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PENTAGON ADOPTS PLAN FOR CORPORATE INFORMATION MANAGEMENT

Deputy Secretary of Defense Donald J. Atwood has approved a plan for implementing corporate information management (CIM) principles throughout the Department of Defense. CIM involves policy and activities in the computing, telecommunications, and information service areas throughout the Department of Defense. This plan will carry out the decision, made by Secretary of Defense Dick Cheney in November 1990, to assign authority for CIM implementation to Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) Duane P. Andrews. It establishes a management process allowing for centralized policy making and decentralized execution by components of the Defense Department. Guiding CIM is the principle of making decisions on a business case basis with the cost of information support services being provided on a fee-for-service basis.

Several organizational changes are being made in conjunction with the recently approved plan. To serve as the initial cadre for this organization, the Deputy Comptroller (Information Resources Management) responsibility (less the the Directorate of Systems and Services) has been transferred to the office of the ASD (C3I). In addition, the ASD (C3I) is establishing an office, at the principal deputy assistant level, to implement the corporate information management program across the Defense Department, including the development of information management policies; oversight of all information technology and systems; and integration of information management principles into departmental activities. A deputy assistant secretary of Defense for Information Systems has also been established. This office will have responsibility for review and oversight of programs and information services involving automated data processing and equipment. Cynthia Kendall, formerly Deputy Comptroller (IRM), has been selected as the DASD (IS).

Attached is additional information on the major components of the recently approved corporate information management plan.

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Plan for Corporate Information Management

The approved plan provides for execution by the office of the Assistant Secretary of Defense (C3I) of the following actions to implement corporate information management:

- A. Create a new Center for Information Management within the Defense Communications Agency to provide technical advice and program execution assistance. The Center will perform functions such as:
- support the information technology standardization area of the Defense Standardization and Specification Program;
 - assist in the production of process and data models;
 - help to identify alternative approaches, methods and tools for the development of process models and data models;
 - develop DoD standard information technology architectures;
 - assist in the development, coordination and execution of the DoD data administration program and provide the technology support to achieve the objectives of that program; and
 - assist in assessing the efficiency and effectiveness of information services in DoD.
- B. Develop policy for the effective and efficient development, acquisition (consistent with the guidance of DoD Directive 5000.1) and operation of all automated data processing equipment in the Department of Defense. The only exception involves equipment and software which is an integral part of a weapon or weapons system and related test equipment, for which policy responsibility will remain with the Under Secretary of Defense (Acquisition).
- C. Execute policy responsibility for information management resources functions, such as information technology; the Freedom of Information Act (FOIA); records management, records and forms management; privacy; statistical activities; and the information collection budget.
- D. Provide oversight of information management programs through the Major Automated Information Systems Review Council (MAISRC). As chairman of the MAISRC, the ASD (C3I) will operate the MAISRC independently of the DAB for automated information (AIS) programs below thresholds of the Defense Acquisition Board (DAB). Information management programs that exceed DAB thresholds will be forwarded to the DAB for review.
- E. Exercise responsibility for all software policies and practices, including the issuance of waivers on the use of Ada, except for those activities which "involves equipment which is an integral part of a weapon or weapons systems" or the research and development of information technology. Software activities which involve these areas, test support equipment for a weapon, or weapons system or information technology basic research and development activities will remain the responsibility of the office of the Director, Defense Research and Evaluation. The interface of a weapon, weapons system or related maintenance information to DoD information systems will be in accordance with the information policies established by the ASD (C3I).
- F. Formulate program plans to execute the following strategies recommended in the "Executive Level Group Plan for Corporate Information Management."
- Develop process models that document new and existing business methods.
 - Develop data standards with emphasis on data modeling.
 - Develop and implement a set of cost effective, common information systems based upon process models and data standards.

- Develop and implement a communications and computing infrastructure based upon the principles of open systems architectures and systems transparency.
 - Manage expenditures for information, regardless of the technology involved.
 - Institute a life-cycle management methodology that addresses process models, data models, updated systems development and acquisition methodology, and educate the user and technical communities on its use.
 - Establish measures of information management effectiveness and efficiency.
 - Educate DoD personnel in the concepts of corporate information management and the plans to apply it.
- G. Establish a DoD Information Policy Council to exchange information management concepts plans and to provide a forum for the exchange of a full range of views on achieving the goals of corporate information management. The Council will help in shaping Defense and federal IRM policy matters affecting defense information management. The Council provide a forum for DoD senior level consensus on implementation of CIM principles and programs. The CIM Council and DoD IRM Council will be subsumed by this Council.
- H. Review and update the Life Cycle Management of Automated Information Systems (AISs) directives and practices of the Department--consistent with legislative and other federal information criteria (FIRMR, GSA, etc.).
- I. Establish and centrally manage data and information systems standardization programs including DoD-wide data administration, and the standards aspects of Computer Aided Logistic Support (CALs) and electronic data interchange (EDI) initiatives. The Assistant Secretary of Defense for Production and Logistics retains the responsibility for oversight of the development of CALs and EDI, but the CALs/EDI office will receive policy direction on information standardization from, and coordinate all CALs/EDI standardization activities, with the ASD (C3I).
- J. Develop, in conjunction with the DoD Comptroller, a comprehensive plan for the evolutionary transition of the Department's ADPE operations to a fee-for-service basis. Evaluate all automated information systems development and modernization as well as ADP activities to determine if the investment is consistent with DoD policies and issue appropriate guidance if necessary.
- K. Ensure the existence of management controls for stopping or redirecting ADPE procurement and ensuring that components do not obligate or expend funds on information management related activities which conflict with DoD information management policies.
- L. Finalize ongoing actions with the Office of Personnel Management (OPM) to create a new Information Systems Management series. This action will permit the design, in coordination with the Assistant Secretary of Defense for Force Management and Personnel, of a career management program for our people as the quality of our human resources is vital to the successful and sustaining implementation of CIM.

The ASD (C3I) is in the process of developing internal plans and programs to execute each of the above areas and will provide periodic progress reports to the Deputy Secretary of Defense.

**A Plan for
Corporate Information Management
for the
Department of Defense**

**Forwarded by the
Executive Level Group for
Defense Corporate Information Management**

September 11, 1990

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Foreword

This draft represents the first eight sections of a Plan for Corporate Information Management for the Department of Defense. The Executive Level Group for Defense Corporate Information Management is assisting the Department in the development of this plan. This draft has portions yet to be completed and existing sections may be reassessed. It is intended to be a living plan that will be updated and refined as needed, even after its initial completion and submission to the Deputy Secretary of Defense.

The Preface contains a model of corporate information management. It describes the elements involved in corporate information management and their relationships. An understanding of this model is important to understanding of the plan itself.

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Preface

A Model for DoD Corporate Information Management

Introduction

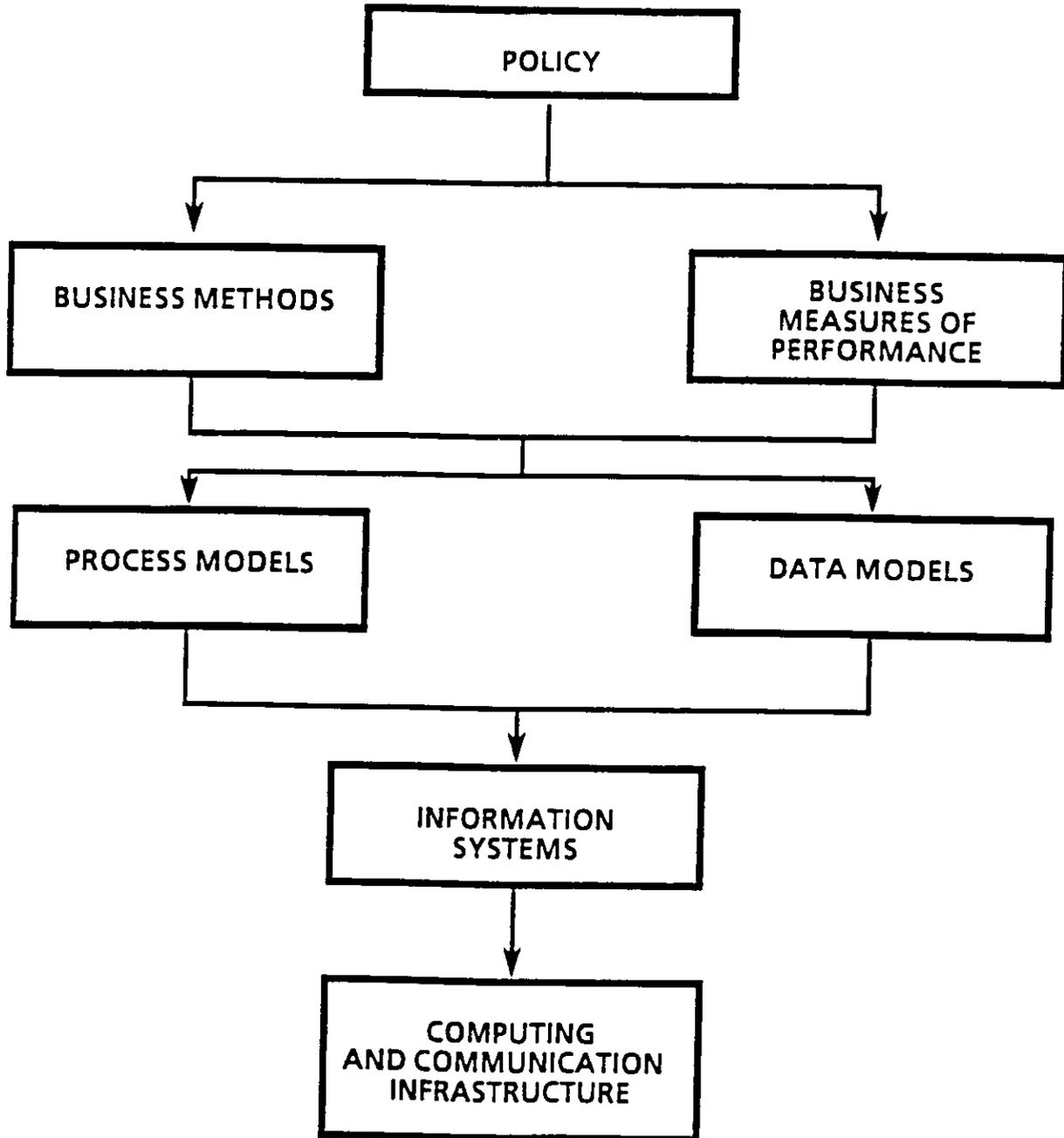
Adam Smith, the Scottish economist, wrote "The Wealth of Nations" before the Industrial Revolution was fully under way. He identified three resources that must be managed by every organization: capital, material, and labor (people). The Industrial Revolution with its ever increasing demand for information is propelling another continuing revolution built upon computing and communication technology. Now information is becoming recognized as a fourth resource. Just as capital, material, and people need to be managed in order to achieve effectiveness and efficiency, so does information.

Most U.S. government agencies and corporations viewed information management as the automation of existing business methods in order to reduce costs. With this narrow view, little effort was made to improve the methods themselves. Results were disappointing: new technology applied to old methods did not produce the benefits expected.

Forward-looking organizations took a path which put primary emphasis on continuously improved business methods. Computing and communication technology played a subordinate role, and only now is being applied to the superior business methods that have evolved.

All organizations have access to the same computing and communication technology. Benefits and competitive advantage accrue to those who apply that technology to improved ways of doing business. Computing and communication technology also makes possible new business methods which are not otherwise practicable. This wider view of information management is incorporated in the model that follows.

CORPORATE
INFORMATION MANAGEMENT
MODEL



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The Corporate Information Management Model

The following sections describe the elements of the Corporate Information Management model and explain their relationships.

Policy

Management of information begins with policy. Policies are the guiding principles and operating fundamentals that determine the direction the organization shall take. Policy is announced in memoranda, regulations and directives. These are supplemented by the beliefs and values of the organization and its members. Policies represent a choice among alternatives, and they frame the business methods and performance measures to be employed by the organization.

Business Methods

Business methods are the formal way in which business is conducted. They represent a selected and defined approach to executing the operation of a business or government agency. Two different business methods for DoD inventory management are described below.

"Inventory of spare and repair parts will be managed by individual item."

"Inventory of spare and repair parts will be managed in the context of the weapon system they support."

It is essential that business methods be continuously reexamined and redefined in order to effect improved operations. The end goal is simpler, integrated methods for organizations to adopt.

Computing and communication technology enables the implementation of business methods that would not otherwise be affordable or even possible. Properly applied, this technology allows implementation of new solutions to old problems. On the other hand, improperly applied technology can restrict the application and integration of new methods.

Measures of Performance

Measures of business and mission performance must also be defined. They provide the framework for evaluating effectiveness and efficiency of an organization's business methods and the resulting operations. These measures permit comparative evaluation and provide insight to the strengths and weaknesses of operations. In the private sector, such criteria as return on investment, return on sales, inventory turn rates and other basic measures are commonly used measures. The

government needs to define measures appropriate to its non-profit environment which would include cost, responsiveness of service, and quality of service. Measures should be regularly reexamined and refined. Some will be abandoned in favor of new measures that better direct and motivate the private corporation or government agency towards its objectives.

Process models

Process models document business methods by graphically describing the tasks performed and their sequence. They are used to describe present methods and are essential to continuously evolving improved methods. Process models reveal better ways of doing business and are valuable as training aids.

In the case of a private sector manufacturing firm, a process model is needed for each of the three primary corporate functions: preproduction, production, and sales and marketing, and one for management of resources. Appropriate process models will be necessary in the government that are consistent with the fundamental missions of the agency or organization. Formal methodologies for developing process models are available.

Data models

While process models represent the activities of a business method, data models represent the data necessary to execute the business method. Data models formally define the terms (data) used in a business method. These terms and their relationships, once defined, comprise a business language, and like natural languages, are to be captured in a dictionary. Together the data models and dictionary comprise a corporate information standard.

In the absence of an information standard, data definitions will vary among systems, and, therefore, data must be translated between systems. Translation gives rise to misunderstanding and errors, particularly where computers are employed; computers have no tolerance for inexactness, no ability to compensate or interpret. Therefore, an information standard is essential if data are to be shared among organizations and the systems through which data flow are to be common.

Information systems

Business methods and performance measures are implemented through information systems. New methods require new information systems. For example, a policy of direct shipment from supplier to user changes the major supply and distribution activities and work cannot be performed without new information systems for stock control and warehousing.

Process and data models must be built before development of an information system begins. Applied in that sequence, these models facilitate integration and commonization of systems. Since they formally define a business method in a sufficiently rigorous manner to permit correct implementation, they also help simplify system design, cutting development and operating costs. Together, process and data models provide the how and what, respectively, of an information system.

Common business methods are implemented through common information systems. A system is common when used by more than one organization; otherwise, a system is unique. Common process models and common data models are a prerequisite of common information systems. If the processes used by organizations vary, or the data definitions and relationships are not identical, their information systems cannot be common; nor can data be exchanged without translation.

Infrastructure

Information systems support operational transaction processing--such as payroll and personnel--and provide information needed to support management decisions. Information systems are largely computer based. The computing and communications infrastructure upon which they stand includes modules such as:

- information/data processing centers,
- office automation, and
- communication networks.

Core facilities, notably information/data processing centers and communication networks, are managed and operated by information system organizations. End user resources, which include personal computers and workstations, are generally operated by the users.

Infrastructure is constantly undergoing change as new computing and communication technology becomes available. However, investment in leading edge technology of itself does not guarantee a return.

Executing the Corporate Information Management model from the top down can lead to dramatic improvement in business effectiveness and efficiency of an organization whether private sector or government. Driving this model from the bottom up, that is, beginning with change to the computing and communication infrastructure, re-automates old ways of doing business and potentially institutionalizes ineffective and inefficient ways of doing business.

The Corporate Information Management model has implications for teamwork as well as technology. Knowledge of the business

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. must be combined with knowledge of computing and communications.
This requires that users and technical support groups
collaborate at every stage of execution.

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Planning Structure and Content

The plan which follows represents a summary master plan for Corporate Information Management. It is expected that supporting plans will be necessary for each functional area and organizational element in the Department. These plans should have the following content:

- Mission
- Scope
- Guiding principles
- Vision of the future
- Situation analysis
- Objectives
- Goals
- Strategies
- Programs
- Organization structure
- Resources
- Implementation issues

Mission

The mission of _____ is to cause information to be managed across the DoD as a resource that contributes significantly to the shaping and achievement of objectives of the DoD.

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Scope

The scope of DoD Information Management involves both information requirements at all levels of authority and information, whether used to conduct transactions or support decisions.

Information management includes business process models, data models, information systems, and the computing and communications infrastructure.

The scope of this plan shall initially be restricted to business oriented functions. Specifically this includes the business functions involved in managing personnel, materiel, and financial resources. Command and control is not included in the initial scope, but subject to reassessment. Embedded weapon systems are also initially excluded.

Determination of policy is outside the scope of this plan.

Guiding Principles

1. Information will managed through centralized control and decentralized execution.
2. Simplification by elimination and integration is to be preferred to automation whether developing new or enhancing existing information systems.
3. Proposed and existing business methods will be subject routinely to cost-benefit analysis which includes benchmarking against the best public and private sector achievement.
4. New business methods will be proven or validated before implementation.
5. Information systems performing the same function must be common unless specific analysis determines they should be unique.
6. Functional management will be held accountable for all benefits and all directly controllable costs of developing and operating their information systems.
7. Information systems will be developed and enhanced according to a Department-wide methodology and accomplished in a compressed time-frame in order to minimize the cost of development and achieve early realization of benefits.
8. Information systems will be developed and enhanced in the context of process models that document business methods.
9. The computing and communications infrastructure will be transparent to the information systems that rely upon it.
10. Common definitions and standards for data will exist DoD-wide.
11. Wherever practicable, information services will be acquired through competitive bidding considering internal and external sources.
12. Data will be entered only once.
13. Access to information will be facilitated, and/or controlled and limited, as required. Information will also be safeguarded against unintentional or unauthorized alteration, destruction, or disclosure.
14. The presentation between the user and system shall be friendly and consistent.

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Objectives

The mission of the Department of Defense is clear and significant. A coherent and strong information management program is required to accomplish that mission. Every action that is taken with respect to information management should be weighed against the broad DoD objectives and information management should serve those objectives. From a corporate or business standpoint, the Executive Level Group views five major constituents which the DoD information management program should serve; they are as follows:

AMERICAN PEOPLE: Provide an effective, global defense against threats to the United States through ready and able forces.

U.S. ALLIES: Increase the effectiveness of defense capabilities through collaboration and joint efforts.

U.S. CONGRESS: Utilize available resources efficiently and in a manner that ensures mission readiness and effectiveness.

SUPPLIERS: Provide a cooperative environment that ensures acquisitions are efficient and competitive, with reasonable return.

EMPLOYEES: Provide a safe, enabling work environment with opportunities for professional enrichment and growth.

(This section will be updated when the supporting programs for implementation of this plan's strategies are developed.)

Vision of the Future -

The Department of Defense in the Year 2000

1. The Department has been downsized to reflect reduced East-West threats and fewer available resources. New threats involve more varied problems, greater volatility, and more diverse locations. Even with smaller overall numbers, military readiness and effectiveness is very high because forces are more self-contained, flexible, mobile and responsive. The Department has developed the capability to plan and employ needed forces, often in concert with U.S. allies, in a more rapid, precise and effective manner.

2. Defense expenditures continue to decline in proportion to the GNP. The Defense burden on the U.S. economy is now at its lowest point in recent history. At the same time, the Department has substantially increased the productivity and effectiveness of its business and support activities. The resources freed up through improved business operations have permitted the Department to maintain a fully effective military mission capability and devote a greater percentage of its reduced budget to mission needs.

3. The acquisition cycle has been shortened significantly, compressing the time to field new weapon systems. Parallel improvements have been made in the acquisition of other DoD systems and support materiel. A streamlined and simplified acquisition process has been put in place to solve the problems identified by the 1989 Defense Management Report and other efforts.

A new generation of weapon systems has contributed significantly to the high level of military readiness and effectiveness. These new weapon systems employ a high proportion of commercial technology and have been designed and acquired so that technological currency can be maintained throughout weapon systems life-cycle. Lower priority weapons capabilities are being obtained by combinations of life cycle extensions, upgrades or new tactics.

4. Planning and resource allocation within the Department has been strengthened by achieving a common, more integrated Planning, Programming, Budgeting, and Execution System. It permits consistent, mission-oriented output analyses to support decisions throughout all four phases. A new generation of accounting systems provides the necessary information to link execution with prior phases. Consistency and clarity of resource allocation decisions have been improved.

5. Simplification of business methods has helped to establish a more flexible organization for the Department, which is now able to adapt more rapidly to changes in mission emphasis, resources, or size. Responsiveness to policy and performance of operational level activities has been improved, reinforcing the longstanding DoD management approach of centralized policy and decentralized execution.
6. The Department has streamlined business operations and realigned functional organizations around them to enhance quality and responsiveness. Organizational redundancy and layering have been reduced. Operating expenses are declining more rapidly than is the overall DoD budget.
7. Direct control ("ownership") of support resources is no longer considered essential to achieving responsive, cost-effective results from support functions. Clarified responsibility and accountability ensures effectiveness and efficiency of support organizations. The Department's flexibility in applying or redirecting its varied resources is enhanced.
8. Business functions are now evaluated against a suitable set of performance measures. Benchmarking against the best private and public sector achievement is routine and is stimulating fresh ideas. Simplification of methods and availability of consistent data provide the basis for improved evaluation. As a result, the Department's ability to identify and correct problems that inhibit effectiveness and efficiency is improved significantly.
9. A more select and skilled workforce of military and civilian personnel has resulted from selective recruitment, and training and development programs. Increased focus on individual needs and professional development has broadened responsibility and improved job satisfaction for both military and civilian personnel. Restructuring and enlarging employee duties have assisted DoD's downsizing through increased productivity, supported organizational change, and improved job satisfaction.

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Vision of the Future -

DoD Information Management in the Year 2000

1. The management of information is central to the Department's strategy of simplifying business methods and operations. Information management is recognized as a business and force multiplier. It has reduced non-value added work, improved productivity, and enabled consolidation of like functions and organizations. This has enabled an effective military mission capability to be maintained within a smaller defense budget.

Allocation of resources and the ability to effect change is improved through the more integrated Planning, Programming, Budgeting and Execution System.

2. Business methods across the Department have been documented and opportunities to simplify business activities identified. Functional managers are challenging and changing old ways of doing business.

Process models are being used to document and continuously improve business methods. This activity provides the foundation for the development of new and enhancement of existing information systems.

3. The Department's measures of business performance have sharpened focus upon quality, costs, productivity, and time-based performance. These measures allow benchmarking against the best comparable achievement in the public and private sectors, and are helpful in justifying investment in new business information systems. Capture of performance data is integrated into system design.

4. Data standards have been set and implemented across the Department's major business, support, and mission areas. A data modeling initiative has resulted in standardized data descriptions and attributes for all alphanumeric, geometric and symbolic data. Data dictionaries provide the reference and discipline for data bases that are the foundation for clear, concise and consistent data. Access, sharing, and reconciliation of information is dramatically improved.

5. Most data are being entered into information systems without being handwritten or typed. Electronic data capture systems, embedded in weapon systems and business activities, are often the source. The availability of data standards and a communications network necessary for data sharing permits data to be entered only once. As a result, costs are reduced, errors avoided, and the currency of data improved.

6. Electronic data interchange and funds transfer are now in place, speeding financial transactions and the exchange of technical and management information. There is less reliance on paper documents and traditional mail. Transactions between the Department and its suppliers and among DoD Components are handled more quickly and accurately; clerical and other costs are reduced, everyone is better informed.

Electronic and voice mail are in everyday use by most employees. Videoconferencing has become economically preferable and widely used.

7. With barriers to data exchange disappearing, business methods are more readily integrated and improved. Information systems, implementing these business methods, are more compatible with each other, less complex, and therefore more easily developed and changed.

A new generation of transaction systems that incorporate the simplified business methods and standardized data have been introduced or are nearing completion. These systems tangibly impact quality, costs, and response times for the business operations they support. They are recognized as essential to reducing overhead and maintaining effective operations in a downsized DoD.

A coordinated portfolio of decision support systems that draw upon standard operating data are used as tools of planning and analysis. Through their use, there has been a reduction in middle management responsible for decision support. Decision making is accelerated.

Information systems are easier to use than in the past. System ergonomics, which addresses the interaction between people and machines, is much improved, increasing user acceptance and satisfaction and reducing the need for special training.

8. Common information systems, embodying common business methods, are in wide use. Examples include payroll, supply, personnel, and financial management. Common information systems have simplified many business operations, and have provided organizational flexibility. Continuous improvement is more easily effected. Management control is strengthened through the uniform implementation of policy.

9. An updated and expanded life-cycle management methodology is applied across the Department for development or enhancement of information systems. The methodology describes management policies, decision points, responsibilities and activities to be followed. Business method definition, process modeling and data modeling are integrated into the methodology. The guiding principles for information management are included as exit criteria of the milestone process. Development costs and times are reduced by following this methodology.

Guides have been developed for both the user and technical communities that provide a "how to" approach for meeting the requirements of the methodology. Users understand their responsibilities more clearly and can perform them more efficiently.

10. Functional managers have assumed direct responsibility for the funding, costs, and achievement of benefits for the information systems upon which they depend. Information management is no longer delegated to the technical support community. Both the users and the technical support community are pleased with this relationship.

Each system development and major enhancement is a joint undertaking by the user and technical support communities, which team together. A program manager is established to lead the development and enhancement effort.

Each information system in use is the responsibility of an operations manager who controls all change. As a result, common systems remain common and costs of enhancement and operation are contained.

As younger, computer-literate employees enter managerial ranks, the trend for functional managers to assume ever greater responsibility for all aspects of information management accelerates. It is a trend propelled by the ready availability of convenient, easy-to-master computer power, and the recognition that information systems are best developed by people who are close to and understand the business itself.

Vision of the Future -

DoD Information Technology in the Year 2000

1. Computers are now at least a hundred times more powerful than in 1990. Data transmission speeds and reliability are keeping pace with increased computer efficiency. The DoD's enormous range of computing needs is taking advantage of these technologies in improving effectiveness and efficiency of its business, mission and weapons systems. There are few cases where the available commercial technology does not meet the Department's needs.

2. The DoD is operating a computer and communications infrastructure that is transparent to the information systems that stand upon it. The overall architecture is open in order to accommodate a wide variety of centralized and distributed technologies and products.

DoD is transitioning to a computing and communications environment in which most applications processing occurs locally and corporate databases are primarily controlled centrally.

3. In emphasizing a heterogeneous, open systems architecture, the DoD has focused on standards critical to portability and interoperability across the DoD and with allies. An open systems environment has permitted information systems to be developed, operated, maintained, and enhanced independently of technology or vendor.

The Department assumed a leadership role in the development of open systems standards, working in concert with national and international standards bodies. This has resulted in standards with a consensus of support from industry and our military allies in the following major areas:

- Operating systems
- Database management
- Data interchange
 - Graphics
 - Product data
 - Document processing
- Network/communications services
- User interfaces
- Programming services

DoD computer and communications security requirements have also been integrated into these standards.

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4. A digital communications infrastructure, built upon Open Systems Interconnection (OSI) standards, is fully operational. A long-haul network has been implemented which provides integrated digital communications services. Local area networks are being integrated with the long-haul digital communications network, providing end to end interoperability. Wideband communications permit integrated voice, data, and video services. In combination these provide interconnection flexibility, fast response times, and lowered costs. Necessary security capabilities have been incorporated into the network.
5. The time to develop and deploy information systems has been compressed and life-cycle costs reduced through special attention to software. These improvements have been achieved through a coordinated set of initiatives that emphasize increased reuse of software, reliance upon commercial software, use of standard high order languages, and improved software development methodologies.
6. Standards for graphically oriented windowing have rendered user interfaces simple, intuitive, and consistent. This combination has reduced training costs and improved productivity of users and technical support personnel. Voice recognition allows hands-free interactions, advancing some business and mission applications.
7. Data modeling tools and methodologies have matured to permit rapid generation and manipulation of data bases. Data bases are shared DoD-wide in the context of operational and security considerations. Data base management software facilitates assembly of data both for transactional processing and decision support.
8. Open architecture and transparency of infrastructure has led to hardware being acquired as a commodity that serves applications. In order for the DoD to better avail itself of cost effective technology, acquisition times have been shortened, enabling the cost and performance benefits of new information technology to be realized fully. Open system standards expedite the acquisition process and compress the time to migrate information systems to new platforms. The result is improved operational support and increased competition consistent with Congressional and administrative regulations.

In view of the continued rapid advance of technology, leasing of hardware is often seen as a more cost effective alternative to purchasing.

Economic analyses in support of acquisitions are more in keeping with industry practice.

9. Expenditures for information systems and supporting technology, including development, operations, and maintenance, constitute the same percentage of the DoD's total budget as a decade earlier.
10. Independent analysis reveals that DoD is using information technology effectively and efficiently, comparing favorably with use by the public and private sectors. DoD is recognized as a leader in the application of information technology.

DoD Situation Analysis

1. The Department is reassessing its military posture, structure, programs, and resources to deal with changing global conditions. These include the unprecedented pace and magnitude of political developments in Eastern Europe and the Soviet Union which portend a lowered threat from the Warsaw Pact and changing, more unpredictable threats to peace.
2. Significant reductions in Defense spending are planned, starting with the reductions included in the President's FY 1991 Budget. Current Department planning calls for a 2% yearly real decline in expenditures for the foreseeable future and expectations are that DOD expenditures, relative to the GNP, will be reduced to the lowest level in 40 years. Additionally, planning is underway to effect a downsizing of the Department in response to the changing threat as well as Congressional and public expectations that Defense expenditures decline.
3. The process for acquiring new weapon and other systems is long, cumbersome and complex. Important first steps have been taken to implement the framework for streamlining and clarifying the acquisition process. For example, a direct line of authority from the Program Manager to the Program Executive Officer and Service Acquisition Executive has been established. The Defense Acquisition Board's exit criteria are more clearly defined and its decision process expedited. However, much remains to be done to achieve fully the policy goals of lowered costs, improved performance, and reduced acquisition times.

A variety of weapon systems with a wide range of technological capabilities are used by the Department. Use of commercial products within the systems varies greatly.

4. The potential of the Department's planning and resource allocation process, the Planning, Programming, and Budgeting System, is not yet fully realized. The process employs differing categories and terminology across its four major phases and is oriented toward resource inputs rather than mission-capability outputs. There is little flexibility in redirecting or reallocating resources.

5. Business methods, developed on an ad hoc basis, have been institutionalized in older generation information systems which are not easily evolved. Many aspects of the Department's business functions and activities are cumbersome and inflexible, particularly in light of the pace of changing world events.
6. Large numbers of personnel and financial resources are involved throughout the Department in supporting functions which are fundamentally the same. Examples include payroll, financial management, personnel and logistics. The Department has begun to identify opportunities to reduce costs and improve effectiveness in these areas by restructuring organizations. The recently announced supply depot consolidation is a first step in this effort.
7. The buildup of separate organizations, policies, and procedures has resulted from a bias that responsive support could not be achieved without direct control or "ownership" of the resources performing these functions and from earlier, less constrained budgets. This has impeded improvements to business performance.
8. The Department has not established formal measures to assess performance of its business functions. Cost and performance measures that are used do not effectively assess the quantitative or qualitative aspects of ongoing or planned business operations and infrequently consider impacts on overall operational objectives.
9. The DoD workforce contains a mixture of skills and capabilities. While the workforce is generally capable, a portion of the military and civilian personnel do not have sufficient skills to employ new advanced technology with the flexibility desired. New employees reflect many of the skill deficits that national educational assessments have identified.

September 11, 1990

Situation Analysis of DoD Information Management

1. Effective control through management of information is not a central focus of most DoD organizations. Information management responsibilities are fragmented within the DoD. Information requirements are usually considered in the context of automated support capabilities. Today's information environment consists of a wide variety of information systems and supporting resources.
2. Business methods are infrequently documented, making it difficult to understand the linkage between improvements in the efficiency or effectiveness of business operations and information systems. Today's information systems inhibit improvements to functional performance because they have institutionalized outdated and cumbersome business or functional methods and are difficult to adapt.
3. Evaluations within the Department focus on development costs and technical performance, rather than contribution to overall efficiency and effectiveness of business operations. Inaccurate, incomplete, and inconsistent auditing and benchmarking data contribute to the difficulty in measuring the contribution of information systems to business cost and performance.
4. Standardization of data across the Department has not yet been achieved, and most data continues to be managed in separate, functional "stove pipes." Several initiatives are underway to address the lack of consistent data definitions which impedes exchange, integration, aggregation, and comparison of data in the Department. The overall DoD data standardization effort recently has been revitalized and given high priority, and programs such as PDES and CALS, are underway to standardize product and technical data across the Department.
5. Data entry in many functional areas remains a labor-intensive activity, subject to many errors and often requiring reentry. Delays, inconsistencies and higher costs are the result. Automatic means to ensure data consistency, detect and correct errors, or assist in the entry process are generally lacking in the DoD.

6: Electronic exchange of documents exists in limited applications within the DoD. Currently, much data exchanged between DoD and its suppliers exists in digital form, but must be converted to hardcopy for use by the Department. Transfer of technical and management information as well as financial transactions are characterized by delays in deliveries, high handling costs, and inefficient processing steps. DoD has recently taken steps to address this problem through increased emphasis on data standardization, the CALS program, and EDI.

7. Many barriers to effective data exchange exist in the Department, impeding integration and improvement of business methods. Information systems mirror these data exchange problems since they are complex and not readily adapted.

Transaction systems have been in use for some period to support the Department's financial, logistics, personnel operations. Built upon older business methods, upgrading has been difficult and software is not flexible. Their potential is not realized.

Decision support capabilities are available in a wide variety of forms and capabilities. Inconsistency, inaccuracy and inaccessibility of data degrade their usefulness.

8. Very few common information systems have been developed within the Department. Existing federal and DoD development policies have encouraged individual, non-integrated systems development efforts. Efforts to standardize systems for certain functions, such as pay and personnel, received strong emphasis in the Reform 88 initiative, but little success was achieved because the efforts focused on technical systems. Thus, in the DoD today, there are 27 payroll systems, which is still a reduction from several years ago. Systems are complex and expensive, retraining costs are high, and organizational flexibility is degraded by "unique" systems.

9. Life-cycle management methodology exists in the DoD for business applications, but is focused on the development of individual information systems. The fundamental concepts linking business methods and information systems through process and data models is not integrated into overall or individual systems planning. No formal guidance is available to functional management describing functional management's responsibilities during the system life-cycle.

10. Accountability for functional, financial, and technical aspects of an information system is generally focused on the program manager. Although improvements have been achieved through time, responsibilities of the user and developer during systems development and operational phases are not fully clarified and remain focused primarily on technical issues rather than functional requirements. Functional proponents tend to take a hands-off approach to systems development after the early mission need/requirements development stage.

Situation Analysis of DoD Information Technology

1. The Department's technology base which originated during the 1950's and early 1960's has evolved into a variety of disparate computing and communications architectures. An enormous variety of computing technology, from laptop computers to supercomputers, is available and is used effectively to support many DoD business, support, and mission areas. At the same time, the varied information technology infrastructure constrains many system developments and enhancements and hinders the insertion of new technology. New system developments can take advantage of leading edge technology, but their effectiveness is limited because of interoperability problems with existing systems.
2. The Department has a multiplicity of unique information system architectures with incompatible hardware, software, and communications networks. This situation has developed, in part, because the Department focused on individual systems developments designed to meet specific user requirements.
3. The Department's numerous information systems are based on a variety of computer language standards, multiple definitions and formats for the same basic data, several communication protocols, and a multiplicity of hardware and operating systems. The lack of uniform standards within the Department has contributed to incompatible data and systems, and has impaired the ability to exchange information among systems or users, port systems to new architectures, interface with allies, or take advantage of commercial products.
4. The majority of the Department's long-haul data communications needs are being met by the Defense Data Network (DDN) and dedicated leased circuits. The growth in distributed processing has resulted in increased dependence on telecommunications to transmit and receive data processing information and increased the burden on the communications infrastructure. Communications protocol standards exist, but the wide variety of vendor-unique implementations complicate communication interoperability within the DoD. Further, many local-area and wide-area networks in place are not integrated with the long-haul networks.

10. In some areas the DoD uses leading edge information technology, while in others it is tied to obsolete computing and communications capabilities.

Goals

Overall achievement of the visions for the DoD Information Management Plan will require actions throughout the decade in three resource areas: financial, human, and materiel. The four goals for this plan follow.

1. Process models that document new and existing business methods developed by FYxx.
2. Standard data definitions available for the Department's business and mission areas by FYxx.
3. A set of common information systems for each function, built upon standard data and business methods, implemented by FYxx.
4. An open systems computing and communications infrastructure, transparent to the information systems that stand upon it, implemented by FYxx.

Prerequisites for the plan:

1. Business methods will be defined for three resource areas: financial, human, and materiel by FYxx.
2. Performance measures will be set, parallel to documentation of business methods, with initial measures in place by FYxx.

Strategies

There are eight strategies for achieving the goals:

1. Develop process models that document new and existing DoD business methods.
2. Develop data standards with emphasis on data modeling.
3. Develop and implement a set of cost effective, common information systems based upon process models and data standards.
4. Develop and implement a communications and computing infrastructure upon the principles of open systems architecture and systems transparency, to include but not be limited to:
 - Operating systems
 - Database management
 - Data interchange
 - Network/communications services
 - User interfaces
5. Manage expenditures for information, regardless of the technology that is applied.
6. Institute life-cycle management methodology that addresses process models, data models, updated system development and acquisition methodologies, and educate the user and technical communities on its use.
7. Establish measures of information management effectiveness and efficiency.
8. Educate Department personnel in the concepts of corporate information management and the plans to apply it.

Department of Defense

Corporate Information Management

Prepared by the

Assistant Secretary of Defense

(Command, Control, Communications and Intelligence)

April 1991



ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301-3040

COMMAND, CONTROL,
COMMUNICATIONS
AND
INTELLIGENCE

April 18, 1991

Honorable Robert C. Byrd
Chairman
Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Joint Appropriations Conference Report (Report 101-938) for FY 1991 requested the Department of Defense's (DoD's) Senior Information Resources Management (IRM) Official to submit a report to the Appropriations Committees of the Congress on the status and progress of the Corporate Information Management (CIM) initiative. The enclosed report is forwarded in response to this request.

Your continued support for the CIM initiative is appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read "Duane P. Andrews".

Duane P. Andrews

Enclosure

cc: Honorable Mark O. Hatfield
Ranking Republican



ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301-3040

COMMAND, CONTROL,
COMMUNICATIONS
AND
INTELLIGENCE

April 18, 1991

Honorable Jamie L. Whitten
Chairman
Committee on Appropriations
House of Representatives
Washington, DC 20515

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cc: Honorable Joseph M. McDade
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Background

The Joint Appropriations Conference Report (Report 101-938) for FY 1991, "Making Appropriations for the Department of Defense," requested the Department of Defense's (DoD's) Senior Information Resources Management Official to submit a report to the Appropriations Committees of the Congress

"on the status and progress of the Corporate Information Management (CIM) initiative; to include program milestones, return-on-investment objectives, dates for selection of interim standard systems in each functional area, and anticipated investment costs associated with the development of interim standard systems or the integration of existing systems with the interim standard architecture."

The purpose of this report is to respond to Conferees' request.

Also in Report 101-938, the Conferees centralized funding of development, modernization, and procurement for CIM-related automated information systems in the Office of the Secretary of Defense. To this end, the Conferees provided \$1 billion of development and modernization operation and maintenance funding to the Secretary of Defense, and moved some procurement funding for Service-proposed systems to the CIM funding line in Procurement, Defense Agencies.

This report also includes a description of the disposition of the FY 1991 CIM funding, as it was centralized according to the Conferees' instructions.

Defining Corporate Information Management

The Corporate Information Management initiative is part of the President's overall effort to improve the management of the Department of Defense. In response to the President's direction to "realize substantial improvements ... in defense management overall," the Secretary of Defense issued the Defense Management Report (DMR) in July 1989. The DMR contains outlined policies and directions the DoD is taking to maintain or improve defense capabilities, even in times of austere resource availability.

One of the important tenets of the DMR is that the members of the Department will be "encouraged to examine and improve continuously the processes in which they are engaged -- and to raise, at all levels, new ideas and approaches that will contribute to a sound, affordable program to maintain adequate U.S. military strength." This must be done to take full advantage of opportunities for cost savings and quality improvement.

Accordingly, the Deputy Secretary of Defense announced in October 1989 the Corporate Information Management (CIM) initiative, to reduce non-value added work and costs, and to improve the management of DoD's information.

CIM is one of the management methods for achieving DMR cost reductions while maintaining or improving the effectiveness of DoD military missions. The primary objective of CIM is business process improvement. The role of information technology is supportive and allows the adoption of more efficient and effective business area management practices.

CIM acts as an enabler for many DMR initiatives and their associated cost savings. This includes DMR initiatives such as reducing supply system costs, consolidation of supply depots, consolidation of financial operations, stock funding of

reparables, reducing transportation costs, and better management of Defense Agencies.

Computing and communication technology make possible new business methods which are not otherwise practicable, but the decision to use technology must be made within the context of DoD's mission and policy. The extremely large and complex logistics operations in the Persian Gulf employed information technology to mark and track individual items, plan depot repairs and critical asset redistribution, and rapidly determine aircraft cargo loads. These process improvements were enabled by advances in information management, but the bottom line in each case was the added contribution to mission achievement.

To achieve its objectives of transforming the DoD business practices, the CIM program will follow the principles of:

- Centralized direction of functional methods, but decentralized execution;
- Application of business case analysis to functional and information technology decisions;
- Centralized guidance on how to apply standard information technology;
- Managing risk through the evolutionary migration of existing systems, salvaging and revising existing know-how and software to the maximum extent possible; and
- Benchmarking new business methods and systems against the best accepted practices.

In establishing the CIM initiative, the Deputy Secretary of Defense directed that DoD examine successes in industry, suggesting that these same successes could be achieved in the Department. To evaluate the depth of DoD's information management issues, he convened an Executive Level Group (ELG) of high-level industry and Defense officials to recommend an overall approach and action plan for improving information management throughout the Department. The ELG was set up as a

Federal Advisory Committee reporting directly to the Deputy Secretary of Defense.

The ELG began its work in early 1990. In looking towards DoD's information needs for the future, the ELG made its projections from three perspectives:

- (1) policy direction to down-size and refocus the U.S. defensive posture in light of changing threats,
- (2) management of information as an enabler for improving the Department's business methods and operations, and
- (3) information technology available as a supportive infrastructure.

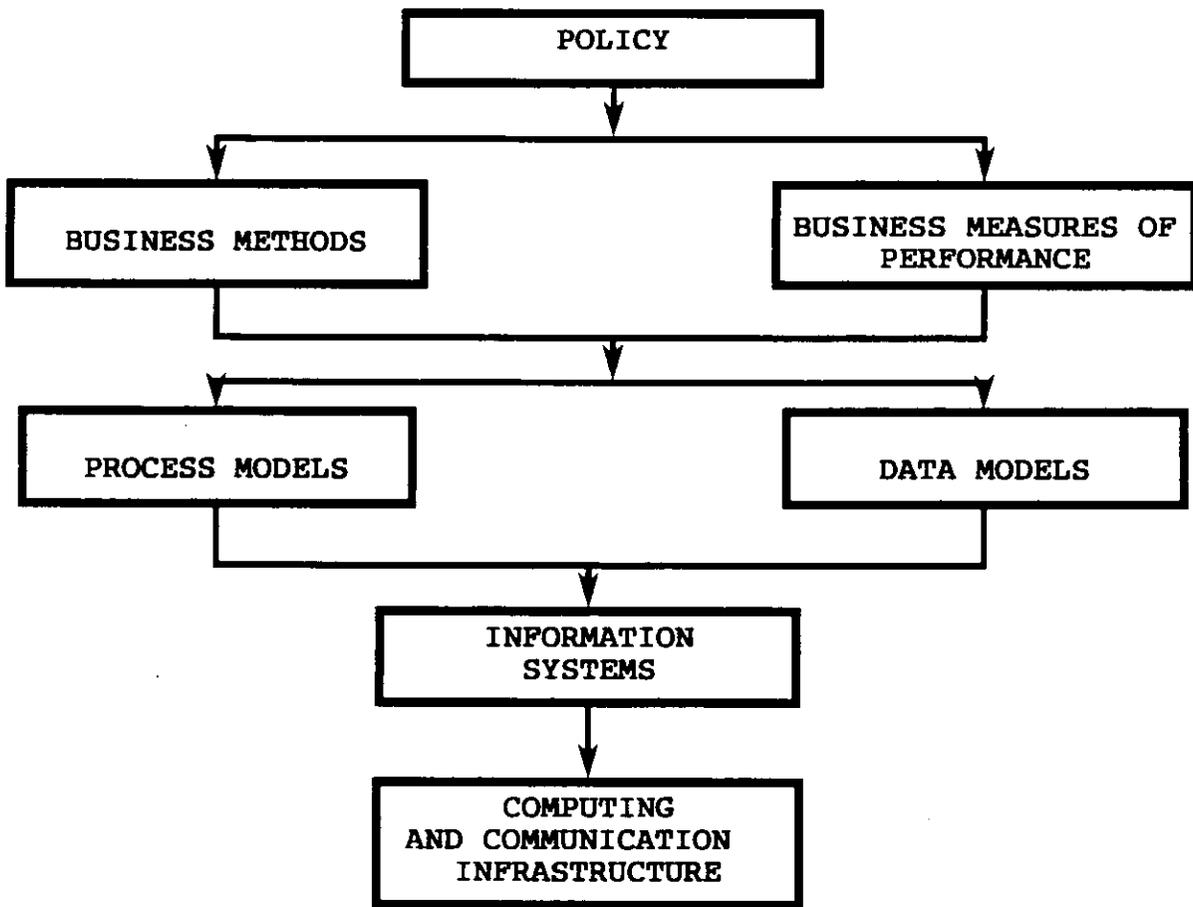
The ELG submitted its plan to the Deputy Secretary of Defense, who endorsed the plan on November 16, 1990. The concepts set forth in the plan serve as a guide for implementation of CIM principles throughout the Department. The concepts are being accepted DoD-wide because they are mission driven, support functional responsibility and accountability, focus on business methods and practices, and introduce to the Department a mission-oriented discipline for information management.

The Department takes a broad view of information management as a means for achieving DMR savings. This wider view includes information as a resource, to be managed in much the same manner as capital, materiel, and people. Forward-looking organizations take a path which puts primary emphasis on continual improvement of business methods, with information management being one of the means available to carry out those improvements.

The ELG plan describes the use of information technology thusly: Management of information begins with policy, which are the guiding principles and operating fundamentals. Business methods represent a selected and defined approach to executing the operation of the DoD organization. Measures of business

performance provide insight into the strengths and weaknesses of operations; appropriate measures may include cost, responsiveness of service, and quality of service. Process models graphically described tasks to be performed and their sequencing. Data models show the information necessary to execute business tasks; data may need to be shared among several business tasks, such as having a Social Security number being a shared item among personnel, payroll, and reserve mobilization tasks.

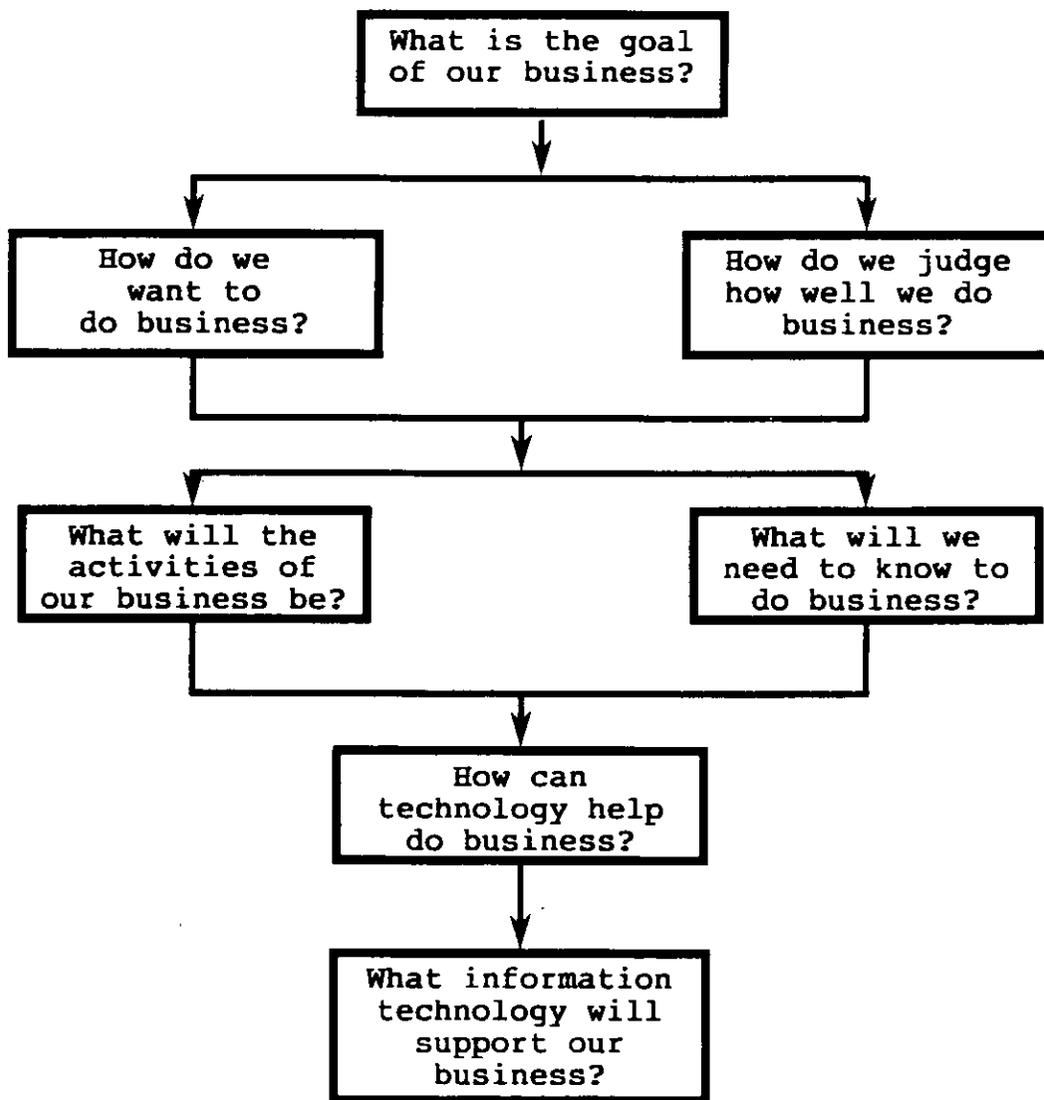
The following depicts the model described in the ELG plan:



The application of information systems and information technologies comes into play only after revised business processes have been examined thoroughly and agreed upon. This is important as CIM is not about information technology per se, but will enable benefits to be reaped through simplification and

standardization of functional processes and the ways we do business in DoD.

As shown in the model, information systems come into the planning process only after business policies, procedures, and measurements have been considered. Restated as a series of questions, the model becomes an examination of business strategies first, and an information management plan second.



Information systems and technology can, however, make possible changes in business methods that would have been otherwise infeasible. Bar codes and hand-held scanners allow inventories to be tracked without checking it into and out of a warehouse. Smart cards carry complete and accurate medical records without having to transport bulky manila folders. Decisions to use information technology must be driven, however, by a business need for new ways of doing business, such as lowering costs or finding a more accurate and timely way of tracking inventory.

Use of information systems must facilitate, rather than hinder, access to data. To do this, DoD's computer and communications systems must give access to data that is needed by appropriate users, while keeping unauthorized users out. DoD's computers must be able to share data without requiring cumbersome translation. Under the CIM initiative, DoD is increasing its efforts towards applications software and data standardization. DoD's computers need to allow for software portability to prevent dependence on any individual computer manufacturer. Under the CIM initiative, DoD is directing its movement towards an "Open Systems" architecture.

Major Accomplishments

In the last year, the CIM initiative has made significant progress in meeting its goals in several important areas. It has laid the foundation for long-term strategies, and it has demonstrated the feasibility and viability of the initiative at the operational level.

Key to the progress in the first 18 months of the initiative is the high level of cooperation that has developed among the senior managers of the DoD Components. The CIM initiative is a joint and cooperative effort and has the full support and interest of the Secretary of Defense and the Deputy Secretary of Defense. The "jointness" of the CIM initiative is exemplified by two major accomplishments -- the progress made in the CIM functional groups and the cooperative allocation of the \$1 billion CIM Transfer Fund set up by the Congress for FY 1991.

Functional groups

At the same time the Deputy Secretary of Defense established the Executive Level Group to advise on an overall direction for the Department, he also set up groups to examine eight business areas and the information management of each.

Groups of experts from across the Military Departments and Defense Agencies are now convened to examine and document the functional requirements in their respective areas of responsibility. The initial set of areas is as follows: Civilian Payroll, Civilian Personnel, Contract Payment, Distribution Centers, Financial Operations, Government Furnished Material, Materiel Management, and Medical. These groups, for the first time, bring together functional experts across the Department in a major collaborative effort to improve the efficiency and effectiveness of each function.

Each Service and selected Defense Agencies contribute to the membership of each group. OSD provides leadership and administrative support for each group. Members of each group remain permanently assigned to their home organizations but are detailed full time to the group for its duration. The functional groups are supported across DoD organizational lines:

Membership of Initial Eight Functional Groups

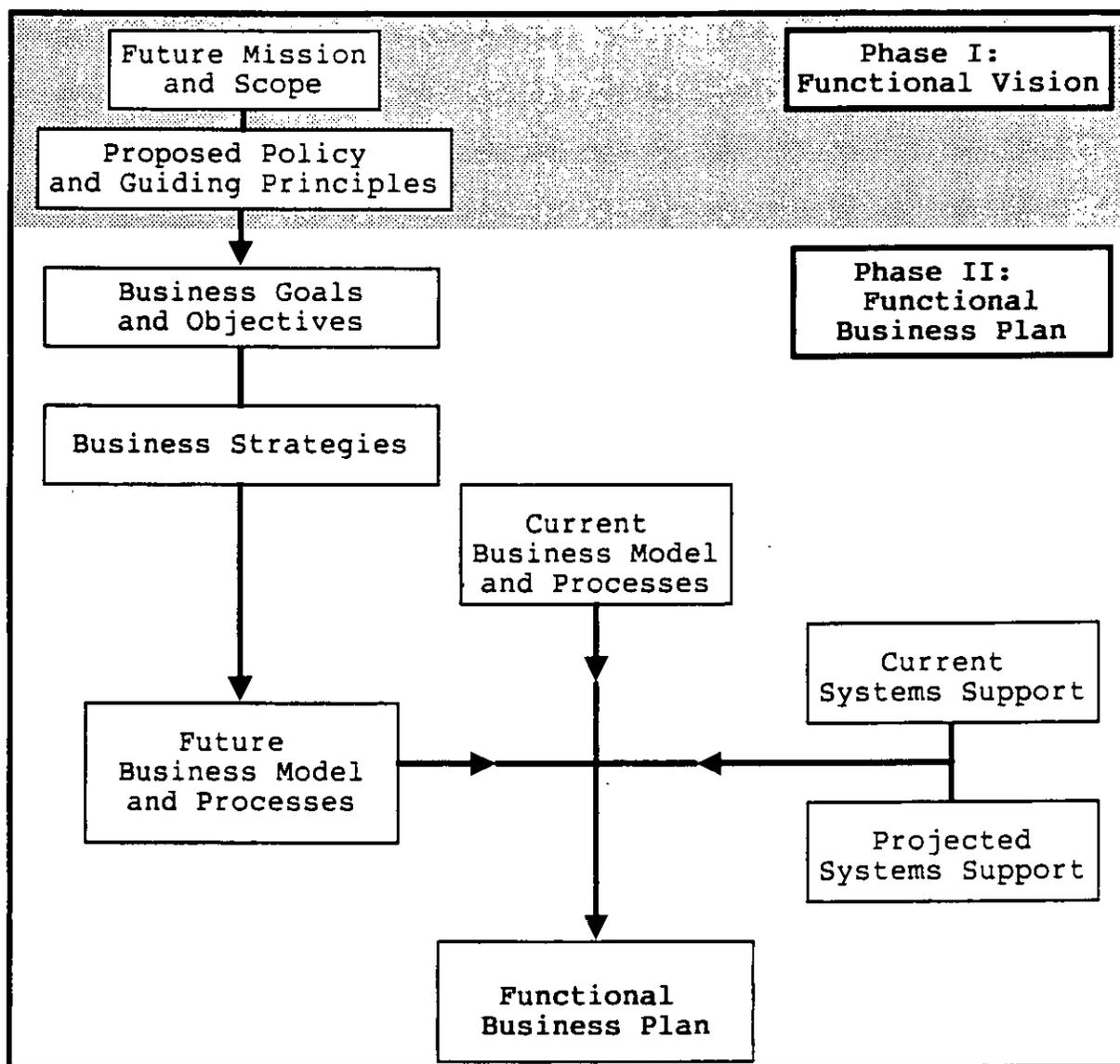
<u>Group</u>	Army	Navy	Air Force	Defense Agencies	OSD	Totals
Civilian Payroll	3	3	3	3	4	16
Civilian Personnel	4	6	5	3	5	23
Contract Payment	3	2	2	6	4	17
Distribution Centers	4	3	3	3	5	18
Financial Operations	5	7	8	4	6	30
Government-Furnished Material	1	1	2	2	6	12
Materiel Management	6	5	5	10	6	32
Medical	9	6	7	5	6	33
TOTAL	35	33	36	43	42	181

The eight groups are working from a single set of procedures that follow closely the model described by the Executive Level Group. The emphasis is on looking to the future to determine upcoming needs and the ways to do business in each area. The process provides a measurement of each group's progress, and consists of two initial phases: Functional Vision and Functional Business Plan.

Phase I - Functional Vision. Phase I focuses entirely on the business aspects of a function and develops a visionary perspective of the function as it will ultimately evolve.

Phase II - Functional Business Plan. Phase II develops strategies for meeting the future vision, documents the current environment and functional requirements, projects the future environment and functional requirements, and formulates the business plan for management decisions.

The first two phases are the province of the functional groups, and their activities are shown as follows:



In most functional areas, these joint functional business plans -- including strategies and plans for moving forward to yield cross-Service management requirements and redesigned business practices -- will be the first of their kind.

The Functional Business Plan is responsibility of functional management. Proposed and existing business methods are subject to business case analyses, that include benchmarking against the best public and private sector achievements. New business methods which have clearly been demonstrated as cost effective via a business case can then be scheduled for evolutionary implementation as Phase III of the systems planning process. Several groups will be completing their functional planning products in the next few months and will be working with their functional management to develop more detailed information systems strategies.

The initial eight functional groups have all completed the Functional Vision of their respective areas, and all are proceeding through Phase II. During the study of the current function in this second phase, several hundred business practices are analyzed, and hundreds of possibilities for near-term improvement have already been identified. These improvements should result in a significant savings to the Department through the elimination of unnecessary practices.

Among the techniques being used by the functional groups is benchmarking with industry and other government agencies. The civilian personnel group has found this technique particularly useful. Members of the working group have visited with organizations having exemplary human resource management programs, such as Federal Express, Florida Power & Light, and IBM. Members of the group have also been in direct contact with other corporations with outstanding personnel practices, such as Marriott, General Electric, Wal-Mart, and Monsanto. Through these efforts, the group is developing recommendations for changes to DoD's civilian personnel practices. Changes to

supportive information systems will be developed in accordance with these revised business practices.

A chart showing more detailed information on the status of the groups follows:

PROGRESS OF THE INITIAL EIGHT FUNCTIONAL GROUPS

<u>Functional Group</u>	Start Date	PHASE I FUNCTIONAL VISION completion	PHASE II FUNCTIONAL BUSINESS PLAN estimated completion
Civilian Payroll	December 1989	August 1990	3rd Quarter FY 1991
Civilian Personnel	April 1990	September 1990	3rd Quarter FY 1991
Contract Payment	June 1990	February 1991	3rd Quarter FY 1991
Distribution Centers	December 1989	September 1990	3rd Quarter FY 1991
Financial Operations	March 1990	October 1990	1st Quarter FY 1992
Government-Furnished Material	February 1990	January 1991	3rd Quarter FY 1991
Materiel Management	May 1990	December 1990	4th Quarter FY 1991
Medical	April 1990	July 1990	1st Quarter FY 1992

Following the joint analytical process laid out under the CIM initiative has caused a number of interfunctional discussions that might never have taken place, each of which resulted in better understanding of the direction DoD is going or needs to go. In the medical area, the functional group is taking an interdisciplinary, departmental look at services that support their area, such as financial, material, and personnel services, and itemized areas or actions for follow-on work and coordination with other functional areas. The groups are also influencing examination of services other than information

technology which support their business strategies and can be shared jointly. For example, the Military Services have formed a consortium to look at providing centralized joint training in some civilian personnel areas.

The initial eight groups, in addition to supporting their own functional areas, also provide direct support to the overall DoD information management area by being the prototypes for examining the policies and processes in all DoD business areas. The first eight groups are setting the stage for the business case to be the driver in DoD's information management decisions, with information systems providing support for carrying out those decisions.

Disposition of the FY 1991 \$1 Billion CIM Transfer Fund

The FY 1991 Defense Appropriations Act reduced the Department operation and maintenance request for information technology development and modernization by 27 percent, from \$1.374 billion to \$1 billion. Furthermore, it transferred the \$1 billion to the Office of the Secretary of Defense (OSD) for central management and allocation consistent with the Corporate Information Management (CIM) initiative.

Immediately upon enactment, the DoD Comptroller, through the Deputy Comptroller (Information Resources Management (IRM)), established a working group to carry out the requirements of the Act. DoD Components submitted to OSD details on the systems included in their modernization efforts as described by the Congress, with the number of related systems as follows:

<u>COMPONENT</u>	<u># SYSTEMS</u>
Army	109
Navy	128
Air Force	124
Defense Logistics Agency	21
OSD	7
TOTAL	389

To ensure allocation of the central funds as necessary to "further the objectives of the Corporate Information Management initiative," in accordance with the Act, the Deputy Comptroller (IRM) worked with functional management representatives to set criteria for development programs to receive funding.

The review of the Components' systems undergoing modernization and development included a categorization of the systems based on their adherence to fundamental information management criteria, such as --

- Have the costs of the systems been weighed against the functional benefits to come from the system?
- Is the development proceeding at a given level of effort or is it focused at achieving a given goal?
- Does the development effort support interoperability, and is it directed to an open systems environment?

OSD functional manager representatives identified 42 information systems in areas covered by the initial eight functional groups totaling \$224 million. For these 42 systems, \$79 million was allocated to cover FY 1991's first 4 months of funding. The \$145 million remaining for the 42 systems was withheld from allocation until formal designation of Executive Agents was made for the initial CIM functional areas. (Executive Agent designation is discussed later in this report.)

The initial allocation was made by the DoD Senior IRM Official on December 24, 1990. This first allocation included the \$79 million discussed above. A total of \$701 million was allocated on a specific system basis to support previously approved modernization requirements in areas not related to 1991 CIM functional groups. The allocation was based on a prioritized list of systems and included command and control systems. This included no funding for new starts in FY 1991. In addition, a total of \$26 million was allocated to Executive Agents in the materiel management area.

The transfer of operation and maintenance funds to the DoD Component appropriations required prior OMB apportionment approval. This approval was obtained January 28, 1991, when OMB granted DoD's request for exemption to apportionment requirements due to Desert Shield/Desert Storm. Further delays, in allocating funds to program offices, were experienced in the DoD Components.

Subsequently, Executive Agents for the functional areas were designated and the remaining \$145 million for the 42 systems was allocated on March 27, 1991. An additional \$8.8 million was allocated on the same date to a high-priority logistics program. The \$40 million balance remaining from the \$1 billion will be allocated in May 1991. The \$40 million was held pending identification of any exigent requirements; otherwise, it will be allocated to programs previously prioritized.

CIM Program Status and Progress

The progress made by the ELG and the initial functional groups has already been discussed. Along with this progress, the organizational structure for carrying out the CIM initiative has evolved to meet program management, oversight, and execution needs to improve information management on a Departmentwide basis.

While the organizations for carrying out DoD's CIM initiative have undergone structural changes, the CIM program continues to have as its primary objective to facilitate the adoption of more efficient and effective management practices and improve DoD's business processes. This includes improving the standardization, quality, and consistency of data in the Department's management information systems and more effective use of these information systems. CIM, by its scope and nature, is a long-term effort.

CIM Program Organization

At the inception of the CIM initiative, responsibility for setting up and carrying out initial studies and tasks was within the office of the DoD Comptroller, the DoD Senior Information Resources Management (IRM) Official. The Deputy Comptroller (IRM) was given primary responsibility for setting up, facilitating, and supporting the Executive Level Group and the initial set of functional groups.

The DoD Comptroller also served as one of the three DoD members of the ELG, the others being the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) (ASD(C3I)) and the Assistant Secretary of Defense (Program Analysis and Evaluation) (ASD(PA&E)). The group also drew six expert members from the private sector, with one of the industry members serving as chairman of the ELG.

In endorsing the ELG's Plan for Corporate Information Management for the Department of Defense, the Deputy Secretary of Defense also assigned responsibility to the ASD(C3I) for establishing an organization to implement CIM throughout the Department and for ensuring the proper integration of DoD computing, telecommunications, and information management principles. The ASD(C3I) has put into place an organization to provide CIM with the highest levels of functional and technical guidance, and information exchange in the Department. Concurrently, the ASD(C3I) is now the DoD Senior IRM Official and the chairman of the Major Automated Information System Review Council (MAISRC).

The new organization was put in place to support the CIM function and to serve as the focus for this vital area both within and without the Department. To accomplish this, the ASD(C3I) has established a Director of Defense Information (DDI), at the Principal Deputy Assistant Secretary level, with a supporting staff. This Director has overall responsibility for implementing the corporate information management program across the Department. This includes the development and implementation of information management policies, programs and standards and the integration of the principles of information management into all of the Department's functional activities. In addition, within the OASD(C3I), a Deputy Assistant Secretary of Defense (Information Systems) (DASD(IS)) with responsibility for review and oversight of ADP programs and information services has been established, along with a supporting staff.

The DDI is implementing a functional information management process to document business methods, rationalize functional information management programs, and enable users to achieve improved information management support. This is emphasized through the establishment of the DDI's Deputy Directors for

Functional Information Management (FIM). This includes FIM for C3I, to define relationships between and oversee interfunctional systems integration of CIM and C3I information systems.

To provide further valuable technical and program execution assistance, the Center for Information Management within the Defense Communications Agency (DCA) is being established. DCA will be redesignated as as the Defense Information Systems Agency. The Center will perform such functions as:

- support the information technology standardization area of the defense standardization and specification program;
- assist in the production of process and data models;
- help to identify alternative approaches, methods and tools for the development of process models and data models;
- coordinate the development of DoD standard information technology architectures;
- assist in the development, coordination and execution of the DoD data administration program and provide the technology support to achieve the objectives of that program; and
- assist in assessing the efficiency and effectiveness of information services in DoD.

Management of information begins with policy, as was shown in the model described by the ELG. To ensure the highest level policy direction for DoD information management, Functional Steering Committees are in place to review the products and recommendations of the appropriate functional groups. Each committee is chaired by the Assistant Secretary of Defense (ASD) of the pertinent function, and participants are the senior officials responsible for the function across the DoD Components. The DoD Senior Information Resources Management (IRM) Official serves on all committees. The initial set of Functional Steering Committees, their chairs, and the applicable functional groups are as follows:

CORPORATE INFORMATION MANAGEMENT
FUNCTIONAL STEERING COMMITTEES

FINANCIAL MANAGEMENT

Chairman: Mr. Sean O'Keefe, DoD Comptroller.

Functional Groups: Civilian Payroll
Contract Payment
Financial Operations
Government Furnished Material

HUMAN RESOURCES MANAGEMENT

Chairman: Mr. Christopher Jehn, Assistant Secretary of
Defense (Force Management & Personnel)

Functional Group: Civilian Personnel

MEDICAL

Chairman: Dr. Enrique Mendez, Jr., Assistant Secretary of
Defense (Health Affairs)

Functional Group: Medical

PRODUCTION AND LOGISTICS

Chairman: Mr. Colin McMillan, Assistant Secretary of
Defense (Production and Logistics)

Functional Groups: Distribution Centers
Materiel Management

The CIM initiative also requires support and understanding by the entire DoD community. To facilitate this, the ASD(C3I) is also establishing a DoD Information Policy Council (IPC) to exchange information management concepts and plans and to provide a forum for the exchange of a full range of views on achieving the goals of CIM. The IPC will be chaired by the ASD(C3I) and will assist in shaping Defense and Federal IRM policy matters affecting defense information management. A key subelement of the IPC is the CIM Council, which was formed in early 1990 and is chaired by the DASD(IS). The CIM Council has

met one to two times per month since its formation, and has proved itself vital to exchanging ideas and promulgating CIM principles throughout the DoD Components. The CIM Council will be renamed the Information Policy Subcouncil.

The DDI has established the Information Technology Policy Board to address joint technical issues, such as programming languages and compliance with data standards, that will require centralized policy direction. This board meets weekly and is chaired by the DDI. In its first months, the Information Technology Policy Board is to reach decisions and begin implementations in three of the most critical areas of information technology:

- DoD-wide information technology standards,
- Modeling support to architecture and system development, and
- Defining standards and methods for managing data.

Strategies for Implementing Information Management

The Executive Level Group identified the following eight strategies, which are being used as a basis for formulating further CIM plans:

1. PROCESS MODELS

Early emphasis will be placed on documenting new and existing business methods throughout the Department's major functional areas. This will be accomplished to be sure that functional improvements truly drive all of our future information systems decisions. The use of process models is one way we will determine cross-Service methodologies and move to joint programs while maintaining or improving quality of support to any given organizational element.

2. MEASUREMENT OF EFFECTIVENESS AND EFFICIENCY

The Department will establish an aggressive program to identify and install functional, technical and cost measures of performance as an essential element to establish proper controls for information management. This will allow the Department's measures of business performance to focus upon quality, costs, productivity, and time-based performance. These measures will allow benchmarking against the best comparable achievement in the public and private sectors, and will be integral to making investment decisions in new business information systems.

3. MANAGEMENT OF EXPENDITURES

The ASD(C3I) will work with the DoD Comptroller and the Defense Finance and Accounting Service to ensure the capture and management of all costs for information systems. This long-term effort will require us to update our supporting accounting systems to gather the cost data necessary to move towards a fee-for-service environment. Within a fee-for-service environment, information services will be accounted for in much the same way as an organization's personnel or contracting expenses. Measurement of information support expenses will be a management tool for assessing a system's efficiency.

4. COMMON INFORMATION SYSTEMS

Work is progressing towards our goal of developing and implementing a set of cost effective, common information systems based upon process models and data standards. Development of Functional Information Management plans, to coordinate information systems directions and developments across the functional areas of the Department, will provide the basis to identify where common systems can be employed and when systems should be unique. This is a high-priority area.

5. OPEN SYSTEMS INFRASTRUCTURE

We intend to promote the development and implementation of a communications and computing infrastructure based upon the

principles of open systems architectures. Establishment of the architecture identified in this strategy is a long-term effort but a key link in our plans, since it will free DoD from the software locks in proprietary systems that hinder the move to new technology. The overall architecture must be open and capable of rapidly accommodating a wide variety of centralized and distributed technologies and products.

6. DATA STANDARDS

The Department intends to assume a strong leadership role to assist in accelerating the development of open systems standards and will place increasing reliance on full conformity with Federal Information Processing Standards for all new system developments. In particular, DoD is working as a partner with the Commerce Department's National Institute for Standards and Technology.

7. LIFE-CYCLE MANAGEMENT METHODOLOGY

Strengthening of this cornerstone information management policy will govern the implementation of CIM principles in the automated information system development process. We will improve our existing life-cycle management methodology to make the accelerated deployment of evolutionary systems development feasible. The new life-cycle management methodology will include process models, data models, updated system development and acquisition methodologies, and educate the user and technical communities on its use.

8. EDUCATION

We must educate Department personnel in the concepts of CIM and the plans to apply it. The Information Resources Management College of the National Defense University is the leader in meeting the Department's education needs in this area.

In carrying out the CIM strategies, a balance must be struck between the long-term goals of information management and the

near-term needs of DoD missions. DoD has in place a large inventory of information systems and business practices. Only through evolutionary migration can we achieve the move to improved information management while managing the risks of such an undertaking.

Migration Systems and Executive Agents

The Department of Defense has a sizable investment in installed information systems that provide required functional capabilities. It is important to determine whether there are opportunities for taking advantage of these existing resources as joint requirements are determined and must be met. Consequently, the Department developed mechanisms in the summer of 1990 for examining existing systems and for assigning responsibility for accelerating the migration to systems emerging from Phase II plans by means of "interim" systems.

The "interim" systems concept designed to save ADP money today by transitioning to fewer systems supporting the same function in the near term, without major changes in business processes. The Business Plan and subsequent information systems strategy will detail the approach to migration. The migration systems will be made as the functional groups complete the Business Plans and the Department establishes the open architecture policy and rules for the future.

Guidelines for selecting systems for migration were developed to meet day-to-day operational requirements, while maximizing the use of limited resources and eliminating duplicative automated information systems (AIS) development. This is to set the stage for evolution of DoD's information systems to meet joint requirements and to become more responsive to improvements in DoD's business processes.

Migration systems are selected only when DoD's selection criteria, as issued by the DoD Comptroller in June 1990, are met:

- A migration system will be employed only if net benefits accrue to the Department prior to deployment of a standard system whose development is based on the CIM model.
- A selected migration system must meet functional requirements, based on the current functional concept of

operations, and is applicable and acceptable across DoD Components.

- A selected migration system must be flexible enough to adjust to functionally drive operational changes.
- A selected migration system must be operational or in an advanced state of development and be partially implemented. A migration system may be a system that is operational in one of the Components or it may be a hybrid system composed of modules taken from currently operational systems.
- System implementation must be technically feasible; that is, it must address the ability to interface with related functional areas.
- An acquisition strategy must be feasible to support the transition.

A key criterion requires that benefits exceed costs. It must be recognized that if the cost of fielding that system to other Components exceeds its benefits, the Department does not accept that system for migration.

As teams of experts in their areas, the CIM functional groups were asked to provide nominations on candidate systems for use as migration systems to their respective Functional Steering Committees for review. The Functional Steering Committees then nominated candidate systems to the DoD Senior IRM Official for approval.

In addition, executive agents in the eight initial functional areas have been designated by the DoD Senior IRM official to act as stewards of migration of systems in their functional area. Part of their mission is the responsibility to obtain the greatest benefits from the use of limited resources. Executive agents must submit a technical plan, which includes feasibility, economic and technical analyses, to the appropriate Functional Steering Committees for review and to the DoD Senior IRM Official for approval. Identification of funding for

migration systems is also the responsibility of the executive agents for their respective functional areas. Resources for the multiple systems to be replaced by the migration systems will be transferred to the executive agents for use in administering the transition to the migration systems.

Some example of the role of the functional groups and executive agents in the migration of systems is as follows:

- 1) The Medical area has received approval for twelve systems by the Senior IRM Official for migration. In the medical area, most major systems are already quad-Service or scheduled for replacement by a quad-Service system. Some of the selected medical systems are expected to operate well into the 1990s, such as the Composite Health Care System (CHCS).

- 2) A decision for the Civilian Personnel function has been made. The Air Force Personnel Data System-Civilian (PDS-C), of which the Personnel Concept-III system is an integral part, was selected. The Secretary of the Air Force is designated as the acting DoD Executive Agent until the ASD(Force Management and Personnel) provides a final recommendation.

Orderly implementation of incremental improvements to systems is essential to avoid the degradation of the information processing capabilities achieved to date through endeavors undertaken jointly by the functional communities and the automated data processing communities over the past 10 years. The migration from interim to future systems will be evolutionary. It must be free of periods of discontinuity that would deprive the Department of Defense of its access to information and would disrupt DoD's mission functions. To achieve this objective, the migration of systems is designed to maintain a balance between a rate of transition and the ability of DoD Components to absorb the changes. This will be done in such a way as to retain within the individual Components

sufficient capability to define and articulate requirements to meet its special mission-related needs and legitimate managerial preferences.

The selected migration systems in the initial eight functional areas and the associated executive agents are:

APPROVED EXECUTIVE AGENTS AND MIGRATION SYSTEMS

FUNCTIONAL AREA	APPROVED EXECUTIVE AGENTS	APPROVED MIGRATION SYSTEMS
Civilian Payroll	Defense Finance and Accounting Service (DFAS)	
Civilian Personnel	Air Force	Air Force Personnel Data System - Civilian (Approved 3/4/91)
Contract Payment	DFAS	
Distribution Centers	Defense Logistics Agency (DLA)	
Financial Operations	DFAS	
Government Furnished Material	DFAS	
Materiel Management <ul style="list-style-type: none"> • Asset Management • Acquisition Management • Item Introduction • Requirements • Distribution 	Army Navy Marine Corps Air Force DLA	

APPROVED EXECUTIVE AGENTS AND MIGRATION SYSTEMS

FUNCTIONAL AREA	APPROVED EXECUTIVE AGENTS	APPROVED MIGRATION SYSTEMS
Medical	Defense Medical Systems Support Center (DMSSC)	<ul style="list-style-type: none"> • Automated Quality of Care Evaluation Support System (AQCESS) • Composite Health Care System (CHCS) • Computer Assisted Processing of Cardiograms (CAPOC) • Defense Blood Management Information System (DBMIS) • Defense Medical Regulating Information System (DMRIS) • Medical Expense and Performance Reporting System, Expense Assignment System, Version 3 (MEPRS/EAS III) • Tri-Service Food Service System (TRIFOOD) • Tri-Service Micro Pharmacy System (TMPS)
	Army	<ul style="list-style-type: none"> • Theater Army Medical Management Information System (TAMMIS) • Veterinary Services Automated Data Management System (VSADMS)
	Navy	Shipboard Nontactical ADP Program (SNAP) Automated Medical Systems (SAMS)
	Air Force	Automated Patient Evacuation System (APES) (All approved 12/24/90)

The executive agents will be responsible for the life-cycle of these approved migration systems and beyond, since the functional business processes within each area must continually be analyzed for improvement.

Budget Status and Plans

Beginning with FY 1991, the DoD budget request includes a central account for new, standardized systems as part of the CIM initiative. The current funding line for this account is as follows (dollars in millions):

Appropriation	FY 91	FY 92	FY 93
Operation & Maintenance	50.0	179.4	257.6
Procurement	79.1	40.0	60.0
TOTAL	129.1	219.4	317.6

This CIM Central Fund does not involve the \$1 billion in operation and maintenance appropriations placed in a CIM Transfer Fund by the Congress in its mark of the FY 1991 DoD budget request. It does, however, include the procurement funds directed by the Congress for use by CIM in FY 1991.

The primary purpose of the CIM Central Fund is for development of common information systems, which may include some funding for planning for migration systems. To establish the CIM Central Fund, the Deputy Secretary of Defense reduced the funding for development and modernization of automated information systems in the Services and Defense Agencies beginning in FY 1991. The reduction to each of the Components was phased, starting as a low percentage in FY 1991 and increasing the percentage reduction up to FY 1995. Recognizing that funding is needed to develop the standard information systems, about a third of the reduction was placed in a CIM Central Fund.

Considering only the savings associated with information systems, the CIM activity related to information technology only, produces a net savings of \$2.1 billion from FY 1991 to FY 1995. Significant reductions continue to be anticipated as a result of eliminating duplicative development and modernization of multiple systems for the same functional requirement as well

as future reductions resulting from maintaining fewer information systems. These anticipated reductions result from slowing development and modernization in anticipation of the full implementation of a CIM environment with common data standards, open systems architecture, as well as changing business practices in determining future investment and financing of systems. The anticipated reductions are offset in part by investment costs needed to design new systems, to procure related equipment and systems development tools, and update the skills of DoD's systems developers. The anticipated information technology budget reductions and investments are estimated in millions of dollars as follows:

<u>SERVICE/AGENCY</u>	<u>Appropriation</u>	<u>Total</u>
Reductions:		FY 1991-FY 1995
Army	All	1,162.8
Navy	All	1,312.1
Air Force	All	791.2
Defense Agencies	All	141.0
Gross Reduction	All	3,407.1
Less Investment:		
Central Fund	O&M	-982.0
Central Fund	PROC	-310.0
Net Reduction	All	2,115.1

Not reflected in this table are the savings in areas other than those directly associated with information technology. DoD sees the bulk of the payoff for the CIM initiative in functional improvements and savings beyond computers and communication systems. The true return on CIM investments will come in the business areas supported by CIM and in the realization of DMR targets.

It is fundamental to CIM that a return on investment be maximized. The information technology budget has already been reduced in anticipation of savings to be achieved as a result of improving business practices and eliminating the duplicative development of multiple systems for the same functional requirement. Similarly, the goal of CIM is to move the Department to an investment strategy that will allow DoD to reap the greatest return on its investment.

Initial estimates of CIM information technology DMR costs and savings are based on the best data that DoD has in hand -- which are geared towards consideration of the information technology budget. DoD is taking a series of steps to obtain more precise management data on CIM costs and the associated savings, regardless of the business area in which they accrue.

One of these steps will include cost recovery of information support through a fee-for-service mechanism. This is one of the key eight strategies for implementing CIM, and the ASD(C3I) and the DoD Comptroller have begun fact-finding and exploratory studies on moving to a fee-for-service environment. As DoD funding becomes more austere, DoD managers want more control over where their dollars are spent. This should give them one more tool for making their business case decisions.

Another step is top-level review of DoD information technology budget requests. The Joint Appropriations Conference Report for FY 1991 requests the DoD Components "to submit future budget requests for medical, material management, logistics, and other CIM-related systems through the CIM program director for coordination and review." For the FY 1992/1993, information technology budget request was reviewed in detail by the DoD Comptroller and ASD(C3I) staffs, with attention paid to the role of each program in meeting mission needs and, for programs falling within the scope of the functional groups, CIM criteria. In preparation for future years, the DDI is strengthening his staff to continue the review of the information technology proposals within the context of CIM principles.

Major Milestones

October 4, 1989 The Deputy Secretary of Defense announces the CIM initiative.

December 20, 1989 The ELG is chartered as a Federal Advisory Committee.

December 1989 First CIM functional groups are convened for training.

February 1990 ELG is convened.

May 1990 All eight initial CIM functional groups are in session.

June 1990 Interim Standard (Migration) System Criteria are issued by the DoD Comptroller.

September 11, 1990 The ELG formally submits A Plan for Corporate Information Management for the Department of Defense to the Deputy Secretary of Defense.

November 5, 1990 Congress established the \$1 billion CIM Transfer Fund.

November 16, 1990 CIM is institutionalized throughout the Department by the Secretary of Defense. Primary responsibility for CIM moves from the Comptroller to the ASD(C3I). ASD(C3I) becomes the DoD Senior IRM Official.

December 24, 1990 Initial allocation of CIM Transfer Fund is made, totaling over \$800 million. First migration systems are approved.

December 30, 1990 Deputy Comptroller (IRM) and staff become the DASD(IS) and staff under ASD(C3I).

January 14, 1991 The Deputy Secretary of Defense approves the ASD(C3I) plan for implementing CIM DoD-wide.

March 10, 1991 The Center for Information Management is established within DCA.

March 18, 1991 The Director of Defense Information is on board.

Concluding Remarks

The mission of CIM -- the improvement of business methods with information technology as an enabler -- is necessary and attainable. That is the consensus of the public and private sectors alike. Even as critics argue as to how to proceed and when successes can be realized, there is unanimity as to the philosophy and principles of corporate information management and the need for it in the Department of Defense to achieve more effective and efficient methods of doing business.

Continued congressional support for the CIM program remains essential. In 1990 congressional documents, the supportive language has lent added credence to the merit of the CIM initiative. This show of support is the reason for its success thus far. Specifically, Joint Appropriations Conferees have strongly endorsed the CIM initiative, calling it a constructive effort undertaken by the Department of Defense to ensure standardization, quality, and consistency of data from DoD's multiple administrative management information systems. As we move closer to achieving our ends, it is hoped that Congress will continue this strong support.

The Office of Management and Budget (OMB) is also supporting the CIM initiative by designating it a Priority System for 1991. This designation gives DoD's CIM priority attention and ensures OMB oversight of CIM implementation. An objective of the Program for Priority Systems (PPS, formerly the Presidential Priority Systems) is to involve top management in the planning (including cost/benefit analysis) for use of modern information management methods, which includes the effective deployment of information technologies.

The Deputy Secretary of Defense continues his strong support of CIM. The transition to the Office of the ASD(C³I) and the concomitant reorganization of the information resources

management organization within OASD (C³I) adds to the program the support that will help ensure the institutionalization of CIM as a broad-based effort. This confidence in the program guarantees its success in the Department.

The CIM initiative has come a long way in a year and a half. Under the broad CIM umbrella, many groups and many people have accomplished much towards implementing CIM throughout DoD. But these achievements are just the beginning -- part of the groundwork -- for much more. The work ahead will be great, but it is hoped that these efforts will have long-lasting effect in achieving DMR savings, improving business methods, delivering quality products and services, and managing effectiveness in support of DoD's military missions.