ASSESSMENT REPORT

JORDAN CUSTOMS DEPARTMENT ASSESSMENT

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USAID/Jordan Monitoring and Evaluation Support Project (MESP)

CONTENTS

ACRONYMS

ADS	Automated Directives System
AW	ASYCUDAWorld©
DEC	Development Experience Clearinghouse
DRS	Disaster Recovery Site
ERP	Enterprise resource planning
FDA	Food and Drug Administration
FY	Fiscal Year
IT	Information Technology
JCD	Jordan Customs Department
JOD	Jordanian Dinars
JSMO	Jordan Standards and Metrology Organization
GOJ	Government of Jordan
KII	Key Informant Interview
MSI	Management Systems International
NSW	National Single Window
Oracle	Oracle Corp©
SOA	Service-Oriented Architecture
SOW	Statement of Work
SW	Single Window
USAID	U.S. Agency for International Development
USG	United States Government
VM	Virtual Machine

EXECUTIVE SUMMARY

The report responds to USAID's statement of work (SOW) requesting the USAID/Jordan Monitoring and Evaluation Support Project (MESP) to conduct an assessment of the Jordan Customs Department's (JCD) capacity for implementing the first stage of the national single window (NSW). The assessment looked into JCD's human capital, technical knowledge for successful implementation of single-window programs and sustainability measures to ensure continuation of the NSW after USAID assistance ends.

In addressing the stated purpose, the assessment explicitly answers the questions stated below:

What is the technical and personnel capacity of JCD's information technology (IT) department to implement the NSW?

1. What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?

2. What is JCD's plan for sustainability of the NSW project?

3. What other costs are necessary for successful implementation of stage one of the NSW project?

This assessment used a mixed-methods approach to answer the assessment questions. During primary data collection, the assessment team conducted in-depth qualitative interviews with USAID, JCD and other relevant government agency staff, as well as with members of the private sector. Secondary data review included the JCD proposal, USAID's previous gap assessment and other relevant documents.

Findings, Conclusions and Recommendations by Question

Q1. What is the technical and personnel capacity of JCD's IT department to implement the NSW?

JCD has a high-caliber, albeit small, software development team with strong experience in technology innovation. The JCD team has a robust and complex infrastructure that makes it well-positioned to develop and implement the NSW. However, given the small size of its team, JCD will need the support of outsourcing services to effectively implement the NSW. In terms of structure, a steering committee oversees and regulates the NSW. The committee is headed by the JCD and comprises directors general from six regulatory agencies that report to the prime minister. However, JCD does not have the required authority to influence or enforce changes in the behavior of the other agencies.

Q2. What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?

JCD has a robust information and communications technology (ICT) primary site infrastructure; however, it lacks a disaster recovery solution. To address this, a critical and necessary part of JCD's vision of implementing the NSW is to acquire a disaster recovery solution (DRS) (Linux, Oracle replication) with real-time restoration capacity. The other participating agencies also recognize the importance and need for implementing a NSW, though they also lack the needed IT capabilities, equipment and technical support, including for the re-engineering process required for implementing the NSW. While JCD's NSW proposal contains cost estimates for the required IT equipment, it lacks details and justifications. More robust technical justifications and cost estimates are provided in the main body and annexes of this assessment report.

Q3. What is JCD's plan for sustainability of the NSW project?

Jordan has an operational, legal and physical single window at several customs houses that allows traders to process semi-manual imports and exports. JCD's virtual NSW project is likely to be sustainable as the virtualization of the trade process will bring cost reduction and greater efficiency. Furthermore, the government allocates an annual budget to support the single window, ensuring this project's sustainability.

Q4. What other costs are necessary for successful implementation of stage one of the NSW project?

The Jordan Customs Department and other government agencies acknowledge the need to analyze and re-engineer all of the procedures for customs and other government agencies for successful implementation of the NSW project. The JCD proposal includes a discussion of this re-engineering process phase, but does not include any cost estimates for this process. JCD's proposal is also primarily focused on the big importers and exporters and does not adequately factor the costs and process-related needs and concerns of smaller traders. Lastly, the regional single window concept was not taken into consideration in the NSW development vision.

ASSESSMENT PURPOSE AND ASSESSMENT QUESTIONS

Assessment Purpose

The report responds to the USAID statement of work (SOW) provided as Annex I, requesting that the USAID/Jordan Monitoring and Evaluation Support Project (MESP) conduct an assessment of the Jordan Customs Department's (JCD's) capacity for implementing the first stage of the national single window (NSW). The assessment looked into JCD's human capital, technical knowledge for successful implementation of single-window programs, and sustainability measures that will ensure continuation of the NSW after USAID assistance ends.

The study assessed the capacity of JCD to implement the NSW project and the feasibility of its plans in terms of:

- Developing a project plan/schedule showing the sequence and duration of major tasks and start and end dates, as well as responsibilities – including, importantly, the parallel running of the existing and new systems and migration from the existing system to the new one.
- Proposed and expected costs, such as:
  - The annual costs of running the current single window, including maintenance and enhancements.
  - The detailed breakdown of the anticipated one-time costs to build the new system, including for hardware and packaged software, the itemized projected quantities and unit and total price, as well as for development work for each major task, the breakdown of each category for each technical resource, the estimated effort days, and the assumed per effort day rate in Jordanian dinars (JOD).
  - The detailed breakdown of the annual costs to operate the new system.
- An assessment of the proposed new system's quantitative benefits versus the status quo.
- An analysis of the pros and cons of enhancing the current system versus the current proposal, recommendations for risk factors to consider and how best to monitor the implementation of this system.
- Gap analysis between the current systems and expertise versus what is required to achieve the expected goals. This will include an assessment of the hardware, software, licensing considerations and capacity and availability of relevant personnel.

Assessment Questions

In addressing the stated purpose, the assessment will explicitly answer the following questions:

1. What is the technical and personnel capacity of JCD's IT department to implement the NSW?
2. What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?
3. What is JCD's plan for sustainability of the NSW project?
4. What other costs are necessary for successful implementation of stage one of the NSW project?

PROJECT BACKGROUND

The Jordan Customs Department implements regulations, trade agreements, orders, rulings and instructions on behalf of more than 28 government agencies. Therefore, establishing a centralized database for customs regulatory and legislative requirements can be very beneficial to the trading community, including foreign investors and government agencies. This will provide international traders with a "single window" of information, such as duty and tax rates and other required Government of Jordan (GOJ) documentation (e.g., certificates, quotas, restrictions and licenses).

JCD aims to implement a NSW project – also known as an e-trade system – in Jordan, which works to include all governmental entities and relevant stakeholders with a direct involvement in trade on a unified platform. This would significantly reduce the time of release for all shipments, as well as work toward achieving an "e-government" platform with a paperless environment.

ASSESSMENT APPROACH AND LIMITATIONS

Assessment Approach

The purpose of the assessment is to establish the basis for system design and technical architecture requirements for the NSW and determine the cost assessment for the required technical architecture.

It is difficult to evaluate the implementation of complex technological platforms like NSW, as it is not always possible to specifically define what such interventions will achieve, or even the specific actions to be taken over a multi-year period.

To mitigate these challenges, MESP's approach will be holistic, focusing on the four layers (software, hardware, processes and operational framework) of the NSW technological platform.

Figure A-1 - NSW Technological Platform

APPLICATION SOLUTION

HARDWARE/COMMUNICATION

ORGANIZATIONAL CONTEXT OPERATIONS

BUSINESS PROCESS/REGULATION FRAMEWORK

These layers include the following:

1. **APPLICATION SOLUTION:** This is the software framework or a universal, reusable software environment that provides particular **functionality** as part of a larger software platform to facilitate development of software applications, products and solutions.
2. **HARDWARE/COMMUNICATION:** This includes all IT equipment (hardware, communication and middleware) necessary to achieve the requirements of the envisioned NSW.
3. **ORGANIZATIONAL CONTEXT OPERATIONS:** This set of rules and methods describes the functionality, organization and implementation of application systems, which include architecture, operational, administration, logic and functional design.
4. **BUSINESS PROCESS/REGULATION FRAMEWORK:** The set of related, structured activities or tasks that produce a specific service or product (serve a particular goal) for a particular business process. They may often be visualized as a flowchart of a sequence of activities with interleaving decision points, or as a process matrix of a sequence of activities with relevance rules based on data in the process. In addition, their regulation framework is the legal key element that defines and determines the system process.

Such a holistic approach will allow for learning about the human capital, technical knowledge and technology requirements required for the successful implementation of single-window programs. This

approach also allows identification and consideration of other relevant costs (Question 4) for the successful implementation of the NSW. Moreover, examining all these layers will enable assessment and identification of potential sustainability measures that will ensure continuation of the NSW after USAID assistance ends.

As JCD and six other government agencies control 80 percent of trade transactions, this assessment has primarily focused on the following seven entities:

- Jordan Customs Department;
- Ministry of Agriculture;
- Food and Drug Agency (FDA);
- Jordan Standards and Metrology Organization (JSMO);
- Ministry of Environment;
- Telecommunication Regulatory Commission; and
- Jordan Nuclear Regulatory Commission.

Data Collection Methods

This external assessment primarily relied on a qualitative data collection approach to assess the capacity of JCD to implement the NSW project and the feasibility of their plans.

Primary Data Collection

The assessment focused on gathering an in-depth understanding of process behavior and the reasons that govern such process behavior, and focused on examining "why" and "how" of technology layers development – for example, application, hardware, organizational context and process. Primary data collection was based on in-depth interviews using semi-structured interview/discussion guides with key informants at the Jordan Customs Department and other relevant government and non-government stakeholders, and supported by field observations and notes.

In-depth interviews/consultations were conducted with 30 key informants/stakeholders. The assessment team also supported data collection with site visits and field observation to the Jordan Customs Data Center and Server Room and the Customs House in Aqaba.

Table 1: Number of Interviews/Consultations per Stakeholder

Stakeholder	Interviews/ Consultations
USAID	2
Jordan Customs Department HQ	5
Aqaba Special Economic Zone Customs Staff	9
Jordan Standards and Metrology Organization	4
Food and Drug Administration	2
Ministry of Agriculture	1
Customs Agents	1
Transportation Company	1
Petra Engineering Industries Co. Private Sector Firm/ President of Export Association	4
Total	**30**

Remote collaboration with Mr. Paul Kimberly, a customs and trade expert, was utilized to revise and provide comments on the assessment design report and to revise the draft report to USAID. Mr. Kimberly also provided valuable relevant reports and background material; in addition to being useful for this assessment, this may constitute useful reference documents for the USAID team moving forward.

Secondary Data Collection

The team reviewed and incorporated relevant secondary data sources into the analysis. The following are some key pieces of secondary data that the team has considered:

- Report: Preliminary Approach for the Next Generation Jordan Single Window, July 2016. Nathan Associates Inc. (Subcontractor under DAI) Author: Peter Stokes

- Business Case Study Project Name: National Single Window for International Trade (NSW) Ahmed AlAlem, Director of IT Directorate, Jordan Customs

- Report: Single Window Business Process Improvement Guidelines and Implementation Guide. Jordan Customs Administration Modernization Program. MCC/USAID/Jordan 2008. ARD Inc.

- UNCTAD – ICT Solutions to Facilitate Trade at Border Crossings in Ports. TD/B/COM.3/EM.27/2. August 4, 2006

- Doing Business 2016, Measuring Regulatory Quality and Efficiency, 13th edition, 2016 Primary Data Collection

- Bylaws and minutes of meetings on single windows creation and development

- Diagram and system architecture topology of JCD and cost estimates

Limitations

This assessment was conducted over a relatively short time frame (three weeks). This affected the total number of interviews the team could conduct as well as other relevant information that could be obtained and reviewed from the Jordan Customs Department and other relevant agencies. Related to the above, the team was able to meet with only three of the six other key government agencies. The short timeframe for this assessment also meant that the team was not in position to verify all of the claims made during the interviews.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Question 1: What is the technical and personnel capacity of JCD's IT department to implement the NSW?

JCD has a high-caliber, albeit small, software development team with strong experience in technology innovation. The JCD team has a robust and complex infrastructure that makes it well positioned to develop and implement the NSW. However, given the small size of its team, JCD will need the support of outsourcing services to effectively implement the NSW. In terms of structure, a steering committee oversees and regulates the NSW. The committee, headed by the JCD, comprises directors general from six regulatory agencies that report to the prime minister. However, JCD does not have the required authority to influence or enforce changes in other agencies' behaviors.

Findings

1. Regarding the technical capacity to implement a NSW, the assessment team observed that the JCD's primary technology site has a complex, advanced and very functional infrastructure (see Table 2); this includes connectivity to all custom houses in the country.

Table 2: Items at JCD's Technology Site

Xdata servers with Oracle operating licenses
20 servers
4 virtual servers
Infrastructure for the data center, including: air conditioning (3), fire extinguishers, UBS 30 KVA (2 parallel)

2. In terms of personnel, a high-caliber team of 10 programmers/software developers support all operations with strong experience in technology innovation. JCD confirmed that each team member has 10 to 15 years of experience at JCD; two team members have a master of science degree in computer programming and eight have a bachelor of science degree in computer programming.

3. Capacity to implement the NSW should consider not only technical and personnel capacity, but also the policy change enforcement aspect of NSW. There is a need for re-engineering the processes for the operational and legal framework and this involves numerous stakeholders, as well as policy and operational changes.

    a. Under the mandate of the Cabinet in 2010, a steering committee was formed to oversee and regulate the implementation of the NSW. The committee is headed by the director general of JCD and comprises directors general/secretaries general of six regulatory agencies: Ministry of Agriculture, FDA, Jordan Standards and Metrology Organization, Ministry of Environment, Telecommunication Regulatory Committee and the Nuclear Regulatory Commission. JCD said that in the next phase, it will propose including the ministers/directors general of these agencies to be on the committee, giving them more authority to solve any issues that arise.

    b. The Cabinet recently approved a 2017 draft amendment to the Customs Law. The draft amendment aims to facilitate customs procedures in line with international agreements, recently signed by the Jordanian Kingdom, that depend on electronic tools for presenting customs statements (Jordan News Agency, Petra). The new regulations will also allow pre-clearance on imported goods, facilitate procedures for examining merchandise and create rules for customs examinations before export.

Conclusions and Recommendations

Support to technical and personnel capacities to implement the NSW should focus on the following:

1. Technical and Personnel Capacity: The JCD has the technological and personnel capacities to implement the new NSW vision presented in its proposal (*Business Case Study Project Name: National Single Window for International Trade*). However, some of the initiatives and activities will require support of outsourcing services, including involvement of local and international experts to support the internal processes such software development, hardware installation and training.

2. Policy Change Enforcement: The JCD heads the steering committee that the prime minister formed in 2010 to oversee implementation of the NSW. However, JCD does not have the required authority to influence, control or enforce changes in the behavior of other agencies. There is a need for re-engineering the operational and legal framework to streamline and enforce the required policy change to successfully implement the NSW. This should include members from other government agencies that have the authority to make decisions on required actions.

Question 2: What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?

JCD has a robust ICT primary site infrastructure; however it lacks a disaster recovery solution (DRS). To address this, a critical and necessary part of JCD's vision of implementing NSW is to acquire a DRS (Linux, Oracle replication) with real-time restoration capacity. The other participating agencies also recognize the importance and need for implementing a NSW, though they also lack the needed IT capabilities, equipment and technical support, including for the re-engineering process required to implement the NSW. While JCD's NSW proposal contains cost estimates for the required IT equipment, it lacks details and justifications. More robust technical justifications and cost estimates are provided in the body and annexes of this assessment report.

Findings

1. During the site visits, the team found that the JCD has a robust ICT primary site infrastructure, i.e., a data center that includes servers, switches and other information technology infrastructure.

2. "Jordan Customs has already implemented an efficient and effective electronic single window involving six government agencies, with the core functionality for electronic submission of manifests and customs declarations together with, in one customs house (Aqaba), "scanned" supporting documents (e.g., commercial invoice, packing list, and transport document), collection of duty and sales tax (the latter comprising over 60 percent of collections), e-payment services (albeit used only rarely) and electronic clearance. Customs brokers submit customs declarations, and shipping agents submit manifests using the ASYCUDA web interface."[1]

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[1] Gap analysis document, Peter Stokes, section: "Current Jordan Single Window Highlights and Schematic."

3. The high-quality initial primary site infrastructure or technological platform of JCD HQ, which includes air-conditioning, fire extinguishers, UBS 30 KVA (two parallel), were provided by USAID.

4. The new vision of NSW requires the implementation of a virtual single window. Any virtual services will require real-time restoration capacity. The JCD has a robust primary location but lacks a DRS (Linux, Oracle replication) and secondary site replication. In 2015, in accordance with the mandate of Prime Minister Abdullah Ensour, all government institutions' secondary recovery capacities should be hosted at the National Center for Security and Crisis Management.

5. During interviews and meetings with JCD and other agencies, respondents mentioned that although JCD has a robust infrastructure, other agencies that participate in the trade process lack modern equipment, technology support and methodologies for implementing the NSW.[2] Moreover, the FDA and JSMO mentioned that they support the NSW and look forward to the implementation; however, they focused on their need for technical assistance during the re-engineering process, and help in setting their risk management criteria and selection, in addition to the need for IT equipment.

JCD server room

6. For communication and connectivity, JCD has a strong wide area network (WAN) between the headquarters in downtown Amman and each customs house.[3]

7. Even though JCD included cost estimates in its proposal, with estimates of the total expected cost to be around JOD 5 million to 6 million (broken down Table 3), the cost details lack correct background, system configuration and justification for decision-makers to identify and choose alternatives based on the values and preferences of technology.

Table 3: Cost Estimates Included in the JCD Proposal
(FINANCIAL INFORMATION REDACTED)

Required	Number	Cost (JOD)
Xdata servers with Oracle licenses for alternative reserve center	Xdata servers With the operating licenses	
Devices needed for the application and equipment 1. Computers with modern specifications in accordance with the requirements of the new system: a. Computers for customs officers. b. Computers for government departments and ministries and others.	Prepared by customs officials	
	Prepared by staff of departments and ministries working on the system	

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[2] Also see in section 4.1, "Architecture Overview," the Gap Analysis document

[3] More details in section 4.2, "Gateway Functionality Overview," in the Gap Analysis document

Required	Number	Cost (JOD)
2. Barcode reader devices 3. Printers 4. Scanner devices 5. Tablets with advanced specifications to implement programs such as electronic inspection. a. Infrastructure to run tablet (wireless devices)	According to the number of customs inspectors and relevant departments checking the goods.	
Appliances and equipment necessary for programmers: 1. Workstation devices for programmers	10	
2. Printers	5	
3. Laptops	30	
Specialized courses on programming languages for programmers		
Intensive courses for users of the system	Customs officers Customs brokers Companies Other government departments Ministries Navigation agents	
Tender system programming in partnership with JCD		
Administrative costs, experts	3 years	

Conclusions and Recommendations

1. At its primary location, the JCD has the necessary technological capacities and equipment to implement the new vision of the NSW. No further equipment is required at the primary site. One important priority is to install the disaster recovery system (DRS).

2. The business model or site selection of the NSW can be divided per functionality into operational and web host site. All web host sites should be integrated into the primary and future secondary site location of JCD. Operational site must be established in the customs houses around the country. It is necessary to provide cost estimates of the equipment for the other agencies especially the six agencies that will be part of the pilot program in the five locations of Amman Customs, Free Zone Customs – vehicles (Zarqa), Clearance Airport Customs (Zezya), Al-Omari Customs and Free Zone Customs (Sahab).

3. All costs need to be re-estimated, justified and developed with the proper details and configuration included. Please see the "Project Initiatives" section of this report and Annex IV, "Direct Cost Estimation by Initiative."

4. From an acquisition standpoint, cost reduction may occur if equipment is obtained for all of the relevant departments and agencies. Thus, given the risk of technology becoming outdated, it is a good idea to focus on the initial pilot program that addresses six key agencies over a period of two to three years.

5. JCD's cost proposal lacks detailed justification. Cost estimations and proper technological justifications are detailed later in this report (see the "Potential Initiatives" section).

6. The costs estimated in the proposal are long-term implementation projections, where the core technology presented is at high risk of becoming obsolete in a short period after an expensive capital investment in technological products.

Question 3: What is JCD's plan for sustainability of the NSW project?

Jordan has an operational, legal and physical single window at several customs houses that allows traders to process semi-manual imports and exports. JCD's virtual NSW project is likely to be sustainable as the virtualization of the trade process will bring cost reduction and greater efficiency to the process. Furthermore, the government allocates an annual budget to support the single window, thus ensuring the sustainability of this project.

Findings

1. The country already has an operational, legal and physical single window at several customs houses that allows traders to process semi-manual imports and exports. Per the USAID-funded study "Preliminary Approach for the Next-Generation Jordan Single Window" (July 2016), JCD has already implemented an efficient and effective single window involving six government agencies, with the core functionality for electronic submission of manifests and customs declarations together with one customs house (Aqaba), "scanned" supporting documents (e.g., commercial invoices, packing lists and transport documents), collection of duty and sales tax (the latter constituting more than 60 percent of collections), e-payment services (albeit used only rarely) and electronic clearance.

2. A prior USAID-funded study, "Preliminary Approach for the Next Generation Jordan Single Window (July 2016), explored other business models for NSW sustainability and provided an analysis using a potential business model.

Single window at Aqaba Custom House

3. During several interviews, JCD and regulatory agencies agreed that virtualization of the trade process will bring cost reduction and greater efficiency to the process.

4. JCD confirmed that the government allocates funds under annual budget to support the single window.

5. The plan submitted by JCD focused on the NSW, but highlighted the development of virtual single windows. This virtual enterprise is visible through web portals and interfaces connecting a group of cooperating facilities. The entire arrangement, which needs an orchestrator, is supported with a strong technical and legal support.

Conclusions and Recommendations

1. JCD's vision of virtual single windows is feasible and sustainable. Moreover, this type of concept establishes the base for future regional windows.

2. The source of the bottlenecks and inefficiency in the process come from the obsolete legal and regulatory framework, in addition to a lack of methodological practices by the control agencies with regard to the requirements, selectivity and inspection criteria during the trade process.

3. It can be concluded that under the current physical single windows model, the correct approach is for the web host to reside within the JCD ICT infrastructure and the operational functions at the customs houses with JCD and the other regulatory agencies. Any attempt to change this will be quite complicated.

4. Annual operational cost will be financed from the Jordanian government's annual budget. USAID required that support to finance the initial cost of infrastructure.

5. The virtual enterprise concept will bring a reduction in cost and additional operational, labor and other administrative interventions. More efficient customer relationships with a virtual portal that will enable multiple agencies to join together to offer trade services anywhere-anytime, which creates opportunities to simultaneously improve the imports and exports services by controlling and reducing administrative costs.

Question 4: What other costs are necessary for successful implementation of stage one of the NSW project?

The Jordan Customs Department and other government agencies acknowledge the need to analyze and re-engineer all of the procedures for customs and other government agencies to ensure successful implementation of the NSW project. The JCD proposal includes a discussion of this re-engineering process phase, but does not include any cost estimates for this process. JCD's proposal also primarily focuses on the big importers and exporters and does not adequately factor in costs and process-related needs and concerns of smaller traders. Lastly, the NSW development vision did not take into consideration the regional single window concept.

Findings

1. The JCD proposal mentioned the re-engineering process phase. Specifically, it notes that all procedures will be analyzed through several stages, including: shipment, registering the customs declaration, goods-arrival to port, goods-handling, customs and other government agents' procedures (including lab tests and goods licenses), goods-release and distribution of data to the related agencies such as income tax, public statistics and others. The costs for this re-engineering process, however, were not included in the JCD proposal's budget.

2. The proposal's focus on virtualization of the NSW is primarily geared toward big importers and exporters. The Pareto principle (also known as the 80-20 rule), was applied, with 20 percent of traders producing 80 percent of the transactions. The JCD proposal therefore does not adequately factor in the process-related needs and concerns of smaller traders.

3. The NSW development vision did not take the regional single windows concept into consideration.

Conclusions and Recommendations

1. While the JCD proposal acknowledges the need to develop and implement a re-engineering study that investigates the various aspects of the implementation of the single window on customs, traders, transport entities, vendors and cross-border regulatory agencies to identify gaps, it does not consider its costs. Moreover, such a study should include an examination of the legal framework and import/export processes.

2. Small and medium enterprises (SMEs) should also be taken into consideration at the time of the implementation and formulation of any future NSW.

3. The JCD proposal does take into consideration public awareness campaigns, which include the need for continued education on the benefits of single windows. It is important to support efforts that raise public awareness regarding NSW and support development of a single-window education program, including a communication and promotion strategy for developing and operating the single window. This type of activity will help influence

policymakers, increasing support and knowledge from allies (including unlikely allies), publicize the message of NSW, address negative perceptions and reframe conversation to a positive tone.
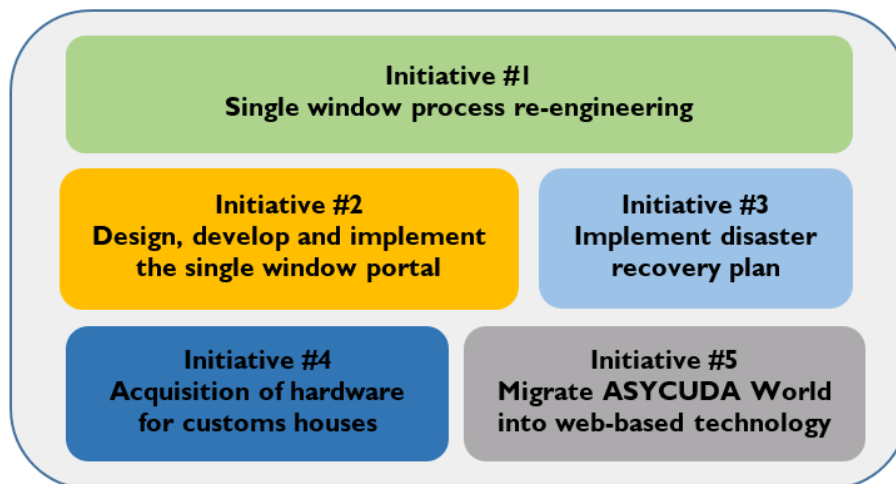
4. There is a need to factor in considerations related to a regional single window in the development of the virtual NSW. Related considerations include: transportation and logistics hubs, one-stop border posts, joint customs inspections between border patrol agencies and regional integration coordination.
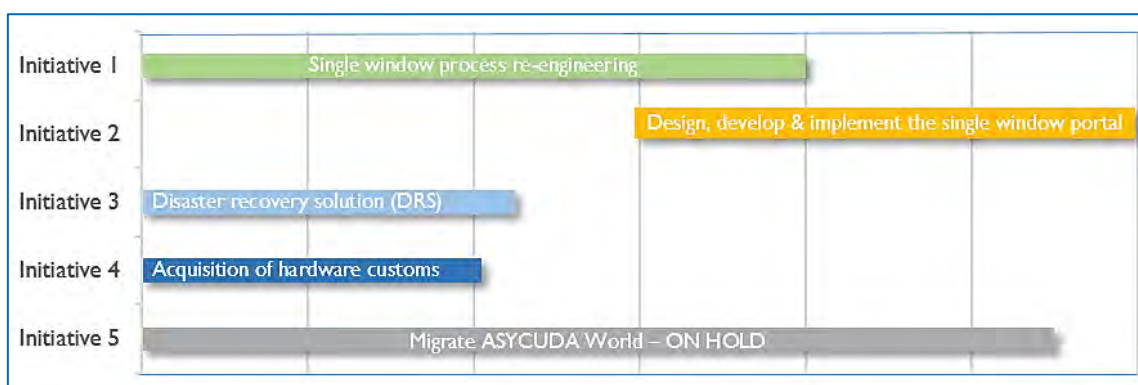
POTENTIAL INITIATIVES – STRUCTURE AND SEQUENCE

The objective of this section is to propose the structure of potential initiatives required for successful implementation of the National Single Window and to address issues that may affect the planning, the development and operation of Single Window systems. When it comes to implementing a virtual NSW, it is useful to think of distinct yet related initiatives due to the practical limitations related to the internal and external capacity to effectively manage a broad sweep of changes in all the stakeholders that participate in the single windows.

This section presents a roadmap for the long-term development of a National Single Window. The roadmap divides the implementation of a National Single Window into five different initiatives. It should be used as a reference for the implementation model for decision makers to determine and define project objectives and resources.

Potential Initiatives for the Implementation of a National Single Window

Initiative #1
Single window process re-engineering

Initiative #2
Design, develop and implement the single window portal

Initiative #3
Implement disaster recovery plan

Initiative #4
Acquisition of hardware for customs houses

Initiative #5
Migrate ASYCUDA World into web-based technology

Suggested Sequence of Implementation

Initiative 1	Single window process re-engineering
Initiative 2	Design, develop & implement the single window portal
Initiative 3	Disaster recovery solution (DRS)
Initiative 4	Acquisition of hardware customs
Initiative 5	Migrate ASYCUDA World – ON HOLD

The sequence of the initiatives implementation is as follows:

- Initiative 1 is the high-priority initiative and can be implemented simultaneously with initiatives 3 and 4.

- Initiative 2 can start only after Initiative 1 is completed.

- Initiative 5 can be explored at a later stage of single-window implementation.

When implementing a single window, all governments face similar challenges related to the technical aspects of the systems, as well as the organizational and inter-organizational, managerial, financial, political, legal, national and international settings. Policymakers and those in charge of conceptualizing, planning, implementing and overseeing single window projects need to manage the many aspects of the project and create an environment in which the project can succeed. This requires advanced managerial competencies in different domains, such as trade policies, business process analysis, change management, electronic business and information technology management and standards, legal issues and single window architectures.

The suggested sequence of implementation takes into consideration all of the above aspects required for the successful implementation of a single window system. It provides guidelines on how to systematically structure many complicated challenges of single-window implementation into less complicated, more manageable sub-components.

Initiative 1 – Single Window Process Re-Engineering

Description, Level of Effort and Deliverables

It is essential to analyze the current business processes and information flows to identify areas that cause inefficiency, and then to propose and implement a simplified future trading environment with efficient processes and data flows.

All aspects of the implementation of a virtual single window on customs, traders, transport entities, vendors and cross-border regulatory agencies should be investigated and gaps (including in the legal framework) and import/export processes identified.

The main purpose of this initiative is to assess an *as-is* process, to determine needed improvements and where the starting point for change is. It continues with a *to-be* analysis, which focuses on solving problems and designing processes to achieve improved outcomes that the organization wishes to accomplish.

Points to consider include the following:

- The NSW offers potential to facilitate strengthening of inter-agency coordination and cooperation at border crossings.
- The limited availability of automation and limited use of existing systems inhibits efficient border clearance procedures and trade facilitation.
- Implementation of the ASYCUDA World system has not been a stimulus to streamlining and simplification of procedures. The processing has changed little from manual procedures, and limited use is made of the selectivity module.
- The split operation is inefficient.
- Operation of the single window needs to be rationalized.
- Cooperation and coordination between JCD and regulatory agencies needs strengthening.
- Limited application of risk management by JCD and lack of an inter-agency approach to risk management impedes efficiency and results.

Apart from the need for political will, this initiative will need a strong, resourceful and empowered lead organization to launch it and guide it through its various implementation phases. The steering committee must have the appropriate political support and a team that provides input in the areas of legislative framework, trade, re-engineering and e-government.

For this reason, it is necessary to get the following technical support:

- IT and trade business process re-engineering expert
- E-government and legal framework experts (2)
- Legal and trade experts (2)
- Trade and customs procedures expert

For this initiative, the following deliverables need to be developed:

- Legal and regulatory amendments: Review, update and agree on laws and related regulations that enable the legal institutional framework to ensure the legitimacy, trust and confidence in the new single windows. This includes development of draft regulations that need to be updated.
- Business process mapping by agency: The business process, which includes analysis and simplification of the current business process, will aim for easier and more compliant trading across borders.
- Functional requirements for Initiative 2: Application of a functional design is to be developed during development of the software application for the single window.
- New risk management methodology by agency: To establish risk management, a framework is a precondition for a risk-based compliance management approach.

Summary

Deliverables

- Legal and regulatory amendments.
- Mapping inter-agency and agency business process.
- Develop the necessary software functional requirements for the single window.
- Design overall inter-agency risk management methodology.

Timeframe: 8-12 months

Priority: High

Risk: Medium

Risk details:

- Failure to establish a process, legal and regulatory structures appropriate to the needs of the new NSW concept.
- Lack of political will and commitment from both government and business.
- Lack of buy-in for changes at the highest levels.

Critical success factors:

- Agreed-upon legal and regulatory framework that presents simplified processes between all participates and stakeholders of the trade process.
- Redesign tasks to optimize the impact of ICT by defining and specifying the details of the functional requirements.
- Commitment at the highest levels at all agencies to develop and implement the NSW system successfully.
- Introduce and agree on a risk-based approach to manage expectations and concerns of agencies involved in and affected by this re-engineering process.

Estimated cost: To be determined by the required level of effort.

Initiative 2 – Design, Develop and Implement the SW Portal

Description, Level of Effort and Deliverables

The virtual single window model comprises three main segments: customs, permits and licenses. The current single window architecture provides neither best practice functionality for simple and secure data exchange nor direct integration/transformation capabilities. In addition, the permits and licenses are completely absent or non-existent.

End-User Model Architecture
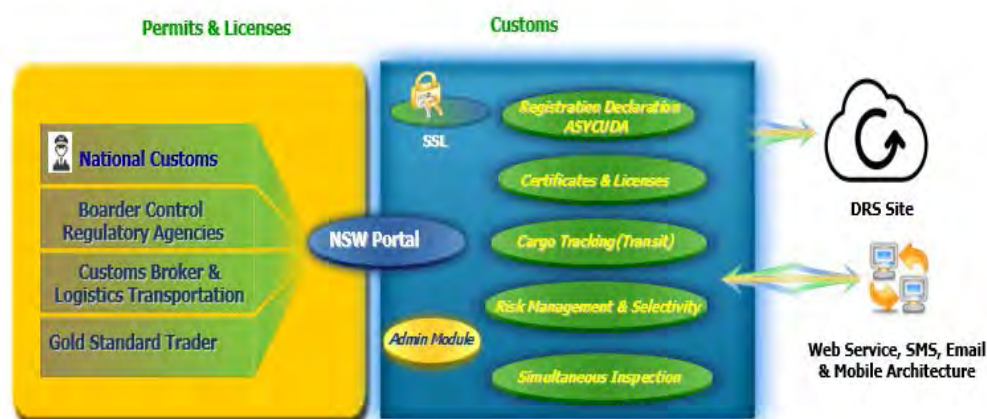
ASYCUDA World is supplying the customs functions, although this product has many limitations, constraints in integration and lack of flexibility to integrate with other and new customs requirements. However, the replacement of the customs functions will distract or delay the development of the regulatory agencies functions.

The figure above presents the end-user model architecture described in terms of the architecture stack and its components and locations. It is conceptualized in two main segments, customs functions and permits and licenses functions, with the following parallel dimensions: end-user, data and message, server and system software, network models and a management model.

The following key experts will support this initiative:

- National software development firm
- Team leader
- Senior developers (2)
- Webmaster and designer
- Software developers (4)
- Tester and documentation support

For this initiative, the following deliverables need to be developed:

1. Design, develop and implement the single window portal and permits and licenses functions under a complete software development life cycle (SDLC) in a Java/Oracle environment.

2. Implement a system integration process between new permits and licenses functions and customs functions under the current ASYCUDA World.

Summary

Deliverables:

1. Develop virtual single window portal and permits and licenses under a Java/Oracle environment.
2. System integration process between new permits and licenses functions and customs under ASYCUDA World.

Timeframe: 9 to 14 months; Initiative 1 pre-requisite (with early start once processes are mapped and approved)

Priority: High

Risk: Medium

Risk Details:

- Running over budget.
- Project fails before delivering an application.
- Lack of strategy that addresses potential resistance to new software.

Critical success factors:

- Develop system-level requirements that are acceptable to all stakeholders.
- Overcome resistance to change, especially as it relates to adopting new software.
- Involve the right stakeholders and manage their confidence and knowledge needs during design and development.
- Detailed design and project plan with agreed-upon milestones and deliverables.

Estimated cost: To be determined by the required level of effort.

Initiative 3 – Disaster Recovery Solution (DRS)

Description, Level of Effort and Deliverables

The importance of ensuring the continued operation of a single window system and its rapid recovery supports the idea that implementing a more holistic pre-disaster planning approach is more cost-effective in the long run. Every $1 spent on hazard mitigation (such as a disaster recovery plan) saves society $4 in response and recovery costs.[4]

Any ICT information solution must have off-site data protection or vaulting according to the new policy of the Government of Jordan. This is the strategy of sending critical data out to the main national disaster recovery site (off the main site) as part of a disaster recovery plan.

Due to the nature of virtual single windows, recovery will require high-availability redundancy services. That can be achieved only by using techniques of clustering, which is the ability for any services to be replicated immediately and to put the application on the standby system without requiring administrative intervention. Depending on the type of redundancy in software to be provided for high-availability, clusters can be configured in any of the following ways:

The team explored these three recovery nodes:

- **Warm Standby**: The software component is installed and available on the secondary node. The secondary node is up and running. In the case of a failure on the primary node, these software components are started on the secondary node. This process is usually automated using a cluster manager. Data is regularly mirrored to the secondary system using disk-based replication or a shared disk. This generally provides an elapsed recovery time of a few minutes to hours, depending on the point of recovery that needs to be achieved.
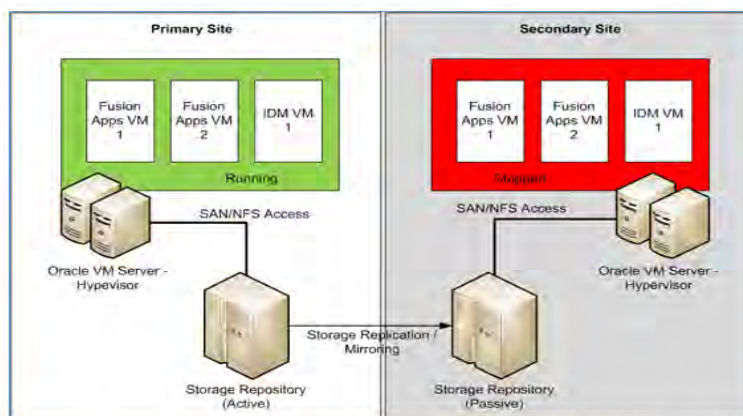
- **Hot Standby**: Software components are installed and available on both primary and secondary nodes. The software components on the secondary system are up, but will not process data or requests. Data is mirrored in near real time and both systems will have identical data. Data replication is typically done through the software's capabilities. This generally provides a recovery time of a few seconds or almost instantaneous.

- **Active-Active (Load-Balanced):** In this method, both the primary and secondary systems are active and processing requests in parallel. Data replication happens through software capabilities and would be bi-directional. This generally provides a recovery time that is instantaneous.

For virtual single windows, it is necessary to have real-time recovery capability; therefore the Hot Standby option is recommended, as it is the most effective and cost-realistic option. Warm Standby is limited by elapsed time and Active-Active costs are extremely high for the JCD operation. For more information, please see the "Cost Estimation by Initiative" section.

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[4] "Post-Disaster Recovery Planning Forum: How-To Guide," University of Oregon's Community Service Center. Retrieved 2013-05-23.

The following key experts will support this initiative:

- Key experts and product acquisitions.
- Oracle Experts firm in system architecture products.
- Hardware and Oracle-licensed national software development firm.

Deliverables that will need to be developed:

- Replication and disaster recovery infrastructure.
- Full functional secondary site.
- Full operational implemented and tested disaster recovery plan.

Summary

Deliverables:

1. Replication and disaster recovery infrastructure
2. Full functional secondary site.
3. Fully operational and tested disaster recovery plan

Timeframe: 5 to 10 months

Priority: Medium

Risk: Low

Risk details:

- Specifications and final budget not allocated correctly.
- Technological obsolescence may occur when a new product is created to replace an older version.
- Outside technical issues on third-party products like communication.
- Issues with warranty and services conditions.

Critical success factors:

- Have clear roles and responsibilities with all vendors.
- Identify a single point of responsibility for the installation of all equipment and products.
- Validate the knowledge capacity of the products in the country by supplier.

Estimated cost: See "Cost Estimation by Initiative" section.

Initiative 4 – Acquisition of Hardware for Customs Houses

Description, Level of Effort and Deliverables

One important element of the NSW is site location. The responsible entity should be selected based on its capacity and willingness to take on the responsibility. The spectrum of options for operation of the day-to-day functions of the registry ranges from mere oversight to legal responsibility for a fully outsourced operation of all registry functions.

When considering all options for the operations and management of NSW, the assessment must be based on existing technological capacities, facility, management continuity and vision, physical capacity to house the technology assets and personnel.

The characteristics above define the environment, operational and functional requirements to consider for the site selection. The selection of a site also depends on the organizational structure of the NSW, which can be divided into operational functions and IT/web server host functions. The new technology allows separation of the organizational structure by functions and technical requirements.

Operational Site

The operational site is also called general public service area or the office for NSW services. The following are characteristics of the operational site:

- Receives requests for data and information;
- Provides support to the general public on problems, special requests and information;
- Provides services for the general public during regular working hours;
- Is easily accessible to the public;
- Is considered a low-cost operation, with only a few employees;
- Will be the only entity that provides official and legal functions of the NSW; and
- Must be the physical place to conduct NSW administrative procedures.

Web Server Host Site

The NSW is the custodian of sensitive information and all stakeholders expect a high degree of security and control of this information, in accordance with the viability of technology and system architecture characteristics described in this document.

The NSW system architecture needs to take into consideration several characteristics or elements that will make the solution functional and secured. These include necessary factors to decide on installation and selection of the most reliable site for these operations.

Web Server Location: The current facilities of JCD comply with the listed requirements. The infrastructure for this location was donated by USAID and it is the best place to provide web server hosting at the office in downtown Amman. The only limitation of this location is the lack of a robust disaster recovery infrastructure.

Operational Site Location: The operational site should be at customs houses. To support their operations, these locations need to adequate equipment to perform this work.

The following key experts will support this initiative:

- Product acquisitions and training support.

- Hardware and licenses.

- Support for training development.

Deliverables that will need to be developed to support the hardware installation and maintenance include the following:

- Development of the training plan.

- Development of the training materials.

- Implementation of the training program.

Summary

Deliverables:

- Development of training plan
- Development of training materials
- Implementation of training program

Timeframe: 2 to 5 months

Priority: Medium

Risk: Medium

Risk details:

- Specifications and final budget not allocated correctly.
- Technological obsolescence may occur when a new product is created to replace an older version.
- Outside technical issues on third-party products (e.g., communication).
- Issues with warranty and services conditions.

Critical success factors:

- Have clear roles and responsibilities for all vendors.
- Identify a single point of responsibility for the installation of all equipment and products.
- Validate the knowledge capacity of the products in the country by supplier.

Estimated cost: See the "Cost Estimation by Initiative" section.

Initiative 5 – Migrate ASYCUDA World into Web-Based Technology

Description, Level of Effort and Deliverables

As the current IT architecture provides neither best-practice functionality for simple and secure data exchange nor direct integration/transformation capabilities, concerns exist about the long-term feasibility for ASYCUDA World to be enhanced and maintained in line with the next-generation single-window requirements.

Due to the time required to further develop this solution and the high risk that any software development will bring, it is recommended that this initiative be postponed for a future stage, as all effort will be concentrated on the implementation of previous initiatives.

The following key experts will support this initiative:

- National software development firm
- Team leader
- Senior developers (3)
- Webmaster and designer
- Software developers (6)
- Tester and documentation support

For this initiative, the following deliverables need to be developed:

- Fully implemented and tested new customs solution.
- System documentation developed.
- Training program.
- Design, develop web portal.

Summary

Deliverables:

- Fully implemented and tested new customs solution
- System documentation developed
- Training program
- Design and develop web portal

Timeframe: 24 to 36 months

Priority: Low

Risk details:

- Running over budget.
- Project fails before delivering an application.
- Lack of strategy that addresses potential resistance to new software.

Critical success factors:

- Develop system-level requirements to that are acceptable to all stakeholder.
- Overcoming resistance to change, especially as it relates to adopting new software.
- To involve the right stakeholders and manage their confidence and knowledge needs during design and development.
- Detailed design and project plan with agreed milestones and deliverables.

Cost Estimation by Initiative

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ANNEXES

Annex I: Evaluation Statement of Work

I.   BACKGROUND

Jordan Customs Department (JCD) implements regulations, trade agreements, orders, rulings and instructions on behalf of more than 28 government agencies. Therefore, establishing a centralized database for customs regulatory and legislative requirements can be very beneficial to the trading community, including foreign investors and government agencies alike. This will provide international traders with a "single window" of information such as duty and tax rates and other required GOJ documentation (e.g. certificates, quotas, restrictions and licenses).

JCD aims to implement a National Single Window (NSW) project -otherwise known as an E-Trade system- in Jordan, which works to include all governmental entities and relevant stakeholders with a direct involvement in trade on a unified platform. This would significantly reduce the time of release for all shipment, as well as work toward achieving an E-government platform with a paperless environment.

II.   PURPOSE OF THE ASSESSMENT

The objective of this assessment is to provide USAID/Jordan Mission with an assessment of JCD's capacity for implementing the first stage of the NSW. The assessment will look into JCD's human capital, technical knowledge for successful implementation of single window programs, and sustainability measures that will ensure continuation of the NSW after USAID assistance.

III.   ASSESSMENT QUESTIONS

In addressing the stated purpose, the assessment will explicitly answer the questions stated below:

   a) What is the technical and personnel capacity of JCD's IT department to implement the NSW?

   b) What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?

   c) What is JCD's plan for sustainability of the NSW project?

   d) What other costs are necessary for successful implementation of stage one of the NSW project?

IV.   ASSESSMENT DESIGN AND METHODOLOGY

The external assessment will use the appropriate approaches (qualitative and/or quantitative) to assess the capacity of JCD to implement the NSW project and the feasibility of their plans in terms of:

- Developing a project plan/schedule showing the sequence and duration of major tasks, and start and end dates, responsibilities – including importantly the parallel running of the existing system and new system and the migration from the existing to the new.

- Proposed and expected costs, such as:
   - The annual costs of running the current Single Window including the maintenance and enhancements.
   - The detailed breakdown of the anticipated one-time costs to build the new system including for hardware and packaged software, the itemized projected quantities and unit and total price as well as for development work, for each major task, the breakdown of each category of each technical resource, the estimated effort days, and the assumed per effort day rate in JOD.
   - The detailed breakdown of the annual costs to operate the new system

- An assessment of the quantitative benefits of the proposed new system versus the status quo – this should be detailed by process

- An analysis of the pros and cons of enhancing the current system versus the current proposal, and provide recommendations for risk factors to take into consideration and how best to monitor for the implementation of this system.
- Gap analysis between the current systems and expertise versus what is required to achieve the expected goals. This will include an assessment of the hardware, software, licensing considerations and capacity and availability of relevant personnel.

The assessment team will conduct interviews with the USAID team, key informants at the Jordan Customs department, and other relevant government and non-government stakeholders to be identified by the assessment team.

V. ASSESSMENT TEAM COMPOSITION AND EXPERTISE

The following is the suggested team composition and expertise for this assessment:

1. Team Leader – Customs and National Single Windows Expert: Knowledge in global trade requirements for government entities and relevant stakeholders in trade. Knowledge of WCO and WTO compliance. Customs and trade facilitation experience, including with national single windows. Experience and familiarity with Data Model 3.5 or 4.0.
2. Technical Specialist – Software and Hardware Specialist: Experience and familiarity with Oracle database products. Ability to assess software and hardware needs (computers, printers, scanners, laptops), including understanding of costs for building appropriate hardware solutions.

The evaluation team will also be supported by the MESP Senior M&E Specialist and Evaluation Assistant.

VI. PERFORMANCE PERIOD

The assessment will be conducted from December 2016 through February 2017 with data collection conducted in December-January and final report submitted by the mid-February 2017.

Logistics for the assessment will be provided by MESP.

VII. DELIVERABLES AND TIMELINE

MESP finalize SOW, develop work plan.	November
MESP develop methodology and tools, finalize work plan and submit Assessment design report	November
Fieldwork	December-January
Debriefing presentation for USAID and assessment team on assessment findings, initial conclusions and recommendations	January
MESP submit draft report • The assessment report will not exceed 30 pages and must adhere to USAID's Evaluation Policy; it must include a table of contents, list of acronyms, and executive summary as well as a copy of the SOW and data collection instruments; • The report will address each of the key questions identified in the relevant sections of the SOW and any other factors the team considers to have a bearing on the objectives of the evaluation; • The key evaluation questions must be answered, and recommendations must be stated in an actionable way with defined responsibility for the action; • Sources of information will be properly identified and listed in an annex; • The assessment and evaluation reports will be published on USAID's Development Experience Clearinghouse at edec.usaid.gov. • Upon request from USAID or closure of MESP, both electronic and hard copy data files will be transferred to USAID. In the meantime, electronic files are on the MESP file and hard copies are warehoused at MESP.	Early February
MESP submit final evaluation report	Mid-February

Annex II. Design Report

INTRODUCTION

Background and Purpose

Jordan Customs Department (JCD) implements regulations, trade agreements, orders, rulings and instructions on behalf of more than 28 government agencies. Therefore, establishing a centralized database for customs regulatory and legislative requirements can be very beneficial to the trading community, including foreign investors and government agencies alike. This will provide international traders with a "single window" of information such as duty and tax rates and other required GOJ documentation (e.g. certificates, quotas, restrictions and licenses).

JCD aims to implement a National Single Window (NSW) project -otherwise known as an E-Trade system- in Jordan, which works to include all governmental entities and relevant stakeholders with a direct involvement in trade on a unified platform. This would significantly reduce the time of release for all shipment, as well as work toward achieving an E-government platform with a paperless environment.

The objective of this assessment is to provide USAID/Jordan Mission with an assessment of JCD's capacity for implementing the first stage of the NSW. The assessment will look into JCD's human capital, technical knowledge for successful implementation of single window programs, and sustainability measures that will ensure continuation of the NSW after USAID assistance.

Assessment Questions

In addressing the stated purpose, the assessment will explicitly answer the questions stated below:

1. What is the technical and personnel capacity of JCD's IT department to implement the NSW?
2. What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?
3. What is JCD's plan for sustainability of the NSW project?
4. What other costs are necessary for successful implementation of stage one of the NSW project?

ASSESSMENT DESIGN

Understanding of the Assessment Questions

The purpose of the assessment is to establish the base for system design and technical architecture requirements for the NSW and determine the cost assessment for the required technical architecture.

The assessment questions focus on the feasibility of the proposal detailed in the document *Business Case Study NSW* prepared by Mr. Ahmed AlAlem. Specifically, these questions require us to look at the internal capacity (technical and personnel) of the JCD for implementing the first stage of the technological platform of the NSW.

It is difficult to evaluate the implementation of complex technological planforms like NSW as it is not always possible to specifically define what such interventions will achieve, or even, what specific actions will be taken over a multi-year period.

In order to mitigate the above challenges, our approach will be holistic and as such will focus on the four layers (software, hardware, processes and operational framework) of the NSW technological platform.

These layers include the following:

APPLICATION SOLUTION - This is the software framework or a universal, reusable software environment that provides particular functionality as part of a larger software platform to facilitate development of software applications, products and solutions.

HARDWARE/COMMUNICATION - This includes all IT equipment (hardware, communication and middleware) necessary to achieve the requirements of the envisioned NSW.

ORGANIZATIONAL CONTEXT OPERATIONS - This is the set of rules and methods that describe the functionality, organization, and implementation of application systems which include architecture, operational, administration, logic and functional design.

BUSINESS PROCESS/REGULATION FRAMEWORK - The set of related, structured activities or tasks that produce a specific service or product (serve a particular goal) for a particular business process. They may often be visualized as a flowchart of a sequence of activities with interleaving decision points or as a process matrix of a sequence of activities with relevance rules based on data in the process. In addition, their regulation framework is the legal key element that defines and determines the system process.

Such a holistic approach will allow us to learn about the human capital, technical knowledge and technology requirements required for the successful implementation of single window programs. Moreover, by examining all these layers, we will be able to assess and identify potential sustainability measures that will ensure continuation of the NSW after USAID assistance.

Approach to Answering the Assessment Questions

This section details the evaluation team's approach to answering the evaluation questions.

Combined with document review, the evaluation team will utilize qualitative key informant interviews (KIIs)) as their primary data collection approach to capture the opinions and perspectives of the different stakeholders, ranging from various offices within GOJ, USAID/Jordan to implementing partners of current activities, JCD and private sector representatives.

1. **Question 1.** What is the technical and personnel capacity of JCD's IT department to implement the NSW?

   The assessment team will meet with JCD's IT department staff using KIIs to evaluate the technical and personnel capacity of JCD's IT department to implement the NSW. Both secondary and primary data will be used to undertake the assessment and will include the point of view of different actors across technical offices.

   Interview questions will focus on identifying the areas where the JCD needs assistance with the technical and personnel capacities. The questions will focus on personnel's understanding of how NSW operates, their qualifications, their understanding of NSW operational procedures and NSW regulations. The assessment will also look if personnel participated in any of the training activities related to the NSW or any other IT training. In addition, NSW regulations and operational procedures (if any) will be reviewed as part of the assessment process.

   It is crucial to evaluate the organizational needs and requirements of the key personnel involved with the NSW. This will include an analysis of the current organizational structure and functions of the JDC.

   In addition, the capacities for the implementation and management of the NSW will be assessed. The assessment will cover existing procedures and facilities, as well as the use of information technology and human resources, administration, types of data retained and security measures.

2. **Question II.** What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?

The question focuses on the selection of hardware and software defined according to the system architecture needed for the NSW. Usually, single windows solutions are built using service-oriented architecture (SOA). This technology structure is designed to provide an interaction between heteronomous type computer system and technology components, through a communication protocol over a network.

The assessment will be undertaken with JCD's IT department staff using KIIs to evaluate the existing hardware architecture, IT capacity of the JCD to absorb new processes and technology, to determine compatibility for the implementation and management of the NSW.

JCD's technology infrastructure and capacity to the NSW is of crucial importance. The team will assess the ability of the infrastructure to meet the needs of the NSW, covering the following important areas:

1. Connectivity with the Internet,
2. Presence of facilities to support registry hardware, and
3. Availability of people with the right skill sets to support the technology components.

The IT capacity needs to be assessed from the end users' perspective as well, determining if all potential users of the NSW have access to Internet. If users do not have access across the country, it will be necessary to provide intake points in outlying regions so that users who do not have access may bring paper documents.

This will allow for the mapping of functionality selection of hardware and software components, for the NSW. The team will use the modular design based on SOA, and which has the potential to estimate cost of the technology including the flexibility to predict future expansion of technology.

3. **Question III.** What is JCD's plan for sustainability of the NSW project?

The sustainability of the NSW, will be explored taking into consideration two possible structures:

   a. Virtual NSW that allows for processing of customs declaration under a very low cost solution with very low cost process and limited number of staff to support.
   b. In addition, we will explore the business model like Public-Private Partnerships (PPPs), a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance.

The sustainability of the NSW project will also be examined taking into consideration that it would need to maintain the number of procedures integrated into the system, as well as plans to integrate other procedures and other entities that would be involved in NSW.

4. **Question IV.** What other costs are necessary for successful implementation of stage one of the NSW project?

The approach to estimate other cost must be guided by the principle of implementing an effective, sustainable and cost effective NSW by focusing on the supporting solutions that make trade faster, simpler and lower cost for traders. The successful implementation of a NSW should simplify import and export requirements for traders, reduce transaction costs and improve data integrity.

Another factor will be to examine early in the project the fee structure taking into consideration the international experience with single window fee. In line with the best practices of World Trade

Organization's (WTO) user fee requirement is stated in Article VIII of the General and the Agreement on Tariffs and Trade (GATT).

Data Collection Methods

The external assessment will use the appropriate mix of qualitative and quantitative approaches to assess the capacity of JCD to implement the NSW project and the feasibility of their plans.

Qualitative - The assessment will focus on gathering an in-depth understanding of process behavior and the reasons that govern such process behavior. We will focus on examining why and how of technology layers development, for example, application, hardware, organizational context and process. The qualitative research will be based on in-depth interviews using semi-structured interview/discussion guides, and will be supported by field observations and notes.

Quantitative – By using available data we will measure the time and cost of the import and export process in the country. This benchmark will help us measure the performance of the process used currently and the future process once the new platform is implemented. Also, it will point to events and stages that require any specific rectification or correction.

> Indicators (Time vs Cost) to be measured are the following:
> - o   Time to export/import compliance (hours)
> - o   Cost to export/important: Border compliance (USD)
> - o   Time to export/import: Documentary compliance (Hours)
> - o   Cost to export/Import: Documentary compliance (USD)
>
> This analysis will rely on secondary data collected annually by the Doing Business Indicators of the World Bank Group, specifically the Trading Across Boarder. In addition, at our final report and recommendation stage, we will explore the feasibility and relevance of using Outcome Harvesting methodology to assess how the intervention will contribute to changes in the future. This methodology reflects and collects ("harvests") evidence of what has changed ("outcomes") and, then, working backwards, determines whether and how an intervention has contributed to these changes. Outcome Harvesting has proven to be especially useful in complex situations: when it is not possible to define concretely most of what an intervention aims to achieve, or even, what specific actions will be taken over a multi-year period.

Data Collection Instruments

The data collection instruments for qualitative assessment (Annex III) have been developed to address the research questions and tailored to the type of respondent and the data collection approach. Given the short time frame for conducting this assessment, as well as the diversity of potential respondents, annex III identifies broader thematic questions that will be made more specific based on the specific respondents and the flow of the discussion. Moreover, answers to some of these questions will be obtained by a combination of individual interviews, as well as review of existing data and documentation.

Data Analysis Methods

Data collected via document review and KIIs (interview notes) will be analyzed and synthesized in a matrix format, allowing the Evaluation Team to conduct content analysis and visually identify key trends and themes. The team will also assess findings by respondent types (for example USAID, Jordan Customs Department, Other Government Agencies and Private sector actors.) to understand and compare the perspectives of the different stakeholders.

This evaluation will rely on primary and secondary data collection.

Primary Data Collection

Qualitative Research: Under qualitative research, the evaluation team plans on doing key informant interviews (KII). We will explore the use of group discussions where appropriate and as time permits.

Below is a summary of the data collection plan:

Key informant in-depth interviews will be conducted with the following key informants.

Mission Leadership

- Mission's Economic Development team

Jordan Custom

- Director of IT Directorate
- ICT Team
- Custom Border official (Border and airport)

Other Stakeholders

- Custom agents
- Ministry responsible for international trade
- National Trade Facilitation Body/Committee
- Importer and Exporter and control representatives (selected by volume and type of goods that trade)
- Chamber of Commerce
- Health and Agricultural Permits and License Agencies
- Regulatory Agents Border Control (health, agro and control agencies)
- Courier services ex. DHL and Fedex
- Transportation Companies
- Jordan Exporters Association

Field Visits and Observations

- Border Crossing Visit (Location: TBD)
- National Single Window (Physical Location)

Secondary Data Collection

The team will review and incorporate into the analysis relevant secondary data sources. The following are some key pieces of secondary data that the team has considered:

1. Report: Preliminary Approach for the Next Generation Jordan Single Window, July 2016. Nathan Associates Inc. (Subcontractor under DAI) Author: Peter Stokes
2. Jordan Customs Department Assessment of National Single Window (NSW) Technical Proposal Statement of Work (SOW)
3. Business Case Study Project Name: National Single Window for International Trade (NSW) Ahmed AlAlem, Director of IT Directorate, Jordan Customs
4. Doing Business 2016, Measuring Regulatory Quality and Efficiency 13 edition 2016 Primary Data Collection

ANNEX II-A: Getting to Answers

Program or Project: SDO 4 Evaluation Design
Team Members: Pedro Souss

Evaluation Questions	Type of Answer/ Evidence Needed *(Check one or more, as appropriate)*		Methods for Data Collection,		Sampling or Selection Approach *(if one is needed)*	Data Analysis Methods
			Data Source(s)	Method		
1. What is the technical and personnel capacity of JCD's IT department to implement the NSW?	*	Description	• JCD • Program Office Staff • Documents	• In depth interviews • Document Review		• Content analysis of KIIs • Content analysis of the documents
	*	Explanation				
2. What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?	*	Description	• JCD • Program Office Staff • Local IT hardware vendor • Documents	• In depth interviews • Document Review		• Content analysis of KIIs • Content analysis of the documents
	*	Explanation				
3. What is JCD's plan for sustainability of the NSW project?	*	Description	• JCD • Program Office Staff • Customs Trader • Regulatory Agencies • Documents	• In depth interviews • Document Review		• Content analysis of KIIs • Content analysis of the documents
	*	Explanation				
4. What other costs are necessary for successful implementation of stage one of the NSW project?	*	Description	• Custom • Regulatory Agencies	• In depth interviews • Document Review		• Content analysis of KIIs • Content analysis of the documents
	*	Explanation				

ANNEX II-B: Work Plan

DESCRIPTION	DELIVERABLE	RESPONSIBLE	DATES
Planning			
Desk review of project documents	• Desk review • List of evaluation reference documents	Pedro Souss	Feb 7 to 11, 2017
Work plan submitted to USAID for approval	• Work plan/schedule	Pedro Souss	Feb 14, 2017
USAID approves work plan			TBD
Design of the evaluation: methodology and tools	• Draft research design report • Draft instruments in English	Pedro Souss	Feb 15, 2017
USAID approves evaluation research design report			TBD
Data Collection Phase 1 **Data Collection through key informant interviews (KII)**	• KII notes and summary • Data Review Matrix	Pedro Souss	Feb 15 to 23, 2017
USAID Midpoint Check-In	• Meeting	Pedro Souss	Feb 26, 2017
Analysis, Debriefing and Reporting Phase			
Initial Data Analysis	• KII notes and summary • Interview group notes	Pedro Souss	Feb 26, 2017
USAID Consultation: Initial findings and actionable recommendations	• Presentation	Pedro Souss	March 5, 2017
Final data analysis and drafting of the report	• FCR Table • Draft report	Pedro Souss	March 7, 2017
Draft report is submitted	• Report		March 7, 2017
USAID comments on draft evaluation report	• Draft report with comments		TBD
Response to the USAID comments and update report	• Updated report and response to comment table		TBD
Final evaluation report incorporating USAID comments	• Final evaluation report		TBD

ANNEX II-C: Data Collection Instruments

Each category of will focus on one of the audiences (PUS) public sector (e.g. JCD, regulatory agencies etc.) or (PRS) private sector (importer/exporter, custom agents etc.)

OVERVIEW OF EXISTING CUSTOMS AND INTERNATIONAL TRADE ENVIRONMENT

1. Please provide a list of the government agencies that are directly involved in export, import and transit regulatory procedures for goods.

2. Does Customs authority have any electronic links with the above-listed agencies (e.g. for issuing permits, import/export licenses, certificate of origin, etc.)?

3. Does Customs authority perform functions on behalf of other government agencies (such as permit collection, examination, risk assessment)?

4. Does your existing national legislation foresee establishment of a Single Window for export, import and transit procedures?

5. Does your existing national legislation foresee electronic data processing and exchange (taking into account electronic signatures, authentication, privacy, access rights, storing and archiving data, etc.)?

SINGLE WINDOW PLANNING, DEVELOPING AND IMPLEMENTATION

1. Has your country adopted a formal national definition of a Single Window?

2. Has your country already started developing a Single Window?

3. What level of political/ executive support for a Single Window exists in your country?

4. What agency is the lead agency for the development of Single Window in your country?

5. Do you have a Single Window task force or coordination mechanism in place?

6. Have you developed any preliminary document (such as a scoping document, business case or concept paper) for developing and implementing a Single Window?

7. Who are the governmental and business stakeholders in your planned or operating Single Window?

8. What are the expected benefits of implementing a Single Window in your country?

9. How was/ will a development of a Single Window be funded?

10. How is/ will an operation and a software updating of a Single Window be funded?

11. Have you experienced any resistance/constraints to the establishment of a Single Window in your country?

12. Is/ will the use of a Single Window be voluntary or mandatory?

DATA AND INFORMATION TECHNOLOGY

1. Have you undertaken a data collection, analysis and streamlining exercise involving all Single Window participating agencies?

2. Have you undertaken the harmonization of trade/customs data of your Single Window participating agencies with international standards (such as those of UN and WCO)?

3. What interface and messaging standards have you used or plan to use for your Single Window system?

4. What is the technical and personnel capacity of JCD's IT department to implement the NSW?

5. What is the IT equipment necessary to achieve the requirements of the envisioned NSW, and what is a realistic cost estimate for this equipment?

6. What is JCD's plan for sustainability of the NSW project?

7. What other costs are necessary for successful implementation of stage one of the NSW project?

BUSINESS PROCESSES AND SERVICES BEING ALREADY PROVIDED ELECTRONICALLY

1. Please indicate what types of business process and services that are being provided electronically?

2. Please describe any existing pilot data processing/exchange relevant to Single Window (e.g. Customs-to-Customs data exchange)

HUMAN RESOURCES CAPACITY

1. Please identify areas where you would like to get assistance.

2. Does your country receive any kind of assistance with regard to Single Window from bilateral, regional and international partners?

3. Do you understand how NSW operates?

4. What is your position and what role do you play in processing trade facilitation or what is your role in chain of approvals?

5. Have you received any SW training? Do you understand SW operational procedures?

6. Do you understand SW regulations?

INDICATORS OVERVIEW MEASURED (TIME VS Cost)

1. What is time required to meet export/import compliance (hours)?

2. What is the cost of export/import: Border compliance (USD)?

3. What is time required for export/import: Documentary compliance (Hours)?

4. What is the cost of export/Import: Documentary compliance (USD)?

Annex III: List of Interviews

[REDACTED]

Annex IV: References

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