

JSC E-FILING PROJECT AND MASTER PLAN DOCUMENTS

Preliminary Draft Technical and Functional Specifications – v.1.0

July 27, 2008

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Preliminary Draft Technical and Functional Specifications – v.1.0

SUSTAINABLE ACHIEVEMENT OF
BUSINESS EXPANSION AND QUALITY (SABEQ)

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BEARINGPOINT, INC.

USAID/JORDAN
ECONOMIC OPPORTUNITIES OFFICE (EO)

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INTRODUCTION

This preliminary master plan document is designed to describe the key objectives, attributes, and functional requirements to implement a proposed e-Filing Pilot System (e-Filing) Project for the Jordan Securities Commission (JSC). This document must be read in combination with the preliminary e-Filing Project Plan (Project Plan), attached hereto as Appendix A.[1] (See the JSC Document Universe Matrix, attached as Appendix B, which contains a preliminary listing of the JSC paper-based filings for possible conversion.) The Project Plan outlines the specific e-Filing software modules, development tasks, activities and time lines to build a fully functional e-Filing System, ab initio. Further, these foundational documents, in combination, form the basis and starting point of an iterative and collaborative development process with the JSC, and its IT and Disclosure Departments. The objective of this process is to ensure that the requirements, objectives and needs of these JSC Departments are fully reflected in the final e-Filing Project Plan and this master plan document.

E-FILING SYSTEM - KEY DESIGN OBJECTIVES / SUCCESS FACTORS

- Improve Domestic, Regional, and International Visibility of Jordanian ASE Listed Issuers
- Convert JSC Paper-Based Filings to an e-Filing Process
- Validate (Accept/Reject) Filed Forms at Point of Submission
- Notify Filers of Filed Forms Status
- Provide Official Notices of Accepted Filing (Date/Time-stamped) to Benchmark Legal Compliance
- Support XBRL Financial Meta Tagging
- User Driven (Programmer-Free) Reporting and Analytical Environment
  - Permits Definition of Internal Workflow, Reviews, and Approval Processes
  - Permits Definition of Standard, Ad Hoc and/or Exception Reports
  - Provides Issuer Financial Data and Analytical Tools
- Broad Internet Publication of Issuer Financial Filings, Annual and Material Events Reports

OVERVIEW

The JSC e-Filing system will consist of three primary portals:

- Filing Portal
  - Flexible Forms Development Mechanism (User Driven)
  - Supports Secure Data Submission in Multiple Formats (Web / MS Excel / Adobe PDF Forms)
- JSC Regulatory Portal
  - Standard, Ad Hoc, and Exception Reporting (User Driven)
  - Disclosure Analytics and Tools (Built-in / User Customizable)
- Public Disclosure Portal
  - Disclosure Data Accessible in Multiple Formats
  - Supports Financial Media and Investment Community Linkages

ESTIMATED LEVEL OF EFFORT, TIMING AND DEVELOPMENT COSTS (FULL BUILD)

The estimates contained in this section are based on the Project Management Institute Best Practice Methodology -- see www.PMI.org.

[1] Note: The Appendix A Project Plan Should Be Printed on Large Format A3 Size Paper

Development Assumptions

- Full "Build Your Own" development and implementation approach to convert all JSC paper-based filed forms to an e-Filing process for all JSC Filers, ab initio. (See the JSC Document Universe Matrix, attached as Appendix B to this document.)
- Full Standard Hourly Blended Rate is an estimated USD 100, based on actual contractual rates available to SABEQ in the local Amman, Jordan market for IT development support services. Actual hourly rates available to the JSC as a governmental entity, may be less than the rates available to SABEQ.
- Time estimate is based on uninterrupted project delivery without administrative breaks.
- Development Costs are estimated based upon using a five (5) person local core development team.
- Costs associated with inputs from JSC and/or other technical assistance resources are not included.
- Hardware costs are separately accounted for in Section 2.1, below.

Level of Effort

	Hours*	Days*	Person Months*
Total Project Effort – Full Build	**8267**	**1,033**	**52**
Module Development [Includes Unit & Integration Testing]	**2850**	**356**	**18**
Life Cycle Components [Includes Scope, Requirements, Design, Technical Architecture, System & Acceptance Testing, Deployment]	**2594**	**324**	**16**
Project Administration	**1252**	**157**	**8**
Documentation & Training	**500**	**62**	**3**
Contingency (16%)	**1071**	**134**	**7**

*Figures rounded to the nearest whole number

Development Costs (Exclusive of Hardware)

	Cost as a Percent of Standard Blended Rate	
Blended Rate	**100%**	**80%**
$100 / hr	**$826,700**	**$661,360**
$80 / hr	**$661,360**	**$529,088**

Project Duration

The expected full build e-Filing project duration, through deployment, is estimated at approximately 10.3 months -- assuming a five (5) person development team, together with the support of JSC staff and a key stakeholders working group.

e-Filing Project Development Alternatives

As noted above, this document details a full "Build Your Own" development and implementation approach to convert all JSC paper-based filed forms to an e-Filing process for all JSC Filers, ab initio.

An alternative development scenario to this approach would be to "adapt" and "configure" to JSC specifications, an already developed solution, which should result in significant time, programming development, and cost savings compared to a full "Build Your Own" scenario -- as all the core module development work (discussed further in this document), has already been produced.

In that connection, SABEQ proposes for further discussion that the JSC consider the use of BearingPoint's **Interactive Regulatory Data Solution (IRDS)** for the purposes of an e-Filing Pilot after the full build project and master plan documents have been reviewed, discussed and understood. If the JSC ultimately determines to pursue this approach, the project and master plan documents will be fully revised accordingly, based upon full JSC input following a Phase 1 Scope Review. At this juncture, we estimate that the project duration of an appropriately scoped and defined e-Filing pilot, through deployment, to be

about between 5 and 6 months. (A more exact estimate can be provided following a Phase 1 Scope review, and further discussions with USAID.)

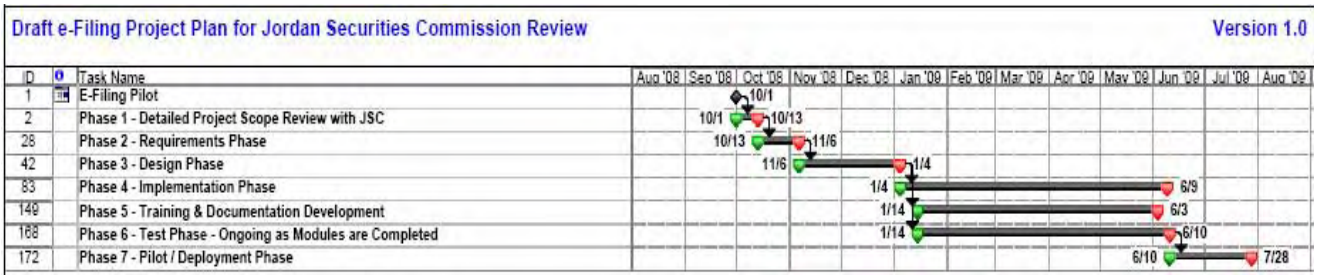
IRDS is BearingPoint's end-to-end reporting solution based upon our work implementing similar solutions for the Australian Prudential Regulation Authority and the Bank of Jamaica. IRDS can support the entire JSC filing data chain from supporting the XBRL preparation and submission processes via the IRDS Filing Portal to the analysis of structured and unstructured data via the IRDS Analyst portal. IRDS uses a sophisticated business intelligence engine that serves as XBRL processor transforming and validating data feeds from the Filing portal or other data sources.

To add value and efficiencies to the reporting, analytical and disclosure portal functions, IRDS will be integrated with **I-Metrix Financial Data Dissemination and Analytical Software** from our development partner, **EDGAR Online.** I-Metrix is a suite of interactive data and analytical tools from our development partner, EDGAR Online that provides quick and accurate, XBRL-tagged financial statement data via Microsoft Excel and an easy to use web interface. I-Metrix includes the ability to integrate: fundamental financials, market data, earnings estimates, ratios, insider and institutional holders, securities regulatory filings, searching, alerting and in the professional version seamless interaction between the web and Excel and customizable models to facilitate more efficient and improved analysis. **I-Metrix** can streamline analyst workflow by supporting the ability to: build financial models; spot emerging trends and anomalies; download or print up to 50 filings at one time; use an Excel add-in to extract and customize issuer financial data directly into Excel; create unlimited screens based on preset variables or a users own custom ratios; and use a model library to quickly create company snapshots, and peer benchmarking studies, among other things. See www.edgar-online.com/products/imetrixPromo.aspx for further information.

Estimated e-Filing Project Plan Schedule (Full Build)

The estimated e-Filing Master Schedule, below, provides a summary level view of the detailed activities and timing contained in the detail Draft e-Filing Project Plan, attached as Appendix A. Following each of Phases 1, 2 and 3, the Project Plan and this master plan document will be revised and updated. The Project Management Office (PMO) will be responsible for updating these plans on a regular basis.

Estimated e-Filing Master Plan Schedule – Full Build



FUNCTIONAL SPECIFICATION:

This section identifies the details of the key development, implementation tasks and activities of the Project Plan.

1. PHASE 1 – DETAILED PROJECT SCOPE REVIEW WITH JSC

1.1 Project Plan

The project plan provides the list of all development and/or organizational tasks required for the e-Filing implementation. Each task is aligned with the time required for its execution and the total development time for the project is derived from the summary of these tasks. In addition to the development time the project plan takes into consideration the adjustments for the project administration, training, testing, and organizational procedures which all add up to the total implementation time and cost. The Project Plan will

be updated and changed at regular intervals to reflect actual implementation progress and any subsequent agreed-upon changes.

1.2 Project Management & Governance

During the Phase 1 Scope Review, an organizational chart should be developed and agreed upon to govern the management of the project (Project Management Office or PMO). The organizational chart should reflect clear roles and responsibilities, lines of reporting and communication. The PMO will have the primary responsibility for overseeing and coordinating all elements affecting the delivery of the project, including the Core Technical and Functional Team and Working Group participants. All e-Filing processes and procedures for project governance and decision making should also be identified, defined and developed at this stage, as well.

[PMO CHART- To Be Determined][2]

Core Technical and Management Team

The core Technical and Functional Development Team (Core Team) who will be responsible for the bulk of the e-Filing Project development and implementation will be comprised of:

- Relevant JSC Departments, including IT and Disclosure, among others.
- An External Jordan IT Development Firm.
- Supporting Technical Assistance and Subject Matter Experts Advisors, as applicable.

The PMO and Core Team will be organized in a manner to ensure the maximum leadership input and participation from the relevant JSC staff to ensure JSC ownership of the project from inception.

Development Team

The Development Team will most likely be comprised of consultants retained for the e-Filing Project from an external Jordan IT Development Firm. The Development Team is a subset of the Core Team and will be responsible to the actual software and hardware development activities. Our costs and time estimates assumes the full time participation of five (5) development team members. Since the time estimates allocate only "development time," it should be noted that the actual implementation time for the entire e-Filing project will be more than the declared development period. The roles and responsibilities of the development team will be assigned together with JSC IT Department PMO lead representative. The actual allocation of the time spent on the project will be determined by the PMO and the time estimates will be adjusted accordingly during the implementation process.

The suggested Development Team Resources would include:

- Senior Manager – 1
- Manager – 1
- Lead Senior Consultant – 1
- Experienced Consultants – 2

1.3 e-Filing Working Group

An e-Filing Working Group should be assembled, from the following stakeholder constituencies:

- Core Team
- Pilot e-Filers
  - ASE Pilot Issuers
  - ASE Pilot Auditors

[2] Certain diagrams, schematics and processes cannot be defined as they are deliverables of later phases of the e-Filing Project development process. These items require discussion, feedback and decisions from the JSC before being developed and finalized. Such deliverables are identified as "To Be Determined" and highlighted in yellow.

- JSC Licensed Brokerage Firms

- Project related Institutions
  - Relevant ASE Management and Staff
  - Relevant SDC Management and Staff

The working group will provide ongoing support and feedback during the development and implementation of the e-Filing project. The exact composition will be determined during the Phase 1 Scope Review.

- Identify and Select Pilot Participants based on the following criteria:
  - Perceived Filer Regulatory Quality (e.g. ASE Tier 1, Timely Filings, High Regulatory Compliance)
  - Filing Entity Interest in Pilot Participation
  - Filer's IT sophistication
  - Filer's IT capacity
  - Auditor willingness to participate

1.4 Risk Management, Issue Tracking and Resolution Procedures

The PMO will be responsible for the implementation and proper support of issue tracking using an agreed upon centralized project management solution to ensure all risk and related issues are properly documented, tracked, and can be viewed by the entire development team. Each identified issue, problem, or constraint should be logged, assigned, and addressed in a timely manner in accordance with the procedures developed for the PMO. There are various software tools available and these should also be discussed during the Phase 1 Scope Review.

1.5 User Review and Sign-off Process

There will be a user review and sign-off process established. The Core Team should set the guidelines on how and when this process should be initiated and executed. As a part of the process, the role of the approver(s) should be assigned. Certain approvals, such as the approval of the unit testing may be provided by the Project Manager; others, such as release of the pilot implementation should be approved by the project sponsor(s).

2. PHASE 2 - REQUIREMENTS

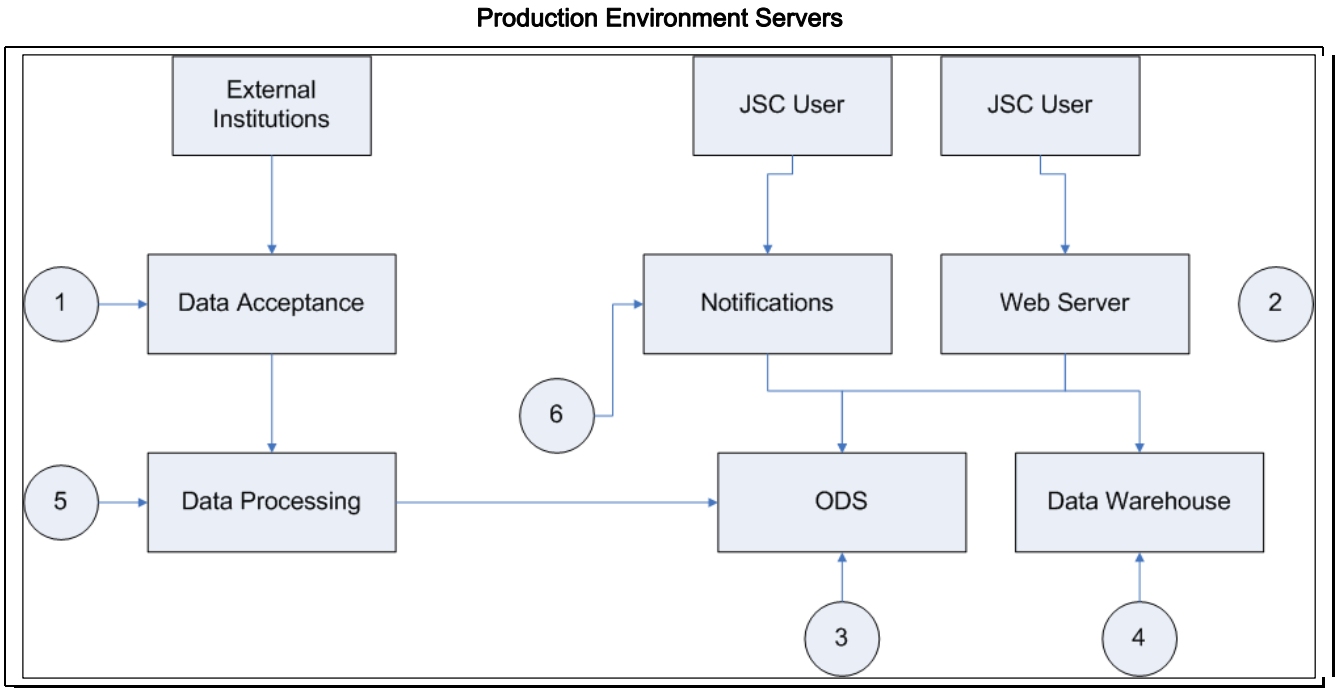
Requirements Analysis Phase – immediately following project initiation, we will conduct a comprehensive analysis of system requirements to validate that the JSC business requirements are understood prior to starting design and construction of the system. We have already begun a thorough analysis of the information provided in the RFP, combined with our understanding of the JSC environment and our learning experiences from similar implementations, as the first step in the systems requirements analysis. We will require extensive support and feedback from the LSC Team during the requirements analysis phase. We will employ methods that emphasize customer involvement and feedback.

Given the extensive amount of coordination required for development and integration of the JSC system and the aggressiveness of the schedule, experienced technical managers have been assigned to the project Team. We understand the dependency the entire project has on the requirements and design phases. Therefore, we have taken this step to verify that both the critical requirements and design documents are thorough and timely, and that the entire program remains on schedule. We recognize the interdependencies between our Teams and look forward to a collaborative process that is efficient and expedient. We will provide a comprehensive Requirements Analysis Document, which will extend the existing requirements document for the e-Filing system.

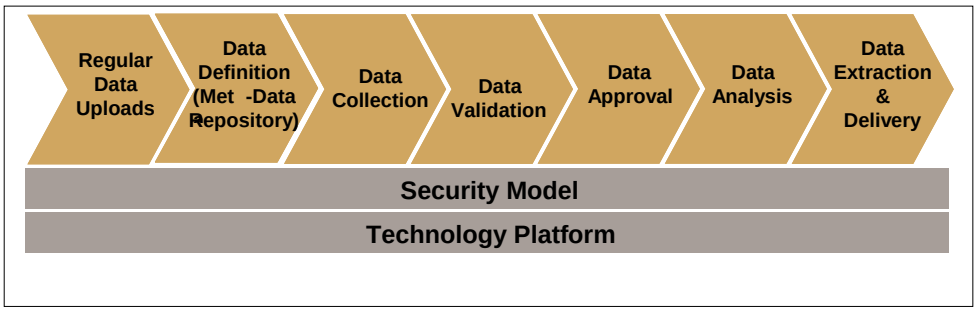
2.1 Architecture Design

The high level design of the e-Filing Architecture Design is reflected in the following schematic diagrams:

High-level Hardware Schematic Diagram



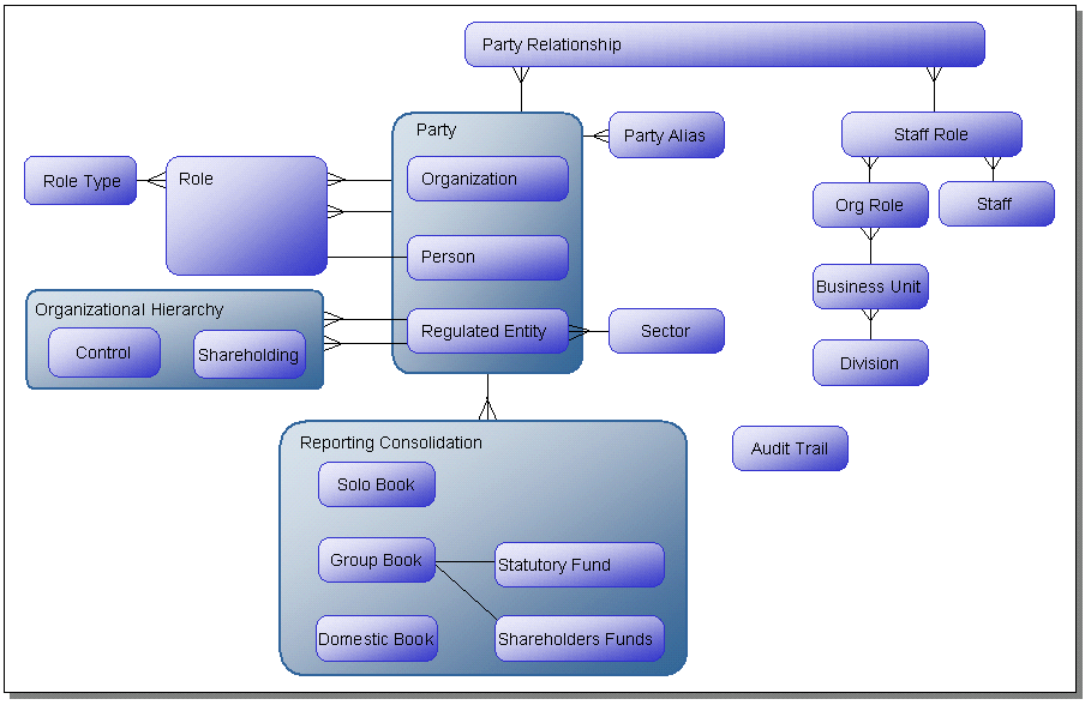
Data Flow Schematic Diagram



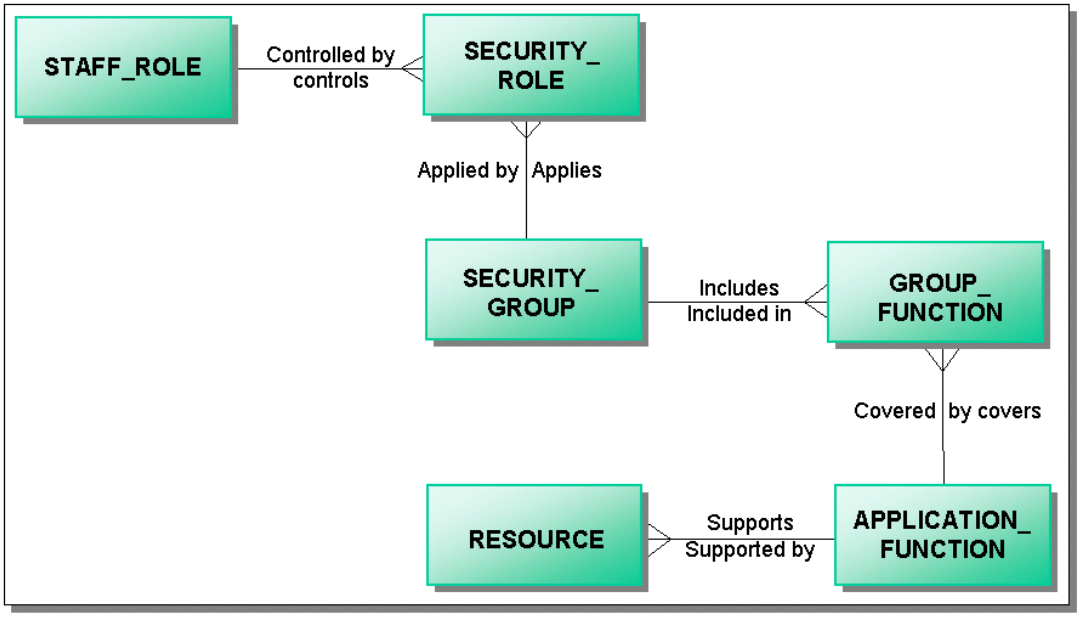
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Filing Entity Contact Management Data Model Example.

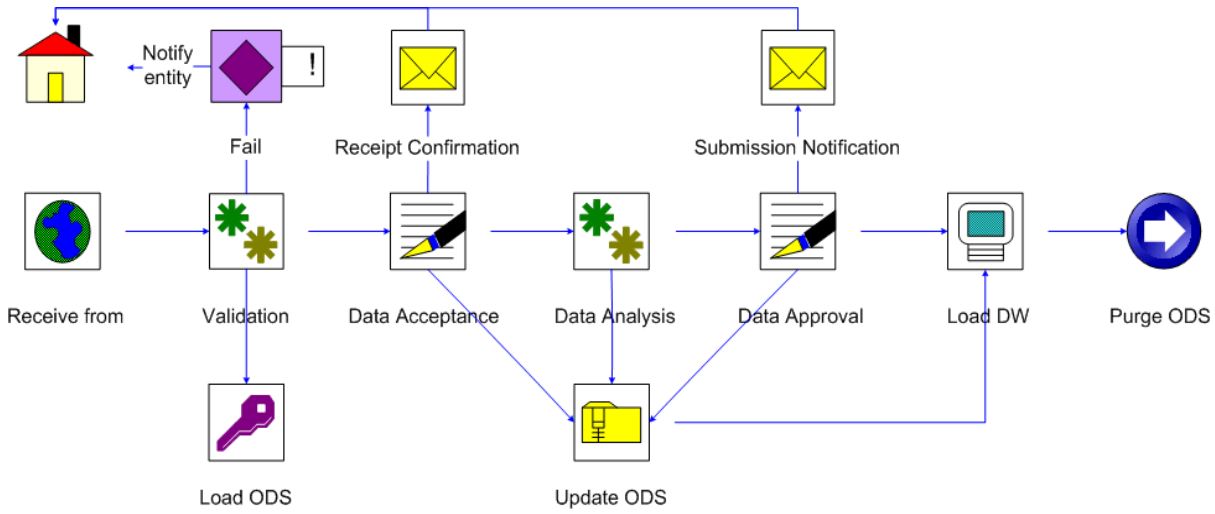
The e-Filing system must maintain contact and other standardized information related to e-Filing participants and the persons authorized to file on their behalf. A Filing Entity Contact Management Data Model will be developed and customized to local Jordanian requirements based on discussions and requirements identified by the JSC during the Phase 1 Scope review process.



Security Data Model Example.



Data Approval Workflow Example



Hardware and Storage Capacity and Cost Estimates

Our hardware and storage requirements and costs are estimated to provide enough scalability to support up to 350 filers and up to 100 JSC internal users. The GREEN highlighted sections in the table below represent equipment requirements and costs for development and pilot testing of the e-Filing Project. The section highlighted in YELLOW represents the additional equipment and costs necessary operate the e-Filing system at full capacity.

We have estimated that the proposed hardware includes enough storage to cover JSC requirements for the first two years, based upon a "solid-state" storage architecture.[3] Depending on the rate of data growth there may be a need for additional storage, which we presently estimate may reach 50 GB per year.

Component	Environment	Aprox. Spec.	~ Price
Database Server	Development	IBM 3850 2 x 2.4 Ghz/local storage	~$16K
	QA	IBM 3850 2 x 2.4 Ghz/local storage	~$22K
	Production	IBM 3850 2 x 2.4 Ghz/local storage	~$30K
	DR	IBM 3850 2 x 2.4 Ghz/local storage	~$30K
Application Server	Development	IBM 3550 2 x 2.66 Ghz/local storage	~$8K
	QA	IBM 3550 2 x 2.66 Ghz/local storage	~$8K
	Production	IBM 3550 2 x 2.66 Ghz/local storage	~$10K
	DR	IBM 3550 2 x 2.66 Ghz/local storage	~$10K
Storage	Production (2)	500 GB x 15,000	~17K x 2
	DR (2)	500 GB x 15,000	~17K x 2
Total	Pilot		~$ 54K
Total	Full		~$148K
Grand Total			~$202K

[3] Hardware and storage requirements depend greatly on the hardware architecture chosen for the project. We have chosen a "solid-state" architecture to provide sufficient capacity and robustness in cases of disaster recovery. The use of a "SAN" storage architecture will require greater amounts of storage and server capacity, and, consequently, will increase the hardware and storage cost estimates. The choice of hardware architecture should be resolved during our Phase 1 Scope Review.

2.2 Training & Documentation Requirements

Training and end-user documentation requirements will need to be identified during the Phase 1 Scope Review, with the specific requirements defined and tailored to the needs of the various stakeholders during Phase 2.

Appropriately designed training and user documentation should be developed and provided to the following stakeholders:

- Technical and Functional Development Team[4]
  - Relevant JSC Departments, including IT and Disclosure, among others.
  - External Jordan IT Development Firm
- Working Group Participants
- End-Users
  - ASE Pilot Issuer Filers
  - Internal JSC Staff
- Project related Institutions
  - Relevant ASE Management and Staff
  - Relevant SDC Management and Staff

See Section 6.2 for additional information on the development of training and user-documentation.

3. PHASE 3 - DESIGN PHASE

The Design Phase is designed to translate the defined Phase 2 Requirements into functional and design specifications detailing how the system will operate. This will encompass all aspects of the e-Filing System, including hardware, software, data structures, data conversion, and system interfaces, etc. This phase will formally assess and document the current reporting processes, refine JSC departmental priorities, and will finalize the scope of JSC's vision for the e-Filing project. One of the most important elements of this phase will be to define the data content, validations, and future workflow requirements of JSC filing forms. The Design Phase concludes with a formal design review to validate that all the requirements have been addressed and are acceptable to the JSC before moving on to the Phase 4 – Implementation Phase module development coding or hardware procurement activities. At the conclusion of this phase, the specified hardware will be ordered and software will be constructed.

3.1 Define Data Content for Filing Forms

The following elements will need to be defined for each document to be converted to an e-Filing process. (See the JSC Document Universe Matrix, attached as Appendix B to this document.)

- The information and data to be collected shall be identified, defined and structured
- Validations required at the time of filing shall be identified and defined
- Workflow Requirements (post-filing) shall be identified and defined, including internal JSC approvals required for the publication and release of public disclosure documentation
- Standard reports shall be defined and structured

[4] Technical training during the course of the e-Filing project should include both "on-the-job" and formal training, and should cover the following suggested areas: Application Administration; Network and Security; Database Administration; Application Development and Maintenance; and Hardware.

We envision this process will entail close coordination with, and guidance from, the JSC Disclosure and IT Departments.

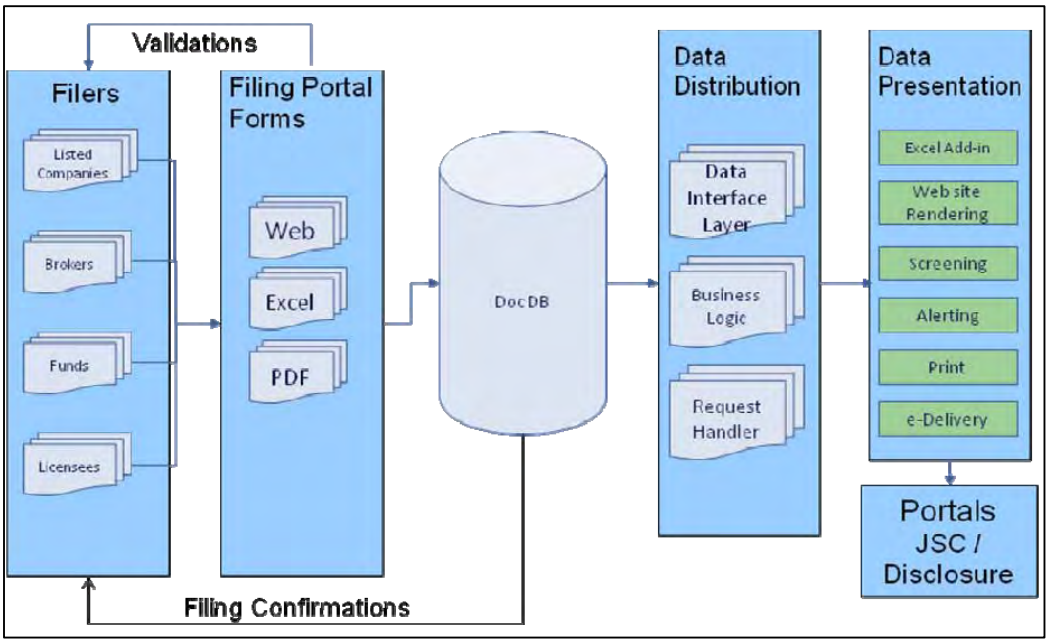
3.2 Logical Architecture

Hardware Schematic
Following a decision on which storage architecture will be utilized ("solid-state" versus "SAN"), an exact schematic of the hardware logical architecture will be inserted here.

[Hardware Schematic – To Be Determined]

Data Flow
Along with the High Level Data Flow view, presented immediately below, a second more technically oriented and Detailed Data Flow diagram will be developed and inserted into this document as an output of the Design Phase.

High Level Data Flow View



Detailed Data Flow – To Be Determined]

3.3 Entitlements & Security

Entitlements should be allocated to the three major user groups (External, Internal, and Administrative) with possible subdivisions within each group. Each user should have its own username ID and password in order to access the e-Filing system with a roll up to the single group which will define the user's rights. This will allow for the easy administration and maintenance of the system.

- **External Users** should be divided into two categories – 1. ASE Issuer Filers and their "authorized persons"[5] (Filers); and, 2. Public Disclosure Data (Public) users. Filers should be allowed to submit online or other predetermined forms through the e-Filing Portal, register to receive filing validations and confirmations (Levels I & II), run predefined or ad hoc reports on the public data, and build their own reports based on their own data. Filers should also be permitted to upload customized disclosure documents for later XBRL tagging, or for use by the JSC to create approved new forms

[5] "Authorized Persons" of ASE Issuer Filers may include Issuer Senior Executive Management and/or Auditors. Such persons should be subject to revised JSC regulation defining their filing obligations in that capacity.

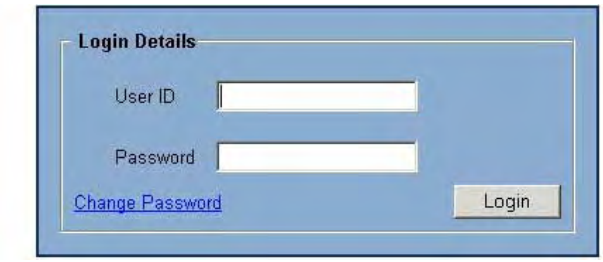
for them. Public users should be permitted to access, either through a predefined report or ad hoc query mechanisms, and to download the same in a variety of appropriate formats – Text, MS Excel, PDF, or HTML.

- **Internal JSC Users** should be permitted to review and approve forms filed by ASE Issuers, and to run predefined and/or ad hoc reports based upon filed data. Possible subdivisions for the external users group may include the right to initiate a confirmation of an ASE Issuer Filing, ability to review different market sector segments, and to run comparative reports, etc.
- **Administrative (JSC IT) Users**. In addition to the rights granted External and Internal JSC Users, Administrative Users should also be given the rights to add/delete/update new or existing users.

Internal Sign-on and Security Mechanism

Industry standards call for the use and implementation of a single sign-on mechanism. When users access the e-Filing System, they will be asked to login using their assigned username and password. (If they have multiple roles assigned to them, they also have the option of selecting one of those roles when they sign on and this provides a better level of audit control.)

Single Sign-On Example



The e-Filing System should provide at least the following three sign-on access control options, any of which can be applied to any user group (across-the-board) or applied upon an individual basis within any user group, depending on the level of access required:

- **User Name and Password Sign-On.** The simplest to administer, but it does require strict discipline in user administration and password policies.
- **Digital Certificate.** Making use of an authorized digital certificate, the user will be automatically connected to the system. Identification would be via the certificate. The database connection can either be embedded within the e-Filing System database (encrypted by the user's digital certificate) or within the certificate itself (encrypted by the e-Filing System certificate).
- **Digital Certificate and Password.** This approach bypasses the need for users to identify themselves, but does require them to enter a password to supplement their digital certificate. This provides the highest level of security.

The ultimate decision should be based purely on the JSC IT Department's choice of security policies and preferences, which will be discussed also during the Phase 1 Scope Review.

Security Control at the DBA Level

Security policies and procedures should be commensurate with the high standards necessary to protect financial, banking and regulatory institutions from malicious or inadvertent breaches of security.

One of the most common causes of a breach of security is the administration (or root level) access allocated to the database administrator (DBA). The e-Filing System should be designed to reduce the tasks allocated to the DBA (e.g., the "programmer-free zone" concept), and to verify that, apart from fundamental changes to the database, the DBA's tasks do not need to be undertaken with administration level access.

To provide adequate protection of data, three separate roles should be defined:

- Day-to-day administration and tuning functions will be undertaken by a DBA without administration level access.
- The administration password will be held by another individual who is not expected to require access to the system.
- A third role will exist to audit access to the system.

The e-Filing System will be extensively audited, including sign-on by users and direct database access. Direct access using the administration password will be detected by the audit process and should be treated as a serious breach of security. In the rare event that administration access is required, the user will be directly supervised by a trusted second person and the usage noted and recorded for audit purposes.

Database and Table Security

Database-level security can be applied to each database (data warehouse, operational database, and the meta-data repository) or to each table within the database. In general this approach should not be used as it provides only an "all or nothing" approach.

Groups or Regulated Entity

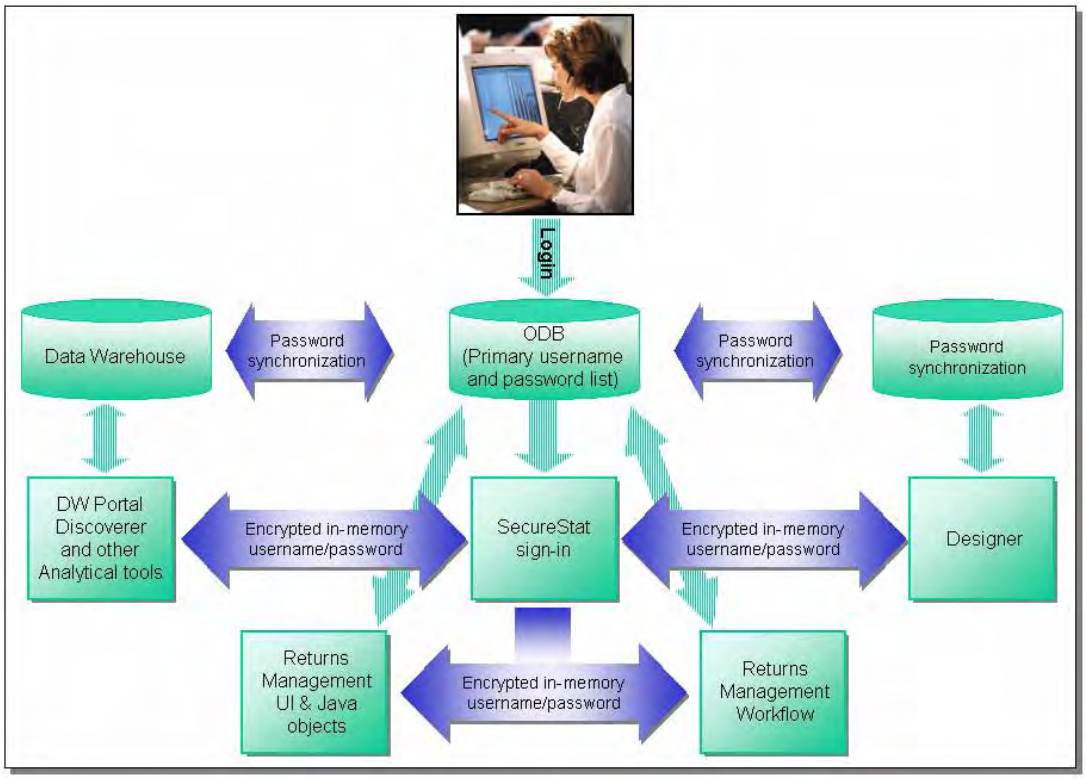
Operational functions restrict operations to groups or entities as defined within the security module.

Internal Access: Single Point of Login

The solution will enable Oracle's Internet Directory to support a single point of login. Ideally, the directory could be combined with Microsoft Exchange; however, until LDAP directories become pervasive (and are recognized by products) it is recommended that the directory be managed as a stand-alone administrative function.

Passwords will be synchronized with the data warehouse and the meta-data repository. The diagram appearing immediately below shows schematically how user names and passwords will be passed between modules.

User Names and Passwords



Oracle Internet Application Server (IAS)

If the Oracle security mechanism is used, then an Oracle-compliant web listener will be required to support password changes from the web environment. Oracle IAS is a web server that allows us to use Oracle PL/SQL cartridges to access relational databases, as well as Oracle Web Agent cartridges for use with Oracle Express. It has at its core the Apache web server. Database connections are made by defining Database Access Descriptors (DADs), which access particular databases. In order to access a database, the PL/SQL cartridge must be installed on every database to be accessed.

Public Access

If required, aggregated information will be open for public access or require only minimal levels of protection (i.e., it is not a security exposure, if it is accessed). There is normally no requirement to authenticate public users when they attempt to view this type of data. The data that is to be publicly available will be defined within the meta-data.

Other Governmental Agency or Institutional Access

The e-Filing System will facilitate information sharing with other relevant Jordanian Governmental Agencies or Institutions such as the ASE, SDC, Central Bank or Insurance Regulator. Authorized Governmental or institutional users will be required to establish an appropriate user account, and will be assigned a database role commensurate with the level of data access pre-determined for their agency or institution. They will be required also to authenticate themselves when logging onto the web service to obtain financial data within the e-Filing System.

Filer Access to Non-Public Data

The e-Filing Portal client application will provide filing entities with the ability to download non-public data they have previously submitted along with historical aggregated data. The solution should only permit the requesting institution to obtain non-public data related to its financial reports. The security process verifies that only the financial institution that originally submitted the data is able to decrypt it once it has been sent out by the e-Filing Portal. Public data, by definition, for all filers will be available through the JSC Public Disclosure Portal site.

Public Key Infrastructure (PKI) - Authenticating Institutions for Submission

In a typical PKI model, the user authenticates him or herself by signing a challenge phrase from the server with the user's private key. The server (which knows the challenge phrase) validates that user's signature with the user's public key, found in a digital certificate from a trusted third party. To "unlock" or make a private key available for a signing event, a user can use one or a combination of the following factors—a biometric identifier, a smartcard, a PIN, or a password.

- **Authorization.** The process by which: 1. rights of validated users are determined; and, 2. validated users are enabled to use certain resources in accordance with those rights.
- **Digital Certificate.** In PKI, a digital certificate is the means by which a user's identity is bound to his or her public key. Certificates are thus integral to the workings of the various key pair transactions that serve to authenticate users and encrypt communications.

Certificates have an important secondary use, however. Apart from binding a user's identity to his or her public key, a digital certificate can serve the secondary function of pointing to or kicking off the authorization process. X.509v3 certificates have a fair amount of flexibility in what they can contain. Typically, certificates contain the name of the user (verified by a Registration Authority), his or her email address, and public key, a serial number, and some information about the certificate authority.

Certification/Non-Repudiation

Authorization of reports needs to be secure and conform to security policies that will be created and updated regularly. Ensuring that the policy regarding non-modification after first authorization will be achieved by encryption using the entity's private key.

A Certificate Authority (CA) will be set up on behalf of the JSC within a secure facility. A Public / Private key pair are generated and secured.

A Registration Authority (RA) will be set up locally within the JSC to allow for entities to be authenticated when they request a digital certificate.

The e-Filing Portal solution is released with the public key, which in turn is used in the generation of a Security Certificate request initiated by the entity. Prior to a certificate being approved, the entity must have posted a hard copy 'Challenge Phrase' letter to the JSC RA.

It is recommended that the Challenge Phrase letter include, at a minimum, the following details:

- Letterhead from the entity.
- Contact details for the Financial Manager.
- Email address to be associated with the digital certificate for non-repudiation.
- The entity's unique e-Filing identifier (the structure of the actual identifier to be used will need to be agreed upon during the initial design phase).
- Signed by the Financial Manager.
- Co-signed by the Project Sponsor.

The details of the Challenge Phrase letter are then stored and used for verification when the entity requests a digital certificate via the e-Filing Portal client.

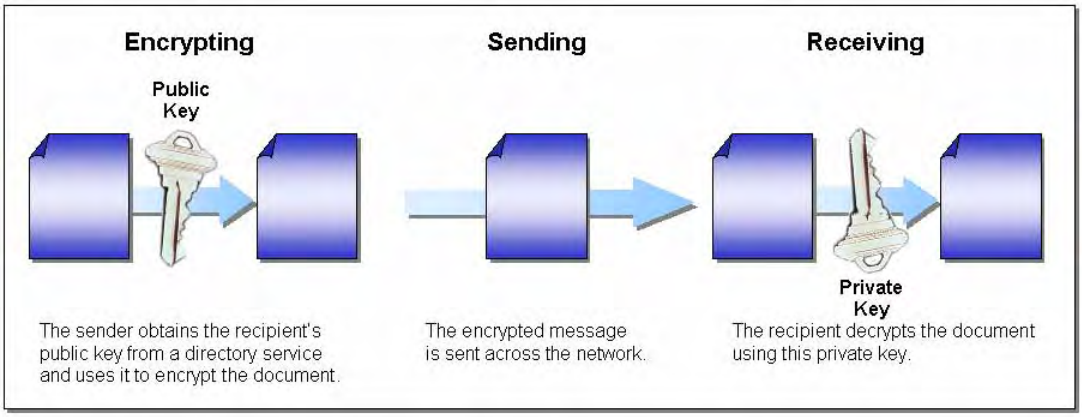
Login Access Control Via the e-Filing Portal Client

The e-Filing Portal Client will require no login access control mechanism, as the application itself is only useful when combined with reports. Institutions should be encouraged to follow these good practices:

- Ensuring user accounts, or computers with certificates installed, are secure.
- Saving "in-progress" reports to a secure location on the network.
- Not distributing reports in an insecure manner.
- Establishing an HTTP connection.

HTTP Communication

The default e-Filing Portal client connection to the JSC will be via HTTP, and does not use HTTPS/SSL (secure HTTP/Secure Socket Layer). Data traffic, however, is encrypted within the body of the standard HTTP request.



If the e-Filing Portal Client has a direct Internet connection, contacting the e-Filing Portal Client server is trivial. However, we expect that the majority of potential e-Filing Portal Client users have proxy servers. The following instances need to exist for the proxy server to permit HTTP traffic from the e-Filing Portal Client:

- The e-Filing Portal Client needs to be able to make a server connection Port 80 (note, Port 443 is not required).

- The content types, “application/octet-stream,” and “application/octet” must be permitted through the connection (it is preferable not to filter on content type).
- There is no need to permit reverse connections from the server to the client on a port.

An optional feature of most web proxy servers is to provide an authentication feature. This stops unauthorized users on an organization’s Intranet from accessing the Internet through the proxy server. Users must first provide some authentication details in the browser before the proxy server will honor their requests. The standard mechanism, known as “Basic Authentication,” passes the user name and password using a generally accepted encoding mechanism. When “Basic Authentication” is required, the e-Filing Portal Client will displays a user name/password pop-up screen and returns the details in the appropriate format.

3.4 IFRS Taxonomy

A standardized XBRL taxonomy must be defined for the filing community in order to proceed with the configuration of the e-Filing System, including an agreement over the shared meaning of concepts and terms used in the taxonomy. The XBRL taxonomy determines the filing elements and calculations that will be utilized to determine valid filings from ASE issuers and other JSC filers. Proper configuration and management of the XBRL taxonomy is paramount to the success of the e-Filing project since the entire reporting solution revolves around this technology standard.

3.5 Arabic Language Localization Design

An Arabic Label Linkbase will allow the IFRS extended taxonomy to be populated with native Arabic tags and will permit broader use and consumption of ASE Issuer financial and material events data. There will be minimal translation associated with the Arabic labels as they have already been incorporated by the XBRL International Consortium into an officially approved Arabic Linkbase.

3.6 Filed Data Acceptance

The e-Filing Portal Client, front-end module is responsible for processing the acceptance of filed data, which can be submitted via web browser, MS Excel spreadsheet, or Adobe PDF document forms. The module should be able to accept filed forms in any of these formats and transfer the data to the validation module for retention.

The data acceptance module will also keep record of the open sessions per user. In case the user becomes disconnected from the system, the working session opened by the user will be kept in the database and will remain available to the same user upon reconnection.

Filed Data Collection

The approach for data collection has five key elements:

- The definition of data items that the JSC needs to collect.
- Creating logically related forms and designing the structure of those forms.
- Multiple submission methods: Web Browser, MS Excel or Adobe PDF Forms.
- Electronic submission of completed forms using a highly secure transmission mechanism.
- Validation, Acceptance and subsequent processing of accepted filed forms.

XBRL Meta-Data Tagging of Collected Data Items

Meta-data are often described as “data about data.” This means that meta-data is the extra information required to give meaning and context to the data that is being collected and analyzed. Meta-data can describe, for example, how the data is defined, how it is represented, how it is to be interpreted, how it is used, where it is used, who is responsible for it at specific stages in its life cycle, what that life cycle is, and why the data is used. A fundamental element of the e-Filing solution is that it is meta-data driven and,

therefore, provides a very high level of flexibility. This aspect helps also to make the e-Filing Solution as "programmer-free" as possible.

Data items that are collected using the e-Filing System will be described in the meta-data repository (MDR) and includes three key pieces of information:

- The name of the filing form where the data item appears.
- An XBRL tag for that data item.
- A definition of the validation method to be used for the data item. This is defined using a "script," which is part of the Derivations and Validations (D&V) Module.
- Once a data item has been defined in the MDR, it can be included in a filing schedule using the Forms Management module.

Forms Design and Management

Forms Management is a key module within the e-Filing System, and provides relevant JSC staff with the capacity to define which forms are to be submitted by which filers and with what frequency. Once the JSC staff have finalized the content and layout of a new or revised form, it is made available within forms library for each filing entity that needs to provide the information defined on it. The filing entity can download the appropriate form using e-Filing Portal Client application described in more detail below.

Data Entry/Collection

The e-Filing Portal Client is used to submit, collect, and validate filed data. Among other things, its key features include the ability to perform the following tasks:

- Can collect data from multiple sources (Financial & Non-Financial), including, but not limited to: ASE Issuer Periodic Financial Filings, Annual Reports, and Material Event Reporting, and other inputs.
- Definition of data items to be collected (Meta-Data repository)
- Forms design and generation
- Data entry / collection e-Filing Portal
- Staging
- Submit data and transform into XBRL format using a variety of mechanisms including the Internet (Browser, MS Excel or Adobe PDF).
- Use digital certificate technology to verify high levels of security on the data that is transferred between the filing entity and the JSC.
- Request (via the Internet or email) that the latest version of a form be sent to the filing entity prior to it commencing the form filing preparation process.
- Permit multiple copies of the application running within a financial institution, and use one instance of the application to consolidate the institution's information into a single submission to the JSC.
- Apply a range of derivations and validations to the filed form data to test the data's validity before it is submitted to the JSC.
- Permit a filing entity to request copies from the JSC accepted filings submitted in the past.

The e-Filing Portal Client application will support filed forms that the JSC may wish to distribute in the future for data collection and presentation purposes. JSC staff can also use the application for the entry of (and updates to) filed form submissions, as well as to view the contents of previously submitted reports. Therefore, if for some unexpected reason, an institution must submit its return in hard-copy (paper) format, JSC staff can use the e-Filing Portal Client to enter the data and submit it for further processing.

3.7 Data Validation

Data Validation will consist of three categories of checks:

- Syntax - single line single values check
- Matrix - single line multiple values check
- Context - multiple lines single/multiple values check

Filed Forms Data Validation

A key objective of the e-Filing System is to increase the accuracy of the data collected through its use. To meet this requirement, the system will include a sophisticated D&V module to manage the data collection process.

Public vs. Private Rules. The D&V module must be able to define one of the following rules:

- A **"Public"** rule, which a filing entity submitting data can apply before final submission to the JSC. These rules are intended to increase the percentage of valid data received when a return is first submitted; or
- A **"Private"** rule, which can only be applied by JSC staff analysts post-submission. These rules are intended to be used where a filing entity is subject to scrutiny and the JSC staff analysts applying the rule do not want to reveal exactly what part of the entity's operations on which they are currently focusing.

Mandatory vs. Confirmation Rules. The D&V module will also support the following concepts:

- "Mandatory" rules, which must be successfully applied to a return before it can be submitted to the JSC.
- "Confirmation" rules, whereby the submitting entity will be warned that a rule has failed, but will not be stopped from submitting the return.

Examples of Simple vs. Complex Rules & Derivations. The D&V module can support the following rules/deviations:

- Simple validation rules such as, x+y must equal z.
- Complex validation rules, such as x+y must be within 20 percent of the filing entity's cohorts.
- Simple derivations, such as total equals x+y+z.
- Complex derivations, such as z equals the average of x weighted by y over 5 years.

Here are some actual examples of simple and complex rules that the D&V module should be able to define:

- Simple rule = net interest income equals total interest income less total interest expense (riad4074 = [riad4107–riad4073]).
- Complex rule = (including functions of time, geography, and company structure), current quarter value must be greater than or equal to previous quarter's value (if [mm-q1=06 or mm-q1=09 or mm-q1=12] and [riad9106-q1 le riad9106-q2] then riad4073-q1 >= [riad4073-q2–2]).

The rules are stored and maintained within the meta-data repository. The fields designed for this purpose are of type derivation and validation, and are stored against each data item. More complex D&V rules will require functions, which are installed in the database using PL/SQL as stored procedures. If called, the D&V engine extracts and executes the rule and dependencies (either from the load file or from historical data).

The D&V module should process derivations and validations at the form level. By applying one or more rules to one or more data items across one or more filed forms, this module provides either a numerical or true/false result for a part in the system that requires it. Each of the validation and derivation rules also has

a set of text-based columns associated with it to define help related text in detail or to provide pop-up text with a short description of the rule.

To verify that filers have accessed the correct version of a form (particularly if they are working offline), version numbers are embedded in the meta-data, generated forms, and XBRL instance documents. The e-Filing Portal Client application and the D&V module both check these version numbers before data are either transmitted or accepted.

When a form fails a mandatory validation at the e-Filing Portal Client application level, it cannot be re-submitted to the JSC until this error is resolved. Therefore, instances of filing attempts that fail at this level of validation are only stored at the filing entity level, and are not copied to the e-Filing System database (as they have not been deemed "submitted" to the JSC).[6]

The e-Filing System will also allow for "confirmation only" validation rules to be defined, which allow the submitted form to be processed after review and correction or acceptance of the validation error by a JSC staff analyst. Forms that fail confirmation or other non-mandatory validations when being processed by the e-Filing Data Approval module (after submission to the JSC) and stored in the operational database with an appropriate status noted, and a workflow task is created for the relevant JSC staff analyst to resolve the validation error. Once the validation error is resolved and the submitted form is finalized, it will be copied to the data warehouse during the next scheduled update of the data warehouse, and a legal acceptance notification will also be generated and sent to the filing entity.

Validation criteria will be date and time-sensitive to verify that the current validation rules are used for new submissions of filed data and that the validation and derivation rules applied at past points in time are retained. In the event of a merger of two or more filers (e.g., ASE Issuers or Licensed Brokerage Firms), historical data and validation rules will be retained for the past history of each entity separately. However, the relationship that has been created between the organizations will be recorded in the contacts management module using a "party" data model. This will allow comparisons of newly submitted data for merged organizations with a combined picture of how the organizations looked in the past when they were separate organizations.

3.8 Data Retention

A Database Model Schematic will be inserted below following completion of the Phase 3 Design process.

[Database Model Schematic – To Be Determined]

Following the first level of data validation, the intermediate data from the successfully submitted filed form is saved in the operational data store area. After the filed form is legally accepted following review by JSC staff, the data contained in the filing will then be saved in the e-Filing database and the public data elements will then automatically be forwarded for public dissemination. Legal acceptance will also generate a date and time-stamped confirmation to the filer, which will then be utilized as the official benchmark against which the submitter's legal obligation to file will be deemed satisfied. After the data retention process is completed, the list of open sessions will be released.

3.9 Data Approval Flow

Once a filed form is successfully submitted following initial data validation, the retained filing data will be routed in accordance to the defined workflows, and becomes available for review by the relevant JSC staff analyst(s). Each step of the submittal process should be visible for these internal users, who in turn will have the responsibility to monitor the correctness of the submitted information and approve the submitted forms within a required time frame. Upon approval by the authorized JSC staff analysts, the information will be published to the public disclosure portals and media, and a date and time-stamped, electronic receipt is

[6] It should be noted that successful submission to the JSC at the level of the e-Filing Portal Client application, does not constitute legal acceptance for regulatory purposes. Legal acceptance should occur only following a JSC internal staff review of successfully submitted filed forms. Filed forms approved for legal acceptance by JSC staff will then be lodged in the e-Filing database and the public elements of the filings will then automatically be forwarded for public dissemination. Legal acceptance will also generate a date and time-stamped confirmation to the filer, which will then be utilized as the official benchmark against which the submitter's legal obligation to file will be deemed satisfied. Regulatory amendments to the various JSC and ASE directives will also be required.

sent back to the filing entity via email. This receipt will constitute the official benchmark against which the submitter's legal obligation to file that document will be deemed satisfied.

If a filing is rejected for failing to meet the initial submission validation criteria, an email notification will be generated and sent to the filing entity notify, together with an explanation for the rejection. As discussed previously, the e-Filing system includes an override facility that allows a KSC staff analyst (with the appropriate level of security) to override a confirmation rule validation failure and force the e-Filing system to accept the submitted filing. Such actions are clearly recorded in an audit trail.

3.10 Data Presentation

There will be several layers of data presentation:

- Filers able to retrieve their own data
- Internal JSC staff analysts will be able to retrieve/update/approve the submitted data
- Dissemination via a public disclosure portal with various access levels to the information

Each access level will be available for set up through the centralized authorization portal and will require single sign-on only.

3.11 Logical and Physical Data Models, Indexes, Views

In this Design section, the architect will prepare the logical and physical data models, taking into consideration discussed topics and expressed opinions from various stakeholders. There will be a research on Indexes and other database objects, data access methods, and other technical considerations in order to maximize the efficiency of these objects and methods.

3.12 Data Maintenance

Special maintenance software will be written. The data will reside in two or more available formats for:

- Immediate Access (staging area)
- Long Term Access (online)
- Archival Purposes (offline)

The special maintenance software will be responsible for the initial data acceptance, fail over protection, and data movement from the staging area to the data warehouse area, and to the archival storage.

3.13 Hardware / Software Procurement

Hardware and software procurement procedures will be developed in coordination with the JSC and local development teams. The specific hardware and software to be procured will depend on resolution of the following issues:

- Finalized physical architecture solution – a "solid-state" versus "SAN" architecture.
- Decision by the JSC to proceed with development of an e-Filing pilot solution, ab initio, or via an adapted IRDS / Edgar I-Metrix solution.

It is anticipated that hardware, software and license procurement will take place locally to the greatest extent possible.

3.14 Development Environment, including Report Server

In this section the development team will create a hardware/software mapping for the development environment. According to this mapping the final decision on the hardware configuration will be made and a purchase order will be refined, if necessary. The report server is a separate part of this mapping and may reside on its own hardware platform, if necessary.

3.15 Test Strategy

Test strategy will include several major steps:

Unit testing

a. Forms submission: web, Excel, PDF (fully filled, partially filled with connection loss or crash)
b. Forms acceptance
c. Forms validation and submission notification (with imitation of connection loss or crush)
d. Staging area – warehouse area movement
e. Data access methods, including stress test
f. Data approval flow (fully checked, partially checked with connection loss or crash)
g. Final submission notification
h. Report writer: web, Excel, PDF, prearranged and flexible tools

System testing

a. Seamless unit integration
b. Restorability
c. Stress testing
d. Data integrity (unchanged content between the units)
e. Archival

Regression testing

a. Formulation of expected entries and expected results
b. Data validation for all units according to the expected results

4. PHASE 4 - IMPLEMENTATION PHASE AND SOFTWARE DEVELOPMENT

Upon completion of the Design Phase, solution development will commence with hardware and software procurement and software development. In conjunction with this phase, structured unit testing will be performed to validate that the e-Filing system meets the Requirement and Design specifications and functionality developed in Phases 2 and 3. Issues discovered as the e-Filing is developed will be documented, tracked systematically, and corrected prior to acceptance testing.

4.1 Arabic Language Localization Build

The build of the Arabic Localization package is implemented as a part of the XBRL taxonomy.

4.2 Entitlements and Security: User Groups, permissions, administration

The single sign-on mechanism will be built according to the elements defined during the Design Phase. Depending on the qualifications of the developers, this module cab be developed by 2 or 3 developers in parallel or adapted from the existing software solutions. Each user group will have its general access rights with an ability to modify the rights of each user.

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4.3 Data Collection Module: DB Access, Restorability, Tagging, Staging, Forms

Data Collection

Implementation of data access mechanisms will be achieved by using the ODBC / JDBC Drivers or other similar access methods. Each independent data submission will be flagged with a session ID or other appropriate identification in order to provide restart ability from the moment of failure, if any. Using proprietary algorithms, the defined forms will be XBRL tagged and stored in the ODS staging area, and then transported to the permanent data structures. Free form filings will be coded; the filing will be assigned custom XBRL tags and can become a de facto filing form.

4.4 Data Validation Module: Syntax, Matrix, Context, Notifications

Data Validation (DV)

- Module is written so the rules are to be defined by relevant JSC staff analysts, and are stored in the Meta-Data Repository
- Rules can be quite simple or exceedingly complex
- A derivation rule “creates” a data item that was not directly entered (includes cross-entity); a validation rules checks the validity of a submission
- A rule can be “public” or “private” / “mandatory” or “confirmation”
- By embedding the D&V module in the e-Filing Data Acceptance the validity of data when first received is significantly increased
- The D&V module is a major contributor to releasing JSC staff analysts from paper handling tasks, and freeing them to concentrate on value-added, data analysis tasks

Support for Amended or Revised Filings

The e-Filing system will identify each filed form by a unique number, a version number, and an extension to define the filing entity and reporting period. Once the filing entity submits a form, a receipt will be generated with the identifier associated with that form (example: [1-form][2-version][3-institution][4-period][5-revision], which can be represented as 1111223333444405). If a filing entity submits the same form again with an amendment, the receipt number will change the revision only (i.e., Revision 2 receipt number would be 1111223333444406).

Internal or external amendments / revisions to a filed form will undergo the same process in the generation of a receipt number. However, an amendment will be flagged with an internal stamp and the user ID of the JSC staff analyst, when it is made by such an individual. If the amendment is an external amendment, the flag will contain an identification tag associated with the authorized reporting person (e.g., an email address) from the filing entity. This will permit amendments and revisions to be tracked and audited. Amended or revised data will have to pass through the D&V module and be validated against the applicable rules for that particular form/version.

4.5 ETL Module: Staging, Restorability, Data Commit, Tuning

Data Revision and Versions

- Filing entities are permitted to maintain an unlimited number of revisions prior to form’s final submission, for a defined period of time.
- The e-Filing system shall store revisions, and JSC staff analysts will have access to each revision.
- Versioning of the filed forms data, its taxonomy, and schema are all maintained in the Meta-Data Repository.

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Data Warehouse Model

- Two Core Databases: Operational Data Store (ODS) and Data Warehouse (DW)
- ODS is used for simplified analytics or reporting
- ODS processes filed forms, performs validations, and sends alerts
- ODS is used by the maintenance scripts to converts data for storage in the DW
- Decomposes Concepts into a Normalized Data Model
- Implicit Relations become Explicit Relations; leaving no ambiguity

Data Analysis

- The data analysis and presentation suite consists of a DW and a set of analytical tools, including an OLAP tool, and both internal and external disclosure portals
- The DW is generated completely from the Meta-Data Repository together with the XBRL tagged data elements

4.6 Document Approval Module: Check List, Authorization, Check-Lists, Notifications

The review and analysis of successfully submitted forms (post-validation) is controlled through a workflow driven process. Workflow processes are defined and managed by Oracle Workflow scripts, and include such tasks as populating the submitted data into the database, or applying post-submission validation and derivation rules to the data.

Specific Oracle Workflow processes will be scripted, which will drive the basic e-Filing Portal submission and post-submission validations of filed data. The workflow application will permit JSC staff to define specific sets of events that must be completed at each stage of the filing process.

The Document Approval Module is built by utilizing an Oracle Workflow Manager Model. The document approval process commences once a document is successfully submitted – post-validation. Each post-validation review step will be indicated by an appropriate check box, and can be manually over-ridden by authorized JSC personnel. Over-rides are subject to audit tracking and version control. Filed forms approved for acceptance by JSC staff will then be lodged in the e-Filing database and the public elements of the filings will then automatically be forwarded for public dissemination. Acceptance will also generate a date and time-stamped confirmation to the filer, which will then be utilized as the official benchmark against which the submitter's legal obligation to file will be deemed satisfied.

4.7 Data Display Module: Business Intelligence, Data Extraction Reports, XBRL Viewer

Business Intelligence (BI)

- Perform analysis on data or calculated data by various defined dimensions: e.g. Time, Currency, Industry Sector, Filing Entity, Schedule, and/or Peer Group
- Database Agnostic (Oracle, DB2, Teradata)
- BI Platform sits above Data Warehouse, Data Marts, and Cubes

Data Extraction and Delivery

- Permits application of BI analysis to archived data.

Reports

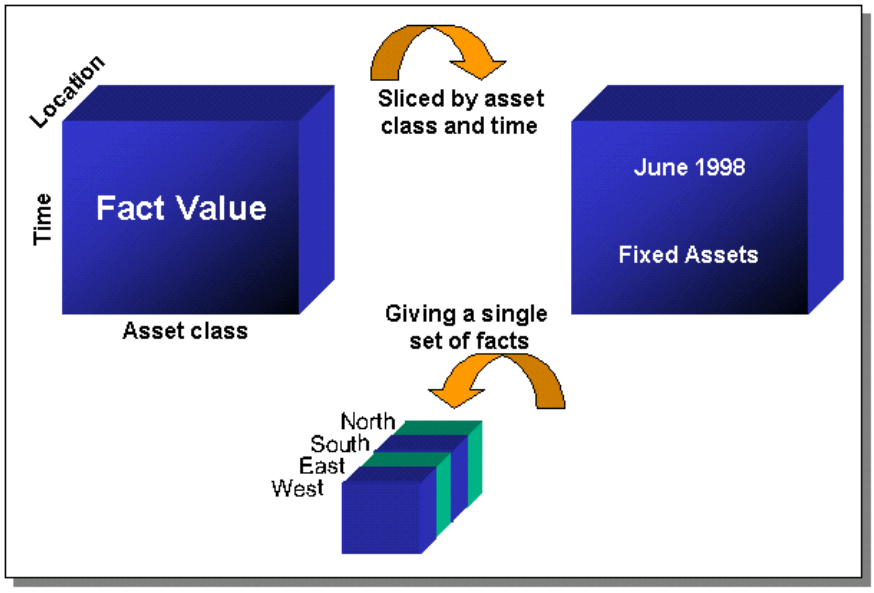
BI will provide a comprehensive analysis environment based on the data warehouse. The data warehouse will utilize a dimensional model that covers the filing entities and defined peer groups. At its core is a "super" fact table that includes the collected attributes and navigational dimensions including Time, Currency, Industry Sector, Filing Entity, Schedule, and/or Peer Group attributes. The data warehouse includes the concept of peer and cohort groupings, which can provide enhanced reporting as follows:

- **A Peer Group** is a grouping of Filing Entities. These may be defined arbitrarily for reporting or analysis purposes. A filing entity may be a member of a number of peer groups. This relationship is time based, and a filing entity may be included or excluded from a peer group.
- **A Cohort Group** is a special case of a peer group where the membership list is determined by the application of a rule. This rule will be evaluated on a schedule, and its members can vary over time (e.g., based on changes in the total assets of a filing entity).

The data warehouse data model should allow for complex analysis, including the use of:

- Calculated fields (columns can be easily configured to show ratios and comparisons to the company group, cohort, or other grouping).
- Peer/cohort groups (the model supports On-Line Application Processing (OLAP) analysis of static and dynamic groupings, providing the ability to leave history static or recast history as these groupings change).
- Period/posting dates (allowing analysis to show the current view or "as-was at a point in time").

OLAP Analysis Example



Ad Hoc XBRL Viewer

Analysis and reporting will be conducted using an XBRL Viewer. This is a simple and technically lightweight tool that e-Filing system users can use to view XBRL data. The viewer is also incorporated in the e-Filing Portal Client application in order to permit filing entities and other public users to view comparative, time-series and cohort data that they are authorized to view. Reporting will use a combination of the XBRL Viewer and Oracle Reports. Both environments provide a flexible and easy-to-distribute output.

5. PHASE 5 – TEST PHASE

5.1 Data Validation and Testing Phase

At the completion of system construction, a comprehensive testing process will be implemented to verify that the entire system meets the performance and functional requirements. The previously developed test plan described in Section 3.15 (Design Phase) will be executed by our development team, and the results recorded. The entire system will be verified through unit testing, systems integration testing, functional validation testing, acceptance testing, and data testing. Additionally, operational procedures, disaster recovery plans, security, backup, and restoration procedures will be reviewed.

6. PHASE 6 – PILOT / DEPLOYMENT PHASE

6.1 Pilot Rollout

Phase 6 will begin with the preparation of a comprehensive pilot roll out plan to deploy the new e-Filing system, first, as a pilot, and later, as a 'full' implementation for the entire JSC filing community. An Implementation Manager will be designated to coordinate the work of this phase with the JSC development and working group teams. A 'full' implementation roll-out plan should be developed and take into account the following factors / recommendations:

- Start with simplest forms to provide filers time to adjust their processes to the e-Filing system.
- Permit the concurrent filing of paper and electronic forms until pilot filers have had enough time to become familiar with the system, and have demonstrated proficiency in submitting in accordance with the e-Filing process.
- Annual Report conversion can be triaged as well – e.g., start with the electronic filing of the financial statement portions of the annual report and move on to other non-financial content and data.

At the successful completion of the pilot phase, "lessons learned" should be incorporated into subsequent roll-out plans for the balance of the JSC Filing Community.

6.2 Training Development and Users Manuals

The Phase 6 Training Stage, will primarily focus on the development of the training materials, users manuals, and delivery modalities defined during Phase 2 (see Section 2.2, above). It is recommended that a combination of instructor lead training (ILT) and computer based training (CBT) be defined and developed for new users, which can routinely updated.

A comprehensive training development and delivery plan and schedule should be prepared, covering the preparation of training materials and users manuals and delivered for JSC staff and working group review. All training (CBT or ILT), should include course evaluation and feedback mechanisms.

Comprehensive Users Manuals should be developed in conjunction with the training development process – one focused on internal technical administrative users, and a second intended for use by departmental users.

6.3 Full implementation

The only significant difference between the Pilot Rollout and Full Implementation is the number of filing entities who will have migrated to the e-Filing system.

A 'full' implementation roll-out plan should be developed and take into account the following factors and recommendations:

- Incorporate "lessons learned" during the pilot phase process
- Develop and roll out prioritized tranches of new pilot filers taking into account JSC training capacity, the filer's IT sophistication, and capacity.
- "Phase-in" tranches of additional JSC filers in manageable group sizes.
- Start with simplest forms to provide filers time to adjust their processes to the e-Filing system
- Permit the concurrent filing of paper and electronic forms until each tranche of filers have had enough time to become familiar with the system, and have demonstrated proficiency in submitting in accordance with the e-Filing process.
- Annual Report conversion can be triaged as well – e.g., start with the electronic filing of the financial statement portions of the annual report and move on to other non-financial content and data.

6.4 Production support: on-line, phone, staffing

User support should be provided for during the Pilot Rollout and Full Implementation phases. The Development Team and JSC personnel should identify, design and implement appropriate methods for supporting the e-Filing community base via dedicated phone lines and/or on-line support.

RISK MANAGEMENT FORM

This section is reserved to keep track of the risks and outstanding issues that my potentially delay the implementation and cause the project to be either over time or over budget. Risk information should be recorded by the PMO in the centralized tracking software used for this purpose.

Risk	Probability (H/M/L)	Impact (H/M/L)	Mitigation

SIGN-OFF FORM

All changes, amendments and modifications to the e-Filing Project and Master Plan documents should be subject to a verification and sign-off procedure. The exact details of the sign-off procedure should be defined as a PMO process. All sign-off's should be recorded by the PMO in the centralized tracking software used for this purpose.

Name	Role	Sign-Off

RELATED DOCUMENTS AND LINKS

This section will be developed during the course of the e-Filing project. All related documents and links information should be entered by the PMO in the centralized tracking software used for this purpose.

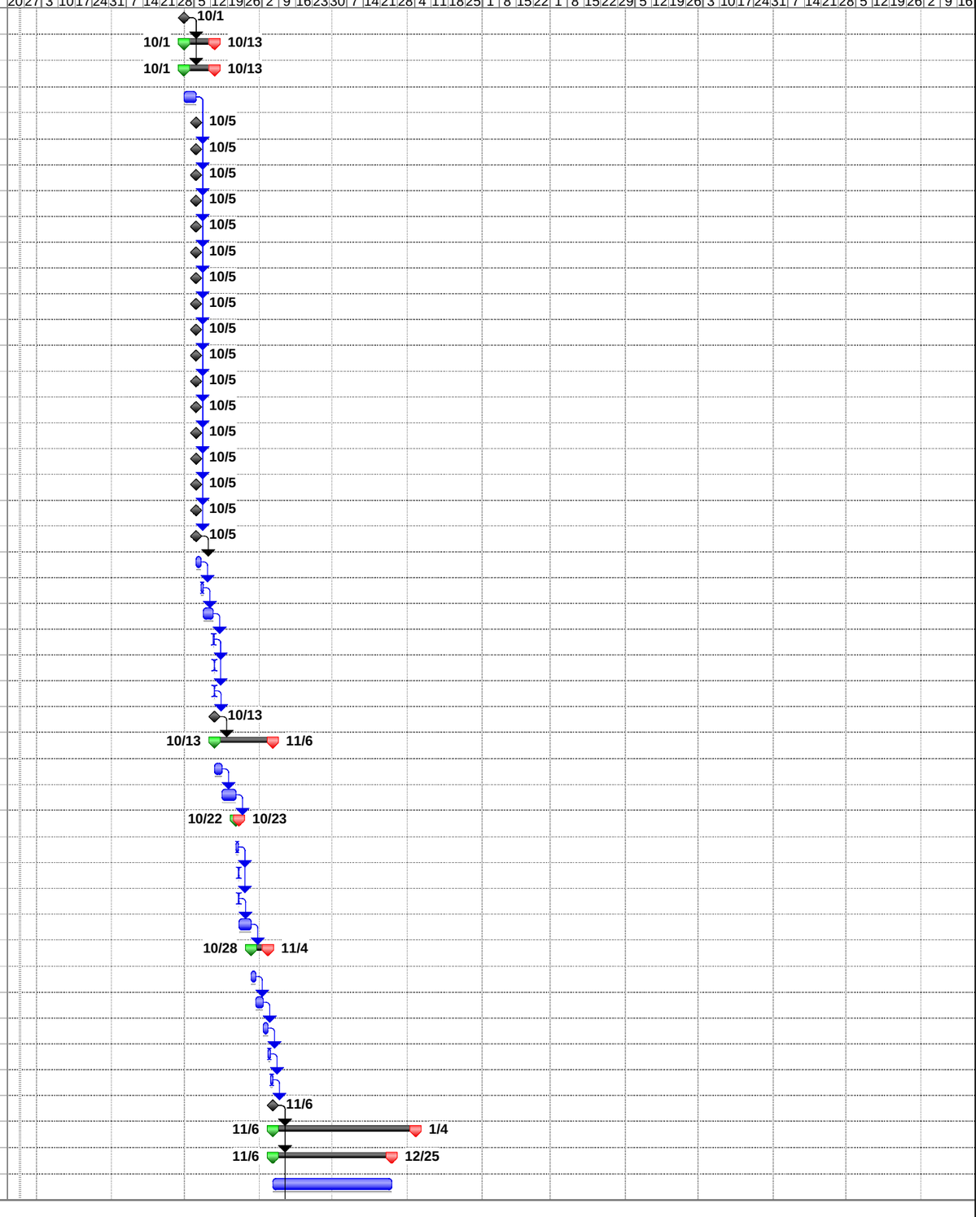
Document Name	**Document Link**

APPENDIX A

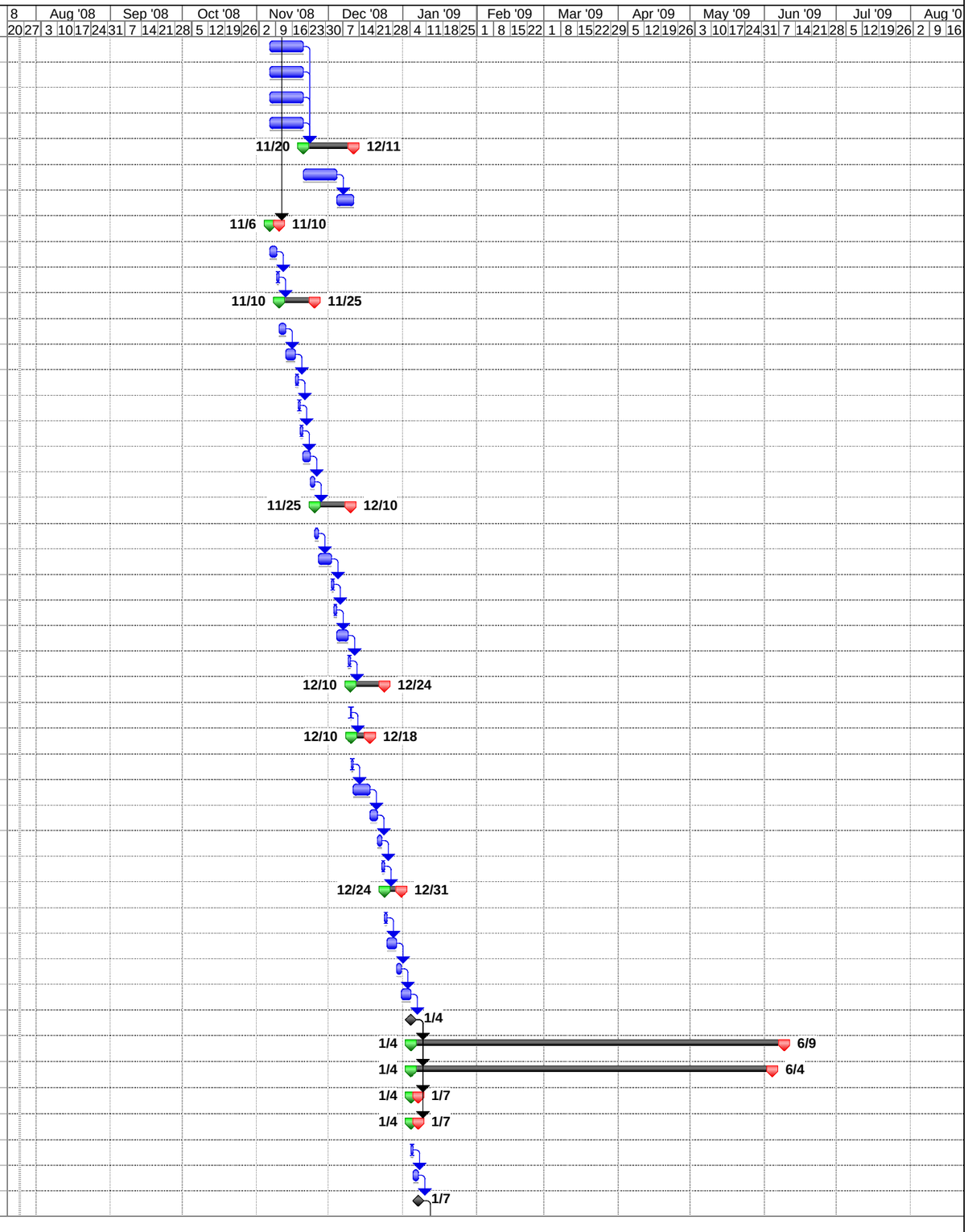
PRELIMINARY DRAFT E-FILING TECHNICAL PROJECT PLAN

[Note: Project Plan Should Be Printed on Large Format A3 Size Paper]

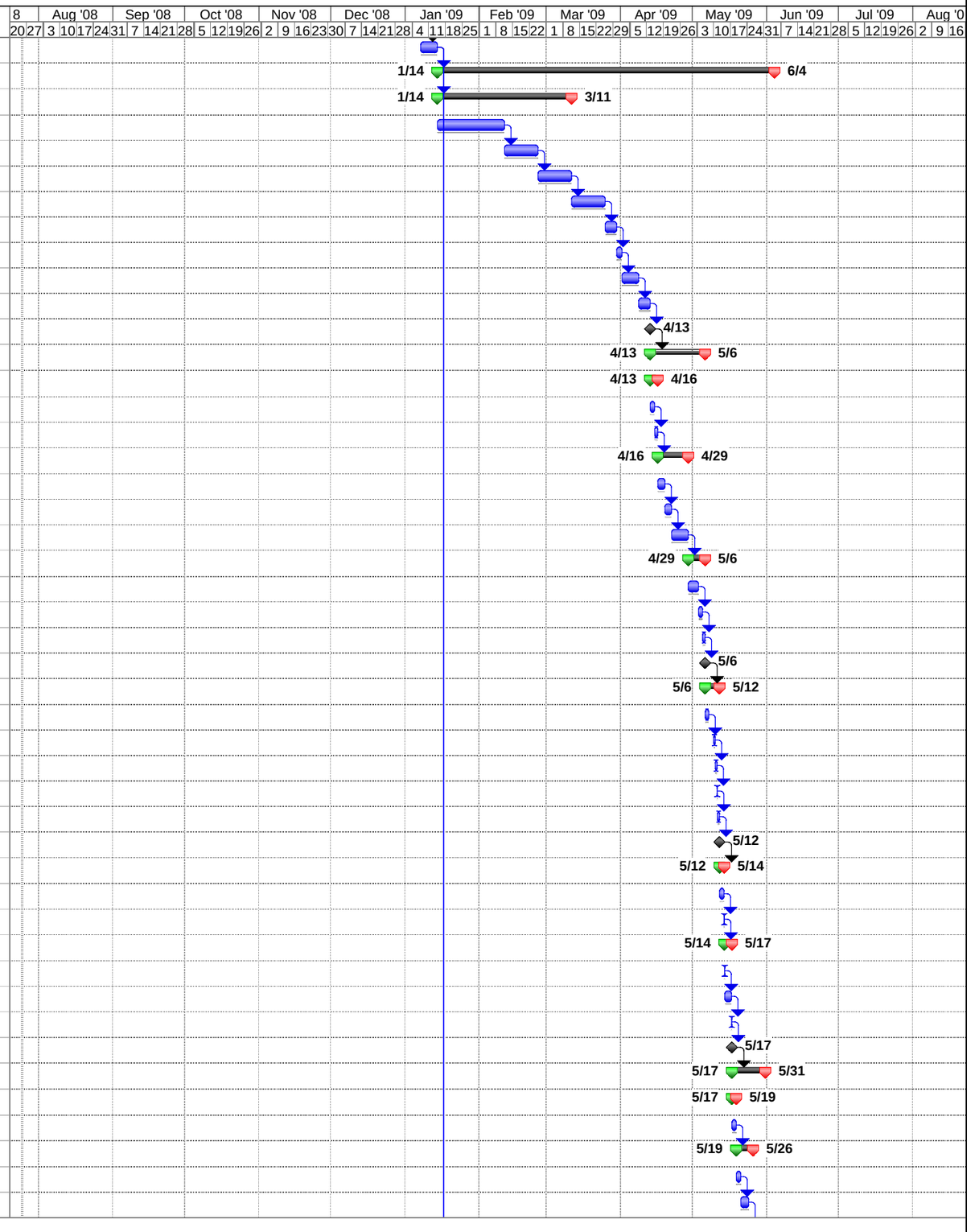
ID	Task Name	Duration	Start	Finish	Predecessors
1	**E-Filing Pilot**	0 days	Wed 10/1/08	Wed 10/1/08	
2	**Phase 1 - Detailed Project Scope Review with JSC**	**8.66 days**	**Wed 10/1/08**	**Mon 10/13/08**	1
3	**Review Master Plan Technical & Functional Specifications**	**8.66 days**	**Wed 10/1/08**	**Mon 10/13/08**	1
4	Create Revised Project Plan	3 days	Wed 10/1/08	Sun 10/5/08	
5	**Prioritize Disclosure Filings List for Conversion**	**0 days**	**Sun 10/5/08**	**Sun 10/5/08**	
6	Q1 / Q3 Financial Statements - ASE Tier 1	0 days	Sun 10/5/08	Sun 10/5/08	4
7	Semi-Annual Financial Statements	0 days	Sun 10/5/08	Sun 10/5/08	4
8	Preliminary Annual Financial Statements	0 days	Sun 10/5/08	Sun 10/5/08	4
9	Material Events Filings	0 days	Sun 10/5/08	Sun 10/5/08	4
10	Auditor Changes	0 days	Sun 10/5/08	Sun 10/5/08	4
11	CGRI Questionnaires	0 days	Sun 10/5/08	Sun 10/5/08	4
12	Capital Adequacy Filings	0 days	Sun 10/5/08	Sun 10/5/08	4
13	Annual Report Filings	0 days	Sun 10/5/08	Sun 10/5/08	4
14	Large Traders [To Be Converted to Internal Filing]	0 days	Sun 10/5/08	Sun 10/5/08	4
15	BOD Trading [To Be Converted to Internal Filing]	0 days	Sun 10/5/08	Sun 10/5/08	4
16	Other Insiders [To Be Converted to Internal Filing]	0 days	Sun 10/5/08	Sun 10/5/08	4
17	Licensing - Initial?	0 days	Sun 10/5/08	Sun 10/5/08	4
18	Licensing - Renewal?	0 days	Sun 10/5/08	Sun 10/5/08	4
19	Complaint Forms?	0 days	Sun 10/5/08	Sun 10/5/08	4
20	IPO Disclosures?	0 days	Sun 10/5/08	Sun 10/5/08	4
21	Registered Person Trading [To Be Converted to Internal Filing]	0 days	Sun 10/5/08	Sun 10/5/08	4
22	Define & Organize Working Group	2 days	Mon 10/6/08	Tue 10/7/08	21
23	Define & Organize Project Management Office	1 day	Wed 10/8/08	Wed 10/8/08	22
24	Identify & Select Pilot Issuers	2 days	Thu 10/9/08	Sun 10/12/08	23
25	Define & Assign Roles & Responsibilities	0.33 days	Mon 10/13/08	Mon 10/13/08	24
26	Establish Risk Management, Issue Tracking & Resolution Procedures	0.33 days	Mon 10/13/08	Mon 10/13/08	25
27	Establish User Review & Signoff Process	0.33 days	Mon 10/13/08	Mon 10/13/08	25
28	Scope complete	0 days	Mon 10/13/08	Mon 10/13/08	27
29	**Phase 2 - Requirements Phase**	**18.25 days**	**Mon 10/13/08**	**Thu 11/6/08**	28
30	Create / Revise Functional Requirements with JSC Team	3.33 days	Mon 10/13/08	Thu 10/16/08	
31	Create / Revise Technical Requirements with JSC Team	3.33 days	Thu 10/16/08	Wed 10/22/08	30
32	**Review software specifications / budget with JSC & Development Teams**	**1.67 days**	**Wed 10/22/08**	**Thu 10/23/08**	31
33	Incorporate Feedback & Revise preliminary software specifications	1 day	Wed 10/22/08	Thu 10/23/08	
34	Develop Revised Budget	0.67 days	Thu 10/23/08	Thu 10/23/08	33
35	Develop revised delivery timeline	0.67 days	Thu 10/23/08	Thu 10/23/08	33
36	Obtain approvals to proceed (concept, timeline, budget)	3 days	Thu 10/23/08	Tue 10/28/08	35
37	**Assess Technology Feasibility**	**4.92 days**	**Tue 10/28/08**	**Tue 11/4/08**	36
38	Define Initial Architecture	1.67 days	Tue 10/28/08	Thu 10/30/08	
39	Estimate Capacity Requirements	1.25 days	Thu 10/30/08	Sun 11/2/08	38
40	Review and Signoff Architecture and Technical Requirements	2 days	Sun 11/2/08	Tue 11/4/08	39
41	Plan Resource Training	1 day	Tue 11/4/08	Wed 11/5/08	40
42	Review and Modify Budget	1 day	Wed 11/5/08	Thu 11/6/08	41
43	Requirements Phase Complete	0 days	Thu 11/6/08	Thu 11/6/08	42
44	**Phase 3 - Design Phase**	**40.75 days**	**Thu 11/6/08**	**Sun 1/4/09**	43
45	**Define Data Content for Prioritized Filings**	**35 days**	**Thu 11/6/08**	**Thu 12/25/08**	43
46	Establish IFRS Taxonomy	35 days	Thu 11/6/08	Thu 12/25/08	



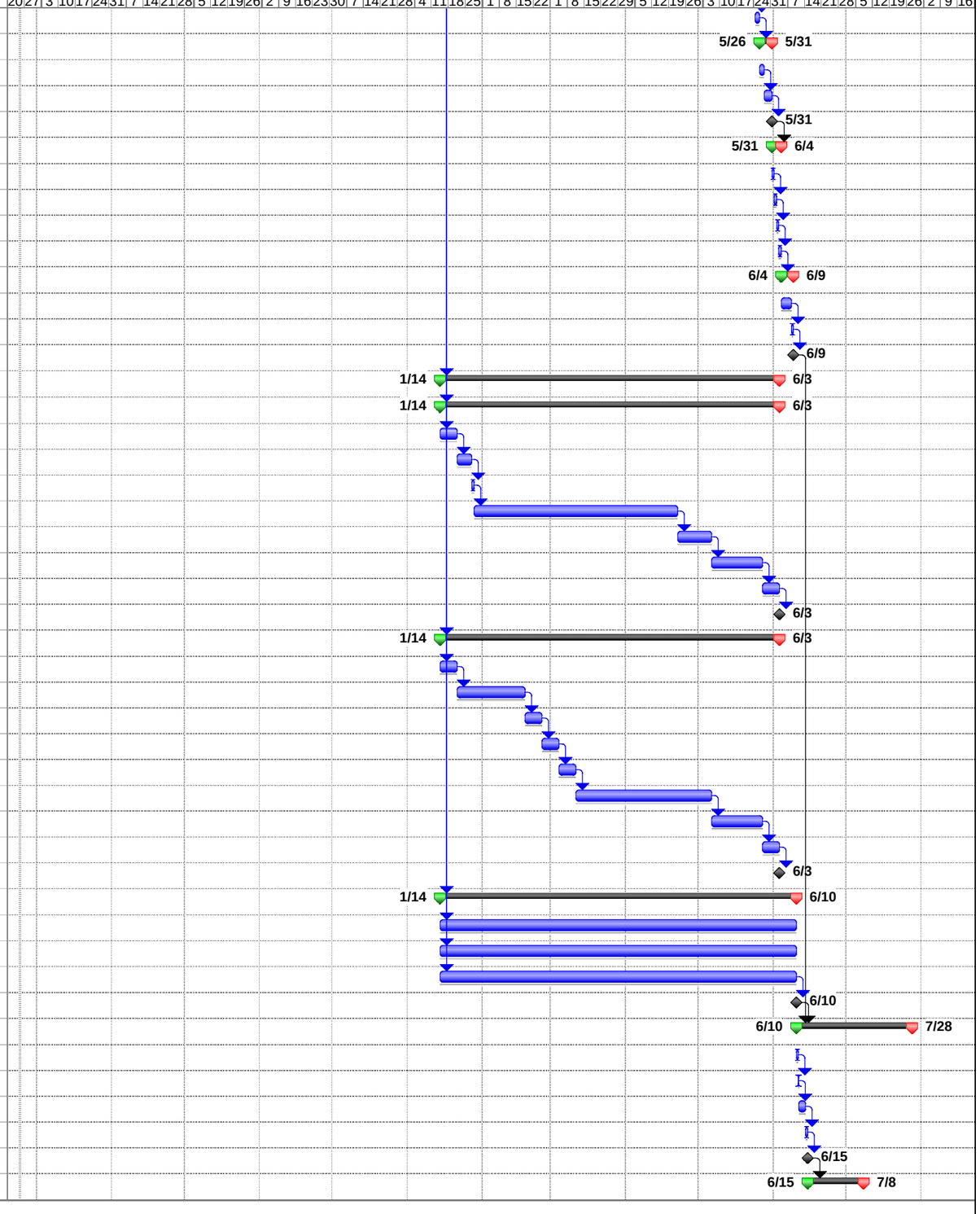
ID	Task Name	Duration	Start	Finish	Predecessors
47	Define Filing Document Requirements	10 days	Thu 11/6/08	Thu 11/20/08	
48	Define Filing Workflow Requirements	10 days	Thu 11/6/08	Thu 11/20/08	
49	Define Filing Validations	10 days	Thu 11/6/08	Thu 11/20/08	
50	Define Filing Reporting Requirements	10 days	Thu 11/6/08	Thu 11/20/08	
51	**Regulatory Revisions**	**15 days**	**Thu 11/20/08**	**Thu 12/11/08**	**50,49,48,47**
52	Draft Interim e-Filing Directives	10 days	Thu 11/20/08	Thu 12/4/08	
53	Revise / Amend Disclosure Directives	5 days	Thu 12/4/08	Thu 12/11/08	52
54	**Define Logical Architecture**	**1.66 days**	**Thu 11/6/08**	**Mon 11/10/08**	**43**
55	Create Logical Application Architecture Diagrams	0.83 days	Thu 11/6/08	Sun 11/9/08	
56	Create Logical Deployment Diagrams	0.83 days	Sun 11/9/08	Mon 11/10/08	55
57	**Design Software Components**	**10.76 days**	**Mon 11/10/08**	**Tue 11/25/08**	**56**
58	Entitlements & Security	2.5 days	Mon 11/10/08	Thu 11/13/08	
59	Arabic Lanugage Localization Design	2 days	Thu 11/13/08	Mon 11/17/08	58
60	Data Acceptance	1.67 days	Mon 11/17/08	Tue 11/18/08	59
61	Data Validation	0.42 days	Tue 11/18/08	Wed 11/19/08	60
62	Data Rentention	1.25 days	Wed 11/19/08	Thu 11/20/08	61
63	Data Approvals	1.25 days	Thu 11/20/08	Sun 11/23/08	62
64	Data Presentation	1.67 days	Sun 11/23/08	Tue 11/25/08	63
65	**Design Data**	**10.83 days**	**Tue 11/25/08**	**Wed 12/10/08**	**64**
66	Create Logical Data Diagrams	1.67 days	Tue 11/25/08	Wed 11/26/08	
67	Create Physical Data Model	3.33 days	Thu 11/27/08	Tue 12/2/08	66
68	Create Indexes, Constraints, Dependencies	0.83 days	Tue 12/2/08	Wed 12/3/08	67
69	Create Data Maintenance Processes	1.67 days	Wed 12/3/08	Thu 12/4/08	68
70	Create Data Schema and SQL Scripts	2.5 days	Thu 12/4/08	Tue 12/9/08	69
71	Define Output Views	0.83 days	Tue 12/9/08	Wed 12/10/08	70
72	**Define Technical Architecture and Infrastructure**	**10.5 days**	**Wed 12/10/08**	**Wed 12/24/08**	**71**
73	Create Physical Architecture Deployment Diagram	0.83 days	Wed 12/10/08	Wed 12/10/08	
74	**Hardware / Software Procurement**	**5.5 days**	**Wed 12/10/08**	**Thu 12/18/08**	**73**
75	Create Hardware / Software Procurement List	0.5 days	Wed 12/10/08	Thu 12/11/08	
76	Procure Hardware / Software	5 days	Thu 12/11/08	Thu 12/18/08	75
77	Create and Install Clean Development Environment	1.25 days	Thu 12/18/08	Sun 12/21/08	76
78	Deploy Database and Apply Data Schema	1.67 days	Sun 12/21/08	Tue 12/23/08	77
79	Install Report Server	1.25 days	Tue 12/23/08	Wed 12/24/08	78
80	**Establish Test Strategy**	**5 days**	**Wed 12/24/08**	**Wed 12/31/08**	**79**
81	Create Unit Tests	1 day	Wed 12/24/08	Thu 12/25/08	
82	Develop Test Plans	2 days	Thu 12/25/08	Mon 12/29/08	81
83	Produce Master Test Plan with Documented Scenarios	2 days	Mon 12/29/08	Wed 12/31/08	82
84	Update Project Plan and Budget	2 days	Wed 12/31/08	Sun 1/4/09	83
85	Design Phase Complete	0 days	Sun 1/4/09	Sun 1/4/09	84
86	**Phase 4 - Implementation Phase**	**111.62 days**	**Sun 1/4/09**	**Tue 6/9/09**	**85**
87	**Build Application Software Components**	**108.62 days**	**Sun 1/4/09**	**Thu 6/4/09**	**85**
88	**Entitlements Module**	**3.33 days**	**Sun 1/4/09**	**Wed 1/7/09**	**85**
89	**Define User Groups**	**3.33 days**	**Sun 1/4/09**	**Wed 1/7/09**	**85**
90	Allocate Group Level Permissions	0.83 days	Sun 1/4/09	Mon 1/5/09	
91	Create Administrative Interface	2.5 days	Mon 1/5/09	Wed 1/7/09	90
92	Entitlements Module Complete	0 days	Wed 1/7/09	Wed 1/7/09	91



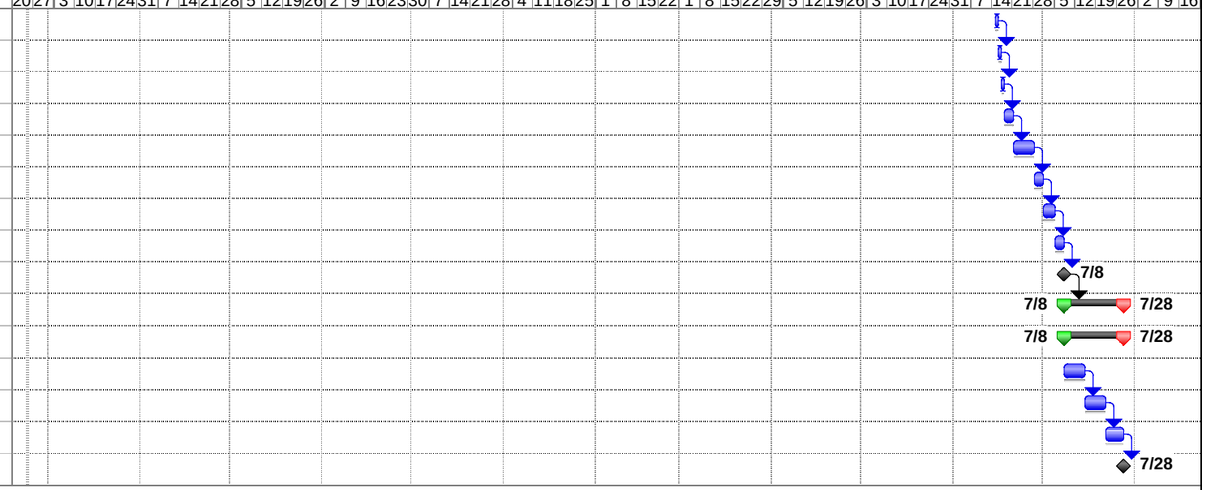
ID	Task Name	Duration	Start	Finish	Predecessors
93	Arabic Language Localization Module	5 days	Wed 1/7/09	Wed 1/14/09	92
94	**Data Collection Module**	**100.29 days**	**Wed 1/14/09**	**Thu 6/4/09**	**93**
95	**Define Acceptable Data Formats**	**40 days**	**Wed 1/14/09**	**Wed 3/11/09**	**93**
96	Web Forms Development	20 days	Wed 1/14/09	Wed 2/11/09	
97	Excel Forms Development	10 days	Wed 2/11/09	Wed 2/25/09	96
98	PDF Forms Development	10 days	Wed 2/25/09	Wed 3/11/09	97
99	Defnition and Allocation of XBRL Tags	10 days	Wed 3/11/09	Wed 3/25/09	98
100	Database Connection Methods	2.5 days	Wed 3/25/09	Mon 3/30/09	99
101	Restorability - Front End Identification	2.5 days	Mon 3/30/09	Wed 4/1/09	100
102	Ad Hoc Forms Development Process	5 days	Wed 4/1/09	Wed 4/8/09	101
103	Reference Data Load and Maintenance	2.5 days	Wed 4/8/09	Mon 4/13/09	102
104	Data Collection Module Complete	0 days	Mon 4/13/09	Mon 4/13/09	103
105	**Data Validation Module**	**16.84 days**	**Mon 4/13/09**	**Wed 5/6/09**	**104**
106	**Accuracy**	**3.34 days**	**Mon 4/13/09**	**Thu 4/16/09**	
107	Syntax Check	1.67 days	Mon 4/13/09	Wed 4/15/09	
108	Matrix Check	1.67 days	Wed 4/15/09	Thu 4/16/09	107
109	**Completeness - Context Check**	**8.5 days**	**Thu 4/16/09**	**Wed 4/29/09**	**108**
110	Calculated Values Check	1 day	Thu 4/16/09	Sun 4/19/09	
111	Single Line Entry	2.5 days	Sun 4/19/09	Wed 4/22/09	110
112	Multiple Line Entries	5 days	Wed 4/22/09	Wed 4/29/09	111
113	**First Acceptance Notice Delivery Method**	**5 days**	**Wed 4/29/09**	**Wed 5/6/09**	**112**
114	Email	2.5 days	Wed 4/29/09	Sun 5/3/09	
115	Fax	1.25 days	Sun 5/3/09	Tue 5/5/09	114
116	Online	1.25 days	Tue 5/5/09	Wed 5/6/09	115
117	Data Validation Module Complete	0 days	Wed 5/6/09	Wed 5/6/09	116
118	**Extraction, Transformation & Loading (ETL) Module**	**4.08 days**	**Wed 5/6/09**	**Tue 5/12/09**	**117**
119	Staging Area	1.67 days	Wed 5/6/09	Thu 5/7/09	
120	Restorability - Immediate Identification	0.83 days	Sun 5/10/09	Sun 5/10/09	119
121	Data Commitment to Back End	0.42 days	Sun 5/10/09	Mon 5/11/09	120
122	Database Index Alignment	0.33 days	Mon 5/11/09	Mon 5/11/09	121
123	Restorability - Complete Data Release	0.83 days	Mon 5/11/09	Tue 5/12/09	122
124	ETL Module Complete	0 days	Tue 5/12/09	Tue 5/12/09	123
125	**Document Approval / Work Process Module**	**2.09 days**	**Tue 5/12/09**	**Thu 5/14/09**	**124**
126	Define Work Process Checklist for Prioritized Filings	1.67 days	Tue 5/12/09	Thu 5/14/09	
127	Approved Data Commitment Process	0.42 days	Thu 5/14/09	Thu 5/14/09	126
128	**Second Acceptance Notice Delivery Method**	**1.26 days**	**Thu 5/14/09**	**Sun 5/17/09**	**127**
129	Email	0.42 days	Thu 5/14/09	Thu 5/14/09	
130	Fax	0.42 days	Thu 5/14/09	Sun 5/17/09	129
131	Online	0.42 days	Sun 5/17/09	Sun 5/17/09	130
132	Data Approval / Work Process Module Complete	0 days	Sun 5/17/09	Sun 5/17/09	131
133	**Data Display Module**	**10.02 days**	**Sun 5/17/09**	**Sun 5/31/09**	**132**
134	**Data Retrieval Mechanisms**	**1.67 days**	**Sun 5/17/09**	**Tue 5/19/09**	
135	Develop / Configure Query Tools	1.67 days	Sun 5/17/09	Tue 5/19/09	
136	**Data Publishing Methods (Standard)**	**5.01 days**	**Tue 5/19/09**	**Tue 5/26/09**	**135**
137	Text	1.67 days	Tue 5/19/09	Thu 5/21/09	
138	Excel	1.67 days	Thu 5/21/09	Sun 5/24/09	137



ID	Task Name	Duration	Start	Finish	Predecessors
139	PDF	1.67 days	Sun 5/24/09	Tue 5/26/09	138
140	**Ad Hoc Mechanisms (By Request)**	**3.34 days**	**Tue 5/26/09**	**Sun 5/31/09**	**139**
141	RSS Feeds	1.67 days	Tue 5/26/09	Thu 5/28/09	
142	Email Alert Mechanism	1.67 days	Thu 5/28/09	Sun 5/31/09	141
143	Data Display Module Complete	0 days	Sun 5/31/09	Sun 5/31/09	142
144	**Establish Test Environment and Perform Unit Testing**	**3.5 days**	**Sun 5/31/09**	**Thu 6/4/09**	**143**
145	Develop Test Unit Scripts	0.5 days	Sun 5/31/09	Mon 6/1/09	
146	Prepare Test Environment	1.25 days	Mon 6/1/09	Tue 6/2/09	145
147	Execute Unit Testing	0.5 days	Tue 6/2/09	Wed 6/3/09	146
148	Review Test Results	1.25 days	Wed 6/3/09	Thu 6/4/09	147
149	**Language Localization Module**	**3 days**	**Thu 6/4/09**	**Tue 6/9/09**	**148**
150	Prepare Arabic Localization	2.5 days	Thu 6/4/09	Mon 6/8/09	
151	Test Internal and External Localization Functionality	0.5 days	Mon 6/8/09	Tue 6/9/09	150
152	Implementation Phase Complete	0 days	Tue 6/9/09	Tue 6/9/09	151
153	**Phase 5 - Training & Documentation Development**	**100 days**	**Wed 1/14/09**	**Wed 6/3/09**	**93**
154	**Develop Training Program & Materials**	**100 days**	**Wed 1/14/09**	**Wed 6/3/09**	**93**
155	Develop training specifications for end users	5 days	Wed 1/14/09	Wed 1/21/09	93
156	Develop training specifications for helpdesk support staff	4 days	Wed 1/21/09	Tue 1/27/09	155
157	Identify training delivery methodology (computer based training, classroom, etc.)	1 day	Tue 1/27/09	Wed 1/28/09	156
158	Develop training materials	60 days	Wed 1/28/09	Wed 4/22/09	157
159	Conduct training usability study	10 days	Wed 4/22/09	Wed 5/6/09	158
160	Finalize training materials	15 days	Wed 5/6/09	Wed 5/27/09	159
161	Develop training delivery mechanism	5 days	Wed 5/27/09	Wed 6/3/09	160
162	Training Program & Materials Complete	0 days	Wed 6/3/09	Wed 6/3/09	161
163	**Documentation**	**100 days**	**Wed 1/14/09**	**Wed 6/3/09**	**93**
164	Develop Help specification	5 days	Wed 1/14/09	Wed 1/21/09	93
165	Develop Help system	20 days	Wed 1/21/09	Wed 2/18/09	164
166	Review Help documentation	5 days	Wed 2/18/09	Wed 2/25/09	165
167	Incorporate Help documentation feedback	5 days	Wed 2/25/09	Wed 3/4/09	166
168	Develop user manuals specifications	5 days	Wed 3/4/09	Wed 3/11/09	167
169	Develop user manuals	40 days	Wed 3/11/09	Wed 5/6/09	168
170	Review all user documentation	15 days	Wed 5/6/09	Wed 5/27/09	169
171	Incorporate user documentation feedback	5 days	Wed 5/27/09	Wed 6/3/09	170
172	Training and Codumentation Development Complete	0 days	Wed 6/3/09	Wed 6/3/09	171
173	**Phase 6 - Test Phase - Ongoing as Modules are Completed**	**105 days**	**Wed 1/14/09**	**Wed 6/10/09**	**93**
174	Create Test Data	105 days	Wed 1/14/09	Wed 6/10/09	93
175	Execute Quality Assurance (QA) Testing	105 days	Wed 1/14/09	Wed 6/10/09	93
176	Validate QA Test Results	105 days	Wed 1/14/09	Wed 6/10/09	93
177	Test Complete	0 days	Wed 6/10/09	Wed 6/10/09	176
178	**Phase 7 - Pilot / Deployment Phase**	**33.34 days**	**Wed 6/10/09**	**Tue 7/28/09**	**177,152**
179	Prepare Pilot Deployment Plan	0.42 days	Wed 6/10/09	Thu 6/11/09	
180	Establish Deployment Procedures and Scripts	0.42 days	Thu 6/11/09	Thu 6/11/09	179
181	Prepare Rollout Plan	0.42 days	Thu 6/11/09	Sun 6/14/09	180
182	Setup Production Environment & Convert Data	0.83 days	Sun 6/14/09	Mon 6/15/09	181
183	Setup Complete	0 days	Mon 6/15/09	Mon 6/15/09	182
184	**Pilot Rollout**	**17.25 days**	**Mon 6/15/09**	**Wed 7/8/09**	**183**



ID	Task Name	Duration	Start	Finish	Predecessors
185	Select Test Group	1 day	Mon 6/15/09	Tue 6/16/09	
186	Develop software delivery mechanism	1 day	Tue 6/16/09	Wed 6/17/09	185
187	Install/deploy software	1 day	Wed 6/17/09	Thu 6/18/09	186
188	Pilot Release to Production	1.25 days	Thu 6/18/09	Sun 6/21/09	187
189	Production Test	5 days	Sun 6/21/09	Sun 6/28/09	188
190	Production Support Test	3 days	Sun 6/28/09	Wed 7/1/09	189
191	Obtain user feedback	2 days	Wed 7/1/09	Sun 7/5/09	190
192	Evaluate testing information	3 days	Sun 7/5/09	Wed 7/8/09	191
193	Pilot complete	0 days	Wed 7/8/09	Wed 7/8/09	192
194	**Create Future Release Schedule**	**14 days**	**Wed 7/8/09**	**Tue 7/28/09**	**193**
195	**End-to-End Rollout**	**14 days**	**Wed 7/8/09**	**Tue 7/28/09**	
196	Full Release to Production	5 days	Wed 7/8/09	Wed 7/15/09	
197	Full Production Test	5 days	Wed 7/15/09	Wed 7/22/09	196
198	Full Production Support Test	4 days	Wed 7/22/09	Tue 7/28/09	197
199	Pilot / Deployment Complete	0 days	Tue 7/28/09	Tue 7/28/09	198



APPENDIX B

JSC DOCUMENT UNIVERSE MATRIX

Document	Article	Filer	Filing Method	Elements	Validations	Process	Reports/Flags	Portal	Complexity	Priority	Sequence	Comment
Quarterly Financials	ASE LD A.15B	Issuer	Web Form	Financial	Mathematical	Review Publication Analysis	Std Report(s) Flags - Timeliness - Significant Changes	Public	Low	High		
Semi-Annual	JSC DD A.6	Issuer	Web Form	Financial	Mathematical	Review Publication Analysis	Std Report (s) Flags - Timeliness - Significant Changes	Public	Low	High		
Preliminary Annual	JSC DD A.3	Issuer	Web Form	Financial	Mathematical	Review Publication Analysis	Std Report(s) Flags - Timeliness - Significant Changes	Public	Low	High		
Annual Report	JSC DD A.4 A.5	Issuer	Form	Financial Text Data	Mathematical Completeness	Review Publication Analysis	Std Report(s) Flags - Timeliness - Significant Changes	Public	High	High		
Material Events – I	A.8	Issuer	Web Form	Text Data - Define sub-articles	Various - Define sub-articles	Review Publication Analysis	Std Report(s) Flags - By Category	Public	Low/Med	High		
Material Events – II [Follow up] [Public Stmt]	A.9	Issuer	Web Form	Text Data	Various	Review Publication Analysis	Define Std Report(s)	Internal Public	Low/Med	Medium		
Auditor Changes - I	A.20	Issuer	Web Form							Low		
Auditor Changes- II	A.21	Auditor										
IPO Disclosures			Form									

Document	Article	Filer	Filing Method	Elements	Validations	Process	Reports/Flags	Portal	Complexity	Priority	Sequence	Comment
Large Traders	A.13	[Convert]	N / A	Text Data	N / A	Auto Publish if threshold exceeded	Define Flags	Public	Low	High		
BOD Trading	A.12	[Convert]	N / A	Text Data	N / A	Auto Publish	Flags	Public	Low	High		
Other Insiders (SEM)	A.12	[Convert]	N / A	Text Data	N / A	Auto Publish	Flags		Low	High		
Capital Adequacy		Broker	Web Form	Financial	Mathematical	Review – H	Flags Standard	Internal	Low	High		
Licensing – Initial		Legal Physical	Form	Text Data	Completeness	Review – M Approval		Internal	Med/High	Low		
Licensing – Renewal		Legal Physical	Form	Text Data	Completeness	Review – M Approval		Internal	Med/High	Low		
Registered Person Trading		[Convert]	N / A	Text Data			Flags	Internal	Low	Medium		
CGRI Questionnaire	TBD	Issuer	Web Form	Data	Completeness	Auto Scoring	Ranking – Raw Ranking – Percentile Sector Comparison	Public	Low	Medium		
Complaint Form	TBD	Physical	Web Form	Text Data	Completeness	Review - M	Flag by Category Sort by Target Name	Internal	Low	Low		