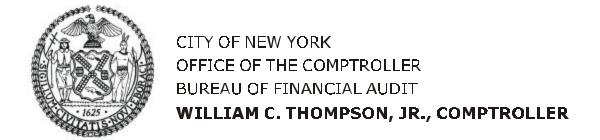# AUDIT REPORT

Audit Report on the Development and Implementation of the Disease-Tracking System, PRIME, By the Department of Health and Mental Hygiene

7A03-076

June 23, 2003

THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
1 CENTRE STREET
NEW YORK, N.Y. 10007-2341
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WILLIAM C. THOMPSON, JR.
COMPTROLLER

To the Citizens of the City of New York

Ladies and Gentlemen:

In accordance with the Comptroller's responsibilities contained in Chapter 5, § 93, of the New York City Charter, my office has performed an audit on the development and implementation of Disease-Tracking System, PRIME, by the Department of Health and Mental Hygiene. The results of our audit, which are presented in this report, have been discussed with officials from Department of Health and Mental Hygiene, and their comments have been considered in preparing this report.

Audits such as this provide a means of ensuring that City agencies are developing computer applications in an efficient, timely, and cost-effective manner.

I trust that this report contains information that is of interest to you. If you have any questions concerning this report, please contact my audit bureau at 212-669-3747 or e-mail us at audit@Comptroller.nyc.gov.

Very truly yours,

William C. Thompson, Jr.

Report: **7A03-076**
Filed: **June 23, 2003**

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The City of New York
Office of the Comptroller
Bureau of Financial Audit
EDP Audit Division

Audit Report on the
Development and Implementation of the
Disease-Tracking System, PRIME, by the
Department of Health and Mental Hygiene

7A03-076

AUDIT REPORT IN BRIEF

We performed an audit of the development and implementation of the Department of Health and Mental Hygiene's Disease-Tracking system, the Person Registry Information Management Environment system (PRIME). The system automates the collection, tracking, and analysis of disease reports in New York City by centralizing data from a large number of sources, such as private providers, hospitals, and laboratories, and by integrating its disease-tracking subsystems [1] in one system.

Audit Findings and Conclusions

PRIME was technically obsolete before it could be fully completed and was terminated by the Department of Health and Mental Hygiene (Department) in early 2002; therefore, the system did not meet its initial business and system requirements. We found that the Department did not employ a formal systems development methodology, nor did it employ an independent quality assurance consultant throughout the development process. Also, the Department did not comply with the Procurement Policy Board (PPB) regulations to procure services from two vendors, which contributed to the failure to develop PRIME despite the payments of more than $6.3 million to the vendors.

Audit Recommendations

To address these issues, we recommend that the Department:

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[1] The Communicable Disease Program, Sexually Transmitted Diseases, Directly Observed Therapy, AIDS, HIV, and Tuberculosis subsystems

Office of New York City Comptroller William C. Thompson, Jr.

➢ Ensure that it follows all applicable PPB Rules in its procurements. In that regard, all large systems development projects should be awarded by competitive sealed proposals and result in a formal contract that is registered with the Comptroller's Office. Such contracts should contain specific deliverables with due dates and related costs as well as penalties for nonperformance.

➢ Comply with all applicable provisions of Directive 18 when developing systems. In that regard, the Department should: employ a formal systems development methodology; engage an independent quality assurance consultant; ensure that executive management support and sponsorship and an experienced project manager are in place to oversee and coordinate the development process.

INTRODUCTION

Background

The Department of Health and Mental Hygiene (the Department) was created in 2002 by a merger of the Department of Health (Health) and the Department of Mental Health, Mental Retardation and Alcoholism Services. The Department's mission is to protect the health and mental health of all City residents through health promotion and disease prevention programs, and enforcement of City health regulations. Department programs and activities include: providing health information and laboratory services; performing disease investigations and surveillance; inspecting, permitting, licensing, and monitoring a wide range of enterprises related to public health; maintaining the City's health-related vital statistics; and registering and issuing birth and death certificates.

In 1994, in order to enhance Health's ability to monitor and manage its response to disease trends, its Bureau of Disease Intervention began planning a system development initiative known as the Person Registry Information Management Environment (PRIME) system. The purpose of PRIME was to automate the collection, tracking, and analysis of disease reports in New York City by centralizing data from a large number of sources, such as private providers, hospitals, and laboratories and by integrating its disease-tracking subsystems within one system.

In 1998, Health hired the IBM Corporation (IBM) to provide technical and consulting services for the design and development of PRIME. Under its contract with Health, IBM was to design the system, develop its business rules, create the common database for its subsystems, program the Communicable Disease Program subsystem, and prepare training materials. According to the documentation provided by the Department, IBM was paid $4.6 million for its work on PRIME. However, as of 2000, PRIME was still not developed, and the Department engaged another firm, Alternative Resources Corporation (ARC), to complete PRIME at an additional cost of $1.7 million. In 2001, ARC delivered a system that was only partially complete; it included just one subsystem, the Communicable Disease Program. However, the users were not comfortable

with this subsystem. In addition, the programming languages used by ARC to develop PRIME were obsolete before the system was complete.

Also, in 2001, the Federal Centers for Disease Control and Prevention (CDC) was in the process of finalizing its rules for the new National Electronic Disease Surveillance System, an electronically linked and integrated national disease surveillance system that consists of an Internet-based infrastructure and a set of standards. Therefore, the Department deferred PRIME's development until it performed a system assessment to determine whether PRIME met the new CDC standards.

The problems with PRIME and the system's lack of compliance with CDC standards led to a decision by the Department in 2002 to terminate PRIME before it was complete.

Objectives

The objectives of the audit were to evaluate whether:

- A structured methodology was followed when developing PRIME;
- PRIME meets its initial business and systems requirements;
- The system design allows for future enhancements and upgrades;
- PRIME, as a finished product, will meet overall goals as stated in the system justification; and
- The Department complied with all relevant Procurement Policy Board (PPB) Rules.

Scope and Methodology

Our fieldwork was conducted from August through December 2002. To achieve our objectives, we: interviewed Department officials; conducted a walk-through of the current Disease Intervention operation; reviewed project specifications documents, project proposals, contracts, purchase orders, and other PRIME-related material; and evaluated the Department's compliance with the PPB Rules.

Since the City does not have a formal systems development methodology, we used Comptroller's Internal Control and Accountability Directive 18, "Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems" (Directive 18), as a criterion for this audit. To meet our audit objectives, we also reviewed provisions of the PPB Rules and relevant sections of the New York City Charter.

This audit was conducted in accordance with generally accepted government auditing standards (GAGAS) and included tests of the records and other auditing procedures considered necessary. This audit was performed in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, § 93, of the New York City Charter.

Discussion of Audit Results

The matters covered in this report were discussed with Department officials during and at the conclusion of this audit. A preliminary draft report was sent to the Department officials and discussed at an exit conference held on May 20, 2003. On May 23, 2003, we submitted a draft report to Department officials with a request for comments. We received a written response from the Department on June 10, 2003, in which it partially agreed with the audit's findings stating:

> "The individuals who planned and implemented PRIME were attempting to attain a system that, at the time of development, was not technically feasible. Technology has changed, as has the approach recommended by the Federal government for this kind of critical effort. Before the end of 2003, we expect to complete the development of a disease surveillance system which will comply with the National Electronic Disease Surveillance Standards (NEDSS).

> "We agree that, as mentioned in the audit, the preferred method for identifying computer systems consultants is to prepare system specifications and business requirements that are included in a Request for Proposals. Your audits of our more recent technology procurements have found them to be satisfactory. However, this method is not mandated, and at the time the agency determined that there were adequate justifications for utilizing other methods."

The full text of the Department's comments is included as an Addendum to this report.

FINDINGS

Department officials stated that the development of PRIME was terminated in early 2002, before it was implemented. Therefore, we were unable to determine whether the system design allowed for future enhancements and upgrades. Accordingly, we were also unable to determine whether PRIME, as a finished product, met the overall goals as stated in the system justification. However, because PRIME was technically obsolete before it could be fully completed, it did not meet its initial business and systems requirements.

With regard to compliance with PPB Rules, we found the method used to procure services from IBM was inappropriate for a project of this magnitude and contributed to the failure to develop PRIME despite the payment of more than $4.6 million to IBM. In fact, before the entire project was terminated the Department spent an additional $1.7 million to complete a single subsystem using another vendor. Moreover, the Department could not provide us with all the required documentation that directly relates to its contract with IBM. Missing documentation included IBM's Scope of Work statement and the monthly IBM status reports submitted to Health.

Moreover, in its attempt to develop PRIME, the Department did not employ a formal systems development methodology, nor did it employ an independent quality assurance consultant throughout the development process. After the project was terminated, Department officials agreed that the development of PRIME could have been better monitored and overseen had a third party been involved.

These issues are discussed in detail in the following sections of this report.

Initial Business and System Requirements Were Not Met

PRIME was designed as a centralized computer system that would provide a common framework for electronic disease reporting to local, state, and federal government entities. This would be accomplished by creating individual subsystems—for communicable diseases, AIDS, HIV, tuberculosis, etc.—using a common interface to a centralized database that would provide easy storage and retrieval of patient records. However, PRIME was partially completed, and only one of the subsystems, Communicable Diseases Program, was workable. According to Department officials, users were not comfortable with some of the business rules incorporated into the system. Users also complained about the "traffic" problems when many used the system simultaneously. Moreover, since the research and development of PRIME had taken eight years, certain components of the system were technically obsolete before the entire system could be fully completed. Specifically, the programming languages used to create PRIME were obsolete, and the system had no Internet capability to allow data files to be efficiently imported and exported. Finally, even if PRIME had been fully developed, it would not have been compliant with CDC National Electronic Disease Surveillance Standards. These standards are to ensure the ability of public health agencies nationwide to exchange patient and disease data among disease program areas within public health

jurisdictions and among local, state, and federal government agencies. The inherent problems with PRIME, previously discussed, and the system's lack of compliance with CDC standards led the Department to terminate the development of PRIME in 2002.

Inappropriate Procurement Practices

The first step in a systems development project is determining the needs of the agency and developing the specifications and business requirements of the system. This information is used to prepare a Request for Proposal (RFP) to solicit vendor proposals. According to the PPB Rules, "procurement by competitive sealed proposals is the preferred method for the procurement of non-commodity data processing equipment, products and services." The agency reviews the proposals, selects, and then contracts with a vendor to develop the system. The contract would contain specific deliverables with due dates, related costs, and penalties for non-performance. However, the Department followed none of these procedures for PRIME.

In the case of PRIME, the Department entered into a "Customer Agreement" with IBM in 1998 through an existing New York State Comprehensive Services Agreement. Under the Customer Agreement, IBM was to provide technical and consulting services to the Department. These services included:

- Conducting a thorough needs analysis, submitting a detailed Scope of Work for each project identified;
- Providing the Department with a framework for project communications;
- Developing and monitoring the project plan;
- Providing on-going technical support and assisting with other general system tasks.

The agreement with IBM was based on billable hours rather than on specific deliverables, which made it difficult to control the project's costs and gave IBM no incentive to produce deliverables within prescribed deadlines. However, under that agreement, the Department ultimately paid IBM $4,642,685 for its work on PRIME.

Although there was a formal agreement between IBM and the Department, Department officials never presented that agreement or any of its modifications to the Comptroller's Office for registration, as required by the City Charter. The Comptroller's Office would not have registered this agreement since it was not competitively awarded, did not contain specific deliverables with due dates and related costs, and did not contain penalties for nonperformance. In addition, the Department provided no documentation to show that it followed a "mini-bid" process as required by New York State Procurement Council guidelines. Under the mini-bid process, bids are obtained from vendors on a pre-approved list maintained by the New York State Office of General Services. Moreover, the Department procurement files did not contain a document signed by the Agency Chief Contracting Officer of the Department stating that "appropriate market research and/or price analysis has been conducted in order to determine that the price offered via the New York State contract is lower than the prevailing market price."

In addition, we could not determine whether the Department had received all system deliverables that were due from IBM, since the Department could not provide us with copies of IBM's Scope of Work statement and monthly status reports.

As mentioned earlier, the Department hired ARC to complete PRIME at an additional cost of $1.7 million. As with the IBM contract, the Department did not follow PPB Rules, City Charter requirements, or New York State Procurement Council guidelines when it initially selected ARC. In fact, the Department paid ARC more than $1.3 million before making any attempt to comply with procurement rules. At that point the Department employed a mini-bid process in which it solicited bids from six vendors, including ARC, to complete PRIME. Department records revealed that ARC was the only vendor who submitted a bid, which conveyed the impression that ARC's prior experience on this project gave it an unfair advantage over the other solicited contractors.

According to Department officials, even though PRIME was terminated, the business rules that were created for it are still applicable for each subsystem, and PRIME's database can still be used for each subsystem. However, we believe that had the Department carefully compared the system requirements with user requirements at the beginning of project development, it could have made a prompt decision to terminate the project, thereby minimizing the cost of a system that obviously provided little or no benefit to the City.

By ignoring the City's normal procurement practices, the Department violated its obligation to encourage competition, prevent favoritism, and obtain the best value in the interest of the City and the taxpayers. Despite having paid IBM and ARC more than $6.3 million (including labor costs and equipment), PRIME—in development since 1994—is obsolete and has been terminated.

Department Response:

"We agree that as mentioned in the audit, the preferred method for identifying computer systems consultants is to prepare system specifications and business requirements that are included in a Request for Proposals. However, this method is not mandated, and at the time the agency determined that there were adequate justifications for utilizing other methods.

"IBM procurement

- "At the time that IBM was retained by the agency for the PRIME development, the agency was not in a position to specify agency requirements in detail sufficient for an RFP which would lead to a contract with specific deliverables, due dates, related costs, and penalties for non-performance. An agency decision, allowed under City rules, was made to enter into an arrangement with IBM based on billable hours.

- "The Comptroller is correct in noting that the agreement with IBM was not presented for registration. This was neither a requirement nor standard procedure. The Department had been following the procedure set down by DCAS [Department of Citywide Administrative Services] for purchases off State OGS [Office of General Services] contracts; that is, present the Purchase Order to DCAS for processing. Procurements from State contracts were not required to be submitted for registration, although some agencies did so.

- "The Department conducted market research at the time that the Purchase Orders were set up. The program responsible for this procurement researched eight computer consultant firms in the State OGS list. IBM's prices for hourly services for the required systems analysts were the lowest of the eight surveyed. Based on this survey, the ACCO [Agency Chief Contracting Officer] determined, and DCAS accepted, that appropriate market research had been conducted.

"ARC procurements

- "PRIME continued to be an ambitious and complex undertaking, intended to be implemented over a number of years. Even after the preliminary work by IBM, we still needed to develop the parameters and capabilities of the project with the vendor as development progressed, and as we learned what a system would in fact be capable of. Therefore, DOH [Department of Health] solicited hourly rates to be drawn upon as a requirement contract. This appeared to be the most appropriate and prudent method.

- "After soliciting hourly rates from a total of five vendors from the NYS OGS [New York State Office of General Services] list, a Purchase Order was issued to ARC. The ARC pricing of $185/hour for project manager was the lowest of the three price quotes submitted. The price analysis was conducted by the MIS Director for the Bureau of Disease Intervention, approved by the Bureau's Assistant Commissioner. The ACCO certification was made by the Agency ACCO on March 15, 2000. The documentation was submitted to and approved by DCAS.

- "As noted in the audit, the Department did a subsequent mini-bid. This new procurement was done as a New York State OGS bid with a Project Definition released on November 29, 2000, and 35 vendors were solicited. It called for three PRIME-related deliverables. On the proposal due date, only ARC submitted a bid. Five other vendors indicated that they did not have resources available or that the work was outside their core activities.

"Since the time covered by these procurements, the ACCO has established procedures for OGS minibid purchases which are patterned after PPB rules for RFPs and MOC [Mayor's Office of Contracts] standards, although they are not required by the State.

- "The Department's Bureau of Management Information Services has assumed day-to-day management for major technology projects in the agency. This ensures that technology projects are based on agency and City standards, well-defined and deliverable-based.

- "The Assistant Commissioner for MIS reviews the minibid document to ensure that it is sufficiently detailed and appropriate to the activity. Rating committees are established, and formal proposals are submitted and rated. The ACCO receives and reviews the documentation concerning the rating process.

- "In all cases, vendors are now being directed to submit deliverable-based bids rather than hourly pricing for consulting services.

- "A staff member in the ACCO's office trained in OGS rules and in technology procurement provides oversight of all uses of OGS contracts.

- "Agreements are now prepared and signed, detailing mutually agreed upon scopes and terms.

- "A new process has since been agreed to in conversations between MOC, the Law Department and the Comptroller. An 'Interim Process for Intergovernmental Procurement Transactions,' promulgated in a memorandum from MOC dated September 5, 2002, now calls for Comptroller registration."

Auditor Comment:

If, as the Department contends, it was not "in a position to specify in detail sufficient for an RFP the needs and scope of the project" when IBM was originally hired, the Department should have solicited vendors and entered into a formal contract to continue PRIME development once IBM completed the needs assessment (defining and documenting the business processes, work rules, and system requirements). Instead, the Department chose to continue development using IBM through billable-hours, rather than through a formal contract with specific deliverable, due dates, related costs, and non-performance penalties.

In addition, the Department contends that "market research was conducted at the time that the Purchase orders were set up." However, the documents provided by the Department showed only the names of vendors with various dollar amounts. Details describing the process used for examining and evaluating the proposed prices were not disclosed, and the reasons that the Department selected the specific vendor were not part of the documentation.

Moreover, the Department is incorrect in its assertion that registration of these agreements was not required because it had used, albeit improperly, New York State contracts. City Charter Sections 93(p) and 328(a) require that all contracts and agreements be registered by the Comptroller's Office prior to implementation.

Finally, we are pleased that the Department has agreed to follow the PPB Rules and has established procedures that ensure adherence to these rules.

Failure to Follow Directive 18

The Department did not employ a formal systems development methodology in its attempt to develop PRIME. Directive 18 states that:

"The risks inherent in agency systems development projects can be significantly alleviated by conducting them in accordance with a formal systems development methodology. Such methodologies help insure that system development efforts are conducted in a structured, logical, organized, and efficient manner and help insure that systems meet their objectives, and are developed within budget and time constraints."

In addition, Directive 18 states that engaging "an independent quality assurance consultant to assist the agency monitor and review the work of the development and integration team" can help "insure the success of system development projects." Again, the Department ignored this provision and allowed IBM and ARC to continue with the development of PRIME without such oversight. After the project was terminated, Department officials agreed that the development of PRIME could have been better monitored and overseen had a third party been involved.

Moreover, given the limited documentation available, we could not determine whether the development of PRIME had active executive management support and sponsorship. We also could not determine whether an experienced project manager was in place to oversee and coordinate the process. These factors are critical for the success of systems development projects, according to Directive 18.

By their nature, system development projects are technically and organizationally problematic and prone to a number of risks that can result in runaway costs, extended development periods, and failure to meet needs and objectives, and, in the worst cases, outright failure. We believe that the lack of a formal systems development methodology combined with the absence of independent oversight contributed to the apparent failure of this project.

> ***Department Response:*** "Directive 18 provides broad recommendations for systems development that are widely accepted as best practices in both government and corporate industries. These include the importance of executive sponsorship, the importance of an experienced technical project manager, and the employment of a systems development methodology. While the initial PRIME effort had both executive management support and a dedicated technical project manager, we are in agreement that the initial project effort did not employ a formal, industry-accepted systems development methodology.
>
> "Our current development of an electronic disease surveillance system follows a formal, well-defined systems development life cycle, from requirements and design, through coding, testing and user acceptance. As evidenced by recent audits by the Comptroller of other successful DOHMH [the Department] systems development efforts, employing this methodology has resulted in the delivery of systems that meet all of the requirements defined at the outset of the project.
>
> "DOHMH also believes that engaging an independent quality assurance consultant to review the work of the development and integration team can, depending upon the degree of complexity, level of integration, and time to develop, help insure the success of systems development projects. DOHMH is currently considering the engagement of an independent quality assurance consultant to review this effort, taking into consideration budget and project timeline implications that may result."
>
> ***Auditor Comment:*** We are pleased that the Department has agreed to follow Directive 18 as it pertains to using a system development methodology. However, we feel that the Department's current efforts to develop PRIME will be greatly strengthened by hiring an independent quality assurance consultant. As stated earlier, we believe that the lack of independent oversight contributed the apparent failure of this project.

RECOMMENDATIONS

The Department should:

1. Ensure that it follows all applicable PPB Rules in its procurements. In that regard, all large systems development projects should be awarded by competitive sealed proposals and result in a formal contract that is registered with the Comptroller's Office. Such contracts should contain specific deliverables with due dates and related costs as well as penalties for nonperformance.

Agency Response: "We demonstrated to the auditors during this as well as other EDP audits that for at least two years we have had appropriate procedures for IT [information technology] procurement, including the development of extensive specifications, competitive procurement, proposal evaluation procedures, and the drafting of contract documents. Now that guidelines have been issued for the submission of NYS OGS contracts to the Comptroller for registration, we are happy to comply with them, and have already done so.

"All of the contracts that we engage in for IT systems development have a liquidated damages clause for non-performance. The NYS OGS contract has rather severe liquidated damages, and in addition there is a 10% withholding of all payments until final delivery. Our contracts office has adopted the liquidated damages clause found in the NYS OGS contracts as the starting point for negotiations with IT vendors on non-OGS contracts."

Auditor Comment: We are pleased that the Department has agreed to follow PPB Rules.

2. Comply with all applicable provisions of Directive 18 when developing systems. In that regard, the Department should: employ a formal systems development methodology; engage an independent quality assurance consultant; ensure that executive management support and sponsorship and an experienced project manager are in place to oversee and coordinate the development process.

Agency Response: "The current Communicable Disease Surveillance System (CDSS) has full executive management support. DOHMH has assigned an experienced technical project manager to oversee the current CDSS. DOHMH has already shared with the Comptroller evidence of the formal systems development methodology currently being used on the project. DOHMH is considering the use of an independent quality assurance consultant to review development efforts."

Auditor Comment: We are pleased that the Department has agreed to follow Directive 18 as it pertains to using a system development methodology. However, as stated earlier, the Department's current efforts would be greatly enhanced by hiring an independent quality assurance consultant to help ensure that the project is completed according to the Department's expectations.

DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF THE COMMISSIONER

THOMAS R. FRIEDEN, M.D., M.P.H.
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June 9, 2003

Greg Brooks
Deputy Comptroller for Policy, Audits, Accountancy & Contracts
The City of New York Office of the Comptroller
1 Centre Street, Room 530 South
New York, New York 10007-2341

Dear Mr. Brooks:

The Department of Health and Mental Hygiene (DOHMH) is responding to the draft audit report on the Development and Implementation of PRIME.

The individuals who planned and implemented PRIME were attempting to attain a system that, at the time of development, was not technically feasible. Technology has changed, as has the approach recommended by the Federal government for this kind of critical effort. Before the end of 2003, we expect to complete the development of a disease surveillance system which will comply with the National Electronic Disease Surveillance Standards (NEDSS).

We agree that, as mentioned in the audit, the preferred method for identifying computer systems consultants is to prepare system specifications and business requirements that are included in a Request for Proposals.   Your audits of our more recent technology procurements have found them to be satisfactory. However, this method is not mandated, and at the time the agency determined that there were adequate justifications for utilizing other methods.

Attached is a more detailed response to the findings and the recommendations. We appreciate the courtesy and professionalism of your audit staff in the performance of this audit. If you have any questions or need further information, please contact Charles Troob, Assistant Commissioner, Business Systems Improvement at (212) 788-4757.

Sincerely,

Thomas R. Frieden, M.D., M.P.H.
Commissioner

cc: Vince Liquori, Assistant Director for Support Services
TRF/ct

DETAILED REPONSE TO DRAFT AUDIT REPORT ON THE DEVELOPMENT AND
IMPLEMENTATION OF THE DISEASE-TRACKING SYSTEM, PRIME, BY THE
DEPARTMENT OF HEALTH AND MENTAL HYGIENE
7A03-076

This audit report covers a set of activities performed in support of a technological initiative
which was terminated by DOHMH in early 2002.

PRIME was a pioneering but unsuccessful attempt to enable the exchange of patient disease data
between different disease programs in DOHMH, and with our Federal and state partners.

This effort was based upon an assumption that disease surveillance systems that identify
individual patients could be efficiently linked through common data standards and re-useable
application code. It used traditional 2-tiered client server architecture, the most relevant systems
architecture at the time. There were many other unsuccessful attempts to develop similar
systems across the country.

There are now new possibilities for successful development in this area, because of the evolution
of browser-based application frameworks, web services technology, SOAP, and XML
messaging.

The National Electronic Disease Surveillance Standards (NEDSS) were promulgated by CDC as
a national initiative to take advantage of these promising technologies, and to ensure the ability
to exchange patient and disease data between disease program areas within public health
jurisdictions, and between local, state, and Federal jurisdictions. Similar to the original intent of
PRIME, NEDSS seeks to address the need for secure data exchange for surveillance and disease
reporting.

The DOHMH has made significant progress in implementing a disease surveillance system in
accordance with the NEDSS standards. Development of a disease surveillance system is
expected to be completed before the end of 2003. This Communicable Disease Surveillance
System, will includes all communicable diseases except Tuberculosis, Sexually Transmitted
Diseases, and HIV, which are currently managed on separate systems. We completed a NEDSS
assessment of these and will ultimately make these NEDSS compliant, through replacement or
modification.

This new system utilizes web services technology
  • to ensure the seamless exchange of information between partners
  • to develop core web services to be shared by all applications.

These core services include:
  • address matching and geocoding
  • patient matching and de-duplication.

These core services will provide a standardized way to manage patient and address information so that it is comparable across different systems.

We are confident that our current progress, and the availability of appropriate technology, will ensure the successful delivery of an electronic disease surveillance and reporting system.

Our comments on the audit findings are as follows:

Initial Business and Systems Requirements Were Not Met

This section is an accurate description of the results of the PRIME initiative and the reasons for its cancellation.

Inappropriate Procurement Practices

This section of the audit discusses the procurement for services from IBM and ARC, and also describes our current procurement practices for projects of this magnitude. We agree that as mentioned in the audit, the preferred method for identifying computer systems consultants is to prepare system specifications and business requirements that are included in a Request for Proposals. However, this method is not mandated, and at the time the agency determined that there were adequate justifications for utilizing other methods.

IBM procurement

- At the time that IBM was retained by the agency for the PRIME development, the agency was not in a position to specify agency requirements in detail sufficient for an RFP which would lead to a contract with specific deliverables, due dates, related costs, and penalties for non-performance. An agency decision, allowed under City rules, was made to enter into an arrangement with IBM based on billable hours.

- The Comptroller is correct in noting that the agreement with IBM was not presented for registration. This was neither a requirement nor standard procedure. The Department had been following the procedure set down by DCAS for purchases off State OGS contracts; that is, present the Purchase Order to DCAS for processing. Procurements from State contracts were not required to be submitted for registration, although some agencies did so.

- The Department conducted market research at the time that the Purchase Orders were set up. The program responsible for this procurement researched eight computer consultant firms in the State OGS list. IBM's prices for hourly services for the required systems

analysts were the lowest of the eight surveyed. Based on this survey, the ACCO determined, and DCAS accepted, that appropriate market research had been conducted.

ARC procurements

- PRIME continued to be an ambitious and complex undertaking, intended to be implemented over a number of years. Even after the preliminary work by IBM, we still needed to develop the parameters and capabilities of the project with the vendor as development progressed, and as we learned what a system would in fact be capable of. Therefore, DOH solicited hourly rates to be drawn upon as a requirement contract. This appeared to be the most appropriate and prudent method.

- After soliciting hourly rates from a total of five vendors from the NYSOGS list, a Purchase Order was issued to ARC. The ARC pricing of $185/hour for project manager was the lowest of the three price quotes submitted. The price analysis was conducted by the MIS Director for the Bureau of Disease Intervention, approved by the Bureau's Assistant Commissioner. The ACCO certification was made by the Agency ACCO on March 15, 2000. The documentation was submitted to and approved by DCAS.

- As noted in the audit, the Department did a subsequent mini-bid. This new procurement was done as a New York State OGS bid with a Project Definition released on November 29, 2000, and 35 vendors were solicited. It called for three PRIME-related deliverables. On the proposal due date, only ARC submitted a bid. Five other vendors indicated that they did not have resources available or that the work was outside their core activities.

Current procedures

Since the time covered by these procurements, the ACCO has established procedures for OGS minibid purchases which are patterned after PPB rules for RFPs and MOC standards, although they are not required by the State.

- The Department's Bureau of Management Information Services has assumed day-to-day management for major technology projects in the agency. This ensures that technology projects are based on agency and City standards, well-defined and deliverable-based.
- The Assistant Commissioner for MIS reviews the minibid document to ensure that it is sufficiently detailed and appropriate to the activity. Rating committees are established, and formal proposals are submitted and rated. The ACCO receives and reviews the documentation concerning the rating process.
- In all cases, vendors are now being directed to submit deliverable-based bids rather than hourly pricing for consulting services.

- A staff member in the ACCO's office trained in OGS rules and in technology procurement provides oversight of all uses of OGS contracts.
- Agreements are now prepared and signed, detailing mutually agreed upon scopes and terms.
- A new process has since been agreed to in conversations between MOC, the Law Department and the Comptroller. An "Interim Process for Intergovernmental Procurement Transactions," promulgated in a memorandum from MOC dated September 5, 2002, now calls for Comptroller registration.

Failure to Follow Directive 18

Directive 18 provides broad recommendations for systems development that are widely accepted as best practices in both government and corporate industries. These include the importance of executive sponsorship, the importance of an experienced technical project manager, and the employment of a systems development methodology. While the initial PRIME effort had both executive management support and a dedicated technical project manager, we are in agreement that the initial project effort did not employ a formal, industry-accepted systems development methodology.

Our current development of an electronic disease surveillance system follows a formal, well-defined systems development life cycle, from requirements and design, through coding, testing and user acceptance. As evidenced by recent audits by the Comptroller of other successful DOHMH systems development efforts, employing this methodology has resulted in the delivery of systems that meet all of the requirements defined at the outset of the project.

DOHMH also believes that engaging an independent quality assurance consultant to review the work of the development and integration team can, depending upon the degree of complexity, level of integration, and time to develop, help insure the success of systems development projects. DOHMH is currently considering the engagement of an independent quality assurance consultant to review this effort, taking into consideration budget and project timeline implications that may result.

Recommendations

The Department should:

1. Ensure that it follows all applicable PPB rules in its procurements. In that regard, all a large systems development projects should be awarded by competitive sealed proposals and result in a formal contract that is registered with the Comptroller's Office. Such contracts should contain specific deliverables with due dates and related costs as well as penalties for non-performance.

Response: Response: We demonstrated to the auditors during this as well as other EDP audits that for at least two years we have had appropriate procedures for IT procurement, including the development of extensive specifications, competitive procurement, proposal evaluation procedures, and the drafting of contract documents. Now that guidelines have been issued for the submission of NYS OGS contracts to the Comptroller for registration, we are happy to comply with them, and have already done so.

All of the contracts that we engage in for IT systems development have a liquidated damages clause for non-performance. The NYS OGS contract has rather severe liquidated damages, and in addition there is a 10% withholding of all payments until final delivery. Our contracts office has adopted the liquidated damages clause found in the NYSOGS contracts as the starting point for negotiations with IT vendors on non-OGS contracts.

2. Comply with all applicable provisions of Directive 18 when developing systems. In that regard, the Department should: employ a formal systems development methodology; engage an independent quality assurance consultant; ensure that executive management support and sponsorship and an experienced project manager are in place to oversee and coordinate the development process.

Response: The current Communicable Disease Surveillance System (CDSS) has full executive management support. DOHMH has assigned an experienced technical project manager to oversee the current CDSS. DOHMH has already shared with the Comptroller evidence of the formal systems development methodology currently being used on the project. DOHMH is considering the use of an independent quality assurance consultant to review development efforts.