of Dockerfiles
4. Integration Testing: Using Jenkins, perform automated integration tests on the containerized services
5. Tear Down: Using Jenkins, automatically stop and remove the containers and images

## FUNCTIONAL REQUIREMENTS

The main features and functionalities of the application to be developed are presented below:

### **Schools Calendar forms and information**

* Enter the national holidays and working days of school in interactive calendar
* Upload and update evidence based documents in SEF/SIP using SEF/SIP tools and flags provided
* Upload information/documents(assessment, attendance, health and safety, behavioral, etc.) in the tools provided to pre-populate sections of the inspector evaluation modules in order for some judgments to be pre-calculated, which will be transparent to inspection teams
* Upload all the relevant data and information(curriculum, licenses, numbers on roll, staff information, turnover, significant changes since previous year) required by the inspection team into a larger profile embedded with these tools
* The tools and calendars shall be transparent to administration, management and inspection teams

### **Pre-inspection/Evaluation activity Portal**

* Team leaders , team members and QA pull together the entered data, information and evidences(SEF,SIP, school profile, previous inspection reports, data information, standard documents required by the inspector during pre-inspection phase) and prepare for inspection
* Team creation, allocation and assignment: Pre-allocation of the team controls pre-evaluation briefing for each evaluator/inspector and signpost to the designated inspectors areas of inspection that might need a sharp focus based on pre-defined criteria
* Pre-evaluation briefing approval: Revise and approve PEB by lead and then by QA

### **Recording evidences and judgments**

* An activity-based running electronic evidence recording forms with descriptors of the framework embedded
* Address each of the activities(lesson observation, learning walk, document analysis, work evaluation, discussion, data analysis, other) by electronic evidence recording forms
* eERF’s shall be written in different type of structure/form based on the selected aspects from the framework to suit the activity
* eERF screens shall be designed to present the inspector screens with relevant sections of the framework
* Descriptors at aspect level, numbered 1 to 5 allows inspector to make selections from outstanding, very good, good, acceptable and weak
* Inspector shall choose a judgment from one of the descriptors and write text in a narrative box
* ERF’s shall be linked with one another to formulate the final judgment

### **Automated, weighted calculation of inspection judgments**

* Automated calculator for judgments to be generated by inspector: each judgment activity to count as 1 takes a sum of judgments from all inspectors and will generate an average judgment for each of the 36 elements. Average judgments from the integer aspects(1-5) are now to one decimal place, where the threshold is 0.6
* Element judgments shall be combined to generate indicator judgments through an engine. Whole school, by phase, by phase & subject weightings shall be flexible
* Single report shall be created based on the evaluations- aspects to elements, elements to weighted indicators which will be summarized in a single chart per school visible to all teams, leads, QA and managers. Allows definitive indicator judgments when a given bandwidth and soft boundary are inconclusive
* Edit judgment formula to make different final judgments

### **Live reporting of emerging judgments – highly flexible**

* A live reporting platform for emerging judgments at element and indicator level and overall judgments
* Responds to inspector input and flexible to make different reports visible to all or limited to those with specific permission and shall be turned on and off at different times of inspection

### **Quality assurance and quality manager platform**

* Entire system transparent to QA personnel and managers
* QA personnel shall interrogate the data/information across the platform and summarize in writing their findings and recommendations to lead inspectors, team inspectors and managers through flexible intelligent search platform
* Triangulation of data and cited evidence/text from inspectors/leads

### **Inspection report generation and submission**

* Generate school drafted report based on pre-defined structure, layout and styles by the system through lead
* Inspectors shall self-review the quality of the work of the lead and vice-versa
* Identify report dates and time limits and sent automated reminders to teams for pending actions
* Customization of the report layout and content

### **Key features**

* Reports: Generate reports, edit reports in design and content based on different layouts per educational authority, export report to different formats (word, excel, PDF, etc.)
* Dashboards for every type of users
* Multi-modal text entry – typing, writing, speaking
* Communication module for interaction between system users
* Offline mode operation for all inspection activities and sync data once getting back online
* Automatically archive entire data from previous inspections/evaluation prior opening up a new schedule
* Framework configuration: Turn on and off specific elements and manage other elements on the framework
* Comprehensive search facility throughout the platform
* Reminders and notifications for all actions

## Detailed Requirements

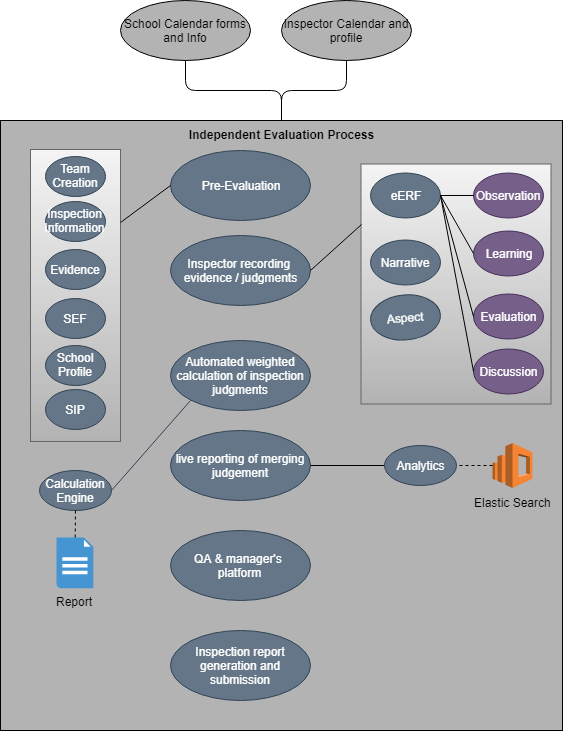
### Responsive Web Application

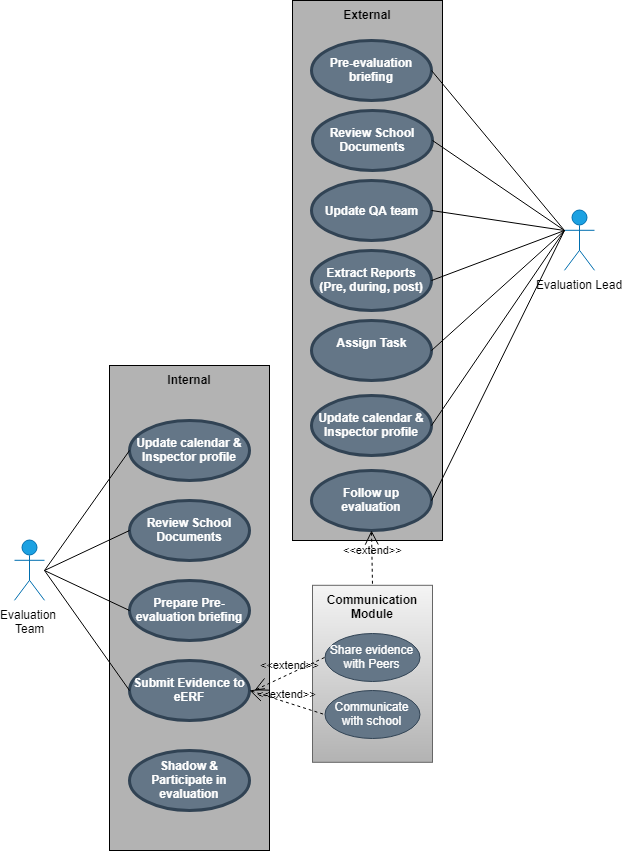
|  |
| --- |
| User management (Users and Roles front end) |
| Schools |
| EYCC Coordinators |
| IT Support |
| Evaluators / Inspectors profiles |
| Evaluator Leads |
| QA |
| Report Editors |
| Inspection Cycles |
| Inspection Cycles - Schools |
| Task Creation |
| Tasks - Inspections |
| Inspection Cycles - Tasks - Schools |
| Teams & team leads |
| Document Categories |
| Aspect Descriptors (Outstanding, very good etc.) |
| School information categories and sub categories |
| Flexible weighing systems |
| School Management |
| School Calendar Management (National Holidays, School holidays, Events, reminders) |
| Document management (versions, category, tags, school, process - sub process type, Sharing etc.) |
| Messaging |
| Staff on duty |
| Staff turnover |
| School information submission (Assessment, attendance, behavioral etc.) |
| Self-Evaluation Forms |
| Inspection Reports |
| Self-improvement planning |
| Evaluation Criteria |
| Standards |
| Indicators (Evaluation Category) |
| Elements (Evaluation Subcategory) |
| Quality Descriptors |
| Journal entries |
| Judgments |
| System |
| Archiving |
| Offline mode |
| Intelligent Search |
| Authentication and Authorization |
| Auditing and logging |
| exception handling |
| Pre-inspection / Evaluation |
| Team creation |
| Team assignments |
| Pre Evaluation briefing |
| PEB approval |
| Pre inspection activity |
| Record Evidence |
| Activity based electronic evidence |
| eERF's for lesson observation, learning walking, document analysis, work evaluation, discussion, data analysis etc. |
| Record evidence and narratives |
| Calculation Engine |
| Generate average judgements from multiple aspects (integer or otherwise) |
| Generate indicator judgements |
| Judgements by school |
| Reports, heat maps etc. |
| Add Judgement formula |
| Dashboards |
| Reporting platform with emerging judgments at element and indicator levels |
| QA platform that supports search and triangulation |
| Reports with filters, sorting |
| Export reports (CSV, PDF) |
| Offline mode for mobile apps |
| Mobile API |

### Mobile App

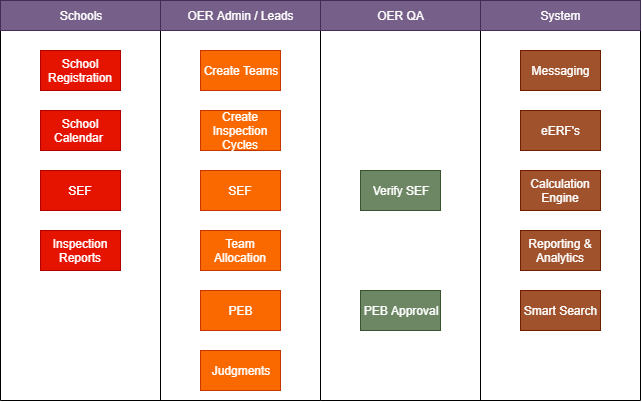
|  |
| --- |
| Dashboards |
| School |
| QA |
| IT Support |
| Evaluator Leads |
| Jotter |
| Subject Evidence |
| lesson observation |
| Phase 3 |
| Phase 4 |
| ERF Subject Data |
| Social judgements indicators |
| Data Analysis |
| internal attainment |
| external attainment |
| NAP attainment |
| Discussion |
| Heads of subject |
| Student after one lesson |
| Work Evaluation |
| Phase 3 |
| Phase 4 |
| Learning skills |
| attainment |
| progress |
| Document Analysis |
| Curriculum |
| Self-evaluation |
| School improvement |
| Curriculum adaptation |
| Subject leadership (operational) |
| Subject leadership (Educational) |
| Indicator Journal (IJ) |
| Discussion |
| Students |
| teachers |
| parents |
| Documents |
| Student survey |
| Student community activity |
| Extra-curricular |
| Health |
| Attendance and punctuality |
| Observations |
| Health & Safety |
| Assemblies |
| Canteen & common areas |
| Judgments |
| IJ:Moral education & Well being |
| IJ:curriculum |
| ERF Documents |
| Prompts |
| Surveys |
| Extra & co-curricular |
| Pre-inspection briefing (PIB) |
| PIB-Social studies |
| PIB-Moral development and well being |
| PIB-curriculum |
| Offline mode |

### Use Case Diagrams





|  |  |
| --- | --- |
| **Requirements** | **Details** |
| User Experience and  UI Design | * The application will be developed only in English & Arabic * The layout and graphical components will be created considering the usability factors |
| Performance | * Application will allow users to have smooth and quick access to the information or services they require. |
| Security | * Web security standards will be followed. |



## NON-FUNCTIONAL REQUIREMENT (OTHERS)

### **Privacy**

* Protection of personal information and undesired access to personal space
* Protection of authority’s information
* Full isolation of data/databases across different authorities using the system
* No data shall be saved in cloud

### **Integration**

* Integration with the existing systems through standard integration protocols-rest API’s or AMQP messages

### **Security**

* Accessible and usable only in authorized ways only by authorized users
* Integration of user management system with existing authentication service
* Roles management to define all levels of roles and responsibilities
* Proper security standards on all system functions, URLs and APIs

### **Auditability**

* Audit trail and activities log for all business transactions by different system actors

### **Usability**

* Intuitive and easy to learn
* Multilingual
* Innovation and uniqueness
* Operate with different operating systems, browsers or devices

### **Flexibility**

* Manipulate and design according to needs by admin
* Configuration on implementing changes or applying inspections on EYCC inspection framework.

### **Master data**

* Admin can enter and import master data from sheets with the ability for data retrieval from different integration points

### **Capacity**

* The application shall accommodate more than 500 users concurrently logged in from different parts of UAE

### **Help & user guide**

* User manual shall be provided
* Help module built shall include text-based and video based materials

## PROPOSED SYSTEM ENVIRONMENT

****

ASP.Net, MVC, Angular

HTML5 / CSS3

Java Script

Windows

IIS

MS SQL

**MS SQL2012  
Windows 8/10  
Web Services**

## TECHNICAL CONFIGURATIONS

### **DEVELOPMENT TOOLS**

* ASP.Net 4.5
* MS SQL
* HTML / CSS 3
* Photoshop
* Web services, Ajax, JavaScript

### **RECOMMENDED WEB HOSTING PACKAGE- DEDICATED HOSTING**

* Operating System : Windows Server
* CPU : 2 core
* Domains: Unlimited
* Disk Space: 200 GB
* Monthly Bandwidth: 50 GB
* Web site Server Software – IIS 7.5 +
* ASP.NET 4.5

### **BROWSER**

* Chrome version: 56
* Firefox version: 51
* Edge version: 39

### **HARDWARE**

The application is reliant on hardware interfaces to provide a seamless automated user experience.

* Computer with Windows 8 or 10 OS
* Compatible Browsers as specified in section 6.2.3

### **TECHNICAL STANDARDS**

* Screen Resolutions

1080 x 1920, 720 x 1280, 750 x 1334, 640 x 1136

* Testing Devices

Google Pixel     Android 7

Motorola Moto G Turbo Edition -   Android 6

* OS Version

Android KitKat and above

### **TECHNICAL GUIDELINES**

The guidelines provide instructions and conditions that will be adhered to during the development of the mobile application.

* API will be used, as the case may be, in realizing the features and functionalities mentioned
* The client will finalize the functional requirements and UI/UX before the commencement of the project
* Verbat will be testing the app in the mentioned devices only. Testing on devices other than the ones mentioned under the “Technical Standards “ will have to be specified and provided by the client at the beginning of the development phase
* The client will have to provide the details of the testing devices they are using before the start of development phase
* Client should provide the relevant Developer's Account credentials before the development phase. In case Verbat needs to create the developer id additional charges will be incurred by the client
* The duration mentioned in the project time line is for development and testing and any delay or time taken by the review team to respond will not be Verbat’s responsibility
* Any clarification required from client needs to be addressed within 24 hrs.
* The apps will be developed / created within the guidelines of Android play store.
* Verbat will strictly follow the guidelines provided by the respective stores.
* Verbat will inform the client if any of the client requirements /request deviates from it.
* Customization of the features of the app will be susceptible to the limitation imposed by the respective platform/ store.
* Once development commences the test device/screen sizes will not be susceptible to change. Any change requested by the client will have to go through change management
* OS version support will be limited to the ones mentioned in the technical specifications. Further support will have to go through change management

## PROJECT DELIVERY

### **PROJECT MANAGEMENT**

The Verbat development center strictly follows industry standards on quality. The project management is process governed by the Verbat Quality Management system and is put to verification through internal audit programs that happen from time to time. Verbat will dedicate a project manager for the proposed implementation. Verbat proposes Client to identify one project manager who will be driving activities to be undertaken by Client to be the single point of contact for Verbat.

### **ROLES & RESPONSIBILITIES**

Verbat will assign a dedicated Project Manager/Project Lead to lead the project, who will be the first point contact for Client. He/she will be responsible for planning and managing the various activities within the project. He/she will work closely with Client Project Manager, to give periodic status updates and ensure high level of visibility and comfort on the progress of the project. The Project Manager/Project Lead will lead the co-ordination between Verbat and Client, thus enabling smooth transitioning of Client requirements to the Verbat ’ offshore delivery team, and provide visibility as well as comfort on the progress of the services to Client.

He/she will have periodic meetings with Verbat ’ s Senior Management, thus ensuring Verbat ’ Management commitment and focus on Client initiatives.

### **DELIVERY ACTIVITY SUMMARY**

|  |  |
| --- | --- |
| Activities | Description |
| Detailed requirement Analysis | Verbat team to conduct detailed study of requirement for the phase. If clarification is required, team will reach out to Client for more information and/or time for discussions. |
| DB Design | DB design for central and test DB. |
| Software Requirement Specification document (SRS) | Once the requirement analysis is completed, Verbat team will submit the SRS document for approval |
| UI/UX Design, Prototyping | Based on the SRS, Verbat UX/UI team will work on the UI/UX of the screens and submit for approval |
| Functional Specification Document (FS) | Once the UI/UX is approved, Verbat shall submit an FS document for approval. |
| Development | Actual system development starts based on the FS. This involves detailed design and software development of Web Application. |
| Testing | Test Planning, test plan creations, internal, integration testing and user acceptance testing. |
| Deployment | Deploying the latest built in the Verbat Test Server. |

### **PROJECT IMPLEMENTATION PLAN**

Verbat will be providing the solution in a stand-alone fixed bid approach which ensures minimum viable solution for quick wins with core focus on the long-term business objective and outcome. Once the implementation is over, Verbat will initiate the application maintenance process (once the maintenance contract is signed) which continues to extend after the implementation.

### **DELIVERABLES**

* Project Plan
* Software Requirement Specification Document (SRS)
* UI/UX Design
* Functional Specification
* Fully Developed & Tested Application
* Documentations related to System Architecture, Database schema & Database backup
* Source Code

### **ESTIMATED DELIVERY TIME**

The effort estimated for delivering the application will be as below:

* 00 UAE working days for the UI/UX from the date of approval of the SRS
* 00 UAE working days for the development of the application from the Date of Approval of the FS.

| **Activity** |
| --- |
| Contract Signoff (T0) |
| Project Initiation & Initiating requirement gathering |
| Software Requirement Specification Document(SRS) |
| SRS Approval (T1) |
| System UI/UX-Complete |
| System UI/UX-Approval (T2) |
| Functional Specification (FS) |
| FS Approval (T3) |
| Development Phase-Complete |
| Perform QC (Unit Testing and Integration Testing) |
| System ready for UAT |
| UAT Acceptance on Verbat server (T4) |

* The above-mentioned timeline is in UAE Working Days
* The initiation of the UI/UX development is dependent on the confirmation of SRS. SRS will be submitted post the confirmation of the project along with LPO, signed proposal and advance payment
* The above mentioned timeline for development is post the confirmation of FS
* Documentation submitted after project initiation and system study supersedes any proposal or documentation submitted during initial requirement gathering / discussion / negotiation
* Project plan will be submitted post the confirmation of project with necessary payments
* Any delay in getting the approvals of deliverables from client will cause change in timelines and the revised timelines will be updated in weekly status reports shared with client after the project commencement
* All approvals and queries regarding the client requirement and any queries which may hinder the project advancement at any stage should be answered by the client within 24 hours from the time of initiation, failing which the time delay will get added to the actual effort and timeline which was estimated.
* On project confirmation, Verbat requires a lead time of minimum seven (07) days for resource mobilization.

### **DEPLOYMENT DETAILS (AT CLIENT’S BEHEST)**

* Client can opt for hosting the application at Verbat’ Server.
* If deployment is at the client’s server, responsibility of deploying the application onto the production environment after conducting the necessary acceptance testing will lie with the client unless and until Verbat ’ support is contracted for deployment.

### **RELEASE PLANNING**

* Client will be informed about the release date and time through email.
* Client performs the UAT

### **RISK CONTINGENCY PLANNING**

Verbat has identified various risk factors associated with this assignment and understands the impact of these risk factors on the project schedules. The objective of this section is to highlight for both Verbat and client, the risk factors, to analyze the impact of the risks on project execution, and to propose strategies to control and reduce the impact of the risk factor. These various risks, which could arise during the project, are tabulated below along with mitigation implementation.

| Type of risk | Impact | Risk Mitigation | Risk Handling |
| --- | --- | --- | --- |
| Scope Creep | H | Functions and features will be detailed in system requirement documents and will go through client approval. Once this document is approved, any change to requirement will go through change management review for possible impact assessment. | Proper change management procedure will be implemented. |
| Delay in customer feedback | H | The plan is prepared with enough lead-time for customer reviews and approvals.  The customer is indicated with the dates when the document is expected after review and approval. | The request for feedback will be escalated if not attended at the right time so that the schedules are not affected. Deemed acceptance criterion is set up front and will be followed. |
| Non-availability of necessary software’s, frameworks, database instances and infrastructure at client’s hosting environment(If hosting support is provided by Verbat ) | M | Client will be informed in advance on these requirements. | Possible impact to schedule. |
| Manpower attrition | L | All efforts would be made to ensure process dependence rather than being person dependent. As a risk mitigation plan Verbat will train backups. | A new person will be identified as early as possible, provided the required project-specific training and mentored by the senior members of the team to minimise impact of attrition on the project. |

*H-High, M-Medium, L-Low, NA-Not Applicable*

## PROJECT ASSUMPTIONS

The project solution and technology is created from the initial understanding of the requirement shared with Verbat through mails and meetings. The proposed solution is based on the following assumptions:

### **OBJECTIVE**

* The requirement is to develop an Inspection/evaluation IT system with the functionalities as defined in ‘Functional Requirements’ section

### **DESIGN**

* Client to provide Verbat with the branding guidelines.
* Color theme shall be provided by the client
* Client shall provide licensed images and logos in specified size & format
* Client shall provide the text and associated images for the proposed application. Text should be provided in digital format preferably in MS Word 2013 or above
* Verbat may use template based design for the application
* The application designed for mobiles will be in portrait mode

### **DEVELOPMENT**

* The proposed application front end and backend would be developed in English & Arabic
* Development Contingent upon timely feedback from client
* The client will finalize the functional requirements and UI/UX before the commencement of the development of the project
* Client shall approve the UI/UX for the mobile and web application before development work starts
* Verbat assumes client requires minimal reports and the reports considered in the scope are mentioned under the respective user modules.
* The following items will be hardcoded / implemented in the application
* Final data needs to be entered by the client via the application
* Client will provide sample data to test the application
* Testing of web application will be done in latest versions of Google Chrome, Mozilla, Edge web browsers only
* Testing of the mobile app will be executed on devices mentioned under Technical Standards
* Client will procure templates, SSL certificates (if applicable)
* Client will host and manage the application on infrastructure (server / cloud) recommended by Verbat for managing database and application backup inclusive of images
* Application and data backups are subject to the purchase of such services at an extra cost
* Mobile Application elements or design cannot be modified once the app is deployed
* This estimate is only for portrait orientation on android mobile phones (Not Tabs)
* Client shall provide the developer account for Android Store and IOS Stores.

# **OUT OF SCOPE**

With the ever evolving digital market, the requirement should be clear to both the parties involved, hence the importance of mentioning the out of scope details of the project. Following are considered to be out of scope while creating this proposal:

* Purchase of images, fonts
* Any language other than English & Arabic
* Migration of existing data / Database migration
* Content writing / proof reading / Data Replication / Manual data entry
* Content or image procurement or uploading or editing
* End user testing and load testing
* Developer account creation and Maintenance (Play Store)
* Adding new features to the application other than mentioned in the functional specifications. Such requests will be handled via change management. *For Change management details, please refer section titled “Change Management” in the Proposal*. (refer to section 4.1)
* Annual Maintenance Contract (Bug fixing, debugging, enhancements) – Please refer section titled “Maintenance and Support”, unless contracted for.(refer to section 4.2)
* Hosting Infrastructure and Maintenance (web and email hosting), unless contracted for.
* Application Deployment on the server and respective stores, unless contracted for.
* Backup solution and Disaster recovery unless contracted for.
* Physical deployment onsite / installation of the application in devices and Physical connection, installation of system.
* Integration with third-party, if any, other than mentioned in the functional specifications
* Hardware Integrations / procurement and purchase
* Procurement of SMS gateway / payment gateway / email gateway
* SSL Purchase and installation, if any
* Plugin/template purchases, if any
* OS other than mentioned in the Hardware Interface
* Relevant / related software libraries
* Offline support shall be provided only for mobile apps

## CHANGE MANAGEMENT

Any addition which comes out of the project scope, upon and after the launch of the application will be considered as change management. Verbat recommends the following change management procedure for the same.

* Any change which comes out of the project scope, which was discussed, documented, and mutually approved by both the parties in the requirement stage, will be carried out only through raising a change request.
* Change request will be studied and an impact analysis on the existing work flow will be performed.
* On finalizing the impact, effort estimation for the change will be calculated and raised as additional requirement.
* Verbat will initiate the change request only after getting a formal approval from the client for the additional changes raised.
* Any change from the scope will be charged at AED 1,200.00 per man day effort and approval from the clients will be availed before commencing on any change management.



## MAINTENANCE & SUPPORT

* Maintenance contracts by default are supported as per the basic SLA terms.
* AMC with Basic SLA is charged at 25 % of the total project value. Additional Effort/change management request will be added towards Total Value of the Project to determine the AMC value.
* Maintenance support is limited to providing application support for ensuring the consistency of the look-and-feel, bug fixes and user issues i.e. maintenance and support of the existing features of the application.
* Support does not in any way cover providing technical or other support to the end users. The maintenance agreement does not include functionality changes or feature additions which are handled as change requests which will be charged AED 1,200.00 per man day. AMC does not include server support, maintenance and application deployment.
* AMC charges will cover Off-Site Support and Debugging. Support includes E-mail, Telephone and Chat unless explicitly specified. In the event, the application is hosted with the client; necessary remote desktop connectivity should beprovided for carrying out maintenance activity.
* Gap in AMC - In case if the client does not opt an AMC for a year and want to renew it after that period, 50% of the AMC amount for the year for which AMC is not taken will also be payable if the client wishes to renew the AMC contract.

*Note:*

* *Please note that the AMC support shall start only after all the necessary sign-offs (AMC Document) to this effect have been given.*
* *It is not mandatory that the client should opt for an AMC (replace with perhaps: It is mandatory that the client opts for an AMC). The client will still be supported on an ad-hoc basis on an agreed man-day rate.*
* *AMC Payment Terms: 100% to be paid as advance.*

## SERVICE LEVEL AGREEMENT (SLA)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SLA Type** | **Max Response Time** | | **Max Resolution Time** | **Target** |
| Basic | 1  working day | 3 working days | | Request / incident / problem tickets |
| Advanced | 5 Business Hours | 12 Business Hours | | Request / incident / problem tickets |
| Priority | 3 Business Hours | 5 Business Hours | | Request / incident / problem tickets |

*Note:*

* *We provide Basic SLA as standard with AMC while Advanced and Priority SLAs attract additional charges.*
* *Time zone applicable (8:00 am to 5.00 pm, Sunday to Thursday)*

AMC Option:

Client can opt for time and material based Annual Maintenance, the details of which will be shared post the completion of project.

# **TERMS & CONDITIONS**

## ACCEPTANCE CRITERIA

* UAT (User Acceptance Test) sign off should happen within 07 Days from the first release of the application and the acceptance confirmation needs to be mailed to Verbat failing which Verbat will consider the project as approved by the client.
* Any comments or reason for rejection need to be documented and the same needs to be sent as an email from the official mail id of client to Verbat on or before 07 days from the first release.
* Timeframe for acceptance for any further release will be mutually agreed and finalized between client and Verbat depending on the UAT Comments

## WARRANTY

* Verbat shall provide a bug ﬁx warranty at no additional cost for 30 days from the date of acceptance of the project, for correction of any errors in the developed application that may be attributed to Verbat.
* However, this does not cover modifications by Client, or use of the application on an environment other than the proposed environment, or other circumstances outside Verbat’s reasonable control. In such a case Verbat reserves the right to charge for its services.
* All error corrections will be executed at Verbat India office. In the event of any need for on-site work, all expenses incurred for such trips will be payable to Verbat by Client.

## SOURCE CODE & INTELLECTUAL PROPERTY RIGHTS

* Upon completion of the Project and 100% completion of the payment, client will have access to the source code except for propriety codes, developer tools and third party applications etc.
* The solution offered will be the intellectual property of the client and will be made available to the client on an “unlimited license” basis.
* Modifications by third party/person: No person or organization, other than Verbat or any person authorized by Verbat in writing, has any permission to modify/change the software Solution to be eligible to get continued support from Verbat as per the support terms defined under this document.
* Liabilities/Damages: Verbat accepts no liability or damages of any kind arising out of use or non-use of the software delivered. The responsibility of testing of software lies with Client.

## GENERAL TERMS AND CONDITIONS

* Offer Valid for 30 calendar days from the date of submission of the Proposal.
* An average of 20 working days are assumed in a month.
* All the projects activities will be carried out from our off-shore development center in India
* All the documentation will be provided in English.
* Third party components may be used to develop this application.
* The scope of the project is to develop the Application as detailed in the scope of the project and mentioned in this proposal. Any changes or additions will have to go through change management.
* This proposal would have been derived or concluded from either the RFQ /RFP/data shared via email / information transferred during an initial requirement analysis meeting / tele-conversation. Verbat reserves the right to change the terms of this proposal as the final terms (including the costing), features & functionalities and timeline could change during the course of the project. Hence any fees quoted / timeline committed in this proposal may not be considered as final unless agreed and signed by both parties.
* Web Application will be best viewed only in the environment mentioned in the section Browser Compatibility
* Mobile app will be best viewed only in the environment mentioned in the section Hardware Interface
* All Source Codes and other project artefacts would adhere to the Verbat document templates and internal coding standards.
* The documents delivered to the client includes the ones mentioned under ‘Deliverables’ and these will adhere to Verbat’s internal document standards.
* Acceptance criteria shall be based on the clauses which were mutually discussed between Verbat and client at the Requirement Analysis phase and the same will be documented and approved by both parties through official emails
* In case Client requires any extension of the proposed acceptance schedule, the associated effort and cost of such extension can be mutually reviewed.
* For any circumstances if project needs to be put on Hold / Stop it requires minimum request notice period of 1 week along with duration for which request will be addressed by management and final decision on the request will be based on that
* If deployment is done in client’s server, Verbat cannot be held responsible for any performance issues arising due to hardware malfunctions.
* Client is responsible for data backup in case the application is not hosted on Verbat server.
* Source code will only be delivered or uploaded on the Production Server once the due payments are made.

## GENERAL ADMINISTRATIVE, TECHNICAL & FUNCTIONAL ASSUMPTIONS

* Detailed system study is required before the start of the project.
* During the requirement gathering phase, authorized personnel from the Client’s side is expected to be available for discussion and finalizing the HLD (High Level Design), before development commences.
* Type of reports and formats, if under the scope of the project, needs to be specified by Client before project sign off.
* Workflows if under the scope of the project, need to be specified/ confirmed by client before project signoff.
* Verbat assumes that all sign-offs from Client will be provided within agreed and specified timeframe.
* Client will provide all the necessary contents, both text and image, before starting the project in the format suggested by Verbat (if any).
* The client should provide the relevant information and data well in time for the execution of a related activity. Non- availability of this information or data may lead to an interruption of work which may result in a delay in delivery as well as additional costs to the client.
* Client should have/possess server with technical specifications as suggested by Verbat for the proposed application.
* Client will be provided with one time training (train the trainer) on how to use the application via video conference (maximum of 4 hours). Additional training requests will be charged.

# **FINANCIALS**

## WEB AND MOBILE APPLICATION DEVELOPMENT

|  |  |  |
| --- | --- | --- |
| **No** | **Description** | **Amount (AED)** |
| 01. | Development of:   * Web Application |  |
|  | **Total Project Cost** |  |

*Note:*

* *The above cost is exclusive of VAT applicable in UAE*
* *The above cost is based on the initial understanding of the requirement grounded on the details shared by client. Any further changes in the scope or complexity if encountered during detailed system study/ analysis will call in for additional effort and time.*
* *The above cost does not include Application hosting, integration with any other third-party systems, deployment unless explicitly mentioned in this proposal.*
* *For feature additions, please refer section titled “Change Management “.*
* *LPO to be raised in the name of “Verbanet Technologies LLC” for project initiation*
* *Refer section 7.3 for ‘Mode of Payment’.*

### **PAYMENT TERMS**

* 30% () of total project value to be paid as advance along with the Purchase Order
* 40% () of total project value to be paid on confirmation of the UI/UX
* 30% () of the total project value to be paid on completion of Development and UAT on Verbat test server

*Note:*

*Payment should be made within 7 days from the date of invoice.*

## WINDOWS DEDICATED HOSTING – OPTIONAL

ITEM NO. DECSRIPTION AMOUNT (AED)

1. Windows Dedicated Hosting

TOTAL PROJECT COST

*Note:*

* *The above cost is exclusive of VAT applicable in UAE*
* *Refer “Windows Dedicated Hosting Proposal” for detailed Server specifications.*
* *Refer section 7.3 for ‘Mode of Payment’.*
* *LPO to be raised in the name of “Verbanet Technologies LLC” for project initiation*

### **PAYMENT TERMS**

* 100% advance payment along with Purchase Order to initiate Server purchase

*Note:*

*Payment should be made within 7 days from the date of invoice.*

### **MODE OF PAYMENT**

By Cheque to Verbanet Technologies LLC

OR

Wire transfer to our bank account

Bank Name : Emirates NBD

Account Name : Verbanet Technologies LLC

Account Number : 1011492858201

IBAN Number : AE61 0260 0010 1149 2858 201

Swift Code : EBILAEAD

Bank Address : Mamzar Branch, Dubai

*Note:*

* *Bank charges incurred during wire transfer to be borne by the client.*
* *Any local taxes / VAT applicable to be borne by the client*
* *Client invoices will include VAT charges in addition to the application cost*

# **ABOUT US**

Education

Transportation







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