U.S. EPA
Central Data Exchange (CDX) Support

Statement of Work

August 31, 2010

United States Environmental Protection Agency (EPA)
Office of Environmental Information (OEI)
Office of Information Collection (OIC)

1. Background

The United States Environmental Protection Agency (EPA) is charged with protecting human health and the environment. Since 1970, EPA has been working for a cleaner, healthier environment for the American people.

EPA employs 17,000 people across the country, including our headquarters offices in Washington, DC, ten regional offices, and more than a dozen labs. EPA staff is highly educated and technically trained; more than half are engineers, scientists, and policy analysts. In addition, a large number of employees are legal, public affairs, financial, information management and computer specialists. EPA is led by the Administrator, who is appointed by the President of the United States. The following are the primary work areas in which EPA has been tasked:

- Develop and enforce regulations: EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Where national standards are not met, EPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality.

- Offer financial assistance: In recent years, between 40 and 50 percent of EPA's enacted budgets have provided direct support through grants to State environmental programs. EPA grants to States, non-profits and educational institutions support high-quality research that will improve the scientific basis for decisions on national environmental issues and help EPA achieve its goals.

- Perform environmental research: At laboratories located throughout the nation, the Agency works to assess environmental conditions and identify, understand, and solve current and future environmental problems; integrate the work of scientific partners such as nations, private sector organizations, academia and other agencies; and provide leadership in addressing emerging environmental issues and in advancing the science and technology of risk assessment and risk management.

- Sponsor voluntary partnerships and programs: The Agency works through its headquarters and regional offices with over 10,000 industries, businesses, non-profit organizations, and state and local governments, on over 40 voluntary pollution prevention programs and energy conservation efforts. Partners set voluntary pollution-management goals; examples include conserving water and energy, minimizing greenhouse gases, slashing toxic emissions, re-using solid waste, controlling indoor air pollution, and getting a handle on pesticide risks. In return, EPA provides incentives like vital public recognition and access to emerging information.

- Further environmental education: EPA advances educational efforts to develop an environmentally conscious and responsible public, and to inspire personal responsibility in caring for the environment.

More information about EPA’s mission and strategy can be found at www.epa.gov.

The Office of Environmental Information (OEI), headed by the Chief Information Officer, manages the life cycle of information to support EPA’s goal of protecting human health and the environment. The OEI Office of Information Collection (OIC) collects, manages, provides and safeguards environmental information.

As a result of increasing demand for electronic reporting and data exchange among trading partners and the regulated community, in 1999 EPA established the Central Data Exchange (CDX). CDX is the designated gateway where environmental data is received from the regulated community and processed for delivery to program offices in the Agency. CDX also serves as the point of presence on the National Environmental Information Exchange Network where State and Tribes routinely conduct data transactions with EPA.

1.1 CDX Stakeholders

The CDX Program has many stakeholders. Listed below are descriptions of some of the various stakeholders to which the contractor shall interact with:

- ***EPA Program Offices and EPA Regional Offices*** – Develops environmental rules that require submission of environmental data to EPA. Provide funding for CDX projects to the OEI CDX Program Team and develop business and technical requirements for submission of environmental data to EPA. These are the traditional CDX customers.
- ***State, Local and Tribal Partners*** – Typically wish to develop a presence on the Environmental Information Exchange Network. Most state, local and tribal partners receive grant money from EPA to help fund projects for the Exchange Network.
- ***CDX Users*** – Environmental rules developed by EPA Program Offices require CDX users to submit environmental data to EPA. CDX users do not typically provide funding for CDX services.
- ***OEI CDX Program Team*** – Works directly with the contractor to develop and deliver CDX services while ensuring project quality, scope, cost and schedule are maintained. Integrates new technologies into CDX services and leads governance of the CDX Program.

1.2 Mission, Vision and Strategy of CDX Branch

The branch that manages the CDX Program for EPA is the Information Exchange Technology Branch (IETB) and it is within EPA's Office of Information Collection (OIC). Listed below are the IETB Vision, IETB Mission and IETB Strategies.

1.2.1 IETB Vision

- To serve as EPA's center of excellence for electronic reporting and exchange of environmental data through the Central Data Exchange (CDX).

1.2.2 IETB Mission

- Support protection of human health and the environment by leading the Agency in electronic data exchange.
- Provide EPA Programs, States, Tribes, and Industry data exchange options to meet their business needs through CDX.
- Create CDX solutions and implement a Service Oriented Architecture in alignment with the Agency's architecture.
- Maintain support services to internal and external customers that are comparable to the best in the business.
- Assist EPA Programs to comply with their federal technical and policy requirements.

1.2.3 IETB Strategies

- Provide technical, contractual, financial, and project management expertise to assist exchange partners in developing data exchanges.
- Work collaboratively with OEI and Program Offices on a consultation basis to support the development and maintenance of data exchanges that meet EPA and federal policies, standards, and regulations.
- Provide expertise to Programs, States, Tribes, and Industry on regulatory programs to assist in dataflow design.
- Serve as a focal point in the Agency for Web services and Service Oriented Architecture activities.
- Communicate CDX support services in a transparent way.
- Keep abreast of federal requirements and guidelines involving project management, security, and investments.

- Implement and maintain security standards, investment, and contractual requirements as specified by federal, EPA, and program requirements.
- Develop and support options for exchange partner registration and authentication alternatives to meet program and regulatory requirements.
- Provide messaging options to assist in informing customers on status of reporting and publishing requests.
- Provide and implement options for complying with the Cross-Media Electronic Reporting Regulation (CROMERR) for all applicable partners.

1.3 CDX Program Initiatives

CDX is currently supporting the flow of data of 60 programs in the Agency. OIC is in the process of expanding CDX and the Exchange Network to support data exchanges with other Federal Agencies and international organizations, as well as provide the infrastructure and expertise for assisting more EPA programs in an evolving electronic age.

1.4 CDX Program as a Solutions Provider

From a business operations perspective, the CDX Program has matured to a point where business processes and procedures are evolving to become more efficient and effective overall. At the center of this evolution is a focus to improve on the operational excellence that CDX Customers are accustomed to receiving from the CDX Program Team.

The CDX Program is the data exchange solutions provider to the EPA and other CDX Program stakeholders. The structure of this task order is meant to facilitate successful management and delivery of CDX services and solutions to CDX customers.

1.5 CDX Development Services Description

CDX provides lifecycle development services to EPA program offices and regions, States, tribal and other trading partners, regulated entities who report and exchange data with EPA, and other stakeholders. “Dataflows” are the applications that effectively establish a new data exchange between, and are developed collaboratively with, EPA OEI, Program Offices, States and other trading partners. Program offices work with OEI and the contractor to define dataflow requirements to develop and maintain dataflows. OEI works with the program office to identify and document the activities, deliverables, and acceptance criteria in developing a dataflow. OEI’s goal is that new dataflow projects integrate and utilize existing CDX “core” services and software components, —leveraging service oriented architecture consistent with the EPA’s Enterprise Architecture and in accordance with the CDX Life Cycle Management Guide. Many dataflows consist of interconnectivity between a trading partner external to EPA (state, Tribal or local agency or reporting industry), EPA’s CDX, and a program application/database located in EPA’s National Computer Center where coordination is performed through Application Deployment Checklist procedures.

1.6 Cross Media Electronic Reporting Rule (CROMERR)

The Cross-Media Electronic Reporting Rule (CROMERR) provides the legal framework for electronic reporting (ER) under all of the Environmental Protection Agency's (EPA) environmental regulations. CROMERR applies to: (a) regulated entities that submit reports and other documents to EPA under Title 40 of the Code of Federal Regulations, and (b) states, tribes, and local governments that are authorized to administer EPA programs under Title 40. §3.2000(b) of CROMERR sets standards for electronic report receiving systems operated by states, tribes, and local governments under their authorized programs. These standards cover a variety of system functions, such as electronic signature validation. The standards are designed to provide electronic submittals with the same level of legal dependability as the corresponding paper submittals.

For reports submitted electronically to EPA, CROMERR requires the reports be submitted to the Central Data Exchange (CDX), or to a system designated by the Administrator for the receipt of those reports. On October 13,

2005, EPA published a Federal Register Notice (70 FR 59748) designating as acceptable all EPA systems that were receiving electronic reports as of that date to continue receiving those reports until October 13, 2007. To receive electronic reports after October 13, 2007, systems other than CDX must be re-designated by the Administrator. Although CROMERR does not subject EPA systems to the standards, EPA has decided that all of its systems will conform to the standards when they operate to receive electronic submittals that are covered by the regulation. In the Preamble to the regulation, EPA commits to meeting the §3.2000(b) standards for its own electronic report receiving systems. CROMERR also requires that states, tribes, and local governments that wish to continue or begin using ER for their authorized programs must revise or modify those programs to incorporate ER. CROMERR details the process to obtain EPA approval of ER-related revisions or modifications to an authorized program. See http://www.epa.gov/cromerr/.

2 CDX Operations and Maintenance (O&M) Tasks

2.1 O&M Services

The Contractor shall be responsible for overall operations and maintenance (O&M) of the environments for CDX development, integration test, pre-production, and the contractor shall provide partial O&M support for the CDX production and research and development environments in accordance with Agency and Federal Information Processing Standards (FIPS). CDX O&M is documented in Change Control Board (CCB) meetings and regular operations meetings. The contractor shall maintain CDX O&M procedures that are in accordance with the Technical and Security Procedures, CDX O&M Guide, and CDX Contingency Plan. The contractor shall track hardware and software purchases in order to provide status to EPA OEI upon request. The contractor shall provide the following O&M support:

- Procurement and management of hardware, software, and telecommunications resources shall be performed according to FAR and documented.
- Systems integration and implementation of hardware, software, and telecommunications shall be performed according to monthly milestone schedules and project plans for significant activities. Changes to CDX architecture shall be coordinated with the CDX Engineering Board (EB) as outlined in the EB Charter.
- Anti-Virus Scanning and Patchlink Operating System updates shall be managed in coordination with EPA's National Computer Center schedules and promotion schedules.
- Infrastructure monitoring, repair and maintenance shall be performed according to the CDX O&M Guide, CDX Contingency Plan, and performed to CDX Service Level Agreement (SLA) Matrix requirements.
- System performance monitoring shall be consistent with CDX O&M procedures.
- Change control / configuration management shall be performed according to the CDX Configuration Management Plan.
- Tier three help desk support shall be provided on escalated tier one or tier two CDX help desk issues.
- Contingency planning shall be documented and routine testing shall be documented according to the CDX Contingency Plan.
- Database administration shall be performed to ensure the support for CDX and program systems for all database environments as documented in the CDX O&M Guide.
- Regular coordination meetings shall be held between the Contractor with the National Computer Center Networking and Operations to ensure Development and Production environments are maintained in a timely and in a consistent manner.
- CDX Application O&M and Infrastructure O&M support, separation of duties as described in Separation of Duties Guide.
- The Contractor shall provide systems performance monitoring and reporting services for CDX customers. This applies specifically to customers who desire performance reporting that is above the reporting that is normally provided as a part of the standard CDX O&M support.

2.1.1Standard O&M Service Levels

(1) As identified in the Contractor's Communications Plan, the Contractor shall notify EPA within thirty (30) days before the expiration of any renewals on software/hardware licenses.
(2) The Contractor shall act on purchase requests within five (5) business days of receipt of approval on purchase requests from EPA. Contractor shall provide confirmation of purchase to EPA within one (1) business day of purchase.
(3) As identified in the Contractor's Communications Plan, the Contractor shall notify EPA OEI within one hour of any system downtimes / outages that would impact OEI or any stakeholder end user. If directed by EPA OEI, the contractor shall notify effected stakeholders directly.

2.1.2 Node O&M

The Contractor shall support O&M activities for the CDX Node and Exchange Network (EN) dataflows that includes but is not limited to:

- Deploying new CDX Node releases (e.g., server setup and configuration, node setup, unit testing, rolling between DEVTEST PROD environments, quality of service (QOS) monitoring.)
- Supporting versions for Node 1.1.
- Communicating/releasing new versions of NGN software for trading partners,
- Providing periodic testing.
- Identifying, testing interoperability and deploying new versions of supported software to remain current and to ensure adequate support.

2.1.3 Exchange Network Discovery Service (ENDS)

The Contractor shall support O&M activities for the CDX ENDS.

ENDS is a set of web services compliant with the Exchange Network Functional Specification that support the discovery of services and related metadata necessary for node clients and applications to easily provide user friendly query builders against published Network data. Some of the primary Meta data types included is Node, service request, parameters, style sheets available, and costing information. Metadata can be collected directly from the Network nodes and loaded into ENDS automatically via the GetServices query in the Node 2.0 Specification. The ENDS is a network-wide service repository which contains service descriptions for all nodes. ENDS not only offers a set of service publishing services, but also provide service management capabilities.

2.1.4 Data/Document Archiving and Tape Back Up Services

The Contractor shall ensure that all data/documents in CDX and the Data Processing Center (DPC)/Reporting Centers (RC) are archived and/or periodically backed up on tape. Examples of services the Contractor shall provide include the following:

- The Contractor shall provide both on-site and off-site storage for data, files, electronic equipment, and supplies.
- The Contractor shall provide digital scanning and electronic archiving if requested by EPA.
- The Contractor shall backup DPC/RC related systems data files, and any other operating system, application program, and data files critical to the operations of the centers. Timeframe of backups and procedures will be specified by EPA.

The Contractor shall have an offsite storage facility where the Contractor shall maintain the archived monthly backup tapes. The Contractor shall maintain a hard copy log of the Contractor's backup activities and securely store this information. The Contractor shall keep a copy of the log, preferably in a secure offsite location.

2.1.5 Government Owned Property

The Contractor shall maintain a detailed inventory accounting system for Government Furnished Equipment/Material (GFE/M) or Contractor-Acquired-Government Owned Property (CAP). The inventory accounting system must specify, as a minimum: product description (make, model), Government tag number, date of receipt, name of recipient, location of receipt, current location, purchase cost (if CAP), and contract/order number under which the equipment is being used. The Contractor shall either: a) attach an update inventory report to each monthly report, or b) certify that the inventory has been updated and is available for Government review. In either case the Contractor's inventory listing must be available for Government review within one business day of Contracting Officer request.

2.2 CDX Information Assurance and Registration

2.2.1 Information Assurance

The Contractor shall ensure the continued security of the CDX system and development environments. The Contractor shall be responsible for maintaining security of all CDX supported systems in accordance with laws, regulations, policies, procedures, etc.

For new dataflow requirements, the Contractor shall assess the impact of a customer's security requirements on the CDX infrastructure. The assessment could include:

- Type of data
- System sensitivity
- System structure
- Data transmission

The Contractor shall remain cognizant of new directions in Federal/EPA security guidance and CDX technologies; and shall ensure that the detection of new threats and vulnerabilities to CDX are addressed and escalated according to the EPA Security Escalation Procedures and Computer Security Incident Response Capability (CSIRC) procedures.

The Contractor shall keep all security procedure and planning documents that are necessary to maintain the certification and accreditation of the CDX system and development environments current and accurate. The Contractor shall fill out Firewall Rule Change Requests (FRR) and submit them to the EPA. The Contractor shall create and update Security Addendums (SA) to the CDX system security plan. The Contractor shall update the EPA ASSERT system as necessary. Example – When security vulnerability is found in CDX, the CDX Program staff creates an entry in the EPA ASSERT system and the Contractor updates the entry into the EPA ASSERT system.

The Contractor shall insert this clause in all subcontracts when the sub-Contractor is required to have routine physical access to a Federally-controlled facility and/or routine access to a Federally-controlled information system.

Security includes but is not limited to:

- Intrusion detection & protection systems
- Firewalls
- Hardware security
- Router
- Bridge
- Switches.

The Contractor shall assess design and development, and implementation of new and existing applications for

CROMERR, and recommend and provide procedures, software, and documentation necessary for CDX electronic reporting to be CROMERR compliant. The Contractor shall support the CDX Program's efforts to implement CROMERR in CDX system components and CDX services for CDX customers.

2.2.2 Network Authentication Authorization Service (NAAS)

The Contractor shall support O&M activities for the CDX NAAS.

NAAS is a set of security web services that the Central Data Exchange (CDX) centrally manages. It supports remote administration by the State and EPA Node Administrators. The NAAS provides extensive security services for identity management, user authentication, user authorization, and access control policy management. These services support security for every message on the CDX and the Exchange Network and as such their availability and performance are critical to successful operations.

2.2.3 Cross Media Electronic Reporting Rule (CROMERR) Support

The Contractor shall periodically review current CROMERR solutions and investigate whether advances in technology may be utilized to more efficiently meet the provisions of CROMERR.

The Contractor shall support customers that have dataflows which require CROMERR compliance. That support shall include assisting CDX customers' efforts to complete relevant CROMERR compliance checklists.

The Contractor shall maintain and update documentation, including design documentation, as it relates to CDX-CROMERR solutions. The Contractor shall maintain and ensure the adherence of all established standard operating procedures including, but not limited to, help desk procedures and maintenance of a copy of record of the submission.

2.2.4 CDX Registration

CDX provides a multitude of application registration services that support registration work flow procedures, and integration of identity management, credential management, certificate management, electronic sponsorship management, and access rights management through Web forms and Web Services.

The Contractor shall coordinate all CDX registration components with other CDX services and provide development, integration, and O&M support consistent with CROMERR, CDX Life Cycle Management and CDX O&M.

The key electronic registration components supported by CDX are comprised of:

- Exchange Network Registration –web forms allowing Exchange Network Node owners to remotely administer credentials, access rights, and passwords to the Network Authentication &Authorization Service (NAAS).
- CDX Open Registration –web forms allowing users to identify themselves, request credentials and authorization, and obtain sponsorship forms electronically for applications designated as "Open".
- CDX Pre-Registration –allowing application owners to identify and pre-populate user identities, credentials, and access authorization to applications designated as "Open" or "Closed" and then allow users to validate pre-populated information through Open Registration.
- CDX Closed Registration –allows application owners to restrict users requests for access, openly, and utilize CDX Pre-Registration exclusively for applications designated as "closed".
- CDX Dynamic Registration –a dynamic workflow component enabling owners to specify table-driven criteria necessary to authorize "Open" registration users.
- CDX Registration Maintenance –a web based access rights management tool allowing for remote administration of access rights to role based applications managed by CDX.
- CDX Exchange Network Integration for Identity Management and Reduced Sign On.

- CDX Digital Certificate Management and Local Registration Authority support for Certificate Authorities.

The Contractor shall provide technical support, coordination, documentation, record keeping, and management for CDX Registration and Exchange Network Registration procedures, as well as, provide PKI Local Registration Authority procedures and management for electronic and paper registration materials and records received. These procedures and materials shall be managed consistent with all applicable laws, Federal standards, Agency policies, and the CROMERR.

2.2.5 Exchange Network Quality Assurance Services

In addition to the Quality Control Plan as outlined under Task Management, the Contractor shall support the Exchange Network Quality Assurance Services. These services are a set of XML web services for validating XML documents against the associated schemas and extended business rules. It consists of two major services:

- Schema Validator: This service verifies the structure of XML documents using definitions in one or more schema files. Basic content constraints are also checked.
- Schematron Validator: This is an optional extension of the Schema service that further validates XML documents using custom business rules, look-up tables, and regular expressions that are not possible with the basic schema validation service.

The purpose of these services is to support data stewards data checking prior to submission to CDX. Because these are Exchange Network SOAP services, they can be easily invoked from applications that are web service ready, and be integrated into automated data submission or processing systems. The services can also be accessed using a web browser. Users can send documents from their desktop and get results either synchronously or asynchronously[1].

2.3 Technical Facilitation and Consulting

The CDX Program leads and participates in various technical meetings on a routine and as needed basis. The Contractor shall provide technical facilitation support to the CDX Program and to CDX customers.

2.4 Elevated O&M Support Services (Optional Task)

Some CDX customers require elevated levels of O&M support. That can be caused by a dataflow being categorized as a "critical" system or for other reasons.

The Contractor shall provide elevated service levels to CDX systems. Examples of elevated service levels include but are not limited to:

- 24x7 technical support
- Disaster recovery support

[1]For additional information refer to: http://www.exchangenetwork.net/exchanges/air/nei_xml_val.pdf http://tools.epacdxnode.net/

2.5 System Performance Monitoring and Reporting (Optional Task)

There is a certain level of performance monitoring that comes with the standard CDX O&M service. Some CDX customers require additional system performance monitoring and some CDX customers also request additional reporting on their systems performance.

The Contractor shall provide systems performance monitoring and reporting services for CDX customers. This applies specifically to customers that desired performance reporting that is above the reporting that is normally provided as a part of the standard CDX O&M service.

3 CDX Development Lifecycle Tasks

OEI works with multiple EPA Program Offices to develop dataflow requirements. Dataflow requirements are sent by the contracting officer to the Contractor and the Contractor then submits a project proposal for that dataflow. After the Contractor's project proposal is accepted by EPA, a Technical Direction Document (TDD) is issued which begins the project. Example – TDD 09.02 Program Management. The contractor's proposal time/costs in response to these dataflow TDD requests are not billable hereunder.

The life cycle for dataflow development for CDX Web and the Exchange Network includes a set of activities that need to be completed to take a flow from conception with a program office to a fully deployed flow in production. This process is referred to as the Data Standard Life Cycle Process (Figure 1).

As part of a continual process improvement, the Contractor shall streamline and reduce costs for the lifecycle for dataflow development. Including but not limited to:

- Simplified documentation. Use generic documentation templates for each flow,
- Standard Services. Generalize common dataflow patterns are generalized such that they can be readily reused on the development of new dataflows.
- Reuse Standard Services. Orchestrate existing standardized services/software components that enable rapid/low cost deployment of standard dataflows that do not require a significant amount of customization).

The goal for using these standardized services and generic documentation is to minimize development costs for individual dataflows (e.g., under $10,000).

The Contractor shall adhere to the Data Standard Life Cycle Process for design, development, test, and implementation of CDX dataflow projects. The Contractor shall ensure that all development efforts be compliant with the EPA's Enterprise Architecture. Documentation deliverables shall be provided at each milestone in the process. These activities include but are not limited to the following:

3.1 Document System Requirements

The Contractor shall hold teleconferences and other follow-up communications with the OEI project lead and the program office representative to document the system requirements in a Systems Requirements Specification (SRS).

3.2 Integrated Project Team participation

The Contractor shall coordinate actively and responsively with the Government and other Government designated contractors participating in the design, development, test, implementation, deployment, and operation of CDX. Failure or refusal to coordinate and cooperate with the IPT or IPT member contractors precludes effective performance of this agreement.

The Contractor shall participate on the IPT throughout the entire project lifecycle to ensure efficient and quality development is delivered.

3.3 Establish Cost & Schedule

Based on the requirements and approved SRS the contractor shall prepare a cost and schedule proposal and submit it to the OEI. If the Government agrees to proceed with the development, a Fixed Price or T&M type effort will be identified and the Government and the Contractor will agree on an approved cost and schedule. EPA recognizes that Fixed Price offerings are traditionally the lowest risk contract type for government projects, hence EPA encourages the Contractor to propose innovative fixed price offerings for CDX projects because historically, most CDX projects have been either T&M or cost-plus contract type.

3.4 Develop System Design

The Contractor shall develop the system design document (SDD) for the transmission of the dataflow through CDX. The contractor shall leverage as much as possible generic documentation that could be utilized for this flow (for Web / Node flows). The design shall utilize existing services and reusable CDX components where possible (including Network Node Services, CDX Lite, etc.), follow CDX and Exchange Network standards, guidance, business practices, and architecture, focus on maximum efficiency and cost effectiveness, and include features needed to ensure adequate system security. Typically, a system architect and an engineering board provide final review of the design.

3.5 Security Planning and Documentation

The Contractor shall work with the OEI project lead and CDX security staff to ensure adequate security planning and documentation. See Section 2.2.1.

3.6 Design Readiness Review

The Contractor shall conduct a readiness review after the design of the dataflow has been completed to ensure that it leverages core services and meets the requirements as described in the SRS. The contractor shall develop the functionality listed in the SRS and the SDD and modify existing code or deploy new code as required. The Contractor shall conduct and present the results of developer testing to the government and turn the developed functionality over to the testing team for formal unit/integration testing.

For any fixed price dataflow effort developed by the Contractor, the costs of any fixes required after formal unit/integration testing has begun shall be included in the fixed price. For any time and materials dataflow effort developed by the Contractor, the costs of any fixes required after formal unit/integration testing has begun shall be billable to the Government up to an amount not to exceed 5% of the development costs (costs incurred from the acceptance of the SRS through release to the testing team for formal unit/integration testing). Fixes in excess of the 5% maximum cost shall be completed at no additional cost to the Government.

3.7 Unit/Integration Testing (Optional Task)

After the dataflow development is completed, the Contractor shall conduct unit and end-to-end integration testing of the different components of the system in CDX. The Contractor shall use test files of actual data that the program office will provide to the contractor.

3.8 Test Readiness Review (Optional Task)

A test readiness review is conducted once the application has been developed to ensure the dataflow is ready for testing in CDX preproduction.

3.9 Prepare a Test Plan and Prepare a Test Report (Optional Task)

The Contractor shall prepare a test plan to test the requirements identified for the specific dataflow. The contractor shall prepare a test report that identifies what system changes the contractor completed during dataflow testing.

3.10 User Acceptance Testing (Optional Task)

The Contractor shall provide support to user groups during testing. The Contractor's support shall include ensuring the specific dataflow and system is fully operational in the CDX preproduction environment and shall monitor the system during this testing period.

3.11 Configuration Management

In moving from development to test to production the Contractor shall use the configuration processes and procedures described in Configuration Management and Change Control and utilize CM implementation processes and procedures for deployment.

3.12 Production Readiness Review

At the conclusion of system testing and the Contractor has made any required changes to the system that were identified during testing, the Contractor shall conduct another readiness review to ensure the system is ready for deployment to production. The Contractor shall complete all readiness checklists during the readiness review and resolve any outstanding issues identified during the readiness review.

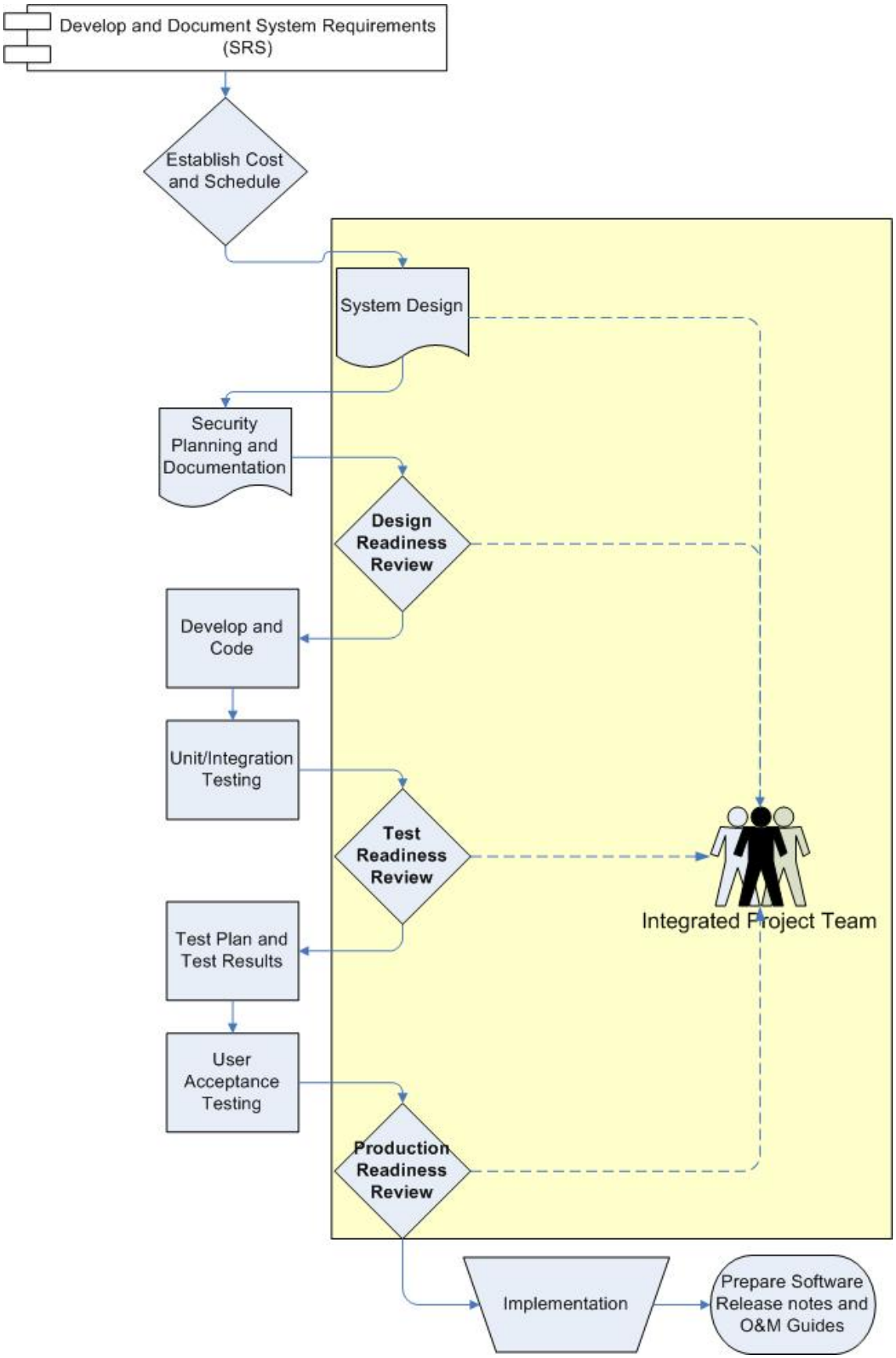
3.13 Successful Implementation

Ensure the successful implementation of the software without impacting other parts of CDX. The Contractor shall update and revise software release notes one time for any contractor developed software. The contractor's notes shall reflect the final version of the software that is moved out of the development and preproduction environments and deployed to the production environment.

3.14 Prepare Draft O&M Guide

The Contractor shall prepare a draft dataflow O&M Guide using the O&M guide template. The Contractor shall ensure that the operation staff provides input during the readiness review.

Figure 1: Data Standard Life Cycle Process


Develop and Document System Requirements (SRS)
Establish Cost and Schedule
System Design
Security Planning and Documentation
Design Readiness Review
Develop and Code
Unit/Integration Testing
Test Readiness Review
Integrated Project Team
Test Plan and Test Results
User Acceptance Testing
Production Readiness Review
Implementation
Prepare Software Release notes and O&M Guides

The Contractor shall serve as a knowledge base for CDX customers by providing procedural and technical guidance on standards previously approved by a CDX Engineering Board.

4 CDX Development Services

In accordance with the Data Standard Lifecycle Process and in compliance with the EPA Enterprise Architecture, the Contractor shall provide the following development services:

4.1 Node Development and Deployment Assistance

The Contractor shall continue the development of the network nodes and node clients and assist EPA program offices and trading partners in deploying nodes.

EPA's CDX, a cornerstone of the Agency's Enterprise Architecture, and the Exchange Network (EN), are built on the use of Web Services and Service Oriented Architecture (SOA). Many key CDX SOA infrastructure components are currently in place or under development including:

- Universal Description Discovery and Integration services
- XML Gateway
- Web Service orchestration using the Business Process Execution Language (BPEL)

These common SOA components are leveraged to provide services for the CDX web site, CDX node, and Exchange Network shared security and quality assurance support. This architecture is being used to support and integrate CDX with Agency SOA initiatives as well such as the Identity and Access Management (IAM) services. Information sharing and data publishing via Network services is a primary goal of the Network and the Office of Environmental Information's Information Access Initiative.

CDX and the EN dataflows utilize many of these services to exchange data and messages among Network trading partners that are based on a common specification for reusable software components known as Network Nodes. Network Nodes are developed as both open source and proprietary software deployed by trading partners on the Network. The behavior of Network Nodes is defined in the Network Node Functional Specification. The EN trading partners are upgrading their nodes from supporting the initial Node 1.1 to the recently published Node 2.0 Specifications. CDX currently supports both version of the node in order to support state and internal EPA office nodes transition efforts.

CDX maintains nodes running on BEA WebLogic (Node1.1), JBOSS (Node 2.0), and SQLDATA Soap server (Node 1.1/2.0 - Network Authentication and Authorization Services and Quality Assurance services). In addition, a .NET /Windows Workflow Foundation based node is being evaluated for use on the Network.

Listed below are the main types of nodes provided to trading partners:

- Full Nodes can both request data from the Network, as well as publish data to the Network in response to requests (e.g., a query or solicit) from other Network Nodes. Full nodes can potentially leverage the full capabilities of the Network for machine-to-machine interaction by sending requests for data, and publishing data for use by other Network partners.
- Node/Network clients or "Network Desktops" can submit, request, and receive results from a request to a full node, but they cannot listen for/respond to queries from other nodes and as such cannot publish data on the Network. These clients are primarily for human-to-machine interaction and are normally used by trading partners that do not publish to the network.
- Demonstrated Node Configurations are essentially the messaging layer of a node that has been tested for each major platform and made available for developers to build interoperable Nodes around.
- Software Developer Kits are also available to integrate Network services into applications. It simplifies Network access down to a few lines of script that can be inserted into any application.[2]

[2] For more information on Nodes and Node Clients see http://exchangenetwork.net/node/index.htm.

The Next Generation Node (NGN)[3] is a full node implementation in JAVA that contains all of the software components that are required to host an Exchange Network node from messaging to transaction management and auditing. EPA provides open source Nodes, both Java and .Net Versions, to trading partners. The JAVA version called the NGN is supported for a variety of application server platforms including JBoss, Oracle, Websphere, Tomcat and BEA Weblogic. EPA's Network Nodes allow integration of a variety of other services and applications. For example, the current NGN includes integration of an open source Velocity mapper that can be used by trading partners to map to their database to create XML files for exchanges or as publishing services. EPA assists trading partners and EPA Program Offices in deploying these nodes. Support for these applications is handled through the node and CDX help desks. Third tier help desk support for the node help desk and CDX help desk shall be provided by the Contractor.

4.1.1 Node Development

The Contractor shall support development activities to support the CDX Node and EN dataflows that includes but is not limited to:

- Provide standard development and lifecycle management of each CDX and EN dataflow.
- Improve existing NGN functionality by leveraging services and other reusable components (e.g., NAAS, IAM, QA, Standard Audit, Logging, and Workflow monitoring).
- Facilitate more rapid and lower cost node deployment through the use of configuration driven service development and the use of streamlined development tools and procedures (e.g., BPEL orchestration, generalized common dataflow patterns).
- Port the NGN Node as necessary for other State platforms.
- Evaluate and develop new methods, tools and procedures to simplify dataflow creation, new services and data publishing to reduce cost and time to market.
- Port dataflows from node 1.1 to node 2.0 in support of partner upgrades.
- Integrate with other Agency SOA components.

In order to reduce costs for future NGN dataflows, the Contractor shall standardize common dataflow patterns such that they can be readily reused on the development of subsequent NGN dataflows. The types of reusable actions / workflow activities include (e.g., integrate Solicit into generic NGN dataflow to provide application support for launching publishing services (i.e., Velocity Mapper), transforming results, and providing results to the service requester).

4.1.2 Node Deployment Assistance

The types of node flow configurations deployed for a particular dataflow vary, but (depending on the complexity of the business process, timeframe, and funding) reflect one or many of the following:

- Trading Partner Full Node ↔CDX Node ↔ Program Full Node
- Trading Partner Node Client ↔ Full CDX Node ↔ Program Full Node
- Trading Partner Node Client ↔ Full CDX Node ↔ Program Node Client

The Contractor shall assist EPA and other trading partners as requested in installing, configuring, and using Nodes for their data exchanges including:

- Meeting with program office support teams to provide current information on the Exchange Network, Agency SOA initiatives, CDX standard services and processes, and consult on requirements, architecture, and design in support of the other support team's dataflow.
- Reviewing available documentation, (e.g., process/architecture diagrams, requirements, design) to ensure that the solutions proposed by the internal developers/operations teams are consistent with CDX's and EN business practices and architecture. The contractor's input and comments shall recommend making best use

[3] The NGN distribution information, design, and tools can be found at https://test.epacdxnode.net/ngn.

of reusable CDX components; identify specific CDX and EN standards and guidance items that are not, (but should be), used in these documents; and identify requirements and design features needed to ensure adequate system security.
- Performing analysis of key infrastructure components (e.g., Universal Description Discovery and Integration services, the XML Gateway and web service orchestration using BPEL) to optimize and integrate these services whenever possible.
- Assisting the State or EPA office in installing and demonstrating potential software solutions for Network dataflows that may include coordination with other support teams by providing code, installing and running these potential solutions in the dataflow environment(s).
- Coordinate across internal development teams to ensure all teams are kept up to date on changes in software, procedures, environments, and services.

The Contractor shall review existing CDX Node and EN Node implementations in order to identify critical issues. Contractor shall also identify and review relevant emerging and new technologies in Web Services, SOA and business process management. As agreed upon by the Government, the Contractor shall prototype and evaluate new products, and make recommendations for improving the overall efficiency and maintainability of CDX and the EN.

4.2 Data Publishing

CDX defines Data Publishing as a framework of web services that make data available for consumption by end users from EPA data stores through the Exchange Network. Network partners are encouraged to publish data to make it more widely available. EPA and CDX are making a concerted effort to make data available through data publishing services. Two systems, the TRI State Data Exchange and the Air Quality System (AQS) have publishing services available through the EPA node.

The Contractor shall develop and maintain web services that operate through the CDX node and make data available to end users and consumers. Publishing services shall include those that operate on a push model, such as in the TRI state data exchange, and a pull model, such as Facility Registry System (FRS). Push model services include web services such as submit. Examples of pull model services include query and solicit. Services shall be fully compliant with the exchange network specifications and protocols. The Contractor shall develop monitoring capabilities that will allow EPA to track data publishing transactions, including the success or failure of that transaction. The contractor shall develop, maintain, and update, as necessary, all documentation detailing publishing services.

4.3 Web Development Services

In 2009 CDX supported more than 130,000 submissions and more than 2 million transactions with external parties that conduct business with the Agency in over 40 Programs. OEI provides a web interface that supports a significant portion of these user submissions and other data exchanges with EPA and external entities.

The Contractor shall support development and operations activities to support the web-based components of CDX. This may include the following:

- Conducting functional, technical, and user requirements.
- Designing and developing web-based dataflows in accordance with all applicable federal and EPA laws, regulations, policies and procedures.
- Conducting multiple levels of testing and assisting EPA program offices in the testing process.
- Conducting production readiness reviews.
- Deploying web dataflows.

The Contractor shall also provide consulting services to programs that elect to build themselves components of a web-based dataflow that will be hosted on CDX. The Contractor shall serve as a knowledgebase for program customers and their contractors to provide procedural and technical guidance and standards previously approved by the CDX Engineering Board.

4.3.1 Web Application Development

CDX-Web hosts approximately 30 web applications on a variety of platforms that interface with web forms and other systems and services. The purpose of these applications is to support the submission and exchange of data with EPA and external parties.

The Contractor shall support web application development activities that interact with CDX forms and services according to Development Life Cycle procedures. This may include conducting functional, technical, and user requirements specifications; designing and developing applications in accordance with all applicable federal and EPA laws, regulations, policies and procedures; conducting multiple levels of testing and assisting EPA program offices in the testing process; conducting production readiness reviews and deploying applications; and making post-production enhancements/bug fixes as part of a dataflow or related project.

The Contractor shall also provide consulting services to programs that elect to build themselves components of a web-based dataflow application that will be hosted on CDX. The contractor shall serve as a knowledgebase for program customers and their contractors to provide procedural and technical guidance and standards previously approved by the CDX Engineering Board.

Development technologies include: J2EE, ASP.NET, Oracle, Lotus Notes, and Cold Fusion with a focus on JCE cryptography.

4.3.2 Web Form Development

CDX contains multiple web interfaces for users to submit and exchange data with EPA, many of which are web forms. As of March 2010, CDX supported web forms for about 40 different EPA programs. In the past, OEI had an average increase of five to 15 new programs a year. Based on new requirements and additional programs serviced by EPA, these web forms require changes or new forms are built to support additional programs. In addition, the core CDX infrastructure includes forms associated with user registration, administration and provisioning.

The Contractor shall support web form development activities that interact with CDX services. This may include conducting functional, technical, and user requirements; designing and developing web forms in accordance with all applicable federal and EPA laws, regulations, policies and procedures; conducting multiple levels of testing and assisting EPA program offices in the testing process; conducting production readiness reviews and deploying forms; and making post-production enhancements/bug fixes as part of a dataflow or related project.

4.3.3 CDX Lite

CDX Web is comprised of several web based services which have been consolidated to provide a complete table-based, custom, electronic reporting solution. CDX Lite is comprised of the following:

- Client-based Designer Tool
- CDX Web based Design Submission
- CDX Web design review and approval application
- CDX Lite Registration Provisioning tool

The CDX Lite components allow customers to design and submit requirements to be published as meta-data into CDX and incorporate:

- Screen wording
- Submission and connection criteria
- Web services
- Functions to fully implement CDX Web dataflows

The Contractor shall provide technical support to develop and integrate new CDX Services into CDX Lite.

The Contractor shall provide support for CDX customers that want to establish a CDX Lite dataflow. CDX Lite electronic data exchange support shall include the following:

- Design
- Submission
- Review
- Test
- Publication
- Operational maintenance (Refer to CDX O&M Services)

The Contractor shall ensure CDX Lite dataflows are designed, developed and maintained in accordance with:

- CDX Development Life Cycle procedures
- CDX O&M procedures
- Cross Media Electronic Reporting Rule if applicable to that specific dataflow

4.3.4 Shared Services

The Contractor shall support Shared Services and assist Shared Service developers in deploying enhanced services as necessary.

The Contractor shall support O&M activities for the Shared Services that includes but is not limited to:

- Deploying new service releases (e.g., server setup and configuration, node setup, unit testing, rolling between DEVTEST PROD environments, quality of service (QOS) monitoring
- Communicating/releasing new versions of shared service software
- Periodic Testing
- Identify, test interoperability and deploy new versions of supported software to remain current and to ensure adequate support. Routine maintenance activities are described under O&M services task.

The Contractor shall provide last tier operational support for the Shared Services including: the Universal Description and Discovery Integration Services (UDDI), Client Central Services, the Exchange Network Discovery Services, the Network Desktop tool, the Network Authentication / Authorization Services (NAAS), and the Quality Assurance Services (QA) as required. Support issues associated with other application integration, schema and Schematron deployments as they are necessary. Assist in the redeployment of these services in the various CDX and NCC environments based on the ongoing hardware refresh activities.

The XML Gateway is a message filtering appliance that is deployed in front of CDX application servers to block invalid messages routed to CDX, selected states, and Exchange Network Services. Valid Network message structures and schemas are loaded into the gateway and used to parse the incoming messages. It will serve as a gateway router for State Nodes that are only accessible by CDX.

The Contractor shall develop, maintain, and update, as necessary, all documentation detailing EN shared services.

4.4 Reporting Centers (RC)/Data Processing Centers (DPC)

RC/DPCs receive, process, record, store and distribute print and other electronic media.

4.4.1 Reporting Centers (RC)/Data Processing Centers (DPC) Support

The Contractor shall be responsible for configuring, installing, and maintaining data entry and processing systems and all of associated modules and equipment in optimal working condition. The contractor shall follow hardware and system operations procedure guidelines as stated in various EPA documents. The Contractor shall maintain any DPC/RC related systems at an optimal working condition during normal business hours (8:00 a.m. - 5:00 p.m. Eastern Standard Time) on all normal business days unless otherwise directed by EPA. The Government considers optimal working conditions as ones that do not impede or stop data entry or production processing during 99 percent of normal business hours. The Contractor shall exclude downtime resulting from specific technical directions from the EPA for the halting of data processing and data management activities.

The Contractor shall receive the current documentation from EPA on the required Standard Operating Procedures (SOPs) for each of the programs that operate a DPC/RC and shall follow those procedures as directed. The Contractor shall suggest enhancements to the procedures but shall not implement unless at the direction of EPA. The Contractor shall be responsible for maintaining and updating all procedure documentation upon receipt, as required.

The Contractor shall provide comprehensive systems life cycle services for all software application systems in the DPC/RC and shall ensure that all system-related products produced under this order have adequate documentation. The Contractor shall refer to the Data System Development and System Life Cycle Maintenance section of this SOW for information regarding the regarding EPA system life cycle requirements. The Contractor shall ensure that the Contractor maintains a high degree of interaction between the Contractor's technical staff and the Contractor's project managers while performing these services.

The Contractor shall provide design recommendations as well as ideas for the development and implementation of major enhancements. The Contractor shall include suggestions for where existing development, systems or processes can be leveraged or adapted to maximize cost savings, where feasible, to the Government.

The Contractor shall identify innovative technologies that exploit web capabilities to streamline the collection and dissemination of environmental information to stakeholders. Contractor shall identify mechanisms to publish data in appropriate formats to address the analysis in response to stakeholder queries.

The Contractor shall inventory, manage and maintain all property required for the operations of the DPC/RC including items such as computers, furniture, office supplies, etc.

4.4.2 Submission Receipt and Identification

The Contractor shall:

- Receive, identify, process, and track all submissions to the DPC/RC. The contractor shall receive submissions via a Post Office Box, as regular mail, or commercial express mail, and fax transmissions.
- Receive and process (e.g., date stamp and identify document type) all mail addressed to the DPC/RC.
- Pick-up and deliver documents to EPA.
- Open, date stamp (with the date of receipt at the EPA RC) and process all “official” incoming mail.
- Maintain processing procedures that include document identification, document labeling (i.e., bar coding), placing materials (whether forms, disks, or other communications) in folders, recording postmark and received dates per received package, and entering the information into the Records Management System.
- Assist EPA, as required, in the distribution of EPA mailings through the DPC/RC.
- Assist with electronic a print correspondence with end users, including e-mailing responses to requests.
- Perform the entry of data from paper/magnetic/optical media into repository databases.
- Support Data capture, identification, verification, reconciliation and validation.
- Maintain responsibility for handling and acknowledging Claims of Trade Secrecy (Trade Secret documents) under EPCRA Section 313.

4.4.3 End User Support and Troubleshooting

The Contractor shall:

- Provide user and technical support services as defined and prioritized by the EPA to the user community by answering questions, responding to requests for documentation, and providing required help.
- Respond to requests for assistance directly from users, or EPA may refer them to the contractor.
- Respond to all inquiries within one (1) business day. The contractor shall notify users who leave messages that it is EPA's goal to respond to their inquiry within one (1) business day.
- Develop standard form answers for hotline and e-mail questions.

4.5 Systems Development Lifecycle (SDLC) Advocate (Optional)

The Contractor shall provide an O&M team member to act as the SDLC Advocate and be involved with all development efforts, from the beginning, to ensure that all efforts in CDX are following proper development guidelines. Once the development effort is ready to launch into the production environment, the Advocate will inspect the dataflow to ensure the code is acceptable and maintainable with minimal effort. Tasks of the Advocate shall include the following:

- IPT participation.
- Evaluate cost and schedule estimates to ensure they are fair and reasonable for the size and complexity of project. The Advocate shall make recommendations to proceed at a Fixed Price or as a T&M effort.
- All documentation including test scripts and design documents are complete and acceptable.
- Code has been tested and results documented.
- EA compliance.
- Maintenance documentation is complete and usable.
- Ensure transition from the development team is satisfactory and all members of the O&M team are trained including help desk and infrastructure support.

4.6 Dedicated Hardware and Software (Optional)

CDX stakeholders may require specialized hardware and software be supported due to unique needs or to reduce risk in the primary CDX system environment. This is an exception to the normal practice. Based on the requirements of CDX stakeholders' dataflows, the contractor shall analyze the various facets of a dedicated environment construct.

The Contractor shall analyze the impact of supporting a dedicated environment for a specific customer which could include custom or dedicated:

- Hardware
- Operating system
- Custom application
- Physical environment

The Contractor shall clearly delineate CDX infrastructure from the program specific dedicated environment and document these components. The Contractor shall build out these environments as directed by EPA. Additionally, the contractor shall maintain these environments under Task 2.0 in accordance with EPA and program established practices and documented policies.

4.7 Systems Engineering

CDX System Engineering support includes activities related to the growth, interoperability, and extension of the CDX service oriented architecture. It revolves around research and development of new engineering approaches.

These consulting services are coordinated through the CDX Engineering Board (EB) and all activities are approved and managed by the chair of the engineering board. Current areas of CDX research include SOA technologies and new web 2.0 technologies.

The Contractor shall provide systems engineering support including, but not limited to the following activities:

- Attendance and general support for the weekly EB activities and the monthly Web Services Community of Interest.
- Identification/tracking of high-level dataflow development project milestones.
- Support consistent application of CDX engineering standards across CDX.

Work products in this area could include generating best practice guidelines and engineering-related reviews.

The Contractor shall support CDX research activities. The contractor shall support efforts to look at emerging technologies in order to determine suitability for future use on CDX. This research will generally involve special investigations and presentations to the CDX EB.

5 CDX Development Integration Testing (Optional Task)

The Contractor shall provide the following testing services:

Unit/Integration Testing.

After the dataflow development is completed, the contractor shall conduct unit and end-to-end integration testing of the different components of the system in CDX. The Contractor shall use test files of actual data that the program office will provide to the Contractor.

Test Readiness Review.

A test readiness review is conducted once the application has been developed to ensure the dataflow is ready for testing in CDX preproduction.

Prepare a Test Plan and Prepare a Test Report.

The Contractor shall prepare a test plan to test the requirements identified for the specific dataflow. The Contractor shall prepare a test report that identifies what system changes the contractor completed during dataflow testing.

6 Additional Optional Tasks

6.1 Routine Data Exchange Upgrades (Optional Task)

On a regular basis, individual dataflows within CDX require routine upgrades to enhance the functionality of the dataflow. These upgrades are usually made on an annual basis and are typically in response to one of several things:

- Changes in information collection requests (ICR).
- New regulations that must be implemented within existing systems.
- Changes determined necessary by the sponsoring program as a result of user comment.
- Changes in technology that would result in an improved operation of an existing dataflow.

Examples of changes could include things such as adding an additional field to a web form, additional data quality checks, or new security features.

The Contractor shall develop capabilities or modify existing systems to accommodate changes to data exchanges. These changes are expected to add new functionality or technology to the existing system and are not considered to be a complete redevelopment of the system.

The Contractor shall use coding practices that limit the amount of re-coding necessary when additional functionality is added as a result of a routine data exchange upgrade. The contractor shall update existing system documentation to reflect any changes as a result of routine data exchange upgrades.

6.2 Training for CDX Users (Optional Task)

The Contractor shall provide instructional guidance for end-users of CDX dataflows.

Types of training provided could be, but are not limited to:

- Print products/manuals
- Online text tutorials
- Online video tutorials
- Live web conference training sessions
- In-person, on-site training sessions

The Contractor shall conduct post-training surveys/assessments and provide results to the CDX Team.

6.3 Shared Services O&M and Deployment Assistance (Optional Task)

The Contractor shall continue the O&M of the Shared Service and assist Shared service developers in deploying enhanced services as necessary.

The Contractor shall support O&M activities for the Shared Services that includes but is not limited to:

- Deploying new service releases (e.g., server setup and configuration, node setup, unit testing, rolling between DEVTEST PROD environments, quality of service (QOS) monitoring.
- Communicating/releasing new versions of shared service software.
- Periodic Testing.
- Identify, test interoperability and deploy new versions of supported software to remain current and to ensure adequate support.
- Routine maintenance activities.

The Contractor shall provide last tier operational support for the Shared Services including: the Universal Description and Discovery Integration Services (UDDI), Client Central Services, the Exchange Network Discovery Services, the Network Desktop tool, the Network Authentication / Authorization Services (NAAS), and the Quality Assurance Services (QA) as required. Support issues associated with other application integration, schema and Schematron deployments as they are necessary. Assist in the redeployment of these services in the various CDX and NCC environments based on the ongoing hardware refresh activities.

6.4 Database Management Services (Optional Task)

Typically CDX customers' dataflow databases and data tables are hosted and maintained outside of the CDX environment. A few customers choose to have their systems hosted and maintained within the CDX environment.

The Contractor shall provide database management services to those customers that choose to keep their database and/or data tables within the CDX environment. All processes, procedures and service levels associated with standard CDX O&M service offering still apply.

Under Database Management Services the Contractor shall:

- Provide assistance in the querying of the databases for the purposes of returning information requested by EPA.
- Conduct an active system maintenance program for the DPC/RC databases and related applications.
- Perform regular database verification and validation routines and procedures to ensure the integrity of tables, files, and related systems.
- Administer and perform diagnostic testing to identify problems within the databases and related applications.
- Maintain responsibility for reliable, available and effective database management of the databases and related applications and shall ensure a secure platform that delivers optimal performance.

The Contractor shall ensure the appropriate implementation and execution of the following database administration functions:

- Installing and upgrading the database software and options.
- Creating tables and indexes.
- Creating and managing table spaces.
- Managing control files, online redo logs, archived redo logs, job queues, and server processes.
- Creating, monitoring, and tuning data loading procedures.
- Adding users and groups, and implementing security procedures.
- Implementing security, backup, and recovery plans.
- Monitoring database performance and exceptions.
- Reorganizing and tuning the database.
- Troubleshooting database problems.
- Coordinating with appropriate vendor customer support services.
- Upgrading and migrating database software to current and supportable releases and versions.
- Performing regularly scheduled system and database backups.

6.5 Outreach, Communication and Governance Support (Optional Task)

The CDX Team requires outreach and communications support to the CDX stakeholder community. The Contractor shall prepare materials for internal and public consumption and those materials could be in the form of paper, web-based or other form. The Contractor shall also provide support to CDX governing bodies that address CDX related issues and determine the future direction of CDX and the Exchange Network. Examples of governance support include preparing agendas, meetings notes, and action items.

6.6 Enhanced Financial Reporting (Optional Task)

Enhanced financial reporting is defined as reporting that is above the standard reports provided to customers by the CDX Program. The CDX Program offers enhanced financial reporting to customers as requested. The enhanced reports are custom for each customer and will vary. Examples of enhanced financial reporting typically requested by customers include:

- Traditional or modified Earned Value Management (EVM)
- Weekly or Monthly Financial Reporting of CDX Services
- Return on Investment Reports
- Data calls for Capital Planning and Investment Control input
- Data calls for OMB Reports

As directed by EPA, the Contractor shall provide enhanced financial reporting services. Reporting services provided to EPA will depend on CDX customer financial reporting requirements.

6.6.1 Earned Value Management System

An example of enhanced financial reporting is earned value management support. If requested by the CDX customer, the Contractor shall use traditional EVMS to manage a specific dataflow effort. EVMS is recommended for development efforts exceeding five hundred thousand dollars.

"EVMS", as used in this statement of work, means a project management system used by the contractor that effectively integrates the project technical scope of work with schedule and cost elements to improve project planning and control. The contractor's EVMS must conform to the characteristics described in American National Standards Institute (ANSI)/Electronic Industries Alliance (EIA) Standard-748-A -1998, Earned Value Management Systems. A copy of the standard is available from American National Standards Institute (http://webstore.ansi.org and 1-212-642-4900).

Earned value is best measured using discrete measures of progress. There are a relatively small number of industry-accepted methods of measuring earned value. Most are alternatives for use in measuring the earned value for discretely measurable work packages. Other methods of earning value, such as the so-called "level of effort" and "apportioned" measures are used where there are no clear, objective, discrete measures available. The use of these measures is discouraged by industry best practice, but, at the same time, unavoidable for certain classes of work. Specifically, those tasks which resist discrete measures of earned value are tasks where broadly defined technical support services and rapid responses to dynamically defined specific requirements are acquired. The contractor shall use discrete measures of earned value whenever it is reasonable to do so.

For certain activities (work packages), prospective contractors may not have appropriate metrics at hand in order to make accurate estimates and to be in a position to use discrete measures of performance necessary to manage using a robust EVM plan. For these reasons, EPA will allow more subjective measures of earned value to be used in some work packages under this SOW during the base year period of performance. If so, during the base year period, the contractor is required to develop the metrics that will allow the majority of the activity under the SOW during any option year periods to be planned in work packages for which objective, discrete measures of earned value can be used. The contractor shall consult and collaborate with EPA in developing the metrics during the base year that are intended to support option year discrete measures of earned value and report monthly on the values of metrics collected.

The Contractor shall use an EVMS to provide the following project status data on a monthly basis as part of the monthly status report (all metrics are project-to-date cumulative values unless otherwise stated):

- **Measurement Data**

  BCWS – The budgeted cost of work scheduled (planned value)
  $BCWS_{curr}$ – The BCWS for the most recent month

BCWP – The earned value of the work actually performed (earned value), the physical (measurable amount (in dollars)) of work completed
$BCWP_{curr}$ – The BCWP for the most recent month
ACWP – The actual cost of the work performed (actual cost of work)
$ACWP_{curr}$ – The ACWP for the most recent month

Cost/Curve Graph – A graph plotting BCWS, BCWP, and ACWP on a monthly basis from inception of the contract through the month just ended, and plotting the BCWS curve to the budget at completion (BAC) value

- **Variance Data**

  Cost Variance (CV) – The between earned value and actual cost of work performed [CV = (BCWP-ACWP)]
  Schedule Variance (SV) – The difference between the earned value and the planned value [SV= (BCWP-BCWS)]

- **Performance Index Data**

  Cost Performance Index (CPI) – The ratio of the earned value to the actual cost [CPI = (BCWP/ACWP)].
  Schedule Performance Index (SPI) – The ratio of the earned value to the planned value [SPI = (BCWP/BCWS)]

- **Variance Percentage Indicators**

  Cost Variance % (CV%) – The Cost Variance (CV) expressed as a percentage of the earned value [CV% = (CV/BCWP)*100]
  Schedule Variance % (SV%) – The Schedule Variance (SV) expressed as a percentage of the planned value [SV% = (SV/BCWS)*100]

- **Estimates At Completion and Completion Variances**

  EAC_1 = ACWP + (BAC – BCWP) / CPI
  EAC_2 = ACWP + (BAC – BCWP) / (CPI*SPI)
  EAC_{PM} = ACWP + Contractor's current estimate to complete (ETC) the project
  VAC_1 = BAC – EAC_1
  VAC_2 = BAC – EAC_2

The Contractor shall report the above EVM metrics in a table containing a column for each of the six most recent months' values and one row per metric.

The Contractor shall include an analysis of significant EVM variances on a monthly basis as part of the monthly status report as requested.

The Contractor shall support and participate in integrated baseline reviews and reviews of all relevant EVM data as requested by EPA customers.

6.7 Systems of Registries Development Support (Optional Task)

The purpose of this task is to develop and integrate software for the System of Registries and the Data Standards (DSB) web site on both the Internet and EPA Extranet that enhances and expands DSB services. Solutions will continue to enable stewardship of individual registry contents by program offices and EPA partners. Work will support collaboration by communities of interest in order to develop registry contents and data standards. It will elevate the visibility and access of EPA data standards and associated processes to the EPA community and its developers. It will allow DSB customers to clearly understand and access DSB services. It will support the EPA enterprise architecture by providing tools for enterprise and system architects performing Service Oriented

Architecture (SOA), data architecture, applications architecture, and data standards integration. Most importantly it will allow EPA program offices, regions, and partners to integrate their systems and services with the metadata contained in the registries in an automated way. This will allow EPA's registries to remain current. Users of EPA systems will have direct access to metadata which will assist them in determining the appropriateness and quality of data they may wish to use. Use of metadata managed in the registries will facilitate the general understanding of the meaning of environmental data, both structured and unstructured.

The Contractor shall design, develop, test (unit, integration, and user acceptance testing), and deploy system and capabilities in accordance with EPA policies, guidelines, and standards. The Contractor shall provide documentation as appropriate according to best practices and the deliverable list. The Contractor and EPA will jointly review the deliverables, in working sessions, prior to final submission to the Government. When applicable, systems and databases shall be compliant with the ISO 11179 standard.

One goal of the System of Registries is to make the creation, delivery, and use of metadata and terminology transparent to the end user of environmental information. Source information, definitions and meanings may appear to the user as needed. In some cases systems and registries may be updated and kept current without human intervention. The end user may be a user of the EPA Internet or Extranet, a user of an EPA system or document repository, or in some cases the user of partner or Federal system. The Contractor shall also design, create, test, document and register (in the Reusable Component Services) metadata and terminology web services in support of EPA, its partners, and the public as they retrieve, translate, validate, use, or present environmental information. On occasion, work shall include upgrades to COTS software, bulk loads for TSCA substance inventory, registry contents management, architecture support and outreach support.

The services and systems to be developed are expected to include:

- Code translation services as data is moved across the Exchange Network
- Code (including substance) validation services as data is imported into Federal, EPA or partner systems
- Reference (active metadata) services (including substance metadata) for users of Federal, EPA, and partner systems (available within the customer systems)
- Code (including substance) notification and/or update services (push from the registries to EPA and partner systems that use data registry contents including items such as standards, data dictionaries, and code sets)
- Keyword update services for the EPA Enterprise Content Management System (ECMS) and other EPA and partner systems
- Classification scheme and taxonomy and other terminology update services for EPA and partner systems
- Search and retrieval services based on concept and meaning for document (unstructured data) systems
- Search and retrieval services based on concept and meaning for structured database systems
- Presentation services for code sets (including substances), dictionaries, vocabularies and other metadata and terminology (to allow visibility from within web sites or systems)
- Tool Evaluation and Design for Reusable Component Services
- Design, Development, Testing, and Integration of Data Set and Models Registration and Inventory Services
- Integration of Geospatial Tools, Technologies, and Resources with the System of Registries.

6.8 Geospatial Services (Optional Task)

Geospatial data are those data that are placed based- including locational, geographical and associated place-based attributes that facilitate the use of these data in a geographic context. Typically they are described as points, lines, polygon "vectors" or digital images known as "rasters". These data are exchanged through widely used proprietary formats and services or increasingly through the use of Geographic Markup Language (GML) and Geospatial Really Simple Stuff (GeoRSS). Geospatial data tend to be complex, and because of this, they are typically accessed, analyzed and managed through Geographic Information Systems (GIS) technologies for mapping, modeling or routing purposes. Geospatial Services include the functions and associated technologies associated with the storage, search, discovery, access and exchange of geospatial data.

Over the last decade, there has been a virtual explosion in the interest and capabilities to integrate environmental

data to a spatial context. Whereas CDX was never considered a "geospatial system", aspects of CDX support to the states, regulated entities and the public have inevitably led CDX to incorporate limited geospatial tasking into their overall services. Some examples of past support include:

Facility Registry System Update Service (FRS US)

In this service, FRS data are presented to a regulated entity or other register users through a web-based visualization/mapping service (currently it is Google Earth) and the user is allowed to submit edits to that location using the mapping interface. By offering this service, EPA is able to collect more accurate locational data simply and effectively on facilities.

GeoFinder Exchange Network Project

Geospatial analysis depends on rapidly gathering and integrating widely disparate information on places and presenting this on a map. One of the major obstacles to the geospatial community has been the shortcoming of existing search engines to crawl for geospatial data and metadata. The GeoFinder project leverages CDX security (NAAS) to search geospatial metadata catalogues across agencies.

Heartland Emergency Response Exchange Geospatial Services

These services are critical during emergency responses, where responders need rapid access to widely-diverse state, local and federal data to make "on the ground" decisions. CDX has helped support an Exchange Network project to tie Exchange Network dataflows to visualization capabilities like Google Earth.

With rare exception, EPA's programs, regions and research operations use geospatial data, but geospatial technologies for analyzing these data aren't used widely. Over the next decade this is going to change, to the point that geospatial data services could become a central focus of CDX.

For the purposes of this contract, geospatial data should be considered another type of "Dataflow" that could take advantage of the full range of CDX services. These services include:

- Business Support Services
- Primary and Additional Development Services
- Primary and Additional Operations and Maintenance Services

In the development of geospatial dataflows, the Contractor shall take advantage of the use of Open Geospatial Information System Consortium (OGC) standards (http://www.opengeospatial.org/) for search, exchange and publishing of geospatial data. The Contractor shall also take full advantage of existing Federal (http://gos2.geodata.gov/wps/portal/gos) and EPA (http://www.epa.gov/geospatial/data.html) infrastructure, policies and standards for geospatial data and metadata.

7 Task Management

The Contractor shall designate a single Program Manager (PM) to serve as the Contractor's primary point of contact for all CDX activities and issues. The Contractor shall ensure that its PM provides sufficient management of this task order to ensure that tasks are performed efficiently, accurately, on time, and in compliance with the requirements. The Contractor PM shall coordinate as necessary with Government representatives to ensure that the task is managed consistently with overall contract requirements. The Contractor PM shall ensure timely and accurate submission of deliverables and invoices. Contractor shall identify opportunities to streamline and minimize costs where possible, while improving services (e.g., for processes, procedures, services, system architecture and dataflow, design, testing, and implementation).

Supporting services to the Contractor's business including but not limited to accounting, clerical, executive management, and business development are not chargeable to the Government as they are included in the contractor's fully burdened rates. Management activities specific to a dataflow development effort shall be recorded and charged specifically to that effort.

7.1 Reporting

7.1.1 Monthly Progress Report (MPR)

The Contractor shall ensure that a MPR is submitted outlining the progress, status, and any problems/issues encountered in the performance of this task order. The Contractor shall require all sub-Contractors to provide input to the MPR where there are critical or significant tasks related to the prime order. Critical or significant tasks shall be defined by mutual agreement between the Government and Contractor.

7.1.2 Monthly Financial Report (MFR)

The Contractor shall provide a MFR detailing expenditures and billings on a monthly basis. Format for the report includes a single, consolidated report detailing expenditures and hours by task, sub-task, and dataflow and labor category.

7.1.3 Ad-hoc Reports

The Contractor shall provide additional reports or data as requested by the Government. Reports and data calls may include but are not limited to metrics, performance measures, strategic plans, guidance documents etc.

7.2 Resource Plan

The Contractor shall provide a Resource Plan that outlines staffing and physical assets management, including the Contractor's plan to retain adequate, qualified staffing for EPA, processes for resolution of priority and resource conflicts, the approach to collaboration, flexibility, creativeness, responsiveness, willingness to change, and innovative solutions. The Plan shall also include a transition plan for key personnel in the case of changes to the personnel during the contract performance. A draft Plan shall be delivered with the RFQ submission and the final shall be due ten days after award. The Plan shall be reviewed annually and updated as necessary.

7.3 Communications Plan

The Contractor shall provide a Communications Plan that provides the guidelines for communication between Contractor and EPA. The Communications Plan shall include, but not be limited to, escalation procedures,

notification guidelines, communication channels, and risk management procedures. A draft Plan shall be delivered with the RFP submission and the final shall be due thirty days after award. The contract shall review the Plan jointly with EPA annually and update as necessary.

7.4 Transition Support

7.4.1 Incoming Transition

In accordance with this task order, the Contractor shall provide a draft plan five days after contract award for incoming transition. The Contractor shall coordinate with the Government in planning and implementing a complete transition to the Contractor's support model. The Contractor shall collaborate with the Government to develop and deliver an Incoming Transition Plan. The Government designates a transition period of six months for the incoming Contractor to coordinate and work with the incumbent Contractor. This transition plan shall include, but is not limited to:

- Availability of Key Resources.
- Timelines/Milestones.
- Coordination with Government representatives.
- Review, evaluation and transition of current support services.
- Transition of historic data to new Contractor system.
- Government-approved training and certification process.
- Transfer of hardware warranties and software licenses (if applicable).
- Transfer of all necessary business and/or technical documentation.
- Transfer of compiled and uncompiled source code, to include all versions, maintenance updates and patches (if applicable).
- Orientation phase and program to introduce Government personnel, programs, and users to the Contractor's team, tools, methodologies, and business processes.
- Distribution of Contractor purchased Government owned assets, including facilities, equipment, furniture, phone lines, computer equipment, etc.
- Transfer of Government Furnished Equipment (GFE) and Government Furnished Information (GFI).
- Documentation and Inventory.
- Applicable EPA briefing and personnel in-processing procedures.
- Comprehensive Security Plan.
- CBI and Chain of Custody Issues.

7.4.2 Outgoing Transition

In accordance with this task order, the Contractor shall provide a plan for 120 days of outgoing transition for transitioning work from an active task order to a follow-on contract/order or Government entity. This transition may be to a Government entity, another Contractor or to the incumbent Contractor under a new contract/order. In accordance with the Government-approved plan, the Contractor shall assist the Government in planning and implementing a complete transition from this order to a successor provider. This shall include formal coordination with Government staff and successor staff and management. It shall also include delivery of copies of existing policies and procedures, and delivery of required metrics and statistics. This transition plan shall include, but is not limited to:

- Coordination with Government representatives.
- Review, evaluation and transition of current support services.
- Transition of historic data to new Contractor system.
- Government-approved training and certification process.
- Transfer of hardware warranties and software licenses (if applicable).
- Transfer of all necessary business and/or technical documentation.

- Transfer of compiled and uncompiled source code, to include all versions, maintenance updates and patches (if applicable).
- Orientation phase and program to introduce Government personnel, programs, and users to the Contractor's team, tools, methodologies, and business processes.
- Disposition of Contractor purchased Government owned assets, including facilities, equipment, furniture, phone lines, computer equipment, etc.
- Transfer of Government Furnished Equipment (GFE) and Government Furnished Information (GFI), and GFE inventory management assistance.
- Applicable EPA debriefing and personnel out-processing procedures.
- Turn-in of all government keys, ID/access cards, and security codes.

7.4.3 Documentation Analysis and Creation (Optional)

The Contractor shall analyze documentation for existing dataflows and provide a gap analysis report. The report shall make recommendations for which dataflows require documentation to be created to ensure a successful transition. Once the gap analysis report is accepted by EPA, the contractor shall create documentation for the requested dataflows and include such documentation as system design documents.

7.5 Program Management Plan

The Contractor shall develop a Program Management Plan that requires Government approval. The Program Management Plan shall consist of control policies and procedures in accordance with standard industry practices for project administration, execution and tracking. The contractor shall review the Plan annually and update as necessary. The Program Management Plan shall be due five (5) calendar days after the award of the order and shall be updated when new development efforts are authorized.

The Program Management Plan shall include the following:

7.5.1 Identification of Milestones

The PMP shall detail when Government information, activity, equipment, material, facilities, etc. is required and timeline dependencies or prerequisites for subsequent Contractor activities.

7.5.2 Work Breakdown Structure (WBS)

The Contractor shall provide a WBS for development tasks over one hundred thousand dollars.

7.5.3 Video Conferencing

This will detail the capabilities that are compatible with EPA video conferencing services to ensure support of video media capabilities. The EPA currently utilizes Tandberg technology for video conferencing.

7.5.4 Risk Management Plan (RMP)

The Contractor shall supply a RMP that describes the Contractors management procedures for risk identification, tracking, and resolution.

7.5.5 Issue Escalation Plan

The Contractor shall outline procedures and policies regarding escalation of issues surrounding the management of the contract. This plan will encompass both Contractor and Government procedures.

7.6 Quality Control Plan

The Contractor shall prepare and adhere to a Quality Control Plan (QCP). The QCP shall be updated following award. The QCP shall document how the Contractor will meet and comply with the quality standards established in this statement of work. At a minimum, the QCP must include a self-inspection plan, an internal staffing plan, and an outline of the procedures that the Contractor will use to maintain quality, timeliness, responsiveness, customer satisfaction, and any other requirements set forth in this RFQ. The Plan shall be reviewed every six months and updated as necessary.

7.7 CDX Information Management

The Contractor shall utilize an Information Management (IM) Tool for managing and sharing information securely with all CDX stakeholders. Information shared by that system could include any of the following:

7.7.1 CDX Program Information

- Service descriptions
- Service pricing
- CDX system technical documentation
- Marketing materials
- CDX system status & outage notification

7.7.2 Project Information

- Schedule progress
- Cost progress
- Performance goal attainment
- Log of schedule/cost changes

7.7.3 Customer Account Information

- Services ordered
- Funding balance/owed
- Contact information

7.7.4 Contract Information

- Deliverables
- Modifications
- Funding status
- Contractor performance scorecard

7.8 CDX Information Management Tool (Optional Task)

The Contractor shall propose an Information Management Tool enabling CDX stakeholders to easily access their respective CDX Program information, and to report CDX program information in a method that is user-friendly and meets stakeholders' various needs.

7.9 Key Personnel

The Contractor shall furnish the following Key Personnel for performance of tasks. An alternate contact for each Key Position shall also be identified by the Contractor, in the event the Government cannot communicate with Key Personnel. Alternates are not subject to Section 7.9.1.

- Program Manager – (Insert Name)
- Team Leaders Teams to be proposed by Contractor and agreed to by Government. – (Insert Name)

7.9.1 Replacement of Key Personnel

The Key Personnel specified in task orders are considered to be essential to the work being performed hereunder. Prior to replacing any of the specified individuals, the Contractor shall immediately notify both the Contracting Officer and the EPA Cognizant Technical Officer reasonably in advance and shall submit written justification (including proposed substitutions) in sufficient detail to permit evaluation of the impact on the program. No replacement of Key Personnel shall be made by the Contractor without the written consent of the Contracting Officer.

7.9.2 Transition of Key Personnel

Upon approval of substitution of Key Personnel, a transition plan shall be presented to the EPA Cognizant Technical Officer outlining time and tasks that will be completed to ensure the Key Personnel change is seamless and does not cause negative impact to the program.

7.10 CDX Performance Metrics

Minimum performance metrics are outlined below. Contractor shall propose additional metrics in the QCP (Task 7.6). Any weights applied to these metrics shall be defined after the QCP has been approved and additional Contractor metrics have been incorporated. Surveillance documents are defined in the Quality Assurance Surveillance Plan. The Government may waive a Milestone Review under Tasks Three and Four if warranted by the short term or small dollar amount of a dataflow development effort.

TASK TWO OPERATIONS and MAINTENANCE					
Requirement	**Indicator**	**Standard**	**Acceptable Quality Level**	**Surveillance Tool**	**Incentive**
Security / Information Assurance Section 2.1	Applicable vulnerability alerts, bulletins and technical advisories implemented within 30 days of issue date.	Notices implemented by due date.	See scorecard	Review Monthly Report Quality of Service Scorecard Quality of Documentation Scorecard Quality Deficiency Report as needed	Semi Annual or QDR initiated O&M Performance Review Past Performance Evaluation
Tier III Support Section 2.1	Length of time to close Severity 1 and 2 items.	Severity 1 and 2 items are closed within 7 calendar days or less.	See scorecard	Review Monthly Report Quality of Service Scorecard	Semi Annual or QDR initiated O&M Performance Review

				Quality of Documentation Scorecard Quality Deficiency Report as needed	Past Performance Evaluation
Product Monitoring of software/hardware licenses including Anti-Virus Scanning and Patchlink Operating System updates. Registration updates Sections 2.1 & 2.2	Products and registrations are updated before they become unsupported by the Vendor.	Unsupportability dates are identified and a recommendation for an appropriate update point is provided.	0% (No products go unsupportable for lack of a plan being presented to the Government)	Review Monthly Report Quality of Service Scorecard Quality of Documentation Scorecard Quality Deficiency Report as needed	Semi Annual or QDR initiated O&M Performance Review Past Performance Evaluation
Technical Support / Management Information Services Sections 2.1 & 2.2	Quality of support for all supported environments.	Availability of supported environments during all scheduled working hours.	1% (99.0% System Availability)	Review Monthly Report Quality of Services Scorecard Quality of Documentation Scorecard Quality Deficiency Report as needed	Semi Annual or QDR initiated O&M Performance Review Past Performance Evaluation
TASK THREE & FOUR DEVELOPMENT					
Task	**Indicator**	**Standard**	**Acceptable Quality Level**	**Method of Surveillance**	**Incentive**
Configuration Management Sections 3 & 4	Accuracy of configuration identification.	Number of individually listed items requiring correction.	See scorecard	Review of Configuration Reports Quality of Documentation Scorecard Schedule/Cost Performance Scorecard Quality Deficiency	Dataflow Milestone/Effort Performance Review Score Past Performance Evaluation

				Report as needed	
Requirements definition for each dataflow Section 3.1 Section 4	Government acceptance of SRS	Draft final due at Milestone review Final due two days after Milestone Review or as agreed by the Government	See scorecard	Milestone Review Quality of Documentation Scorecard Schedule/Cost Performance Scorecard Quality Deficiency Report as needed	Authorization to proceed on the dataflow is predicated on the acceptance of the SRS Dataflow Milestone/Effort Performance Review Score Past Performance Evaluation
Design definition for each dataflow Section 3.4 Section 4	Government acceptance of SDD	Draft final due at Milestone review Final due two days after Milestone Review or as agreed by the Government	See scorecard	Milestone Review Quality of Documentation Scorecard Schedule/Cost Performance Scorecard Quality Deficiency Report as needed	Authorization to proceed on the dataflow is predicated on the acceptance of the SDD Dataflow Milestone/Effort Performance Review Score Past Performance Evaluation
Design Readiness Review Section 3.6 Section 4	Government acceptance of documentation	Draft final due at Milestone review Final due two days after Milestone Review or as agreed by the Government	See scorecard	Milestone Review Quality of Documentation Scorecard Schedule/Cost Performance Scorecard Quality Deficiency Report as needed	Authorization to proceed on the dataflow is predicated on acceptance Dataflow Milestone/Effort Performance Review Score Past Performance Evaluation
Production Readiness Review Section 3.12	Government acceptance of documentation	Draft final due at Milestone review Final due two	See scorecard	Milestone Review Quality of Deliverables	Authorization to proceed on the dataflow is predicated on acceptance

Section 4		days after Milestone Review or as agreed by the Government		Scorecard User Satisfaction Survey Scorecard Quality of Documentation Scorecard Schedule/Cost Performance Scorecard Quality Deficiency Report as needed	Dataflow Milestone/Effort Performance Review Score Past Performance Evaluation
CROMERR Technical Review for standard CDX services Section 4.0 when applicable	Committee approval of supporting technical documentation	Committee approval with a minimum of two review sessions	Cannot exceed two review sessions See scorecard	Quality of Documentation Scorecard Schedule/Cost Performance Scorecard Quality Deficiency Report as needed	Past Performance Evaluation Dataflow Effort Performance Review Score
Common dataflow patterns are generalized such that they can be readily reused on the development of new dataflows Section 4.0	Government acceptance of documentation with repeatable /shared designs	Number of repeatable standard dataflows that can be established	See scorecard	Quality of Documentation Scorecard Schedule/Cost Performance Scorecard Quality Deficiency Report as needed	Past Performance Evaluation Dataflow Effort Performance Review Score
Shareholder Support Section 4.0	Shareholder satisfaction with support provided.	Implementation Assistance personnel receive satisfactory rating or higher.	See scorecard	User Satisfaction Survey Scorecard Quality Deficiency Report as needed	Past Performance Evaluation Dataflow Effort Performance Review Score

TASK FIVE TESTING					
Task	**Indicator**	**Standard**	**Acceptable Quality Level**	**Method of Surveillance**	**Incentive**
Testing Support (Optional) Section 5.0	Government acceptance of Test Plan	Plan arrives on time and encompasses all areas needed to meet functional and technical requirements.	No technical changes acceptable after Final See scorecard	Quality of Documentation Scorecard Quality Deficiency Report as needed	Performance Review Score Past Performance Evaluation
Testing Support (Optional) Section 5.0	Government acceptance of final Test Results		See scorecard	Quality of Documentation Scorecard Quality Deficiency Report as needed	Performance Review Score Past Performance Evaluation
TASK SEVEN TASK MANAGEMENT					
Task	**Indicator**	**Standard**	**Acceptable Quality Level**	**Method of Surveillance**	**Incentive**
Monthly Progress Report Section 7.1	Milestones are met within 10 business days of due date and within budget - unless EPA is advised of extenuating circumstances	Status Report arrives on time and encompasses all topics needed to meet functional and technical requirements.	Contractor meets milestones and stays within budget.	Quality of Documentation Scorecard Quality Deficiency Report as needed	Semi Annual or QDR initiated Performance Review Score Past Performance Evaluation
Monthly Financial Report Section 7.1.1	Monthly Status report	Status Report arrives on time and encompasses all topics needed to meet functional and technical requirements.	Contractor meets milestones and stays within budget.	Quality of Documentation Scorecard Quality Deficiency Report as needed	Semi Annual or QDR initiated Performance Review Score Past Performance Evaluation
Information Management Section 7.7	IM Tool is populated		99% population of documentation and information	Quality of Services Scorecard Quality Deficiency Report as needed	Semi Annual or QDR initiated Performance Review Score Past Performance Evaluation

References

The following list is Federal regulations, guidelines, and instructions for compliance under this task order.

- Federal Information (FIPS) www.itl.nist.gov/fipspubs
- NIST Special Publication
- IEEE Standards
- EPA Directive 2100, Information Resources Management Policy Manual
- EPA Information Security Manual
- OMB Circular A-130
- ANSI/EIA-748 "Earned Value Management System Guidelines."
- EPA Security Escalation Procedures and Computer Security Incident Response Capability (CSIRC) procedures.
- Technical and Security Procedures
- CDX O&M Guide
- CDX Contingency Plan
- Separation of Duties Guide
- Test Readiness Review
- Continuity of Operations (COOP) Guide
- CDX Lifecycle Procedures Table
- CDX Operations Lifecycle Management
- Getting Started Guide http://www.epa.gov/cdx/getstart/index.htm
- Work Product Summary
- Open Source Software Policy
- CDX IORC Template
- SRC Template
- Super Excel Dataflow List
- CDX Application Maintenance Checklist
- CDX Configuration Management Template
- CDX SRC Template
- CDX PMRC Template
- PR Tracker
- CDX Infrastructure Purchase Request Procedures
- O&M Change Support Matrix
- MOU SLA Template
- CROMERR http://www.epa.gov/exchangenetwork/cromerr/index.html
- Design Readiness Report
- Development Readiness Report
- Production Readiness Report
- Work Product Summary
- CSIRC Procedures
- EPA Security Escalation Procedures
- Separation of Duties Guide
- CMM Plan
- CDX SLA Matrix Requirements
- Standard Operating Procedures (SOP)
- EB Charter
- CDX Registration and Exchange Network Registration Procedures
- Network Node Functional Specifications
- Application Deployment Checklist Procedures
- Exchange Network Functional Specification

CDX Glossary

Central Data Exchange (CDX)
EPA's CDX is the point of entry to the National Environmental Information Exchange Network (Exchange Network) for environmental data exchanges to the Agency. CDX provides the capability for submitters to access their data through the use of Web Services. CDX enables EPA and participating Program Offices to work with stakeholders - including state, tribal and local governments and regulated industries - to enable streamlined, electronic submission of data via the Internet.

Communities of Interest
A community of interest is a group of Exchange Network stakeholders who share an interest in the exchange of a specific set of environmental data.

Construction
Construction is the erection, building, alteration, remodeling, improvement, or extension of buildings, structures or other property.
Construction also includes remedial actions in response to a release, or a threat of a release, of a hazardous substance into the environment as determined by the CERCLA of 1980.

Data Standard
A data standard depicts the required content and format in which particular types of data are to be presented and exchanged. Exchange Network partners must use data standards that have been approved by the Exchange Network Leadership Council (ENLC). The ENLC has subsumed the activities of the Environmental Data Standards Council (EDSC). A list of ENLC/EDSC-approved data standards is shown in Appendix C. Also see information at http://www.envdatastandards.net.

Data Element
A data element is the smallest unit of information stored in and exchanged among Exchange Network partners' information systems.
Examples of data elements are the facility name, DUNS number, and inspection date.

Data Exchange Template (DET)
A data exchange template is a standardized format that identifies the types of information required/allowed in a particular document or data exchange. Data exchange templates contain no data, but they define the format for exchange according to data standards and trading partner agreements. A standard template for DET's is available on the Exchange Network Website (http://www.exchangenetwork.net).

Demonstrated Node Configurations (DNCs)
Demonstrated Node Configurations are the messaging layer for Web Services that interacts with the Exchange Network. It is based on the Network WSDL which defines the Web Services.

Environmental Information Exchange Network (Exchange Network)
The Exchange Network is an Internet and standards-based information network among EPA and its partners in states, tribes, and territories. It is designed to help integrate information, provide secure real-time access to environmental information, and support the electronic collection and exchange of high-quality data and information. The Exchange Network provides a more efficient way of exchanging environmental information at all levels of government. It significantly improves the way EPA and its state, tribal, and territorial partners send and receive information.

Extensible Markup Language (XML)
Extensible Markup Language is a flexible language for creating common information formats and sharing both the format and content of data over the Internet and elsewhere. XML, a formatting language recommended by the World Wide Web Consortium (W3C). For guidance on the development of XML schema for the Exchange

Network or related activities of the Network Technical Group, see the Exchange Network Web site at http://www.exchangenetwork.net.

Flow Configuration Documents (FCD's)
FCD's are the principle document that captures the detailed data exchange processing design and roles governing the data exchange using narrative text, diagrams and examples.
A standard template for FCD's is available on the Exchange Network Website http://www.exchangenetwork.net).
For more information, refer to the Flow Configuration Checklist v1.1 at:
http://www.exchangenetwork.net/dev_schema/FlowDocChecklist_v1.1pdf.

Geographic Information Systems
Geographic Information Systems (GIS) include software and hardware systems that relate and display collected data in terms of geographic or spatial location. GIS allow users to collect, manage, and analyze large volumes of geospatial data and metadata. EPA and its partners use GIS systems to conduct complex environmental analyses.

Geospatial Data
Geospatial data are data that identify, depict, or describe the geographic locations, boundaries, or characteristics of the Earth's inhabitants or its natural or human-constructed features. Geospatial data include geographic coordinates (e.g., latitude and longitude) that identify a specific location on the Earth; data that are linked to geographic locations or have a geospatial component (e.g., socio-economic data, land use records and analyses, land surveys, homeland security information, and environmental analyses). Geospatial data may be obtained using a variety of approaches and technologies, including things such as surveys, satellite remote sensing, Global Position System (GPS) hand-held devices, and airborne imagery and detection devices.

Geospatial Technologies
Geospatial technologies include the computer hardware and software that are commonly used to collect, import, store, manipulate, analyze, and display digital geospatial data. These technologies include GIS, global positioning systems (GPS), remote sensing, and visualization systems.

In-Kind Services
Services provided by EPA contractors and consultants on specific parts of the project for the recipient. The recipient can request this type of service as part of the grant proposal, if the in-kind work is directly related to the recipient's proposal and the applicant is the primary beneficiary of the work. However, EPA reserves the right to decide whether or not in-kind services will be provided. The recipient may not direct the work provided through in-kind services. These services are managed by EPA.

Integrated Project Team
A group of individuals comprised of partner and EPA staff, support contractors and technology vendors organized to design and implement a specific exchange.

Metadata
Metadata are data or information that describes other data. Examples include data that describe how or where the data were collected, whether or not the data comply with agreed-upon data standards, or how the data will be used.

National System Flows
Ten National System Flows identified by the Exchange Network Leadership Council in the Exchange Network Strategic Plan (http://www.exchangenetwork.net). The flows are: Air Facility System (AFS); Air Quality System (AQS); Beach Notification; Facility ID; Integrated Compliance Information System – National Pollutant Discharge Elimination System (ICIS-NPDES); National Emissions Inventory (NEI); Resource Conservation and Recovery Act Information System (RCRAInfo); Safe Drinking Water Identification System (SDWIS); Toxics Release Inventory System (TRIS); and Water Quality Exchange.