



هيئة الاتصالات وتقنية المعلومات
Communications & Information
Technology Commission

Attachments to Project

The project of establishing and operating
the Electronic System
for CITC Cases

Proprietary and Confidential

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1. Technical Requirements for the Application Management

CITC Technical Standards

1. Technical Requirements:

In general, all applications must follow the following standards as a first option, any applications that are not in compliance with these requirements can be proposed and will be evaluated during proposals technical evaluation phase (taking into consideration that solution design should be upgradable to the latest versions when approved by CITC):

- **DBMS:** MS SQL Server 2016 SP1
- **Application Server:** IIS 7 (or higher)
- **Programming Language:** .Net (ASP.net, C#)
- **Portals & WCM:** MS SharePoint 2013
- **Mobile Applications:** CITC had developed its own iOS and Android apps, any new service/form can be embedded into the application.
- **BPMS:** K2 blackpearl – latest version (<http://www.k2.com>)

(All business process based applications must be built on this platform, unless the vendor suggests a different platform and proves that the solution requires this platform)

- **Adopting SOA concept.**

2. System Logical Design

- All applications must fulfill the following principles when building the system logic design:
- Fail-Over principle in all its components and services.
- High Availability principle.
- N-Tier when designing systems components.
- Integration into central backup system for core business data

- Integration into central monitoring system for major services and components.

Since applications differ in their needs, the actual implementation of these principles will differ from system to another. Some will follow Active/Passive approach, while others will follow Active/Active approach, and that depends on the nature of the application and its functionalities.

3. Information security

The deployed application must fulfill the highest level of security in accordance with CITC security policy whether in hardware, software, procedures, privileges or other aspects.

The following Information security concepts should be applied:

- **IA3 concept which involves:**
 - Identification
 - Authentication
 - Authorization and ACL : Access Control List
 - Accountability and *who did what* principle

- **Secure Coding :**

The coding should follow the best practices in this area such as and not limited to OWASP

- **Vulnerability and Penetration Prevention**

Penetration Tests should be applied by 3rd party and in case of any vulnerability is found, the winning bidder should fix these vulnerabilities.

- **Sensitive information should be sent over an encrypted channel**

Use SSL for all connections that are authenticated or transmitting sensitive or value data, such as credentials, credit card details, and other private information.

All requests from the user to a HTTP URL must be redirected to a HTTPS URL instead.

4. Compatibility with standards provided by Yesser (YEFI)

It is strongly recommended that the deployed application complies with the standards provided by Yesser (YEFI) which can be found by following this link:

https://www.yesser.gov.sa/ar/BuildingBlocks/Pages/interoperability_framework.aspx

5. IT Infrastructure Requirements

- Hosting outside CITC:

The bidder must cover all aspects related to hardware and software as follows:

- Servers and Storage: the selected solution should be Hyperconverged Infrastructure (HCI).
- Application should be compatible with VMware V. 6.5 and above.
- Operating System:
 - Windows Servers: CITC supports Windows Server 2016 and above.
 - Linux (RedHat): CITC supported latest two versions of RedHat with latest updates.
- All licenses should be covered by the bidder.

- Hosting in CITC:

- Servers and Storage: CITC will provide all requested VM's, storages and other computing resources.
- Application should be compatible with VMware V. 6.5 and above.
- Operating System:
 - Windows Servers: CITC supports Windows Server 2016 and above.
 - Linux (RedHat): CITC supported latest two versions of RedHat with latest updates.
 - Operating System Licensing: CITC is responsible for providing all Operating System licenses and related subscriptions.

Annex 2

Scope of Operation and Maintenance

The winning bidder shall undertake the operation, support and maintenance operations, and shall also implement the improvements and additional modifications required by the business need starting from the launch of the system to the end of the project. We recommend that the period of operation, support and maintenance shall be at least 3 years.

• **Scope of Operation, Support, Maintenance and Improvement:**

- The scope of work includes operating the system, resolving problems, fixing malfunctions, troubleshooting, implementing requests for improvements and additional modifications, and making the necessary updates and upgrades on all parts of the system and tools, in accordance with the Service Level Agreement described below.
- The above clause excludes operating, maintaining and updating the infrastructure components, such as servers, operating systems, and hardware, networking, etc, as this will be the responsibility of the CITC.
- In the event that a problem occurs in the system or tools, and the cause of which is not immediately clear (such as slow system performance, security issues, etc.), the winning bidder shall investigate and analyze the source of the problem and solve it in an optimal manner, and can seek the assistance of technical infrastructure specialists in CITC, when needed, to analyze and examine the potential causes related to the infrastructure.
- With regard to requests for improvement and additional modifications, the winning bidder shall provide a total of (60) working days throughout the operation and maintenance period to implement these requests.

• **Process of Operation, Support, Maintenance and Improvement:**

The support, maintenance and improvement operations shall follow the following process:

- The winning bidder shall assign a client account manager for CITC during the period of support, maintenance and improvement to serve as the point of contact with CITC.
- The winning bidder shall provide CITC's representatives with periodic reports that include progress, problems resolved, and recommendations.
- The winning bidder shall provide CITC in advance with all information that may arise from planned updates or upgrades in the next versions of the system or one of its components, and inform CITC before making any downtime for maintenance purposes with adequate time to do what is necessary.
- The winning bidder shall take the necessary measures to ensure that the system remains fully functional at all times without the public noticing any interruptions in the system.

- In the event that the process of updating and upgrading the system or one of its components fails due to a technical problem, product incompatibility, or for any reason whatsoever, the system must be restored to its previous state ensuring that no data is lost. Both the winning bidder and CITC shall give the green light before embarking on the second attempt.
- The winning bidder shall adhere to the technical standards approved by CITC in all operation, support, maintenance and improvement processes (Attachment 3).
- The winning bidder shall do what is necessary to transfer knowledge to the technical resources.

• **Service Level Agreement:**

The methodology for support, maintenance and improvement shall be as follows:

- When an error occurs in the system or if an improvement or amendment is requested, CITC's employee will send the request to the support team of the winning bidder via the channels it provides (phone, e-mail, reporting system, etc.) at all times.
- The winning bidder shall provide a reporting system so that it enters CITC's request into the system, issues a report number and gives it to CITC for follow-up.
- The competent employee at CITC determines the priority level of the problem / request when opening the report with the winning bidder.
- The winning bidder's engineer shall examine the system and handle the problem / request, and update the level of priority of the problem, if required, after referring to CITC's employee.
- The winning bidder's engineer shall not implement any of the proposed solutions except after informing CITC's employee of its implications, if any.
- Priority levels shall be determined according to the type of error / request and the degree of its impact on the system's operation as follows:

• **Top Priority (Critical)**

- All or most of the main services in the system are stopped: any malfunction of the major parts of the system is a top priority, such as the inability to access the system or a malfunction in one of its major components.
- Report acceptance time: 15 minutes max
- Time of response and presence on site: 2 hours max
- Error repair time: 3 hours max

• **First Priority (High)**

- One of the components of the system is stopped: a service or part of the system is down, but the main functions are functioning.
- Report acceptance time: 30 minutes max
- Time of response and presence on site: 2 hours max
- Error repair time: 3 hours max

- **Second Priority (Medium)**

- Malfunction in one of the parts or components of the system: the problem does not affect all parts of the system and it may be limited to a specific service. Such as failure of any part of the service, or slow browsing of a certain part of the system or one of its components.
- Report acceptance time: 1 hour max
- Time of response and presence on site: within 8 hours max
- Error repair time: within 2 working days max
- CITC shall be provided with a detailed report on the solution and the necessary steps to avoid the problem in the future.
- The reporting system of the winning bidder shall be updated and a report issued and sent to CITC which is the one to approve the closure of the report.

2. Functional Requirements for the System According to the Requirements of the Enterprise Architecture Management

A. Functional requirements for the integration of the Electronic System for the Commission's Cases

Integrations with internal systems of the Commission

Number	Entity	Description
Integration 1	Electronic System of Violations	Linking to the Electronic System of Violations to obtain the violation data related to the case from the Electronic System of Violations
Integration 2	Electronic System of Violations	Linking to the Electronic System of Violations to update the violation based on the status of the case in the Electronic System of Violations
Integration 3	Transactions and Administrative Communication System	Linking to the Transactions and Administrative Communication System to link the memorandum to the transaction in the Transactions and Administrative Communication System
Integration 4	Regulatory System	Linking to the Regulatory System that is to be developed in the Commission when it is ready in order to obtain the data of the regulations related to the memorandum
Integration 5	Power BI Platform	Providing data to the Power BI Platform, and the winning contractor shall implement the advanced reporting and dashboard requirements using the Power BI Platform available in the Commission
Integration 6	Active Directory	Linking to the Active Directory available in the Commission in order to obtain employee data that is used in the Electronic System for the Commission's Cases
Integration 7	SMS Gateway	Linking to the SMS Gateway available in the Commission in order to send SMS
Integration 8	Email Server	Linking to the Email Server available in the Commission in order to send emails

Integrations with the systems of external entities

Number	Entity	Description
Integration 9	Mueen Platform (Board of Grievances)	Linking to the Mueen Platform (Board of Grievances) to receive notifications from the administrative courts
Integration 10	Mueen Platform (Board of Grievances)	Linking to the Mueen Platform (Board of Grievances) to submit memoranda to the administrative courts
Integration 11	Najiz System (Ministry of Justice)	Linking to the Najiz System (Ministry of Justice) to receive notifications from Sharia and labor courts
Integration 12	Najiz System (Ministry of Justice)	Linking to the Najiz System (Ministry of Justice) to submit memoranda to Sharia and labor courts

B. Data transfer requirements for the Electronic System for the Commission's Cases

Number	Description
Data-transfer 1	The contractor shall study the current data in the Commission that is concerned with the services and procedures that have been automated or re-automated, and develop a plan for their transfer and cleansing in order to facilitate the data transfer process
Data-transfer 2	The contractor shall specify the data that needs to be re-entered and it is considered one of the future requirements so that this data is provided electronically or manually (depending on the situation) in preparation for the launch of the system
Data-transfer 3	The contractor shall develop the necessary software in order to transfer the existing data to the new databases in digital form
Data-transfer 4	The contractor shall conduct an examination to ensure that the data has been transmitted completely and correctly, prepare reports on this issue, and share the results with the Commission's work team with the holding of workshops for the project work team by the Commission to ensure the correctness of the data transfer

C. General requirements for the Electronic System for the Commission's Cases

Number	Description
General-requirements 1	The services of the Electronic System for the Commission's Cases shall be provided to the internal recipient through the internal portal of the Commission or through the SSO with the internal portal
General-requirements 2	The services of the Electronic System for the Commission's Cases shall be provided to the external recipient through the business portal of the Commission or through the SSO with the business portal
General-requirements 3	The winning contractor shall implement the advanced reporting and dashboard requirements using the Power BI Platform available in the Commission
General-requirements 4	The winning contractor shall establish workflow processes/procedures using the K2 system available in the Commission
General-requirements 5	The winning contractor shall comply with the non-functional requirements when implementing the electronic system based on the attached document

D. Requirements for the training of the Electronic System for the Commission's Cases

Number	Description
Training 1	<p>The contractor shall perform the following tasks to provide training to the Commission:</p> <ul style="list-style-type: none"> • develop and discuss the training plan with the Commission's team in line with the requirements of the system to be developed; • discuss and agree on the training curriculum, courses, sessions, and tools that will be used to support the training and transfer knowledge; • prepare training materials in an appropriate format (PowerPoint presentations, videos, etc.) in both languages (Arabic and English), as the trainer shall be an Arabic speaker; • provide knowledge transfer during the project implementation phases that cover different groups of users involved in the project; • the training plan should mainly include professional training courses covering (but not limited to) the following topics: <ul style="list-style-type: none"> ○ Business Users Training (users of the system to be developed): this training targets the users of the system and will take users through interactive sessions on how to use the system effectively. ○ Technical Administrators Training: this training targets the technical administrators of the system to be developed; it will cover administrative functions and technical details. <p>Preparing a guide for the system to be developed that explains the steps of interacting with the system in both languages (Arabic and English), provided that the style of the guide is clear and easy and follows the storytelling method.</p>

3. Non-functional Requirements for the System According to the Requirements of the Enterprise Architecture Management

A. General non-functional requirements

Number	Description
Requirement 1	The system shall support Hijri and Gregorian calendars
Requirement 2	The shape and style of presentation (Look and Feel) shall be similar to the shape and style of presentation used in the Commission
Requirement 3	The following environments should be implemented: production, staging, testing, and development
Requirement 4	The system should support input validation using lookup tables or allowed values for different fields such as dates and numbers
Requirement 5	The contractor shall detail the services and procedures at the 5th level using BPMN coding (according to the APQC standard) and enter them into the enterprise architecture tool, provided that it includes the link of services with the relevant procedures

B. Security requirements

Number	Description
Requirement 6	The system shall support control access through user accounts
Requirement 7	The system shall support Single Sign On capability through other systems
Requirement 8	The system shall support access privileges management to grant privileges to different users and groups

C. Non-functional requirements for integration

Number	Description
Requirement 9	The system shall be designed using SOA principles and Open Industry Standards.
Requirement 10	The architecture of the system shall be based on sound principles of the architecture that enable fault tolerance and high performance
Requirement 11	The system shall support web service standards, including XML, RESTful API, SOAP, UDDI, WSDL.
Requirement 12	The system shall support appropriate returning of error messages to the sender when the verification process fails
Requirement 13	The system shall support connectivity protocols based on such standards as HTTP, HTTPS, FTP, SFTP, SSO

D. Scalability and high availability requirements

Number	Description
Requirement 14	The system shall support scalability to support future requirements in terms of Performance & Capacity
Requirement 15	The solution software components shall take advantage of high availability and load balancing of the proposed hardware architecture in order to increase system performance and scalability.
Requirement 16	The system shall support all users without affecting the system and without leading to slow system performance
Requirement 17	The system shall support hosting on the Commission's network or cloud computing without affecting the system and without leading to slow system performance
Requirement 18	The system shall support providing public availability by 99.982%
Requirement 19	Maintenance procedures should not lead to system failure when being conducted
Requirement 20	The response time shall be 3 seconds per thousand concurrent users

E. Monitoring and administrating requirements

Number	Description
Requirement 21	The system shall support full technical control of the processes/procedures.
Requirement 22	The system shall provide tools for real time monitoring.
Requirement 23	The system shall support remote technical monitoring.
Requirement 24	The system shall provide configuration settings using interfaces for technical control (configuration settings through administration interface)
Requirement 25	The system shall have the ability to return automatically to a usable state after a system reboot (both automatic and manual reboots)
Requirement 26	The system shall support the ability to make hot and cold backups of databases and the ability to restore data in cases of incidents.
Requirement 27	The system shall support the ability to fully archive databases

F. Logging and auditing requirements

Number	Description
Requirement 28	The system shall be able to record and check all the details of all received and sent transactions in the implementation of business services procedures in case of entry or modification, including: <ul style="list-style-type: none"> • Date created/update • Time created/update • Unique ID of user creating/updating • Item updated • Old value of item • New value of item
Requirement 29	The system shall support the ability to issue reports on modifications/updates made to subscribers' data

G. Design requirements

Number	Description
Requirement 30	The contractor must carry out the following activities during the design phase: <ul style="list-style-type: none"> • develop technical architecture for the system that covers all layers required to implement functional and non-functional requirements. The technical architecture should cover (but is not limited to): <ul style="list-style-type: none"> ○ Presentation Layer ○ Process Layer ○ Business Rules Layer ○ Data Layer ○ Integration Layer ○ Security Layer • develop a Technical Architecture Design for the system that covers technical and functional aspects • map functional and non-functional requirements to the technical design • develop a Graphical User Interface (GUI) according to the specific requirements

H. Examination requirements

Number	Description
Requirement 31	The Contractor shall develop a test plan and test scenarios for functional and non-functional requirements (including but not limited to security testing, penetration testing, performance testing, load testing, and scalability testing).
Requirement 32	The contractor shall implement test scenarios for the developed system, generate test reports, and fix errors (execute test cases and scenarios)
Requirement 33	The contractor shall conduct User Acceptance Testing (UAT) with the stakeholders of the Commission based on the developed test scenarios, and fix/improve errors according to the feedback