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I. Our Understanding of Your Needs

I.1 Background

The High Performance Computing Modernization Program (HPCMP) was instituted in 1993 in response to congressional direction to modernize the Department of Defense (DoD) laboratories' high performance computing capabilities. The HPCMP's Mission is "to provide world-class high-end performance computing capability to the DoD science and technology and test and evaluation communities, in order to allow DoD scientists and engineers to incorporate technological advantage into their efforts. The intent of the HPCMP is to advance the capabilities of application and tools software, as well as increasing the capability and accessibility of hardware." The High Performance Computing Modernization Office (HPCMO) is charged with implementing the HPCMP.

I.2 HPCMO Information Environment

The DoD HPCMP is focused on creating an information environment (IE) by developing a web application that provides up-to-date data regarding resource scheduling and usage on all high performance computers. The metrics gathered from the operating system level will act as the baseline for closely monitoring and increasing the efficiency of utilization of the high performance computer centers. The results will enable HPCMP to manage their shared resource centers, around the globe, for all users, regardless of their location. With participating services and agencies, DoD HPCMP IE supports approximately 6,000 people throughout its 7 major (MSRC) and 10 minor (DC) high performance computing sites. As a part of this broad-based initiative, the DoD HPCMP has identified key areas requiring immediate attention. One such area, addressed herein, will facilitate a more streamlined approach to resource allocation management by providing not only a technical solution but also a reengineered resource management methodology. To more effectively manage the highly sought after resources allocated to the various services and agencies, the DoD

HPCMP has identified an urgent need for a secured, web-based, automated resource allocation tracking and reporting system, capable of seamless integration with existing systems.

Therefore, the HPCMP goals for IE are:

- A secured web based Information Environment (IE)
- Seamless access to distributed relational data
- Better information sharing/gathering among HPCMP sites
- Standardized data exchange/reporting
- A well defined Information Environment Data Architecture (IEDA).

This requires the development of a fully integrated scalable system and architecture consistent with existing architectures in local sites and implementation in a secure robust environment supporting 24x7 operation.

The IE system will provide backend mechanisms for the IE to interface with local site database to access and update data.

The HPCMP has requested the development of five distinct tools with a common user interface for the IE system, the basic function of each we understand to be presented in Table 1, below:

Table 1 – HPCMP IE Tool Description

| Tool | Tool Name | Tool Description |
|-------------|----------------------------------|---|
| Tool 1 | Allocation/Utilization Reporting | HPCMP users must have reporting capability on both the scheduling and the performance of projects on high performance computers. This reporting will be MSRC/DC site-centric, so that re-allocation and forecasting for future years is facilitated, although the reporting must also be robust enough to show who is utilizing resources and how those resources are being utilized. |
| Tool 2 | Queue/ Process Status | From a single tool, HPCMP users will be able to survey one or more MSRC/DC sites' resources for current performance. Performance is the period between allocation and utilization reporting. |
| Tool 3 | Allocation Management | Using information available from Tool 1 (and to a lesser extent, Tool 2), as well as MSRC/DC system descriptions, authorized users may request and adjust the allocation of resources at various sites. This rescheduling involves two parties – a requesting party, and a granting party. Use of this tool will complement, rather than replace, the specific scheduling of projects on MSRC/DC resources. |
| Tool 4 | User Fill-in | Users may request account profile changes, and these changes will be replicated to MSRC/DC sites without manual re-entry. |
| Tool 5 | Account Application Management | Similar to Tool 4, users may request new accounts, or changes to account status that will enable further HPCMP functions available to those users. |

1.3 Why PwC?

PricewaterhouseCoopers (PwC) is uniquely qualified to perform this Task Order because PwC is intimately familiar with DoD's operational, informational and budgetary requirements. We have developed and implemented many web applications for various services of the DoD, where the PwC team has had the opportunity to work closely with DoD's management and stakeholders, and define many interfacing systems' data requirements, data matching criteria requirements for carrier payment and shipper billing, various accounting feeds and cargo movement requirements. Currently, we provide functional and technical analysis services to various DoD agencies.

Thus, based on our extensive background, PwC has the functional expertise in defining the requirements of the enhanced HPCMP IE. Our functional and technical expertise makes PwC uniquely qualified to support HPCMP in developing the new IE architecture. Our *functional expertise* track record is supported by several engagements with the Office of the Assistant under Secretary of Defense (Transportation Policy), MTMC, MSC, DFAS Centers, DFAS OPLOCS, USTRANSCOM, DoD Services, and other DoD Agencies (e.g. DLA and DeCA).

Our *technical expertise* demonstrated by our strong information technology (IT) practice that has developed, implemented, and supported a number of information systems for commercial and government clients, including the Defense Transportation System (DTS). Our IT experience includes systems development and implementation support for several of the DTS components (i.e. AMC, MSC, MTMC, DFAS, DLA, DeCA, and the Services). Additionally, PwC is a known leader in the Enterprise Application Integration (EAI) area.

To efficiently perform the required tasks, PwC's structured methodology, Ascendant™, ensures effective and seamless management and delivery of timely products to HPCMP by accommodating simultaneous tasks planning. We will use structured IT methodologies for all development and deployment phases

required for this engagement. Furthermore, PwC provides an exceptional combination of technical skills and integration experience that spells success for HPCMP. PwC's sophistication in managing functional and technical services in a multi-site government environment ensures that we deliver highly effective and integrated services.

More than 2,400 professionals in our Washington Consulting Practice (WCP) of PwC serve the federal, military and civilian organizations, state and local governments, and private industry consulting needs. WCP is organized to leverage its diverse skills and experience and is dedicated to providing enterprise and agency wide integrated improvements and information technology solutions. The professionals we offer in this proposal are part of our public sector team, selected as having the right experience to respond to your needs. Within Management Consulting Services, PwC has created a dedicated EAI technology service practice. This Practice helps clients manage today's demands economically by leveraging their existing technical infrastructure, while adding the new technology necessary to remain competitive. We see EAI providing:

- speed to market in the integration of e-business with legacy applications,
- agility in the merger and acquisition landscape,
- support for corporate restructuring, and
- business process automation.

Drawing from the expertise found across our industry and service practices, the EAI team brings a depth of understanding to E-Transformation issues (B2B/B2C/B2E). PwC also has an XML Standards Center of Excellence team that supports participation in workgroups and meeting attendance for the following:

- **OAG** (Open Application Group): The Open Applications Group is a non-profit consortium focusing on best practices and process based XML content for eBusiness and Application Integration.
- **ebXML**: ebXML (www.ebXML.org) is an International Initiative established by UN/CEFACT and OASIS in late 1999 with a mandate to undertake an 18-month program of work to research and identify

the technical basis upon which the global implementation of XML (Extensible Markup Language) can be standardized.

- **XBRL**(Extensible Business Reporting Language): XBRL.ORG is developing the *eXtensible Business Reporting Language* (XBRL) for the preparation and exchange of business reports and data.

II. Technical Approach

PwC has reviewed the HPCMP RFP for an Information Environment, and we feel confident that we can provide a solution that meets your needs of today, yet will expand to meet your goals for the future.

II.1 Solution Description

We propose a centralized application and data repository for the IE. This will allow for a scalable, secure, cost-effective, easily maintained solution that has minimal impact on MSRC/DC sites' networks and communications.

The IE will serve two types of operations:

- As a small data warehouse, allowing most convenient and efficient access to allocation and process performance data, both current and historical
- As a small application server, providing a basic workflow-management system for allocation/quota adjustments, and on-line forms for users to apply to the S/AAA for accounts and to update profiles.

Note that individual users will be limited to a subset of the above functions, according to their defined roles.

The Information Environment Data Architecture (IEDA) will therefore represent both relational and multi-dimensional data modeling schemata within the two operations. The Common Data Architecture (CDA) will represent the data transport schema between the IE and the MSRC/DC sites. Neither term implies an actual data repository. The samples provided in documents #5 and #6 of the SOW provide a baseline for establishing the CDA.

The data repository will be implemented in an Oracle database. A custom-developed loading process using FTP will be used as the mechanism for the IEDA to accept XML files. The transaction feeds will be generated for individual local site by using stored procedures on pre-defined schedules, or triggered by updating events. The determination of which paradigm will be made during analysis, and will be based on MSRC/DC sites' ability to accept data on an ad-hoc basis (as would be the case for triggered events).

The two types of operations will be inter-operable to the user, but will in fact be separated at a logical and database instance level. The exception to this is allocation changes, which will return to the allocation management reports after the changes are posted to HPCs. Note that allocation changes return to the IEDA only after they have been entered at the sites.

The IE will be accessible via web-based interface only by authorized end users through a Kerberized webserver. Users will need to have a hardware token (RSA SecureID) in order to access the system. SSL v3 will be used to protect the communication between the web server and browser. A login process will be required for the web-based access because the user privilege has to be enforced. The web application will be browser independent. PwC will use existing HPCMP security policies and architecture to ensure complete secured access to the web based Information Environment (IE) for the DoD HPCMP.

II.2 Advantages of Centralized Versus Distributed Architecture

We recommend a centralized architecture. By “centralized,” we mean that data and servers will be maintained in one location. Any of the MSRC/DC sites, or the HPCMO, would be candidates for this installation. It is not implied that the installation is in a new site; in fact, we recommend reusing infrastructure components of the host site. This architecture benefits HPCMP by:

- Eliminating the request of data from MSRC/DC sites by the IEDA, and replacing it with regular exporting of data to the IEDA, removing one possible security breach pathway into the MSRC/DC sites.

- Eliminating the pulling of data from MSRC/DC sites; this eliminates the need for distributed transactions (pull SQL).
- Reducing additional hardware requirements for MSRC/DC sites; this limit the impact on these networks (installation and communications), eliminates a potential point of failure, and harnesses the true value of XML as a transfer protocol (using FTP). There is also a significant saving of money in not purchasing this hardware and DBMS licenses.
- Centralizing maintenance. This lowers maintenance costs and makes it more manageable.
- Allowing for use of the IE staging server as a hot backup in case the IE ODS server goes down.
- Minimizing the impact on sites, to allow for all subsequent site implementations to complete within a much faster time period than would have been possible with distributed standard data stores.
- Allowing future enhancements that may entail collecting and centralizing the allocation process within IE; this is specifically compatible with this more scalable data flow.

The other technical architecture envisioned by us was a decentralized architecture where each site will have an application server and database server with the IE database. The advantages of a decentralized architecture are that a single point of failure will not affect the entire system. However, it also has substantial disadvantages:

- Difficult to manage and update the IE database across MSRC/DC sites
- Lack of uniformity in the RDBMS software among all the local HPCMP sites (both Oracle and MS Access have been used), making it difficult to implement database connections and SQL-based communications
- Increased network traffic in all HPCMP sites, as all sites would communicate with each other.

II.3 System Architecture

Figure 1 displays the high-level architecture recommended for this effort.

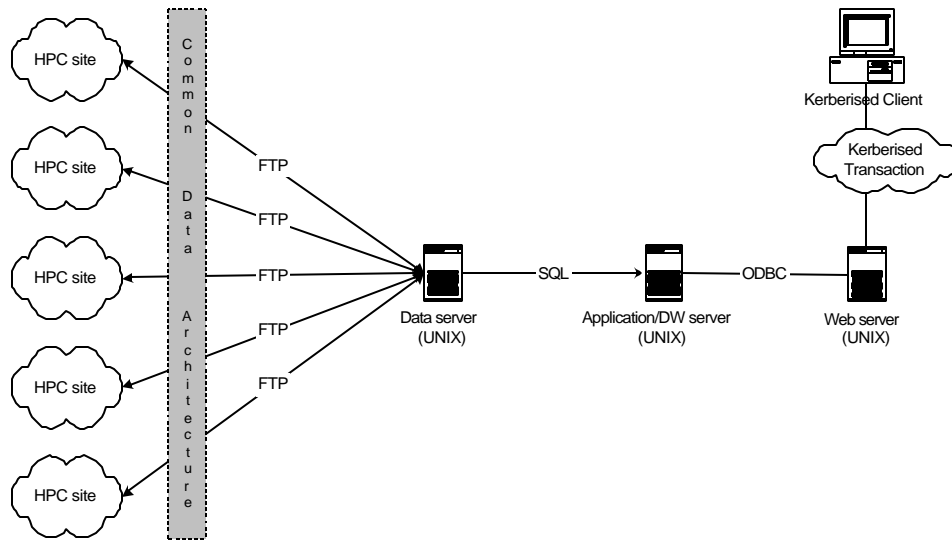


Figure 1 – High level Technical Architecture for HPCMP IE

We propose a configuration of the following hardware, although similar servers will satisfy the processing needs. We also propose the following applications, DBMS and middleware solutions for this architecture.

Table 2 – Proposed Configuration for HPCMP IE

| Server | Make/Model | Operating System | Software |
|--------------------|---------------------------|--------------------------|--|
| Data server | Sun E3500 (or comparable) | Sun Solaris 2.6 or above | Oracle 8i |
| Application server | Sun R420 (or comparable) | Sun Solaris 2.6 or above | Oracle 9i Application Server; Oracle Forms 6i ; Oracle Discoverer 3i |
| Web server | Sun R420 (or comparable) | Sun Solaris 2.6 or above | Iplanet Web Server 4.0 |

We selected servers that would more than satisfy the basic requirements for the IE. Because of the limited amount of data, we are able to use each server to perform several functions – e.g., the data server having separate instances for transactional and analytical data stores; the application server providing both application and reporting functionality. For initial releases, we may want to incorporate all functions on a single server. Our approach to developing a portable solution will allow the convenient migration of

components to new servers as application and system performance are negatively impacted by the use of a single server. What we present above is a target architecture, which we do not expect to implement immediately, certainly not prior to rollout of the prototype.

PwC has selected software components for this solution to meet current and future IE requirements. Each of these components is explained below:

- Oracle 9i database management system – We chose Oracle for its clear position as the industry leader in data storage technologies. This allows us to choose middleware tools not available for other DBMS options. Specifically, we decided against recommending Microsoft Access, which we have repeatedly found to have scalability and reliability issues.
- Oracle Reports and Discoverer – Data about allocations, performance and utilization will be stored in a multi-dimensional data model. The most convenient user facility for seeing this data is one designed for traditional data warehouses. On initial examination, we recommend the use of Oracle Reports and Oracle Discoverer, tools designed for convenient implementation on much larger data warehouses than the one IE will have. They are also well integrated into the Oracle suite of applications. As future requirements arise, such as automatic notifications based on conditions, additional Oracle tools will be able to accommodate that functionality in an integrated way with the software that is implemented. As we are able to perform more in-depth analysis of your requirements, we may determine that a different toolset (such as Business Object or Cognos) is better suited for the specific processing needs. PwC has extensive experience, expertise and in some cases partnerships with leading data warehouse tools and technologies, and is uniquely able to adjust the project staffing mix as this determination is made so that technical experts will be involved in this development with limited schedule impact.
- Oracle Forms – We envision Tools 3, 4 and 5 as being best approached as custom software development components. The need for scalability and the use of UNIX as the OS for the application server,

countered by the aggressive development cycle, lead us to recommend Oracle Forms as the preferred tool for development of the program logic. Forms uses Java for client code compilation, has fully integrated XML support, and boasts the robust security of all Oracle products, making it an ideal product in terms of scalability, portability and overall functionality, for the IE development.

II.4 Architectural Comparisons

We considered three different high-level approaches to this architecture.

Table 3 – Architecture Pros and Cons

| Architecture Paradigm | Example Components | Advantages | Disadvantages |
|-----------------------|---|---|---|
| Microsoft | NT for OS, Access or SQL/Server for DBMS, Business Objects for reports, ASP / ColdFusion for application development, IIS for web server | Cost-effective, rapid application development | Security, scalability, and portability are all compromised |
| Java | Sun Solaris for OS, Oracle for DBMS, J2EE / JSP / Java Servlets for application and reports | Most scalable and portable | High cost (development, maintenance) |
| Oracle | Sun Solaris for OS, Oracle 8i for DBMS, Oracle 9i for application server, Oracle Reports / Discoverer for reports, Oracle Forms for application development | Oracle 9i focuses on open standards such as Java and XML, rapid application development, tight integration of packages. | Oracle 9i application server is a new product, high cost (software procurement) |

Since this is a new implementation, there will be other infrastructure components needed. Namely:

- Storage can be internal to the various servers, or a RAID-configured disk farm that can spare a small amount of space could be used. For internal storage, we would propose mirroring data within a server to alternate database instances.
- Backup should reuse infrastructure available at the site. Obviously, sharing a disk farm with other applications would facilitate this installation. We plan full segment backups weekly and incremental backups daily. To support the 24x7 production schedule, an on-line backup procedure will be established.
- Similarly, we would plan to reuse system management tools such as IBM Tivoli, CA Unicenter, available at the selected site to monitor performance and usage of the IE.

- To enable high availability of the IE, we plan to have both the data and application servers configured for fail-over in case of one server’s failure. In the case of lost data, we would supplement restored data with that day’s data, as retrieved from MSRC/DC sites through pull FTP process. This differs from the push FTP that will provide data normally from sites to the IE.
- For Disaster Recovery, we propose to follow the existing HPCMP site’s Disaster Recovery Plan. The site hosting the centralized database servers and application servers will be the primary site. There will be a backup site which can take over all of the IE computing in the event a major disaster makes the primary site non-operational. Copies of our backup tapes will be stored at the backup site. In the event of a disaster, user accessing the IE system will be rerouted to the backup site.

II.5 Data Flow Description

The centralized architecture that we propose, Figure 2, has a slightly modified data flow from what is presented in the SOW. Specifically, we are proposing the FTP of data from the sites to the IE, rather than using a distributed database transaction.

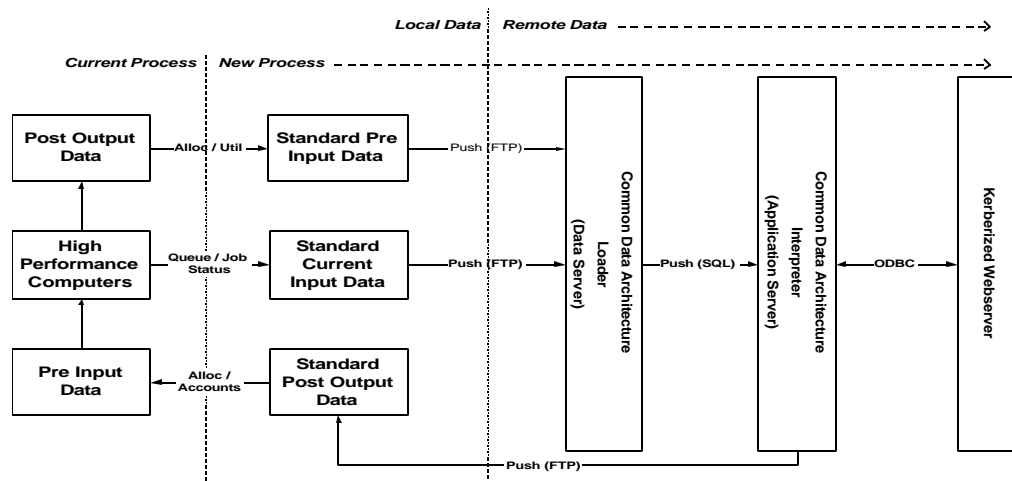


Figure 2 – Proposed Concept of Operations

The impact on existing processes requires that allocation and performance data to utilize FTP on a regular, scheduled basis from the HPCs. The limitations of this architecture are typically that of access to real-time

data, but in light of the requirement to have refreshed data only on an every three to fifteen minute basis, the cost of preparing a distributed data architecture are in excess of the benefit.

The CDA and IEDA will be implemented using appropriate meta-data management and implementation of data validation and error notification standards in IE. Individual HPCMP sites should establish points of contact to facilitate troubleshooting. PwC will document appropriate procedures to support the operation of CDA, from the perspective of both sites and the IE application itself.

II.6 Application Description

The user-facing component of the IE will be presented with a uniform look-and-feel due to the use of the Oracle suite of products. Users will only login to the system once, then have access to all applicable applications through a paradigm called “single sign-on”, which is elemental to the integrated Oracle solution. Hyperlinks are created based on the user’s account profile. For instance, every registered user will have access to Tools 4 and 5 (to change his/her account details), but specified users will be allowed to use Tools 1, 2 and 3.

Tools 1 and 2 will be accessed through hyperlinks that lead to both canned reports and ad-hoc queries within the data warehouse. Oracle Business Intelligence tools (Oracle Discoverer, Oracle Reports) provide an intuitive and logical front-end that makes the exploration of project life-cycle data (allocation and utilization) straightforward.

Tool 3 provides basic forms that allow a user to request allocation from an MSRC/DC with available resource time. MSRC/DC sites without available resource time may be requested as “wait-listed” resources, which will be managed differently than requests of available resource time. This process will run request validity checks, and if these are successful, it will initiate an email to the requested MSRC/DC S/AAA. It will also track activity to the requests within this Tool, and changes to the specified allocations within Tool 1, to determine completion. A nightly cron job will determine whether requested but unfulfilled allocation

changes are within a system-specified window of elapsed time, and send notifications to both affected S/AAA's that the allocation request is at risk of going unfulfilled.

Tools 4 and 5 are envisioned as basic forms for users, where data returns to the MSRC/DC sites via the defined transport mechanism. There is no direct reporting need currently envisioned for this data, although reports can certainly be developed in a subsequent effort.

II.7 Interfacing Sites With the IE

HPCMP intends to use XML in order to integrate data files from heterogeneous relational databases. This method is known as XAI, which stands for XML Application Integration. This concept combines the technology of XML and the paradigm of EAI (Enterprise Application Integration). Enterprise Application Integration is a set of standards and principles concerning the use of technologies, that allows the movement and exchange of information between different applications and business processes within and between organizations. PwC will perform an analysis of the XML file specifications presented in this SOW, to validate their suitability for the solution. Our initial review of these specifications leads us to believe that they are strong starting points for the production of the final specifications.

XML flat files will be transported from all the HPCMP sites to the centralized IE site. In our solution we propose to transfer the XML files using FTP which is suited for bulk data transfer. XML files will be transferred from all HPCMP sites to our central IE site every 6 minutes. The database server will check for the arrival of new XML files and insert it in the Oracle database. XML could also be transferred by using HTTP, SMTP (email) or messaging applications (IBM MQSeries, Microsoft Message Queue), although we are not recommending them at this time given the performance and security requirements for IE.

In the distributed database solution, data can be exchanged over the web using Simple Object Access Protocol (SOAP) which is an open standard to carry XML-encoded data. However, we recommend the centralized database solution.

We intend to use Oracle version 8, which comes with Oracle XML Developer's Kit (Oracle XDK) and is the industry's first XML-enabled database. The Oracle XDK is a set of components that facilitate the delivery and implementation of XML-based business-to-business infrastructures. The XML Parsers, XSL Processors, XML Class Generator, and XML Transviewer Beans are packaged together in the Oracle XDK. The XML document sent by HPCMP sites will have a well-defined structure and contains data that is updateable or used in other ways. Hence the document is data-centric and contains elements or attributes that have well defined structures. Oracle9i, with its object-relational extensions has the ability to capture the structure of the data in the database using object types, object references, and collections. There are two options for storing and preserving the structure of the XML data in an object-relational form:

- Store the attributes of the elements in a relational table and define object views to capture the structure of the XML elements
- Store the structured XML elements in an object table.

Once stored in the object-relational form, the data can be easily updated, queried, rearranged, and reformatted, as needed using SQL. The XML SQL Utility provides the means to then store an XML document by mapping it to the underlying object-relational storage, and conversely, provides the ability retrieve the object-relational data as an XML document.

II.8 IE Security Description

PwC will use existing HPCMP security policies and architecture to ensure complete secured access to the web based Information Environment (IE) for the DoD HCMP. We assume that the MSRC/DC site where the IE web server, database and application server will be hosted already have the following:

1. Physical Security
2. Established Security Policies and Procedures
3. Escalation Procedures
4. Periodic Security Audit and update in polices
5. Firewall and routers
6. Intrusion detection software

7. Virus Checkers.

The users will access the IE Web Server using RSA SecurID pin pad card, which generates a new, single-use password each time the authorized user assesses the web server. The data which is transmitted from the client workstation to the IE web server will be encrypted using Kerberos encryption software. This software will be installed on the computers (web server, database server and application server) at the Shared Resource Center and the user's desktop computer. Once this software is in place, data transmissions will be encrypted whenever they are sent over a network. Users will also be able to use another encryption product, Secure Shell, to encrypt data transmissions when Kerberos software cannot be used (for example, with an X-windows session). Unix Client Workstations can use SSH software.

User access to HPCMP MSRC/DC systems is accomplished over either the Internet or the Defense Research and Engineering Network (DREN). The DREN connects to the Internet at multiple points, and the Internet connects to networks around the world.

IE interface requirement states that “SSLv3/TLS shall be used to protect communications between the web server and browser.” The SSL protocol provides connection security that has three basic properties:

- The connection is private. Encryption is used after an initial handshake to define a secret key. Symmetric cryptography is used for data encryption (e.g., DES [DES], RC4 [RC4], etc.)
- The peer's identity can be authenticated using asymmetric, or public key, cryptography (e.g., Kerberos, RSA [RSA], DSS [DSS], etc.).
- The connection is reliable. Message transport includes a message integrity check using a keyed MAC. Secure hash functions (e.g., SHA, MD5, etc.) are used for MAC computations.

Once, the client and the server authenticate with each other, the next step would be to send the data in encrypted format. We will use SSL 3.0 to implement this functionality. **SSL**, short for Secure Sockets Layer, is a protocol developed by Netscape for transmitting private documents via the Internet. SSL works

by using a private key to encrypt data that's transferred over the SSL connection. Both Netscape Navigator and Internet Explorer support SSL. By convention, Web pages that require an SSL connection start with https: instead of http: Secure Sockets Layer (SSL) is a cryptographic protocol for protecting digital communications between a client and a server. This protocol layer can be placed between a connection oriented network layer protocol and an application layer protocol. We can use SSL to protect the communication of any application protocol that normally operated over TCP, such as HTTP, FTP or telnet. Also, there will be an authentication process between the web server and Oracle data server. Both of them will identify each other using the Kerberos Authentication protocol. Using Kerberos 5 with infinitely renewable tickets will provide IE Process to Process authentication. Kerberos will also be used to provide strong authentication mechanism when XML files are transferred from all the sites to centralized data server. All these steps ensure that work is done in a very secure environment.

Oracle security features will be used to prevent users from accessing and viewing non-authorized data. Oracle provides us with the capability to enforce database security policies, ensuring users have right privileges. Oracle also provides audit capabilities, which can be used if required. Oracle Label Security, which provides sophisticated and flexible row level security can be used provide control access to sensitive data. PwC will work with the HPCMP security personnel at all stages of the IE system implementation to ensure security and data integrity.

II.9 How We Meet Your Goals

Using this architecture, we believe that we meet your goals as stated in the RFP, specifically:

Table 4 – Meeting HPCMP goals

| RFP Requirements | How Our Proposed Solution Meets HPCMP Goals |
|---|---|
| Understanding of Technical Requirements | The architecture satisfies requirements for all five tools requested. We have validated requirements 1-65 from the RFP, against our proposal. |
| Tool Interoperability / Integration | All tools are selected for open-standard adherence. |



| RFP Requirements | How Our Proposed Solution Meets HPCMP Goals |
|------------------------------|---|
| Architecture Scalability | We have selected industry-standard open architecture components, for hardware, DBMS and software. By approaching the reporting requirements as a data warehouse, we enable substantial growth and encourage the inclusion future requirements, leading to an enterprise-wide data warehouse strategy. |
| Architecture Portability | No proprietary offerings are in place. We are careful to recommend Oracle as the DBMS, in that its position as an industry leader should provide HPCMP with comfort in any future software and hardware upgrades. |
| Architecture Maintainability | Centralization of hardware is key to this proposal, not only because it is a best practice, but also because maintenance is substantially decreased over a distributed architecture. As future source systems are identified, this architecture allows for “multi-staging”, where source data is essentially cleared through one of several computers, cleaned and quality-checked, and then sent through the standard staging pathway. |
| Security Implementation | PwC will use existing HPCMP security policies and architecture to ensure complete secured access to the web based Information Environment (IE) for the DoD HCMP. All new architectural components proposed will adhere to the best available security practices. We will work with the HPCMP security team to ensure that our solution follows the current HPCMP security guidelines. |

Tools 1 and 2 will utilize the data warehouse, and Tools 3, 4 and 5 will be prepared as custom applications. Using Tools 1 and 2, we envision tracking the life cycle of a project, from allocation usage to performance to utilization results. We will help the HPCMP best utilize its resources with the knowledge available to it in the data warehouse.

II.10 Assumptions

Key to our understanding of the operation of the IE is that PwC will not be involved in any local repository changes needed for conformity with the IE standard data repositories and IE formats. Namely, we are making the following assumptions.

- All sites within the HPCMP domain will be responsible for providing network resources and procedures that is required to interface with IE. This resource will be secure from the HPCs themselves, so that an additional site layer of security is not needed for the IE.
- All sites within the HPCMP domain will be able to provide XML files as specified in the attachments to this SOW, within the scheduled deliverable period (180 days, 300 days or 360 days) for this proposal. Furthermore, minor changes to the XML specifications that result from our analysis effort will not take more than 60 days to complete.

- All sites will provide allocation and utilization data on regularly scheduled intervals.
- All sites will provide queue and process status data on frequent regularly scheduled intervals. This frequency of provision will govern the proximity of status checks to the current conditions. IE will have the capability of accepting XML packets from all the HPCMP sites much more frequently than determined to be necessary by the project team.
- All sites will be responsible for processing changes to allocations (Tool #3) and user contact and project information (Tool #4) within their own MSRC/DC infrastructure. The IE will manage this process and then provide this data in XML format back to the sites.
- The number of current end user of the system is 5243 based on the current CTA data, and simultaneous users will be approximately 1% of this (52 users) during normal usage and 5% (260) during peak usage.
- The rough order of magnitude estimated of HPCMP data requirements for IE is 5 GB a year. Since a maximum of two year's worth of data are required to be stored on the system, no more than 10 GB of outside data will be needed in the IE.
- The current architecture is heterogeneous, specifically in its DBMS usage and support.
- The number of current end user of the system is 5243 based on the current CTA data, and simultaneous users will be approximately 1% of this (52 users) during normal usage and 5% (260 users) during peak usage.
- The rough order of magnitude estimated of HPCMP data requirements for IE is 5 GB a year. Since a maximum of two year's worth of data are required to be stored on the system, no more than 10 GB of outside data will be needed in the IE.
- The current architecture is heterogeneous, specifically in its DBMS usage and support.

III. Management Plan

PwC is recognized by various market research organizations as being a clear leader in the management and implementation of projects that include all facets of integrating technology solutions to business problems. It is this institutional ability that makes us uniquely suited to approach the IE project as a first step in the streamlining of the overall management of the High Performance Computing Modernization Program. We recognize a successful development and deployment of the IE as being the first step in the streamlining effort.

III.1 Management Approach

All PwC engagements follow methodologies provided in the Ascendant™ methodology toolkit to govern and guide technology projects. Ascendant is a collection of configurable management, business and technology methodologies used to provide a common framework and task set for PwC projects. Each one of these project performance methodologies incorporates the Program and Project Management methodology (PPM).

The PPM provides a framework for the use of staff and project management tools to accomplish project goals, manage scope and expectations, maintain open communications, and manage deliverables. We focus on the following:

Clear Definition of Responsibilities – Our methodology provides for a clear definition and bilateral understanding of each task. The Project Manager (PM) will assign and explain specific team member responsibility prior to the start of each major task. This eliminates duplication of effort and ambiguity.

Detailed Work Plan and Methodology – We will schedule the tasks and work steps described in our methodology in short intervals to facilitate the continual monitoring of progress. We create this work plan with Microsoft Project, an advanced project planning tool that enables open sharing of plans and convenient tracking of accomplishments. The primary focus of this short-interval scheduling will be on controlling

costs and project timeliness. This will ultimately have a positive impact on quality control because it will define employee responsibility and accountability.

Configuration and Document Management – The architecture/infrastructure team lead will ultimately be responsible for the configuration management activities required during all phases of development. We will prepare documentation for the IE system administrator, HPC site administrators, and future development and implementation teams. Additionally, we will fully document the entire HPCMP environment, and how each site is affected by or integrated into the IE.

Predetermined Deliverables – We will detail major deliverables in terms of form and substance prior to the beginning of the tasks that will produce them. This quality control approach reduces ambiguity regarding expected results and allows employees to focus their total effort on producing the best product to meet the established criteria. Furthermore, we actively manage the delivery of these work products according to the definitions agreed upon.

Project Management Reviews – The PwC project manager will schedule weekly meetings with relevant HPCMO management and stakeholders, to discuss project performance, risks and issues. Although the meetings can be scheduled less frequently, we find that the project will benefit from frequent communications, especially during the early phases.

Issue and Risk Management – An integral part of the PPM is the use of the “Seven Keys To Project Success” for managing risks and issues. Status reporting by team leads will include all current issues and potential future risks in an appropriate category, or “key”. The seven keys are:

Table 5 – Project Success Key Factors

| Success Keys | Relation to HPCMP IE Project |
|------------------------------------|--|
| 1. Stakeholders are committed | Is HPCMP truly behind the completion of the IE project? |
| 2. Business Benefits are realized | Is the project accomplishing the underlying business goals? |
| 3. Work and Schedule are predicted | Is the project plan achievable? |
| 4. Scope is realistic and managed | Can the system functionality be defined, and can the definition be adhered to? |
| 5. Team is high-performing | Have we placed staff with appropriate skills on this project? |
| 6. Risks are mitigated | Can we control all of the internal and external situations that might negatively affect project performance? |
| 7. PwC benefits are realized | Is it in our best interest as an organization to perform this work? |

We are already proactively managing some of these risks, and will enter the project performance period with a template of risks we have identified from our past performance on similar projects, to be aware of. We manage each key as a risk pool, and are able to concentrate our efforts on the keys that need the most attention at any given time during the project.

Staffing by Experienced Professionals – The single key to a successful project is having the ability to assemble and deploy a project team that possesses the experience and skills necessary to perform the required work. The PwC methodology defines the tasks and skills needed to complete the project while the Firm, with over 16,000 professionals in the United States alone, provides an extensive network ready to deliver the expected results with minimum disruption to the HPCMP operations. In addition, the extensive PwC professional talent pool can be augmented according to the needs of the project, with specific sets of skills from our Integration Services partners.

III.2 Plan of Action and Milestones (POA&M)

PwC utilizes the highest standards of excellence throughout each project’s life cycle to ensure total customer satisfaction and delivery of only quality products. Establishing and maintaining quality forms the foundation for each and every PwC engagement. The PwC staff consistently achieves or exceeds customer expectations due to adherence to the fundamentals of quality in the workplace. Each deliverable must pass a series of rigorous checks and cross checks to verify quality before being turned over to the customer.

Based upon PwC’s extensive experience with similar projects, we are confident that this engagement can be completed within the time specified. To accomplish the tasks set forth by the HPCMP IE requirements, we have outlined our expected milestones in the table below. This initial estimate is founded upon our understanding of the scope of work presented and reinforced by our previous successes in this line of work. These estimates may change throughout the life cycle of this project and will be adjusted accordingly.

Table 6 – Proposed Project Plan

| Proposed Task(s) | Month of Completion | | | | | | | | | | | |
|---------------------------------------|---------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Project Management & Status Reporting | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Planning and data collection | ✓ | | | | | | | | | | | |
| IE system initial prototype | | | ✓ | | | | | | | | | |
| IE system beta release | | | | | | ✓ | | | | | | |
| IE system full release | | | | | | | | | ✓ | | | |
| Install & integrate IE system | | | | | | | | | | | | ✓ |
| System Documentation | | | | | | | | | | | ✓ | |

III.3 Implementation Plan

At the heart of our technical approach is the adherence to a variety of other methodologies in the Ascendant toolkit, with distinct methodology sets to govern custom software development, data warehouse development, security, enterprise application integration (EAI), and information technology infrastructure (ITI) efforts for the IE project. Other methodologies provide framework for the implementation of enterprise resource planning systems, and the use of strategic change or process improvement services. As future needs are identified, additional services can be performed with full compliance with the existing work already accomplished.

Ascendant’s custom software and data warehouse methodologies will be used in the management of the user facing components of IE, and include development, deployment and installation steps. The EAI methodology will be invoked for the transport of data from MSRC/DC sites to the central architecture. The ITI methodology will govern the implementation of hardware and software components in support of the applications.

Analysis. The overall objective of the requirements analysis phase is to validate and confirm system functionality prior to development and to ensure that the requirements meet future DOD development needs. We will use PwC professionals who possess information technology, internal controls, and federal and

defense system and process expertise to complete this phase. The HPCMO has prepared materials for this SOW that reduce the amount of Analysis work required; however, since the architecture we propose is somewhat different from the architecture envisioned in the SOW, due diligence will be undertaken by PwC during Analysis.

Design. In the design phase we will develop a system and data architecture that will be consistent within existing local sites architecture. As new development cycles proceed to this phase, the IE developed in prior stages will serve as the foundation for the new designs. Design phase work considers user interface, system interface (XML receipt of source data), report layout, extract/transform/load (ETL) for data transformation, connectivity, database, usage/audit, infrastructure, hardware and software integration components required to satisfy requirements gathered and validated in Analysis.

Construction. Work products from the design phase are converted into working code and procurements during the construction phase. To maintain scalability, yet provide a robust architecture, PwC will perform development in industry-standard technologies, as described in the technical approach. Construction of front-end (web pages, report layouts) can coincide with back-end construction (database administration, transformation code).

Testing. All construction is put through rigorous cross-team testing at the unit (module) and system levels. This is the first phase of testing, which continues into the next phase. The scale of the IE functionality and the relatively straightforward nature of the user interactions with IE will preclude the use of automated test tools. However, careful adherence to test plans and scripts, and reuse of test datasets, should result in a manageable, effective and comprehensive test cycles.

Implementation. Continuation of testing for user acceptance and system integration will drive the ability to implement the IE onto production hardware. The very earliest of these testing cycles will use test data representing multiple MSRC/DC sites, since the presence of multiple sites' data is elemental to the overall

value of the IE. PwC's approach to systems implementations is to develop a partnership with our clients where our success is defined by their success implementing the targeted solution and achieving the critical success factors that were the impetus for the project. To achieve success requires both experience and discipline. To that end we will need to revisit this implementation plan after the completion of construction. Key to any successful implementation is thorough user training, not just through documentation but also using classroom-based, hands-on training sessions. Ascendant documents basic course outlines and documentation templates for training purposes. Additionally, PwC can provide consultants from a practice that specializes in user training. We recognize that the best system development is meaningless if users are unable to derive value from it.

III.4 Deployment Plan

For the IE project, PwC intends on implementing a staged approach to successfully complete development of all tools within the required time frame. The same approach is viable for future software enhancements as they become defined and specified. Each stage will proceed through the phases of the Ascendant development methodologies.

In order to uniformly develop the five proposed tools, we plan a three-stage development effort. Each subsequent stage will build upon the tools developed previously. It is through this approach that we will maintain specialized staff in project roles that most closely fit their areas of expertise.

1. Manage Allocation (Prototype): This module will accommodate Tools 1 (Allocation/Utilization Reporting) and Tool 3 (Allocation Management), and will be developed to provide two distinct functionalities – requesting and reporting. Oracle Business Intelligence Tools (Oracle Reports, Discoverer) will generate standard reports. Request for information will be carried out through the web interface. Tool 3 (Allocation Management) will use the Oracle application server to allow input of allocation requests, which are then sent to the MSRC/DC sites via FTP'd XML documents.

2. **Manage Utilization (Beta):** The requirements for Tool 2 (Queue/Process Status) will developed to provide reporting on queue status information, using multiple views. Oracle Business Intelligence Tools (Oracle Reports) will be leveraged for this functionality. It is expected to be part of the beta release of the IE.
3. **Manage Users (Full Release):** This level will result in design and construction of Tool 4 (User Fill-In) and Tool 5 (Account Application Management). The development will accommodate user input and will allow paperless system for opening a HPCMP account.

Presuming availability of MSRC/DC allocation and utilization data, we anticipate releasing Allocation and Utilization Management (Tools 1, 2 and 3 from the SOW) to the first five sites within the first 180 days. Our initial workplan, subject to change after analysis has commenced, will be based on performing the following life-cycle phases to deliver the following tools with the timeframes requested for the following RFP line items:

Table 7 – Project Workplan

| <i>Days</i> | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 365 |
|---------------|--------------------|----|--------------------|-----|-----|--------------------|-----|-----|-----|--------------------|-----|-----|
| | CLIN 0001AA | | CLIN 0001AB | | | CLIN 0001AC | | | | CLIN 0001AD | | |
| Tool 1 | ADC | | | | | | | | | | | |
| Tool 2 | | | ADC | | | | | | | | | |
| Tool 3 | ADC | | | | | | | | | | | |
| Tool 4 | | | | | | ADC | | | | | | |
| Tool 5 | | | | | | ADC | | | | | | |

(A – Analysis, D – Design, C – Construction, I – Implementation)

Note that implementation is a repeating life-cycle phase, even within a stage/tool development. This reflects the need to implement the tool for testing, for beta release, and for live release for the first and second sets of five MSRC/DC sites. We have also reflected the benefit of existing analysis work in the plan to successfully perform three life-cycle phases within the first 90 days.

Deployment of the application is a virtual effort because of the centralized approach taken by PwC. Upon obtaining system acceptance based on successful results of our rigorous integration testing, we will work with all MSRC/DC site administrators to facilitate the transfer of data from the sites to the IE. This is with

the understanding that any work at the task or project level, at the actual sites, will not be performed by the IE staff, nor are they included in the cost estimate for the IE. Additionally, this will ensure that we manage the schedule and scope of this project, which are two of the seven keys closely monitored throughout project performance.

For both the implementation and “deployment” of IE for additional MSRC/DC sites, PwC will be carefully managing project delivery as discussed in the PPM section. Use of the seven keys in status reporting, and the workplan to track scheduled work and accomplishments, will demonstrate the team’s progress during the project. Configuration management standards will ensure that the high-level IE architecture and implementation schema are maintained. Internally, team members will utilize a simple issue tracking database application that allows team leaders to determine project performance issues that may come up during the course of the project.

III.5 Personnel Plan

Currently, PwC requires all its professional staff to update the PwC Skills Set Bank on a semi-annual basis. This database is utilized by PwC’s Resource Management (RM) staff to identify among PwC staff, worldwide, the most suitable skills match for each project task, per roles and responsibilities specified by the project manager. The results of this effort is demonstrated by having identified a team of experts on this proposal who will bring years of functional and technical expertise to this project. Additionally, our project team interaction with HPCMP's team and our commitment to this partnership is further described below.

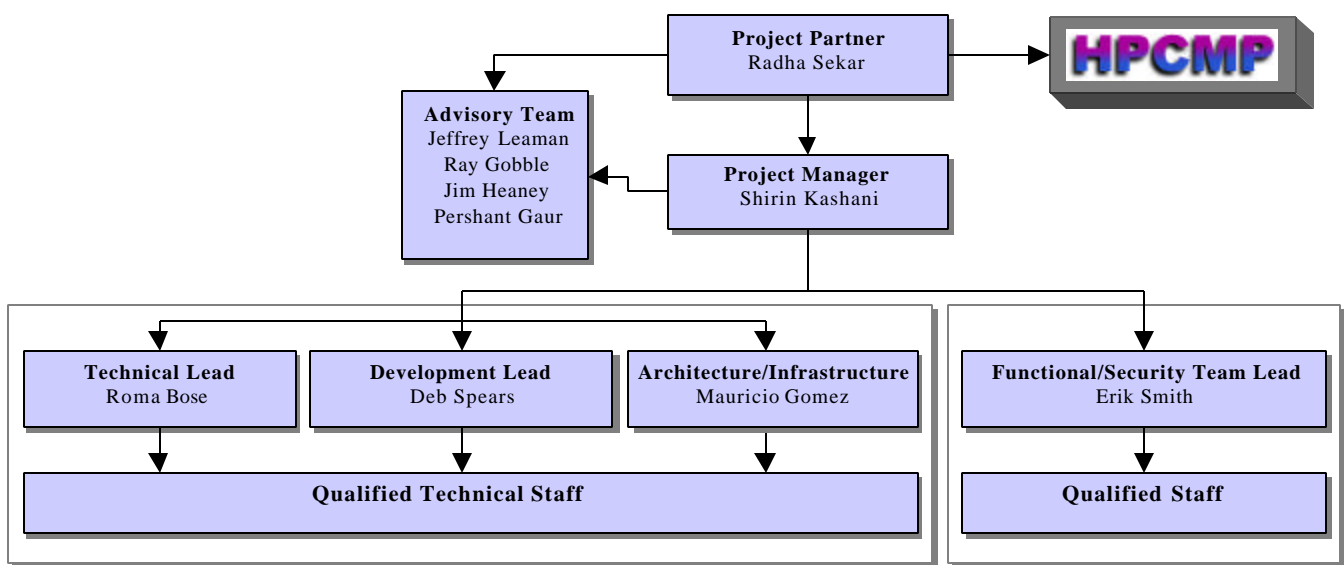
Embrace a Teaming Approach. Our experience shows that the best way to meet your requirements is by teaming with your personnel. Although PwC brings a wealth of experience in support of DoD related financial and automated systems, software enhancement, and software maintenance, a critical success factor to this project is the ability to leverage existing knowledge within the realm of supercomputers, web

development and integration. We will work with the appropriate HPCMP personnel to increase efficiency and effectiveness throughout the development and implementation lifecycle.

Manage for Results. PwC places a premium on delivering value to our clients while managing to a plan. Effective project management allows us to streamline costs and meet the objectives of the plan on time and within budget. To the extent possible, we will use electronic data manipulation techniques, rely on existing system data and process documentation, draw upon existing knowledge of HPCMP personnel, and seek other methods to reduce costs.

Engage in Frequent Communication. Communication is the best method to instill a sense of partnership. We build this philosophy into our project management approach through both formal and informal status reporting, discussions and meetings, and a proactive mindset for issue resolution. PwC will assign qualified personnel who understand the user as well as system requirements, who can simulate the typical business test scenarios and environment, and communicate the test results to the developers in an acceptable and understandable manner.

The following provides the teaming of HPCMP and PwC project teams, with a brief description of the responsibilities of the PwC project personnel.



The **Project Partner** will have the ultimate responsibility for successful project implementation. She will ensure that the HPCMP's project objectives are fully met, and will commit the necessary resources to assure project success. For this engagement, the Engagement Partner is **Radha Sekar**. Ms. Sekar has 14 years of experience in performing and managing projects in business process reengineering, process improvement, strategic information technology planning, executive information reporting, system evaluation and selection, structured design, development, integration, documentation, implementation and training. She has vast experience in business process redesign and change management methodologies. Ms. Sekar has led the DoD-wide MRM15 Implementation re-engineering effort, over the last three years. In addition, Ms. Sekar has managed numerous reengineering and system development efforts for DoD, including DFAS, MTMC, AMC, MSC, and USTRANSCOM.

The **Project Manager** will be responsible for day-to-day project management, and will develop project status reports, and develop and maintain the project plan for presentation to the client. She will also work with the project team leaders to ensure that tasks are being completed according to specifications and within the allocated time frame. For this engagement, the Project Manager will be **Shirin Kashani**. She brings in extensive background of reengineering initiatives and requirements. She has more than 14 years of experience in the automated financial services environment, specifically management of full lifecycle systems development projects; analysis and management of financial system operations, daily banking operations and management audits.

Ms. Kashani is identified as one of the key personnel, and her resume may be found at the end of the Personnel Plan section.

The **Advisory Team** is a board of technical experts, who possess extensive backgrounds in reengineering initiatives, information security, financial systems strategy and implementation, in-depth knowledge of supercomputers, and software and system design. The Advisory Team will be at the disposal of both the

PwC project team, as well as the HPCMP, for recommendations and advisory services regarding strategy and procedural facilitation. The Advisory Team members consist of:

- **Jeffrey Leaman** – Mr. Leaman is a manager in our E-Commerce organization and an expert in public key infrastructures (PKIs), secure network design, secure architectures, vulnerability analysis, test methodology development, security policy definition, INFOSEC program management and classification determination. Over the past several years, he has provided PKI consulting support to large-scale PKI application developments; developed requirements-based acceptance test procedures that has been used on several E-Commerce applications; provided program management expertise and systems engineering support to custom PKI developments; and has developed a practice aid for the general review and security review of Java and C++ cryptographic source code. Mr. Leaman spent twelve years as a certified Computer Security professional at the National Security Agency. In this role, he was instrumental in defining the security requirements for the Department of Defense’s MISSI program – a network security initiative. His primary emphasis was security for the classified boundary. He was the program manager and technical director on several multi-million dollar developments for securing general purpose computers and networks. Additionally, Mr. Leaman served as an adjunct faculty member for the National Cryptologic School.
- **Ray Gobble** – Mr. Gobble has more than 30 years of broad based information technology expertise, which includes consulting experience in the supercomputers and mainframes environment, managing hardware, communications, software configuration, and security (including Kerberos and related system security). He has experience with management, technical consulting and benchmarking with and against a number of Super Computer manufactures including Cray, IBM SP2, Fujitsu, and clustered Sun, SGI, HP and others. Mr. Gobble is especially valuable in developing ”get-well” plans for troubled projects or accounts and is experienced in managing difficult subcontractor, vendor and client relationships.

- **James Heaney** – Mr. Heaney provides the team with full life cycle expertise in the management and development of custom software systems in a variety of methodologies, including firm proprietary programme and project management methodology; object-oriented analysis, design, and development; and information engineering. His specific focus has been in data and user interface design and development and he has experience in both transactional systems such as case management applications and data warehouses.
- **Prashant Gaur** – Mr. Gaur provides the project team with an expertise in financial system strategy, which includes accounting and financial systems strategy and implementation consulting in custom, commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) accounting and financial packages. He has multiple years of experience in managing and implementing projects for both government as well as commercial clients involving financial systems strategy, requirements analysis, systems development, as well as financial systems implementation. His functional experience includes finance/accounting (both government and commercial), operations, manufacturing, distribution, and business process re-engineering.

The **Technical Team Leader** will be responsible for leading the day-to-day tasks related to technical architecture and infrastructure development and implementation, and security compliance in an effort to ensure timely and effective development of the entire system. She will also be responsible for performing configuration control on Problem Reports (PR) and Change Requests (CR) and preparing monthly status reports for the technical efforts. The Technical Team leader will be **Roma Bose**, and will report to the Project Manager on the progress of assignments. She will specialize in the technical architecture, system infrastructure, development effort, and security compliance for this project. She has ten years of experience in analysis, design, development and implementation of computer-based management systems. She has extensively researched the current options available for database security, integrity, and distributed database

concurrency control issues. Ms. Bose is also identified as one of the key personnel, and her resume may be found at the end of this section.

The **System Development Leader** is experienced in IT system, network, and web development. He understands the system objectives and will effectively design the system to meet HPCMP needs. He will also productively communicate period results, by means of creating PRs and or CRs. The development and implementation lead will be *Deb Spears*, and will report to the Technical Team Leader on the progress of the assignments. Ms. Spears is a Principle Consultant with ten years of experience in a variety of activities related to the software development life cycle. These activities include: systems analysis, systems design (both functional and technical design), reports development, software quality-assurance (unit, system, and acceptance testing), hardware testing and installation, configuration management, data verification/validation, technical training, network administration, database conversion, and technical documentation. Ms. Spears has worked with both Web-based applications and large-scale client-server systems.

The **Architecture and Infrastructure Lead** is responsible for the design and establishment of the development, test and production environments, as well as leading the system operations effort. This person needs to understand the system and security objectives to effectively facilitate the system architecture design to assure efficiency and compliance to the RFP requirements. He will also productively communicate period results, by means of creating PRs and or CRs. The architecture and infrastructure lead will be *Mauricio Gomez*, and will report to the Technical Team Leader on the progress of assignments. Mr. Gomez has been a key individual participant in the development of databases and software systems for more than 14 years. His experience includes software development and implementation, user training, new systems configuration, software cost analysis, systems integration, extensive manage healthcare business analysis, and personnel systems for the Federal Government. His experience working with different environments ranges from LANs Internet development to WANs using mainframe legacy systems as servers on a

client/server environment. He has experience in the full usage of the system lifecycle methodology and extensive project management in information technology projects.

The **Functional and Security Team Leader** will be responsible for leading the day-to-day system functionality development, information security standard definition and compliance, implementation, deployment, integration testing and system documentation efforts to ensure that the system effectively meets the system functionality requirements as described in the RFP. He will also prepare monthly status reports for the functional activities. The functional and security team leader will be *Erik Smith* and will report to the Project Manager on the progress of assignments. He has a Top Secret clearance and more than 19 years of progressive Information Assurance (IA) and Information Systems Security (INFOSEC) experience coupled with extensive background in the fields of contingency planning and execution, database design and development, instructional systems development, and resources and financial management which he routinely applies to government, DOD & civilian agencies and domestic and international commercial practices. Strengths include conducting risk analyses, vulnerability assessments, policy review and development, physical and personnel security, education, training and awareness, and risk management methodologies. He is well versed in planning and executing security solutions designed to identify, assess, and reduce organizational, process and system vulnerabilities. His skills extend to emergency and disaster recovery processes and protection, as well as detection and reaction capabilities.

The **Qualified Staff /Technical Staff** will include experienced functional analysts, system designers, web developers, testers and technical writers experienced in requirements analysis, information security, system testing, implementation, deployment, training and documentation. This staff will all be cleared at the Top Secret security level and will understand project objectives, effectively execute the test system functionality, and productively communicate the test results, by means of creating PRs and/or CRs.

III.6 Resumes of Key Personnel

Shirin M. Kashani

Principal Consultant

Summary of Qualifications

Ms. Kashani has more than 14 years of experience in the automated financial services environment for both private industry and the Federal Government. Her experience in financial services and system development includes management of full lifecycle financial and military transportation systems analysis, development and implementation; management of financial and banking systems operations; and management audits.

Education and Certifications

B.S., Double Major: Management Information Systems (MIS) and Operations Management, University of Massachusetts, 1982.

A.S., Computer Science, *cum laude*, Newbury Junior College, 1980.

PricewaterhouseCoopers LLP (formerly Coopers & Lybrand, LLP), Principal Consultant, October 1985 to July 1991; and September 1997 to present.

Selected Experience

Defense Commissary Agency (DeCA) electronic Shipper System (DeSS). Ms. Kashani is currently leading an effort to completely automate the commercial supplier's interface by automating DeCA's Requisition Processing, Cargo Booking, and Shipping Instruction (SI) generation. She recommended this e-business solution to assist DeCA in reducing their high rate of errors incurred due to multiple entry of the same data into various DoD systems, as well as receipt of faxed and phoned data from their suppliers. The DeSS also provides DeCA with a centralized database, which allows visibility of transportation data at all levels of management, and is used for improved long and short term transportation needs planning and budgeting. DeSS is developed to run on a Sun Solaris environment, using Oracle 8I database, Java Servlets, JSP, HTML, and PL/SQL.

U.S. Department of Defense (DoD), Military Traffic Management Command (MTMC). Ms. Kashani acted as the team lead for the functional analysis, development and implementation of an e-commerce web-based

solution for MTMC to automate DoD's MRM #15 Sealift Prototype test. This test was conducted to measure the efficiency and accuracy of using credit cards for making DoD inter-agency and commercial vendor (ocean carrier) payments. Additionally, a billing module was developed to capture data from various sources (interfacing with two other systems), at different times in the DoD cargo movement cycle to settle the inter-agency payment reconciliation. This system reconciles selected data; reports exceptions; allows batch and online updates; generates automatic payment and billing data for US. Bank's third-party-pay system; and reports expense and revenue accrual and actual data to DFAS' Financial Management System (FMS).

Based on the successful results of this prototype, MTMC extended this contract for two more years to develop the Commercial Sealift Solution (CSS) system. The CSS Web application was built using Boreland's Jbuilder and Oracle Developer 2000 for Windows/UNIX HP 9000, and it currently accommodates about 500 commercial and government users, worldwide. Currently, the system maintenance is performed by another contractor, and Ms. Kashani's team is responsible for supporting the new developers and perform requirements definition and analysis of all system enhancements, such as conversion of interfacing feeds to EDI transactions.

U.S. Department of Defense (DoD), Military Sealift Command (MSC). Ms. Kashani led the Cars II project to develop Electronic Data Interchange (EDI) capabilities for receipt and payment of commercial carrier invoices. This system was designed to automate the matching process involved in verification of ocean carrier's invoice data against the shipper's manifest data for payment selection and approval. The scope of this project included, management of two other contractors, planning, requirements definition, design, testing, documentation, training and implementation of this enhancement to MSC's Cargo System.

U.S Department of Housing and Urban Development, Government National Mortgage Association (Ginnie Mae), Mortgage-Backed Securities Information System (MBSIS). Ms. Kashani was responsible, with four other analysts, to define and analyze the requirements and design the base MBSIS on an IBM 3010 mainframe

using ADABAS/Natural 2. The scope of the original development of this multi-phase project included the overall redesign and conversion of Ginnie Mae's IBM VSAM operations to a distributed, relational database architecture. After successful implementation of the base system, Ms. Kashani led the effort of developing a feasibility study for analysis of the requirements for enhancements to the base system. This project required detail understanding of the overall objectives of Ginnie Mae's MBS program. Recommendations were made for achieving these goals once the program requirements were defined through documentation of current physical and logical process models. Ms. Kashani was the task leader managing four concurrent systems development projects to enhance the MBSIS.

Resolution Trust Corporation (RTC). Ms. Kashani acted as the supervisor for many insolvent savings and loan (S&L) association closures. She was usually responsible for the bank's main office cash control, count and reconciliation. She was also the Division/Cluster Coordinator supervising the takeover of 21 branches of a S&L association in the state of Florida. During another closing in Texas, she was the Asset Team Leader responsible for identifying the assets taken over by RTC.

U.S. Postal Service (USPS), Office of Accounting, International Mail Division, Settlement Management Sub-system (SMS). Ms. Kashani assisted in the development of the SMS in an IBM main frame batch and on-line environment. The SMS maintains settlement records of receivable and payable accounts for all postal administration worldwide. Ms. Kashani designed all of the management reports, performed IV&V testing, and developed user manuals and systems documentation. Additionally, utilizing FOCUS, she developed prototype screens that allowed users to walk-through the system to view the system prior to building it. The prototype system was built in a PC environment using REALIA COBOL and REALCICS. Completed programs were transferred to the IBM mainframe environment.

Roma Bose

Principal Consultant

Ms. Bose has more than ten years of experience in the analysis, design, development and implementation of computer-based management systems for both private industry and Federal Government. Her area of specialization is Security, Database, Transaction Processing, Enterprise Application Integration and Internet related technologies. She also has two years of research experience in the area of Database Security, Integrity and Distributed Database and Concurrency Control.

Education and Certifications

M.Sc.(Tech.) Engineering Technology, Birla Institute of Technology & Science, India, 1989

M.E., Systems & Information, Birla Institute of Technology & Science, India, 1990.

M.S., Information Systems, George Mason University, Fairfax, VA, 1992.

Ph.D Information Technology, George Mason Univ., Specializing in Information Security (In progress)

Graduate Certificate in Information Systems Security (completed all courses)

PricewaterhouseCoopers LLP, Corporate Travel Program, Principal Consultant, May to Dec 2000.

Corporate Travel Program is a business-to-business (B2B) initiative that streamlines corporate travel functions. Ms. Bose was the team lead for Security, Enterprise Application Integration (EAI) and Enterprise System Management (ESM). Ms. Bose was responsible for the development of the enterprise wide security architecture and strategy, evaluating security solutions and implementing them. She was also responsible for the development of the EAI strategy, the conceptual architecture, exploring integration issues and tools, and implementing EAI solutions. As part of the management team Ms. Bose developed project plans for twenty-three teams and assists the program manager with project management activities. Ms. Bose applied firm methodologies in managing tasks and developing and delivering solutions.

Military Mgmt Traffic Command (MTMC) IBS-CSS project, Technical Team Lead, Dec 1999 to Mar 2000.

IBS-CSS project is a Web-based software system for Sealift transportation initiative MRM15. This Internet application was built using Java technology, Oracle database, and Oracle Developer 2000 for NT/UNIX HP 9000, to accommodate more than 50 users worldwide. Ms. Bose worked as a technical leader on the project, being in charge of all stages of system development. She supervised a development team consisted of 8

developers. She worked closely with the Functional Lead and functional analysts. Ms. Bose played multiple roles in this project - technical lead, quality assurance lead and, supported and assisted the project manager. She was responsible for timely delivery of the web application, as well as configuration management of all software versions, weekly status reporting to the client, and maintenance of project plan.

U.S. Department of Housing and Urban Development (HUD), FHA, Development Application Processing (DAP) System/Multifamily Accelerated Processing (MAP), Tech Advisor, Nov 99 to Dec 99.

DAP is an automated system that supports the underwriting process for multifamily mortgage insurance applications. The system tracks housing development applications and related information from pre-application through closing. HUD was interested in allowing external lenders access to the DAP application and was concerned about extranet and remote access issues. Ms. Bose performed technical assessment of the DAP application Security, reviewed Configuration Management (CM) plan and execution, and the technical infrastructure supporting the application. She assessed the DAP security and configuration management plan, identified issues and recommended solutions. This was achieved by performing a risk analysis, understanding HUD Security and CM guidelines and plan, comparing it to ADP requirements and industry best practices, and documenting next software release security and CM requirements.

Internal Revenue Service (IRS), Information Systems, Infrastructure Task Group, Systems Integration Specialist, January 1998 to June 1999. In support of the Internal Revenue Service (IRS), working in a team of seven engineers in analysis, design and development of a prototype infrastructure of Internet-based tax processing applications that correspond to the IRS modernization architecture. As a member of the Technical Evaluation team, responsible for the development of web-based prototypes to capture performance and capacity information for the IRS modernized systems running in a distributed computing environment. Activities include participation in the analysis, design, implementation and integration of COTS middleware software. Also conducted performance and capacity analysis.

IV. Qualification of Past Performance

IV.1 DoD Expertise

PwC has gained ever-increasing insights into the culture, operating and technical environments of the DoD. For more than 20 years, we have supported the Department in its efforts to change business processes in a way that supports its operational focus. Within our Global and National Management Consulting Services, Defense is the largest sector.

Working together with DoD, we do more than find solutions. We stay with the client staff, turning plans and strategy into new, efficient information and financial systems, business management practices, and logistical and industrial process improvements to achieve today's tougher mission requirements.

We provide project teams with extensive knowledge of DoD organizational structure and missions. Time and again, we have successfully performed important consulting engagements within the Department of Defense. These projects have included property reports to higher government agency echelons and to Congressional committees, business process reengineering, performance measurement, IT selection and implementation, custom IT system development, e-business implementation, and CFO Act compliance, among others.



IV.2 PwC Citations

| United States Department of Treasury, Internal Revenue Service, Integration Support Contract (ISC) | |
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| Period of Performance: 12/1991-11/2003 | Contract Number: TIR-NO-92-C-00014.000 |
| Contract Type: Delivery Orders | Contract Amount: \$350 million |
| Client Identification: | |
| Technical Contact Name: Ms Rebecca Swinson | Title: COTR |
| Agency/Company Name: Internal Revenue Service | Address/Telephone: Washington, DC (202) 927-2597 |
| Contracting Contact Name: Ms Barbara A. Williams | Title: Contracting Officer |
| Agency/Company Name: Internal Revenue Service | Address/Telephone: Washington, DC (202) 283-1326 |
| <p>Description: The Integration Support Contract (ISC) is a large twelve-year systems integration contract with the Department of Treasury, Internal Revenue Service (IRS). The contract was awarded to TRW (the prime contractor) and Pricewaterhouse (a major subcontractor) in 1991. The ISC project is comprised of multiple delivery orders to support the IRS in its efforts to achieve the agency's strategic business goals.</p> <p>One of the tasks for FY96 was to develop a high priority IRS application using Rapid Application Develop techniques. The application selected was an Executive Information System (EIS) and data mart for the Examination business area. The EIS will be used by business analysts and executives to generate pre-defined reports and perform ad hoc analysis of examination information. The EIS provides access to data from three disparate legacy systems and allows users to view examination data at individual tax payer, District, Regional or National levels.</p> <p>The EIS was developed in five months using a combination of Rapid Application Development and Data Warehousing methodologies. The technical environment consisted of MicroStrategy's DSS Agent running on Windows NT workstations and Sybase's System XI relational database management system running under Unix on a Sun/Sparc 2000. The data mart contains data from a data warehouse and is refreshed monthly using SAS programs.</p> | |
| <p>Solutions:</p> <ul style="list-style-type: none"> • Instituting management processes which include a standard System Life Cycle (SLC) process, standard Configuration Management (CM) and Quality Assurance (QA) policies and processes, and Technical/Schedule Oversight of contractors to track the progress of product and service development, • Engineering teams are conducting front-end systems engineering activities of the system life cycle including requirements analysis, architecture development, and development planning, • Infrastructure encompasses the design and implementation of "corporate" systems. Corporate systems form the basic building blocks on which user applications can then be built. Examples of such building blocks include data, system security, the software development environment, and the hardware and software configurations comprising the three tiers of the IRS' universal architecture, • The Applications teams ensure the implementation of engineering requirements and architecture, the Infrastructure design, and legacy system requirements. This includes corporate processing and application design activities. The former addresses legacy system requirements, the latter addresses engineering requirements and architecture and Infrastructure design. • The Integration and Test activity manages and operates the Integration, Test, and Control Center (ITCC) and the National Transmittal Center (NTC). At the ITCC, this activity maintains control of new and related legacy software; builds and integrates sub-releases for acceptance testing by the IRS Software Acceptance Test (SAT) organization; and configures SAT-approved software for distribution to production sites. The configured software is provided to the NTC, where site configuration packages of software and associated documentation are assembled, controlled, distributed, and installed at each production site. • Program Management teams assist the IRS in planning, directing, monitoring, and controlling activities to ensure successfully meeting the business vision of a modernized IRS in an efficient and timely manner. This task establishes and maintains a master schedule and provides business support to the IRS. | |



| Defense Security Cooperation Agency (DSCA), Defense Security Assistance Management System (DSAMS) | |
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| Period of Performance: 03/98-Present | Contract Number: GS-23F-9758H / F4964299PA020 |
| Contract Type: Time and Materials | Contract Amount: \$34 million |
| Client Identification: | |
| Technical Contact Name: Mr. James L. Pollitt | Title: COTR |
| Agency/Company Name: Defense Security Coordination Agency (DSCA) | Address/Telephone: Crystal City Gateway North, Suite 303, 1111 Jefferson Davis Highway, Arlington, Virginia 22202, (703) 604-6585 |
| Contracting Contact Name: Mr. Maurice Ford | Title: Contracting Officer |
| Agency/Company Name: DLA Administrative Support Center | Address/Telephone: DLA Administrative Support Center, Office of Contracting, DASC-CPC, 8725 John J. Kingman Road, Section 11, Fort Belvoir, VA 22060-6220, (703) 767-1175 |
| <p>Description: PwC is assisting the Defense Security Cooperation Agency (DSCA) to develop a single integrated application to integrate Foreign Military Sales (FMS) business processes and systems for the entire U.S. Department of Defense (DoD), including the Army, Navy, Air Force, and several other military organizations. The objective of the project is implement core business processes across all military departments—processes that had been previously supported by 13 automated mainframe systems. The system, referred to as the Defense Security Assistance Management System (DSAMS), is a custom developed system that will replace the 13 existing legacy systems which currently operate on different technical platforms throughout the DoD.</p> | |
| <p>Solutions:</p> <ul style="list-style-type: none"> At the core of the DSAMS system is an ORACLE 7 database, running on an HP9000 UNIX server. The integrated PwC and client project team is developing the core system in a central development environment that includes all software and hardware required to support the development effort. At the core of the DSAMS system is an ORACLE7 database, running on an HP9000 UNIX server. The user interface, software infrastructure, and most other business processes are being built using Forte, an object-oriented client/server multi-tier 4GL development tool. Working in partnership with DSCA and staff from each military department, PwC developed an overall implementation plan to replace logical pieces of functionality from each of the 13 legacy systems and to prioritize the rollout of each phase to the various military departments. PwC also developed a comprehensive technical infrastructure plan to support the development and production rollout of the system. To accommodate the phased implementation approach, PwC designed and constructed a configuration management system and procedures to allow up to four different releases of the software to be in various phases of development at one time. These processes also allowed the team to implement upgrades to vendor software and hardware products in conjunction with functional software upgrades. With the implementation of the last module of the application in 2002, the system will support 5000 users at more than 50 sites around the U.S. The first module of the application is already in production. The software was already implemented at three Navy sites in February 1998; the Army came up at 17 sites in December 1999; 12 more Navy sites came live in April 1999, and the Air Force went live in July 1999 with another 17 sites. More than 500 users now access the system. Working with designated user representatives, PricewaterhouseCoopers has been developing the functional and system requirements for the DSAMS software. This analysis has been supported by various CASE tools including IEF, Designer/2000, and Software through Pictures. Work products have included Functional Decomposition Diagrams, Event Dependency Diagrams, a Conceptual Data Model, Use-Cases, and a data dictionary. These analysis efforts have been organized around the various functional areas of the DSAMS application, including case development, case implementation, case execution, closure, and training. One of the major goals of the DSAMS project is to standardize the business processes which support foreign military sales and security assistance across the three military departments of the Army, the Navy, and the Air Force. Previously, the three departments and DSCA all independently developed their own business processes in the preparation and execution of cases. Although the processes developed by all three services were compliant with DSCA and DOD regulations as well as Congressional laws and mandates, they varied widely in their execution. PricewaterhouseCoopers has been assisting DSCA in sponsoring the standardization of these business processes, as a forerunner to the development of a computer automation system which will support these processes. | |

Solutions (Continued):

- PricewaterhouseCoopers has provided complete software life cycle management (SLCM) to DSCA in the development of the DSAMS application. Software life cycle activities have included the following:
- All DSAMS software development and documentation has been prepared in accordance with DOD-STD-468. In addition, standards specified in the SEI Capability Maturity Model for SEI Level 3 have been developed and adhered to on the project. All other relevant regulations have been followed in the development of the software, including DSCA regulations.
- PricewaterhouseCoopers staff performed the coding and unit testing for the development of the DSAMS application using a variety of tools, including ORACLE RDBMS DDL and DML, Forte (an object-oriented 4GL), ORACLE Reports, Impromptu, Doc-to-Help, and PERL. Structured unit test plans were developed and executed, and test problem reports were reported and tracked through a specialized application support database.
- PricewaterhouseCoopers developed and maintains the DSAMS Web site in order to support three primary functions: downloading of new versions of the DSAMS software to the user sites, reporting status of trouble calls, and providing general information related to the DSAMS program, including status of the DSAMS application.



| U.S. Navy, Space and Naval Warfare (SPAWAR) Systems Center – San Diego, Enterprise Resource Planning (ERP) Pilot Program | |
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| Period of Performance: 06/00-06/01 | Contract Number: GS-35F-0105K |
| Contract Type: Firm Fixed Price | Contract Value: \$15,663,000 |
| Client Identification: | |
| Technical Contact Name: Michael Nguyen | Title: Deputy Program Manager |
| Agency/Company Name: U.S. Navy, SPAWAR Systems Center, Code D028 | Address/Telephone: 619-553-2461 |
| Contracting Contact Name: Caroline D. Standish | Title: Contracting Officer |
| Agency/Company Name: U.S. Navy, SPAWAR Systems Center, Code D211 | Address/Telephone: 619-553-4509 |
| <p>Description: The SPAWAR Systems Center-San Diego volunteered to participate in one of four Navy Enterprise Resource Planning (ERP) Pilot Programs as the Navy Working Capitol Fund (NWCF) Activity. The SPAWAR Pilot Program will determine the feasibility of implementing similar systems at other NWCF activities. The initial functionality will be rolled out in 12 months, and capability rollouts at SPAWAR Headquarters and other geographies are expected to follow. SPAWAR Systems Center-San Diego is seeking to modernize its many applications and information systems and will implement select modules from SAP’s R/3 software package. This technology will enable NWCF management to have the capability and flexibility to redesign existing business practices to better align with best commercial practices. ERP will enable the SPAWAR Systems Center-San Diego to overcome the reduced competitiveness brought about by aging stovepipe systems that cannot provide up-to-date, certified financial information. After competitive bid, PwC was selected as the ERP systems integrator based on our expertise in three broad service areas: technology services, change management, and process improvement.</p> | |
| <p>Solutions:</p> <ul style="list-style-type: none"> • PwC is completing all development tasks, requirements through implementation. Interfaces and SAP enhancements will be developed by the San Jose Solution Delivery Center (SDC). PwC also intends to leverage 3rd party tools from partner Logicon/INRI for certain existing DoD interfaces. PwC is Installing SAP v4.6B, SAP IS-PS 4.61B, OROS ABC-M, Mercatur, Mercury Interactive, using Oracle. • PwC is using tailored AscendantSAP methodology, incorporating change management methods. AscendantSAP Toolset is being used as repository for all project documentation and deliverables. We have already demonstrated significant savings in effort and time in creating project preparation phase deliverables by using Ascendant Accelerators. • There are currently 54 staff members including contractors. This will peak at approximately 70 people. The project team is based out of one geographic location (San Diego), but the initial implementation will impact 3,500 users, dispersed throughout the U.S. and Asia Pacific, including some remote users globally. Additional roll-outs planned for future phases include sites in Charleston, SC (1,400 users), and Chesapeake, VA (600 users). | |



| United States Department of Education | |
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| Period of Performance: 1995-Present | Contract Number: DTOS59096-00421 |
| Contract Type: Cost plus award fee | Contract Amount: \$39 million |
| Client Identification: | |
| Technical Contact Name: Mr. Mark Robinson | Title: COTR |
| Agency/Company Name: Office of the Chief Financial and Chief Information Officer | Address/Telephone: 400 Maryland Ave, SW, Washington, DC 20202 |
| Contracting Contact Name: Mr. Andrew Culko | Title: Contracting Officer |
| Agency/Company Name: US Department of Education, Contracts and Purchasing Operations | Address/Telephone: ROB-3, Room 3624, 7th and D Streets, SW Washington, DC 20202 |
| <p>Description: The U.S. Department of Education is the Federal department responsible for funding and administering Federal education grants and loans. The Department administers over 500 legislated programs, resulting in more than 100,000 individual grant awards. The Department, through the Direct Lending program, also provides post-secondary loan funds directly to participating institutions. There are more than 20,000 organizations making up the Department's grantee community. The Department grants and loans more than \$30 billion annually.</p> <p>The Department's central financial operations have been supported through various custom legacy systems hosted in antiquated environments. The Department undertook the ED Centralized Automated Processing System (EDCAPS) program to replace these legacy systems with modern, supportable systems, making use of commercial off-the-shelf (COTS) software whenever possible. In addition to modernizing systems, the Department sought to improve business processes and accounting procedures to be in compliance with the Joint Financial Management Improvement Program (JFMIP).</p> <p>To replace the legacy systems, the Department developed a concept for four integrated systems: Financial Management System Software (FMSS) for general ledger and accounts receivable functionality, Contracts and Purchasing Standard System (CPSS) for contracts and purchasing support, Grant Administration and Payment System (GAPS) for grant management and payment processing, and Recipient System (RS) providing a centralized repository for recipient data for the Department. FMSS and CPSS were to be implemented using COTS packages. GAPS and RS were to be custom developed.</p> | |
| <p>Solution:</p> <ul style="list-style-type: none"> • FMSS has been implemented using the FARS Federal financials package from ACS. PwC is responsible for tracking problems and enhancements to the software, working with the vendor to identify and resolve problems and enhancements, developing release schedules, regression testing, ad hoc reporting, and any other tasks necessary to ensure that FMSS satisfies the Department's accounting requirements. FMSS operates using a two-tiered approach with Windows 95 client software and a DEC Alpha Unix server. The Oracle relational database management system (RDBMS) provides database support. • With the exception of the 500 largest recipient institutions, previous grantees requested funds by calling a call center, where their request was taken by human operators who entered the request into a separate system. This system then uploaded the grant payment requests via batch cycle to one of the legacy systems for transmission to the Federal Reserve Bank. The 500 largest recipients had direct access to the legacy system through a mainframe-based TELNET interface. Grant applications were paper-based, and each one received by the Department had to be copied and filed. Recipients were issued paper reports quarterly indicating the current status of their grant funds. The recipients had to return these with annotations if the Department's records were not accurate. The Department also issued an annual certification report to all recipients that requested each recipient to account for grant funds and return to the Department. All of these reports were returned to the Department, where they were manually keyed into the systems. • PwC developed GAPS to consolidate the functions of three legacy systems and provide a Microsoft Windows-based user interface. As part of developing the requirements for the new system, business processes were evaluated and reengineered. The new system reduces the application processing effort by scanning images of the applications into the system using a batch scanning process. All paper-based reports and more than 90 percent of the payment call center volume have been eliminated through the use of a web site that enables recipients to view up-to-date award information and request funds on-line. Available balances are updated in real-time. Through an EDI-based interface, GAPS sends the payment requests to the Federal Reserve Bank for deposit into the recipient's bank account. GAPS processes more than \$30 billion in payment requests annually, and enables recipients to reconcile their award account balances on-line for the first time. The web site will eventually be expanded to enable recipients to apply for grants directly, eliminating the need to send any paper application forms to the Department. | |

Solution (continued):

- PwC developed GAPS using the PowerBuilder development tool. Processing is done on both the Windows 95 clients as well as in stored procedures in the Oracle RDBMS database hosted on the DEC Alpha Unix platform. GAPS integrates several COTS tools, including Watermark Imaging, Saros @Mezzanine document management, Lotus cc:Mail, and web browsers. The web site reuses much of the business logic contained in the stored procedures and was developed using Active Server Pages (ASP) and Active X Components running on the Microsoft Internet Information Server (IIS) web server and Microsoft Transaction Server (MTS). Electronic file transfer with Federal Reserve Bank via Automated Clearing House (ACH) and FEDWIRE EDI.
- PwC provides integration support through testing and interface design and development. In the testing area, PwC executes system and integration testing for both the custom-developed products as well as the COTS products. Further, PwC provides support for user acceptance testing and problem resolution. For interface design and development, PwC works with the Department to define the required interfaces, design the implementation architecture (i.e., batch vs. real-time, bridges vs. interface updates, etc.), implement the interfaces, and document interface definitions. These interfaces include those internal to EDCAPS as well as external interfaces that both feed EDCAPS as well as send data from EDCAPS to outside systems.



| Office of the Secretary of Defense (OSD), Military Traffic Management Command (MTMC) | |
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| Period of Performance: 1995-Present | Contract Number: DASW01-99-F-0964 |
| Contract Type: Firm Fixed Price | Contract Amount: \$3.5 million |
| Client Identification: | |
| Technical Contact Name: Mr. Alan Estevez | Title: COTR |
| Agency/Company Name: Office of the ADUSD | Address/Telephone: 703-614-5166 |
| <p>Description: As a result of Management Reform Memorandum (MRM) #15, the Military Traffic Management Command (MTMC) was directed by the Assistant Deputy Under Secretary of Defense, Transportation Policy (ADUSD (TP)) to lead the implementation of the MRM #15 SeaLift prototype. MRM #15 called for a “complete reengineering” of the documentation and financial processes that support the Defense Transportation System (DTS). The primary objective for MTMC was to develop a prototype system that would provide the automation capabilities that meet the objectives of MRM #15. Once operational, MTMC would then evaluate the prototype, and if feasible, develop an implementation plan to expand the prototype throughout the entire Commercial Liner SeaLift business area.</p> | |
| <p>Solutions:</p> <ul style="list-style-type: none"> • PwC supported MTMC in developing data verification, documentation, and automated billing capabilities to link with existing MTMC financial and operations systems. The additional capabilities developed by PwC were developed as modules of MTMC’s existing booking system, the Integrated Booking System (IBS). PwC developed a web-based interface into the IBS modules that allowed all of the stakeholders to verify and reconcile shipping data prior to executing any financial transactions. Additionally, PwC helped MTMC to establish a working prototype that supports all logistic and financial functions without DoD specific documents such as the Transportation Control and Movement Document (TCMD). The following paragraphs provide more detail. • The prototype design captured the three primary data streams that support the entire life cycle of an ocean shipment. These data streams are the booking data, shipping instructions, and status data. These data streams support up-front pricing, cargo movement, customer billing, payment certification, and in-theater customs clearance and ground transportation functions. Prior to implementing the prototype, PwC developed training materials and user procedure documentation, and trained users on sight on how to operate the prototype’s functionality. • PwC implemented a web-based prototype that provided up-front pricing; used commercial sources of documentation as opposed to DoD-unique sources of documentation; automated the billing function; provided automated links of accounting journal vouchers between MTMC and DFAS accounting systems; and generated onward movement reports to support customs clearance and in-theater transportation. • In July 1997, the Deputy Under Secretary of Defense (Comptroller) directed the establishment of a Task Force, that determined that the business processes supporting the Defense Transportation System (DTS). Each one of the responsible agencies within the DTS developed concepts of operation (CONOPS) that addressed one or more of these short-term objectives. The United States Transportation Command (USTRANSCOM) contracted PwC to provide overall project management support and to coordinate and facilitate each of the individual CONOPS tests. PwC then recommended that the ADUSD(TP) implement the To-Be systems as prototypes that incorporate the CONOPS procedures and concepts. On 13 May 1998, the ADUSD(TP) accepted PwC’s results and recommendations and directed the implementation of the prototype systems. • The ADUSD(TP) objective was to develop the prototypes using standard procedures across all three transportation modes (air, surface, and sea). The ADUSD(TP) contracted with PwC to provide overall project management support by facilitating and coordinating each of the individual prototype implementations. PwC consultants also supported the individual prototype directors in eliminating DoD-unique processes and documentation by analyzing functional and data requirements, and reducing the number of financial transactions that occur by modifying the credit card payment approach for both commercial invoice payment and intra-government billing. PwC then proposed commercial practices and sources of documentation that support the functional and data requirements while reducing the overall number of data elements. | |



| Office of the Secretary of the United States Army, eArmy University Online | |
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| Period of Performance: 12/00 – 01/05 | Contract Number: DASW01-01-D-0003 |
| Contract Type: Fixed Price | Contract Amount: \$430 million |
| Client Identification: | |
| Technical Contact Name: Ms. Susan Johnson, COR | Title: COTR |
| Agency/Company Name: Army University Access Online Program Assistant Secretary of the Army for Manpower and Reserve Affairs | Address/Telephone: Pentagon 2E594, Washington, DC 20310 703-692-9985 e-mail: susan.johnson@HQDA.Army.mil |
| Contracting Contact Name: Robert Lavelle, Contracts | Title: Contracting Officer |
| Agency/Company Name: Army Continuing Education System (ACES) | Address/Telephone: 5200 Army Pentagon, Room 1C243 Washington, DC 20310-5200 703-614-4578 |
| <p>Description: PwC won a \$430 million contract to develop the Army University Access Online program (eArmyU) to seamlessly provide courses leading to post-secondary degrees and vocational-technical certificates via online education. The size, complexity, and potential of the eArmyU program are unprecedented in distance learning. For eArmyU, the PwC e-Learning Network has created a customized and complete on-line university that includes a total student services solution. The educational services solution PwC has designed will provide the Army, its soldier-students, and administrators with a complete and compelling capability.</p> | |
| <p>Solutions: In sum, PwC delivers the results needed for eArmy University Online:</p> <ul style="list-style-type: none"> • Capability to better attract, retain, and develop soldiers • Technology that will virtualize higher education • Soldier-friendly learning experience • Realistic, efficient, and low risk plan | |