Department of Budget & Management

State of Maryland Information Technology Master Plan

FY 2008

July 2006

Executive Summary

The DBM Office of Information Technology (OIT) recognizes the vital role technology plays in the effective delivery of services to the citizens of the State. It is incumbent on the information technology (IT) professionals of Executive Branch agencies to deploy technology in support of the fundamental business drivers represented by the five pillars of the Ehrlich Administration: Fiscal Responsibility, Education, Health and the Environment, Public Safety and Safer Neighborhoods, and Commerce. The intent of this plan is to provide an executive summary of the IT strategies that are being implemented to achieve those results. Further, it serves as a general guideline for agencies in preparation of their agency-specific IT Master Plans (ITMP).

The IT objectives that support these drivers are: (a) adapt technology that improves the quality of service to citizens, (b) collaboratively consolidate existing technology and information to increase the efficiency of agency operations, (c) reduce dependency on custom applications, (d) migrate towards data standards and (e) implement appropriate security systems and procedures to protect the State's assets and sensitive information. These objectives represent a continuing evolution of the State IT Master Plan goals that were established in FY 2004, refined in FY 2005, FY 2006 and FY 2007, and will be further refined in FY 2008. These objectives will continue to influence the direction of IT projects and investment decisions in future years.

The State's IT and supporting processes have undergone a planned methodical transformation. The purpose has been to establish a stabilized baseline for the State's technology and technology organizations capable of sustaining initiatives focused on improved services to the State's citizens. Stability has been accomplished as a result of:

- Establishing a state-level IT Project Management Office (PMO) to manage the portfolio of major IT projects and statewide contracts, and PMOs at certain agencies to manage key IT investments. An IT portfolio management system is now being implemented to better track the progress and status of the State's IT investments. A comprehensive IT Master Contract has been established, creating substantially more options for agencies to access available IT services and products, while providing greater access to procurement opportunities for the State's business partners.

- Implementation of the State's private network (networkMaryland™) is nearing completion with the addition of all nine Eastern Shore counties. Only three jurisdictions remain to be added to the network. The build out phase of the network will be completed by the end of the second quarter FY 2007. Approximately two-thirds of the State's formerly leased services have already been migrated to the network. All State agencies and numerous county and municipal governments now receive Internet, Internet 2 and data transport services from networkMaryland™, substantially improving information security and reducing service costs.

- Under the auspices of the Maryland Technology Architecture Framework (MTAF), an inventory of IT hardware, software and systems has been completed.

- Wireless interoperability planning and issue resolution are now being addressed by a formal process and structure that includes equal representation from State, county and municipal governments. This process encourages the sharing of resources and technology that will foster a lower cost and accelerated completion of an interoperable system. A contract has been awarded to design a statewide interoperable radio system and to build a proof of concept site.

- A recently completed assessment of the State's IT disaster recovery capability has defined a more unified structured approach to ensure that the State's most crucial data systems will continue to operate if primary service is disrupted.

- The deployment of web-based E-Government services continues to proliferate; with all agencies providing some level of web-based services.

- A contract has been awarded to assess the State's Enterprise Resource Programs, including the personnel, ledger, time keeping and the Central Collections Unit systems. When complete, this study will provide insight into potential vulnerabilities and proposed mitigating actions for these essential systems.

Agencies continue to make substantial progress towards realizing the goals of the State ITMP. Agencies are increasingly collaborating to deliver services in an efficient and effective manner and deploying innovative Internet-based services. This growing inter-dependency necessitates that enterprise IT planning for the State of Maryland continues to focus on gaining cross-unit efficiencies through the implementation of standards-based IT systems.

However, there remain a number of impediments that prevent a true optimization of the systems supporting agency business requirements. One such impediment is the diversity of missions and customer service requirements of the agencies. For example, case management for child welfare is significantly different than case management for public safety. It is unrealistic to expect a single case management system to support both missions. Secondly, due to the myriad of systems that have evolved over the years, the State will continue to have a number of statewide/agency-specific hybrid systems for several years. To optimize the inventory of legacy systems requires a number of years for agencies to assess, plan, fund and execute projects to consolidate systems supporting their core missions. Consequently, funding requests for large scale migration to new all-encompassing data systems is not anticipated. It is imprudent for State government to undertake such a cost prohibitive, high risk strategy that is likely to result in only marginal improvement in State-provided services. Maryland will continue to improve and modernize IT systems through a methodical, incremental process based on the five drivers referenced above.

Information Technology Results and Plans

Three strategic initiatives from previous State IT Master Plans have sufficiently matured to the point that they no longer warrant classification as specific initiatives. These initiatives do, however, remain important to the continued success of the State's IT systems and will be improved, modified and continually refined. They are:

1. Professional Project Management: DBM OIT has fully staffed a PMO to implement the State's IT project oversight methodology. In addition to the project/contract management techniques and capabilities mentioned earlier, project peer review committees and targeted independent verification and validation of IT projects continue to be valuable tools in the management of IT projects. The PMO has expanded the project portfolio to include not only projects funded via the Major Information Project Development Fund, but also major IT projects receiving funding from other sources. The PMO continues working to integrate sound project management methodologies into strategic planning, budgeting and oversight processes, ensuring project expectations are realized for cost, schedule and improved operations and customer service.

2. Web Site Consolidation and Standardization: Web standards have been implemented across the agencies. A review process is in place to ensure that agencies continue to adhere to the standards, including compliance with Non-Visual Access standards. DBM migrated the hosting of the www.maryland.gov portal from an external arrangement to an internal one resulting in reduced operational costs and improved service delivery. With over 5 million unique visitors each year, it is imperative that the State's portal as well as all agency web sites continue to support a positive customer experience similar to large private sector enterprises with a clear branding of web sites, expanded search capacities and a proliferation of web enabled transactions.

3. Build out of networkMaryland™: By the second quarter of FY 2007, build out of the network will have been completed in all 24 jurisdictions in the State (23 counties and Baltimore City). Each jurisdiction will have a central service delivery point where State, county and municipal network customers can obtain Internet and data transport services. With the core build out of networkMaryland complete, the focus of FY 2008 will be on continued customer migration to the network and implementing new core services such as Voice over Internet Protocol (VoIP).

Consistent with other recent Maryland State IT Master Plans, strategic initiatives are selected on the basis of enabling systemic, gradual improvement that, over a period of time, support improving the efficient delivery of services by the maximum number of agencies. Eight FY 2008 initiatives have been identified based on providing a continuing evolvement of a concise, sustainable direction for IT across all State agencies. Of the eight initiatives, six are a continuation from prior plans and two are new. The eight strategic initiatives for FY 2008 are:

1. Establish technical standards and enterprise architecture,
2. Establish a consolidated and enhanced disaster recovery site,
3. Develop data format standards for collaborative information exchange,
4. Complete migration to networkMaryland™ and introduction of new services,

5. Consolidate common information platforms,
6. Standardize and consolidate Geographical Information Systems,
7. Modernization core statewide business systems, and
8. Establish interoperability of wireless public safety communications systems.

Technical Standards and Enterprise Architecture

State agencies have historically operated in a largely decentralized fashion with a great deal of autonomy. This has provided a productive environment for customized solutions and individual problem solving. However, a large diversity of technology platforms and multiple versions of similar hardware and software have evolved in this environment. In addition to high maintenance and training costs, the diversified technology base has limited the benefits of economies of scale, statewide interoperability, and resource sharing. Recently, the IT industry has introduced numerous standards-based products that can now be used in lieu of custom products.

In order to realize these benefits, statewide technical standards and an enterprise architecture (EA) must be established to foster an environment conducive to effective strategic IT planning and operational decision-making. To accomplish this, OIT initiated the MTAF project. Begun in FY 2005 the MTAF project has resulted in the Technical Reference Model (TRM), a repository of information characterizing statewide IT assets. The TRM is the foundation for discerning the number and types of various systems currently operating in the State, and the development of statewide technology standards. This effort, in conjunction with other strategic initiatives, will allow the State to gradually migrate to common platforms over a number of years.

MTAF has evolved into a valuable tool supporting State agency planning and operational requirements. With the collaborative support of Executive Branch agencies, the TRM and EA continue to mature: a governance structure to oversee the continued accuracy of the technical standards; technical standards committees evolving into a cohesive standards board; further integration into the IT master planning and project funding processes; and expanding the TRM to include deployed systems and supported business functions. Incremental benefits will continue to be realized as the EA is developed, with maximum value being achieved when it is fully developed.

Consolidated Disaster Recovery Site

Nearly every agency manages systems that are critical to their mission. Each agency has established some level of backup and recovery processes. However, the recovery arrangements are inconsistent and not coordinated across agencies. Consequently, a major regional disruption, such as a widespread power grid failure or natural disaster, could cause State agencies significant difficulties in restoring important services and systems. Some of the State's most critical data centers have contracts with third parties to provide disaster recovery back up. This is an effective arrangement for short-term restoration caused by localized events, but the severe

weather in the gulf region last year clearly demonstrated such short-term solutions are ineffective when faced with more widespread longer duration disasters.

As reflected in the FY 2006 ITMP, a disaster recovery assessment contract was awarded to assess the status of agency disaster recovery capabilities for critical Maryland data centers, and to identify potential risk mitigation strategies. Completed in FY 2006, the study validated the significance of the risks associated with the State continuing to rely upon third party 30-day restoration services as the primary recovery strategy. DBM has submitted an FY 2008 capital project request to establish a multi-agency consolidated disaster recovery site that would provide perpetual hot, warm and cold recovery services for all agencies. As is the case with all major IT projects, this effort will be thoroughly examined in a fully developed business case to validate the investment. Options to developing an in-state disaster recovery site will be evaluated for appropriateness in light of desired characteristics (i.e. proximity to networkMaryland™, accessibility, cost to acquire, etc.). Once completed, the disaster recovery facility will assure continued delivery of the State's critical data services in all except the most extreme situations. Alternatively, during the planning phase of this project, DBM will continue to search for a suitable public/private partnership arrangement that could reduce the overall cost of establishing an appropriate multi-agency disaster recovery center. When completed, this initiative will improve the State's ability to protect critically important data systems and eliminate the need for costly individual arrangements by each agency

Data Standards

The continued collaboration and standardization of agency IT operations have proven effective and provide a natural impetus towards the next steps in the maturation of statewide IT capabilities. The State has already implemented standards for web based services and is well on the way towards wide ranging technical standards as a result of the MTAF initiative. Data standards are equally important towards maximizing opportunities to share information quickly and accurately between agencies and governments.

Presently, data standards exist at each agency to govern data that is unique to their missions. However, citizens often receive services from multiple agencies. Currently, agencies do not have a standard method of capturing, storing and sharing common data, thereby making it more complicated and difficult for agencies to provide quality services. Having the ability to share data across agencies also makes it less cumbersome for citizens to provide information to State agencies and to monitor the status of services being received.

The federal government has been working to address a similar initiative. In 2005, the Department of Justice and Department of Homeland Security initiated the National Information Exchange Management (NIEM) program (niem.gov). This approach encourages the use of extensible mark-up language as the information exchange standard. Consequently, information sharing can occur without the need to replace or upgrade existing systems. As the standards evolve, the State may benefit by implementing these federal standards; particularly at agencies with first responder, security and crisis management responsibilities.

During FY 2008, DBM, in conjunction with other Executive agencies will evaluate the value, complexity and costs associated with either adopting State data standards or the NIEM

data standards as a means to facilitate information sharing, while preserving appropriate line of business standards. All data sharing initiatives will comply with Federal and State privacy statutes.

networkMaryland™ Migration

networkMaryland™ continues to provide significant value to the State. networkMaryland™ provides the means for State agencies, county governments and municipalities to securely access the Internet, Internet2, and transport data between locations (both Intra and Inter Local Access and Transport Area) at a cost significantly below that for similar services from commercial carriers. Having a reliable, robust and secure network has allowed all remaining customers of the legacy Financial Management Information System (FMIS) network to be migrated to networkMaryland™, allowing the legacy network to be decommissioned. networkMaryland™ presents a significant opportunity for agencies to collaborate and centrally host common business applications and services. By operating its own network, the State is less susceptible to the capacity limitations that sometimes occur on commercial networks.

The networkMaryland™ project will complete the network's core backbone by the end of the second quarter FY 2007 with the establishment of a point of presence in each of the State's 24 jurisdictions. On the Eastern Shore, the nine service delivery points were established via a State-owned microwave system. The microwave system is forecasted to reach capacity in approximately 2010. DBM has submitted an FY 2008 capital project funding request that would allow the State to enter into a public/private partnership for the purpose of constructing an Eastern Shore fiber optic based backbone to address this capacity limitation. The microwave system would be repurposed to serve as a redundant path for critical services in the event the fiber optic backbone is interrupted.

As part of the effort to maximize the network's value, additional services are continually evaluated. One such service is Voice over Internet Protocol (VoIP). VoIP has the potential to further improve agency telecommunication costs. A pilot implementation will be undertaken in FY 2007. Should this pilot prove successful, VoIP may become a standard service offering for the network's customers in FY 2008.

Consolidate Common IT Platforms

Significant inefficiencies and unnecessary expense exists when the 65 State agencies and commissions each develop and operate individual IT platforms. The agencies each have their own LANs, WANs, email systems, support teams, hardware and software maintenance and training requirements; often within the same complex of buildings or in buildings near each other. This makes it difficult to provide statewide applications.

This environment is inefficient, insecure, negates any opportunity to take advantage of economies of scale, and is an impediment to the goal of improved services. With a renewed focus, State agencies have been successful in consolidating applications and systems.

The suggested approach for this major effort requires an inventory of existing systems and the development of applicable standards consistent with the MTAF initiative. Once a

statewide standard is selected, an implementation strategy will be developed consistent with the enterprise architecture, interoperable products will be obtained, and pilot testing will be undertaken in selected agencies. Over a period of several years, agencies can then migrate to the standard systems as existing systems and versions become obsolete. The investment cost for this strategy will be determined in conjunction with the technology standards initiative.

Through the Information Technology Advisory Council (ITAC) and the MTAF initiative, agency IT Master Plans will be coordinated to identify these opportunities, validate their feasibility and implement the changes. The eventual consolidation of systems, and, consequently, providing improved service to the citizens of Maryland, will require firm commitments of resources and funding.

Standardize and Consolidate Geographical Information Systems (GIS)

Geographical information can be used by a number of State agencies for such diverse uses as growth planning, emergency response coordination, environmental monitoring and capital asset management. Because agencies have developed applications independently, there are multiple systems with concomitant issues of incompatibilities, information sharing limitations, multiple licenses, increased maintenance, and competing efforts to fund common initiatives such as aerial photographing of the State's land mass.

Similar to other areas of the State's IT enterprise, a consolidation of GIS applications, establishment of data standards and collaborative funding can lead to more innovative services at a lower aggregate cost. Toward that end, in conjunction with the data standards initiative discussed earlier, DBM will collaborate with those agencies with a prevalent GIS program to establish a governance model, determine requirements, and to assess and develop a consolidated strategy for maximizing GIS statewide. There are numerous services that can be offered once the systems have been consolidated, including monitoring waterway sediment, confirming preserved land is being appropriately managed, advance planning for evacuation during disruptive events, an inventory of highways and their appurtenances and locating people in need of assistance in remote areas.

Modernize Core Business Applications

In addition to agencies evaluating opportunities to consolidate within their operational boundaries, it is imperative to identify and plan for the eventual replacement of certain core statewide applications. Specifically, these applications include those that support accounting, finance, procurement, personnel, employee benefits and time keeping.

Scheduled for completion in FY 2007, DBM has undertaken a Statewide Assessment and Risk Analysis (SARA) project to assess the potential risks associated with these systems. Further, the SARA project will identify the projected remaining serviceability of each of the systems assessed, develop potential risk mitigation strategies, and recommend a long-term plan to repair or replace these systems, if warranted. A priority of assessments has been established, beginning with the personnel and time keeping systems. Predicated on FY 2008 funding availability, changes to the personnel and time keeping systems will commence and a

simultaneous planning phase will ensue for the remaining systems. The assessments of the systems will determine what, if any, funding will be requested in FY2009 and beyond.

Wireless Interoperability

The current inventory of public safety and first responder voice and data communications systems deployed throughout Maryland (owned and operated by State, counties and local municipalities) consists of systems that were constructed on an "as-needed" basis over several decades, and are typically designed to meet the needs of a specific user base. These communications systems often do not permit cross-jurisdictional communications, are primarily voice only, and are unable to be expanded or improved to support increasing functional requirements. In addition, manufacturer support for these older systems is diminishing and, in some cases, not expected to continue. Approximately three million (60%) of the State's residents live within an hour's drive of numerous high visibility federal installations. The State also hosts one of the regions busiest airports, marine terminals and is a major axis of interstate highways. These considerations, plus external influences, such as those mandated by the Federal Communications Commission, indicate a need to migrate the State's wireless infrastructure to a multi-government statewide interoperable system that can be used by all of the 30,000 first responders during multi-jurisdictional events.

In order to address these issues, the State, counties and municipalities have combined resources to establish a first in the nation collaborative organization to address these concerns – the Governance Working Group (GWG). With equal representation from all three levels of government, the GWG is working collaboratively to identify an enterprise solution for a statewide, interoperable wireless radio system. The convergence of four key elements: 1) availability of frequencies in January 2009, 2) multi-jurisdiction collaboration, 3) construction of a robust backbone infrastructure and 4) a professionally engineered solution, provide credence to this concept.

In FY 2006, DBM awarded a contract to address statewide public safety and first responder voice and data communications. Under the joint direction of OIT and the GWG, the Wireless Interoperability and Proof of Concept project will result in defining functional requirements for a statewide wireless interoperable system, a detailed design and implementation strategy for the system, and a proof of concept site that demonstrates the design satisfies the functional requirements. For the first time, State, county and municipal first responder requirements will be included under the same initiative. Results of this effort will refine the current wireless infrastructure build out project to include interoperability requirements and determine associated funding requests beginning in FY 2009. Simultaneously, DBM continues with a capital project to build the supporting infrastructure of towers and equipment shelters that will be necessary to implement this or any other interoperable system.

Summary

Under the guidance of the Governor and Secretary of DBM, the State IT community continues to make steady, methodical, systemic improvements to the services provided to the citizens of Maryland, while simultaneously containing or reducing the costs of delivering those services.

The initiatives discussed in this strategic plan are based on sound principles that include understanding the business case, confirming system user requirements, validating goals and benefits, employing professional project management techniques, and collaborating across agencies and all levels of government to improve the quality and efficiency of services to the citizens of the Maryland. Changes will continue to be implemented deliberately in a fiscally responsible manner through an evolutionary process, over several years. Some of the benefits have already been realized while others will begin accruing over the next several years.

The success of this strategy is highly dependant on the continued support of the Governor, Lt. Governor, DBM Secretary, Executive Branch senior managers, Legislature and the State's business partners.