

# **IRM Strategic Plan 1993-1997**

**Managing Our  
Information Resources,  
The "Common Currency" of  
EPA's Approach to Environmental Management**

"EPA must take a strategic, 'big picture' approach to the collection and use of environmental data."

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# **IRM STRATEGIC PLAN**

**1993 - 1997**

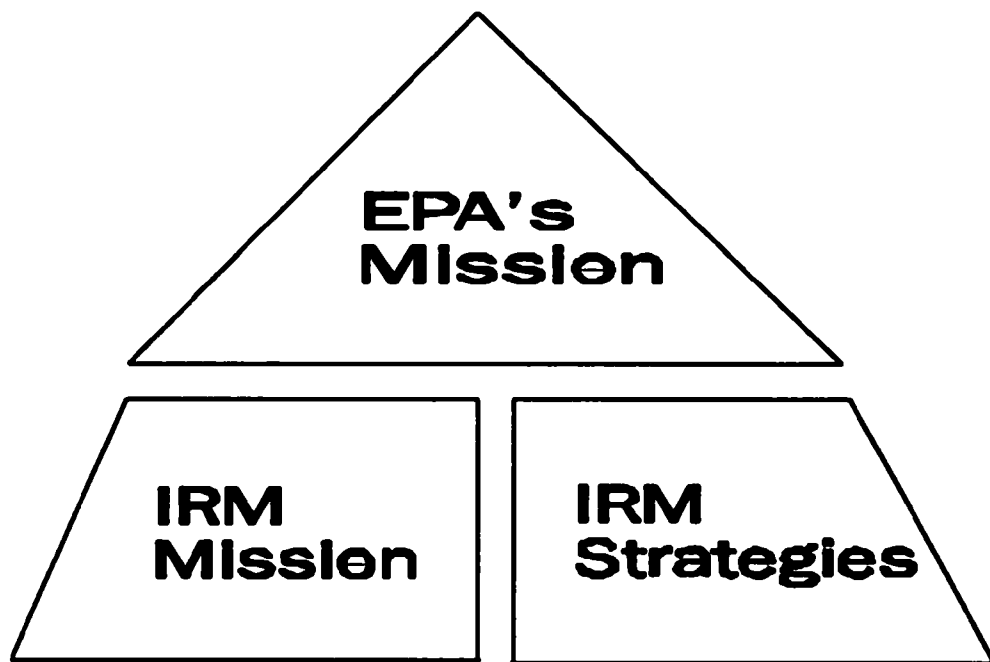
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# **MODULE I**

## **EXECUTIVE SUMMARY**



## ***Executive Summary***

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EPA must take a strategic 'big picture' approach to collecting and using environmental data. This plan attempts to provide that strategic vision for EPA. The Agency has traditionally focused on media-specific program efforts. IRM systems and decisions which supported the Agency's efforts have followed this same tradition. Recently, EPA has begun the difficult transition to a more integrated perspective in all of its activities - both programmatic and administrative. The Agency IRM efforts must reflect this change in focus and perspective.

The Information Resources Management (IRM) Strategic Plan is a vehicle to define the new mission focus for the EPA's IRM program and to describe the goals and objectives necessary to support the mission. The key purposes of the IRM Strategic Plan are:

- 1) to integrate IRM's mission and strategies into a cohesive program of support for the Agency's goals and strategies, and
- 2) to provide a framework within which program planning and budgeting decisions may occur.

In addition to the business benefits to the Agency, the IRM plan also fulfills various Federal and Agency planning requirements.

### **Support of Agency Mission:**

If the Agency is to be successful in meeting its goals it must have a successful IRM program. Information is a key asset in each of the Agency's four goals. Therefore, the IRM Strategic Plan is designed to directly support the Agency's mission and goals.

Data integration is a key issue in meeting Agency goals. For example, providing leadership in the nation's environmental science, research and assessment efforts depends upon EPA having access to reliable and integrated data. It also requires sufficient computer processing and telecommunications capabilities to access and analyze the integrated data. Finally, it requires efficient and effective systems to store, access and retrieve the data. "Stovepipe" computer

### **Agency Goals and Objectives**

- Providing leadership in the nation's environmental science, research and assessment efforts
- Making sound regulatory and program decisions
- Effectively carrying out our programs and policies
- Improving the global environment

systems, with an exclusively single-media focus, are no longer acceptable or effective in support of the Agency's mission, goals and strategies. The IRM Strategic Plan speaks to these needs by defining various goals, objectives, and measures which the IRM community will undertake to meet the data and systems integration challenge.

The IRM Strategic Vision translates the goals and strategies of the Agency into the IRM arena. For example, the need for reliable and integrated data to support the goals finds voice in the IRM Vision statement that "EPA has integrated environmental data."

The IRM Strategic Vision defines the desired outcome of Agency IRM program efforts, not the technical steps needed to achieve the outcome. The focus is on the usefulness and quality of information that IRM can provide to the Agency in pursuit of its environmental mission, and on how IRM efforts are viewed by the Agency.

Specific IRM Goals and Objectives are defined in the

plan. Just as the strategic themes of the Agency Strategic Plan define approaches to achieving the Agency Goals, the IRM goals and objectives provide greater insight into the efforts the IRM community will undertake to actualize the IRM Strategic Vision.

One of the Agency's key strategies is to improve its science and knowledge base. The IRM Strategic Goals and Objectives support this strategy in a number of important ways. For example, the plan commits to renewing the Agency's computing and telecommunications base. This will provide the Agency with needed computing power and interoperability for Geographic Information Systems (GIS) work to support the strategic theme of geographic targeting. It also commits to developing data standards and a data administration program which are critical to improving our knowledge base.

## IRM Strategic Vision

EPA leverages its information for environmental results.

EPA has integrated environmental information.

EPA is a leader and reliable partner in sharing environmental information.

The public has access to environmental information.

EPA employees make productive use of information and technology.

EPA is committed to quality strategic information plans and efficient implementation of IRM programs.

EPA views IRM as understanding EPA's business and providing value added services.

Technology is transparent to users.

IRM initiatives such as data integration also support the Agency's multi-media enforcement strategy and geographic targeting. In addition, the commitment to public access will facilitate the Agency's environmental education strategy. The commitment to promote data sharing with foreign governments is a significant support to EPA's role in improving the global environment. In many ways the IRM program will contribute to and strengthen the success of the Agency's Mission and Goals. As evidenced by this plan, the IRM community of EPA is committed to providing value-added services to the Agency.

### **IRM Framework for Planning:**

The IRM Strategic Plan documents the goals we seek to achieve and the basic choices (strategies) selected to achieve our goals. The IRM Strategic Plan might be best thought of in terms of a trip plan. Just as the key to planning any trip is to define the destination and its purpose, the IRM Strategic Plan defines the nature and direction of our IRM efforts. Thus, the IRM Strategic Plan provides the destination and purpose needed to do our IRM planning, budgeting, and implementation.

In a decentralized IRM function, such as EPA's, a clear destination and purpose for our IRM efforts is critical if we are to support the Agency in the most cost-effective and efficient manner possible. This plan provides a clear statement of the results we want to achieve. EPA is working to improve and formalize the linkages between this plan and the budget and mission-based planning process of the program offices.

The IRM Strategic Plan contains the IRM component of the Office of Administration and Resources Management's (OARM) strategic plan. It is also a response to Federal requirements for annually updated mission-based IRM plans linked to the budget process. The plan represents the results of roughly two years of assessment, analysis, formulation, and revision of a prior plan by the Office of Information Resources Management (OIRM), the National Data Processing Division (NDPD), and the EPA IRM community. It is an essential foundation for developing a robust IRM program that will enhance the Agency's effectiveness through the 1990s. Also, it indicates investments essential to a more productive IRM environment and should affect the Agency's future budget decisions.

### **Ongoing Adjustment and Improvement:**

The IRM Strategic Plan is not cast in stone. To return to the trip analogy, the goals and objectives of a trip define such things as where you plan to be each day, the miles to be traveled, and other such choices. Just as one must continually assess progress in a trip, and make necessary adjustments to account for delays and detours, so we must also continually assess our



progress, external and internal changes, and the evolving Agency mission we support. These changes will be reflected in an updated IRM Plan annually.

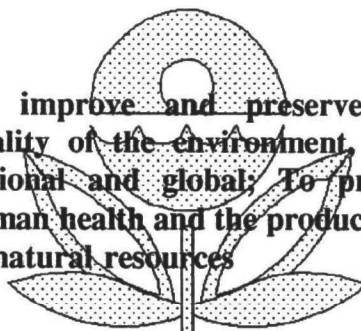
The information strategy planning process is dynamic and ongoing. Continued support and participation from the IRM client community is critical to maintain its momentum. OIRM and NDPD will continue to develop, and take steps to improve our partnership with customers as we identify initiatives, develop priorities, and solicit funding to support the initiatives. OIRM and NDPD are committed to their mission of delivering quality support to meet the information demands of EPA.

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## **MODULE II**

### **AGENCY MISSION, GOALS, AND OBJECTIVES<sup>1</sup>**

To improve and preserve the  
quality of the environment, both  
national and global; To protect  
human health and the productivity  
of natural resources



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<sup>1</sup>Source: EPA Agencywide Strategic Plan, 6/10/92 Draft

## ***Agency Mission Statement***

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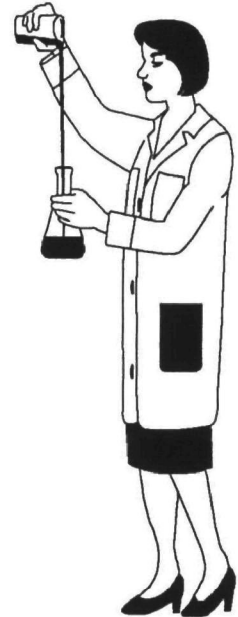
The people who work at the Environmental Protection Agency are dedicated to improving and preserving the quality of the environment, both national and global. We work to protect human health and the productivity of natural resources on which all human activity depends. Highly skilled and culturally diverse, we are committed to using quality management processes that encourage teamwork and promote innovative and effective solutions to environmental problems. In particular, we are committed to ensuring that:

- Federal environmental laws are implemented and enforced effectively.
- U.S. policy, both foreign and domestic, fosters the integration of economic development and environmental protection so that economic growth can be sustained over the long term.
- Public and private decisions affecting energy, transportation, agriculture, industry, international trade, and natural resources fully integrate considerations of environmental quality.
- National efforts to reduce environmental risk are based on the best available scientific information communicated clearly to the public.
- Everyone in our society recognizes the value of preventing pollution before it is created.
- People have the information and incentives they need to make environmentally responsible choices in their daily lives.
- Schools and community institutions promote environmental stewardship as a national ethic.

The Agency's mission is supported by four fundamental goals:

*Providing leadership in the nation's environmental science, research, and assessment efforts*

- Conduct and encourage research that improves our understanding of health and ecological risks.
- Provide objective, reliable, and understandable information that helps build trust in EPA's judgement and actions, and informs the choice of institutions and individuals throughout society.
- Promote and support innovative technological solutions to environmental problems and share our innovative technologies and research with our various partners.



*Making sound regulatory and program decisions*

- Implement current environmental laws effectively and help to improve those laws as they are reauthorized in the future -- maintain a vigorous and credible enforcement program with emphasis on multi-media and criminal violations.
- Evaluate health and ecological risks; target our resources and priorities at the problems and the geographic areas posing the greatest risks, and devise innovative, integrated solutions to environmental problems.
- Promote public and private actions that prevent pollution at the source before it becomes a problem.

*Effectively carrying out our programs and policies*

- Meet Federal statutory obligations while retaining sufficient flexibility to address priority risks in different parts of the country -- promote cross-media and interstate initiatives, such as multi-media permitting and enforcement.

- Improve the economic analyses that promote efficiency and cost-effectiveness in our decisions, and apply market mechanisms and economic incentives when they are appropriate and effective -- work with other government agencies, to ensure they consider the environmental implications of their actions.
- Enable state and local governments, as partners, to implement and enforce environmental programs, and convey clear, accurate and timely information to the public -- incorporate information from the public in EPA activities, and involve other government agencies, public interest groups, the regulated community and the general public in achieving national and global environmental goals.

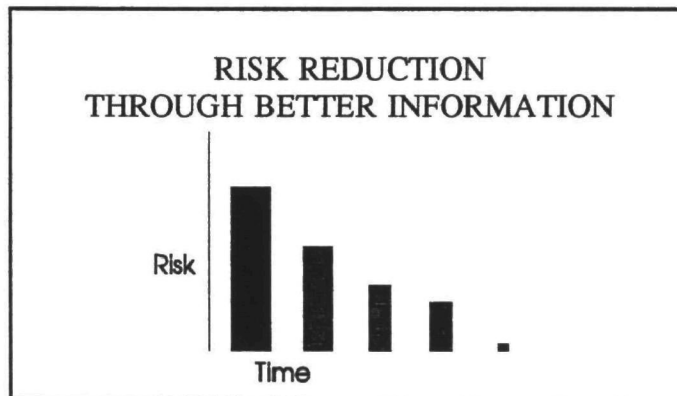
*Improving the global environment*

- Expand and strengthen U.S. leadership to protect and improve the global environment.
- Collaborate with other government agencies and nations, the private sector, and public interest groups to identify and solve transboundary pollution problems.
- Ensure that environmental concerns are integrated into U.S. foreign policy, including trade and economic development.
- Provide technical assistance, new technology, and scientific expertise to other nations.

Using risk reduction as EPA's principal measure of success, EPA's strategic plan elaborates 11 strategies designed to achieve EPA's mission, goals and objectives and to address the Agency's opportunities for risk reduction:

1. Strategic Implementation of Statutory Mandates
2. Improving Science and the Knowledge Base
3. Pollution Prevention: EPA's Preferred Choice
4. Geographic Targeting for Ecological Protection
5. Greater Reliance on Economic Incentives
6. Technological Innovation
7. Improving Multi-Media Enforcement
8. Building State/Local/Tribal Capacity
9. International Activities
10. Strengthening Environmental Education and Public Outreach
11. Better Management and Infrastructure

This IRM Strategic Plan is designed to support risk reduction through support of these key strategies.

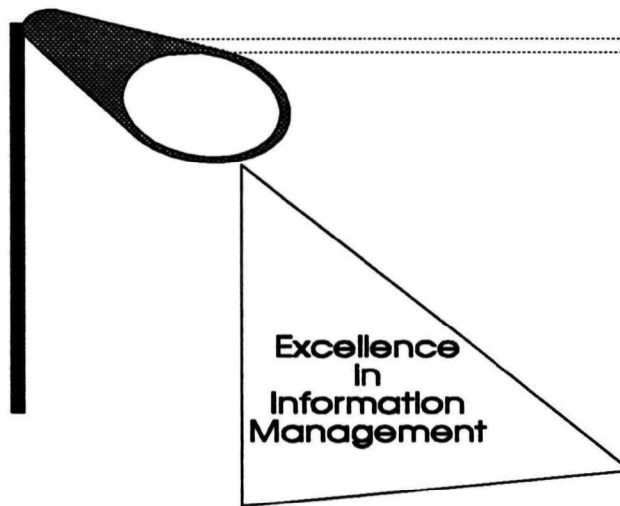


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# **MODULE III**

## **IRM MISSION AND STRATEGIC VISION**



## ***IRM Mission Statement***

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It is the mission of the Environmental Protection Agency's Information Resources Management (IRM) program to provide leadership and effective management in delivering reliable information services to support the Agency's mission.

The Agency's effectiveness would be significantly improved by accomplishing the IRM Mission through the IRM Strategic Vision that follows.

## ***IRM Strategic Vision***

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- ***EPA leverages its information for environmental results.***

Information is collected, analyzed, stored, and retrieved to promote environmental assessments and decisions which anticipate and prevent environmental problems. The Agency has access to comprehensive sets of environmental, health, economic, legislative, and social demographic information to evaluate remedies for a broad domestic and international environmental agenda.

- ***EPA has integrated environmental information.***

There is recognition and understanding of the commonality of information and the need to share it throughout the Agency and the environmental community. Information transcends organizational boundaries and is managed as a corporate resource readily accessible in usable form. Vigilant management ensures that data definitions, data formats, and data quality are effectively designed into and maintained throughout the automated systems and document collections.

- ***EPA is a leader and reliable partner in sharing environmental information.***

Information is collected, managed and stored with the intent of ensuring its availability and accessibility in useful form to the environmental community. Our partnerships in data sharing extend to all members of EPA, State and local governments, other Federal agencies, scientific communities, the American public and other national governments and international organizations.

- *The public has access to environmental information.*

EPA information resources are known and supplied to the public to enhance their understanding of the Agency's environmental decisions and for their own environmental stewardship.

- *EPA employees make productive use of information and technology.*

EPA employees have ready access to information, technology, and any necessary training. This access maximizes the effective use of their time and encourages high standards of performance for their own work.

- *EPA is committed to quality strategic information plans and efficient implementation of IRM programs.*

Management is committed to long-range information and technology investments as a result of higher user awareness and executive understanding. EPA's commitment, in turn, persuades oversight agencies, such as the Office of Management and Budget (OMB) and the General Services Administration (GSA), to support EPA's decisions.

- *EPA views IRM as understanding its business and providing value-added services.*

The Office of Information Resources Management (OIRM) and National Data Processing Division (NDPD) consistently demonstrate leadership initiative and reliable expertise which result in a high demand for services.

- *Technology is transparent to users.*

EPA information resources and services are designed and managed so that users can devote minimal time to learning the technical aspects of the systems they use.

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# **MODULE IV**

## **ISSUES AND ANALYSIS**

This section provides an extended look through the 1990s by discussing external forces or megatrends which have a direct impact on Information Resources Management (IRM) at EPA. These trends are depicted in the table below.

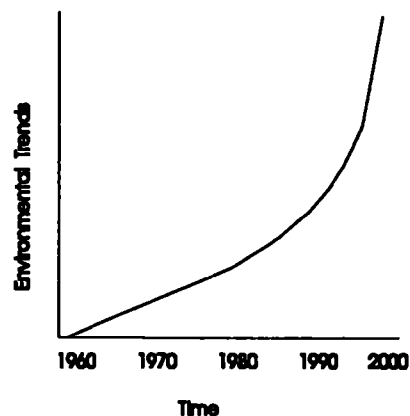
EXTERNAL TRENDS
<ul style="list-style-type: none"><li>• Environmental management trends</li><li>• Domestic and international partnership trends</li><li>• Research and development trends</li><li>• Work environment trends</li><li>• Information technology trends</li><li>• Oversight and legislation trends</li></ul>

The implications of each of these areas for EPA's IRM program are discussed in the following sections.

### ► Environmental Management Trends

Trends in environmental management directly affect the future of EPA. Several of these trends will change the scope and complexity of environmental management, increasing the demands for IRM to support the management structure effectively and efficiently. The environmental management trends most important to the Agency are as follows:

#### Complexity and Integration of Environmental Management



- *The emphasis on multi-media environmental management will grow among all interested parties.*

Congress and the public are increasingly interested in dealing with environmental issues in the context of specific geographic areas. Also, there is an increased understanding of the cross-media interrelationships of environmental problems. Many industries are also interested in an integrated approach to avoid the delays, cost, and confusion of multiple media specific efforts. New initiatives such as risk based decision making and pollution prevention also will benefit from integrated multi-media data systems. New technology, such as GIS, has also increased expectations about our ability to address cross-media questions. EPA's strategic themes and external expectations and demands all focus on a multi-media approach.

- *Greater international cooperation will develop, allowing global problems to be addressed.*

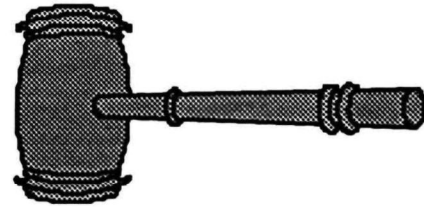
An emphasis on international cooperation to solve environmental problems is emerging. Worldwide forums have been established and will use their influence to address such environmental issues as global warming and depletion of the ozone layer. An important element of international cooperation will be to increase the sharing of data and public expertise among countries. This will present a considerable challenge for the future given the diversity of information systems around the world.

- *Increased public involvement will foster greater community outreach by the government.*

The public's concern for and involvement in environmental issues will continue to grow. The public will demand more environmental information to fulfill its increased role in anticipating, preventing and solving environmental problems. The government will continue to expand community outreach programs to facilitate the sharing of information. EPA can anticipate a growing need to develop partnerships with external parties that are pursuing and taking legal action against violators. These partnerships would focus on the mutual sharing of information.

- *Environmental oversight agencies will undertake more timely and aggressive enforcement actions.*

Increased emphasis on enforcement actions will demand improvements in information system capabilities. Environmental systems must provide the data to recognize and pinpoint environmental problems and support identification of the responsible party. EPA systems must perform these functions on an integrated basis. This will help enforcement agencies take action against the responsible parties to facilitate clean-up and cost recovery efforts.



- *The government will place greater emphasis on the prevention of potential environmental threats.*

The government has been primarily reactive in addressing environmental problems, concentrating its efforts on clean-up and enforcement. Today, greater emphasis is placed on preventive measures. These measures include such activities as source reduction, recycling, conserving resources, and waste minimization. This change in emphasis creates a demand for new types of data and analytical capabilities, including reliable environmental, social and economic models.

- *Advancements in measuring techniques and modeling will improve environmental research and refine remedies.*

Enhancements of environmental models will allow more accurate research and analysis. More advanced information collection and measurement techniques will improve the accuracy and completeness of data. Progress in environmental modelling, information collection and measurement techniques will result in more precise solutions to environmental problems.



*Automated systems will expand and enhance EPA's access to scientific and regulated community data and measurements of the Agency's effectiveness.*

Through data collection, analysis, and sharing, the Agency will increase its access to, and use of, scientific data. The systems will also allow the Agency to further model and examine various aspects of the regulated community. The Agency's ability to analyze and assess the success of its activities will promote a better understanding of the scientific data and the pollution occurring.

These environmental management trends indicate that EPA media programs are facing fundamental changes in their mission and activities. Strategic plans for programs emphasize increased demands for high quality integrated data and greater scientific understanding of the complex interrelationships of the environment, costs, and human behavior. This will require: standardization of data, systems, technology and information management processes; greater use of models; and access to economic, public health, social demographic data, and environmental data.

#### ► **Domestic and International Partnership Trends**

EPA is committed to various domestic and international partnerships. In particular, EPA is committed to a State/Federal partnership in environmental decision making and to the delegation of Federal environmental programs. This commitment underscores the critical role of the State/EPA Data Management Program in achieving a broad environmental agenda. The partnership trends are as follows:



- *Private/public partnerships and increased technology transfer will develop among the environmental community, industry and academia.*

Industry, academia, State, tribal, and local governments, and other parties outside of the Federal government are becoming increasingly involved in environmental issues. They conduct environmental analysis, research, and development. The enhanced relationship between EPA and its partners requires extensive data sharing and integration efforts to ensure improvements in data analysis and to realize environmentally beneficial results.

- *Public involvement will create a demand for more environmental data.*

States and Tribes are the primary collectors of environmental data; enforcers of environmental legislation; and decision-makers weighing environmental, economic, and social priorities. EPA will continue to emphasize building State and tribal capacity to increase and enable information exchanges. These activities are necessary to meet the growing demands of the environmental community and the general public for information on local and regional environmental issues.

- *Greater demand for public access will heighten the dialogue addressing the nature and limits of data security.*

As demand for access to EPA's information grows, EPA will receive more requests for access to its partners' data which is stored in the EPA databases. The relative merit of allowing unrestricted access to data, or protecting the interests of those who collect or provide data will continue to be debated. In managing national environmental data, the States, tribes, local governments, environmental community, and general public will depend on EPA to achieve the proper balance in providing suitable access to information, while safeguarding its partners' data deemed inappropriate for general distribution.

- *The States and tribes will expand their participation in IRM decision making.*

The States and tribes will become more active partners in decisions about the collection of information for national databases. As primary providers and users of data, the States and tribes will demand to become more active partners in defining requirements, selecting feasible alternatives, and implementing solutions that address both Federal and State information needs.

- *The States and tribes will adopt advances in environmental analysis.*

As economic pressures mount, the States and tribes will become more creative when making decisions about the environment. The States will pioneer the development of many environmental assessment technologies and data integration tools that promote pollution prevention and environmental protection goals in State and Regional initiatives.

► **Research and Development Trends**

EPA's strategic emphasis on better science and data management as the basis for more intelligent public policy has direct consequences for the IRM program. If EPA is to retain its place as a leader in environmental research, the tools must be available to support EPA laboratories and scientists. The research and development trends that need to be followed are:

- *Environmental models will dramatically facilitate analysis and understanding with graphic rather than numeric results.*

EPA will depend heavily on mathematical models to assess and compare the merits of alternative abatement scenarios. The use of Geographic Information Systems (GIS) by the Agency, its partners, other Federal agencies, and the broader international environmental research community will continue to explode, thus raising the comprehension of environmental problems. Standards and protocols will be needed to ensure these data and models can be exchanged and understood. Environmental assessments will require the ability to join previously unrelated data collections, many collected and maintained outside EPA by other Federal agencies, universities, and research organizations. The power of this new generation of environmental models is reflected in their outputs, which will be visual, not numeric. Producing these assessments, however, will demand increased database, graphics, and telecommunications capabilities.

- *Increased ecological monitoring will provide the data required for the quantitative, scientific assessment of the complex effects of pollutants on ecosystems.*

EPA is becoming more active in ecological monitoring because its regulatory responsibilities require scientific assessment of risk and the ability to target potential problem areas or violators. The Environmental Monitoring and Assessment Program (EMAP) is intended to address these and other requirements for depicting the condition of the environment. Remote sensing (satellite imagery, aerial photography, etc.) will provide efficient data collection for developing large scale environmental characterizations. EMAP, and EPA's Center for Environmental Statistics, will provide the Agency, Congress, and the public with statistical summaries, status, and trends on the environment. EMAP requires active interagency coordination and draws upon the expertise and activities of the EPA Regional offices, the States, tribes and the international community.

- *Large environmental assessment models will require high performance computing capabilities.*

High performance computing is required to process large volumes of atmospheric, global climate, and detailed ecological data, which are analyzed in sequences of mathematical models. High performance computing coupled with graphic outputs will bring a need for sophisticated support and training. Applied mathematics and specialized programming skills are particularly essential for full utilization of scientific computing capabilities.

- *National Research and Education Network (NREN) will facilitate the Agency's efforts by linking research, government, and higher education data resources.*

The National Research and Education Network (NREN) will dramatically improve access to data, both internal and external. NREN has the potential to permanently alter how we access, store, and use vast amounts of data. NREN will improve our ability to work with the academic community and other public and private organizations. It will increase the challenge of organizing the vast array of data into useable information.

## ► **Work Environment Trends**

Another important area affecting the future IRM environment in the Agency involves changes in the work environment of the future. Several factors will affect the work environment in general and, more specifically, the work environment of EPA and other Federal agencies. These factors are as follows:

- *The Federal government will perform a greater role as a gatherer and broker of information.*

With the increased delegation of authority to State and local governments, the Federal government will increase its role as manager of information resources. Government agencies will become brokers of information by collecting, processing and disseminating information. While responsibility for implementing programs will shift to State and local authorities, accountability for managing data will remain with the Agency. As the role of information broker increases, this accountability will require EPA to improve its methods for managing and disseminating information.

- *Proliferation of computers will allow greater access to information.*

Personal computers have become an integral part of the office environment. The ratio of computers to employees continues to increase; EPA is rapidly approaching one personal computer for each employee. This change, coupled with improved communications technology and the Agency's adoption of the LAN platform, will allow increased access to and presentation of information at each worker's desk. In the future, virtually every employee will have immediate access to information. The personal computer will become the "interpersonal" computer.

- *Minimum basic computer skills will be necessary for the majority of positions.*

As technology advancements automate both managing and processing information, computer skills become critical for all levels of employment. The need for basic computer skills will be particularly critical in an information-intensive environment such as EPA.

- *Entry-level workers will lack basic skills to use technology, thereby creating a need for easy-to-use technologies.*

While the need for minimum computer skills increases, more entrants to the work force will lack not only these skills but basic mathematical and verbal skills necessary to utilize information technology. The public sector will be particularly vulnerable as it competes with the private sector for highly trained, skilled workers in technology-based jobs. To overcome this handicap, the public sector will adopt technologies that are easy to learn and operate, such as Graphic User Interfaces (GUIs).

- *Demand for Federal services during nontraditional work times will increase.*

The public will demand information from the Federal government at night and on weekends. In order to meet these demands without increasing the Federal work force, technical solutions for managing and disseminating information will be required.

- *Smart buildings will promote productive use of technology.*

Facilities will be designed to optimize the use of technology in a productive work environment. Managers will invest in ergonomic furniture, lighting, and other improvements that complement their investment in information technology by addressing health and stress problems.

- *Increasing numbers of people will work at home.*

The proliferation of computers and increased communications capabilities will make it more feasible for employees to work at home. This will create an increased demand on communications and other IRM resources to facilitate access to information from a greater number of locations.

- *An increased mismatch between work loads and funding for FTEs will require a more technically proficient staff.*

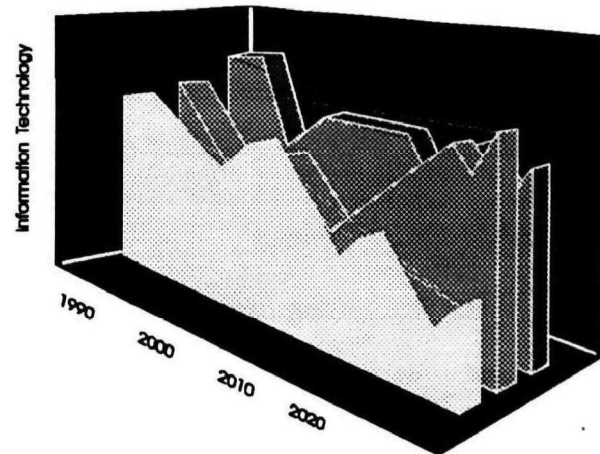
As workloads increase disproportionately to staffing levels, employees will need to be more proficient in the use of automation technologies. They will need to receive more training on the use of ADP systems and technologies. Skilled use of various application systems will maximize productivity and efficiency, reducing the effects of understaffing.

These many changes in the work environment will place additional demands upon the Agency's information resources management community. For example, communications capabilities will need to be enhanced, and employees' computer skills will need to be improved through comprehensive training programs.

## ► Information Technology Trends

Information technology is a vital element of any IRM organization because it provides the power to drive the data management operations. EPA is committed to and relies on an advanced computing and telecommunications environment. This environment facilitates the collection and sharing of information with EPA's national field operations at Regional Offices and laboratories, with the States and with external parties. Methods for electronically collecting and disseminating information are being reviewed and will result in revisions to

OMB Circular A-130. These revisions are expected to encourage increased use of information technology as a means of data collection, access, and sharing.



High-performance Computing  
Telecommunications  
Advanced Analysis Concepts

Continuing assessment of the adequacy of existing resources and emerging needs is important to keep EPA management abreast of new products and capabilities. Following an era of dramatic technical breakthroughs, the computing industry is anticipating a period of more stability and consolidation, which should result in compatible technologies meeting national and international standards. The emergence of a more predictable computing environment in the marketplace will enhance the Agency's ability to plan and implement enhancements that directly increase performance and productivity. EPA is experimenting through prototypes and pilot projects with several emerging technologies (e.g., pen-based and notepad computers, global positioning systems, etc.) to determine their applicability and optimal usage in the Agency.

- *High performance computers will provide new insights into research and development through advanced modeling capabilities.*

High performance computers are expected to have an increase in power equal to 1,000 times the existing capabilities. This will provide the necessary power to run the many iterations of data required by advanced environmental models. This technology will play a significant role in the Agency's ability to predict environmental impacts and to plan remedies for environmental problems.

- *Workstations and personal computers will become more powerful and networking will enhance communication and contribute to data integration and sharing.*

Workers will have access to greater power, more information sources and larger communication networks. Enhanced processing and communication capabilities will improve the productivity of workers, and the effectiveness of government decision-making and services. Graphical User Interfaces (GUIs) and object-oriented systems will make these technologies easier to learn and use.

- *Telecommunications networks will have the capabilities to handle high volume data transmissions at high speed with high reliability.*

Increases in satellite and terrestrial technologies will increase the speed, reliability, and capacity of telecommunications networks. As the Federal government implements the new FTS-2000 network, many of these improvements will become available. Additionally, local area networks (LANs) and wide area networks (WANs) can aid in the replacement of central data hubs by providing opportunities for distributed environments. These changes will provide many opportunities for improvements in data sharing among distributed locations.

- *Voice, image, document management and video technologies will enhance the presentation and comprehension of information.*

Increased application of voice, image, and video technologies will provide more complete and effective methods of presenting information, and improve the efficiency and effectiveness of EPA decision-making and general operation. Applications such as document imaging, electronic signature and full text retrieval will improve productivity through improved and timely workflow, and will reduce physical storage requirements. These technologies will require significant electronic storage and telecommunication capacity.



- *Computer Aided Software Engineering (CASE) tools will provide a means to satisfy system development, maintenance, and documentation problems.*

CASE tools, such as the Information Engineering Facility (IEF) or Information Engineering Workbench (IEW), will better support the five general phases of the system development life cycle (SDLC)<sup>2</sup>. In the long term, future prototype and systems development will occur in a CASE environment. Enhancements and modifications made with the assistance of CASE tools will decrease system downtime, reduce the possibility of programming errors, and promote currency in technical documentation through the use of a repository.

- *Re-engineering will assist in efficiently maintaining systems.*

As stated above, CASE tools control system development and maintenance. Reverse engineering techniques extract information from an existing system, abstract the information into higher levels, and prepare the information for entry into a CASE environment. Forward engineering techniques enable enhancements to data models and specifications thus facilitating construction and maintenance of existing software. Through use of reverse engineering and forward engineering techniques, existing systems can be placed in a CASE environment along with new systems where both can be efficiently maintained.

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<sup>2</sup> The five general phases are strategic planning, requirements analysis, design, implementation, and maintenance.

- *Increased attention to Change Control and Configuration Management will help manage changes to a system's configuration.*

Change Control and Configuration Management provide control over the direction of system development, thus ensuring that the requirements are reflected in the functioning of the operational system. In addition, control over changes to a system's configuration elements during operations increases system reliability.

LANs, as a platform, demand Configuration Management. Increased management of EPA system configurations will enhance system performance by ensuring that products of the various stages of the life of a system are captured and controlled during subsequent stages of system development.

Advancements in information technology will provide the ability to meet the increased demands for change control and configuration management levied by the current environment and future trends. The key to achieving the promise of technology is understanding the Agency's needs and identifying the areas where new technologies can be successfully applied.

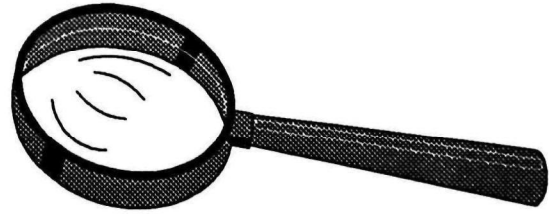
- *Standards based categories will simplify data collection, access, and sharing.*

The Agency's commitment to develop integrated systems to support cross-program, multi-media efforts requires adoption of a set of standards for data collection, transmission, and access. Graphical User Interface (GUI), Unix Operating Systems, and Electronic Data Interchange (EDI) are standards that can facilitate various aspects of the Agency's information management needs. For example, for workstations the Agency has made a commitment to support Unix based operating systems, beginning in fiscal year 1993, and is leaning toward OSF/Motif, a type of GUI for Unix. The Agency expects EDI to be widely used by fiscal year 1994. A standards based approach to IRM technology is key to satisfying the Agency's requirement for integrated information systems.

► **Oversight and Legislation Trends**

The enactment of new legislation, Congressional hearings, and oversight by other agencies, such as the Office of Management and Budget, General Accounting Office, the General Services

Administration and EPA's Inspector General, are major influences on EPA's information resources management program. The impacts of the oversight and legislation trends permeate the planning, acquisition, and operation of the IRM program. These trends are as follows:



- *The OIRM will increase its oversight activities to ensure agency compliance with federal and agency requirements and policies.*

OIRM will need to move towards greater oversight of EPA's IRM community to ensure full compliance with applicable regulations. Programs to enable, promote, and gain compliance will be set in place. These programs will address such issues as the challenge of contract management and implementation of federal IRM policies and standards.

- *Public access requirements will necessitate development of a coordinated dissemination system.*

Both the House and Senate versions of the bills to give EPA cabinet-level status, and proposals to revise the Paperwork Reduction Act, mandate affirmative dissemination of environmental information in ways that support analysis and understanding. In addition, there are provisions for establishing an environmental statistical organization to produce and provide integrated assessments of environmental conditions and trends. These mandates will require EPA to seek more efficient strategies for disseminating information, including electronic distribution.

- *More interdepartmental management of information and data will mandate greater efficiency.*

Developing and implementing automated mechanisms to manage information supports the pending legislation to revise the Paperwork Reduction Act and is a high priority throughout the Federal Agencies. Much planning and cooperation in the area of data administration needs to occur among the agencies who share data. With the large volumes of data required by some of the scientific computerized modeling applications, using appropriate data, regardless of where they reside, will be most cost effective. Agencies that share data will increasingly share in planning for and administering data.

- *IRM planning and acquisitions will attract greater oversight scrutiny.*

To better target reviews and improve overall response time, GSA has been revamping its process for reviewing IRM acquisition plans. While small purchases will be processed quickly, agencies can expect large procurements to receive more scrutiny. Under the revised Paperwork Reduction Act, OMB's Office of Information and Regulatory Affairs will likely assume a greater leadership role and review IRM budgets for consistency with long range plans.

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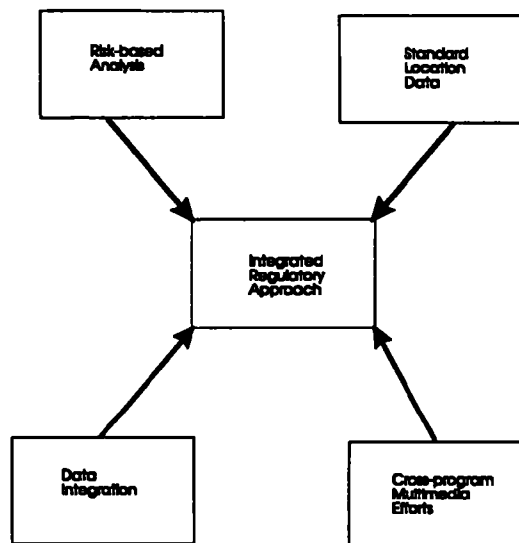
## *Internal Issues*

This section provides a contemporary view of the internal forces which impact Information Resources Management at the EPA. These issues have been partitioned into the following three categories:

<b>INTERNAL ISSUES</b>
<ul style="list-style-type: none"> <li>• <b>Integration Issues</b></li> <li>• <b>Decision Support Issues</b></li> <li>• <b>Personnel Issues</b></li> </ul>

► **Integration Issues**

The EPA is committed to an integrated regulatory approach which will have far reaching effects on IRM. An integrated regulatory approach will move the Agency toward a significant realignment of structure and function. Issues which may affect the success of this initiative are listed below.



- Risk-based analysis will be more widely implemented. The approach will break down departmental barriers within the Agency and facilitate the integrated regulatory approach.
- Data integration is a key topic. The Agency must define its integration strategy; including selection of one of the two major approaches to data integration, data warehousing and data repositories. Also integration of disparate databases cannot be realized without universal Agency application of data standards that arise from a comprehensive and coherent data administration program.
- Cross-program, multi-media efforts will require integrated systems; compatibility will be demanded by senior management. Interoperability is a key issue.
- The foundation for realizing location data (i.e., the latitude and longitude of regulated facilities) lies in policies that are currently established. Implementing these policies is the next challenge.
- A cross-program approach will create the need for greater technology transfer. There will be a greater need for bulletin board systems, online regulatory databases, and the sharing of models and applications.

- Greater standardization of our platforms, data, and interfaces will enable our move towards greater integration. Our telecommunication packages will need to create a seamless communication ability.
- The challenge of achieving data integration across programmatic boundaries will require budgetary cooperation among participating parties.
- Standards are a key foundation to integration. Technical and operational differences between Programs and Regions increase the difficulty of developing information systems standards. Resolution will require cooperation among all parties and EPA partners.

► **Decision Support Issues**

The EPA effort to adopt an integrated regulatory approach will create more complex methods and information requirements. Limited resources will affect the EPA's ability to support these developments.



- To assist in the risk-based assessment process, the Agency will use existing automated tools such as the Integrated Risk Information System (IRIS). The introduction of additional integrated decision support tools will promote additional integrated approaches to environmental management.
- EPA functions in a socioeconomic role. In addition to its environmental models, the EPA needs models of social and economic behavior, including good econometric tools to enable assessment of regulatory effectiveness by relating industrial behavior to regulatory actions.
- The essential emphasis on automated systems for all types of applications creates the need for rigorous procedures to systematically capture the necessary data in standardized electronic form.

- **Decision support systems frequently involve secondary use of data. The Agency must continue to emphasize and improve the quality of data and metadata to support secondary use.**

► **Personnel Issues**

EPA relies on a limited number of personnel to carry out the tasks that support its mission. An effective workforce is vital. Issues that may influence the effectiveness of the staff are listed below.

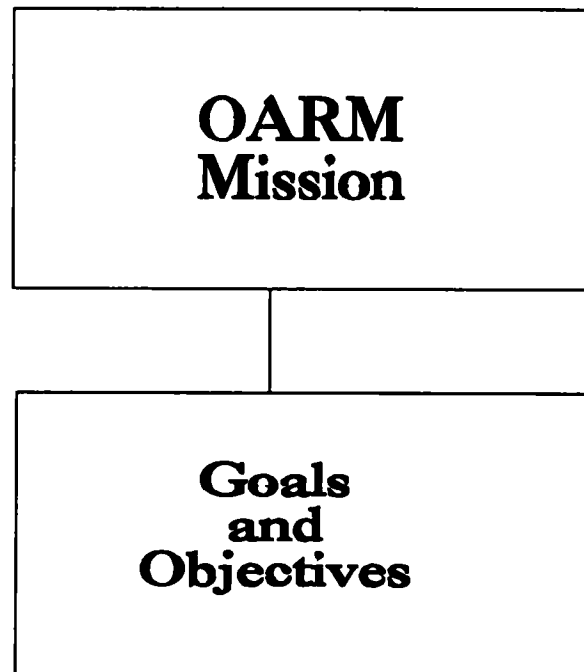


- EPA cannot expect that its personnel will possess more than minimal computer-related skills. A Common User Interface (CUI) will be essential to successful use of automated systems. The Agency must move forward with adoption of CUI standards and address the issues involved in their introduction to existing systems. The Graphical User Interface (GUI) type of CUI will provide significant benefits, but will require significant effort to introduce in existing action oriented systems.
- The need for greater use of automated systems and the minimal computer-related skills of EPA personnel will require more training for users of automated systems.
- EPA will need to find, train, and retain technically skilled staff to serve as Contract, Project, and Delivery Order Project Officers. The Agency will need to commit to an effective skills maintenance training effort for its various contract oversight staff to allow the staff to maintain technical skills in the rapidly changing IRM field. This is a must if the Agency is to maintain full independence of action and decision making with regard to contractor services.



**MODULE V**

**OARM MISSION AND GOALS<sup>3</sup>**



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<sup>3</sup>Source: OARM Strategic Plan - 3/6/92

## ***OARM Mission Statement***

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The Office of Administration and Resources Management (OARM) provides strong leadership, excellent service and quality products to enable the Environmental Protection Agency to meet its mandate of improving and protecting human health and the environment. We safeguard the resources entrusted to the Agency and ensure that the Agency has high quality capital equipment and facilities, and safe working conditions. We enhance the Agency's capabilities by attracting, developing and retaining a quality work force, and by providing effective management systems in finance, information resources, contracting and communications. We serve our clients' needs from an anticipatory posture and go beyond our clients' expectations to meet their needs. Our client services are consistently of high quality and are designed to move the Agency forward with ease in addressing its wide range of responsibilities.

## ***OARM Goals***

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1. To implement statutory mandates in management and administrative programs through innovated strategic initiatives.
2. To provide leadership and effective management in delivering reliable information services to support the Agency's mission.
3. To provide the leadership and processes that will make EPA an "Employer of Choice."
4. To provide for all its employees a quality working environment which: supports scientific research; uses state of the art systems and equipment to encourage cross-program activities; provides for the needs of the handicapped and stresses the importance of a safe and healthy atmosphere in which to pursue environmental goals and objectives.
5. To provide quality budget, fiscal and resource management programs that support and enhance Agency environmental plans, goals and policies and meet the highest standards of public resource stewardship.

OARM's second goal pertains directly to Information Resource Management. That goal states that OARM will " ...provide leadership and effective management in delivering reliable information services to support the Agency's mission."

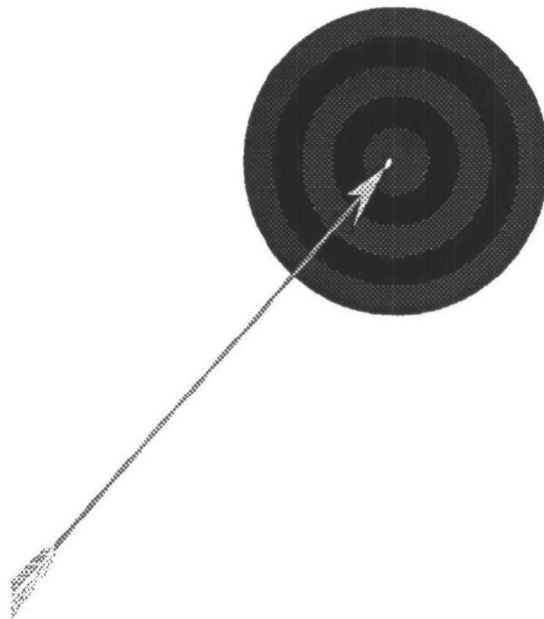
In support of this goal, OARM has defined eight IRM objectives:

1. Manage information systems, telecommunications, and computing facilities to support EPA and the environmental community.
2. Renew EPA's computing and telecommunications base to increase performance, reduce costs, and promote interoperability.
3. Provide EPA the capability to achieve integrated decision-making through data standards, managed databases, and analytical tools.
4. Enhance productivity through training and the educated use of technology and information.
5. Guide the development of new information systems to meet customer needs using a consistent development process.
6. Reinforce, through continuing customer communication, EPA's IRM policies to provide a framework for efficient information resources management, consistent with Federal policies and guidelines.
7. Promote information exchange between EPA and Federal, State, local and foreign governments, environmental organizations, academia, and the public.
8. Clearly identify and communicate the standard EPA hardware, software, telecommunications, and application development architecture.

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# **MODULE VI**

## **IRM GOALS AND OBJECTIVES**



The IRM goals and objectives are the means and method for fulfilling the IRM mission statement. This IRM mission is to support the Agency and help the Agency achieve its goals by providing and supporting the necessary information services for EPA employees, State and local governments and others that rely on EPA information. The following are IRM's defined goals and associated objectives and measures.

**1. Manage information systems, telecommunications, and computing facilities to support EPA and the environmental community.**

**A. Objectives:**

1. Operate and maintain national systems, including hardware/telecommunication infrastructure, ensuring a high level of system performance through continuing evaluation and quality improvement.
2. Provide systems to ensure the accuracy, consistency and efficiency of EPA laboratory networks.
3. Implement technology in an orderly manner and evaluate results.
4. Evaluate and strengthen IRM management and telecommunication networks.
5. Ensure security of EPA information, systems and ADP equipment.

**B. Measures:**

The Information Resources Management staff will measure this goal by ensuring that:

1. The number of supported users increases, and performance remains within published service level objectives.
2. The number of States, tribes, local governments, and international agencies with telecommunications access to EPA increases.

**2. Renew EPA's computing and telecommunications base to increase performance, reduce costs, and promote interoperability.**

**A. Objectives:**

1. Assess EPA's business needs, the general direction of IRM technology and the capabilities of specific technologies.
2. Procure selected technologies and capabilities to meet EPA-wide needs.
3. Maintain and expand the library network to include an on-line catalogue, interagency CD-ROM, local area networks and improved collections and reference databases to improve access to information.

**B. Measures:**

The IRM staff will work to acquire the newest applicable technology and support services to enhance the Agency's existing capabilities. To measure this goal the staff will strive to ensure that:

1. Service levels for the Agency computing environment are improved consistent with industry standards. This includes maintaining current price/performance ratios or helping them decline.
2. Current ADP contracts are replaced with EPA-wide contracts that provide standard hardware and software platforms for new applications.

**3. Provide EPA the capability to achieve integrated decision-making through data standards, managed databases, and analytical tools.**

**A. Objectives:**

1. Provide connectivity for seamless access to data through EPA's hardware, software and telecommunications capabilities.
2. Define formats and protocols that facilitate the exchange and document the meaning of environmental and laboratory data.
3. Design, develop, and implement common user information access techniques for major EPA Program databases.

4. Incorporate data integration tools and activities into EPA Regional offices and a majority of the States' Environmental and Information Resources Management programs.
5. Provide tools and capabilities to facilitate information sharing within EPA, and between EPA and other environmental organizations.
6. Establish and manage an effective EPA-wide data administration program.
7. Provide tools and capabilities which promote common data management approaches for program, administrative and scientific data.

**B. *Measures:***

EPA's ability to perform its congressionally mandated functions will increasingly depend upon how well its employees and partners can access information. But improving access will not integrate data or assist users managing the data unless IRM provides the proper tools. In measuring this goal, IRM staff will ensure that:

1. EPA data standards are communicated and disseminated throughout the Agency and to its key partners.
2. EPA standards are employed in EMAP and other laboratory systems.
3. Compliance with standards and use of databases and tools are quantifiable.

**4. Enhance productivity through training and the educated use of technology and information.**

**A. *Objectives:***

1. Manage and deliver information and technology transfer for improved access and use of data needed by EPA staff to perform effectively.
2. Establish and manage training programs for IRM professional development of Agency and key partner's staff.
3. Provide tools and capabilities to improve personal productivity of EPA staff.



4. Provide tools and capabilities to improve EPA's organizational productivity and effectiveness.

**B. *Measures:***

As new technologies are introduced to EPA personnel, new training opportunities must be provided. IRM staff will work to provide the types of training employees want and need. To measure attainment of training goals and objectives, IRM will:

1. Increase training opportunities, increase use of automated training, and increase availability of productivity tools.
2. Increase opportunities for State and international representatives to participate in technology transfer and training through EPA.

**5. Using a consistent development process, guide the development of new information systems to meet customer needs.**

**A. *Objectives:***

1. Update and codify EPA's consistent development process.
2. Develop and implement a software engineering development program.
3. Develop an application tool kit.
4. Develop improved national administrative and program systems.

**B. *Measures:***

System development at EPA requires the coordination of numerous offices. IRM staff will assist with the modernization efforts of old systems as well as the creation of new. This assistance will be measured by the following criteria:

1. EPA system development life cycle guidance is followed closely during system development, and customer contact during system development increases.
2. User satisfaction improves significantly in delivered systems. Negative audits and reviews by oversight officials decrease.

3. EPA's use of information systems increases.
  4. An initial EPA Information Strategic Plan (ISP) is conducted using information engineering (IE) focusing on existing legal and programmatic documentation.
6. **Reinforce, through continuing customer communication, EPA's IRM policies to provide a framework for efficient information resources management, consistent with Federal policies and guidelines.**

**A. Objectives:**

1. Establish, implement and enforce data standards, policies, procedures, and guidance for corporate or shared data as required by Federal policies and guidelines.
2. Develop and implement a cooperative process for IRM strategic planning on an annual basis.
3. Engage in active outreach to EPA and the environmental community, including newsletters, annual IRM reports, orientation tools, expanded participation in internal and external work groups, and other routine communication opportunities.

**B. Measures:**

As a Federal agency, EPA must follow Federal IRM policies and guidelines. To do this, IRM staff must communicate IRM policies to users and key partners and ensure that current guidelines are being followed in EPA. To measure this goal, IRM staff will ensure that:

1. Awareness and knowledge of IRM policies by Agency staff and key partners is improved and that EPA users are in compliance with IRM policies.
2. Regularly scheduled meetings with members of the IRM network are held covering topics of importance to EPA Program Offices, Regions and OIRM. Agendas encourage Program Office participation as well as stimulate discussion of critical EPA IRM issues.

**7. Promote information exchange among EPA and Federal, State, tribal, local, and foreign governments, international organizations, as well as environmental organizations, academia, and the public.**

**A. Objectives:**

1. Foster compliance with the standards for electronic reporting capabilities for major EPA program databases.
2. Provide systems with the flexibility necessary to promote State/EPA information partnership.
3. Manage and deliver information and technology transfer for public access.
4. Manage and deliver information and technology transfer for international environmental programs and organizations.
5. Manage and deliver information and technology transfer to the States and tribes.
6. Establish and implement training programs for client communities, including States, tribes, Program Offices and the scientific community, which promote teamwork and information sharing.

**B. Measures:**

IRM's role as communicator of both Federal and EPA IRM policy and guidelines surpasses the boundaries of the Agency. EPA's role as a leader in the environmental arena requires it to disseminate information to many organizations and individuals outside the Agency. IRM staff will work to achieve this goal by:

1. Improving communication through formal channels and increasing the volume of information exchanged.
2. Increasing capabilities of the State Revolving Funds' workstations.
3. Assuring coordination of base geographic data requirements, development and acquisition through continued leadership and participation in the Federal Geographic Data Committee.

4. Fostering the exchange of integration and geographic information system capabilities between Federal agencies, States, foreign governments, etc., through increased demonstrations, memoranda of understanding, inter-agency agreements, and other mechanisms.
- 
8. **Clearly identify and communicate the standard EPA hardware, software, telecommunications, and applications development architecture.**
    - A. *Objectives:*
      1. Develop EPA-wide information architecture for program, administrative and scientific systems, and hardware/telecommunication which includes Information Strategic Plans (ISPs), major acquisitions and maintenance.
    - B. *Measures:*

EPA has spent considerable time and money developing the existing ADP architecture. To optimize usage of existing capabilities, it is important that this information be made available to EPA employees and those working with EPA systems. IRM staff will measure this goal and ensure that:

      1. There is an improved awareness of information technology architecture by an increased audience of EPA users and improved compliance with information technology architecture.
      2. The Administrative Systems Information Strategy Plan is produced and distributed biannually.
      3. Application development architecture for use by the MOSES contractor will be identified, documented, and communicated to EPA systems managers and IRM chiefs.

## **APPENDIX A: Contributors**

**Senior IRM Officials, Regional IRM Chiefs, and National System Managers**

## **EPA SENIOR IRM OFFICIALS**

Patricia L. Meaney  
EPA - Region 1  
John F. Kennedy Federal  
Building, Room 2203  
Boston, MA 02203

Herbert Barrack  
EPA - Region 2  
26 Federal Plaza  
New York, NY 10278

James Newsom  
EPA - Region 3  
841 Chestnut Street  
Philadelphia, PA 19107

Donald J. Guinyard  
EPA - Region 4  
345 Courtland Street, N.E.  
Atlanta, GA 30365

Robert L. Springer  
EPA - Region 5  
230 S. Dearborn Street  
Chicago, IL 60604

William Hathaway  
EPA - Region 6  
1445 Ross Avenue  
12th Floor, Suite 1200  
Dallas, TX 75270

Susan C. Gordon  
EPA - Region 7  
726 Minnesota Avenue  
Kansas City, KS 66101

Kerrigan G. Clough  
EPA - Region 8  
One Denver Place  
999 18th Street, Suite 1300  
Denver, CO 80202-2413

Nora McGee  
EPA - Region 9  
215 Fremont Street  
San Francisco, CA 94105

Barbara McAllister  
EPA - Region 10  
1200 Sixth Avenue  
Seattle, WA 98101

Rick Garman  
OARM  
Room W1123  
(PM-208)

Michelle Hiller  
OW  
Room E1041A  
(WH-556)

Mary Free  
OPPE  
Room W1019  
(PM-219)

Jack Frost  
OSWER  
Room M2416  
(OS-110)

Thomas Hooven  
OPTS  
Room E637F  
(TS-788)

Kelly Spencer  
OAR  
Room W939C  
(ANR-443)

Frank Rusincovitch  
AO  
Room W227K  
(A-101)

Bruce Rothrock  
OE  
Room NE104  
(LE-133)

Clifford Moore  
ORD  
Room NE304C  
(RD-674)

John Jones  
OIG  
Room NE314  
(A-109)

Gerald Yamada  
OGC  
Room W537  
(LE-130)

Joan Fidler  
OIA  
Room WT 800  
(A-106)

## REGIONAL IRM CHIEFS

Michael McDougall, Chief  
Information Management Branch  
U.S. EPA Region 1  
JFK Building Room 2211  
Boston, MA 02203

Robert Messina, Chief  
Information Systems Branch  
U.S. EPA Region 2  
26 Federal Plaza Room 404  
New York, NY 10278

Joseph Hamilton, Chief  
Information Resources Management  
Branch  
EPA Region 3  
841 Chestnut Street  
Philadelphia, PA 19107

Jack Sweeney, Chief  
Information Management Branch  
EPA Region 4  
345 Courtland Street, N.E.  
Atlanta, GA 30365

Elissa Speizman, Chief  
Information Management Branch  
EPA Region 5  
230 S. Dearborn Street (5-MI)  
Chicago, IL 60604

Stan Spivey, Chief  
Information Resources Branch  
EPA Region 6  
1445 Ross Avenue  
Dallas, TX 75202

Gordon Gregory, Chief  
Information Management Branch  
U.S. EPA Region 7  
726 Minnesota Avenue  
Kansas City, KS 66101

Robyn McKenry, Chief  
Information & Computer Management  
Branch  
EPA Region 8  
1 Denver Place, Suite 500  
999 18th Street  
Denver, CO 80202-2405

Mike Schultz, Chief  
Information Management Branch  
EPA Region 9  
1235 Mission Street  
San Francisco, CA 94103

Robin Gonzalez, Acting Chief  
Information Management Branch (MD103)  
U.S. EPA Region 10  
1200 6th Avenue  
Seattle, WA 98101

Robert Laidlaw, Chief  
Information Management Branch  
Box 25227, Building 53  
Denver, CO 80225

Steve Greenfield-OPI, Chief  
Management Information Services  
U.S. EPA  
P.O. Box 93478  
Las Vegas, NV 89193-3478

Robert Castor, Director  
Computer Services System Division  
U.S. EPA-OARM Cincinnati Room 28  
26 W. Martin Luther King Drive  
Cincinnati, OH 45268

## **EPA NATIONAL SYSTEM MANAGERS**

**Allan Abramson**  
**OPP Data Management**  
**CM11078**  
**H-7502C**

**Joe Acton**  
**CERCLIS/ENF**  
**SE269**  
**OS-505**

**John Adams**  
**IFMS**  
**NEB014**  
**PM-211**

**Joe Anderson**  
**FINDS and FACTS**  
**PM-218B**

**Mark Antell**  
**CDS/CEMS**  
**M3202**  
**EN-341**

**DeBorah Allen**  
**FIRMIS**  
**M2416**  
**OS-110**

**Harry Baker**  
**GICS**  
**8FL FC**  
**PM-216F**

**Sylvia Bell**  
**NEEDS**  
**E1129A**  
**WH-547**

**David Bittenbender**  
**EPA Telecom Network**  
**NDPD**  
**RTP, N.C. 27711**  
**MD-34**

**Wendy Blake-Coleman**  
**OW**  
**E1023**  
**WH-556**

**Kay Bomar**  
**PMSD/SB**  
**CM-2 1015C**  
**H7502C**

**George Bonina**  
**OPTS**  
**E108**  
**TS-793**

**Will Boone**  
**RMIS**  
**W729**  
**PM-225**

**John Bosch**  
**E.P.A. - OAQPS**  
**AIRS**  
**RTP, N.C. 27711**  
**MD-14**

**Kate Bouve**  
**OPP DATA MGMT**  
**CM-2 1107**  
**H-7502 C**

**Ruby Boyd**  
**OTS DATA MGMT**  
**NEC008**  
**TS-793**

**Brenda Bray**  
**OIG**  
**A-109**

**Jim Combs**  
**OTS-IMD**  
**E111**  
**TS-793**

**Jeff Byron**  
**Gateway**  
**OIRM/PSD**  
**PM-218B**

**Frank Caeser**  
**OTS DATA MGMT**  
**E113**  
**TS-793**

**Jeff Camp**  
**OGC**  
**M3305**  
**LE-130M**

**Chuck Carpenter**  
**OSWER/IMS**  
**M2416**  
**OS-110**

**Mike Cullen**  
**CERCLIS**  
**SE-312**  
**OS-240**



Phil Cuny  
RADS  
NE108  
ANR-461

David Eng  
CARD/CCP  
M2624D  
OS-230

Sandie Friedland  
OIRS  
W2060  
A-105

Ken Dawsey  
OHRM DATA  
W1129  
PM-224

Tim Farris  
ICMS  
FC 7 FL  
PM 214F

Myra Galbreath  
RCRIS  
SE264H  
OS-312

Dan Dellapenta  
PPAS  
NEB015  
PM-215

Mary Louise Fink  
OIG  
NE-303  
A-109

William Gill  
OIRM/PSD  
3405R

Melvin Denwiddie  
PMS  
609 FC  
PM-226F

Leonard Fitch  
OW  
E1219H  
WH-547

Daniel Graves  
EPAYS  
SW206  
PM-218

Tommy Dewald  
GIS  
OIRM/PSD  
3405R

John Fogarty  
BIENNIAL REPORT  
SE264G  
OS-312

Jeralene Green  
FIATS  
W227E  
A-101

Bill Dickerson  
ERTS  
M2119J  
A-104

Bill Foskett  
UST DATA MGMT  
C-1 9FL  
OS-400W

Sandy Hill  
ICMS  
M2907C  
PM-218

Towana Dorsey  
FURS/FRDS  
E113C  
WH-550E

Don Franklin  
FFIS  
SWM2119  
A-104

William Gross  
OPP DATA MGMT  
CS-1 42A6  
H-7502C

Alan Dixon  
PMSD/SB  
CM-2 1015  
H7502C

Paul Frazier  
Docket  
W537A  
LE-130

Geoffrey Grubbs  
STORET  
E837  
WH-553

Connie Dwyer  
GICS  
SW207  
PM-218

Rod Frederick  
Office of Water  
E835B  
WH553

Peg Hall  
OSWER Data Mgt.  
M2614  
OS110

Bill Harrison  
OHRM SYSTEMS  
SW206  
PM-218

Johnathan Libber  
BEN&ABLE  
NE104  
LE-133

Joanne Martin  
OTS DATA MGMT  
E108  
TS-793

Robin Heisler  
OW/OGWP  
E803B  
WH-550G

Joe Lieb  
OPP DATA MGMT  
CM #2 - 1021F  
H-7502C

Suzanne Matsumoto  
PCMD  
FC 6th Floor  
PM-214F

Gloria Hendricks  
EXT AFC  
W227L  
A-101

John Leitzke  
CECATS  
ET447K  
TS-778

Steve McNeeley  
UST DATA MGMT  
CS-1-9FL  
OS-420W

Amy Kearns  
OHRM DATA  
M3624  
PM-212

Nathan Lewis  
FAC DATA MGMT  
NEB015  
PM-215

David Meredith  
ETS  
E715B  
EN 342

Bob King  
STORET  
E835A  
WH-553

David Lindsey  
OIRM/ASD  
M3618G  
PM-218

Ingrid Meyer  
PSD  
Data Integration  
3405R

Yvonne Kinney  
OTS DATA MGMT  
E217  
TS-793

Ann Linnertz  
FAC DATA MGMT  
NEB030  
PM-215

Jerry Miller  
OPP DATA MGMT  
CM #2 1015 E  
H-7502 C

James Kranda  
AISCN  
2FL FC  
PM-214F

Bobbie Lively-Diebold  
OHMTADS  
M2710  
OS-210

Merle Miller  
OE-EDRS  
NE-104  
LE-133

Kurt Lamber  
ERIS  
CS-1 7th Floor  
OS-510W

Sandy Martin  
Director  
OIRM/ASD  
PM-218

Jeff Morin  
STARS  
M3131  
PM-222A

Jannie Latta  
GICS  
E1205A  
WH-547

Rick Martin  
Deputy Director  
OIRM/PSD  
3405R

Mike Mundell  
PCS  
NE 217  
EN-338

Patricia Murray  
HWDMS  
SE264A  
OS-312

Donna Perry-Inman  
CARS  
SE264F  
OS-312

Mike Shannon  
CARS/HWDMS/RCRIS  
SE 264 J  
OS-312

Carl Myers  
WQMIS/STORET  
E837  
WH-553

Kevin Phelps  
RCRIS  
SE264H  
OS-312

Craig Silverthorne  
OIG  
NE-303  
A-109

Steven Newburg-Rinn  
OTS DATA MGMT  
NEG008  
TS-793

Orlando Plator  
OIRM/ASD  
PM-218

Reginald Slade  
OAR  
W945  
ANR-443

Bruce Newton  
Waterbody  
E743  
WH-553

Joe Regan  
MATS  
NELCO24  
H3304

Joe Sierra  
STORET BIOS  
3405R

Dela Ng  
PCS  
NE217A  
EN-338

Bruce Rothrock  
DOCKET  
NE104  
LE-133

Jim Skaptason  
OPP DATA MGMT  
CM #2 1021G  
TS-7502C

John Oliver  
CIS  
2FL FC  
PM-214F

Don Sadler  
OHRM DATA  
M3910  
PM-224

Franklin Smith  
CDS  
CS-1 5th FL  
EN-342W

Theresa Pearson  
BIDS  
M1500B  
LE-132G

Alex Salpeter  
OAR-Acid Rain  
M3202  
ANR-445

Bill Telliard  
EMMI  
E909B  
WH-552

Bob Pease  
GRIDS  
PM 218B

Steve Schilling  
Act. Director  
OIRM/PSD  
3405R

Paul Thorpe  
ORD  
NEM304  
RD-674

Sandy Perrin  
NEEDS  
E1133  
WH-547

Pam Saunders  
SSTS and FATES  
E715B  
EN-342

Carolyn Thornton  
CICIS  
NEG008  
TS-793

Linda Travers  
OTS DATA MGMT  
E108  
TS-793

Jeff Tumarkin  
HWDMS  
M2812A  
OS-342

Charles Webb  
WIC

Larry Weiner  
FRDS  
E1113B  
WH-550E

Mike Whittacre  
ADCR, CPARS, EPAYS,  
MARS  
Fairchild 6th FL  
PM-226F

Bob Zisa  
OCM DATA MGMT  
E723B  
EN-342