



Planning and Development Committee

Board Action Item II-B

September 21, 2006

IT Strategic Business Plan

**Washington Metropolitan Area Transportation Authority
Board Action/Information Summary**

Action
 Information

MEAD Number:

Resolution:
 Yes No

PURPOSE

To provide the Planning and Development Committee with the IT Strategic Plan.

DESCRIPTION

To better service the needs of internal and external customers and to follow the recommendations of the Peer Review, IT needs to create and manage a 21st Century Enterprise Infrastructure and Business Technology Partnership.

Historically, IT at WMATA has been viewed as a tactical tool to address short-term challenges and help reduce costs. WMATA is now revisiting that perception and beginning to use IT as a key strategic tool to help the Authority meet its long-term objectives. A new governance model is being established to address key elements of our strategic plan which will demonstrate value to the organization.

FUNDING IMPACT: None

RECOMMENDATION

Endorse IT Strategic Plan and Resolution



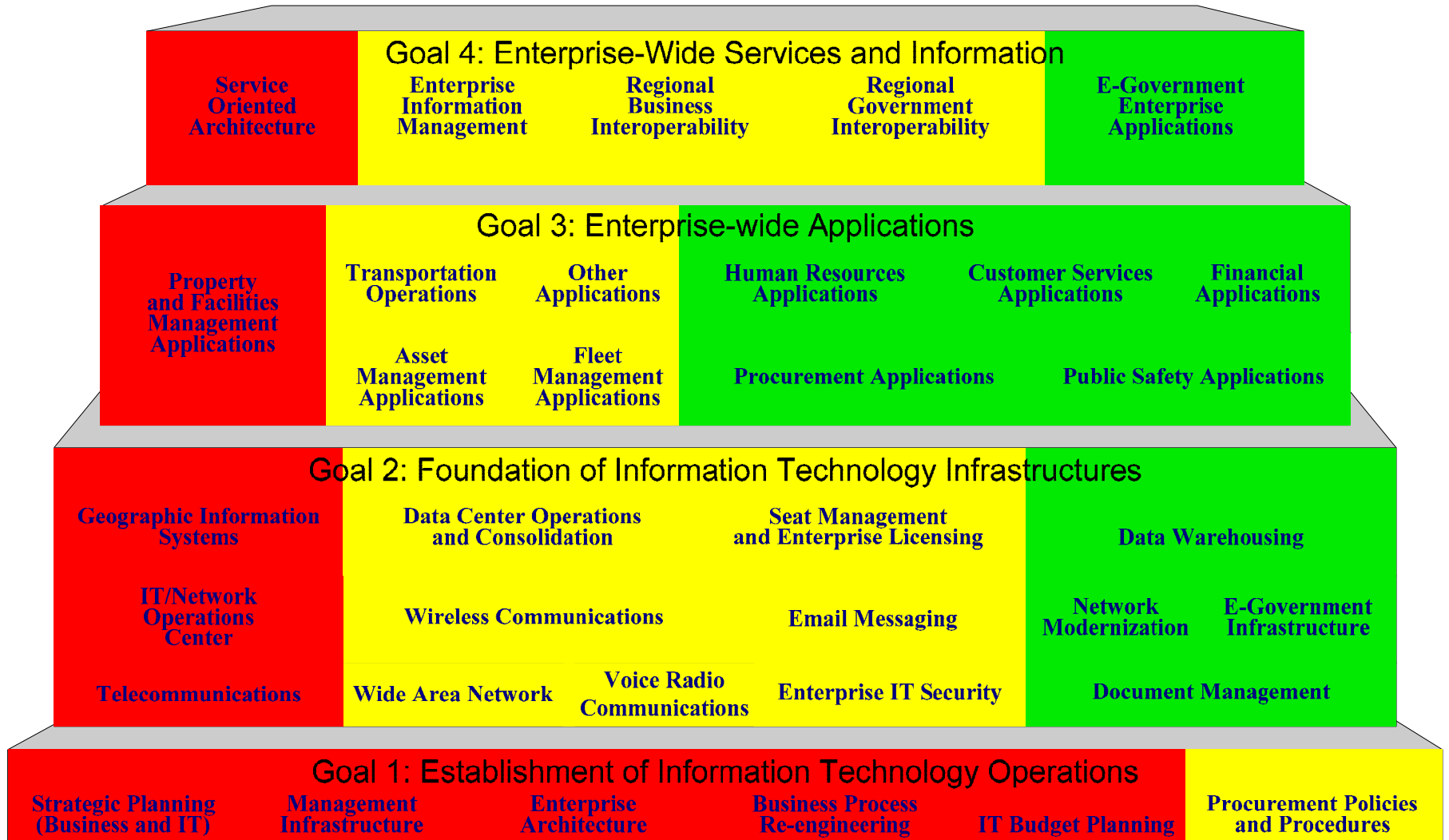
Office of Information Technology Strategic Plan

Presented to the Board of Directors:

Planning and Development Committee

September 21, 2006

Information Technology Capability Pyramid



Critical
Needs Work
Good



GOAL 1: Establishment of Information Technology Operations

Strategic Planning

◆ P & D Committee - September 21, 2006

Management Infrastructure

◆ Restructuring plan progressing

Enterprise Architecture

◆ In progress

Business Process Re-engineering

◆ In progress

IT Budget Planning

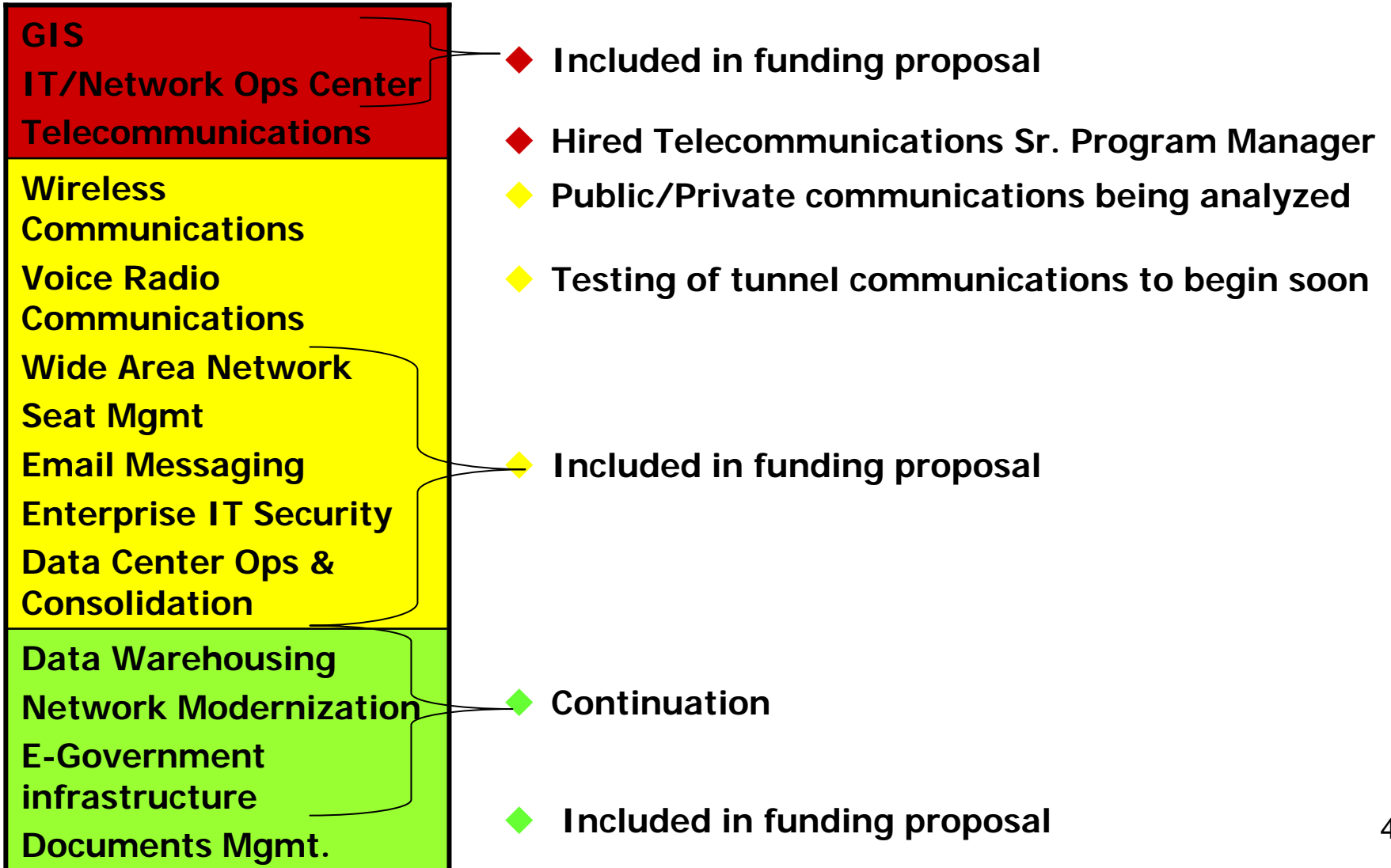
◆ In progress

Procurement Policies

◆ Dedicated IT procurement contracting officer



GOAL 2: Foundation of Information Technology Infrastructures





GOAL 3: Enterprise-wide Applications

**Property and
Facilities
Management
Applications**

**Transportation
Operations
Asset Management
Applications
Fleet Management
Applications**

**Human Resources
Applications
Procurement
Applications
Customer Service
Applications
Financial
Applications
Public Safety
Applications**

- ◆ **Install PeopleSoft (PS) Fixed Assets Module**
- ◆ **GOTRS included in funding proposal**
- ◆ **Continuation**
- ◆ **Fleetwatch, AVM included in funding proposal**
- ◆ **PS Base HR Installed - Enterprise Learning Management funded**
- ◆ **PS Procurement, MRO installed**
- ◆ **PS Customer Relationship Management installed**
- ◆ **PS Accounting, Payroll, Cash Management, Budget installed; KRONOS funded**
- ◆ **MTPD Crime Reporting System funded**



GOAL 4: Enterprise-wide Services and Information

Service Oriented Architecture

Enterprise Information Management

Regional Business Interoperability

Regional Government Interoperability

E-Government Enterprise Applications

- ◆ **New flexible methodology under development to change business processes with same software**
- ◆ **Continuation**
- ◆ **P3 Proposals, Managed Services**
- ◆ **Working with state/local governments on sharing GIS and fiber optic infrastructure**
- ◆ **Continuation**

PRESENTED AND ADOPTED:

SUBJECT: ENDORSEMENT OF INFORMATION TECHNOLOGY STRATEGIC PLAN

**PROPOSED
RESOLUTION
OF THE
BOARD OF DIRECTORS
OF THE
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY**

WHEREAS, WMATA has embarked upon major information technology investments totaling over \$200 million over the last five years and further investments are programmed in future years; and

WHEREAS, These investments include the Information Technology Renewal Program, which modernized the financial, procurement, human resources, payroll, bus and rail scheduling and dispatch, asset management and inventory systems; upgrading the Rail Operation Computer System (ROCS); establishing the Bus Information Program; and establishing the regional SmarTrip fare collection program for Metrobus, Metrorail, MARC, VRE and the regional bus systems; and

WHEREAS, The expansion of the technology infrastructure and network requires a new governance model in order to align the business and technology functions at WMATA to optimize these current and future investments; and

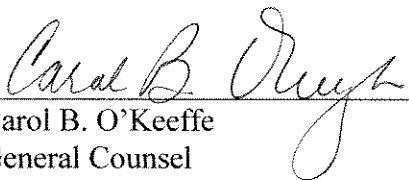
WHEREAS, A Peer Review of the WMATA information technology department was performed in February 2006 by the chief technology officers of the District of Columbia, Fairfax County and Montgomery County and the results were presented to the Board of Directors in June 2006; and

WHEREAS, The first Information Technology Strategic Plan, based upon the Peer Review and the current and future WMATA technology needs, was presented to the Board of Directors in September 2006; now, therefore, be it

RESOLVED, That the Board of Directors hereby endorses the Information Technology Strategic Plan and directs the General Manager to use this plan to align the business and technology functions, and to optimize the use of WMATA technology investments; and be it finally

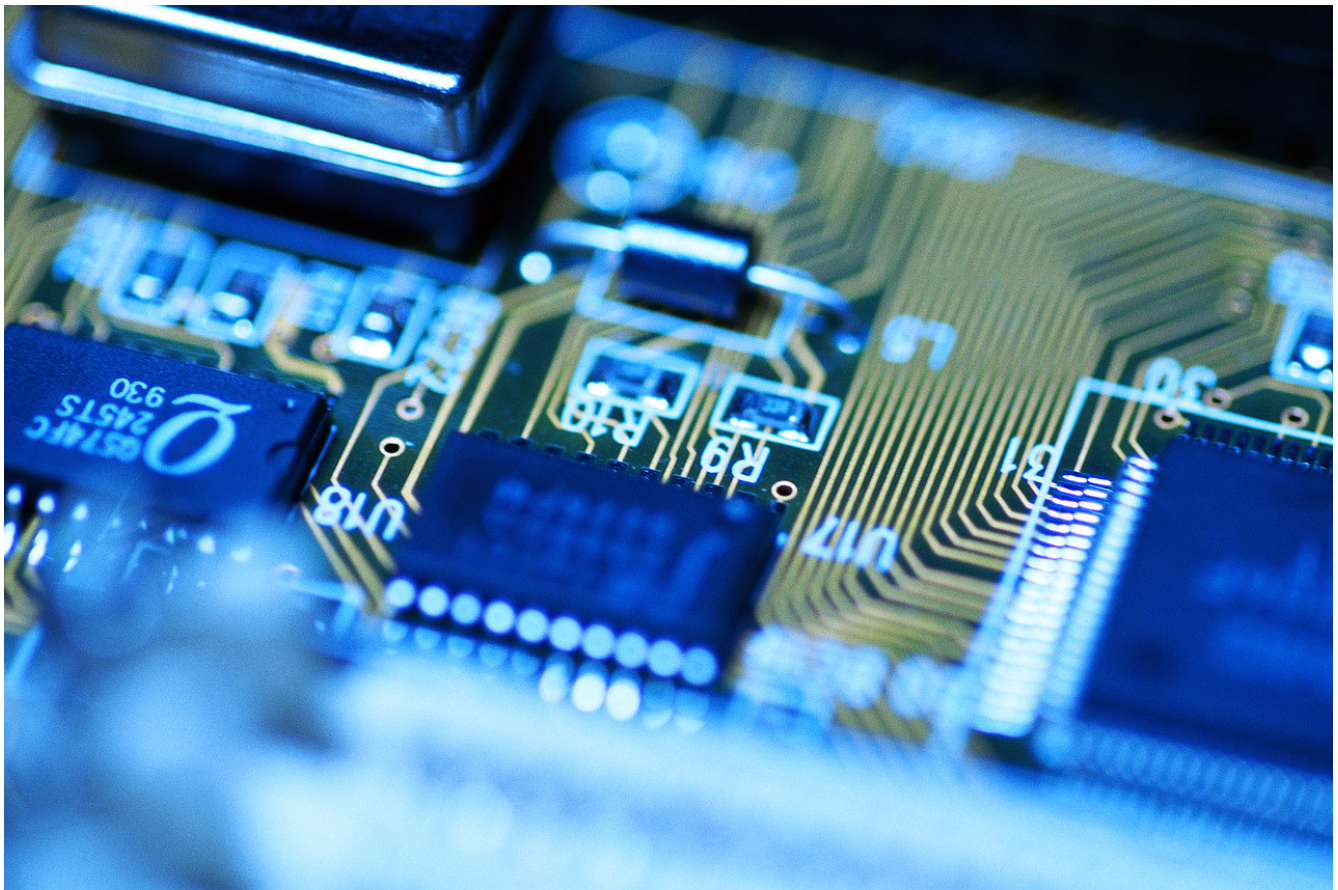
RESOLVED, That this resolution will be effective immediately.

Reviewed as to form and legal sufficiency.



Carol B. O'Keefe
General Counsel

**Washington Metropolitan Area Transit Authority
Office of Information Technology
Strategic Plan
September 2006**



Executive Summary

The Washington Metropolitan Area Transit Authority (WMATA) has historically viewed Information Technology (IT) as a tactical tool to address immediate operating challenges and to automate routine administrative functions. The IT function has never been viewed as a key strategic component of WMATA's business. Instead, it has been viewed as an "out of sight, out of mind" group primarily responsible for ensuring that the technology systems and equipment operated at acceptable levels. IT did not report directly to the General Manager; agency-wide IT funding remained well below industry averages. As a result, there was a lack of centralized IT spending and control.

The world is now in the midst of an information revolution that is remaking home, business, recreational and social environments in ways that would have been unimaginable even a few years ago. Technology is now a key element in business strategy, especially in the areas of customer service, creation of new markets and the introduction of new revenue streams. Technology is now an essential strategic tool to add value, enable change and drive business innovation.

WMATA recognized these changes in 2001 when the Board of Directors directed that a comprehensive technology strategy be developed and allocated over \$60 million in capital funds to execute the resulting plan. The plan was designed to replace old, inflexible, non-integrated, legacy and mainframe business and technology systems with modern, fully integrated, web-based, client server systems: the Information Technology Renewal Program (ITRP) and the Rail Operating Computer System (ROCS) Upgrade. These systems place WMATA in the forefront of business improvements in the transit industry by using modern technology systems to enhance productivity and deliver better value to the public. (As evidenced by the recent receipt of the CIO 100 award, one of the most prestigious technology honors in the United States, for delivering the ITRP.)

The delivery of the ITRP and the ROCS upgrade, however, is just the beginning. WMATA must continue to re-examine how technology is positioned, as part of our efforts to provide enhanced customer service, deliver the most efficient bus, rail and paratransit services and streamline internal business processes. Toward this goal, a Peer Review of the WMATA IT department was conducted in February 2006 and the findings presented to the Board in June 2006. The Peer Review recommended a series of actions that will take The Authority more towards this goal. This Information Technology Strategic Plan (a first for WMATA) will describe the actions that must be taken if WMATA is to optimize the technology investments already completed and in progress since 2001. The Plan will make a series of recommendations, based upon current WMATA initiatives and the Peer Review, in the areas that follow.

❖ **Establishment of Information Technology Operations**

This area outlines a new governance model and is the foundation for the future alignment of business and technology and for future funding decisions. The position of Chief Information Officer has been established as a direct report to the General Manager and as a member of the executive team. An Investment Review Board, consisting of the Chief Information Officer (CIO), the Chief of Staff (CHOS), the Chief Operations Officers (COO) for Rail and Bus, the Chief Financial Officer (CFO), and the Assistant General Managers of Chief Engineer/Project Management (CEPM); Operations Support (OPRS) and Workforce Development and Administration (WFDA), has been established. This group prioritizes and monitors all major IT/business investments.

The IT management infrastructure is in the process of being restructured in order to better manage the new systems, develop and maintain our Enterprise Architecture and boost business processes in the areas of budget planning and procurement. A key element of the restructuring is the creation of a customer liaison and communications unit designed to more closely align the Office of Information Technology with the business units. The business units have created functional teams to work closely with IT staff to improve performance in areas such as business process improvement, training, reports and software enhancements and upgrades. IT has also created a Project Management Office to establish standards and practices and manage new technology projects.

❖ **Foundation of Information Technology Infrastructures**

The installation of the ITRP, the upcoming completion of the ROCS Upgrade, the beginning of the Bus AVL Program, the relocation of the OCC to the Carmen Turner Facility and the installation of the SmarTrip Regional Customer Service Center in the next several years has placed and will continue to place enormous strain on the existing technology infrastructure. Combined with learning how to manage an enterprise system versus managing a group of non-integrated legacy systems, substantial effort must be made to invest in a robust, flexible and scalable technology backbone in order properly manage this new and complex environment. The investment is in three primary areas:

1. Modern infrastructure that can more easily handle these new technology applications.
2. Hiring of WMATA staff with upgraded skills and market-based compensation and Consultant support (including seat management and managed services) as quickly as possible, especially in the areas of applications, security and telecommunications.
3. Centralizing the development, installation and operations & maintenance of technology projects within the Office of Information Technology.

The infrastructure must be modernized and staff trained to manage it if the new business services that run on this technology backbone are to be effectively deployed and managed.

❖ Enterprise-Wide Applications

This was the primary focus of the ITRP through the installation of new enterprise software in the areas of human resources, customer service, financials, procurement, inventory, transportation scheduling and dispatch and asset management. Additional investments in the areas of time and labor, learning management and public safety have already been approved and many more have been requested. The systems that have been installed to date comprise the basic functionality of PeopleSoft and MRO. Additional applications have been requested that will add critical functionality and the opportunity for significant cost savings. Additional post-production consultant resources will be required for the next two years in order to optimize the integration and optimal use of these new systems. As new staff are hired and retrained staff are brought up to speed, consultant staff in this area will be reduced and eliminated.

❖ Enterprise-Wide Services and Information

This is the area of IT that involves working with outside public and private agencies and businesses in areas like procurement, homeland security, communications, fare collection and geographic information systems. The Office of Information Technology already manages applications in some of these areas and is actively seeking partnerships in others, such as fiber optic networks, in order to bring new services on board faster and cheaper than would otherwise be possible if WMATA built it. This strategy also reduces the risk of a new installation by partnering with existing operational systems.

Service Oriented Architecture is a promising new technology model that holds the promise of a less technical and more business-friendly process that will allow users to adjust business processes using existing software to meet evolving business needs without the time and expense of purchasing and installing a completely new application. This model will be included in the WMATA Enterprise Architecture and the modern hardware will be configured to allow SOA to be used when it reaches maturity.

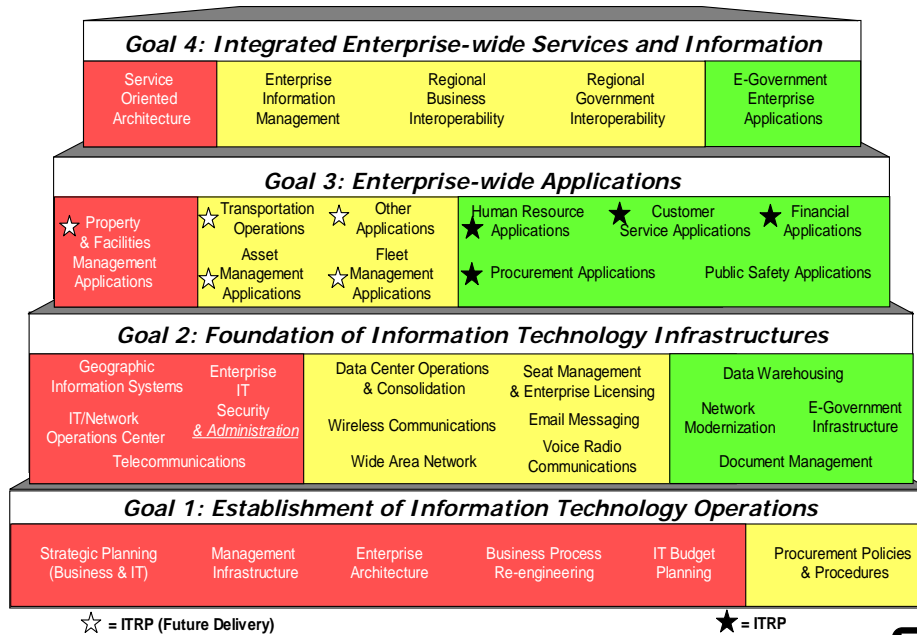
❖ Conclusion

WMATA and its state and regional partners have embarked on an ambitious plan to leverage new technology systems to enhance transit services and fare collection in the National Capital Region. There has been substantial investment in the last 5-6 years and more is to come. As transit usage continues to grow, WMATA must develop the IT capacity to meet the information requirements of its system end-users. Substantial organizational efforts within WMATA and with our partners, combined with a committed technology funding stream, is required if these investments are to achieve their stated goals.

IT Capability Components

The layers of the pyramid labeled Goals 1-4, are intended to show that the necessary capabilities for an IT framework build on each other. Starting at the bottom, the Goal 1 layer is intended to address the governance model and the set of organizational skills that the IT organization needs to develop in order to run efficiently. Goals 2 and 3 directly address the IT systems and technology requirements. The top layer – Goal 4, is most closely aligned with those functions needed to interact with customers, business, and outside agencies, and reflects the set of services that WMATA provides to the community.

Information Technology Capability Pyramid
(from CIO Peer Review - 3/10/2006. Modified.)



☆ = ITRP (Future Delivery)

★ = ITRP

Washington Metropolitan Area Transit Authority



The order of these layers is important – the Authority needs to have the structure and processes in place to build, operate, and manage the IT systems in order to get the benefit of those systems. Similarly, the systems implemented must align with external influences to ensure that the Authority is responsive to customers and the community. Each of these goal layers is explored in more detail beginning with Goal 1.

- **Goal 1 – Technology Operations**

As stated above, the focus of the activities in this goal are to develop the skills and processes needed to effectively manage the IT operation of the Authority. As IT systems have evolved from automating back-room functions such as accounting, to real-time functions such as scheduling, they have become integral to the operation of most businesses. As a result, IT organizations need to do a much better job of aligning technical goals with overall business strategic goals. Processes must be developed to enable the organization to manage complex projects, react more quickly to operational change, and ultimately act as an internal consultant in applying technology to improve business operations. Within Goal 1, the following focus areas have been defined:

- Strategic Planning
- Management Infrastructure
- Enterprise Architecture
- Business Process re-engineering
- IT Budget Planning
- Procurement Process

These are not listed in a strict order of importance, but the WMATA organization has already begun to address the strategic plan as evidenced by the pyramid itself. The area of Management Infrastructure is the next critical piece to focus on. There are a number of dimensions to Management Infrastructure since it encompasses all the core elements needed to improve the operational efficiency of the IT operation. In many cases, the cost of implementing these changes is not high, and will have a positive effective on other IT investment areas. This is why it is considered a high priority.

- **Goal 2 – Foundation of Information Technology Infrastructure**

This is the engine room of IT, and increasingly of most organizations. As the goal implies, the deployment of state-of-the-art hardware and software lays the foundation on which to deliver the applications and functions needed to run the business. WMATA has already begun to address this with the implementation of data warehousing, modernization of the data network, creating Web-enabled E-Government capabilities to improve customer communications, and instituting an enterprise wide document management strategy. A number of other areas in the pyramid are being addressed at the application level.

- **Goal 3 – Enterprise-wide Applications**

This goal focuses on the software that is needed to run the business of WMATA. Progress has been made in implementing a standard suite of applications built on PeopleSoft. Using the PeopleSoft platform, WMATA has rolled-out human resources, payroll, customer service, financials, accounting and procurement applications.

Additionally, WMATA is now using new software systems to help manage bus and rail operations. With the implementation of the Trapeze and MRO systems, WMATA is realizing the benefits of new information technology applied to managing its core business.

- **Goal 4 – Enterprise-Wide Services and Information**

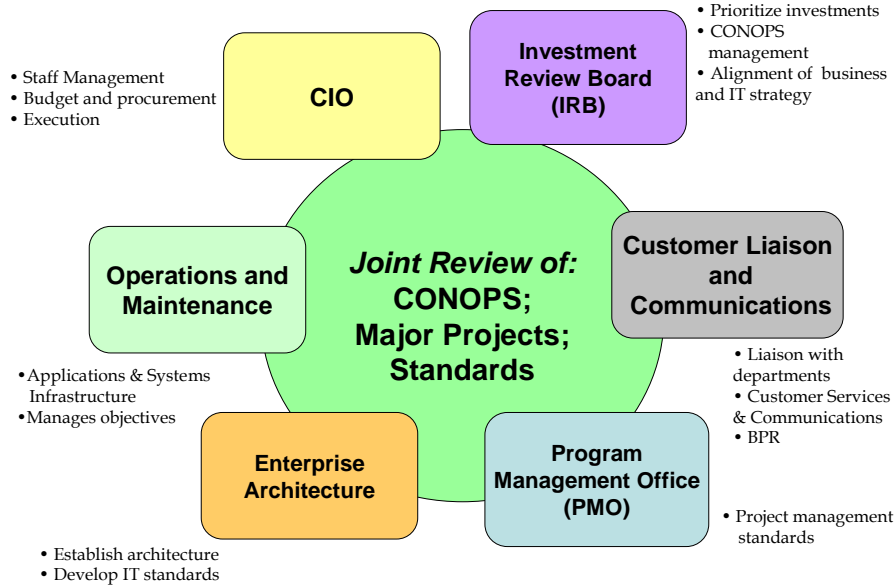
The Goal 4 layer is intended to define a set of system interfaces that will facilitate integration of data sources and applications both across the enterprise and with external customers and other government agencies. Initially, this will build on the work already done on eGovernment enterprise applications. Ultimately, this will be built on a Service Oriented Architecture (SOA) to provide additional levels of automation and ease of integration.

In order for IT to continue as an enabler of WMATA's mission and an integral part of its business, it is necessary to have a strategic plan tied to that mission. The remainder of this report will explore the key steps that need to be taken within the authority to fully realize the strategic value.

Key Strategic Steps

1.1. Establish a New Governance Model

Establishment of a new governance model addresses most of the elements identified in Goal 1 of the Capability Pyramid. The figure below shows the new model and highlights the individual responsibilities of each function, as well as the shared tasks that are the fundamental pieces of the model.



WMATA IT should put this infrastructure in place as soon as is practical and begin to build a tactical delivery plan of smaller, measurable projects. Success against this tactical plan will begin to build confidence throughout the organization in IT's ability to deliver quantifiable value. Candidate projects might include — improving network availability, ensuring backup data center readiness, and measuring IT renewal program benefits.

It is important to establish metrics around which projects will be judged, with successful on-time IT deliveries as a preeminent goal. To this end, it is important to create an IT project pipeline with monthly and major quarterly deliverables. This will provide the organization with opportunities to demonstrate the increased effectiveness of the new governance model.

2.1.1. Strategic Planning

As mentioned above, the WMATA IT organization has begun to put in place a strategic plan to cover the period FY2007 through FY2009. This plan is a good start, and there are a number of areas that should receive additional focus:

- **Tie to Business Strategy** - There needs to be a stronger tie between the overall business strategy of WMATA and the IT initiatives outlined in the strategy. The executive board needs to work with the CIO to make this linkage clear. The best IT strategies begin with a statement of the business objectives, and map IT initiatives against those strategies. For example, a goal in the business strategy could be "Decrease bus depot turn-around times by 10%". The IT staff could then analyze opportunities for automating the scheduling of maintenance activities through onboard instrumentation and back-end automation.
- **Initial Strategic Plan** - should be completed this year and reviewed annually by the WMATA board. The Strategic Plan should be updated every three years.
- **Goal areas**, such as those in the Capabilities Pyramid, should be identified. These will be a mix of objectives focused on improving specific WMATA business operations and general strategies for improving overall IT operations.
- **Identify IT programs** needed within each goal area and prioritize.
- **Disseminate the plan** to ensure that it is read and understood throughout WMATA including the IT department, other departments, the IRB, executive committee and the WMATA board. The more effective IT is in communicating how it provides value to the business, the more successful the organization will become.

2.1.2. Management Processes

IRB - An improved management infrastructure requires both structural changes to the governance model and development of key management skills within the IT organization.

To improve visibility and communication between business owners and IT, WMATA should establish an IT Investment Review Board (IRB). The members of the board must include the CIO, the CFO and an Operations, Senior Manager.

The IRB will have responsibilities for:

- Prioritizing and monitoring major IT investments
- Ensuring alignment of the Business and IT strategic plans
- Prioritizing and overseeing the implementation execution of major IT initiatives
- Guiding the development of Concept of Operations (CONOPS) plans for major IT programs.

Recommendation: Complete. The IRB is chaired by the CIO and includes representation by the Chief of Staff, the AGM of Operations, the AGM of Workflow Development, the CFO, and the AGM of Construction, Engineering, and Project Management.

Project Management Office – It is vital that WMATA develop a consistent project management capability that can be used throughout the enterprise. WMATA has already begun addressing this issue through the following:

- Identification of Project Manager as a needed skill set
- Staffing employees with degrees in IT or computer science
- Training and certification in project management

Building on this core, WMATA should take the next step to formalizing the project management process through the creation of a Project Management Office. This office would reach outside of the IT organization and be responsible for:

- Creating and governing IT project standards and reporting
- Monitoring IT procurements and IT projects enterprise-wide to ensure compliance with the project management processes, standards, and practices
- Creating and managing a liaison officer function, whose role will be to work with the divisions to communicate WMATA IT standards and practices, and facilitate IT project definition and management.

Recommendation: In progress. The Office of Information Technology (OIT) is reorganizing and a project management branch is being created.

Concept of Operations Planning – CONOPS is a methodology used to define and manage the overall objectives at both the business and technical level for all projects. The CONOPS plan is used as input to the investment planning process and will be a key review element in making staffing and investment decisions.

After the creation of an Enterprise Architect role (see below), along with the Project Management Office and Investment Review Board, the following should take place:

- Create a template for program planning that includes root cause analysis, best practice research, as-is/to-be business process analysis, IT analysis, target architecture and hardware/software costing, implementation and transition planning, activity breakdown, cost estimates, and Cost Benefit Analysis (CBA).
- Establish an IT governance process for assuring the quality of CONOPS plans. The reviewers should include the CIO, the Enterprise Architect, the Program Management Office, and (for major programs) the IT Investment Review Board.
- Require CONOPS plans for every significant IT program.
- Use the IT Investment Review Board to own and guide the plan from plan inception.
- Validate that program benefits are realized throughout the program lifecycle based on the CBA.

Recommendation: This is being set up through the restructuring of OIT.

2.1.3. Enterprise Architecture

The beginnings of enterprise architecture exist. IT has a general understanding of how the systems and networks are currently configured and where we want to go in the future. However; it is not written down. As with the strategy document, having a documented architecture will help IT communicate the value and rationale behind budget requests and ongoing projects.

As with many things that are important, architecture definition won't be done well until there is an established WMATA Chief Enterprise Architect position responsible for coordinating technology planning and IT architecture initiatives. The Enterprise Architect will be an integral part of the management infrastructure of WMATA IT. Additionally, the Chief Enterprise Architect should form and lead a WMATA Architecture Review Board (ARB), composed of lead IT architects from WMATA's IT programs and divisions, to:

- Work with the CIO, Investment Review Board.
- Conduct IT governance and peer reviews.
- Establish IT standards, review IT programs at various milestones, create enterprise architecture models, and perform strategic problem-solving.
- Create as-is blueprints of WMATA systems, including models for business architecture, security architecture, information architecture, application architecture, and technical infrastructure architecture.

At a more tactical level, the Enterprise Architect will also:

- Evaluate functions across the Authority for potential automation.
- Translate user requirements into workable systems which are both feasible and economically consistent with the management objectives of the Authority.

Recommendation: The OIT is reorganizing and it includes an Enterprise Architect.

2.1.4. Business Process Re-engineering

Business process re-engineering is the application of systems analysis techniques of the day-to-day operation of the organization, looking for ways to improve efficiencies through the application of information technology. As the IT organization develops and demonstrates the ability to become an integral part of the business planning process of WMATA, they will be looked upon to participate in up-front discussions of how to literally "make the trains run on time".

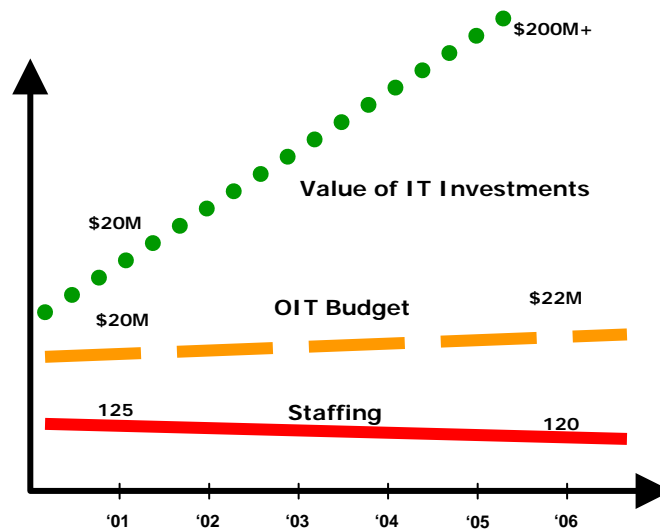
This is a capability that can either be developed from within by providing employees with specific training, hiring from outside the organization, or bringing in outside consultant organizations on a project basis.

Recommendation: In progress. The OIT reorganization established a new function, Assistant CIO for Customer Liaison and Communications, which will be staffed by 8 Subject Matter Experts (SME) from the ITRP. The skill and knowledge gained by the ACIO and the Subject Matter Experts (SMEs) will be used to provide additional services to users including BPR, training, upgrades, enhancements and system trouble shooting. The eight staff will be transferred to OIT and not "back-filled", therefore achieving this goal at no additional cost to WMATA.

1.2. Develop a new Budgeting and Procurement Model

2.2.1. IT Budget Planning

Depending on one's perspective, WMATA is either getting an IT bargain, or it is not taking full advantage of technology to improve Authority operations.



Industry best practices for large organizations, indicate that IT budgets should be 2%--4% of the overall operational budget. For WMATA, this translates to a range of \$30 million--\$60 million annually. This is compared to the actual 2006 budget of approximately \$22 million split between basic IT operations and the IT enhancements. Bringing the budget in line with industry measures, coupled with a strong commitment to staff development will enable the IT organization to deliver more value to WMATA's overall operations.

Over time, through the strategic planning process, the Authority should increase the overall level of funding available to IT to more closely align with industry standards. Additionally, the Authority should look to putting the overall financial operations more in line with industry best practice:

- Shift the ratio of capital funds to operating funds after major modernizations, such as WMATA's IT Renewal Program.
- Ensure that the IT financial manager establishes an Activity-Based Cost (ABC) reporting system for IT services.
- Establish an IT division billing regime incorporating the following:
 - In the first year, sending monthly "notional" billings to WMATA divisions showing the cost of the IT services end users are consuming;
 - In subsequent years, converting the notional billings into actual chargebacks.

Recommendation: The IT budget should immediately be increased to at least \$30 million and, given the historic under investment in IT at WMATA; the amounts for future fiscal years should match the increasing scope and complexity of the technology system.

2.2.2. Procurement Process

As mentioned in section 3.1.1, WMATA is taking initial steps to rationalize IT procurement by giving the CIO overall authority on IT spending. In order to make IT procurement as efficient as possible, the CIO should have program level Authority over the IT budget and all technology procurements.

The strategic plan currently under development calls out a number of concrete steps that should also be undertaken to improve the process. Among these are:

- Establish a list of approved product standards including vendors, release version numbers and internal/external sourcing.
- Coordinating IT purchasing through the enterprise procurement system to reduce costs and enforce standardization.
- Development of an IT storefront to provide a location for new technology demonstrations, displays, training, and hosted events for departments to evaluate and procure Enterprise IT architecture items.
- CIO planned IT life-cycle requirements using pre-competed contracts to achieve greater flexibility in IT services, support, software, and equipment resulting in a streamlined process for the procurement of common architecture items.
- WMATA should take advantage of existing federal and multi-jurisdictional contract vehicles to leverage volume purchasing power to reduce costs.

Recommendation: Assign a Contract Administrator from the Office of Procurement with a technology procurement background to OIT to execute and monitor all technology procurements.

1.3. Evaluate and Invest in Staff

WMATA has begun to make significant improvements to the organizational structure of IT that is consistent with industry best practices. While these changes are showing positive results in the management and performance of the IT organization, the organization itself remains understaffed and under or wrongly skilled in a number of areas.

Significant investments have been made on new state-of-the-art systems that are improving financial management, human resources management, asset management, communications, and transit for WMATA. For example, contracting assistance to help users with the new ITRP system is required for the next two years because of the absence of the required experience and skill sets of the existing IT staff. However, continuation of contractor staff on a long-term basis is both costly and detrimental to growth and improvement.

Additionally, continued technology enhancements and improvements needed to support WMATA's business are dependent on having an adequately numbered and skilled staff. The commitment to staffing will require investment to accomplish the following:

- Fill the persistent and substantial amount of vacancies in the IT organization
- Increase the training (technical and managerial) of existing staff
- Hire new personnel that meet increased educational (formal and experiential) and skill set standards
- Bring salaries to commensurate market levels for in-demand skills
- Reconstruct and refresh the IT organization's staffing to reflect and accommodate the new technologies and responsibilities and aggressively recruit personnel with the needed skill sets
- Simplify and significantly shorten the recruitment process

WMATA has successfully employed the use of external consultants and contractors to enhance and complement internal staff. This approach can be advantageous depending on overall staffing and sourcing strategies. However, in the absence of these strategies, and in the absence of a clear commitment to appropriate staffing policy as outlined above, this approach can be both costly and detrimental to continued growth and improvement.

WMATA will need to implement and commit to a purposeful staffing resource policy and sourcing strategy.

Recommendation: Fund contracting ITRP post-production support staff for two years and at the same time commit to the investment necessary to accomplish the above goals.

2.3 Key IT Initiatives

2.3.1 Seat Management and Managed Services

In a situation related to the centralization of the procurement process, the management of desktop and laptop provisioning and maintenance, along with other managed IT services should be centralized under the control of IT. The Authority should evaluate best-practice candidates for managed services (seat management). Due to the Authority's budget constraints and difficulty in attracting qualified IT staff, the following specific actions should be addressed:

- IT department control of all PC hardware and enterprise software licenses:
 - Standardize on a small number of desktop configurations (from 2 to 6 including laptops).
 - Negotiate discounted volume buying agreements for these configurations.
 - Desktop versioning with chargeback for Seat Management services and periodic hardware refresh.
- Inventory, serial tag, and track all WMATA personal computer (PC) systems and IT assets.
- Identify if other WMATA divisions have candidates for Seat Managed services.
 - PeopleSoft Application and Security Management
 - Mainframe Application Management
 - Data Center Application and Operations Management
 - Application Service Provider (ASP) Management for servers, networks and backup
 - Network Operations

Recommendation: Review the feasibility of outsourcing Seat Management and other IT functions by the end of FY2007. Perform a total cost of ownership (TCO) analysis to determine budgets, hardware, software and business process costs.

2.3.2 Geographic Information System (GIS)

An organization with a mission as geographically dispersed as WMATA requires a state-of-the-art GIS in place. Such a system can help with both operational and planning activities. Done correctly, it will greatly aid in the interoperation with external agencies and governments.

The problem is not that WMATA has not addressed GIS at all, but rather it has not been done at an enterprise level. This has led to an uncoordinated creation of multiple databases and systems. WMATA should begin to consolidate these disparate GIS solutions into a single system. Fortunately for WMATA, local agencies such as the DC government have created systems that could potentially be reused as opposed to developing a new system in-house or through the purchase and integration of off-the-shelf software.

Because of the existing complexity and the need to coordinate within the Authority as well as outside, this will not be a short-term project. However, WMATA should begin now by establishing a unified GIS Center of Excellence (COE) with the following specific functions:

- Supplying GIS experts to the agencies/divisions
- Develop the GIS strategy in close coordination with regional partners, since regional governments have a wealth of geospatial data and GIS management experience
- As WMATA moves toward the implementation phase for a common GIS, the COE will take on the following tasks:
 - Establishing enterprise GIS data standards for combining GIS data sources enterprise-wide
 - Creating a unified GIS platform infrastructure with enterprise licenses, using WMATA's aggregate buying power, in order to consolidate stand-alone GIS systems over time
 - Migrating existing GIS systems toward a standard set of enterprise GIS products and synchronized product releases and
 - GIS should be part of the to-be-defined Service Oriented Architecture to facilitate aggregation of dispersed GIS data into a common repository and sharing data with WMATA divisions and authorized external requestors

Recommendation: Immediately begin working with the District of Columbia and other state and local agencies to determine the feasibility of WMATA using their existing GIS infrastructure and services.

2.3.3 Service Oriented Architecture

WMATA is currently using a subset of SOA capabilities to exchange two types of information:

1. An XML based interface is used to transfer information from organizations that make transit passes available to employees as part of the Smart Benefits program. Providing this as a standardized interface makes it more cost effective to participate in the program.
2. Credit card and payment processing is currently handled with a similar interface.

Building on these experiences, WMATA should generalize this capability to:

- Define a standard Enterprise Service Bus (ESB) for all integration projects, e.g. WebMethods.
- Establish an enterprise-wide service registry and repository in the infrastructure.
- Create a center of excellence to:
 - Provide centralized support and development of ESB interfaces,
 - Define development conventions and standards for maintainability.
- Identify high-value enterprise information services for enterprise integration, such as:
 - Workflow system interfaces for posting tasks and status checking,
 - GIS interfaces for exchange of geographic information, address validation,
 - Customer Relationship Management data for transforming requests into action, and
 - Departmental systems of record to integrate enterprise processes.
- Prioritize, fund, and launch enterprise integration projects to exploit these systems integration opportunities and realize their benefits.

Recommendation: Configure infrastructure and application software to enable the use of the Service Oriented Architecture model when it is fully developed in several years.