

**STATEMENT OF WORK
INFORMATION TECHNOLOGY AND ENGINEERING SUPPORT (ITES) SERVICES
FOR THE NATIONAL ENERGY TECHNOLOGY LABORATORY (NETL)**

1.0 INTRODUCTION

1.1 Background

Factors driving this requirement include:

- The President's Management Agenda (PMA), which includes expanded citizen-centered electronic Government (eGov) initiatives.
- Post 9/11 directives focused on cyber security.
- The Clinger-Cohen Act which requires federal organizations to have robust processes in place that provide a framework for selection, management and control of IT investments.
- The Department of Energy's A-76 Information Technology Competitive Sourcing Study and the resulting award.
- NETL's 3-year planning cycle designed to identify and implement IT strategic initiatives that support the Laboratory's requirements with a major focus on enabling technologies that facilitate deployment of DOE-wide eGov initiatives.

1.2 Goal

The goal of this solicitation is to obtain quality professional support for NETL's Information Technology function. The support will align IT resource expenditures with business goals and objectives and will enable an IT environment which is responsive to organizational requirements. This contract will facilitate access to a cadre of personnel with the experience and skills to identify, document, and satisfy these requirements in an ever-changing, complex IT environment. This contract will also satisfy the need to augment the core contract personnel with specialized skills as necessary to ensure the above is accomplished in an efficient, secure, and timely fashion. A comprehensive, overarching project management approach will be required to ensure that costs are controlled, schedules are met, return on investment (ROI) is maximized, and business/program objectives are attained.

2.0 STRUCTURE

The Contractor shall perform work in accordance with annual work assignments associated with corresponding contract line item numbers (CLINs). Work assignments for this service contract focus on information technology support. As addressed by the contract's Work Authorization Procedure (i.e., see Section H.2), Contractor support shall be provided to NETL as designated or directed through an associated CLIN. The CLIN shall be utilized by the Contractor to develop and implement its work breakdown structure (WBS) and serve as its financial Chart of Accounts. As organizational changes within NETL occur, the DOE Contracting Officer (CO) may revise existing CLINs in order to facilitate change control. A current title and a brief description of each of these three (3) CLINs are as follows:

CLIN 1: Mission Specific Support

The National Energy Technology Laboratory (NETL), part of DOE's national laboratory system, is owned and operated by the U.S. Department of Energy (DOE). NETL supports DOE's mission to advance the national, economic, and energy security of the United States.

NETL implements a broad spectrum of energy and environmental research and development (R&D) programs that will return benefits for generations to come:

- Enabling domestic coal, natural gas, and oil to economically power our Nation's homes, industries, businesses, and transportation ...

- While protecting our environment and enhancing our energy independence.

NETL has expertise in coal, natural gas, and oil technologies, contract and project management, analysis of energy systems, and international energy issues.

In addition to research conducted onsite, which is supported under CLIN 3, NETL's mission specific functions include R&D conducted through partnerships, cooperative research and development agreements, financial assistance, and contractual arrangements with universities, state and local governments, and the private sector. Together, these efforts focus a wealth of scientific and engineering talent on creating commercially viable solutions to national energy and environmental problems. The mission specific IT support performed exclusive of support for research conducted onsite is addressed in this CLIN.

CLIN 2: Corporate Human Resource Information System

DOE's Corporate Human Resource Information System (CHRIS) encompasses the corporate systems that support human resource processing and information for all DOE employees across the Department, and is DOE's official system of record for human resource management. CHRIS provides integrated human resource information functions for such areas as human resource and training administration, position management, and individual performance management. It serves DOE's executives, managers and employees, provides mandated reports to the Office of Personnel Management (OPM) and Office of Management and Budget (OMB), and interfaces with DOE's outsourced payroll system. Personnel data from CHRIS is used for financial, budget and resource reporting and planning.

The primary CHRIS system is physically located at the NETL Morgantown facility. The CHRIS Disaster Recovery Site (DRS) is located at the DOE Headquarters (HQ) Germantown facility in Maryland and utilizes housing services at that facility. The application software is a DOE-modified COTS product, PeopleSoft HRMS with PeopleTools, currently running in an Oracle database environment. DOE sites across the country, including the NETL sites, have access to CHRIS via DOENet (DOE's private network).

DOE is licensed to use the PeopleSoft HRMS code. The PeopleSoft HRMS application has been heavily modified to suit DOE's requirements. The IT support for the core CHRIS PeopleSoft application, the database, servers, and ancillary systems, including IT support for the DRS, is addressed in this CLIN.

CLIN 3: Research Information Technology Support

Research Information Technology Support encompasses the full breadth of information technology support for the NETL in-house research and development program.

Information Technology as Defined by the Mission of Research

The National Energy Technology Laboratory (NETL) of the United States Department of Energy (DOE) performs applied scientific and engineering research to understand, create, and develop energy processes and systems to meet the nation's future energy needs. In the course of conducting this research, NETL scientists and engineers design, assemble, and operate many highly instrumented test energy systems to make precise and accurate scientific measurements for the purposes of analysis of energy systems' function and performance.

These scientific measurements are initially expressed as raw electrical signals. Electronic circuits and components convert these signals into digital data. Scientific and process systems are likewise controlled by electrical signals. Programmable circuit components provide the timing and conversion of electrical signals to digital data and the conversion of digital data to electrical signals to drive and control components of the test systems.

Microprocessors control the programmable circuits and transform the electrical signal data into scientific and engineering units. The executive programs that support these microprocessor operations are subject to the techniques and priorities of the operating system. The integrity of timely programmable operations for conversion of scientific data and control signals are susceptible to corruption by poorly engineered, implemented, or managed information technology. It is essential to the mission and reputation of NETL that data and control systems be

assured freedom from any form or level of data corruption, signal distortion, or timing error.

Scientific and engineering knowledge of chemical kinetics, thermodynamics, statistical analysis, kinematics, safety systems, instrumentation, electronics, optics, software development, and process control are commonly applied to design, implement, and operate these research projects. Procedures for quality assurance and safety system analysis are rigorously adopted and continuously refined within NETL. Best practices of the scientific and industrial communities are applied in the design, construction, operations, and analysis of energy research test systems. Integration of computational resources to meet the process needs of the laboratory is carried out to meet the scientific and engineering requirements of the laboratory or process specifications.

Technical decisions of data acquisition and control hardware and software have been made by each research project to meet the research and development requirements of the research project. The decision basis for integration of data acquisition and control systems are derived from the scientific and engineering process community not from the computer and software marketing community due to the higher cost components of the former. The life cycle of integrated systems is based on criteria of total research project cost and operational integrity level due to the high costs of retrofit and reconfiguration.

Of the variety of computational resources used within NETL nearly all require specialized scientific and engineering knowledge. Unlike consumer and business market driven information technology (IT) products, scientific and engineering practices require a working knowledge of hardware and software component integration to assure intended functions are performed as designed and that unintended consequences are avoided. Since scientists and engineers strive to know how and why things work, industrial and laboratory practices, components, and software are generally more rigorously designed and tested than are consumer products in order to mitigate the possibility of unintended disruption of operations or data corruption.

The transfer of engineering design data and scientific research measurement data is an obvious function of information technology. The data transfer technology may allow or cause unintended consequences to research operations. The data transfer technology may also allow or cause the installed research software to disrupt, damage, or corrupt the broader network of information technology systems.

In addition to the need for engineers and researchers to be vigilant in preventing unintended consequences of information technology and engineered systems, professional information technology specialists are essential to the research team to perform IT system evaluations against the research project and IT security criteria. The information technology specialist, scientist, operating technician, and engineer must openly share knowledge, resources, and reasoning processes at all levels of design, specification, procurement, operations, and analysis in the NETL organization. The members of the variety of research project teams within the NETL organization work with multiple teams, as should an IT specialist, to cross fertilize the knowledge, reasoning, and resources.

3.0 SCOPE

3.1 Types of Services

Services shall cover the full breadth of Information Technology support essential to satisfy the mission specific requirements of a multi-location, multi-function United States National Laboratory.

3.2 Overarching

The Overarching scope area includes support for many administrative tasks directly related to IT support. This effort ranges from software license management to administration of the IT Change Control process. Several other types of support are to be provided, including quality control, meeting logistics support, reporting, procurement support, and audit support. All effort performed under the overarching activity will be performed to ensure effectiveness and efficiency of all effort performed under this contract.

The Contractor's responsibilities shall include, but are not limited to, providing the following support for overarching services:

- A. Provide logistics support for, but not limited to, Enterprise Architecture (EA) Team, Configuration Control Board (CCB), IT Architecture Board, IT Projects Board, and strategic and operational planning meetings. Logistics support includes, but is not limited to, meeting scheduling; meeting coordination; action item tracking; meeting content documentation; and the creation, collection, and distribution of meeting related materials.
- B. Provide logistics support for, but not limited to, CHRIS weekly meetings, CHRIS monthly budget meetings, CHRIS biannual planning meetings, Configuration Control Board (CCB), and planning activities. Logistics support includes, but is not limited to, meeting scheduling; meeting coordination; action item tracking; meeting content documentation; and the creation, collection, and distribution of meeting support materials.
- C. Implement methods to measure performance and results, including customer satisfaction
- D. Develop and implement a Quality Control Plan to ensure all deliverables provided under the contract are accurate, complete and free of errors. The Quality Control Plan shall address both technical and administrative deliverables. Errors include typographical errors, grammatical errors, programming code errors, as well as errors of fact. The Government will not serve in the quality control function for the contractor. Downward adjustments in fee may be assessed if the Quality Control Plan is not followed and a received deliverable requires rework or is unacceptable due to poor quality.
- E. Provide user communication support to include, but not be limited to, maintaining the Information Technology Division (ITD) Intranet Tips and Tricks information, developing user help aids, coordinating the development of content and subsequent publishing of Intranet postings, and maintaining content within the ITD Intranet web pages.
- F. Provide user communication support to include, but not be limited to, providing technical input for incorporation in user bulletins, CHRIS news and intranet postings, and email alerts/notices; and assisting as necessary with technical input and review of user help aids, user manuals, and test scripts.
- G. Provide ad hoc organizational reporting support to include, but not be limited to, the gathering and compilation of information for Office of Management and Budget submissions and other Departmental or Government-wide calls for information, and the gathering and assembling of information for NETL weekly report submission.
- H. Provide an overarching, contract-wide IT project management capability for all projects and special tasks issued under the contract. Projects and special tasks must be managed in concert with on-going maintenance and operational efforts in a manner that results in achieving the defined technical, cost, and schedule objectives. Provide accurate and timely project status reports. Manage the sum of all active and planned projects as a portfolio. Determine and communicate the impact of a change on one project to all other active or planned projects. Manage multiple projects simultaneously with a defined resource pool. Coordinate with and oversee work performed by third-party organizations. Manage critical paths, coordinate key integration points, and develop contingencies to deal with the risk and uncertainty inherent in IT projects.
- I. Provide IT resource (i.e. hardware, software, and services) maintenance/service agreement support to include, but not be limited to, notifying the associated ITD Contracting Officer's Representative (COR) or Contracting Officer's Technical Representative (COTR) of any maintenance/service agreements or software licenses that will expire in 60 or fewer days and submit purchase requisition(s) to the Government procurement system for renewal at least 45 days prior to the expiration date; coordination of review of maintenance/service agreements (to ensure requirements of coverage are met); coordination of site visits to perform maintenance by external providers; coordination of return to vendor for repair, items that are not covered by onsite maintenance agreements; and coordination of repair of items not covered by maintenance agreement as required.
- J. Provide software license management support to include, but not be limited to, tracking license distribution, ensuring adequate license coverage by informing the appropriate ITD COR/COTR when license levels are in jeopardy of being exhausted, interpreting license agreements, seeking alternative licensing vehicles/pricing, performing research for licensing initiatives, assembling information as necessary to respond to internal and external licensing audits and data calls, verifying license upgrade conditions are met, tagging software media using Government issued labels, tracking software licenses using the Government property management

system, and retiring and disposing of excess license materials (in conjunction with the Government property management function).

- K. Prepare and maintain any operational drawings, architecture drawings, and diagrams that facilitate the documentation and understanding of NETL processes and/or systems.
- L. Actively participate in and in some instances host and facilitate Information Technology Change Control processes. This includes, but is not limited to, consulting with others to determine the impact of a proposed change on NETL's environment, preparing and submitting change requests, implementing approved change requests in accordance with the guidance provided by the Configuration Control Board, developing and maintaining supporting documentation, adhering to the change control processes in effect, reviewing the processes in effect and recommending improvements, and participating in Configuration Control Board meetings.
- M. Provide IT procurement support to include, but not be limited to, development of specifications to meet defined requirements, preparing IT procurement requests, performing advance IT market surveys to determine cost estimates for various initiatives and identify most favorable pricing sources. The Contractor shall review 3rd party IT vendor invoices, provide recommendations to resolve billing disputes and execute approved recommendations
- N. Provide support in the design, development, implementation, and maintenance of NETL information technology policies and procedures.
- O. Perform work in a systematic process-oriented fashion using standard operating procedures (SOPs). The SOPs shall be kept current and align with NETL's environment, directives, and prevailing knowledge. With approval, the SOPs may be updated to incorporate the Contractor's corporate experience and standards with NETL's existing processes. The operating procedures shall be documented, configuration controlled, and all Contractor staff shall be trained to adhere to them.
- P. Participate in and facilitate the development of strategic and operational plans for the future direction of IT activities.
- Q. Audit all systems and applications for compliance with policies, standards, plans and baseline configurations.
- R. CHRIS is subject to the NETL Certification and Accreditation and the DOE Headquarter Certification and Accreditation. The contractor shall ensure that CHRIS remains compliant with all cyber security requirements and will serve as liaison with both the NETL cyber security team and the HQ cyber security team to ensure that CHRIS remains compliant with all cyber security requirements.
- S. Develop and maintain contingency plans for all supported research IT services, systems, and major applications unless specifically excluded by the COR/COTR.
- T. Adhere to all pertinent NETL Focused Standards as indicated in the Focused Standards List. The Focused Standards List can be viewed on the NETL Intranet at http://intranet/ESH_ISO/standard/focused.pdf.
- U. The Contractor shall provide management, logistics, and technical support for wireless services, including cell phones and Mobile Internet Devices, e.g., BlackBerries. The Contractor shall:
 - 1. Coordinate the initiation, renewal, modification, and/or termination of wireless services when authorized by NETL.
 - 2. Work with service providers to resolve installation, performance and service disconnect issues in a timely manner.
 - 3. Review usage invoices for wireless services and verify charges. On ad hoc basis, alert DOE managers if usage or charges exceed established criteria.
 - 4. Coordinate the funding coverage of base and overrun costs by the using organizations. On a quarterly basis, provide information to the using organization on usage costs and overruns.

5. Initiate procurement requests using the Government procurement system as required to satisfy wireless service requirements.
6. Provide recommendations to using organizations on how they might maximize their funds for wireless services.

REPORTS:

1. Quality Control Plan shall be submitted within 60 day of contract award and updated annually on or before September 10th.
2. ITD Weekly Report
3. CCB Meeting Minutes Report to be completed within 5 business days of event
4. IT Projects Board Meeting Minutes Report to be completed within 3 business days of event
5. EA Team Meeting Minutes Report to be completed within 3 business days of event
6. IT Architecture Board Meeting Minutes Report to be completed within 3 business days of event
7. Annual Travel and Training Plan to be submitted with the fiscal year budget plan
8. Monthly Key Milestone Report due on the 10th day of the month
9. Biweekly Project Status Report due 2 business days before the IT Projects Board Meeting
10. Customer Satisfaction Summary
11. Changes Related to Research and Analysis of Federal Regulations
12. Ad hoc reports to managers upon request or if wireless service usage or charges exceed established criteria. Related call detail reports shall be provided as requested and available from vendor.
13. Ad hoc and quarterly reports by organizational element showing wireless services costs by device.
14. Semi-Annual Software Licensing Report shall be provided to identify all software maintained by NETL giving the license count, renewal anniversary date, description of license and other key information needed for management decision making. Due on the 10th day of April and of October.
15. Ad hoc reports to be completed as required

3.3 Cyber Security Audit and Compliance

Performance under the Cyber Security Audit and Compliance scope area utilizes the Under Secretary of Energy Program Cyber Security Plan (PCSP) to identify requirements necessary for ensuring the security of unclassified and classified mission specific information systems. NETL augments the PCSP requirements as necessary to protect NETL’s information and information technology assets. Cyber security is a management priority.

The Contractor’s responsibilities shall include, but are not limited to, providing the following support for cyber security audit and compliance:

- A. Provide cyber security planning, reporting and implementation consistent with NETL, Under Secretary, and Departmental policies and requirements.
- B. Ensure that program managers, system owners, and security personnel in all NETL organizations understand the system security planning, reporting and implementation process. In addition, ensure users of information systems and those responsible for defining system requirements are familiar with the system security planning process and the requirements of the National Institute of Standards and Technology (NIST), DOE, and NETL.
- C. Work closely and collaborate with all parties to ensure adherence to cyber security policy.
- D. Provide support to develop, document, and implement policies and procedures compliant with the requirements defined in the NETL PCSP and commensurate with the level of security required for the environment and special needs of NETL.
- E. Provide support related to establishing and/or maintaining the certification and accreditation of IT systems within the appropriate NETL boundaries or enclaves, including the following duties:
 1. Ensure the implementation of protection measures that are documented in security plans for each information system/application;
 2. Develop and maintain contingency plans for all IT services, systems and major applications supported

- through this contract unless specifically excluded by the COR;
3. Ensure that users are granted access to information systems' resources based on the least privilege required principle;
 4. Identify unique threats to information systems and document threats in the System Security Plans (SSP);
 5. Document any special protection requirements identified by the application owner, data owner, or data steward, and ensure that these requirements are included within the protection measures implemented in the information system;
 6. Ensure that each information system is covered by a SSP;
 7. Ensure that the organization's Cyber Security Program Manager is notified when an information system is no longer needed or when changes occur that might affect the accreditation of the information system;
 8. Ensure that information access controls and cyber protection measures are implemented for each information system as described by its SSP;
 9. Ensure that users and systems administrators are properly trained in information system security;
 10. Conduct cyber security audits, reviews and tests to ensure that the cyber security features and controls are functioning and effective;
 11. Ensure the performance of risk assessments to determine whether additional countermeasures beyond those identified in the SSP are required and whether an identified unique local threat exists;
 12. Communicate individual incident reports to the NETL Cyber Security Program Manager;
 13. Ensure that unauthorized personnel are not granted use of or access to the information system; and
 14. Ensure that the appropriate operational security posture is maintained for information systems.
- F. Provide engineering support to address cyber threats and requirements.
- G. Work closely with all internal and external entities to ensure compliance with cyber security "best Practices" for the: identification of critical information, analysis of threats, analysis of vulnerabilities, assessment of risks, and application of countermeasures.
- H. Maintain a cyber security incident response team composed of members capable of quickly responding to an escalated incident.
- I. Coordinate incident responses with proper internal, external, law enforcement, and contract authorities.
- J. Produce and maintain standard baselines and procedures for secure configuration of NETL mission specific and research systems.
- K. Administer and maintain, and produce or acquire cyber security related training materials for the organization. Conduct cyber security training for the organization utilizing training materials acquired or developed.
- L. As part of routine or special request, investigate, document, and report incidents of waste, fraud, and abuse of information technology resources.
- M. Conduct special projects involving evaluation, development, and application of information security technology, plans, policies, and procedures.
- N. Provide technical expertise and support in all aspects of cyber security associated with the NETL operational IT infrastructure support service provider, such as establishing working agreements, reporting requirements, research, and technology implementation.
- O. Ensure compliance with all Program Cyber Security Plan requirements and documentation, including but not limited to network connections, security impact analyses, and change control.
- P. Develop, implement and maintain a viable workstation protection scheme that protects the workstation and network against malicious code (viruses, trojans, spyware), as well as unauthorized access to the system or its components (implementation of workstation security policies).
- Q. Conduct network device compliance validations according to COR/COTR-approved checklist.

REPORTS:

1. Monthly CYBER incident report Computer Incident Advisory Capability(CIAC), CI, etc., due on the 10th day of the month.
2. Monthly Audit reports due on the 10th day of the month.
3. Monthly Progress on all projects due on the 10th day of the month.
4. Monthly Log auditing activities due on the 10th day of the month.
5. Monthly CIAC notices and actions taken and completed due on the 10th day of the month.
6. Monthly Vulnerability scans and analysis due on the 10th day of the month.
7. Monthly Resolution progress and status on vulnerabilities/weaknesses due on the 10th day of the month.
8. Monthly Policy and procedure reporting due on the 10th day of the month.
9. Quarterly report on reviews of system logs due on the 10th day of the next month.
10. Monthly Plan of Action and Milestone (POAM) status and progress due on the 10th day of the month.
11. Ad hoc FISMA/OMB/HQ/other reporting as required.
12. Quarterly Network Device Compliance Report due on the 10th day of the next month.
13. Yearly PSCP Review Report due on the 10th day of the next month.

3.4 Help Desk

The role of the on-site help desk will be to resolve questions concerning mission specific systems at NETL during standard hours of operation; and log and track requests for resolution of the issues. The Contractor will track and address all calls transferred from the first tier Help Desk with a technically knowledgeable, courteous, and responsive staff. The Contractor will cooperate and share information with the first tier Help Desk to ensure that users' needs are met.

The Contractor's responsibilities shall include, but are not limited to, providing the following support for mission specific services:

- A. The NETL InfoDesk shall coordinate with the NETL operational IT infrastructure support service provider Helpdesk for calls that are transferred to the NETL InfoDesk for mission specific IT support.
- B. Record, assign and track all support calls to the mission specific IT support InfoDesk.
- C. Quickly respond and resolve mission specific service problems by phone to the maximum extent possible and at the client station when required. Users and COR/COTR shall be kept informed on the progress of the action.
- D. Distribute wireless devices, to include cell phones and Mobile Internet Devices, e.g., BlackBerries, and provide end-user training, based on end-user request.

REPORTS:

1. Monthly report of overdue trouble tickets due on the 10th day of the month.
2. Monthly tracking database call volume report due on the 10th day of the month.
3. Monthly "Top 10" Trouble Ticket report due on the 10th day of the month.

3.5 Enterprise Architecture Support

Enterprise Architecture (EA) is the practice of applying methods for describing a current or future structure for an organization's business functions, processes, information, resources, systems, and infrastructure so that they align with the organization's goals and strategic direction. EA serves as a bridge between strategy and implementation and develops an information technology environment which provides flexibility and adaptability for changing business, information and data needs. Enterprise Architecture provides a blueprint of where the organization is, where it would like to be, and a roadmap illustrating how to get there. At NETL, EA includes high-level enterprise-wide EA planning as well as project specific, segmented, EA activities.

EA support covers the full breadth of Federal EA functions, including Business Architecture, Service Component Architecture, Data Architecture, Application Architecture, Performance Architecture, and Technology Architecture.

When applicable, Enterprise Architecture activities shall be accomplished in a manner consistent with the Software Engineering Institute (SEI) Capability Maturity Model Integration (CMMI) level 2 or higher.

The Contractor's responsibilities shall include, but are not limited to, providing the following Enterprise Architecture support services:

- A. Perform EA planning and implementation, which includes capturing through documentation and models the current (as-is) and future state (to-be) architectures. The resulting documents and models should encompass the full breadth of the Federal Enterprise Architecture.
- B. Capture and produce EA documentation for multiple audiences, to include NETL management, the Office of Fossil Energy and the Department of Energy's Office of Chief Information Officer (OCIO). Documentation may take the form of formal slide presentations, formal reports, or informal notes and reports. Documentation may be project specific or encompass the full breadth of NETL's EA. Documentation should be tailored based upon the target audience and objective.
- C. Add detail and clarity to NETL's documented EA. NETL uses the Federal Enterprise Architecture Reference Models and the NETL Strategic Structural Model. The Strategic Structural Model is a matrix of organizational functions and information categories.
- D. Manage and oversee the architecture repositories which house NETL's EA related information. Support the input and management of NETL data in the DOE EA repository (DEAR).
- E. Support NETL's IT application portfolio management activities, which include measuring the economic value and technical fitness for each enterprise application. Economic measures may include life cycle cost, life expectancy and stage of life.
- F. Manage the Application Portfolio Management (APM) database. The APM database contains information related to NETL applications used for decision making.
- G. Manage the IT Architecture Board technology review process. Coordinate recommendations from the support contractor which are submitted to the board for approval. Manage the Technologies database.
- H. Support EA governance activities, which include providing EA technical expertise and recommendations to NETL IT representatives and to the NETL EA governance bodies. Governance bodies currently include the NETL EA Team, the NETL IT Architecture Board and the DOE Enterprise Architecture Working Group (EAWG).
- I. Support NETL in achieving and maintaining compliance with DOE and Federal EA activities, to include compliance with direction received from the DOE OCIO and the Office of Management and Budget (OMB).
- J. Support the NETL EA Team in the performance of the EA Investment Management Process. Participate in the EA Investment Management Process by coordinating the development of Rough Order of Magnitude (ROM) cost estimates and preliminary cost/benefit documents.
- K. Measure NETL's EA utilizing the OMB EA Assessment Framework. Provide recommendations to mature the EA based on assessment results.
- L. Make written IT improvement recommendations documenting potential NETL cost savings.
- M. Work with NETL business representatives, one-on-one, in workgroups and in teams, to understand and document the business goals, business processes and the data necessary to perform those processes in a manner consistent with CMMI level 2 or higher.
- N. Document business-level requirements applying CMMI level 2 or higher practices for new mission specific systems or enhancements to existing mission specific systems.

- O. Perform analysis to address the business-level requirements. Analysis may include document analysis, process analysis, benefit/cost analysis and technical solution analysis.
- P. Document and recommend technology and business solutions in a manner consistent with CMMI level 2 or higher. The solution approach should identify opportunities for process improvements. The resulting work packages should be of sufficient detail for use in defining and managing application development and may include business system requirements, cost estimates, risk assessments and cost / benefit documentation including return on investment (ROI) calculations.
- Q. Work to ensure the resulting system meets the business requirements. Communicate the business representative's requirements to the system engineering development personnel. Ensure the business representative's requirements are documented, tracked, and addressed throughout the application development and deployment process.
- R. After developed applications are placed into production, perform assessment of developed business solutions. Determine if goals and business requirements were met. Determine accuracy of pre-development cost / benefit documentation.

REPORTS:

- 1. Monthly EA Progress Report on the 10th day of the month which documents all relevant EA effort performed in the previous month, including but not limited to:
 - a. Status of active and pending EA projects and special tasks.
 - b. Status of assigned EA action items.
 - c. Lessons learned and associated opportunities for process improvement
 - d. Issues and roadblocks related to assigned work.
- 2. Annual EA Plan on February 28. The plan will align with the Federal Enterprise Architecture Reference Models. The plan will present NETL's current (as-is) architecture and our target or future state (to-be) architecture. A transition strategy to move toward the target architecture will be included in the plan. The goal is to document, advance and maintain NETL's EA planning and implementation efforts.

3.6 System Engineering

The NETL System Engineering Development, Operations and Maintenance environment consists of a diverse software environment used in support of the National Energy Technology Laboratory's (NETL) mission. The environment consists of NETL mission specific internally developed applications, Commercially Available Off-the-Shelf (COTS) applications, and Government Off-the-Shelf (GOTS) applications hosted throughout the Laboratory complex at several physical locations. The development, operations and maintenance of this environment is performed under this scope area. The user community consists of internal (NETL federal and contractor employees) and external (non-NETL federal and contractor employees and the general public) users. Whereas access to NETL applications is primarily from within the NETL sites, provision for NETL application access from offsite is also required.

System Engineering includes implementation of new mission specific application systems, and maintenance and/or enhancement of existing NETL mission specific applications. These applications will be deployed within an infrastructure that is operated and managed by the NETL operational IT infrastructure support service provider. The NETL operational IT infrastructure support service provider will be responsible for the Cyber Security and Networking infrastructure, Application Hosting/Housing, Desktop/Workstations management, email/collaborative messaging, telephony etc. The application environment may vary from application to application. Responsibilities for administration of the server may differ depending upon the hosting/housing environment. Applications will be developed or integrated in an environment consisting of standardized equipment and configurations (servers and storage, operating systems, networking, and desktop clients). NETL has computer rooms at multiple physical locations. An application may be hosted at any of these locations. In addition, it is possible that an application would be hosted or housed by a third party, such as another DOE or commercial entity. The Contractor will need to be able to work effectively in an environment that requires coordination of effort and flexibility in approaches to accomplish the mission specific goals of the NETL. The system engineering support personnel must work closely with internal

and external entities to ensure compliance with cyber security “Best Practices” for the identification of critical information, analysis of threats, analysis of vulnerabilities, assessment of risks, and application of countermeasures.

The system engineering environment shall be built upon accepted standard software engineering principles and shall be consistent with Industry, Federal and DOE development, design operations and maintenance methodologies. Software engineering activities shall be accomplished in a manner that provides a consistent, repeatable and secure development environment following a well documented methodology consistent with the Software Engineering Institute (SEI) Capability Maturity Model Integration (CMMI) level 2 or higher. Elements to be supported in the methodologies shall include, but are not limited to:

- Program and Project oversight of the software life cycle management process;
- Project management process;
- Requirements gathering and analysis;
- System architecture design and analysis;
- System design and development;
- System integration and testing;
- Monitoring System Performance;
- Risk Management and Root Cause analysis;
- System quality control and testing;
- Information and Data Management;
- System deployment, operations and maintenance;
- System configuration/change control;
- System Cyber Security oversight, audit, and control;
- System documentation;
- System Retirement;
- Regulatory Compliance;
- A Software Quality Assurance Program

The Contractor’s responsibilities shall include, but are not limited to, providing the following support for system engineering services:

- A. To the greatest extent possible, use NETL’s existing inventory of development tools and environment when creating new application systems or performing enhancements to existing application systems.
- B. Perform maintenance on application systems. This includes, but is not limited to, activities such as: changing and modifying systems code; system and program documentation updates; periodic reviews of system operations to ensure maximum effectiveness; and problem resolution of system failures and programming errors.
- C. To the greatest extent possible, strive to build systems components that allow for reuse. In addition, systems developed shall minimize dependence on desktop/workstation configuration and the system hosting/housing environment.
- D. Utilize standards-based methodologies such as modeling and markup languages that describe software elements in pictorial form and allow data to be modeled and transmitted in platform and programming language independent format. Utilization of DOE, NETL, and industry standards such as .NET, XML, UML, PKI and Class Diagram technologies is required.
- E. Establish and maintain certification and accreditation of existing and new (major) applications in accordance with the NETL program cyber security program.
- F. Ensure that changes to systems and components are managed by a formal change control process.
- G. Provide application management support to ensure that there is a systematic approach to managing code, project artifacts, documentation, etc. relating to the software engineering environment at NETL. The application

management support system is to be in an application library management system that is accurate, comprehensive and current to ensure proper change management as well as providing a consistent, repeatable, secure, efficient and effective software engineering environment.

- H. Maintain a quality control environment to test all new and changed application systems thoroughly to minimize failures in a production environment. At a minimum this shall consist of supporting and maintaining a coordinated Production, Test and Development software engineering environment for all supported applications and systems. Support of this environment is to include but is not limited to: provide support to create, operate and maintain NETL's implementation of a formal Software Quality Assurance (SQA) program that is consistent with Federal and DOE SQA guidance; follow industry best practices and principles regarding SQA; and provide SQA support that is an integral part of the software lifecycle methodologies employed at NETL.
- I. Identify and eliminate "single points of failure" in applications, systems, staffing and work processes in a cost-efficient manner.
- J. Aggressively search for commercial-off-the-shelf, government-off-the-shelf or external sources to satisfy NETL's requirements for new or replacement application systems. Additionally, the Contractor shall leverage outsourcing services when beneficial to the Government.
- K. Develop APIs (application program interfaces), install and maintain COTS/GOTS and application software as required for various operating systems, databases, and programming language environments.
- L. Coordinate/consult with those providing the hosting/housing environment on issues relating to, but not limited to: system integration functions utilizing available hardware and software interfaces; investigating potential integration functions and services; and installing and testing connections, interactions and operations between different operating, application, network, email, and database systems supported in the hosting/housing environment.
- M. Provide database administration activities for a robust database environment that includes, but is not limited to: Oracle, Microsoft SQL Server, Lotus Notes, and Microsoft Access. Database activities include, but are not limited to: database creation and modification; performance tuning; backup and restoration; disaster recovery; importing and exporting of data with internal and external sources/destinations; and security administration.
- N. Provide ad hoc reporting support to assist application users on an as-needed basis, providing reports not found natively within the application environment. This may consist of creating SQL scripts, exporting data to MS Office products, creating Cognos reports etc.
- O. Implement, operate and maintain a Portal Environment consistent with NETL's IT Architecture to provide NETL staff access to the appropriate NETL, Government-Wide and Commercial information assets and IT resources.
- P. Operate, maintain, and/or enhance a central point for storing and sharing NETL mission specific enterprise data. This Operational Data Store (ODS) consists of an accumulation of common data from multiple sources (internal and external to NETL) to facilitate operations, analysis and reporting needs for NETL and acts as a data hub for NETL's information. It is subject oriented, integrated, contains low level data such as transactions, and supports tactical and operational decision making.
- Q. Operate, maintain, and/or enhance a data warehouse that contains a wide variety of data that presents an aggregated and historical picture of NETL business conditions at a single point in time. This activity includes the development and maintenance of systems or tools to extract, cleanse, and aggregate the data from a variety of different information sources, plus installation of a database system that provides managers flexible access to the data.
- R. Provide process improvement initiatives applying CMMI principles, including on-going root-cause analysis of application modifications.

- S. Operate, maintain, and/or enhance a Business Intelligence environment that supports NETL reporting requirements with a focus on the ODS and Data Warehouse as sources of the information. Develop a robust reporting portal supporting organizations and users at all levels within NETL.
- T. Code, test, install, and monitor interface scripts and queries to generate reports and exports, and to retrieve data from external systems, including but not limited to: DOEInfo, Defense Finance and Accounting Service (DFAS - payroll service provider), DOE's Online Learning Center (OLC²), U.S. Office of Personnel Management (OPM), Office of Management and Budget (OMB), and Corporate I-MANAGE systems (STARS, IDW, STRIPES). Tools and languages used include, but are not limited to, Oracle Tools, SQL-Server, MS Office, Cognos, Lotus Notes, SQRW/SQR Express, SQL-Navigator and PeopleTools Application Engine.
- U. Provide and maintain a tracking mechanism consistent with CMMI level 2 or higher that directly relates high-level business requirements to detailed system requirements. This information is to be associated with a specific release/version of the software and recorded as an artifact in the application/system documentation. This tracking mechanism is to classify requirements by function and to be available as a resource for referencing requirements across all software engineering projects.
- V. Provide and maintain documentation consistent with CMMI level 2 or higher of the various systems, processes and artifacts created and/or maintained by the Contractor to facilitate the continued operation of these systems by others.
- W. Apply project management principals consistent with CMMI level 2 or higher to development activities that include, but are not limited to: project scope, cost control, schedule, resource leveling, project phase management, risk, milestone tracking, deliverables, Earned Value Management System (EVMS), Return on Investment (ROI) and Total Cost of Ownership (TCO).
- X. Develop and maintain user help guides for mission specific applications, as required. Assist or develop and conduct user training of mission specific systems based on guidance from ITD.
- Y. Provide consulting services relating to desktop/workstation configuration and the system hosting/housing environment.
- Z. Perform setup, backup, refreshes, upgrades/patches/fixes, security and administration of multiple copies of the database, including but not limited to Development, Test, Training, Production and Functional environments.
- AA. Provide backup and recovery support, setup and administration (remote and on-site as needed) of the Disaster Recover Site at HQ.
- BB. Coordinate/consult with those providing the computer hosting/housing environment on issues relating to, but not limited to: system integration functions utilizing available hardware and software interfaces; investigating potential integration functions and services, and installing and testing connections, interactions and operations between different operating, application, network, email, and database systems supported in the hosting/housing environment.
- CC. Provide debugging and technical support as required to address Help Desk trouble tickets.
- DD. Provide subject matter expertise in support of the CHRIS functional team and developers. This support includes but is not limited to: interpretation of OPM and OMB regulatory requirements, analysis of the overall impact on CHRIS of regulatory and business process changes, generation and clarification of functional requirements, development of test scripts and test scenarios, functional testing, and development of user guidance.
- EE. Provide consulting support for workstation configuration and backup. This includes supporting field sites encountering technical problems, providing additional backup support for PeopleSoft Configuration Management and preparing installation/documentation materials. Additionally, support is required to address the CHRIS system backup configuration at the DOE Headquarters location.

REPORTS:

1. Monthly Application Uptime Report due on the 10th day of the month.
2. Detailed System Requirements Report per System version release or update.
3. Monthly General Enterprise Engineering Status Report due on the 10th day of the month.
4. Bi-Weekly Meeting Agenda and Status Report
5. Ad hoc reports as required
6. Monthly CAMS report due on the 7th day of each month.
7. CHRIS Monthly Status Report, to include Key Milestones, due on the fourth business day of the month.
8. Weekly Meeting Agenda with Status Updates when nearing a Key Milestone.
9. CHRIS CCB Meeting Minutes Report to be completed within 5 business days of event

3.7 Server Support

Server support includes support for the operation of the NETL research computer facilities and other computing resources; and provision of analytical, technical, administrative, and engineering support for the connection of desktop computers, mini-computers, servers (file, database, application, and web), domain controllers, peripherals, workstations, and other devices to the NETL local, metropolitan, wide area, and other external network(s) as deemed necessary by the COR/COTR, research project principle investigator, and/or engineering design lead. 100% availability for all of NETL research IT services and computing resources is desired during standard hours of operation.

The Contractor's responsibilities shall include, but are not limited to, providing the following server support services:

- A. Monitor mission specific computer facility computer systems to ensure maximum availability of the IT services they provide. Upon detection of computer system problems or failures, perform remedial actions to restore the associated IT services.
- B. Run and technically support mission specific production jobs in accordance with defined schedules and in compliance with current policies and procedures. This support includes, but is not limited to, hardware maintenance, software maintenance, and performing database maintenance procedures including database backups and restores. These elements and schedules shall be established to minimize negative impacts on the user community.
- C. Operate and maintain the mission specific hardware and operating system software for database, file, print, application, batch and web servers.
- D. Operate and maintain the NETL mission specific domain controllers, including user accounts and access controls.
- E. Provide assistance in configuring and maintaining mission specific application web servers in accordance with NETL internet policy.
- F. Administration of licenses and/or mission specific license servers.
- G. Provide database administration and configuration support for NETL mission specific servers.
- H. Provide consultation for unique requirements and needs of NETL mission specific server systems.
- I. Maintain the patches, updates and version control for NETL mission specific servers.
- J. Provide research website administration including content development and management of the published websites, controlling the underlying technical infrastructure, and website user administration.
- K. Perform mission specific server backups (currently running NetWare, Windows, and UNIX) to provide for

system restoration, file and database recovery, and disaster recovery. These elements and schedules shall be established to minimize negative impacts on the user community.

- L. Recover, reload, and restore files, server volumes, and databases as required to maintain maximum availability of required data, engineering design documents, and configuration data.
- M. Develop, maintain, and test each calendar year a Disaster Recovery Plan for the NETL mission specific computer facilities and systems. The Contractor will certify to, and receive documented approval from, the designated COR/COTR that the test was satisfactorily completed.
- N. Conduct a comprehensive preventive maintenance (PM) program for NETL mission specific hardware and software. These PM activities shall be developed and implemented in a manner consistent with industry standards and guidelines, and manufacturer-recommended maintenance schedules. These elements and schedules and the methods utilized in performing PM activities must minimize any negative effect on the user community.
- O. Provide resource utilization and capacity planning support. This should include, but not be limited to, baselining utilization of mission specific server resources (CPU, memory, storage space, backup capacity), monitoring of the server resources to identify utilization/consumption trends, and projecting when resource utilization/consumption will be such that delivery of services by the servers falls below acceptable performance levels. The Contractor shall provide recommendations for mission specific server and server component (hardware and software) replacement, upgrade, and enhancement to prevent server services from falling below acceptable levels.
- P. Provide backup and recovery support, setup and administration (remote and on-site as needed) of the CHRIS Disaster Recover Site.

REPORTS:

- 1. Monthly Server Availability and Capacity Management Report due by COB on the 2nd Friday of each month which documents all relevant sever availability and capacity management data from the previous month, including but not limited to:
 - a. Incident Summary
 - b. Availability and Downtime Summary
 - c. Capacity and Resource Utilization Summary
 - d. Changes Summary
 - e. Problems or Issues
- 2. Monthly Critical Patches Report due by COB on the 2nd Friday of each month, which documents all relevant critical patch information from the previous month, including but not limited to:
 - a. Released Patches
 - b. Application Dates
- 3. Ad hoc Service Interruption/Incident Reports due within 5 business days of the service interruption/incident

3.8 Mission Specific Operational IT Support

The Contractor’s responsibilities shall include, but are not limited to, providing the following support for computing resources:

- A. Record and assign all support calls made for research IT support. Track all client, network, application, and information technology system problems and/or repairs.
- B. Quickly respond and resolve mission specific client hardware and software problems upon notification and at the client station when required. Users shall be kept informed on the progress of the action. The COR/COTR shall be kept informed of significant problems and solutions.
- C. Provide on-site repairs for mission specific desktop computers, printers, monitors, and other peripherals.

Repairs will consist primarily of component replacement. Complex repairs should be accomplished off-site by a Government-designated vendor. The Contractor shall track equipment repaired off-site to ensure that work is done in a timely manner.

- D. Manage a spare-parts inventory for mission specific computers, communications equipment, and peripheral components to minimize equipment repair time. Parts, supplies, and equipment required for on-site repairs will be purchased by the Government as requested by the Contractor. Maintain and operate a central repository for providing, maintaining, and managing replacement computers in conjunction with a cumulative spare parts plan for NETL projects.
- E. Coordinate and support the installation, service, technical consulting, and repair of mission specific desktop computers, printers, workstations, and other IT resources. Provide assistance with software configuration and troubleshooting, particularly with communications. Provide a backup image of each project system and backup media for each licensed product for use on replacement computers during repair periods if so deemed by the project.
- F. Develop and maintain user help guides, as required. Develop and conduct user training of supported hardware and software based on guidance from the COR/COTR.
- G. Notify user community of planned and unplanned outages of mission specific systems, networks, and other major components.
- H. Maintain a detailed inventory of assigned mission specific desktop equipment, e.g., workstations, printers, scanners, external CD-RW, external DVD, mobile internet devices, etc., including relevant configuration information.
- I. Utilize effective, efficient, and automated centralized management techniques where suitable to a sufficient number of like configured projects for software deployment, maintenance, and configuration.
- J. Utilize centralized network tools for the management of mission specific client computing hardware and software where suitable to a sufficient number of like configured projects.
- K. Troubleshoot and resolve system errors, utilizing advanced analytical skills and troubleshooting techniques.
- L. Engineer complete, reliable, networked mission specific client systems through the integration of computing hardware, client operating systems, network operating systems, and application software.
- M. Engineer and maintain configurations for a variety of mission specific client computing systems, such as workstations, laptops, data acquisition platforms, control platforms, and handheld computers. This includes the communications configuration, integration, and support for a variety of peripheral devices such as printers, scanners, external storage devices, audio/video devices, data acquisition platforms, control platforms, and other accessories.
- N. Engineer and maintain installations of a variety of mission specific client operating systems. Included, but not limited to, activities associated with the investigation of new operating systems, installation techniques and options, the maintenance and update options for new and existing operating systems, and the configuration of the many different components of the workstation operating system to provide for reliable and stable integration of such in the NETL environment.
- O. Engineer and maintain installations for a variety of application software. This includes both commercial-off-the-shelf applications and internally developed applications.
- P. Engineer, create, and maintain standardized mission specific client images for deployment purposes that are consistent with project engineering requirements. Requirements include, but are not limited to, the creation and maintenance of preconfigured workstation "images" to facilitate the rapid deployment of equipment and the rapid restoration of existing equipment.

- Q. Prepare and maintain any operational drawings, technical architecture as-built drawings, and diagrams that facilitate the documentation and understanding of NETL mission specific architecture, processes, and/or systems.
- R. Proactively recommend changes and/or enhancements to mission specific IT systems to provide better efficiency, productivity, stability, and/or cost savings within the larger scope of each project's scientific and engineering design requirements.
- S. Periodically audit all mission specific systems and applications for compliance with policies, standards, calibration procedures and baselines.

REPORTS:

- 1. Monthly Support Activity Report due by COB on the 2nd Friday of each month, which documents all relevant mission specific support performed in the previous month, including but not limited to:
 - a. Summary of Support Activities
 - b. System Engineering Initiatives
 - c. Problems or Issues affecting support

3.9 Networks Support

The Contractor's responsibilities shall include, but are not limited to, providing the following networks support services:

- A. Provide engineering and technical support in the design, development, implementation, and maintenance of mission specific facilities, services, topologies, network protocols, network architecture, and connectivity elements of the networks (such as bridges, routers, hubs, and switches).
- B. Perform remedial maintenance, as required, and periodic preventive maintenance on the mission specific network cable plant.
- C. Install, move, configure, maintain, monitor performance, test, diagnose, and resolve problems for all mission specific network hardware and software components.
- D. Install, maintain, update, and operate software for mission specific network and/or network security.
- E. Coordinate circuit implementation and performance of mission specific communication networks with commercial vendors or other providers that connect to the networks. Resolve related substandard communications performance in a timely manner. Recommend/review related hardware and software requirements, and develop conceptual designs.
- F. Develop and implement mission specific network engineering contingency and evaluation plans.
- G. Update and maintain mission specific network engineering and operation documentation.
- H. Plan, implement and maintain a mission specific network management control center. Determine requirements for, and implement network management tools. Monitor project and engineering workstation network communication devices using these tools.
- I. Design, develop, document, implement, and maintain future and existing mission specific network infrastructure, including: internet protocol coordination, domain name services (DNS), dynamic host configuration protocol (DHCP), and Public Key infrastructure (PKI).
- J. Provide resource utilization and capacity planning support. This should include, but not be limited to, baselining utilization of mission specific network resources, monitoring of network resources to identify utilization/consumption trends, and projecting when resource utilization/consumption will be such that delivery

of network services falls below acceptable performance levels. Provide recommendations for mission specific network component (hardware, software, service) replacement, upgrade, and enhancement to prevent server services from falling below acceptable levels.

REPORTS:

1. Monthly Outage data for network services due by COB on the 2nd Friday of each month, which documents all relevant network outage data from the previous month, including the following data at a minimum:
 - a. Date/Time outage reported
 - b. Date/Time service restored
 - c. Corrective Actions
 - d. Impact Assessment
2. Monthly status of network activities due by COB on the 2nd Friday of each month which documents all relevant networks support effort performed in the previous month, including but not limited to
 - a. Work Accomplished
 - b. Schedule Issues
 - c. Cost Issues

4.0 RESOURCES

4.1 Applicable Documents

The following documents are referenced in this statement of work. This list is not intended to be an exhaustive list.

- Clinger-Cohen Act
- The President's Management Agenda
- EA Investment Management Process
- National Institute of Standards and Technology (NIST) Standards