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United States General Accounting Office
Washington, DC 20548

November 14, 2003

The Honorable Porter J. Goss
Chairman, Permanent Select Committee on Intelligence
House of Representatives

The Honorable Nancy Pelosi
House of Representatives

The Honorable Bob Graham
United States Senate

The Honorable Richard C. Shelby
United States Senate

Subject: *Federal Bureau of Investigation's Comments on Recent GAO Report on its Enterprise Architecture Efforts*

On September 25, 2003, we issued our report on efforts by the Federal Bureau of Investigation (FBI) to develop a corporate blueprint—commonly called an enterprise architecture—to guide and constrain its information technology (IT) systems modernization.[1] (This report is available on GAO's Web site at www.gao.gov/cgi-bin/getrpt?GAO-03-959.) We provided the FBI with a draft of this report on August 22, 2003, requesting that comments be provided by September 18. On September 23, the FBI provided us with written comments. However, the comments were not received in time to be analyzed, incorporated, and responded to in the report and still meet our September 25, 2003, reporting commitment to you. As discussed with your offices at that time, we did not extend the reporting date in order to include the FBI's comments and instead are transmitting and responding to them in this follow-up correspondence.

In its written comments signed by the Assistant Director, Inspection Division (which are reprinted in their entirety in the enclosure), the FBI made two primary points. First, it expressed its commitment to developing and using an enterprise architecture (EA), including (1) agreeing with our conclusion that it needs an architecture to effectively manage its IT systems modernization; (2) consistent with our recommendations, stating that it recognized the need for immediate attention to its architecture efforts; and (3) noting that it was managing its architecture effort as an IT modernization enabler and priority.

[1]U.S. General Accounting Office, *Information Technology: FBI Needs an Enterprise Architecture to Guide Its Modernization Activities*, GAO-03-959 (Washington, D.C.: Sept. 25, 2003).

Related to this first point, the FBI also stated that it has efforts currently under way to improve its EA posture, and that substantial and real progress has already been made in doing so. For example, it stated that an executive team had been established to (1) assess the bureau's EA status and resource needs using our EA maturity management framework[2] and (2) formulate recommendations for improvement. Although the FBI's comments did not specify when it would complete the assessment, it did state that the necessary resources would be applied to architecture development, maintenance, and implementation following the results of the assessment. To illustrate its progress, the FBI stated that it had

- completed and approved what it referred to as an EA foundation document which, according to its comments, contains an architecture approach based on 55 principles spanning 10 categories of bureau activities and operations and acknowledges its largest modernization project (Trilogy) as one enabler for moving from its current architectural state to its target state;
- established key IT modernization management structures and processes, such as an investment management process that requires all proposed investments to address EA, a governance board to review investment proposals and architectural decisions, an application integration board to ensure that new applications are consistent with the bureau's IT environment, and change management and control entities to examine and approve changes to its IT infrastructure;
- assigned EA resources, including appointing a chief architect, assigning staff, and obtaining private-industry expert assistance, to support its ongoing architecture assessment and development of architecture products;
- established a list of existing systems that had completed security certification and accreditation;
- begun acquiring an automated tool to serve as an architecture repository, as well as a risk management tool for determining existing system vulnerabilities and cost-effective risk mitigation steps; and
- begun conducting outreach with external parties, such as the Justice Department, the federal CIO Council, and its intelligence community partners to, among other things, learn from these entities' EA experiences.

We support the FBI's stated commitment to architecture development and use, including its adoption of our maturity framework. Moreover, we believe that the examples of EA-related activities cited in the bureau's comments, some of which were subsequent to completion of our audit work, are steps in the right direction. However, the examples that the FBI cites do not alter our report's findings and conclusions about the maturity of the FBI's EA program because they are either already recognized in our report or they do not fully address the EA management maturity core elements that our report cites as not being satisfied. Moreover, the

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[2]U.S. General Accounting Office, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management* (Version 1.1), GAO-03-584G (Washington, D.C.: April 2003).

FBI does not currently have a version of an EA to guide and constrain its ongoing and planned IT investments. Our evaluation and response to each of the FBI's examples of progress are provided below.

- At the time we completed our audit work, the EA foundation document was in draft form, and our review of this draft showed that while it contained information that would be useful in developing a plan for architecture development, maintenance, and implementation, as well as information that would be useful in developing architecture artifacts or products, it did not satisfy the basic content requirements for either an EA or a plan for developing, implementing, and maintaining one. For example, neither the draft nor the recently approved version specifies the tasks, time frames, or responsible parties for actually developing and completing such architecture products as the business, information/data, services/applications, technology, and performance reference models, as well as the security views that should be part of these models.
- At the time we completed our audit work, the bureau's EA governance board did not include all relevant internal stakeholders, such as representatives from its counterterrorism and counterintelligence organizational components. As our framework recognizes, enterprisewide representation and accountability on the architecture governance body is a critical success factor and a recognized best practice. Since we issued our report, FBI officials told us that they now have all relevant stakeholders represented on the board.
- Our report recognizes that the bureau had appointed a chief architect and assigned staff as part of its EA efforts. However, the report also points out that it began these efforts over 32 months ago, and the level of commitment and resources devoted to them had neither advanced the FBI beyond stage 1 of our maturity framework nor produced an EA that could effectively support the investment and modernization management processes and structures that the FBI cited as having been established. Moreover, as we state in the report, the then-chief architect characterized the bureau's annual commitment of $1 million in resources to these efforts as "limited," and this amount now appears to be an overstatement. Specifically, the FBI stated in its comments that it is actually investing less than this amount in its EA efforts ($285,000 and $500,000 in fiscal years 2003 and 2004, respectively), but that its fiscal year 2005 budget request includes a substantial, but unspecified, increase.
- Despite the bureau's progress in establishing a listing of existing systems under security certification and accreditation, which we believe would be a useful source of information in developing an EA, the then-chief architect told us that this listing was incomplete and required management approval before it could serve as a basis for developing the "as-is" architecture description.
- The bureau's comments acknowledge that it is in the process of acquiring automated EA tools, and thus does not yet satisfy core elements of our framework related to establishing an EA management foundation. Further, to augment these tools, the bureau has yet to establish a methodology that it will follow to create its architecture artifacts, which is another management foundation core element.

- We support the efforts that the FBI cited for outreach to relevant external stakeholders. Understanding these relationships, and ultimately defining them in architecture artifacts, should be part of an effectively managed EA program.

The FBI's second primary comment was that our report was too narrowly focused and not comprehensive because it was limited to EA and did not include an assessment of the FBI's other IT management controls and capabilities. Because our report focused on EA, the bureau said that the report was premature.

While we agree that the report focuses on the FBI's EA activities, we do not agree that this is either inappropriate or makes the report premature. As agreed with your offices, we are in the process of reviewing a wide range of FBI IT management areas, such as system acquisition capabilities, IT human capital management, IT investment management practices, and architecture development and use. As further agreed, we are to report on these areas incrementally, as appropriate. Our report represents an appropriate and timely first increment for two principal reasons.

- Our experience over the last 10 years in evaluating federal agency IT management has shown that providing our congressional clients and the subject agency's leadership team with the results of major segments of our work as they are available permits more timely corrective action, and thus better outcomes.
- Reporting first on EA in particular, which can be viewed as an essential link between strategic planning and system investment/implementation, provides the FBI sooner rather than later with a comprehensive set of recommendations for effectively making its architecture efforts more mature in time to influence its ongoing and planned IT investment/implementation efforts. Any delay on our part in reporting on this area of strategic importance would only increase the agency's exposure to modernization risk and postpone your awareness and understanding of this critical issue. This does not, however, mean that the FBI should not be pursuing near-term IT upgrades before it completes and is positioned to use an architecture, nor is it intended to suggest that the bureau's planned and ongoing modernization investments to date are completely unjustified and unreasonable. Rather, it means that these investments and upgrades are being pursued without a blueprint that provides an authoritative, commonly understood frame of reference that translates strategy into implemental actions, which, in turn, increases modernization risk.

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We are sending copies of this correspondence to the Chairman and Vice Chairman of the Senate Select Committee on Intelligence and the Ranking Minority Member of the House Permanent Select Committee on Intelligence. We are also sending copies to the Attorney General; the Director, FBI; the Director, Office of Management and Budget; and other interested parties. In addition, this

correspondence will be available without charge on GAO's Web site at www.gao.gov.

Should you or your offices have any questions on matters discussed in this correspondence, please contact me at (202) 512-3439 or by e-mail at hiter@gao.gov. Key contributors to this response included Katherine I. Chu-Hickman, Barbara Collier, Gregory Donnellon, Michael P. Fruitman, Paula A. Moore, Gary N. Mountjoy, and Megan M. Secrest.

Randolph C. Hite
Director, Information Technology Architecture and Systems Issues

Enclosure

Enclosure: Comments from the Federal Bureau of Investigation

U.S. Department of Justice

Federal Bureau of Investigation

Washington, D. C. 20535-0001

September 22, 2003

Mr. Gary Mountjoy
Assistant Director
Information Technology
U.S. General Accounting Office
441 G Street, N.W.
Washington, DC 20548

Dear Sir:

I would like to thank you for affording the FBI the opportunity to respond to the General Accounting Office (GAO) report entitled "FBI Needs an Enterprise Architecture to Guide its Modernization Activities."

The FBI agrees with the report's conclusion that the FBI should have an enterprise architecture. In fact, as noted in the enclosed response, substantial progress has been made in establishing the FBI Enterprise Architecture.

However, because this report is limited in its scope, it does not incorporate the tremendous progress the FBI has made in the modernization of its Information Technology (IT) systems. Moreover, we suggest that this report is premature and should be a part of a comprehensive assessment of the FBI's IT progress, as has been the practice in previous GAO studies that assess IT systems.

Again, thank-you for the opportunity to respond to the report, and if you or your staff have any questions regarding our enclosed response, please contact me any time.

Sincerely yours,

SC McCraw

Steven C. McCraw
Assistant Director
Inspection Division

Comments on GAO Draft "FBI Needs an Enterprise Architecture to Guide its Modernization Activities"

Comment in response to "Results in Brief" (Pg. 3) and "Conclusions" (Pg. 20) :

The FBI recognizes that several information technology management and technical control mechanisms, needed to most effectively guide our modernization efforts, are not as well developed as we need them to be. In February 2003, FBI executive management directed an initiative to: (1) consolidate FBI technology upgrade efforts into a comprehensive enterprise system managed and sourced by a single prime contractor; and (2) obtain an interim System Engineering, Integration and Test contractor to blend the Trilogy VCF, SCOPE and IDW projects, and several smaller efforts into a unified and functioning whole. The first element is known as Aurora and a FY2005 budget enhancement request, which includes very substantial funding for Enterprise Architecture (EA) related activities, has been prepared and is under consideration at DOJ and OMB at this time. Further, in April 2003, FBI executive management recognized the need for more immediate attention to EA and assigned an executive team to assess current status and formulate recommendations to improve our EA posture. When that assessment is complete the FBI will commit the necessary personnel and fiscal resources to correct EA shortfalls. The FBI, as mentioned elsewhere in the draft report, has selected the CIO Council's "Federal Enterprise Architecture Framework" as the basis for defining the FBI EA. The FBI acknowledges the validity of the GAO EA Management Maturity Framework and is using the GAO framework as part of its internal assessment. FBI executive management has determined to treat EA as an IT modernization priority and to manage EA as such.

While the assessment of FBI EA is still underway, real progress has already been achieved as follows:

- **EA Foundation Document**
    - An FBI Enterprise Architecture "Foundation Document" has been completed and approved. The Document bases its EA approach on 55 principles in 10 categories of FBI activities or operations. These reflect the Director's 10 Priorities through three mission areas and several prescribed functions of the FBI's information

enterprise. This document acknowledges the *de facto* Trilogy Architecture as one of the infrastructure enablers from the "As-Is" to the "To-Be" FBI IT environments.

- **Boards and Processes**

  - An Investment Management Process (IMP) has been established in the FBI consistent with the Clinger-Cohen Act to ensure IT and other investments are aligned to meet mission needs and priorities. A Business Plan template requires all investments to address 10 areas including Enterprise Architecture. The IMP ensures management of investments during the Select, Control and Evaluate phases.

  - An FBI wide Enterprise Architecture Board (EAB) has been established, comprised of FBI executives in Senior Executive Service (SES) and the Senior Level (SL) positions, and is already reviewing architecture decisions. This Board reviews IT proposals to ensure that they are consistent with the *de facto* Trilogy Architecture, Standards and the new emerging EA Vision as delineated in the EA Foundation Document.

  - In March 2003, the FBI Information Resources Division (IRD) initiated an interim Change Management Process that includes an Executive Change Management Board (CMB) and a Technical Change Control Board (TCCB), both of which are comprised of qualified executives, senior level and management staff at GS-15 level with sufficient experience and expertise. These boards regularly record, track, and approve all changes to the IT Operational infrastructure (networks, systems, applications, and computing).

  - IRD has initiated an Application Integration Board to ensure all new Applications are consistent with FBI's IT environment.

- **Resources**

  - A Chief Architect has been appointed, with staff provided on a matrixed basis while the assessment is ongoing.

- Expert assistance from private industry has been obtained and is supporting the assessment and will be developing elements of the architecture.

- **List of Systems**

  - A definitive list of current FBI systems under Certification and Accreditation (C&A) has been established for the Sensitive-But-Unclassified, Classified Secret and Classified Top Secret Enclaves.

- **Tools**

  - A commercial tool (Popkin) for managing EA is in process of being purchased. This tool is exactly the same as the one used by the Department of Justice (DOJ). The tool will first be populated with the current "As-Is" systems baseline information and will rely on Configuration Management (CM) Information from the Trilogy-provided Enterprise Management Systems and new CM tools.

  - The FBI is in process of acquiring a Risk Management Tool that has been successfully deployed in the IC (e.g. National Security Agency). This tool will assist the FBI in determining where IT vulnerabilities should be mitigated through risk/cost trade-offs, thereby ensuring IT Continuity of Operations (COOP). The FBI will interface this tool with the EA Tool.

- **External Efforts**

  - The FBI is actively participating in the DOJ architecture effort.

  - The FBI has met with members of the Chief Information Officer (CIO) Council's Architecture Integration Committee to understand the requirements of the Federal Enterprise Architecture Reference Model.

  - The FBI has actively participated with the IC partners to determine status of their EA efforts and lessons learned in implementation of EA. This will assist the FBI in our Information Sharing efforts with the IC and also assist the FBI in determining the resources and processes required to tailor the FBI's EA effort. For example, the FBI is a voting member of the IC-CIO Communications Board,

Intelligence Implementation Board (IIB) and keeps abreast of IC architecture efforts.

Comment in Response to "Recommendations" (Pg. 21):

The FBI will designate EA as an IT modernization enabler and will manage it as such. FBI executive management assigned an executive team, in April 2003, to assess current EA status and formulate recommendations to improve our EA posture. When this assessment is complete the necessary personnel and fiscal resources will be applied and the FBI EA will be implemented in a manner consistent with the GAO EA Management Maturity Framework.

GAO Comment: Page 7 – "Department of Justice Inspector General reported that, as of September 2000, the FBI had over 13,000 desktop computers that were 4 to 8 years old and could not run basic software packages. Moreover, it reported that some communications networks were 12 years old and were obsolete."

FBI Response: It should be noted that under the Trilogy program the FBI has successfully deployed over 20,000 new desktop computers and peripherals which have been upgraded to current Industry standards, reused more than 7,500 older desktops, replaced the obsolete communications networks with Industry-standard, robust Local and Wide Area Networks with redundancy and standard NSA-approved secure encryption.

The enterprise servers and operating systems will be upgraded in fiscal year 2004. Enterprise Mainframes have been upgraded to requisite computing capacity. Therefore, the major deficiencies cited in the classified IT infrastructure are no longer a problem for the FBI.

Although, several older applications have already been web-enabled, the five most significant investigative and counterterrorism applications are nearing replacement under the auspices of the Trilogy Program. Migration of the remaining applications will require further effort and funding. The problems cited were very significant, but they no longer represent the FBI's "Existing IT Environment" from a networking and computing perspective.

GAO Comment: Page 13 – "They added that they are currently in the process of developing an inventory of the FBI's existing (legacy) systems."

FBI Response: The inventory of legacy systems has been completed and is now part of the basis for managing the FBI C&A program. This inventory will be entered into the recently purchased Popkin EA management tool as part of the current systems baseline information.

GAO Comment: Page 13 – "resources allocated to this effort have been limited to about $1 million annually and four staff."

FBI Response: The FBI has not committed $1 million annually to EA. During FY2003 the FBI has devoted approximately $285,000 to EA. Base funding of $500,000 has been identified that can be applied to EA during FY2004. An executive assessment of EA status and needs is underway after which the necessary FY2004 funding will be determined and identified. Substantial EA funding, of approximately $6.5 million, that addresses EA, technical planning and systems engineering issues has been requested for FY2005 as part of the Aurora budget enhancement request. Substantial EA funding requests are also projected for FY2006 and for a steady-state commencing in FY2007. The dedicated architecture staff was previously at four. While the FBI is assessing EA needs, a matrixed staff is being provided to the Chief Architect.

GAO Comment: Page 15 – "Establish an architecture steering committee representing the enterprise and make the committee responsible for directing, overseeing, or approving the EA."

FBI Response: During April 2003, FBI management assigned an executive team to address EA. An FBI wide EAB has been established, comprised of FBI executives in SES and the SL positions, and is already reviewing architecture decisions. The EAB charter and Policy has been prepared and is nearing approval by the Deputy Director and will be promulgated throughout the enterprise.

GAO Comment: Page 15 – "Appoint a chief architect who is responsible and accountable for the EA, and who is supported by the EA program office and overseen by the architecture steering committee."

FBI Response: A chief architect has been appointed. The chief architect currently reports directly to the chair of the EAB. Appropriate staffing and other resources to support the chief architect have not yet been determined.

Staff is currently being provided on a matrixed basis. The charter for the chief architect and staff has not yet been prepared.

GAO Comment: Page 15 – "Use an architecture development framework, methodology, and automated tool to develop and maintain the EA."

FBI Response: An FBI Enterprise Architecture "Foundation Document" has been completed and approved. The FBI has selected the CIO Council's "Federal Enterprise Architecture Framework" as the basis for defining the FBI EA. The Popkin automated tool has recently been purchased. The methodology for EA development has not yet been selected.

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