



Army
Research
Laboratory

Strategic Information Plan 2001 - 2005

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TABLE OF CONTENTS

1	Executive Overview	3
2	Introduction	4
2.1	Purpose.....	4
2.2	Scope.....	4
3	ARL Information Vision for the Future – A World Class Infrastructure	5
4	ARL IT Strategic Direction.....	7
4.1	Mission and Vision	7
4.2	Strategic Information Planning Goals	8
4.3	Goals	10
5	Relationships to Other Policies & Guidance	31
6	Roles and Responsibilities	33
6.1	Authority for the CIO Function	33
6.2	Responsibilities of the CIO	33
6.3	Organization	36
7	Budgetary Methodology	39
7.1	The ARL IT Investment Process	39
7.2	Process Improvement	39
7.3	Performance and Program Measurement.....	40
8	Strategic Roadmap	41
9	Appendix A	42
10	Appendix B.....	45

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1 Executive Overview

Information is now often referred to as the fourth element of power and has thus become an important key to our national security. This strategic plan provides a roadmap for realizing more efficient and effective mission support for ARL to AMC, the Army, and DoD. ARL has identified this as building a “World Class Infrastructure.” The execution of this plan requires leadership and commitment to work toward our common goals. This ARL Strategic Information Plan does not address specific programs or budgets. It serves as a framework for the development of more detailed plans that identify specific programs and initiatives and relate them back to the overall ARL mission. It is in this context that an Enterprise Resource Planning (ERP) project has been identified and is being proposed. An ERP can incorporate business intelligence, knowledge management, and information sharing. Ultimately an ERP could greatly assist ARL in measuring progress toward the goals addressed in this strategic plan, and support the ARL Corporate Vision of “one ARL”, and the ARL CIO Vision of making information and decision superiority a reality for ARL. This plan provides a roadmap for pursuing significant improvements well into the next decade. However, the execution of this plan requires commitment to work together toward our common goals and achieving the vision of “one ARL”.

This strategic information plan complies with the Clinger-Cohen Act (CCA) of 1996 (formerly the Information Technology Management Reform Act of 1996) and the Government Performance and Results Act (GPRA), Paperwork Reduction Act (PRA), and other Office of Management and Budget (OMB) mandates and guidelines, and AR 25-1, Army Information Management, as well as the 1999 DoD IM Strategic Plan version 2.0 and the AMC IT Strategic Plan version 1.0. This body of laws and regulations has provided the opportunity to move from budget and acquisition centric decision making to mission, architecture, service, and performance based decision-making.

The plan provides overall ARL guidance for managing information resources and establishes the ARL goals and objectives, and strategies for accomplishing the goals. The ARL Strategic Information Plan supports the goals of DoD, DA, and Headquarters AMC, as well as Joint Vision 2010, 2020 and the ARL Common Operating Environment (COE). The plan fulfills the strategic planning requirements of the PRA of 1995, as amended, OMB Circular A-130, and HQ AMC guidance.

Subdivision E of the Clinger-Cohen Act mandates that we improve our day-to-day mission processes and properly use IT to support those improvements. Technology as an enabler of reform must be fielded orderly, promptly, and efficiently. We must use streamlined acquisition processes, commercial off-the-shelf (COTS) products and services, outsourcing, and partnering, as appropriate, to take advantage of industry capabilities. The IT investment portfolio concept, as put forth in CCA, emphasizes the need to do a better job of prioritizing IT capital investments and being accountable for results. Accountability extends from the individual to the mission commanders and the Congress. Keeping our military and civilian workforce trained in new technologies and improved processes is critical to maintaining our fighting edge and achieving savings. Finally, all this is in vain if our information is not protected.

2 Introduction

2.1 Purpose

During the ongoing process of personnel draw down it is necessary to preserve as much of the workforce responsible for delivering the ARL Research and Development product as possible. That means that the support staff is where most of the cuts must be taken. However, by cutting the support staff, there is a danger of reducing the support to the Scientific and Engineering (S&E) staff to the point where the overall effectiveness of the organization suffers. The solution is to find ways to perform the support functions more efficiently with fewer people. We are seeking relief from overly burdensome regulations and policies; however, we also need to look inward to identify those local policies and procedures that are outdated, outmoded, irrelevant, or inefficient. Our goal is to produce *“one, united Army Research Laboratory with standard business practices, concentrated teamwork, and less bureaucracy supported by a corporate information management environment where personnel, financial, accounting, acquisition, and material functions operate uniformly throughout ARL”*. [See ARL Business Process Re-Engineering](#)

The purpose of the ARL Strategic Information Plan is to:

- Enable the execution of the Research & Development mission
- Provide world class support to all our customers
- Ensure constant process improvement
- Protect information
- Provide appropriate access to information
- Share information
- Ensure wise investment of financial and human resources

As these happen the Vision of “One ARL” will emerge where business process enhancement tools such as workflow management, knowledge management, portals and eBusiness solutions will provide direct and measurable benefits to the ARL user. There will be immediate and effective electronic access to the information warehouse that constitutes ARL's intellectual property along with emerging capabilities that allow integrated voice, data, and video over the same network medium.

2.2 Scope

The ARL Strategic Information Plan applies to all ARL organizations, ARL contractors, and ARL tenants on other installations. The main objective is to promote the “one ARL” vision, and at the same time move forward to obtain the overall goal of “World Class Infrastructure for ARL”. To remain useful, this strategic plan must undergo periodic revisions and updates to remain current with AMC, DA, DoD, and other guidance and mandates, and to ensure we remain focused on our overall World Class vision for the Army Research Laboratory.

3 ARL Information Vision for the Future – A World Class Infrastructure

In order to achieve our vision of the future, we must first understand the meaning of world-class infrastructure. A world-class infrastructure encompasses two complementary factors, State-of-the-Art Technologies and the Best of Breed Information Technology Practices.

State-of-the-Art Technologies include:

1. **World Class Communications Infrastructure** – high-speed secure access to all ARL resources from the office, home, telecommuting centers, and travel locations.
2. **Continuous Operations** – Every year an additional “9” must be added to today’s 99.99% availability rate for an organization to remain world class.
3. **World Class Support** – 24x7 support of the entire ARL computing infrastructure. This includes network monitoring, maintenance of infrastructure documentation, communications, security, help desk, software distribution, and hardware and software inventory.
4. **Office of the Future** – The collaborative office of the future allows universal, multimedia, electronic interaction throughout ARL.

The second part of world-class infrastructure, Best of Breed IT Practices, includes the following:

1. **Network Administration** – the use of metrics to quantify system and staff performance to identify issues and to trigger remedial action before problems arise.
2. **Technology Planning** – planned and controlled technology monitoring and refreshment integrates proven leading edge technologies into the everyday infrastructure.
3. **Continuous Upgrades** – technology upgrade plans enable continuous upgrading of hardware and software.
4. **Disaster Planning** – encourages participants to anticipate contingencies and develop procedures to prevent or mitigate consequences of system or process failures.
5. **Documentation** – comprehensive and thorough documentation permits definition and control of the architectural topography and sound inventory management.
6. **Training** – training plans provide ongoing training for users in the features of existing collaborative tools and desktop applications to enable them to get the maximum benefits from ARL investments.

Thirteen components comprise the infrastructure. These components can be viewed as the building blocks in creating the world class infrastructure:

1. Voice communications
2. Video communications
3. Radio, wireless and satellite communications
4. Data communication
5. Desktop computer support
6. Management and business applications
7. Library and knowledge management

8. Visual production (graphics and publications)
9. Records and document management
10. Information technology management
11. Information plans and policies
12. Facilities and space
13. People – trained and productive

Our strategy is to deploy the new technologies in two steps; first, testing and confirmation within one ARL Directorate, followed by ARL-wide deployment if found to be successful. The goal of the world-class infrastructure is to provide maximum support to the ARL user in the most effective and efficient manner possible.

4 ARL IT Strategic Direction for the 21st Century

4.1 Mission and Vision

The mission and vision for information management have a strong link to supporting the corporate mission and vision of ARL.

ARL Corporate Mission

Execute fundamental and applied research to provide the Army the key technologies and the analytical support necessary to assure supremacy in future land warfare.

ARL Corporate Vision

ARL "One Laboratory" Vision:

- **America's Laboratory for the Army**
- **Providing materiel readiness through innovative technology**

CIO IT Mission

Establish knowledge management policy, provide guidance and oversight, and leverage technology, which foster information superiority for the war fighter and maintain and strengthen national security. Provide information accessibility, accuracy and reliability for the Army Research Labs responsive to business needs and safe from compromise to promote a "one laboratory" approach.

CIO Vision

Make information superiority a reality for the Army Research Labs through knowledge management.

4.2 Strategic Information Planning Goals

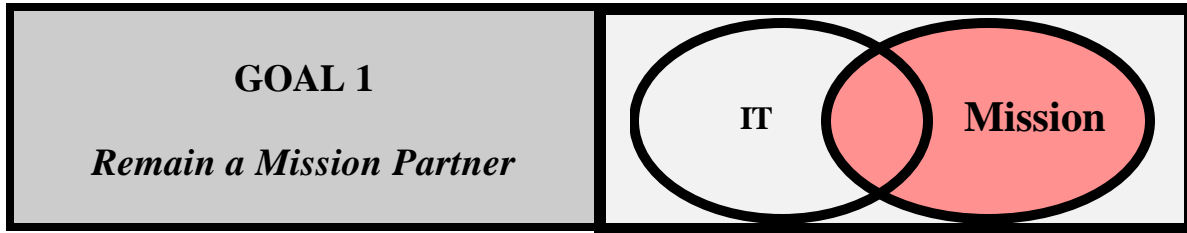
Six goals characterize fundamental ARL critical success factors for IT to realize the vision. These goals have been derived from the DOD IM Goals as mandated *with specific focus on the needs and unique roles and responsibilities of a basic research and development laboratory*. **Goal 1** grounds IT in our national defense mission using joint mission planning and analysis processes as the basis for defining information service and performance requirements. R&D is basic to our long-term ability to maintain our national defense second to none. **Goal 2** responds to management direction and mission requirements by delivering quality, affordable world-class products and services to our R&D IM/IT customers. **Goal 3** emphasizes the management process improvements that are needed to more effectively deliver quality information and services to ARL R&D mission customers. **Goal 4** reflects the pervasive impact of significant R&D role in information assurance on ARL/AMC/DoD. **Goal 5** places emphasis on the leveraging of collective wisdom to increase responsiveness and innovation within ARL to allow ARL to position itself as the AMC, DA, and DOD Knowledge Management (KM) experts. **Goal 6** enforces the sharing of information to accomplish the ARL corporate vision. The objectives and strategies associated with the goals are organized logically but are intended to be implemented in parallel to make rapid progress toward reaching the goals.

These goals also have a strong tie to the goals of the AMC IT Strategic Plan. Although ARL is a research and development laboratory, the role of IT bears some similarity to AMC

ARL Strategic IT Goals		AMC Strategic Goals						
		Improve Information Quality	Promote Effective Use	Promote User Accessibility	Improve the IM Process	Improve the IT Environment	Reduce Costs	Improve Security
1	Remain a mission partner	X	X			X		
2	Provide services that satisfy customer information needs	X	X	X	X	X	X	X
3	Reform IT Management Processes to Increase Efficiency and Mission Contribution	X	X	X	X		X	
4	Ensure AMC/DA/DoD's Vital Information Resources are Secure and Protected				X			X
5	Showcase Knowledge Management Research and Potential	X	X			X		X
6	Use Information Sharing as a Vehicle to Accomplish the "One ARL" Vision	X	X			X	X	X

headquarters. The vision of ARL to obtain a world-class infrastructure, and the goals and objectives to achieve this vision, are associated with the AMC strategic goals as identified in the current strategic plan in the adjacent matrix.

4.3 Goals



Description: *JV2010* recognizes information superiority as the enabler for full spectrum dominance in the 21st century and *JV2020* reinforces those goals. Overall, ARL must leverage information resources and technology to improve the performance of its mission while realizing major efficiencies in how we conduct our business functions. Mission processes, information uses and services must be clearly understood and communicated to all employees in order to drive IT planning and resource decisions. The link from doctrine, strategy, goals, measures, and architectures to IT must be clear and compelling.

ARL must focus on the customer's needs in relationship to Knowledge Management, Information Assurance, and Information Warfare to improve their Research and Development efforts in support of *JV2010*, *JV2020* and the Army Objective Force Structure. Relationships with military commanders and functional managers must remain strong to assist with formulating strategic plans that capitalize on the potential of information technology to revolutionize military, logistic and business affairs to align IT with the mission.

This strategy envisions an assessment and analysis process that addresses all elements of military capability holistically from an ARL/AMC/Defense-wide perspective leading to capstone requirements documents that apply operational architectures to define tasks and information exchange requirements. This strategy requires linking the *JV2010* information superiority implementation process, the Joint War fighting Capabilities Assessment (JWCA) process, and customer processes to provide an integrated set of desired operational IT capabilities and the adequacy of programs and initiatives to meet the IT need.

Objective 1.1 Identify Mission Needs and Align Information Technology (IT)

Strategy 1.1.1 Influence strategic planning and align IT strategically to mission plans.

Promote strategic planning as the basis for investing in IT. Strengthen collaborative relationships with military commanders and functional managers to help them formulate strategic plans that capitalize on the potential of IT to revolutionize military, logistic and business affairs. This strategy envisions having functional strategic plans with goals and performance measures for all ARL functional areas to improve program planning and as a basis for aligning IT with the mission by 2003.

Strategy 1.1.2 Promote and institutionalize methods to improve mission processes.

Using business process improvement disciplines to rigorously analyze mission area processes and relate those to strategic goals and measures of performance for the mission recognizes major improvements. Integrating processes across current stovepipes recognizes order of magnitude improvements. The initial target is to get a core set of

consistent process models for all functional areas and activities necessary to analyze opportunities and select those with the highest payoff. This strategy requires establishing policies for conducting business consistently across all mission and mission support domains by 2002. ARL must have a comprehensive plan for reengineering its functions before investing in IT.

Objective 1.2 Forge Effective Partnerships with Customers

Strategy 1.2.1 Promote organization structures for effective partnering. The ultimate responsibility for managing processes, investing in IT, and assessing the contribution of IT to the mission rests with commanders, process owners and line managers. This strategy requires positioning IT to influence key functional decisions by designing organizational structures to ensure functional and Information Management (IM) responsibilities are effectively executed and aligned at all levels. Existing management structures need to be assessed in the light of GPRA, Chief Financial Officer (CFO), Paperwork Reduction Act (PRA) and CCA mandates. This strategy can be accomplished by continuous, comprehensive, top-level review of IT management structures by the CIO at least annually.

Strategy 1.2.2 Educate customers on IT and communicate the IT mission. Customers need to have sufficient knowledge of IT as it impacts their mission to make informed decisions about what IT they need. Effective communication must be in the user's language, not in technical jargon. This strategy requires increased emphasis on educating users about IT's potential for improving mission performance, how to effectively work with the IM community, and how to get the most from IT investments in place by 2003.

Strategy 1.2.3 Obtain customer feedback at all levels. Understanding and acting on customer feedback is essential in forging and maintaining effective partnerships. Senior leadership must interact with the customers to understand and respond to needs and concerns. This strategy must also extend through all levels of the community, with mechanisms in place to survey customer satisfaction and needs. Customer interaction must be a key influence on strategic plans, business, and day-to-day service and information delivery by 2002.

		World Class Infrastructure Components											
Goals, Objectives & Strategies		Voice communications	Video communications	Radio, wireless and satellite communications	Data communication	Desktop computer support	Management and business applications	Library and knowledge management	Records and document management Visual production (graphics and publications)	Information technology management	Information plans and policies	Facilities and space	People – trained and productive
1	Remain a mission partner												
	1.1 Identify Mission Needs and Align Information Technology						●	○		●	●		●
	1.1.1 Influence strategic planning and align IT strategically to mission plans							○		●	●		●
	1.1.2 Promote and institutionalize methods to improve mission processes						●				●		●
	1.2 Forge Effective Partnerships with Customers						●	○		○	●		●
	1.2.1 Promote organization structures for effective partnering						○			○	●		●
	1.2.2 Educate customers on IM and communicate the IM mission							○					●
	1.2.3 Obtain customer feedback at all levels						●						●
Key:													
●	Major relationship												
○	Minor relationship												



Description: To accomplish its mission, ARL must focus the information infrastructure on getting required and appropriate information to mission and mission support customers in a range of scenarios from peacekeeper roles to the most severe battlefield conditions. As information generation capabilities become more complex, (e.g., maps, video) ARL must become more involved in managing the information space for the user and integrate and modernize its information infrastructure. Users need the information services and tools necessary to identify, retrieve, fuse, and format information easily and immediately.

The underlying technology platform must be modernized to attain world-class stature and integrated to support the "one lab" vision. ARL's base-level infrastructure needs urgent attention. A shared data environment to ensure semantic interoperability and cross-functional integration must remain a priority. A common operating environment throughout ARL and in concert with AMC will expedite application system implementation and allow incremental implementation. Infrastructure components must move from an "organization/technology centric" paradigm to an interconnected set of services/products with quantifiable cost and performance measures to determine value-added to the mission. The cost of the infrastructure must be commensurate to its contribution to the mission.

Management of the end-to-end infrastructure must support the goals of seamless integration and modernization. Today's systems are too often narrowly focused, not fully interoperable, and support a single function or organization requiring users to assemble information from incompatible sources. Breaking out of this stovepipe environment requires new management mechanisms that crosscut organizational boundaries. Common and shared solutions will reduce unnecessary duplication and cut costs for everyone.

Objective 2.1 Build An Infrastructure Based on Architectures and Performance

Strategy 2.1.1 Deploy a comprehensive, uniform methodology to define and integrate ARL architectures. Architectures provide the best, long-term definition of the mission and related IT support. An integrated architecture framework for operational, systems, and technical architectures must be established to ensure interoperability and consistency. A disciplined support environment, similar to that provided by "data modeling" support tools, would advance a common understanding of missions and IT support by enforcing rigorous element definitions and relationships to other elements. Roles and responsibilities for generating, integrating, and using architectures in managing information and supporting IT must be institutionalized. The target is a "system of systems" architecture that can be expanded to include all missions. Technical architectures should bridge the gaps between weapons, platforms, and information

systems. Interoperability must be “built-in” throughout the process, from requirements generation through certification and testing, and demonstrated in “live” environments by 2005.

Strategy 2.1.2 Build performance measures into the infrastructure. This strategy envisions having performance measures for all information related products and services. When complete, efficiency and investment decisions can be based on systematic assessments of information cost and value added to mission customers. Fielding a user oriented performance management system to systematically capture, archive, and report performance information is part of this strategy, which will be in place by 2002.

Objective 2.2 Modernize and Integrate the ARL Information Infrastructure

Strategy 2.2.1 Improve base-level infrastructure. ARL’s base level communications and computing infrastructure and data storage environment needs to be reengineered and upgraded. Inconsistencies in technical and management procedures and capabilities complicate IT change planning and implementation. A major effort will be required to put in place a consistent management structure and modernized IT able to deliver quality support by 2004.

Strategy 2.2.2 Continue ARL-wide applications implementation. As ARL-wide applications (formerly referred to as migration systems) align applications support with ARL functions and processes, future IT investments should be linked directly to process improvements. ARL-wide applications must have plans to achieve acceptable levels of Joint Technical Architecture/Common Operating Environment (JTA/COE) compliance by 2003 or earlier. Continued emphasis must be placed on implementing applications to support reengineered processes that achieve mission and functional goals and measures of performance. COTS software should be used to the maximum extent possible. Information support providers, in house and contractors, must maintain a program of continual improvement keyed to user requirements, software best practices, and the software capability maturity models.

Strategy 2.2.3 Expedite implementation of common standards. The JTA/COE provides the standards and interface environment for interoperability and a transparent technical infrastructure that supports all applications, to include seat management for common applications. Wide implementation will reduce planning time for applications and enable their timely, incremental implementation in a “plug and play” environment. Infrastructure elements and applications should be JTA/COE compliant at appropriate levels by the year 2002 or earlier.

Objective 2.3 Introduce New Paradigms

Strategy 2.3.1 Rapidly insert advanced technology to support the mission. Technology is changing faster than the current infrastructure can adapt. New methods are needed to

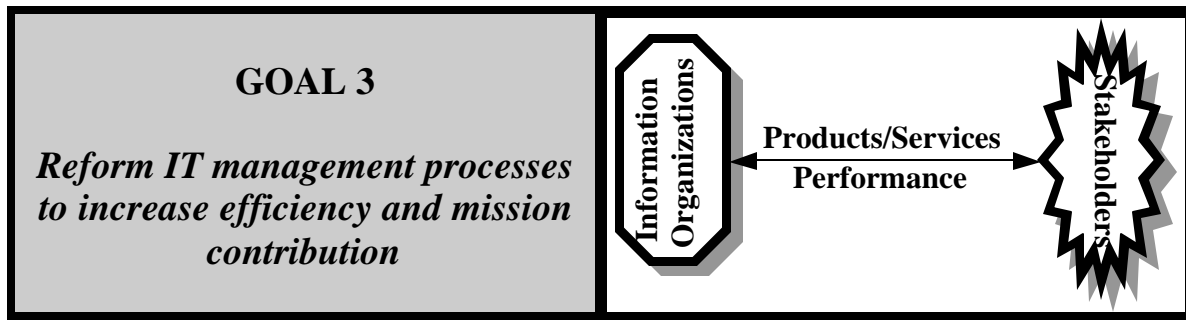
gracefully introduce new technologies incrementally with manageable risk rather than requiring lengthy contracting and development efforts. Distributed, Internet environments must be used to assess, test, integrate, and acquire new IT capabilities and COTS products. The target is a systematic management structure and methodology that “pipelines” new technologies linked to evolving mission needs and smoothly supplies these capabilities to the field before the end of 2002.

Objective 2.4 Improve IT Management Tools

Strategy 2.4.1 Integrate information access and management methods for all media and types of information. The user needs automated, streamlined methods to routinely and reliably access information. A common semantics, syntax, and procedures set would include electronic directories, such as the Government Information Locator Service (GILS), Defense Data Dictionary System (DDDS), Defense Messaging System (DMS) and directory and search methodologies employed by WWW information providers. The target is for on-line data dictionaries to be a primary source for ARL user assistance when accessing information (e.g., WWW documents) by 2002.

Strategy 2.4.2 Implement IT Total Asset Visibility (ITTAV) universally. Total Asset Visibility is a Defense-wide initiative. The ITTAV concept can be used to manage IT “objects” like hardware, software, and data for the user throughout their life cycle. ITTAV “tracking” includes tracking the status of user orders for IT objects, maintaining accurate inventory records, automatically ordering upgrades, and managing asset reuse and removal. The target is a WWW based repository that can be accessed by developers and users to determine availability, reliability, maintainability, etc., for any information or IT asset affecting their service by 2003.

		World Class Infrastructure Functions												
		People – trained and productive	Facilities and space	Information plans and policies	Information technology management	Records and document management	Visual production (graphics and publications)	Library and knowledge management	Management and business applications	Desktop computer support	Data communication	Radio, wireless and satellite communications	Video communications	Voice communications
	Goals, Objectives & Strategies													
2	Provide services that satisfy customer information needs													
	2.1 Build an Infrastructure Based on Architectures and Performance				●				○					
	2.1.1 Deploy a comprehensive, uniform methodology to define and integrate ARL architectures				●				○					
	2.1.2 Build performance measures into the infrastructure				●									
	2.2 Modernize and Integrate the ARL Information Infrastructure	●	●	●	●	●	●	●	○	●	●	●	●	●
	2.2.1 Improve base-level infrastructure	●	●	●	●	●	●	●	○	●	●	●	●	●
	2.2.2 Continue ARL-wide applications implementation				●				●					●
	2.2.3 Expedite implementation of common standards				●				○					
	2.3 Introduce New Paradigms				●	●								○
	2.3.1 Rapidly insert advanced technology to support the mission				●	●								○
	2.4 Improve IT Management Tools				●	●		●	●	●				○
	2.4.1 Integrate information access and management methods for all media and types of information				●	●								○
	2.4.2 Implement IT total asset visibility universally				●	●		●	○	●	●			○
	Key:													
	● Major relationship													
	○ Minor relationship													



Description: As support resources decline in line with the overall guidelines established by QDR 97, information and information technology must be managed as a strategic resource. ARL must base information and information technology decisions on their contribution to the effectiveness and efficiency of their mission and supporting business functions. It is important to manage IT resources and align strategies and programs with ARL/AMC-wide, functional, and organizational goals and measures. In accordance with the *Government Performance and Results Act (GPRA)*, measures of performance for IT must be managed in the context of functional and organizational measures of performance to plan and assess IT’s contribution to the mission. Information management, itself a business function, must employ best business practices to continuously improve customer/user support, reduce infrastructure costs, and apply the best available information technology.

To accomplish this goal successfully, ARL must:

- fully assess all current IT processes
- identify processes which can be improved
- perform comprehensive reengineering of those processes
- prepare and disseminate comprehensive and definitive guidance for IT acquisitions (hardware and software)

A common baseline throughout ARL would serve to streamline the IT acquisition process and reduce overhead and lead time, leading to improved customer support and reduced support costs. Improved acquisition initiatives must fully integrate all ARL efforts to promote the “one laboratory” vision.

The ARL baseline evaluation, ERP implementation and the COE will address several of these issues, such as streamlining the acquisition process, and providing a matrix to measure performance of IT functions, as well as effectiveness of business processes.

Objective 3.1 Institutionalize CCA Provisions

Strategy 3.1.1 Align IT investment decisions to support improved mission processes.

To support strategic plans and improved processes, IT alternatives must consider mission impacts at the ARL-wide, functional, and organizational levels. IT investment criteria must be applied to develop IT portfolios for functions and organizations within the context of an overarching ARL IT portfolio managed by the CIO. These criteria shall be in place before the end of 2002.

Strategy 3.1.2 Improve acquisition processes. Streamlined acquisition regulations and oversight processes can reduce acquisition overhead and lead-time. Acquisition reforms should be fully implemented at all levels. Promising concepts and technologies from research experiments, pilot projects, and operational demonstrations must be moved through the acquisition process smoothly and efficiently. New paradigms of acquisition must be exploited that expedite the use of COTS (e.g., the [Federal Acquisition Regulation \(FAR\) Section 12](#), new testing rules for COTS), exploit commonalities (e.g., product lines), and provide insight into front-end processes (e.g., ACTDs) and other initiatives (e.g., Global Combat Support System (GCSS)). Selection, control, and evaluation of IT portfolios provide better links to the mission and base for improved management of individual systems and initiatives. Automated acquisition processes (eBusiness) shall be in place before 2004.

Strategy 3.1.3 Institute the customer/user focus. Tools and policy will help activities systematically introduce and maintain customer awareness and compare their performance with peers. In industry, customer focus is routinely practiced and supports continuous improvement of processes, practices, and people. Routine use of integrated customer surveys by IT organizations to measure satisfaction at all levels is a key approach. These surveys shall be implemented prior to 2002.

Objective 3.2 Institute Fundamental IT Management Reform Efforts

Strategy 3.2.1 Improve IT processes. A comprehensive reengineering of IT processes themselves will serve to identify the optimum collection of information needed for efficient IT management. Experience in the IT community can be exported to produce cost/performance gains and cross-functional optimization in other areas. This strategy envisions a comprehensive, time-phased plan for assessing and improving all IT processes, including strategic planning, policy and policy enforcement, requirements generation, programming and budgeting, acquisition, and operations. These improvements shall be implemented prior to 2002.

Strategy 3.2.2 Establish uniform organizational measures and assessment processes. Performance measures linked to mission need to be embedded systematically at all levels of ARL. While the focus is on organizational improvement, both [Capability Maturity Models \(CMM\)](#) and [Baldrige Criteria](#), for example, provide quantitative assessment methods that can be used as performance indicators. These shall be in place before 2002.

Strategy 3.2.3 Improve methods and tools. Tools have been provided to assist activities performing BPR, benchmarking, Total Quality Management (TQM), architectures and other improvement activities. These and other tools must be integrated into the actual life-cycle, so end-users, managers and developers can apply them easily, routinely, and incrementally, and also share results with others. Expansion is needed to make the capabilities available via WWW or ARL Intranet, and useful for integrating with other AMC/Army systems, including regular reporting. These shall be made available by 2003.

Objective 3.3 Promote the Development of an IM/IT Knowledge-Based Workforce

Strategy 3.3.1 Provide training and educational opportunities. Ensure that appropriate training, professional development, and rewards for the work force of the ARL support IM processes, policies and innovations.

Strategy 3.3.2 Effectively utilize existing personnel processes, collaborate with other organizations to create new policies, and implement a multi-faceted approach to acquiring, retaining, and maintaining highly skilled personnel in the IM/IT fields. Use the recruitment process to acquire skilled personnel based on CCA core competencies. Use tools such as the performance evaluation process to assess employee performance to determine required training in areas of deficiency. (Beginning in 2003.)

Strategy 3.3.3 Use organization and individual assessment tools to determine skill requirements. Such tools can consist of surveys, studies, self-assessment, and organization assessment tools (automated and non-automated models). These assessment tools shall be in place by 2004.

Objective 3.4 Provide the IM/IT Support Required to Ensure Individuals with Disabilities Have Equal Access to the Information Environments and Opportunities in ARL

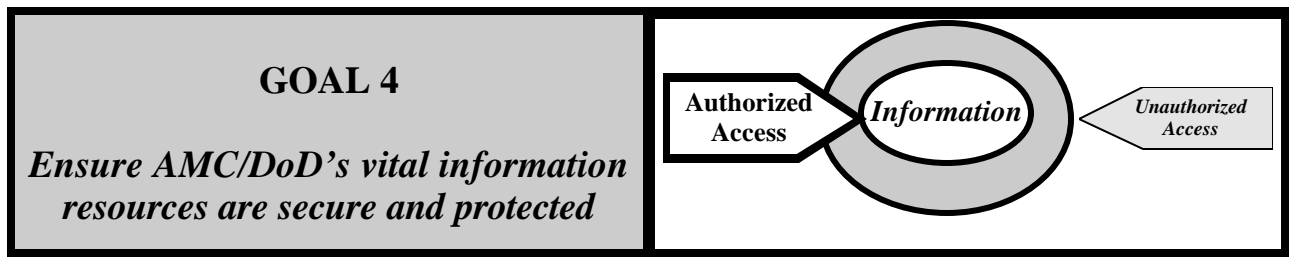
Strategy 3.4.1 Execute the Computer/Electronic Accommodations Program (CAP). Provide the hardware, software, and supportive technologies and services to make ARL work environments and activities more accessible to individuals with visual, hearing, dexterity, and cognitive impairments before 2003.

Objective 3.5 Integrate ARL IT Activities

Strategy 3.5.1 Provide tailored IM guidance for all missions and domains. Ensure that IM processes, policies and innovations are appropriate for different mission and technical domains.

Strategy 3.5.2 Identify relationships between IT activities in different domains. Identify the relationships between IT applied in different domains to ensure that overarching objectives such as interoperability, information security, and efficiency are met; and mission threads, such as sensor-to-shooter, are effective. Dependencies such as those between IT activities in support missions (e.g., procurement, personnel) and the common infrastructure will be described and strategies for managing them established. Interoperable IT is integral to the effectiveness of Army weapon systems.

		World Class Infrastructure Components												
	Goals, Objectives & Strategies	Voice communications	Video communications	Radio, wireless and satellite communications	Data communication	Desktop computer support	Management and business applications	Library and knowledge management	Visual production (graphics and publications)	Records and document management	Information technology management	Information plans and policies	Facilities and space	People – trained and productive
3	Reform IT Management Processes to Increase Efficiency and Mission Contribution													
	3.1 Institutionalize CCA Provisions						○				●	○		●
	3.1.1 Align IT investment decisions to support improved mission processes						○				●	○		
	3.1.2 Improve acquisition processes										●	○		
	3.1.3 Institute the customer/user focus										●	●		●
	3.2 Institute Fundamental IT Management Reform Efforts						●	○			●	●		
	3.2.1 Improve IT process							○			●	●		
	3.2.2 Establish uniform organizational measures and assessment processes						●					●		
	3.2.3 Improve methods and tools						●	○			●	○		
	3.3 Promote the Development of an ITM Knowledge-Based Workforce						●	●			○	○		●
	3.3.1 Provide training and educational opportunities							●				○		●
	3.3.2 Effectively utilize existing personnel processes, collaborate with other organizations to create new policies, and implement a multi-faceted approach to acquiring, retaining, and maintaining highly skilled personnel in the IM/IT fields						●	●			○	○		●
	3.3.3 Use organization and individual assessment tools to determine skill requirements						●							●
	3.4 Provide the IM/IT Support Required to Ensure Individuals with Disabilities Have Equal Access to the Information Environments and Opportunities in ARL	●	●		●	●	●		●		●			●
	3.4.1 Execute the Computer/Electronic Accommodations Program (CAP)	●	●		●	●	●		●		●			●
	3.5 Integrate ARL IT Activities						●				●	●		
	3.5.1 Provide tailored IM guidance for all missions and domains										○	●		
	3.5.2 Identify relationships between IT activities in different domains						●				●	○		
	Key:													
	● Major relationship													
	○ Minor relationship													



Description: The capability of ARL to carry out its mission from peacetime through conflict is highly dependent upon information systems and networks throughout AMC and DoD. In today's environment of sophisticated weaponry and rapid global force projection requirements, the ability to provide timely accurate information is vital to all aspects of operations. Indeed, *Information and Decision Superiority* is at the very foundation of our vision of modern warfare, and Information Assurance (IA) is essential to achieve and maintain information superiority. IA is integral to *JV2010* and the ability to integrate intelligence, command and control, and battlefield awareness functions into joint and combined operations. IA is an essential element to implementing protection of critical national infrastructures mandated by the Presidential Decision Directive – 63, Critical Infrastructure Protection.

A robust IA program requires:

- concept of operations;
- continuous monitoring and assessment of threats, vulnerabilities, and readiness posture;
- appropriate architecture, technology, tools, and material;
- sufficient numbers of adequately educated and well-trained personnel;
- effective operational policies and doctrine;
- appropriate management and oversight; and
- the ability to quickly and efficiently implement agency-wide security measures and countermeasures to limit damage when threatened.

ARL will assess existing network protective measures to ensure there are no network vulnerabilities that could potentially threaten the integrity of the system or data. An Information Assurance Plan must be established and implemented throughout ARL by 2002. ARL must also use a common, integrated Public Key Infrastructure (PKI) to enable security services at multiple levels of assurance. The PKI implementation is in accordance with DoD plans and policies regarding the PKI Roadmap, PKI Implementation Plan, and the PKI Certificate Policy.

Objective 4.1 Make IA an Integral Part of ARL Mission Readiness Criteria

Strategy 4.1.1 Designate all IT functions as mission critical, mission essential, or mission support. ARL defense infrastructure owners (e.g., command and control, logistics and transportation, health affairs, intelligence, personnel, financial services) need to identify those mission functions and information system elements of their infrastructures that perform mission critical, mission essential, or mission support functions by 2002.

Strategy 4.1.2 Provide information assurance levels consistent with the ARL's mission critical, mission essential, and mission support requirements for all networks. Detailed assurance criteria for each level and interconnection between levels must be developed and specified by 2003.

Strategy 4.1.3 Integrate IA readiness standards and metrics into the ARL readiness reporting process. ARL IA policy must address the accountability aspects of IA. It must drive the availability of resources required by operational directors and others accountable for their information, and thus ARL's IA posture by 2004.

Objective 4.2 Enhance ARL Personnel IA Awareness and Capabilities

Strategy 4.2.1 Train and certify ARL network managers, operators, systems administrators, and all other personnel involved in the operation and management of the network and its component systems. Training and certification must extend into the contractor community supporting ARL. Eighty percent of personnel in this category shall be certified by 2005.

Strategy 4.2.2 Review and enhance (as needed) military and civilian career fields to ensure that they reflect adequate recognition of network information assurance skills and capabilities. Career field designation is essential to establishing ascension paths for the military and civilian disciplines critical to ensuring efficient secure operation of the network. This review shall be completed by 2003 and a recognition program in place by 2004.

Objective 4.3 Enhance ARL IA Operational Capabilities

Strategy 4.3.1 Protect the network with a defined and controlled perimeter. While ARL depends upon unclassified connections to the Internet to accomplish unclassified basic support functions and to provide access to open source information, these connections must be controlled and capable of being monitored. Interconnection of all classified systems with any other system will be accomplished by high assurance means. Authentication must be broadly employed as soon as possible but not later than 2002.

Strategy 4.3.2 Protect the network with an integrated attack sensing and response management capability. As part of the integrated capability, all ARL Components of the network and all access points into the network must have intrusion detection capabilities as soon as possible but not later than 2002.

Strategy 4.3.3 All ARL Components of the network must adhere to established IA architecture, connection standards and procedures. All network elements must provide the required levels of security configuration management, employ methods to detect unauthorized activity and malicious code, and have adequate provisions for continuity of operations and rapid reconstitution immediately prior to the end of 2001.



Strategy 4.3.4 Implement "Defense in Depth" concepts across ARL. This concept will be applied to each operating assurance level and shall be applied in accordance with DoD

criteria, including existing protective measures traditionally used to safeguard national security information. This strategy implemented by 2003 will consist of the following:

- Hardened network infrastructure.
- Protected host secure operating systems.
- Protected enclave boundaries.
- User/Application layer security services, including non-repudiation, signature, integrity, and confidentiality.
- Employment of strong identification and authentication (I&A) services.
- Use of a common, integrated ARL Public Key Infrastructure (PKI) to enable security services at multiple levels of assurance.
- IA situational awareness based on both network and host monitoring to formulate and support an attack sensing and response management capability.
- Approved high assurance devices and configurations for all interconnections among mission sensitivity levels.

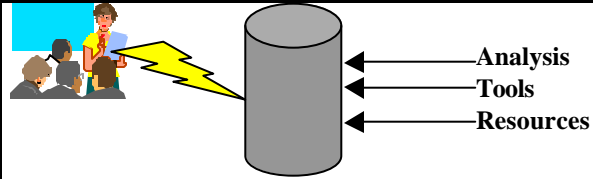
Objective 4.4 Establish an Integrated ARL Security Management Infrastructure (SMI)

Strategy 4.4.1 Integrate a broad spectrum of network services (e.g., audit, intrusion detection, operational network monitoring and control) into the ARL SMI. Confidence in the secure operation of the network must be grounded in a real-time understanding of network-wide activities. Further, the ability to identify when network users have gained access to unauthorized areas or information or to be able to attribute specific network activity to specific users of the network is an important factor in dealing with the insider threat. Implement the ARL PKI consistent with the May 6, 1999 DoD policy memorandum, DoD PKI Roadmap, DoD PKI Implementation Plan, and the DoD PKI Certificate Policy. This capability shall be implemented not later than 2003.

		World Class Infrastructure Components												
		Voice communications	Video communications	Radio, wireless and satellite communications	Data communication	Desktop computer support	Management and business applications	Library and knowledge management	Visual production (graphics and publications)	Records and document management	Information technology management	Information plans and policies	Facilities and space	People – trained and productive
	Goals, Objectives & Strategies													
4	Ensure AMC/DA/DoD's Vital Information Resources are Secure and Protected													
	4.1 Make IA and Integral Part of ARL Mission Readiness Criteria													
	4.1.1 Designate all IT functions as mission critical, mission essential, or mission support													
	4.1.2 Provide information assurance levels consistent with the ARL's mission critical, mission essential, and mission support requirements for all networks													
	4.1.3 Integrate IA readiness standards and metrics into the ARL readiness reporting process													
	4.2 Enhance ARL Personnel IA Awareness and Capabilities													
	4.2.1 Train and certify ARL network managers, operators, systems administrators, and all other personnel involved in the operation and management of the network and its component systems													
	4.2.2 Review and enhance (as needed) civilian career fields to ensure they reflect adequate recognition of network information assurance skills and capabilities.													
	4.3 Enhance ARL IA Operational Capabilities													
	4.3.1 Protect the network with a defined and controlled perimeter													
	4.3.2 Protect the network with an integrated attack sensing and response management capability													
	4.3.3 All ARL components of the network must adhere to established IA architecture, connection standards and procedures													
	4.3.4 Implement "Defense in Depth" concepts across ARL													
	4.4 Establish an Integrated ARL Security Management Infrastructure (SMI)													
	4.4.1 Integrate a broad spectrum of network services (e.g. audit, intrusion detection, operational network monitoring and control) into the ARL SMI													
	Key:													
	 Major relationship													
	 Minor relationship													

GOAL 5

Showcase knowledge management research and potential.



Description: Knowledge management is the leveraging of collective wisdom to increase responsiveness and innovation. To support this goal, ARL must establish knowledge management policy, provide guidance and oversight, and leverage technology, fostering information superiority for the war fighter, while maintaining and strengthening national security.

Providing information accessibility, accuracy, and reliability for the Army Research Labs promotes the “one laboratory” approach. This information must be responsive to business needs, and safe from compromise. It is also the basis for ARL’s support to higher-level command.

There are three main initiatives ARL must employ to support this goal:

1. Build a framework to determine the value of information.
2. Facilitate flexible access to the best sources of information and services for the customers.
3. Facilitate the creation, capture, sharing and management of implicit and tacit organizational knowledge. Identify, centralize, and organize access to the numerous knowledge sources available and critical to the enterprise.

ARL’s responsibility in this arena encompasses three levels of expertise:

1. Establish KM within ARL
2. Act as KM Center of expertise for AMC, DA and an asset to all of DOD
3. Identify and undertake necessary KM research and development

Knowledge Management, as it applies to the war fighter, is the means to assist in understanding the battle space, while depriving the enemy of information for their understanding of the battle space.

ARL should ensure that appropriate training, professional development, and rewards for the work force support IM processes, policies and innovations deployed throughout the organization.

Objective 5.1 Move Toward an Information Marketplace

Strategy 5.1.1 Build a framework to determine the value of information. Our military capabilities are heavily dependent on focused information. The value of information is a primary discriminator in business decisions and information assurance protection strategies that focus on priority targets. This strategy requires developing and applying knowledge management methods and tools for helping a customer determine the value of information to their missions and tasks (and the risks of not having the information). This

methodology, if successful, can help reduce the “glut” of information and enable ARL to treat information itself as a commodity. This framework shall be in place prior to the end of 2001.

Strategy 5.1.2 Facilitate flexible access to the best sources of information and services for customers. The customer should have a full spectrum of interoperable quality information resources and services to choose from, at affordable prices -- a menu of mission/task-related products, services and related cost/performance. The interface to the customer will have many of the characteristics of an information marketplace such as quality/cost comparison information, flexibility, choice of supplier, customer feedback, and ubiquitous help. This strategy envisions new approaches to manage information resources that use market concepts to get customers the products and services on time and at an affordable cost. It envisions increased use of performance contracts, partnering agreements, fee-for-service, and devolution of purchasing of IT to lowest levels. This strategy shall be in place prior to the end of 2003.

Strategy 5.1.3 Facilitate the creation, capture, sharing and management of implicit and tacit organizational knowledge. Identify, centralize, and organize access to the numerous knowledge sources available and critical to the enterprise. Information technology and information services are essential but insufficient to achieve information superiority alone. Knowledge management offers the potential to significantly leverage the value of our information technology investments. The implementation of knowledge management methods and tools will facilitate collaborative knowledge creation and sharing and will, in turn, optimize the effectiveness of strategic and tactical decisions. The target is an agile, responsive, learning organization in which knowledge needed to provide critical mission support is available where and when needed. This capability must be implemented not later than 2004.

Objective 5.2 Provide Information Superiority to the War Fighter

Strategy 5.2.1 Facilitate the means for the war fighter to capture the knowledge necessary to understand the battle space. Through advanced R&D efforts, equip the war fighter with superior technology to capture the information necessary to facilitate the understanding of the battle space. This can be achieved through the use of sensors and advanced C4ISR capabilities.

Strategy 5.2.2 Create advanced systems to deprive the enemy of vital information. The R&D efforts of ARL must also focus on the means to deprive the enemy of gaining an understanding of the battle space. This can be achieved by developing more technologically advanced weapon systems, and the use of RF jamming capabilities and sensors to detect intrusions.

	Goals, Objectives & Strategies	Voice communications	Video communications	Radio, wireless and satellite communications	Data communication	Desktop computer support	Management and business applications	Library and knowledge management	Records and document management (usual production (graphics and publications))	Information technology management	Information plans and policies	Facilities and space	People – trained and productive
5	Showcase Knowledge Management Research and Potential												
	5.1 Move Toward an Information Marketplace	○	○	○	○		○	●		●	●	○	●
	5.1.1 Build a framework to determine the value of information							●		●	●	○	●
	5.1.2 Facilitate flexible access to the best sources of information and services for customers	○	○	○	○		○	●		●	●	○	
	5.1.3 Facilitate the creation, capture, sharing and management of implicit and tacit organizational knowledge. Identify, centralize, and organize access to the numerous knowledge sources available and critical to the enterprise							●		●	●		●
	5.2 Provide Information Superiority to the War Fighter	○	○	○	○			●					●
	5.2.1 Facilitate the means for the war fighter to capture the knowledge necessary to understand the battle space	○	○	○	○			●					●
	5.2.2 Create advanced systems to deprive the enemy of vital information	○	○	○	○			●					●
	Key:												
	● Major relationship												
	○ Minor relationship												

GOAL 6

Use information sharing as a vehicle to accomplish the "one ARL" vision.



Description: This last goal is strongly tied to goals 1-5. The need for information sharing not only applies to ARL internally, but also the sharing of information with mission partners, across AMC, and throughout DA and DoD.

To accomplish this goal, the following initiatives must be in place:

1. Implement needed security measures in order to protect personal information within data warehouse by FY 2002.
2. Implement document management and make all ARL documents accessible to appropriate persons by FY 2003.
3. Provide access to all financial, human and physical assets by appropriate persons by FY 2004.

This goal also reinforces the need to have a common IT baseline throughout ARL. This common baseline will increase the efficiency of information sharing, promote the integrity of the information, and allow for easier processing of the shared information.

Implementation of ARL enterprise resource planning (ERP) will provide the vehicle for information sharing, leading to the "one ARL" vision. The ERP will provide for document management, access to financial, human, and physical assets by appropriate persons, and be the basis for knowledge management across ARL. Once fully implemented, ARL will be a leader in attaining the vision of the DoD, DA, and AMC strategies for achieving Information and Decision Superiority.

Objective 6.1 Implement needed security measures in order to protect personal information within data warehouse.

Strategy 6.1.1 The individual's right to privacy must be protected in Federal Government information activities involving personal information from the initiation of the project.

Strategy 6.1.2 Ensure only those with a need to know are allowed access. Command group, supervisors and personnel managers should have access to employee information. Supervisors' access should be limited to employees under their direct supervision.

Personal employee data must be maintained on a server behind a firewall, with only intranet access. Intrusion detection must be deployed to protect the information from unauthorized access. This must be in place prior to deployment of products.

Objective 6.2 Implement document management and make all ARL documents accessible to appropriate persons

Strategy 6.2.1 The open and efficient exchange of scientific and technical government information, subject to applicable national security controls and the proprietary rights of others, fosters excellence in scientific research and effective use of Federal research and development funds is fundamental.

Strategy 6.2.2 Expedite shared data environment implementation. Sharing data is key to interoperability and quality data. Requirements are exploding for reliable, secure, efficient shared information repositories to support ARL applications data and World Wide Web (WWW) information. Core mission critical data items must be logically organized and shared under the control of data “stewards” who are responsible for their quality and use. The target is an accessible set of repositories with information required to support ARL operations. Private facilities and sources should be assessed when considering alternatives. This shall be initiated prior to the end of 2002.

Objective 6.3 Provide access to all financial, human, and physical assets by appropriate persons.

Strategy 6.3.1 Employ safeguards to ensure electronic information dissemination is appropriate at all levels. Public access to financial, human, and physical assets of ARL must be legally screened to avoid dissemination of restricted information under the Privacy Act, or information, which in the wrong hands, could cause security implications to ARL. The following are guidelines to follow that must be in place prior to implementation of any product:

- (a) Ensure that information is protected commensurate with the risk and magnitude of the harm that would result from the loss, misuse, or unauthorized access to or modification of such information;
- (b) Limit the collection of information that identifies individuals to that which is legally authorized and necessary for the proper performance of agency functions;
- (c) Limit the sharing of information that identifies individuals or contains proprietary information to that which is legally authorized, and impose appropriate conditions on use where a continuing obligation to ensure the confidentiality of the information exists;
- (d) Provide individuals, upon request, access to records about them maintained in Privacy Act systems of records, and permit them to amend such records as are in error consistent with the provisions of the Privacy Act.

		World Class Infrastructure Components												
		Voice communications	Video communications	Radio, wireless and satellite communications	Data communication	Desktop computer support	Management and business applications	Library and knowledge management	Visual production (graphics and publications)	Records and document management	Information technology management	Information plans and policies	Facilities and space	People – trained and productive
	Goals, Objectives & Strategies													
6	Use Information Sharing as a Vehicle to Accomplish the "One ARL" Vision													
	6.1 Implement Needed Security Measures in Order to Protect Information Within Data Warehouse	○	○	○	○		○	○		○	●	●		○
	6.1.1 The individual's right to privacy must be protected in Federal Government information activities involving personal information	○	○	○	○		○	○		○	●	●		
	6.1.2 Ensure only those with a need to know are allowed access				○		○	○		○	●	●		○
	6.2 Implement Document Management and Make All ARL Documents Accessible to Appropriate Persons	○	○	○	○		○	●	●	●				●
	6.2.1 The open and efficient exchange of scientific and technical government information, subject to applicable national security controls and the proprietary rights of others, fosters excellence in scientific research and effective use of Federal rese	○	○	○	○		○	●	●	●				●
	6.2.2 Expedite shared data environment implementation							●	●	●				
	6.3 Provide Access to All Financial, Human, and Physical Assets by Appropriate Persons							●	●	●		●		
	6.3.1 Employ safeguards to ensure electronic information dissemination is appropriate at all levels							●	●	●		●		
	Key:													
	● Major relationship													
	○ Minor relationship													

5 Relationships to Other Policies & Guidance

The driving force for the ARL Strategic Information Management Plan is *Joint Vision 2010*, recently reinforced by *JV2020*, which is the Chairman of the Joint Chiefs of Staff strategic vision for future warfare. It is now permeating all facets of DoD doctrine. The overall improvements in technology must be integrated into Joint Forces command, control, and intelligence. Increased access to information and improvements in the speed and accuracy of prioritizing and transferring data will be of the utmost importance to the war fighter. “*We must have information superiority: the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary’s ability to do the same.*”

Army Vision 2010 – Information Superiority defines the concepts, enablers, and technologies available to assist the war fighter in understanding the battle space, and simultaneously depriving the enemy of information for their understanding of the battle space. A system of systems that will enable our forces to locate the target, provide responsive command and control, generate the desired effect, assess the level of success, and reengage when required will provide for precision engagement, one of the four principles defining *Joint Vision 2010*. The Army vision is to create an Objective Force. “*The Objective Force will meet the challenges of the 21st century by providing the Nation with an Army that is responsive, deployable, agile, versatile, lethal, survivable, and sustainable.*” Objective Force units will feature networked command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities, along with weapons systems capable of accurate, long-range fires and the ability to employ joint fires. The research and development efforts of ARL to provide the Army and DoD with technologically advanced weapon systems include the design of improved sensors, propulsion systems, weapons and materials, and sensors and electron devices. ARL is continuously striving to create better wireless networks to support the soldier in the field while maintaining the integrity of the information.

The ARL Strategic Information Plan acts to link to the September 1999 AMC Information Technology Strategic Plan with the October 1999 DoD Information Management Strategic Plan, yielding an even stronger and more responsive document.

The corporate mission of ARL is to execute fundamental and applied research to provide the Army the key technologies and the analytical support necessary to assure supremacy in future land warfare. The mission of the ARL CIO is to establish knowledge management policy, provide guidance and oversight, and leverage technology, which foster information superiority for the war fighter and maintain and strengthen national security. The C4ISR capabilities of the Objective Force is directly tied to knowledge management – the gathering of raw data from several sources, organizing that data into useful information, having the information readily accessible via network capabilities, at the same time ensuring the security of that network so as to maintain the integrity of the data to the soldier in the field.

Implementation and execution of the ARL Strategic Information Plan will require sustained cooperation, accountability, and refinements. This plan is critical to the way ARL will conduct business in the future, both internally and with mission partners. We must train the way we will fight if we are to be successful. ARL has the opportunity to make a long-range

difference to the soldier in the field in conducting Information Warfare by means of Knowledge Management and Information Assurance.

Appendix A provides a hyper linked list of policies and guidance that were instrumental in shaping this strategic information plan and should be consulted to fully understand the lineage of the issues presented herein.

6 Roles and Responsibilities

6.1 Authority for the CIO Function

The Clinger-Cohen Act of 1996 directed each Executive Agency, e.g. Military Departments, to designate a Chief Information Officer (CIO) responsible for all aspects of information resource management, information technology, and National Security Systems (NSS). The Secretary of the Army designated DISC4 as the Army CIO, and the Vice DISC4 as the Deputy CIO.

In accordance with the *Clinger-Cohen Act* a CIO is not required below Department of the Army. However, DA did release a policy as a follow-up to their CIO Implementation Plan stating, “subordinate organizations may, at their discretion, designate a CIO and establish supporting offices within their organization”. As outlined in OMB M-96-20, dated February 26, 1997, “while the organizational placement of the CIO is to be determined by the agency head, the person selected should report to the agency head directly, and not through another official”. [The Army Materiel Command’s IT Strategic Plan](#), section 2.1.2, requires all of its MSCs to have a CIO. “*Creating a CIO in subordinate organizations provides the leadership a means to develop plans and establish procedures for the improved design, use, sharing, performance, evaluation, and modernization of information resources. All CIOs have a technical relationship with AMC CIO concerning current and desired relationships among business operations and IT.*”

6.2 Responsibilities of the CIO

The responsibilities of the CIO as outlined in the [Clinger-Cohen Act](#) are as follows:

- **Business Process Analysis/Improvement**
 - Analyze the missions of the executive agency and, based on the analysis, revise the executive agency’s mission-related processes and administrative processes before making significant IT investments in support of those missions
 - Promote the effective and efficient design and operation of all major information resource management processes

Links: [Army Business Process Improvement Website](#)

- **Capital IT Investment Control**
 - Before making an investment in a new information system, determine whether the function to be supported should be performed by the private sector or by the executive agency
 - Design and implement a process for maximizing the value and assessing and managing the risks of the IT acquisitions
 - Provide for the selection, management, and evaluation of the results of IT investments

- Be integrated with the processes for making budget, financial, and program management decisions
- Include minimum criteria to be applied in considering whether to undertake a particular IT investment, and specific criteria for comparing and prioritizing alternative information systems investment projects
- Advise the Director of ARL regarding whether to continue, modify, or terminate a program or project

Links: [GSA – Capital Planning Homepage](#)
[GAO - IT Investment Evaluation Guide](#)
[OMB - Evaluating IT Investments](#)

- **IT Acquisition Oversight**

- Monitor the performance of IT programs
- Evaluate the performance of those programs
- Advise the Director regarding whether to continue, modify, or terminate a program or project

Links: [CIO and DoD Assessment Criteria](#)
[CIO and DoD Program Assessment Requirements Letter](#)

- **IT Architecture**

- Develop, maintain, and facilitate the implementation of a sound and integrated information technology architecture

Links: [Army Architecture Directorate Development Site](#) (requires MS IE)

- **Information Assurance**

- Ensure the information security policies, procedures, and practices are adequate

Links: *AMC Information Assurance Plan*

- **Information Resources Management**

- Ensure IT is acquired and information resources are managed in a manner that implements the policies and procedures of Division E, Clinger-Cohen Act and Chapter 35 of Title 44, United States Code

Links: [CIO, Department of Defense](#) (requires MS IE)

- **Performance Management**

- Ensure performance measurements are prescribed for IT used by the executive agency
- The performance measurements measure how well the IT supports programs
- Quantitatively benchmark ARL process performance in terms of cost, speed, productivity, and quality of outputs and outcomes

Links: [Performance Based Measurement – Guides](#)
[Army Management Control Evaluations](#) (requires MS IE)

- **Professional Development and Training**
 - Assess requirements established for agency personnel regarding knowledge and skill in IRM, and adequacy of such requirements for facilitating achievement of the IRM performance goals
 - Assess the extent to which the executive and management levels of the agency meet the IRM knowledge and skills requirements
 - Develop strategies and specific plans for hiring, training, and professional development in the areas of IRM and IT.

Links: [Business Process Reengineering Training](#)

- **Strategic and Capital Planning**
 - Establish effective and efficient capital planning processes for selecting, managing, and evaluating the results of major investments in IT
 - Design and implement a process for maximizing the value and assessment and managing the risks of the IT acquisitions of the agency

Links: [DoD IM Strategic Plan, 19 Oct. 1999](#)
[AMC IT Strategic Plan](#)
[GSA Capital Planning Homepage](#)

Additional CIO responsibilities include:

- Electronic Commerce
[DoD EB/EC Strategic Plan](#)
- Digitization
[Army Digitization Office](#)
- Publishing
[Army Publishing Agency](#)
- Records Management
[Office of the Deputy Chief of Staff for Personnel](#)
- Requirements Validation
[AR 79-1, Materiel Requirements \(HQ, AMC\)](#)
[TRADOC Pamphlet 71-9, Force Development Requirements](#)

Link: [CIO Additional Responsibilities](#)

6.3 Organization

To fulfill the responsibilities of the CIO, ARL has realigned its organizational structure, creating the Computational and Information Sciences Directorate (CISD). The Director of CISD is dual-hatted as the CIO. The Office of the CIO oversees corporate IT issues and is supported by CISD. The mission of the CISD is to provide full spectrum scientific and business computing, computational research, communications, and network services as a critical enabler to the ARL, Army, and the DoD science and technology (S&T) mission. In this way, the Office of the CIO can be kept to a small staff while the CISD organization acts to support a wider base of mission related activities.

The Office of the CIO is directly responsible for the following:

- Develop and enforce information policies, plans and standards for ARL which will ensure the effective and efficient accomplishment of the following functions:
 - Business process analysis and improvement
 - Capital IT investment control
 - IT acquisition oversight
 - IT architecture
 - Information assurance
 - Information resources management
 - Performance management
 - Professional development and training
 - Strategic and capital planning
 - Electronic commerce
 - Digitization
 - Publishing
 - Document and records management
 - Requirements validation

In addition the following are the explicit mission areas of CISD in support of the CIO function:

- Perform R & D in computer and computational science and engineering
- Design, implement, and manage the state-of-the-art technological infrastructure for ARL that meets the computational needs in support of S & T research activities and management and business operations
- Operate and manage the DoD Major Shared Resource Center (MSRC) for High Performance Computing (HPC)
- Battlefield information gathering and dissemination
- Manage the Army HPC Research Center
- The KM Center to include managing ARL technical information and library resources, along with the intranet, extranet and internet.

The directorate has responsibility and direct oversight for the design, development and implementation of the following IT areas: implementing plans and policies for corporate-wide information technologies and automated data processing (ADP) acquisitions; automated

corporate enterprise systems; networking and telecommunications; management and execution of one of four DoD Major Shared Resource Centers (MSRCs) for high performance computing (HPC) to include research initiatives in scientific visualization and the computational sciences; and the corporate knowledge management center.

One element of CISD, the Knowledge Management Center, provides research and exploratory development in Knowledge Management and advanced enterprise software systems for defense, and the application of this research to create enterprise-wide solutions within ARL. HQ, and AMC have appointed ARL the Executive Agent (EA) for Knowledge Management. Knowledge Management is a key link for *Information Superiority*; the concepts, enablers, and technologies available to assist the war fighter in understanding the battle space, and simultaneously depriving the enemy of information for their understanding of the battle space. *“We must have information superiority: the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary’s ability to do the same.” (Chairman, Joint Chiefs of Staff)*

The Information Technology Division (ITD) is responsible for keeping ARL's information systems, database, and computing network infrastructure and associated services up-to-date and operational. ARD consists of the Office of the Chief and the three branches: Networking and Telecommunications Branch, Systems and Operations Branch, and Computing Support Branch. Personnel are located at the two main ARL sites ALC, APG and at White Sands Missile Range (WSMR). ARD provides management and service oversight and support of ARL's non-S&T related databases, its local and wide area computing and communications networks, ARL's corporate Unix servers and ARL-wide personal computer (PC) assets. This includes serving as primary technical source for the acquisition, support, and dissemination of technologies that pertains to local area and distributed computing and telecommunications networks, maintaining network and systems security, and providing the interface of ARL local networks with DoD accredited wide area networks. ARD also has to assure that ARL's business and resource management databases and tools seamlessly interface with the Army information management infrastructure and conform with Army wide used information technology and management procedures, standards, and practices.

The single ARL Library System operates at ARL's two main campuses, ARL-APG and ARL-ALC. Each location has a clientele with distinct technical information needs and reports directly to the CIO/Director, CISD. The library is responsible for providing technical information and associated services to ARL personnel, as well as to persons of other organizations which have a current support agreement with ARL.

The High Performance Computing Division (HPCD) manages the DoD Major Shared Resource Center at ARL, unclassified as well as classified, and conducts all the functions required of a central high performance computing site and network hub. This includes planning, contract administration, and oversight of hardware, firmware, and software resource and maintenance management, performance monitoring, regulatory conformance, and maintenance of standards.

HPCD provides the ARL, Army, and DoD RDT&E with the computational capability required for conducting modeling, simulations, and analysis on the network of the DoD Major Shared Resource Centers and other Government high performance computing centers. This

includes computational methods capable of fully exploiting scaleable massively parallel processors; automated problem-adaptive grid generation; and novel methods, algorithms, and display technologies in support of scientific and engineering information processing and representation.

The oversight of the operation of the Army High Performance Computing Research Center is also the responsibility of HPCD. They coordinate and integrate its technology development with Army R&D requirements.

7 Budgetary Methodology

The [*Clinger-Cohen Act*](#), Division E, Sec. 5122 thru Sec 5124, places the government's technology decisions in a true business context. For the first time, all major technology decisions are being analyzed for the return on investment and the competitive edge they provide. As such, goals are set throughout all IT programs, particularly in the cost-performance tradeoff process. All programs will use performance based metrics to provide the analysis, control mechanism, horizontal integration, and feedback that allows ARL to wisely use IT funds and know the true value of its IT investments.

IT investments involve all funds used for IT and information resources including computers, ancillary equipment, software, firmware, services, and related resources. IT consists of any equipment or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information. The term "information resources" means information and related resources, such as personnel, IT, and funds. An "information system" is a discrete set of information resources organized for the collection, processing, maintenance, use, sharing, dissemination or disposition of data.

7.1 The ARL IT Investment Process

The current budget process at ARL includes IT within the program/project budget submissions. This process does align IT investment decisions to support mission processes in support of Goal 3 of the ARL Strategic IT Plan, ***Reform IT management processes to increase efficiency and mission contribution***. The respective directorate purchases acquisition requests for IT under \$2,500 with an IMPAC card (issued credit card). These acquisitions generally do not go through the OCIO. Acquisition requests for IT, \$2,500 to \$100K, are processed using an internal ARL automated program called "Buy-IT". A Mission Needs Statement (MNS) must be included with the acquisition request. Acquisition requests for IT over \$100K are done as a manual process. Again, a MNS must accompany the request. Approval authority for IT acquisitions greater than \$2,500 is under the direction of the CIO.

7.2 Process Improvement

To improve upon this current process, ARL must first institute a Common Operating Environment (COE) throughout ARL. This would serve to streamline the IT acquisition process and reduce overhead and lead-time.

Further improvement to the IT acquisition process would be for ARL to automate requests under \$2,500 and over \$100K. Either expanding the "Buy-IT" program could do this, or creating another automated process preferably using a COTS package already available. Again, this would assist in streamlining the acquisition process. An ERP could include a purchasing module. That module would automate all IT purchases, as well as tracking the asset to the person responsible for the acquisition. All IT acquisition requests must be approved by the OCIO.

7.3 Performance and Program Measurement

Performance-based management links investment planning with the systematic use of select feedback to manage projects and processes. Projects cannot be managed unless they are measured. The measurement process includes translating business strategies into actions at the operational level. Successful performance-based management depends upon the effective use of performance measures.

The key is to establish program/project performance measures that will be used to determine program/project success and the ability to track program/project progress. These measures shall address:

- Program/Project Success – achievement of performance measures that are linked to strategic goals and objectives
- Schedule and Progress – completion of program/project milestones, significant events, and individual work items
- Growth and Stability – stability of required functionality or capability and the volume delivered to provide required capability
- Funding and Personnel Resources – the balance between work to be performed and resources assigned and used
- Technical Adequacy – use of approved standard elements, and compliance with the DoD Joint Technical Architecture (JTA)

An essential part to this is Configuration Management (CM). The configuration management effort includes identifying, documenting, and verifying the functional and physical characteristics of a configuration item; recording the configuration of an item; and controlling changes to an item and its documentation. It will provide a complete audit trail of decisions and design modifications.

8 Strategic Roadmap

The six goals outlined in the beginning of this document must be achieved for ARL to realize the ARL Corporate vision of “one laboratory”, and the ARL CIO vision of “information and decision superiority”. This strategic roadmap is the direction for ARL to follow to make the vision a reality.

The first thing ARL must focus on is business process reengineering; how to create a common approach to current business processes used throughout the organization. ARL will head in this direction with the Enterprise Resource Planning (ERP) Project. The ERP system can integrate most of the common business functions in ARL, i.e. financial, project management, balanced scorecard, and human resources. An ERP system can utilize the concepts developed in the ARL Knowledge Management project that provide a portal to the business intelligence aspects of finance and project management. When an ERP system is fully implemented, combined with the implementation of the Common Operating Environment (COE), several steps toward achieving the vision will have been met, as well as some of the requirements outlined in the GPRA and the Clinger-Cohen Act (CCA).

The roadmap for ARL to follow involves a classic Plan, Do, Check, Act (PDCA) approach where:

- **Plan** – The ARL Strategic Information Plan
- **Do** – Annual Performance Plan detailing tasks that must be completed to attain the goals, objectives and strategies outlined in the plan. This plan should be completed in time for the annual budget review so that funds can be identified to accomplish the tasks identified.
- **Check** – Annual Performance Plan Evaluation to annually assess the metrics and accomplishments toward achieving the Strategic Information Plan and identify adjustments required. This assessment must be completed prior to preparation of the following year’s Annual Performance Plan.
- **Act** – Implement the changes identified in a new Annual Performance Plan

9 Appendix A References

<http://www.c3i.osd.mil/org/cio/ciolinks/references/itmstpln/itmstpln-memo.html>

DoD Information Management Strategic Plan, October 19, 1999.

(once you reach this site, the memo from the DoD CIO, Art Money, will appear; at the end of the memo, you have a choice of viewing the Strategic Plan as HTML or Word document)

<http://www.dtic.mil/jv2010/jv2010.pdf>

Joint Vision 2010

(must have Internet Explorer 5 and Adobe Acrobat Reader)

<http://www.army.mil/2010>

Army Vision 2010

http://www.army.mil/aps/aps_ch2.htm

United States Army Posture Statement FY01

http://www.itpolicy.gsa.gov/mks/regs-leg/s1124_en.htm

Division E – ITMRA (now the Clinger-Cohen Act)

ftp://pubs.army.mil/pub/epubs/pdf/r25_1.pdf

AR 25-1: Army Information Management, dated February 15, 2000

(must have Adobe Acrobat Reader; Chap. 2, Sect. 2-18 describes the responsibilities set forth for the Commanding General, U. S. Army Materiel Command (AMC); Chap. 2, Sect. 2-25 describes the responsibilities of Commander or directors of MSC, FOA, SRA, etc.)

<http://www.amc.army.mil/amc/ci/amc-it-strat-pln2.pdf>

AMC Information Technology Strategic Plan (must have adobe Acrobat Reader)

<http://www.c3i.osd.mil/org/cio/ciolinks/references/gpra.html>

Government Performance and Results Act of 1993

http://www.army.mil/disc4/cio/bpr_main.htm

Army Business Process Improvement (must have Internet Explorer 5)

<http://www.itpolicy.gsa.gov/mke/capplan/homepg.htm>

GSA Capital Planning Homepage

<http://www.gao.gov/policy/itguide/index.htm>

GAO – IT Investment Evaluation Guide

<http://www.whitehouse.gov/OMB/inforeg/infotech.html>

OMB – Evaluating IT Investments

<http://www.army.mil/disc4/acq/matrixf.htm>

CIO and DoD Assessment Criteria

<http://www.army.mil/disc4/acq/cioltr.htm>

CIO and DoD Program Assessment Requirements Letter

<http://arch-odisc4.army.mil/>

Army Architecture Directorate

<http://www.c3i.osd.mil/>

CIO, DoD (must have Internet Explorer 5)

<http://www.itpolicy.gsa.gov/mkm/pathways/pp08how.htm>

Performance Based Measurement -Guides

<http://134.11.192.15/fo/fod/mc/amcec/inventory.htm>

Army Management Control Evaluations (must have Internet Explorer 5)

<http://www.army.mil/disc4/cio/bpr/bprtrain.htm>

Business Process Reengineering Training (must have Internet Explorer 5)

<http://www.c3i.osd.mil/org/cio/doc/EBECStratPlan.doc>

DoD EB/EC Strategic Plan (Electronic Commerce)

<http://www.ado.army.mil/>

Army Digitization Office (Digitization)

<http://www.usapa.army.mil/>

Army Publishing Agency (Publishing)

<http://www.odcsper.army.mil/default.asp?pageid=44>

Office of the Deputy Chief of Staff for Personnel (Records Management)

http://books.usapa.belvoir.army.mil/cgi-bin/bookmgr/BOOKS/R71_9/2.19

AR 79-1, Materiel Requirements – CG, HQ AMC (Requirements Validation)

<ftp://www.tradoc.army.mil/tpubs/pdf/pams/p71-9.pdf>

TRADOC Pamphlet 71-9, Force Development Requirements (Requirements Validation) (must have Adobe Acrobat Reader)

<http://www.c3i.osd.mil/org/cio/ciolinks/references/itmra/pra95.html>

Paperwork Reduction Act of 1995

<http://www.npr.gov/library/misc/cfo.html>

Chief Financial Officers Act

<http://www.sei.cmu.edu/cmm/cmms/cmms.html>

Capability Maturity Models

<http://www.dhutton.com/baldrige/criteria.html>
Baldrige Criteria for Organizational Assessment

<http://www-ied.belvoir.army.mil>

Go to “Other Links”; select “ODISC4 Architectural Directorate”; under “Master Planning Cell” select “Army Enterprise Architecture”. As you scroll down, you will find links to:

1. Army Enterprise Architecture Guidance Document (AEAGD)
2. Army Enterprise Strategy
3. Army Enterprise Implementation Plan
4. Joint Vision 2010
5. Army Vision 2010
6. Army Enterprise Strategy Control Structure
7. C4ISR Architecture Framework ver. 2.0
8. Clinger-Cohen Act of 1996
9. Strom Thurmond National Defense Authorization Act of 1999
(amendment to Clinger-Cohen Act)

<http://www.c3i.osd.mil/c3ia/guide.doc>

DoD Guide for Managing Information Technology as an Investment and Measuring Performance

10 Appendix B

Definitions of Terms

Defense in Depth Concept - DoD has developed a "defense-in-depth" strategy which includes tools to assess the robustness and security-readiness of networks, technically qualified groups who simulate cyber attacks against information systems, networks and infrastructures to identify security vulnerabilities and help develop protections against future attacks, and a pilot program for authenticating digital signatures for electronic transactions using commercial technology

Information Assurance - represents measures to protect friendly information systems by preserving the availability, integrity, and confidentiality of the systems and the information contained within the systems

Information Superiority – the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary’s ability to do the same

Interoperability – having a systems nature; connecting numerous components to produce a unified good

Knowledge Management – leveraging of collective wisdom to increase responsiveness and innovation