



## **The integration of FSAM into federal enterprise architecture programs.**

*A first step to OMB compliance and business transformation.*

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## **Introduction**

This white paper examines the impact of Federal Segment Architecture Methodology (FSAM) on federal enterprise architecture programs and explores the challenges and benefits of fully integrating this segment approach to provide business value. The paper describes how the IBM® Rational® System Architect® and IBM Cognos® solutions can help clients respond to the new FSAM requirement.

FSAM was introduced in 2008 by the Office of Management and Budget (OMB). It requires federal agencies to report on the progress of their business and technology investments via the use of segment architectures. FSAM is designed to engage the business community in the enterprise architecture process so that it produces business benefits that improve goal or mission delivery.

To comply with this mandate, federal agencies face several challenges, including integrating the data collection, analysis and reporting for segment architectures into their current enterprise architecture program. They need to evaluate how to develop segment architecture programs that help maximize business value, minimize resource requirements and encourage better decisions about investments.

Solutions, such as System Architect for enterprise architecture and IBM Cognos for business intelligence, play an important role in the segment architecture development process. The System Architect solution helps enable your organization to collect, analyze, synthesize and share information in a central repository, generate reports and Web sites and aids in supplying online realtime access. By facilitating the sharing of information, the System Architect environment helps enhance collaboration among the technical and business stakeholders in the architecture process and supports reuse of processes and technology across geographic and departmental boundaries. The System Architect product is being adapted to provide integrated FSAM support while the IBM Cognos solution helps provide you with a strategic performance management perspective.

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**Highlights**

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***FSAM is designed to help engage the business community in the enterprise architecture process so that it produces business benefits that improve goal or mission delivery.***

**FSAM: A new way to look at architecture**

Beginning in 2010, the OMB will require federal agencies to report on the progress of their business investments in accordance with the Enterprise Architecture Segment Report (EASR) Instruction Guide. The OMB recommends that to meet these requirements agencies should utilize the Federal Segment Architecture Methodology (FSAM), a best-practices methodology for creating and using segment architectures to expedite architecture development and to maximize architecture use. Developed by the Federal Segment Architecture Working Group (FSAWG), a group of federal CIOs and the OMB, FSAM is a repeatable, scalable process for developing a business-driven, results-oriented architecture and reporting on the performance and progress of segment architectures via a standardized format. Detailed information on FSAM is available at [www.fsam.gov](http://www.fsam.gov).

In its “Federal Enterprise Architecture (FEA) Practice Guidance,” the OMB defines segment architecture as a “collaborative process forming a bridge between enterprise-level planning and the development and implementation of solution architecture.” A segment architecture constitutes a detailed, results-oriented architecture (baseline and target) and a transition strategy for a portion or segment of the enterprise. It identifies the data elements, technical pieces and performance measures that support a segment. Segments fit into one of three categories; Core Mission, Business Service, or Enterprise Service.

The FSAM step-by-step process enables architecture groups to answer the “how” and “why” questions associated with enterprise architecture development and use these answers to design actionable implementation plans with measurable results.

FSAM offers guidance for establishing clear relationships among strategic goals, detailed business / information management requirements and measurable performance improvements for that segment. The OMB uses agency Segment Performance Reports to understand the overall effectiveness of the segment architecture program, including how the segment architecture and specific processes and technology are driving results and how well they are aligned to business goals and missions.

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One primary goal of the new FSAM guidance is to increase the potential for reuse and collaboration on segment architectures within and among agencies. The common methodology facilitates agencies sharing architectures and implementation plans in common areas, such as healthcare, finance, human resources and security. Another goal is to improve communication between agency enterprise architects and business owners so they can better evaluate ways to improve business value at a core level. Information that needs to be collected, accessed, analyzed and shared includes:

- *Technology investments (for capital planning)*
- *Processes*
- *Current systems and planned system transitions*
- *Services*
- *Data*
- *Program measurements*
- *Strategic goals*

**The challenge of FSAM adoption**

Agencies face several challenges to implementing FSAM as part of an existing enterprise architecture program. The first issue is the actual adoption of the standard. Current FSAM reporting is based on spreadsheet templates. The OMB has engaged with the standards development body, the Object Management Group (OMG), to create one standard metamodel that agencies can tailor to their needs. A first version of the standard should be available in late 2009.

As a result, agencies are faced with the challenge of complying with FSAM reporting requirements, but using a still-evolving standard. Most are using a band-aid approach to gather the information for the FSAM reports. Information is being collected from a diverse number of unrelated files, repositories and formats. By using this informal approach, there is an inherent element of critical risk, however. Without a non-integrated repository, agencies have no way to check that the submitted information is accurate and consistent in each quarterly submission. In addition, the current approach means that agencies are missing the benefit of the segment architecture process – the knowledge gained from analysis that can only be performed with a centralized repository.

***One primary goal of the new FSAM guidance is to increase the potential for reuse and collaboration on segment architectures within and among agencies.***

Linking segment architecture to current enterprise architecture frameworks via a central repository is another challenge. This requires the development of a crosswalk between the agency's enterprise architecture, its capital planning process and its Program Management documentation. Setting up the internal processes to create this crosswalk requires a considerable investment of resources and time. However, it also delivers important many long-term benefits, including simplified reporting, improved data analysis and a better understanding of how processes/IT projects meet their business requirements for funding. To achieve these benefits an agency requires a repository based architecture.

Another significant hurdle in FSAM adoption is the OMB requirement that segment architecture reporting complement and be integrated with existing OMB reporting. This includes multiple directives, including:

- *OMB A11 Guidance for the Capital Planning and Investment Control Process (CPIC) and Section 53 and Section 300*
- *Enterprise Architecture Assessment Framework (EAAF) 3.0*
- *Enterprise Architecture Practice Guide, which provides guidance on segment identification*
- *FSAM Tool Kit, which includes the Five-Step Federal Segment Architecture Methodology (FSAM) Enterprise Architecture Segment Reports (EASR)*

Of particular note are the changes made in the EAAF: the guidance document that describes how an agency's architecture will be assessed by the OMB. Agencies that use FSAM will produce the data needed for its reporting template. In turn, the Reporting Template data will be used with existing data sets to compute the Key Performance Indicators in the EAAF.

The inherent challenge is walking that fine line in managing enterprise architecture resources to both meet compliance reporting requirements and to pursue relevant analysis for decision making.

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***The current approach means that agencies are missing the benefit of the segment architecture process — the knowledge gained from analysis that can only be performed with a centralized repository.***

***Agencies that look beyond the mandatory reporting aspects of FSAM will benefit from the long-term business value delivered by a platform for central development and collection of information for the segment architectures that document the enterprise.***

**FSAM development and reporting**

The IBM Rational System Architect environment provides a comprehensive means to help you simplify the adoption of FSAM and its integration into the enterprise architecture process. It can be used to assist in facilitating the collection, analysis and sharing of information for producing work products, developing reports and collecting feedback. It can help streamline the FSAM development process through its central repository, which serves as the central hub for the collection and analysis of architecture data / artifacts in a standard format.

Agencies that look beyond the mandatory reporting aspects of FSAM will benefit from the long-term business value delivered by a platform for central development and collection of information for the segment architectures that document the enterprise. With this integrated approach, architects can make sure that the information is developed and collected in a standard format that can be used across architecture teams to meet multiple reporting requirements. Because the enterprise transition plan can be generated directly from the repository, they can also check that segment architectures are consistent with that strategy.

The System Architect product offers a variety of features for the development of an enterprise architecture. The core product helps support the standard modeling techniques used in the FSAM, standard reporting and publishing capabilities and shared analysis and feedback mechanisms. System Architect software can also assist your organization in handling the administrative aspects of OMB reporting, from creation to submission.

*IBM Rational System Architect for FEA Interface*

Introduced in 2004, the IBM Rational System Architect for FEA Interface solution offers Federal Enterprise Architecture (FEA) reference model mapping and OMB reporting. The product assists your FSAM efforts with fast and accurate import of the OMB Reference Model information into the System Architect repository, the ability to auto-generate the reference model diagrams in a hierarchy format and to generate reports that specifically help to support the development of Exhibit 300 investment business cases.

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***When used together, System Architect and the FEA Interface solutions help provide a solid foundation for metamodel customization and development of work products, processes and reports for segment architecture development.***

***System Architect Publisher Add On reports are not simple spreadsheets: they are a fully integrated set of hyperlinks that present the architecture from all perspectives.***

The System Architect for FEA Interface workflow can serve as the platform for meeting FSAM requirements; it will be enhanced as the FSAM standard is finalized. Work products can be used to simplify OMB segment architecture reporting. As the FSAM standard is finalized, newly developed integrated guidebooks will be made available to users. These guidebooks will provide contextual help for FSAM deliverables and help agencies implement the metamodel in their organization.

When used together, System Architect and the FEA Interface solutions help provide a solid foundation for metamodel customization and development of work products, processes and reports for segment architecture development. The combination should help agencies to focus on analysis, feedback and implementation and use the System Architect environment for the “heavy lifting,” or collection, synthesis and dissemination of the information.

*IBM Rational System Architect Publisher Add On*

The OMB Segment Reports are used to evaluate whether agencies are developing segment architectures and using them to drive results; to identify opportunities for re-use and cross-agency collaboration. In addition, the OMB Segment Reports are used as a way to provide a means for communication between agency chief architects and business owners, and to offer updated segment information as part of the annual OMB Enterprise Architecture Assessment.

The IBM Rational System Architect Publisher Add On solution, when used in conjunction with the FEA metamodel, supports the validation of OMB Segment Reports by directly emulating them. System Architect Publisher Add On reports are not simple spreadsheets, they are a fully integrated set of hyperlinks that present the architecture from all perspectives. For example, a summary panel report can drill down to the most detailed levels of the architecture. In another example, stakeholders can view the technology being used to support a specific system service. A single click will reveal where that technology is deployed with a line of sight that links the technology to strategic goals and objectives.

Using a standard Internet browser, stakeholders across the enterprise can view and comment on the models and reports, without special software or hardware. Information can be tailored to the knowledge level of the stakeholders. Queries of the System Architect repository can also be used to generate reports. Queries can range from high-level business questions for senior executives to design-level questions about modeled systems for the IT staff. In the future, System Architect Publisher Add On users will have access to configuration files that will support FSAM web site generation. These configuration files can be easily tailored by agencies for their own use.

Online sharing of the architecture information promotes effective and prompt feedback to the enterprise architecture team, helping to enable updates to the segment architecture for the quarterly submission. Online reports also help jumpstart discussions between business and IT about the business rationale behind technical and process decisions, and how these decisions help achieve agency goals and missions.



Figure 1. IBM Rational System Architect software can help you drill down from high-level enterprise architecture segments to individual segment architectures.



*IBM Rational System Architect XT*

The IBM Rational System Architect XT solution helps agencies take the feedback cycle one step further by offering dynamic, browser-based access to the central enterprise architecture repository using the same publishing engine as the System Architect Publisher Add On product. It offers a Web-based platform for sharing, reviewing and commenting on architecture reports and models in real-time. Authorized users can update the models and reports online and provide instant feedback regardless of their location. The System Architect XT solution helps users more easily overcome communication challenges that are inherent in any global enterprise.

*IBM Cognos*

Federal agencies are finding that even small changes can dramatically affect their ability to manage their performance. Having effective metrics and reporting processes can help understand and manage these changes, including new OMB requirements. The IBM Cognos performance management solution provides the ability to combine and present data from many disparate sources of information to help address five key decision areas. The sequence of these decision areas provides a logical and iterative flow of analysis and action to help drive performance management.

1. *Business Value Map. Where and how does IT drive business value for performance?*
2. *IT Portfolio Management. How are IT assets optimized for the best return on assets (ROA) and performance?*
3. *Project/ Systems Development Lifecycle (SDLC) Management. Are projects on time, on budget and on target?*
4. *IT Vendor Management. Are vendor service levels acceptable and what are the costs for better performance?*
5. *IT Compliance Management. Are IT risks and controls being managed to maximize performance?*

**Highlights**

**IBM Cognos acts as the instrument panel of the business transformation effort.**

IBM Cognos acts as the instrument panel of the business transformation effort by helping agencies to:

- Quickly see critical issues and rapidly correct them
- Consolidate information across functions – programs, operations, HR, finance – to gain a better view of overall performance
- Manage personnel skills requirements and inventories to more effectively deploy resources, identify skill gaps and anticipate when to outsource services
- Provide staff with an easy-to-use interface to see and analyze the same information as well as understand the strategy and their roles in executing it
- Eliminate “best-guess” project milestones through predictable planning and better communication with citizens, administrators and staff



Figure 2. The IBM Cognos performance management solution can present data from multiple sources to help agencies review issues, such as budgets and funding.

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**Highlights**

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***Under this scenario, System Architect software serves as the backbone of the segment and enterprise architecture programs by automating the collection, analysis and dissemination of information.***

The IBM Rational Software Group is continuing to refine the integration of the IBM Cognos and System Architect environments to support standards such as FSAM. In addition, third party vendors offer solutions that support the integration of the System Architect and IBM Cognos solutions in the support of FSAM. The combination of enterprise architecture and performance management solutions provides a foundation for agencies to help verify that their strategies and goals are based on the right information and are pulled from a consistent flow of data.

Under this scenario, System Architect software serves as the backbone of the segment and enterprise architecture programs by helping to automate the collection, analysis and dissemination of information. It provides a consistent methodology for FSAM reporting and implementation. The central repository supports re-use of information and the delivery of shared information to CIOs as well as operational and technical experts. This turns the architecture into something actionable and a platform for well-informed decisions.



Figure 3. IBM Rational System Architect software can be used to help generate the OMB Segment Performance and Investment Report. The report is divided into five sections: Summary, Mapping, Detailed Mappings, Performance and Reuse.

### **Benefits of an integrated approach**

One of the goals of the OMB for segment architecture performance reporting is to drive business transformation at an enterprise level. This is where enterprise architects come in. It takes the segment architecture beyond a collection of recommendations and work products and places it in context of the larger agency goals and missions. Enterprise architects can use this new reporting structure to help them:

- *Identify a segment's strategic improvement opportunities*
- *Outline the goals, objectives and measurements*
- *Design a future target state*
- *Analyze the segment architecture within the larger enterprise architecture*

System Architect software provides the required repository-based enterprise architecture development environment so that segment architectures can be used to generate accurate reporting. The System Architect environment acts as the integration glue and centralized mechanism, which gives architects the chance to focus on using that information to help drive business transformation. In addition, diverse stakeholder groups can access and collaborate on the architecture and models via an Internet browser.

System Architect software also helps maximize the use of internal and external resources. Segment architecture development and reporting generally involves a variety of internal and external groups, each bringing its own breadth and depth of knowledge. Critical knowledge can be lost when captured from diverse, unrelated resources or moved between business and technical groups. A centralized, structured approach keeps this institutional knowledge accessible within the organization.

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**Highlights**

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***Architects can gain a dynamic view of information about technical, business, stakeholders, external forces and processes instead of creating a static, one-way data feed to the OMB.***

Re-using processes and applications within and across federal agencies is also supported with the System Architect solution. Information is collected once using a standard format, but disseminated in multiple formats tailored to the audience. Agencies can easily share information about key processes, such as payroll and this information be adopted for use by another agency.

By putting information in the System Architect environment, architects gain a dynamic view of information about technical, business, stakeholders, external forces and processes instead of creating a static, one-way data feed to the OMB. As data changes, it can be quickly incorporated into the repository so that the impact on other processes and technologies is understood. Changes can be shared via a web site with the press of a button. System Architect users can generate an actionable blueprint as part of the implementation of the target architecture down the road.

This approach reduces review cycles and improves communication and collaboration. Business owners can be better informed and more tightly integrated into the enterprise architecture decision cycle. As a result, they can the help they need to make informed decisions about how well processes and applications are working and whether they are aligned with the agency's overall mission and goals.

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**Highlights**

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***Agencies that quickly embrace the FSAM as part of their enterprise architecture programs and integrate the link between segment and enterprise architecture work products will be rewarded with greater business value.***

**FSAM: A first step to business transformation**

The OMB is shifting the paradigm of federal enterprise architecture reporting from business case justification to business transformation via results-driven segment architectures. The FSAM process proactively unites the enterprise architecture and business communities to produce actionable plans that lead to measurable results. Agencies that quickly embrace the FSAM as part of their enterprise architecture programs and integrate the link between segment and enterprise architecture work products will be rewarded with greater business value.

Enterprise architects are an integral part of this process because they define the strategic drivers and prioritization of segments. The IBM Rational System Architect and IBM Cognos solutions provide the platform to embrace this change. By facilitating the sharing of information within or between agencies, System Architect software enhances collaboration among the technical and business stakeholders in the architecture process and supports reuse of processes and technology across geographic and departmental boundaries. System Architect software can help enterprise architecture and segment architecture teams to focus on analysis, feedback and implementation and use the tool for the collection, synthesis and dissemination of the information for better decision making. IBM Cognos provides the business intelligence to help agencies make more informed decisions about how technology supports the mission and goals at a strategic level. The IBM solutions provide a multi-tiered approach to new government reporting requirements.

**For more information**

To learn more about IBM Rational System Architect and IBM Cognos software, contact your IBM representative or IBM Business Partner, or visit:

[ibm.com/software/rational](http://ibm.com/software/rational)



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