AFILON

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EXPERTECH SOLUTIONS

IRS Corporate Experience & Project Profiles

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A. Letter of Recommendation to Afilon from Don Horsey, Former IRS Director of Enterprise Architecture

TO WHOM IT MAY CONCERN:

I hereby would like to commend Afilon, Inc. for the support it has provided to the IRS Business System Modernization and Enterprise Architecture. Over the years Afilon has proven to be an exemplary and loyal consultant to the IRS modernization efforts. Some of its accomplishments in IRS modernization projects are represented below:

1. The Submission and Settlement Harvesting Project (SSHP), which seeks to determine how to improve the submission and settlement of tax returns. During SSHP, the Afilon was part of a team that identified redesign opportunities in the processing of individual tax returns and tax return data, harvested the business rule sets for the processes, and developed a conceptual architecture that supports the redesigned processes. Afilon played a key role in the overall project and were major contributors in the analysis of the processes and rule sets of two key and very complex applications: Issues and Case Management; and Notices. This effort constitutes one of the most important of EA maintenance activities at the IRS, and is one that will impact the future direction of the IRS transformation and modernization efforts.

2. Afilon's role was also essential in chartering MeF, one of most successful and visible IRS modernization projects, and in brining MeF into EA compliance. MeF started as a Tier B Project and had not undergone the rigors of becoming EA chartered and of being subject of EA and engineering reviews required of Tier A Projects. After completion of release one, when MeF was elevated to a Tier One, Afilon, Inc. was responsible for developing its EA charter, and managing the development and implementation of a get-well plan to bring the MeF in compliance with the IRS Enterprise Architecture. These activities required Afilon to identify the areas of non-compliance, identify compliant solutions, socialize the findings, and obtain buy-in and commitment from multiple and diverse stakeholders regarding the get-well plan and its implementation.

These examples illustrate the contribution of Afilon, Inc. to the IRS and Enterprise Architecture. I have found Afilon's work to be exemplary, and its staff to be knowledgeable, current, dependable, and able to work in a professional and suitable manner under pressure and within short deadlines. It is with great pleasure that I recognize Afilon's contributions to the IRS modernization program and strongly recommend their professional capabilities.

Daniel C. Horsey
Director of Enterprise Architecture
Internal Revenue Service

B.- Internal Revenue Service Project Profiles

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1.0 PROJECT PROFILES

The sections below present five project profiles demonstrating successful management and performance of work performed at the IRS.

- IRS Modernized Electronic Filing (MeF) - systems engineering, enterprise architecture, and pm support
- IRS e-Services - systems engineering, enterprise architecture, IV&V, and management support
- IRS Internet Refund/Fact of Filing (IRFoF)- systems engineering, enterprise architecture, IV&V, and management support
- IRS Submission and Settlement Harvesting Project (SSHP) - systems engineering, enterprise architecture, service based architecture support
- IRS technical and project management support for operations, maintenance and enhancement of MeF and e-Services

1.1 IRS MODERNIZED ELECTRONIC FILING - SYSTEMS ENGINEERING, ENTERPRISE ARCHITECTURE, AND PM SUPPORT. CONTRACTING ORGANIZATION: IRS BUSINESS SYSTEMS MODERNIZATION

1.1.1 Overview

Afilon, Inc. provided Systems Engineering and Enterprise Architecture support to Modernized Electronic Filing (MeF), a major Internal Revenue Service (IRS) business modernization project. MeF provides electronic filing for large corporations and tax-exempt organizations without an intermediary, significantly reducing time to file Forms 1120 and 990. MeF will become the primary interface for all business filings, adding capabilities for corporations and tax-exempt organizations to file joint federal and state returns electronically.

The project is designed to accept and process the following electronically filed tax returns: 1120 (Corporate Income Tax Return), 1120S (Subchapter S Corporate Income Tax Return), 990 (Nonprofit Entity Information Return), 990EZ (Nonprofit Entity Information Short Return), 1120POL (Information Return for Political Entities), and 8868 (Extension to File) for nonprofit entities only. Future goals include other business tax returns, such as Forms 94X (employment tax forms) and 1065 (partnerships), Excise Tax E-File & Compliance Forms 2290, 8849 and 720, and ultimately, Form 1040. MeF also receives state tax returns, which are then transmitted to the appropriate states.

Tax return data is received in extended Markup Language (XML) format through the Electronic Management System (EMS) Portal and the IRS Registered User Portal (RUP) via a web browser and an Internet Filing Application. During the 2006 Filing Season, tax return originators will also be able to file automatically, without going through a web browser, via an Application-to-Application mechanism. Returns are then sent to the MeF application server for processing and posting to the Master File. MeF recently received the 2005 Government Computer News Agency Award for Innovation, and it was selected as one of InfoWorld's Top 100 Projects for 2005.

1.1.2 Enterprise Architecture

Afilon was responsible for ensuring that the project was in compliance with IRS Enterprise Architecture (EA), met IRS Business System Modernization (BSM) business goals, followed EA and engineering best practices; and supported EA in maintenance activities. In particular, Afilon played a key role in

developing the project's EA charter, organizing EA and engineering reviews of the project, and obtaining EA certification for subsequent releases, as detailed below.

MeF started as a Tier B Project and had not undergone the rigors of becoming EA chartered and of being subject of EA and engineering reviews as required of Tier A Projects. After completion of release one, when MeF was elevated to Tier A, Afilon was responsible for developing its EA charter, and for managing the development and implementation of a get-well plan to bring MeF in compliance with the IRS EA. These activities required Afilon to identify the areas of non-compliance, propose compliant solutions, socialize the findings, and obtain buy-in and commitment from multiple and diverse stakeholders regarding the get-well plan and its implementation.

Afilon evaluated MeF in terms of EA compliance on the following key requirements:

a) Project function is performed by the Federal Government.
b) Project is aligned with Federal government and legislative mandates.
c) Project function is consistent with functions assigned to IRS.
d) Project is not duplicated by another Agency or IRS project.
e) Project is consistent with IRS EA transition strategy.
f) Project is consistent with IRS IT architecture and standards.
g) All requirements are consistent with corresponding enterprise level elements:
    i. Project business processes and functional requirements are derived from IRS business processes.
    ii. Performance requirements meet IRS performance goals.
    iii. Data requirements are derived form IRS data architecture.
    iv. Security and privacy requirements are consistent with IRS Security and Privacy policy, guidelines and plan.
h) Project's proposed interfaces are consistent with enterprise level interfaces and other projects it interfaces with, and use technology that is consistent with that specified by IRS EA.
i) Products, tools and services to be used are taken from IRS Enterprise Standards Profile.
j) Initial project plan exists and a life cycle schedule has been developed.
k) Project plan is consistent with EA release schedule and BSM priorities.
l) Project adheres to usability standards and in compliance with Federal 508 requirements.
m) Project "As Is" state can scale to project "To Be" in alignment with EA "As Is" and "To Be" states.
n) The project is properly integrated with other key IRS systems and applications such the Master File, Modernized Tax Return Data Base, IRS Registered User's Portal and Employee User Portal.
o) Project future releases are consistent with EA Transition Strategy.

Afilon organized EA and engineering reviews of the project. We gathered all necessary artifacts for review; involved all stakeholders and conducting pre-review assessments; engaged stakeholders in addressing issues and risks; and organized review session and convened review board.

Furthermore, Afilon conducted assessments of several releases of the IRS EA Volumes. We identified several key business processes omitted from the Business Architecture (BA). Also, Afilon participated in the EA update process and included the omitted business processes in the BA.

1.1.3 IT Security Services

Afilon coordinated with IRS Mission Assurance, and participated in Security and Privacy Reviews. We worked closely with IRS Security Office and the project developers to ensure the quality of security and privacy plans.

Afilon conducted IV&V of technical solutions to identify any potential security risks in the proposed engineering solutions and/or proposed tools and products. We ensured alignment of physical and application designs with IRS security and privacy policies and requirements.

Afilon analyzed security risks associated with the application's proposed solution leading to modifications of the proposed design pertaining to one of the application functions. We identified multiple security problems concerning Application-to-Application components of MeF, and proposed technical solutions including some in relation to VPM and PKI technologies.

Afilon identified security problems in the developer's proposed return submission's technical design, especially as it pertained to nested zip archive structures. We assisted in developing IRS policy concerning zip archives (only one level of nesting permitted).

Afilon assisted in the drafting of security tests and reviewed security tests execution and test results.

1.1.4 Independent Validation and Verification Support

Afilon performed Independent Validation and Verification (IV&V) on the quality of contractor's performance and consistency with Federal guidelines and IRS Business System Modernization requirements, and proposed corrective action when necessary to ensure that:

a. Tests were conducted as planned, and test results met functional and performance requirements.
b. Project software architecture was compliant with EA software and data architecture standards.
c. Project security and privacy were compliant with federal and IRS policies guidelines.
d. Business System Requirements were compliant with IRS BSM goals, and requirements.

Afilon ensured that the Enterprise Life Cycle deliverables were consistent with engineering best practices; and that they were EA compliant and aligned with BSM. When misalignment was found, Afilon took an active part in re-crafting the deliverables to ensure acceptance of deliverables by IRS Configuration Management Board and Enterprise Architecture. IV&V was performed on the following deliverables:

1. Business Systems Requirements Review
   - Functional requirements
   - Performance, capacity and availability requirements
   - Security requirements
   - Monitoring requirements
2. Design Specification Report including Use Cases
3. Logical Model View
4. Data Model View
5. Detail Design
6. Physical Model View

7. Performance Model View
8. Interface Control Documents (ICD)
9. Configuration Item / Configuration Unit (CI/CU) List

Afilon performed impact assessments (cost, technology, technology integration, and security) due to proposed changes to IRS Enterprise System Profile (ESP). These proposed changes were made by specific new projects, on-going projects, services, or proposals for technology refresh. In addition, Afilon participated in the Technology Refresh Committee.

1.1.5 Configuration Management

Afilon guaranteed that based lined ELC artifacts, including acquisition strategy; project plan; systems requirements; systems architecture; logical design; physical design; development test and integration test plans; security and privacy plans, security test; and deployment and transition plans were kept under configuration management. Also, Afilon prepared justifications and waiver requests for changes to any of the artifacts; and presented any proposed changes to the IRS Configuration Management Board.

1.1.6 Modeling and Simulation

Afilon participated in modeling team of MeF, conducting Workload Volumetric Analysis and developing a performance engineering model of MeF.

For the Workload Volumetric Analysis, Afilon participated in work sessions with the developers to determine the expected workload volumes by tax return type, tax return complexity, and tax return size. This volumetric analysis served as the basis for the physical and software design, and to assess the performance robustness of the designs and the as-built MeF. The workload analysis also served to design performance test scenarios that are consistent with the expected business volumes.

Afilon developed a performance engineering model of MeF, a complex multi-tier multi-technology and geographically distributed application encompassing a Web Server, Web Application Server, MeF Gateway Server, MeF Server, Business Objects Reports Server, Secure Objects Repository Server, Mainframe, and VPV.. The modeling effort involved three aspects: a) developing an aggregate model of the business volumes by tax return type; b) determining the system workload; and c) simulating the multiple process thread of MeF, including return submission via a web portal, return submission via dedicated lines, return processing, interface with other IRS tax return databases and system utilities, insertion into the taxpayer database, and request and display of tax returns and associated reports by IRS employees. The goal of the model was to determine if the MeF application and infrastructure would be able to handle the workload and what its response time would be.

1.1.7 Performance Engineering

Afilon participated in the resolution of MeF's major performance problems encountered during testing and production. We recommended to the developers team, major application changes necessary to meet the performance requirements in future releases. Also, we identified performance requirements affecting MeF release 3.b (Federal, state and mandated 1120 returns) and release 4 (1040).

1.1.8 Requirements Analysis

Afilon participated in the requirements phase of MeF, including customers' requirements, performance requirements, capacity requirements, Security Audit and Analysis System (SAAS) requirements, availability requirements, enterprise systems monitoring requirements, functional requirements, and

security requirements. We played a key role in the development of the performance requirements, and developed new future state performance, availability and capacity requirements. Also, Afilon presented requirements to the Configuration Management Board led by the Director of Business System Modernization.

1.1.9 Information Systems Test and Evaluation

Afilon participated in the MeF Test Integrated Project Team. We developed case scenarios for performance testing, followed and analyzed performance test results and wrote test report. Furthermore, we designed an algorithm to simulate 1120 and 990 return submissions. We conducted IV&V of the developer's functional and integration plans. We also developed a framework to coordinate the developer's test management activities with IRS project assurance, and drafted an integrated process to track defects in the developer's and IRS' defect tracking systems.

Afilon identified tests that could be postponed to later releases or milestones, and ensured that past tests complied with the business requirements for the particular release.

1.1.10 IT Acquisition and Life Cycle Management

Afilon supported the following activities:

a. Development of project according to the IRS Business System Modernization Enterprise Life Cycle (ELC).
b. Cost analysis of proposed project functionalities in accordance with IRS standards and CPIC guidelines.
c. Development of project E300.
d. Development of project plan and Work Breakdown Schedule (WBS).
e. Identifying EA role in project Enterprise Life Cycle.
f. Management of the ELC deliverables and work products.
g. Determining FTE level of effort required to implement different MeF business processes (e.g. batch print capability) throughout the ELC. This effort was accompanied by the development of a budget consistent with MeF needs.
h. Establishment of a basis to negotiate level of effort with developers.

1.2 IRS E-Services - Systems Engineering, Enterprise Architecture, IV&V, and Management Support. Contracting Organization: IRS Business System Development (BSD)

1.2.1 Overview

e-Services encompasses a complex portfolio of electronic products and services accessible, in a restricted and secure manner, to tax practitioners and the payer community, including businesses and individuals. Afilon provides e-Services with technical support in the definition, documentation, implementation, administration, and maintenance of project life cycle processes, consistent with the IRS Enterprise Life Cycle and relevant industry standards as required.

1.2.2 Enterprise Architecture

Our Enterprise Architecture support to e-Services consisted in guaranteeing the prime developer's adherence to 1) IRS EA, 2) IRS IT architecture and standards, 3) engineering and EA best practices, 4) EA charter, and 5) business goals and objective of the IRS Business System Development (BSD) Division.

To ensure that the performance capacity of e-Services product and infrastructure met IRS business performance goals and requirements, Afilon conducted a performance evaluation of e-Services to estimate expected performance metrics values (external workload, internal throughputs and response times/latencies as specified in the IRS EA Performance Reference Model). Further, we evaluated the software requirement specifications against the system requirements and architectural design. Specifically, the technical evaluation of the software architecture and the detail design was in compliance with IRS EA software architecture development guidelines.

Towards the end of the development of the e-Services application, it became necessary to upgrade the application's PeopleSoft software. Afilon analyzed whether the upgraded design of the e-Services application was compliant with the original EA charter, assessed the impact that the deviation from the original design had on the EA Enterprise Standards Profile, and examined the direct and secondary impact of the deviation on other IRS applications and tools, on the original budget for e-Services, and on the expected benefits of the investment in terms of the cost of the upgrade.

1.2.3 Information Systems Test and Evaluation

As members of e-Services Test Review Board, Afilon assisted in the design and assessment of test plans and test strategies for e-Services, including: Project System Integration and Test (PSIT) plan; security testing; Release 1.1 Pilot Deployment Site Readiness Test Plan and Defect Reporting Procedures; and test results.

1.2.4 IT Security Services

Afilon worked with the prime developer in drawing up the Security and Privacy plan; developing the security test plan; and assessing the security test implementation and results.

1.2.5 Independent Validation and Verification (IV&V)

Afilon performed IV&V on the key Enterprise Life Cycle (ELC) documents for e-Services, including:

a. The Detail Design Document (DDD). We assessed if the document properly provides a high-level description of the e-Services Releases design. The IV&V primarily focused in determining the quality of the detail design as it applies to the e-Services Project, including all technical

activities required to maintain the integrity and continuity of the following releases: First release – called Third Party Community or e-Services Release 1.1; Second release – called e-Services Products or e-Services Release 1.2; Third release – updates to e-File and TDS product or e-Services Release 2.0.

b. Performance Engineering Model View. Afilon examined if the Performance Engineering Model View (PEMV) provides the underlying analysis of usage requirements supporting the selection and configuration of the e-Services architecture. Specifically, Afilon assessed if the expected performance of the architectural components are impacted by the expected end-user usage rates. The analysis was designed to validate the configuration of the e-Services architecture, primarily focusing on the following issues: number of servers, routers, and other hardware components comprising the physical infrastructure; type of equipment (manufacturer/model) to be used for the testing and production environments; and the hardware and software specifications for the equipment.

c. Systems Engineering Model View. Afilon analyzed if the Systems Engineering Model View adequately describes the systems architecture components needed to support the e-Services project, namely the hardware components that make up the e-Services infrastructure. Afilon also performed IV&V on a series of subsidiary models, including direction, diagnostic, conceptual, and logical models, to drive the design of the e-Services project. Finally, we also considered whether the Systems Engineering Model View serves as the basis for the detail design and any future enhancements.

d. Technology Model View. Afilon assessed if the Technology Model View clearly describes the hardware, system software, and network components needed to support the e-Services infrastructure. In addition, we considered whether the Technology Model View contains the following model types: Technology Direction, including principles, constraints, assumptions and standards related to the technical infrastructure to be used for e-Services; Diagnostics, which summarize and evaluate legacy inventory for potential reuse for e-Services; and Conceptual View, which provides a first-cut, high-level overview of e-Services. Of particular importance was the assessment of whether the Technology Model View serves as a guide for the development of the conceptual, logical, and physical infrastructure to be used for e-Services.

e. Application Model View. Afilon performed IV&V on the Application Model View to determine if it properly describes the overall application architecture, or the major building blocks of application software, for each e-Services product (e.g. Registration, ICM). Particular attention was placed on verifying if the document clearly defines individual products and assigns business processes to each product. Afilon also considered whether the next level of detail of the Application Model View accurately defines subsystems within each product, and the interfaces among products and subsystems as well as interfaces to external systems. Finally, we assessed if the Conceptual/Logical Application Model also provides a description of the objects and operations (or derived logical processes (DLPs)) that define the logical functions of the product.

f. Business Process Model View. Afilon, Inc. evaluated if the e-Services Business Process Model View properly decomposes the business processes that make up each product within e-Services; and if it clearly describes these processes, identifies the events to which the business (and systems) must respond and the results produced; and if it presents a design for new business

process flows. In the case of e-Services, which has both common services infrastructure and applications, the processes will involve both human and system process components that needed to be clearly identified.

g. Data Model View. Afilon examined if the Data Model View comprehensively depicts views of e-Services database structures. These structures include data tables, attributes, views, triggers, and stored procedures. We also evaluated if the document properly describes e-Services data according to the standards of the Enterprise Architecture at the following levels: Does the Conceptual Entity Model (CEM) identify groupings of data important to the business and defines their general relationships? Does the Logical Entity Model (LEM) present a fully attributed and normalized data model? And, does the Physical Entity Model (PEM) present the physical schemas?

1.2.6 Change Management and Transition Management Support

Afilon has advised the IRS e-Services on the appropriate organizational structures and systems needed to support and reinforce the use of new processes / systems / technology and the achievement of desired business results inherent in a modernized system. Part of our responsibilities has been to assist management in providing an environment where high-performance change team members are identified and become agents of change; and where employees are fully capable of exploiting the benefits of change in the shortest possible time, and focus on and are rewarded for achieving desired business results.

Afilon has conducted an organizational assessment to identify the appropriate ITS groups to receive each e-Services system component; has developed a management strategy to minimize the risks of receiving an application not fully completed and with a pending major software upgrade; has developed training plans so that the IRS staff is fully prepared to receive e-Services; has conducted change management workshops; and has led stakeholders meetings to foster communication, participation and buy-in.

Afilon has developed transition planning activities and proposed methodologies to minimize the risk of incorporating the required annual filing season enhancements into the e-Services system following transition from PRIME to the IRS.

To assist the IRS in managing the transition of e-Services from PRIME to the IRS, Afilon has developed the following artifacts: (1) e-Services Technology Transition Supplement; (2) e-Services Training Plan; (3) e-Services PRIME Training OJT Curriculum; (4) e-Services Alternative PeopleSoft Approaches; (5) e-Services Service Level Agreement; (6) PeopleSoft Training Workshop; (7) Milestone 5 Acquisition Planning; (8) e-Services Release 2.0 Readiness; (9) e-Services OJT Training; (10) PeopleSoft Upgrade Methodology Workshop; (11) e-Services OM&E Transition Support Options; and (12) e-Services Developer's Quick Start Handbook. (13) e-Services Staffing Plan, (14) PeopleSoft Upgrade Analysis, (15) e-Services Performance Analysis; (16) e-Services Defect Process Analysis; (17) e-Services PeopleSoft Data Elements Mapping Report; (18) e-Services Knowledge Transition and Adoption Architecture; (19) e-Services and the PeopleSoft Internet Architecture; (20) e-Services Architecture Analysis; (21) e-Services OM&E CONOPS; (22) Transition Readiness Plan; (23) Hand-On Training curriculum and timeline; (24) Transition and Acceptance Checklist.

Afilon created a comprehensive change strategy that supports positive communications; enables stakeholder buy-in; and minimizes risk. Specifically, Afilon helped the IRS anticipate issues, manage risk, and improve their change management and leadership skills. The change strategy was of particular importance for the IRS as it geared up to accept an e-Services application that had not fully meet the intended functionality and that had shortly before undergone a major PeopleSoft upgrade.

1.2.7 Modeling and Simulation

The IRS Office of Business Systems Development (BSD) had asked Afilon to develop a staffing plan and Concept of Operations for the Operations, Maintenance, and Enhancement (OM&E) of e-Services Releases 1.1, 1.2, and 2.0. The staffing plan includes the following discussion: a) Size of the team needed to maintain and enhance the application; b) Technical capability of team members; c) Concept of Operations for the Operation, Maintenance and Enhancement of e-Services; d) Roles and responsibilities of each team member; e) Technical and business capabilities of team members; f) Assignment of ownership for services to the appropriate BSD divisions; and g) Assignment of FTE and staffing requirements for each BSD division.

Applying a proprietary methodology and algorithms, Afilon developed a modeling and simulation tool for calculating the FTE and staffing requirements for the e-Services OM&E team; the Concept of Operations; and the assignment of ownership of each e-Services components to the appropriate BSD division. Our modeling and simulation tool calculated the FTE requirements and competency levels required to handle OM&E activities for e-Services, based on the criticality of the application, the complexity of the application, the quality of the design and code, the scope and size of the code; the pervasiveness of custom code, and the diversity and perverseness of COTS products, and programmer availability.

1.2.8 Performance Engineering

Afilon conducted a performance evaluation of e-Services to estimate expected values of the e-Services performance metrics (external workload and internal throughputs and response times/latencies) in order to verify if the delivered e-Services product and STIR infrastructure meet performance requirements. The study showed that PRIME underestimated the expected workload, response time and throughput requirements.

1.2.9 Transition Readiness Planning

Afilon staff developed a Transition Readiness Plan to guarantee IRS' preparedness to accept the e-Services application. The plan identified the organizational structure, functional guidelines and roles of each member of the IRS Project Management Office and other IRS divisions; identified the polices and procedures required to manage e-Services; assessed IRS technical readiness to maintain e-Services; and pinpointed knowledge gaps and described a strategy and plan for the IRS to overcome these gaps. Finally, Afilon designed and maintained a checklist to track IRS readiness development to receive, manage, operate and maintain e-Services.

Afilon has assisted e-Services in the development of clear recommendations for the successful operation and improvement of the e-Services system prior to and upon receipt by the IRS, including:

- Quality and maintainability of the software engineering products delivered to the IRS.
- Quality of the engineering physical design and design validity to meet performance goals.

- Comprehensibility and completeness of the supporting software documentation.
- Suitability of the proposed organizational structure, and staffing capability and FTE requirements to operate, maintain and enhance the e-Services system of applications.
- Project adherence to best practices in software engineering design and development.
- Project compliance with the IRS Enterprise Architecture.

Afilon conducted a technical evaluation of the software architecture and the detailed design with particular attention to the ability of the IRS to maintain and support the e-Services application.

1.2.10 IT Acquisition and Life Cycle Management

Afilon has provided project management support of the e-Services project, ensuring that all Enterprise Life Cycle (ELC) deliverables and work products were accomplished in accordance with IRS ELC framework. Also, we ensured that as the project moved through the life cycle, any changes to the management plan were approved at the start of the appropriate phase.

Afilon assisted the IRS in managing key ELC deliverables and work products for e-Services, including the Software Detail Design Document, Engineering Model View, Systems Engineering Model View, Technology Model View, Application Model View, Business Process Model View, Data Model View (Conceptual Entity Model and Logical Entity Model); Security Certification and Accreditation Package; and Privacy Package/Privacy Impact Assessment.

Afilon assessed and assisted the IRS in managing key ELC Milestone IV deliverables, including the production of the following project management related deliverables: (1) Project Management Plan, (2) Quality Management Plan, (3) Risk Management Plan, (4) Configuration Management Plan, (5) Training Plan, (6) Business Case and Business Area Plan (7) Staffing Plan, (8) Business Continuity Plan, (7) R1.2 Pilot Deployment Site Deployment Plan, (8) Organizational Transition Plan, (9) Transition to Support Plan, (10) Location Model View, (11) Organizational Model View, (12) R2.0 Pilot Deployment Site Deployment Plan, (13) e-Services Milestone 5 Alpha Contracting.

1.2.11 Project Management

Afilon managed a team of six engineers providing Enterprise Architecture, Information Systems Test and Evaluation; IT Security Services; Independent Validation and Verification; Performance Engineering; Transition Readiness Planning; Acquisition and Life Cycle Management and other project management and technical services to e-Services. Activities included developing a work breakdown schedule and estimation of level of effort, and time estimation for assigned activities; lead team integration and assignment of responsibilities; and project control; quality assurance; risk management; and management of team meetings.

1.3 IRS Internet Refund/Fact of Filing - Systems Engineering, Enterprise Architecture, IV&V, and Management Support. Contracting Organization: IRS Business System Development (BSD)

1.3.1 Overview

Afilon provided Systems Engineering and Enterprise Architecture support to Internet Refund/Fact of Filing (IRFOF), a major Internal Revenue Service (IRS) business modernization project. The IRFOF

improves customer self-service by providing instant refund status information and instructions for resolving refund problems to taxpayers via a Web Portal. IRFOF represents the first IRS implementation of web-based, self-assisted capabilities that allow taxpayers to obtain customer specific tax information. IRFOF enables the IRS to provide 1040 class filers, who are expecting a refund, with the capability to check the status of their refund on the Internet. This feature provides taxpayers that are accustomed to doing business online with an alternative to telephone service. The IRFOF service, which operates 24x7, presents the potential to reduce routine refund telephone calls from being referred to the Customer Service Representatives, thereby enabling them to handle other taxpayer inquires.

Key aspect of the contract included: 1) Implementation of Transition Strategy; 2) Alignment of project business processes with the IRS Enterprise Architecture; 3) Use of Capital Planning Investment Control (CPIC) process; 4) Alignment of project performance with Performance Reference Model; 5) Enterprise Architecture waiver implementation, encompassing development, tracking and resolution; 6) Operations, Maintenance and Enhancement (OM&E) transition planning; 7) Enterprise Life Cycle (ELC) project management; 8) Independent Validation and Verification (IV&V) of ELC deliverables and work products; 9) Requirements analysis, security planning and performance engineering assessments and support; and 10) Integration and security test planning and evaluation.

1.3.2 Enterprise Architecture

Afilon, Inc. was responsible for ensuring that the project was in compliance with IRS Enterprise Architecture (EA), met IRS Business System Modernization business goals, and followed EA and engineering best practices. In particular, Afilon:

a. Performed EA and engineering reviews of the project.
b. Guaranteed that the application met IRS performance business goals.
c. Performed Independent Validation and Verification (IV&V) to determine whether the project was in compliance with IRS IT standards.
d. Reviewed whether the tools, products and services used were taken from the EA Enterprise Standards Profile (ESP) and the IRS Common Operating Environment (COE).
e. Wrote justification for waiver requests for tools and products that were not part of the ESP/COE.
f. Ensured that IRFOF was properly integrated with other key IRS systems and applications such the Individual Tax Payers Master File, and the TRIS-IP, the Telephone Routing Interactive System–Interactive Processor used to retrieve the taxpayer's refund or child tax credit information.
g. Reviewed project's adherence to usability standards and compliance with Federal 508 requirements.
h. Ensured that the project plan was consistent with EA release priorities and schedule, and that risks were mitigated.
i. Assisted in drafting waivers, developing sound implementation plans and performing IV&V in areas where project original deployment did not fully meet IRS Business System Modernization requirements, specifically as it pertained to performance requirements.
j. Ensured that project software was compliant with EA software and data architecture standards.

1.3.3 Information Systems Test and Evaluation

Afilon participated in the Defect Review Board and assisted in designing solutions to overcome defects or system shortcomings. We performed assessments of Preliminary System Integration Test (PSIT), Release System Integration Test (RSIT) and Deployment Security Release Test (RSIT) plans. We analyzed test results to ensure that they were conducted as planned, and that results met functional and performance requirements.

Afilon assisted in identifying the software changes that were needed to overcome bottlenecks at the back-end in the Telephone Routing Interactive System-Interactive Processor, or TRIS-IP, due to multi-threading and multi-processing problems, and in the Z900 mainframe relating to C++ programming problems.

Afilon played a key role in the development of performance test scenarios, managing the performance test execution, and in assessing the test results. We determined the physical design corrections that were required for IRFOF to meet performance requirements. Furthermore, Afilon drafted waivers for tests that could not be resolved before deployment of the application.

Based on the requirements of the Child Tax Credit, Afilon developed test cases to verify system functionality.

1.3.4 Independent Validation and Verification (IV&V)

Afilon performed IV&V on integration, performance and deployment plans for the IRFOF application. We also analyzed test results to guarantee that they were conducted as planned, and that results met functional and performance requirements.

Afilon reviewed application code in C++ and Java, and assessed its compliance with standards, including code prologs, naming conventions, code structure, and error handling.

Afilon performed IV&V of the PRIME contractor's logical, physical, and detail designs for IRFOF. We uncovered that many usability requirements had not been considered during the requirements analysis phase. Subsequently, Afilon led the development of a plan to incorporate unmet requirements into IRFOF following the transition of the application to the IRS.

Afilon performed IV&V on the quality of contractor performance and on the performance's consistency with Federal guidelines and IRS Business System Modernization requirements. Also, we conducted IV&V to ensure that project security and privacy was compliant with federal and IRS policies guidelines.

Afilon ensured the quality of all ELC deliverables and work products, and their compliance with the IRS Enterprise Architecture, including:

1. Project requirements
2. Performance Engineering Model View, including IRFOF Availability, Capacity and Performance Models
3. Logical Design Model View
4. Physical Design Model View
5. Detail Design

6. Integration Test and Deployment Test Pans
7. Security Test and Evaluation
8. Deployment Plan
9. Transition Plan
10. Interface Design Document
11. Security and Privacy Plan

1.3.5 Configuration Management

Afilon supported the IRS in managing the baseline of Enterprise Life Cycle (ELC) deliverables. When deviations occurred, we prepared risk assessments, assisted in managing the risks, and when necessary, also prepared waiver requests and followed them through the signature process and get-well plans.

1.3.6 Transition Readiness Plan

Afilon assessed the PRIME developer's Transition to Support Plan and the Transition Management Plan. We found that both plans were lacking in specificity and subsequently assisted in the development of an integrated Transition Plan, also including both the Transition to Support and the Transition Management Plans. As part of the plan, Afilon recommended an organizational structure for the receiving organization and identified specific staffing requirements, roles and programmers' experience level to properly Operate, Maintain and Enhance (OM&E) the IRFOF environment and application.

Moreover, Afilon assisted in developing a transition strategy and a Transition Readiness Plan. The transition approach resulted in a significant cost reduction of $25 million dollars as compared to PRIME's proposal ($3 million vs. $28 million) for OM&E activities.

1.3.7 Modeling and Simulation

Based on the arrival rate to the IRFOF portal, and the response time of each leg of the portal and application (web server, application server, firewalls, VPN, TRIS-IP broker interface, and mainframe), Afilon developed a simulation model to determine the expected traffic throughput and to assess IRFOF's compliance with the Enterprise Architecture customer service business performance goals.

1.3.8 Requirements Analysis

Afilon assisted in determining infrastructure, development and test lab requirements, and staff requirements for the operations, maintenance and enhancement (OM&E) of IRFOF and, based on these assessments, we participated in the development of a budget consistent with the OM&E needs.

Afilon specified the monitoring requirements for Enterprise Systems Monitoring (ESM), and proposed a synthetic transaction to monitor the end-to-end health of IRFOF. Moreover, Afilon upgraded the usability requirements of IRFOF.

Based on federal legislation, Afilon developed the business, design, technical, security and privacy requirements for the Child Tax Credit application of IRFOF.

1.3.9 IT Acquisition and Life Cycle Management

Afilon ensured that the project was properly coordinated between different IRS Program Offices. Specifically, coordination took place between the receiving organization, Business System Development; the developing organization, Business System Modernization; the business client, Electronic Tax Administration; and the IRS Contracting Office.

Afilon also ensured that the project was developed according to the IRS Business System Modernization Enterprise Life Cycle (ELC).

Afilon participated in the development of a budget consistent with the operations, maintenance and enhancement needs, and in accordance with Capital Planning Investment Control (CPIC) guidelines. We contributed to develop a transition strategy and the Transition Readiness Plan. As described earlier, the transition approach resulted in a significant cost reduction, in the amount of $25 million dollars per year, for the project's operations, maintenance and enhancement (OM&E).

Afilon developed a list of infrastructure requirements for the OM&E of IRFOF, drafted the Service Level Agreement (SLA) and led meetings with PRIME to negotiate the final SLA. The outcome of these activities was the completion of the first SLA between the IRS and PRIME, and this SLA served as the model for the future Business Systems Modernization Office Design, Integration and Test Environment (Lab) SLA template.

Afilon reviewed the Enterprise Systems Monitoring (ESM) capabilities and determined that many business-oriented performance, availability, and security related requirements were not being monitored. We proposed an ESM Concept of Operations (CONOPS), and the development of synthetic transaction to monitor the end-to-end health of IRFOF. Our draft resulted in the improvement of ESM monitoring capabilities, many of which were later adopted by other modernization projects at the IRS. The PRIME developed the Synthetic Transaction Investigator (STI) subsequently used in other projects to monitor the stability of applications.

1.3.10 Performance Engineering

Afilon analyzed the Performance Engineering Model View, including IRFOF availability, capacity and performance models. We were responsible for the overall assessment of PRIME test results.

Afilon developed a web portal performance simulation model to assess and validate PRIME's test results. Based on workload, think time and measured response times, the simulation model projected the throughput capability of the designed portal.

Afilon also played a key role in the redesign of the portal infrastructure seeking to overcome performance issues.

1.3.11 IT Security Services

Afilon assessed security and privacy requirements, participated in security meetings, and ensured that the security deliverables were in alignment with IRS security policy. We participated in security tests, and reviewed the security test results.

1.4 IRS Submission and Settlement Harvesting Project - Systems Engineering, Enterprise Architecture, Service Based Architecture Support. Contracting Organization: IRS Enterprise Services/Enterprise Architecture

1.4.1 Overview

Afilon, Inc. supported the Center for Enterprise Modernization of the Internal Revenue Service in business processes analyses and re-engineering activities in the Submission and Settlement Harvesting Project (SSHP). The objective of SSHP was to develop a business processes redesign and conceptual architecture for future submission and settlement of individual tax returns. Afilon, Inc. staff served as senior level technical support to the SSHP. As such, our staff was part of the technical team assigned to the SSHP, and supported team efforts under the direction of the IRS Technical Project Manager. Furthermore, Afilon, Inc. cooperated with a team of professionals from the IRS and other contractors in the analysis of the current business processes, determining the conceptual architecture for the future state characterized by a service base architecture, and developing a transition strategy and recommendations for migrating from the current to the future SSHP pipeline. In summary, Afilon, Inc. contributed to the design of the future state of the pipeline that will allow the IRS to process a greater number of electronically submitted returns in a timely fashion, less costly, improved performance, resulting in better services to taxpayers.

1.4.2 Enterprise-wide Information System Analysis and Re-Design

Afilon, Inc. analyzed the tax filing intake pipeline for manual and automated functions, mapping functions to application programs. We reviewed the documentation of over twenty-five IRS legacy and modernized applications, including GMF, GUF, SCCF, ERS, DocSpecific, EFDS, IMF, NAP, TRDB, ISRP, EMS, IDRS, CADE, MeF, Notices, and others.

Afilon, Inc. reviewed the SSHP current state pipeline business processes (high level) and the elementary business processes (EBP, detailed level) that were developed by the SSHP business team. We reviewed current production environment (CPE) systems to determine redundancies, inconsistencies and inaccuracies. A gap analysis was performed to determine gaps and define priorities. We identified and reviewed opportunities to improve and enhance the tax return pipeline. These opportunities were analyzed in terms of their business value and technical feasibility. Opportunities include use of a service-oriented architecture (e.g., return calculation service, entity management service, etc.), and reuse of selected CPE applications.

Afilon, Inc. participated in the planning for architectural improvements. Based on the business processes and IRS' Enterprise Architecture (EA) and Service Based Architecture (SBA) model, we designed the future SSHP state architecture. We utilized the EBPs to architect the SSHP application services and components. This process included detail analysis of EBPs, interviews of stakeholders and operation staff, and identification of business rule sets and their mapping to the application service components. Based on this information, we contributed to the design of six major application services that make up the SSHP future pipeline state architecture. They are (1) Input Validation, (2) Entity Management, (3) Posting & Settlement, (4) Issue/Case Managements, (5) Balance and Control, and (6) Notices Management.

1.4.3 "Proof of Concept" Systems Re-Engineering Approach

Afilon, Inc. helped to develop a series of tax return scenarios to test the SSHP service-oriented architecture, including applications, services and components. The scenarios included clean tax return (with no errors), tax return with a math error, tax return with an entity error (SSN does not match DOB), tax return with a balance due (owed taxes), and a tax return with an overpayment. Walkthroughs of these scenarios were performed with the active participation of both stakeholders and current operation staff. The tests illustrated how a tax return would be processed through the future state pipeline and how each of the application services and components would be called and used throughout the process. Results of the tests were captured and used to refine services and components.

Three technical workshops were conducted to present the SSHP Proof of Concept. Afilon, Inc. worked with the SSHP technical team to develop material for discussion in the workshops. Feedback and comments from these meeting were utilized to refine the SSHP application designs.

1.4.4 Issue/Case Management and Notices Management Application Design and Integrations

Afilon, Inc. was assigned full responsibility for designing the Tax Return Issue and Case Management and the Notices Management application services. We also contributed to the integration of SSHP applications, as well as to ensure their compliance with the IRS Enterprise Architecture (EA).

Afilon, Inc. designed the Issue/Case Management application architecture; which includes the detailed design of services, components, and interfaces. The Issue/Case Management application manages the resolution of tax administration issues (entity, return, and account related errors) through the management of issue and/or case creation, execution, maintenance, and closure, and is facilitated by a workflow manager. The architecture describes the activities required to manage the life cycle of an individual or multiple issues or cases.

Issues and/or cases are typically resolved independently by applying prioritization, appropriate treatment stream, and assignment and monitoring the events. Each issue and/or case is assigned to a single IRS employee or organization, although the assignments may change over time.

The Issue/Case Management application also includes the tracking of information and events with audit trail-like capabilities, and detailed and summary information for operation and management reports.

Afilon, Inc. designed the Notices Management application architecture; which includes the detail design of services, components, and interfaces. The Notices Management allows for the automatic generation of notices to taxpayers based on the issue or case being addressed. The Notices services is called from within the other application services as required.

For each application designed, Afilon, Inc. developed appropriate sequence and unified modeling and language (UML) diagrams to document the requirements and the flow of the data through the range of services and components. The work accomplished includes the use of IRS Enterprise Conceptual Data Model (ECDM) and Enterprise Logical Data Model (ELDM) to identify the data classes used, passed, and shared through the SSHP application services.

The SSHP utilized workshops attended by stakeholders and executives to present and refine the design of the application services. The material developed by Afilon, Inc. for both the Issue and Case Management

and Notices Management, included detailed descriptions of use cases, mapping of business processes, elementary business processes, rule sets, and mapping of rule sets to application components.

1.4.5 Software and Hardware Compliance with IRS Enterprise Architecture and Service-Based Architecture

The team made sure that all design work involved in SSHP was aligned and compliant with the IRS Enterprise Architecture. Afilon, Inc. ensured that the design of the Issue/Case Management and Notices Management applications met the EA requirement criteria. For those areas in which EA guidelines were not defined, Afilon, Inc. documented required updates to be submitted to the EA governance team for consideration. The contents of the application service architecture of the future state include:

- Application architecture - The redesigned SSHP business processes led to the development of six application services. In total, the team mapped 900 high-level business rule set descriptions to components within these six applications services.
- Data architecture – Follows the IRS Enterprise Conceptual Data Model (ECDM).
- Technology infrastructure – The future state submission process will be based on an asynchronous message driven architecture.

1.4.6 IT Systems Transition Strategy and Migration Planning

The transition strategy specifies a roadmap from the current state to the future state. Afilon, Inc. defined the transition strategy for both Issue/Case Management and Notices Management applications.

Afilon, Inc. and the team also reviewed current state system functionality and determined reusable candidate subsystems that offer functionalities required in the future state architecture

As part of the team, Afilon, Inc. defined preliminary migration models for applications, databases, and supporting technology that provide guidance for moving from the current state to the future state. The models identified key dependencies within each of the major applications and the level of support a service or component provides for various business goals and operational priorities.

Team members, including Afilon, Inc. staff, defined an overall application migration plan that takes into account the enterprise-wide applications to determine the development sequence.

1.5 IRS Technical and Project Management Support for Operations, Maintenance and Enhancement of MeF and e-Services. Contracting Organization: IRS Modernization and Information Technology Systems (MITS)

1.5.1 Overview

Afilon, Inc. is currently providing technical and project management support for two mission critical e-Government applications e-Services and Modernized e-File (MeF). Services include: Project Management; Change Management; Risk Management; Engineering and Technical Support; Requirements Management; Configuration Management; System Integration; Quality Assurance; and Production Defect Resolution

1.5.2 Project Management

Afilon applies CMMI to planning processes for the OM&E activities, especially in preparation for the tax filing season. This includes developing a Project Management Plan, Work Breakdown Schedule (WBS); Quality Assurance Plan; Requirements Management Plan, according to the Enterprise Life Cycle (ELC). Afilon assists the IRS in the development of Project Impact Statements, deployment schedule and cost estimates for each Request for Information Services (RIS) and Change Request (CR). Afilon maintains the e-Services Project Office fully informed via meetings, briefings, emails, and reports to the Project and Program Managers. We also prepare and deliver reports to MITS executives as requested by the IRS.

1.5.3 Change Management

Afilon is currently working in the development of a Branch Configuration Management system to ensure that changes to the e-services/MeF are planned, controlled and managed in a systematic fashion. This activity contributes to the effective management of OM&E contractors for MeF and e-Services in a dynamic and changing environment, responsive to the needs of IRS and the timelines imposed by the filing season.

Afilon supports the analysis of requirements/changes specified in RISs and CRs, and determine their impact to cost and schedule, and recommends to the stakeholder whether to implement, reject, or defer to a later date. In particular Afilon assists in the assessment of impact of new/changed requirements on existing commitments.

1.5.4 Risk Management

Afilon ensures that all risk potentially impacting the filing season and any major OM&E activity are identified and assessed, and steps defined to mitigate impact, assigned to an owner, and placed under risk management. Risk management is totally integrated into the ELC for filing season preparedness and OM&E activities.

1.5.5 Engineering and Technical Support

Afilon oversee that developer's system and software development activities are consistent with best engineering practices. We make sure that technical solutions address the business requirements and that they are aligned with the IRS Enterprise Architecture. Afilon conducts overall system architecture and performance impact analysis of RISs and deferred requirements and performance inefficiencies. Afilon performs IV&V of OM&E contractor test plans and participate in defect resolution and mitigation activities

1.5.6 Requirements Management

Afilon participates in requirements gathering to assure that the Customer Requirements represent the voice and needs of the customer, are framed in business terms, specify business entities and business volumes, and clearly articulate what the customer needs from the system. We ensure that all customer/business needs (use cases) for the system components are identified, validated, prioritized, documented, and sized (at a high level). Afilon engineers assess if the System Requirements clearly specify what the system must do in support of the customer requirements. We ensure that other requirements will be comprehensively addressed and clearly defined,

including the interface requirements, data requirements, security and privacy requirements, capacity requirements, availability and performance requirements, ESM and SAAS requirements, and that requirements are baselined and kept up to date in Rational RequisitePro.

1.5.7 Configuration Management

Afilon reviews OM&E contractor processes to ensure that proper CM processes, as defined by the ELC and appropriate IRMs, are being followed. In particular, Afilon supports the following configuration management systems:

- Rational ClearQuest for tracking all changes to the code baseline, including both RISs, and defect fixes via the Defect Report Tracking System (DRTS).
- Rational ClearCase for version control of text-based files, including Java code, Java Server Pages, XML, and Business Objects.
- Rational RequisitePro to track functional requirements and to trace them to business processes and code.
- ITAMS – Customized asset management system to track issues within the IT infrastructure (outages, failed jobs, code defects).
- RTRS – Customized tracking system for generating, tracking, monitoring, and responding to RISs.

1.5.8 System Integration

Afilon supports the Project Office in developing project plans and monitor the integration of systems components (internal) as well as the integration with independent systems. We ensure that all technical and project management processes are properly integrated according to the deployment schedule, and that all upgrades, enhancements and modifications have technical solutions that are aligned with the business goals, needs, processes and work practice. To achieve this goal Afilon:

- Participates in RIS business modeling and business requirements definition activities, and the mapping of the business requirements to technical requirements
- Analyzes requirements relative to how they impact e-Services/MeF applications
- Determine the best technical approaches to align the technical solutions to the business needs of ETA
- Participates in engineering architectural and engineering design activities and insure their consistency with Enterprise Architecture (Architectural guidelines, engineering best practices; and data model consistency)
- Analyzes system process flows, functionality, features, and content, and determine the best structure and engineering solutions to meet client needs
- Oversees the development of robust scalable system and data architectures that meet the evolving needs of the e-Services program
- Follow up technical implementation to guarantee that technical solutions meet the business needs.
- Maintain e-services project adherence to the Enterprise Life Cycle (ELC or ELC Lite) and CMMI Level 2/3 compliance

1.5.9 Quality Assurance

Based on e-services/MeF requirements, Afilon worsk with the OM&E contractor and Product Assurance to ensure that test plans are comprehensive and verify that the services are functional and perform according to the design specification. We follow the implementation of test plans, maintain a worksheet of test results, participate in defect resolution activities, and log defects in ITAMS, and assign defect owners, timelines and resources for defect resolution according to the ITAMS defect severity category. Test reports are prepared daily while in the test phase. Afilon collects and generates defect metrics.

1.5.10 Production Defect Resolution

Afilon participates in the Defect Review Board and keeps track of the number of defects by gravity, time to resolve defects, and resources used to resolve them. For priority one and two production defects, Afilon implements IRS defect escalation policies and follows the defect through resolution. Afilon participates in defect resolution and monitors the installation of software fixes.