



JORDAN SECURITIES COMMISSION (JSC)

**Request for Proposal
(RFP)**

SURVEILLANCE SYSTEM PROJECT

2020[©]



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1. Background Information:

The Jordanian government adopted a comprehensive capital market reforming policy, boosting the private sector, expanding and diversifying the national economy, and improving regulation of the securities market to reach international standards. Among the most important features of the new orientation were institutional changes in the capital market, use of international electronic trading, settlement and clearance systems, elimination of obstacles to investment, and strengthening capital market supervision to reach optimum transparency and safe trading in securities, in line with globalization and openness to the external world.

The structure of Jordanian capital market aims to separate the supervisory and legislative role from the executive role to consist with international standards, and secure transparency and safe trading in securities. Whereby the supervisory and legislative role was entrusted to Jordan Securities Commission (JSC), and Amman Stock Exchange/ Securities Market (ASE) and the Securities Depository Center (SDC) played the executive role.

Jordan Securities Commission

It aims at supervising the issuance of and dealing in securities, regulating and monitoring the activities and operations of those organs falling under its supervision. It also aims at regulating and supervising the disclosure of information related to securities, issuers, insider trading and major shareholders. JSC has financial and administrative autonomy, and is directly attached to the Prime Minister, to enable it to effectively assume its supervisory role over the capital market. It has a Board of Commissioners, composed of five full-time members, which is entrusted with the following functions: drawing up draft laws and regulations on securities; approving the by-laws and regulations of the SDC and ASE; granting licenses issued under the Law; setting limits for commissions of financial services companies and members of the SDC; and adopting accounting and auditing standards for the organs falling under its supervision as well as standards for their qualified auditors.



2. Project Objectives & Expected Results:

2.1. Overall Objectives:

- To improve the capacity the Jordan Securities Commission to function effectively in line with relevant national legislation, in accordance with International Standards, and responding to growing demand of services.

2.2. Specific Objectives:

- To develop, install and operationalize automated Surveillance system for the Jordan Securities Commission and link it with ASE new automated trading system (Optic), and Securities Depository center (if needed).
- The above system should be provided on a hardware consisting of servers having specifications appropriate for the planned functionalities and performance characteristics of the system.
- Relevant Training for all related parties regarding to their use, and operational management on developed and delivered system.
- Arrange the maintenance and operational trouble-shooting, as well as periodic upgrading if required, will be established between the Jordan Securities Commission and the Vendor for an appropriate period.

3. Assumptions:

The successful implementation of this project is based on the following assumptions:

- The end-users are able to formulate their requirements and needs in developed system.
- The JSC will support the Vendor with all necessary information and documents for developing the system. Cooperation is absolutely necessary for both parties.
- The required hardware specification should be included as a separate appendix in the offer.
- JSC will be responsible for hardware procurement.

4. Project Description:

The Project relates to the delivery of services for custom development of software, implementation and training, required for replacement of the existing surveillance system of Jordan Securities Commission.

The Project shall be divided into the following components:

- Component 1: Replacement of existing surveillance system, currently ARAMIS from Atos Euronext with a new Surveillance system.
- Component 2: Link the new Surveillance system with Amman Stock Exchange new trading system (Optic), and Securities Depository Centre.



- Component 3: Migrating the data from the existing surveillance system (ARAMIS) to the new Surveillance system for the last 5 years.

5. Logistic and Timing:

5.1: Location:

The Project's location will be in the company Headquarters for the development of the system and located in Jordan securities commission datacenter, but it's may require implementation, training, support, and maintenance in other cities as well. The cost and duration of traveling and accommodation to and from the Jordan securities commission, as well as the cost of the experts and the support staff, are inclusive in the overall project cost.

5.2: Commencement date & Period of execution:

The Vendor shall provide a project plan, starting from the contract signature, divided into three main phases:

1. System Development (indicatively from month 1to 2, including the inception phase). It will be implemented in the Vendor headquarters but it should include a sufficient number of missions in Jordan to meet with the relevant counterpart's prior finalization of the inception report.
2. Installation and Operationalization of the system (indicatively in month 3). To be implemented in Amman. The Vendor proposed time plan for this phase will be reviewed to consider the work program of the institutions.
3. Testing and Training (indicatively in month 4). To be implemented in Amman. The Vendor proposed time plan for this phase will be reviewed to take into account the work program of the institutions.

Vendor must provide the following:

- Project plan: should be in detail and present the planning and resources information under the form of MS Project Gantt Chart (or equivalent).
- Testing platform: of all parts of the software within 4 months of the start of the project.
- A team on the ground: presence within one month from launching until one month after launching.
- Maintenance and Guarantee: must state clearly in the proposal the Provided Guarantee and maintenance period for the 10 years from



the installation and acceptance date and the cost of maintenance must be inclusive in the overall project cost.

6. Reporting:

The Vendor should be responsible for the following reports:

- Inception Report:
Within thirty (30) calendar days of the start of the Project, The Inception Report will elaborate the methodology of the project, reviewing the plans for development, installation, and operationalization of the required system, and identify key operational issues emerging from consultations with JSC team following signature of the contract. It will also provide a detailed timetable for the key milestones in the implementation of the contract. The inception report will be submitted to the project steering committee for its approval.
- Weekly Progress Reports:
Submitted no later than 3 working days after the end of the reporting period, the weekly Progress Report should summarize project components progress, issues or constraints encountered and any proposed changes compared to the previous report as well as the planning of activities for the upcoming month. The weekly progress report should be submitted only in the electronic version.
- Final Report:
A draft Final Report should be submitted 10 days before the end of the project. It should cover all project components and includes critical analyses for any major problems that may have arisen during the implementations, with recommendations regarding resolving similar problems in the future and proposals for future actions. The Final Report shall include all previously approved reports, documents, and other on electronic format. The final report also must be accompanied with full technical documentation (e.g. maintenance manuals and operational guide) required for the proper maintenance and operation of the system, all materials produced during the project will be made available to the JSC in hard copies and electronic format.

The reports shall be written in English and submitted in hard copy and electronic format to the JSC and No report or document shall be distributed to third parties without prior approval of the JSC, as well as press statements, etc.



7. High Level Application Prerequisites:

Below are the high level application prerequisites to be met by the Surveillance system:

7.1 Market Supervision:

7.1.1 Multi-Dimensional Analysis:

- Substantial and multidimensional insight into real-time broker, instrument, investor and counterpart information
- Broker-centric or Investor-centric view, with the facility of switching between these analyses of inter-related information
- Sort, Search and Filter options to access specific data in a convenient way
- Cross-referencing and easy navigation facilities that allow switch-over from one view to the other
- Configuration of predefined templates that define and filter the data displayed on the multidimensional window that can be locally saved
- Determination of the most active entities at any time of the trading day, based on various criteria.

7.1.2 Multi Exchange Surveillance:

- The surveillance system should be developed with the idea to be able to connect to the ASE but also towards other exchanges with the same functionality .

7.1.3 On-line / off-line alert analysis and maintenance:

- From a general perspective, the implemented alerting mechanism should offer enough flexibility, according to the terms below:
 - Enable/Disable the Alert.
 - Time-Slice Analysis to facilitate inter-time interval comparisons.
 - Configure the ‘active days’ to trigger alert.
 - Number of times to generate the alert on active days.
 - Configure the re-issue time for subsequent alert generation (on the active day).
 - Configure the ‘Alert Message’ to be displayed on trigger.
 - Pre-assign alerts to users, such that, on trigger, the alerts will be routed to the appropriate user assigned for investigation.



7.1.4 Market Analysis:

The system should cover the following regular activities :

7.1.4.1 Alert Scenarios:

- Insider Trading Alert Scenarios.
- Price Manipulation Alert Scenarios.
- Volume Manipulation Alert Scenarios.
- Pre-opening session/ Alert Scenarios.
- Broker/client level Alert Scenario.
- Trade and Order book alert Scenario.
- Index Manipulation
- Investigating alerts: able to analyze structured and unstructured data.
- Broker and Security Market Cap.

Also, the following on-line alerts should be implemented for each category:

- Price difference to : Opening price, Last, Closing price, Average price of the day.
- Steep pricing.
- Number of orders and trades per instrument/broker for a time interval (concentration).
- Reversal trades (wash sales).
- Front running trades.
- Black Listed Trader.
- Spoofing.
- Layering.
- Scalping.
- Topical orders (pre-arranged orders).
- Cross trades.
- Systematic amend of orders.
- Account change.
- Systematic delete of orders.
- Related to volumes:
 - Disclosed/hidden



- OTC versus other markets.
- Other alerts.

7.1.4.2 Post order, Post Trade Analysis:

In terms of functionality, the system should have feature of ad-hoc query facilities to fulfill the requirements below :

- Analyses market activity post trade for a specific broker and/or investor and/or instrument in terms of orders, trades, value with the % each line represents in the market .
- Analyses market activity on several parameters such as purchases, sales, quantity, value, etc.

7.1.4.3 Flexibility and Expression Parsing:

As exceptional patterns may occur on the market, the system should make possible for a high profile user to design its own expressions for triggering alert messages .Beside the predefined and hard-coded types of alerts, the system should provide an expression parser to enable the user to program any kind of expression according to a predefined syntax. This parser would support operators (+,-,AND, OR,>,>=, NOT), functions (IF, MAX, ABS,), a dictionary containing the fields to mark for tracking (BEST_BID_PRICE, TOTAL_TRADED_VOL, LAST_PRICE ...) and ideally some kind of wizard to assist the user to set up his own expressions .Though this feature requires great care from the perspective of performance, this ability makes it possible to best customize the Surveillance activity .Please elaborate on this request if it is available: details on the planned implementation in the system, the performance risks possible, the language, syntax and tools to be used.

7.1.4.4 Market Replay Utility:

- Revisit any day's activity 'tick-by-tick' based on historical data.
- Filter options on playback.

7.1.4.5 Graphical Analysis:

The system should support various charting and graphical tools to help make a more-informed decision. This includes real-time charts; Charts should be capable of exporting reports to html, txt,excel, pdf, etc.

7.1.5 Surveillance Reports:



7.1.5.1 Reports indicating market manipulation:

- Initiated Trades Report, by instrument and date range.
- Order Matching Report, by broker, instrument, volume & price difference and date range.

7.1.5.2 MIS Reports:

- Instrument/broker/investor statistics in terms of orders, trades ,market value.
- Broker position report across all instruments.
- 'X'-week High-Low.
- Closing Price variation report across a date range.

7.1.5.3 Reporting Capabilities:

- Creation of custom Reports (ad hoc).
- The system should be capable of exporting reports to html, txt, excel, pdf, etc. for further processing and distribution.
- Support of Data Query and Data-Mining .
- Providing and scheduled reports.
- Using industry tools like BIRT and Crystal Reports.

7.1.5.4 System Integration:

The new Surveillance system should be opened for extended integration within the global IT infrastructure of the JSC. This means that the data model should be published and documented in order for the IT team to be able to build new processes based on the database structure and content (tables, views, indexes, stored procedures, triggers).

Please elaborate on this requirement .

7.1.6 Investigation Management:

Alert management and follow up:

- System should monitor alerts from the time they are generated till the time when appropriate action is taken.
- Allow viewing alert information filtered on various parameters.
- Full access to information relevant to the alert (drill down approach).
- Support Alert/Assignment work flow and user access control.
- The system should assign a 'status' to every alert based on the stage of investigation and should be capable of tracking the 'alert status' when the user proceeds through investigation.
- Allow the user to register 'action' on Alert .



7.2 Back Testing:

Ensure robust and resilient to unexpected market conditions by capturing and storing all market events, providing a playback facility and including an analytics library, caters for precisely this requirement.

7.3 System Architecture:

Vendor should provide detailed information regarding planned implementation of the following :

7.3.1 Interfaces:

7.3.1.1 With the Exchange:

- A detailed description of the proposed data flow to and from the trading system .
- A typical scenario for interfacing the proposed system with a trading system from another vendor .

7.3.1.2 With the Depository:

- A typical scenario for interfacing the proposed system with an in-house depository system .
- A detailed description of the proposed data flow to and from the settlement system .

7.3.2 System and data Replication:

The Vendor should detail the functionalities to be implemented in order to support fault-tolerance, system resilience and/or data redundancy aiming at ensuring the integrity of all market data and processes

Important note: the disaster recovery centre (DRC) is a central feature that the new system has to support. For various reasons that are beyond the scope of this document, the DRC will be installed at a later stage of the global system upgrade. Therefore the DRC **should not** be incorporated in the financial offer, but **should well** be included in the technical offer. Whenever technical details are requested regarding the DRC implementation, please give them.

7.3.3 Software:

Vendor should describe in details all the system software, database, middleware, network, off-the-shelf application software,



etc. on both the server and client sides required for proper operation of the system to be developed. Please include all relevant technical information: name of the editor, version, release, etc.

7.3.4 Scalability and design limits:

- Please give as many details as possible on the techniques used to expand/upgrade/scale the proposed system in order to reach the design limits (the ultimate workload the system supports without the need to change the architecture. See Target figures in the HW Requirements)
- Please describe the expected/guaranteed system's flexibility and cost efficiency in estimated responses to sudden capacity changes: process cloning, dynamic/static or automatic/manual or on-line/overnight load balancing, other .
- Please detail the expected/guaranteed global capacity limitations, performance bottlenecks and implementation/rollout options.

7.3.5 Security:

It is expected from the new system to cover the following requirements on application, data, and network security features:

- User authentication (to be implemented at each level: OS, Network, application, etc.).
- User access management.
- Data protection.
- Audit trail.
- Restrict users from multiple log-on sessions from different locations.
- Possible integration capabilities with a 3rd party package(s).
- Prevent user from viewing fields and menus they cannot access.
- To secure workstations by :
 - Usage of security product.
 - Utilize security features of the operating system.
 - Utilize security features of the DBMS.
 - Implement security into application software.
- Elaborate possible use of encryption through third-party products; what is the proposed scope of its usage throughout the system?



7.3.5.1 Password Security:

- The password security must follow a set of complexity and expiry rules which should be configurable by the user .

7.3.5.2 Security Audit

- Explain how would be audit trail and security provided with regard to users operations?
- Explain how would be audit trail and security provided with regard to administrative access and operations management?
- Explains how would be audit trail and security provided with regard to database use and data access?
- Explain how would be audit trail provided with regard to network traffic.
- Any unauthorized attempts to access functions or data must be logged .
- The security attempt logs must be separate from the system monitor logs.

7.4 Documentation:

The Vendor is required to provide appropriate documentation related to the developed system. Below is the list of the required documentation:

- A functional documentation describing the system as a whole (central system and client station), including a description of all rules, algorithms and mechanisms used.
- A technical documentation, describing the system as a whole.
- A user guide for the Administration functions.
- A user guide for the System Operation functions including DRC related matters.
- A user guide for the client workstation.
- A User Acceptance testing documentation containing :
 - Description of the functional and technical (including performance) test scenarios that have been executed on the proposed system.
 - The testing scripts and the automated testing tool if one is used.
- Technical data sheets relating to each component of the hardware and subsystem they propose .



7.5 Licenses:

The Vendor is required to provide the JSC with the licenses below:

- Run-Time license to be granted to the Jordan Securities Commission for using the system.
- Source code or alternatively a copy in escrow is provided in the restricted case of the vendor's failure .
- Appropriate license for any additional software required to run the exchange system (middleware, tools, and database).

7.6 Maintenance and Guaranty:

- Maintenance and Guarantee: must state clearly in the proposal the Provided Guarantee and maintenance period for the 10 years from the installation and acceptance date and the cost of maintenance must be embedded in the overall project cost.

7.7 Additional Descriptive Information Requested:

- Interaction diagram: Vendor should provide a component interaction diagram for the offered system.
- Architectural description: Fully describe and illustrate the architecture of the system including all options.
- Fully qualified list of items: Vendor should provide a detailed list of the version, configuration and quantity of items to be provided.

7.8 Support Requirements:

- Vendor should provide support to the Institutions in arranging Surveillance staff and IT staff training .
- Vendor should provide necessary support for software build, system set-up and the execution of various conversion and migration procedures as according to implementation and migration plans .



7.9 Hardware Requirements:

7.9.1 Target Figures:

The Target throughput figures are the throughput performance figures, which will be used by the vendors to size the system, proposed for the Jordan securities commission (see below). It represents the workload that the proposed system is required to support while complying with the Performance by function table .The Design Limit throughput figures are the throughput performance figures, which can be handled by expanding/upgrading/scaling the proposed system without the need to change the system architecture. The Design Limit figures are provided by the vendors in relation to the type of hardware they propose, including a description of the type of hardware upgrade they use to reach these Design limits. As an example of such a statement: "Adding 25% of RAM will enable x new users to be connected on the system while keeping the same Performance by function ". The Design limits are closely related to the Performance by function table in such a way that adding users to a system without increasing hardware resources (RAM, CPU), usually degrades response times . The vendors are requested to provide performance and sizing models related to the proposed system to demonstrate that the Target throughput and Design Limit can be satisfied . As part of the Acceptance Testing, the vendors will be required to conduct tests to demonstrate that the delivered system will meet the performance requirements related to :

- Target Throughput.
- Response Time.
- System Reliability, including DRC.
- System Recovery.

Description	Minimum Target Figures
Number of brokers	100
Number of trading stations: active. These enable the traders to enter orders on the markets	1000
Number of trades per day	100000
Number of instruments traded	1000, including vanilla derivatives. Includes the various



	series for options and futures
Number of orders per second	100
Number of Surveillance workstations	20
Online archive	10 years

7.9.2 Scalability and Design Limits:

- Please give as many details as possible on the techniques used to expand/upgrade/scale the proposed system in order to reach the design limits as defined above: application/hardware scalability, multi-threading, other .
- Indicate the value of the design limits for some typical system sizes .
- How does the system support flexible and cost efficient responses to sudden capacity changes: process cloning, dynamic/static or automatic/manual or on-line/overnight load balancing, other?
- Performance bottlenecks.

7.9.3 Performance by Function:

- For each basic surveillance function of the proposed system, the vendor is required to provide execution/response time (in seconds).

7.9.4 Hardware:

- The vendors must include with their offers the required hardware specification for system best performance, and JSC will procure the specified hardware and maintenance needed through local suppliers located in Jordan.
- The server hardware must be functioning as a high availability system.
- The vendor should provide an architectural description of the hardware components that he is providing for the system and the accompanying support infrastructure .
- hardware will be placed in the JSC datacenter and connected to ASE datacenter.

7.9.5 System and data replication



- Please detail the facilities that are available to support fault-tolerance, system resilience and/or data redundancy aiming at ensuring the integrity of all market data and processes.

7.9.6 Disaster Recovery center: DRC

- Please detail your DRC architecture, features, flexibility, results and requirements.

8. The Vendor shall comply with the following requirements:

- Minimum experience is 10 years in a related field.
- Posses a strong financial state to ensure longevity and minimize risks of insolvency.
- The system should be present in regional and international securities commissions.
- Testimonies by various securities commissions and stock exchanges about the system's efficiency and effectiveness.
- Present demonstrations of requested features by the JSC.

9. Payment Method:

Total price for the system (including all applicable taxes), license, and maintenance will be paid over ten equal installments for a period of ten years from the date of final installation and acceptance of the system, noting that transportation and accommodation cost for people who will implement and maintain the system is inclusive on the above-mentioned installments.