

**INFORMATION TECHNOLOGY
STRATEGIC PLAN**

FISCAL YEARS 1999–2001

November 1998

***U.S. CHEMICAL SAFETY AND
HAZARD INVESTIGATION BOARD***



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Prepared for the U.S. Chemical Safety and Hazard Investigation Board
Washington, D.C.

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**INFORMATION TECHNOLOGY STRATEGIC PLAN
APPROVAL SHEET**

MESSAGE FROM THE CHIEF INFORMATION OFFICER

CSB Information Technology Vision:

“Prevent chemical accidents through the application and management of knowledge using the right technology.”

This Information Technology (IT) Strategic Plan represents the initial IT planning document for the U.S. Chemical Safety and Hazard Investigation Board (CSB). This Plan translates the CSB’s IT vision into action and provides the foundation for the initial set of IT initiatives and investments for the next three-year period, fiscal years 1999–2001. This Plan is “**customer-driven**” and reflects functional requirements as defined by the CSB staff and Board Members, which are, in turn, driven by several external customers and CSB stakeholders—Congress, industries that use chemicals, and the public.

An element of the overall CSB strategy is the development and maintenance of a “flat” organization. The IT strategy is integral to the overall success of the CSB. Information technology will be a cost-effective multiplier for personal and staff effectiveness. The CSB is, by design, limited in size and will depend on intensive information technology and capabilities to effectively accomplish its safety mission.

The three major functional initiatives of the IT strategy are: data warehouse, administrative business systems, and technical infrastructure. The IT Plan melds these areas into a viable and flexible information technology infrastructure that support the CSB now and in the future.

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ACRONYMS AND ABBREVIATIONS

AR	CSB Annual Report to Congress
BSA	Business Systems Architecture
COTS	commercial off-the-shelf
CSB	U. S. Chemical Safety Hazard and Investigation Board
DoD	Department of Defense
e-mail	electronic mail
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FOIA	Freedom of Information Act
FY	fiscal year
GPRA	Government Performance and Results Act of 1993
GSA	General Services Administration
HTML	Hypertext Markup Language
IA	Information Architecture
IT	Information Technology
LAN	local area network
MHz	megahertz
NTSB	National Transportation Safety Board
OLAP	on-line analytical processing
OSHA	Occupational Safety and Health Administration
PDF	Portable Document Format
RAM	random access memory
RMP	Risk Management Program(s)
SQL	Structured Query Language
TA	Technical Architecture

EXECUTIVE SUMMARY

To accomplish its mission of ensuring the safety of workers and the public by preventing or minimizing the effects of chemical incidents, the U.S. Chemical Safety and Hazard Investigation Board (CSB) requires a robust Information Technology (IT) infrastructure. The primary objective of this IT Strategic Plan is to identify the CSB's information goals clearly and to create a plan to achieve them. This Plan is very much customer-driven. It reflects the functional requirements as defined by the CSB and its staff that are in turn driven by several external customers and CSB stakeholders—Congress, industries that use chemicals, and the public.

This Plan lays the foundation for the initial set of IT initiatives and investments in support of the mission and priorities of the CSB for a three-year planning period, fiscal years 1999–2001. Specific goals include:

- providing a blueprint for development of the CSB information infrastructure,
- emphasizing use of IT tools and systems for increased productivity,
- guiding investments in IT resources to ensure the best possible return,
- ensuring that the IT base remains viable and flexible to meet future CSB needs,
- serving as a basis for evolving near-term operating plans, and
- supporting various processes for measuring performance of IT initiatives.

An analysis of business needs required to support CSB's mission was conducted and is documented herein. This analysis included research and information gathering as well as structured interviews of CSB personnel. Information and data requirements were identified and then arranged in a logical model of systems and data stores that will support CSB. The architecture (hardware and software) for delivering information technologies and capabilities to CSB personnel was developed. This developmental approach allows for migration from conceptual, functional requirements to a logical view of the business systems, data stores, and interfaces to the physical view of processors, networks, software, and databases necessary to implement the CSB IT Plan.

Given that the CSB commenced operations in 1998 and continues to be in the start-up phase of operations in terms of defining roles and responsibilities specific to its various organizational elements and identifying IT-related needs, the following three major functional IT initiatives were identified for implementation during this planning period:

- development of a Data Warehouse to provide easy access to accurate, up-to-date chemical safety information to support incident identification, incident investigations, studies and trending analyses, search capabilities of electronic files, and methods for communicating this information;
- development of Administrative Business Systems to support management of personnel, financial, and facility data; and
- further development and enhancement of the CSB Technical Infrastructure to provide Internet access, communications, desktop management, training, backup of key personnel, and telecommuting.

1 INTRODUCTION

This Information Technology (IT) Strategic Plan lays the foundation for the initial set of IT initiatives and investments in support of the mission and priorities of the U.S. Chemical Safety and Hazard Investigation Board (CSB) for a three-year planning period [fiscal year (FY) 1999 through FY 2001]. The CSB is presently in the start-up phase of operations in terms of defining roles and responsibilities specific to its various organizational elements and identifying IT-related needs. Therefore, a strategic plan focused on a three-year horizon, as opposed to the typical five-year period, is considered more appropriate at this point as the CSB evolves and as the IT area continues to advance rapidly.

Implementation of the initiatives in this plan will develop the IT infrastructure and architecture necessary to support the CSB for the future. While the IT Strategic Plan provides the context and vision of how IT supports CSB activities, a companion document, the IT Operating Plan, implements the initiatives identified in the IT Strategic Plan. The IT Strategic Plan is considered to be a living document that will be updated on a regular basis, particularly over the next few years, to ensure that it continues to directly support the CSB's mission and activities.

1.1 BACKGROUND ON THE CSB

The CSB was created as an independent federal agency in 1990 when Congress passed Public Law 101-549—Clean Air Act (As Amended) and began operations in FY 1998 when funds were appropriated. Other than the single prohibition on investigating chemical incidents occurring on waterways, Congress did not restrict the scope of the CSB's work. The CSB serves as an independent, investigatory body, examining chemical-related incidents to help determine causes and performing other work designed to help industry reduce the possibility of future incidents and, as a result, the possibility of future disasters or catastrophes. Worker training, regulatory requirements, management practices, operational policies and procedures, equipment maintenance, process systems analysis, and emerging process-related technologies are all legitimate areas of investigation for the CSB as it attempts to identify ways in which chemical safety can be improved.

As outlined in the *Business Plan for the Chemical Safety and Hazard Investigation Board*, published in August 1997, the principal efforts of the CSB are designed to answer the question representative of all stakeholders:

Where am I vulnerable today, and what should I do differently tomorrow to attain the highest level of chemical safety possible within economic, technological, and human limitations?

1.2 PURPOSE AND GOALS

To accomplish its mission of ensuring the safety of workers and the public by preventing or minimizing the effects of chemical incidents, the CSB requires a robust IT infrastructure. Therefore, the primary objective of the IT Strategic Plan is to identify the CSB's information goals clearly and to create a plan to achieve them. Within this overall objective, immediate benefits can be realized by ensuring timely IT systems development in support of organizational goals.

The IT Strategic Plan is very much customer-driven. It reflects the functional requirements as defined by the CSB that are in turn driven by several external customers and CSB stakeholders—Congress, industries that use chemicals, and the public. One of the CSB’s stated organizational objectives is to develop and maintain a flat organization to keep staffing and overhead levels low. The IT program supporting any organization is critical to mission success. This is particularly true for the CSB in that IT-related resources will be required to be immediately available to effectively multiply the efforts of a staff limited in size by design.

The purpose of the IT Strategic Plan then becomes one of directly supporting the CSB’s efforts through cost-effective and IT-intensive capabilities and technology solutions.

The goals for the IT Strategic Plan are to

- lay the foundation for major IT-related initiatives in support of the CSB’s mission,
- provide a blueprint for development of the information infrastructure,
- put emphasis on IT tools and systems for increased productivity on the part of the staff,
- guide investment in IT activities to ensure the best possible return on investment,
- ensure that the IT base remains viable and flexible to meet future CSB needs,
- serve as a basis for evolving near-term operating plans, and
- support the processes for measuring performance in
 - developing the CSB’s response to the reporting requirements contained in the Government Performance and Results Act (GPRA),
 - tracking the progress to the extent to which the IT Strategic Plan supports the overall Strategic Plan of the CSB, and
 - tracking the successful completion of individual IT initiatives.

Figure 1-1 illustrates the relationship of IT planning and implementation with the operations of CSB. The IT Strategic Plan builds on objectives from the CSB Business Plan and, in turn, is the basis for developing annual IT operating plans which define specific IT projects.

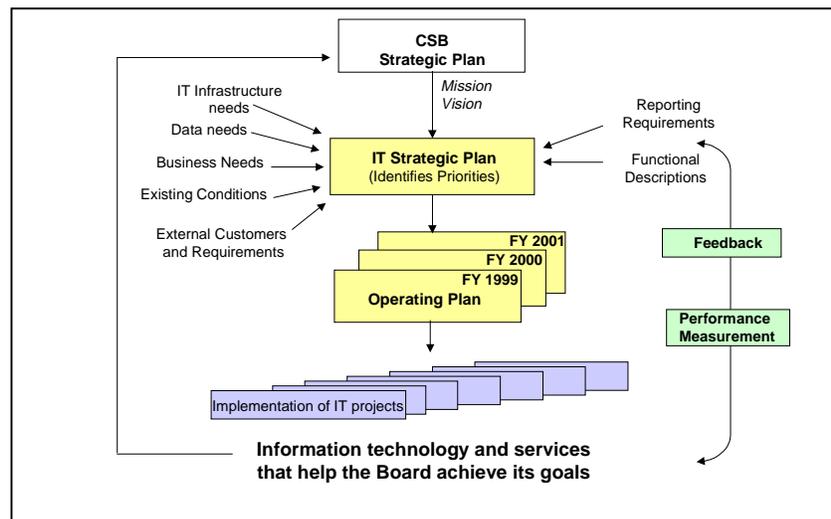


Figure 1-1. Relationship of Information Technology to CSB Operations.

1.3 DEVELOPMENT OF THE IT STRATEGIC PLAN

The development of the IT Strategic Plan involved three phases: data and information gathering, data analysis, and plan preparation. The plan development team completed an analysis of business needs required to support the CSB's mission. IT initiatives, developed and prioritized based on meeting critical CSB business needs, are documented in this plan. During the period of the plan, the IT initiatives will be implemented and assessed for meeting CSB's requirements.

In the data and information-gathering phase, three initial steps were taken to collect information that would form the basis for developing this IT Strategic Plan. These steps were:

1. reviewing the CSB Business Plan, which to date is the principal document defining CSB operations and other critical documents;
2. performing an in-depth review of the roles and responsibilities of CSB Technical Operations, which is responsible for IT activities; and
3. conducting structured interviews with Board Members, executive managers, and the CSB staff by programmatic office.

After the information was collected from the interviews, the information needs of the business units (Board Members, Executive Management, and the five programmatic offices—Investigations, Safety Programs, General Counsel, External Relations, and Safety Information and Management Operations, which includes Technical Operations and Administrative Operations) and the interactions among them were tabulated. External information needs and interactions were also captured. Analysis of these business needs identified IT resource requirements common to all CSB business units as well as IT resource requirements unique to individual business units.

The strategy employed by the IT Strategic Plan development team was to proceed from a broad, general model of CSB IT requirements to successively more specific views of the requirements. As a result of taking this approach, three information management architectures that provide a framework upon which to base analysis and design of IT products were defined: the Information Architecture, the Business Systems Architecture, and the Technology Architecture.

- The **Information Architecture** is a conceptual model of the CSB and provides a basis for sharing data, consistency among systems, flexibility of data and systems design, management of information systems, and establishment of user priorities.
- The **Business Systems Architecture** is a logical model of the systems and data stores (repositories of data) that support the CSB and its Information Architecture. This architecture provides the basis for system planning and development and system integration.
- The **Technology Architecture** is a physical model of the technology (hardware, software, communications, and their interrelation to each other) on which to run the data stores and systems. The Technology Architecture is required to support the Business Systems Architecture and provides the basis for compatibility and integration of components, distribution of systems and data, and data input/output and storage needs.

The development of these architectures allows for migration from conceptual, functional requirements to a logical view of the business systems, data stores, and interfaces to the physical view of processors, networks, software, and databases necessary to implement the CSB IT program.

Based on an information engineering analysis, the business needs of the CSB business units were refined to the point of identifying the essential IT functional areas. The functional areas were aggregated into three IT initiatives: Data Warehouse, Administrative Business Systems, and Technical Infrastructure. Within each of the initiatives, systems were identified and modules were identified within each system. The modules were then prioritized to establish which IT products will be developed over the three-year planning period. Primary considerations in identifying higher priority modules included:

- modules that were common to several business needs across the CSB business units,
- development of IT modules that will allow CSB to perform its basic business operations wherein communications, networks, and intranet capabilities are needed and administrative functions (accounting, budgeting, personnel, facilities management, and travel) must be performed, and
- critical needs as identified through the interviews that will contribute to CSB's establishing a presence or awareness among its stakeholders that CSB is contributing to the reduction of chemical-related incidents.

1.4 OVERVIEW OF THE IT STRATEGIC PLAN

Following this introduction, Section 2 elaborates on the CSB and its functions. The CSB's mission, vision, and principal objectives are discussed, and a summary of the responsibilities of its five major programmatic offices is provided. Section 2 also highlights the major IT initiatives that will be undertaken for this planning period.

Section 3 describes and captures the Information Architecture of the CSB by programmatic office or business unit by examining (1) the informational inputs and needs, (2) the information produced, and (3) interactions both internal and external to the CSB for each of the respective functional areas. It identifies business unit responsibilities and interactions in support of the CSB's overall strategic planning.

The Business Systems Architecture is presented in Section 4. It contains a description of the current IT environment, the information priorities for each functional area initiative, and the systems proposed to meet the priorities. Issues of importance include identifying systems that reduce or eliminate redundantly stored data, giving priority to those systems that will involve significant costs to the CSB if they are implemented later rather than sooner, and ensuring data quality for CSB products.

The Technology Architecture is discussed in Section 5 and is represented as a physical model of the hardware, software, networks, and communication. The Technology Architecture (hardware and software systems) supports the Business Systems Architecture (data) and ensures the compatibility and integration of the various systems and data.

Section 6 then presents the information technology measures in terms of how the IT initiatives to be undertaken for this planning period will support and tie to the CSB's mission, goals, and needs. The IT initiatives that support the GPRA are also identified in Section 6.

There are three appendixes to this plan. Appendix A includes a glossary of terms, Appendix B presents the figures detailing the interactions among the CSB business units described in Section 3, and Appendix C extends further the information on the IT initiatives as presented in Section 4 as a basis for developing the IT Operating Plan for FY 1999 and beyond.

The sections of this plan which are critical to the implementation of the IT program are:

- Section 4.4 which presents the overview of the three IT functional area initiatives and Figure 4-4 relates these initiatives to CSB activities, responsibilities, and information needs;
- Appendix C which systematically refines the three IT functional area initiatives into systems and the systems into modules which, when developed, provide increasing IT capabilities and resources to CSB staff; and
- Section 5 which describes a set of IT goals to support the CSB mission followed by a set of recommendations that deliver the IT capabilities and resources to the CSB staff via data management standards, applications development, electronic mail service, desktop tools, data analysis functionality, Web service, computer server and network administration, computer security, and user training.

2 CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD

Recognizing the need for a new and focused federal strategy, Congress modeled the CSB after the highly respected National Transportation Safety Board (NTSB). The NTSB is an independent federal agency that investigates transportation-related accidents. In the case of airplane accidents, the NTSB works with the airline industry and the Federal Aviation Administration, the regulatory agency within the U.S. Department of Transportation that regulates the airline industry, to improve airline safety. Similarly, the CSB works with industry and cognizant regulatory agencies [e.g., the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA)] in investigating chemical-related incidents.

2.1 THE CSB'S MISSION—WHAT WE DO

Congress' intent in establishing the CSB is documented in the legislative history of the law. The mission of the CSB is to ensure the safety of workers and the public by preventing or minimizing the effects of chemical incidents at industrial facilities and in transport. It is to be a powerful, proactive voice in the effort to improve the safety of chemical operations. The CSB is to be in charge of federal safety investigations into the cause of chemical incidents, and it is to provide the leadership and objectivity needed to achieve this mission.

As defined by Congress, the CSB's mission includes providing industries that manufacture, use, or otherwise handle chemicals with information to enable identification and mitigation of operational conditions that compromise safety. Congress directed the CSB to accomplish its mission by

- conducting investigations and reporting on findings regarding causes of chemical incidents both at fixed facilities and "on the road,"
- evaluating and advising Congress on the effectiveness of and any duplication of effort among 14 other federal agencies in preventing industrial chemical incidents,
- conducting special studies, and
- developing and communicating recommended actions (based on research and investigative findings) to improve the safety of operations involved in the production, transportation, and industrial handling of chemicals.

Realizing that chemical incidents may have global health, environmental, and economic effects, Congress encouraged the CSB to offer investigative assistance to other countries. Through its international outreach efforts to government and industry, the CSB can ensure its safety research program, professional services, and technical information accurately and adequately address the world's chemical safety needs.

2.2 THE CSB'S VISION—WHO WE ARE

The Vision Statement for the CSB is

*to be the world's primary industrial chemical incident investigation organization,
world authority in the cause and means of preventing chemical incidents, world*

leader in industrial chemical safety information and government-provided chemical safety services for industry, and the nation's primary repository of industrial chemical incident statistics and other related data.

The CSB is to take steps to identify and correct systemic weaknesses leading to the many chemical incidents that occur annually. The CSB is to work in concert with industry, labor, and government to help prevent those incidents by determining and addressing their causes. A multifaceted, collaborative partnership of all stakeholders, fostered by the CSB, can reduce risks associated with the use of chemicals.

2.3 THE CSB'S OBJECTIVES—WHAT WE SEEK TO ACHIEVE

The CSB's objectives related to achieving its mission are:

- Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.
- Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.
- Evaluate the effectiveness of other federal agencies in preventing chemical accidents.
- Coordinate the efforts across federal agencies to eliminate duplicate activities related to the oversight of chemical industry operations and the investigation of chemical industry events.
- Incorporate best practices from the private and public sectors to promote efficient CSB business operations.

2.4 THE CSB'S FIVE PROGRAMMATIC OFFICES

The development of the CSB was patterned after the NTSB. However, instead of mimicking the NTSB organizational structure, which includes headquarters and regional offices and a significant number of supervisory staff, the CSB decided to establish a single-location organization with five programmatic offices. Each office is to be staffed with multidisciplinary teams reporting to the respective office director. Each CSB office is supported by adjunct specialists as needed from other federal organizations, thereby keeping staffing levels and associated overhead costs low and permitting the bulk of resources to be devoted to the CSB's technical mission. Figure 2-1 presents the CSB organization.

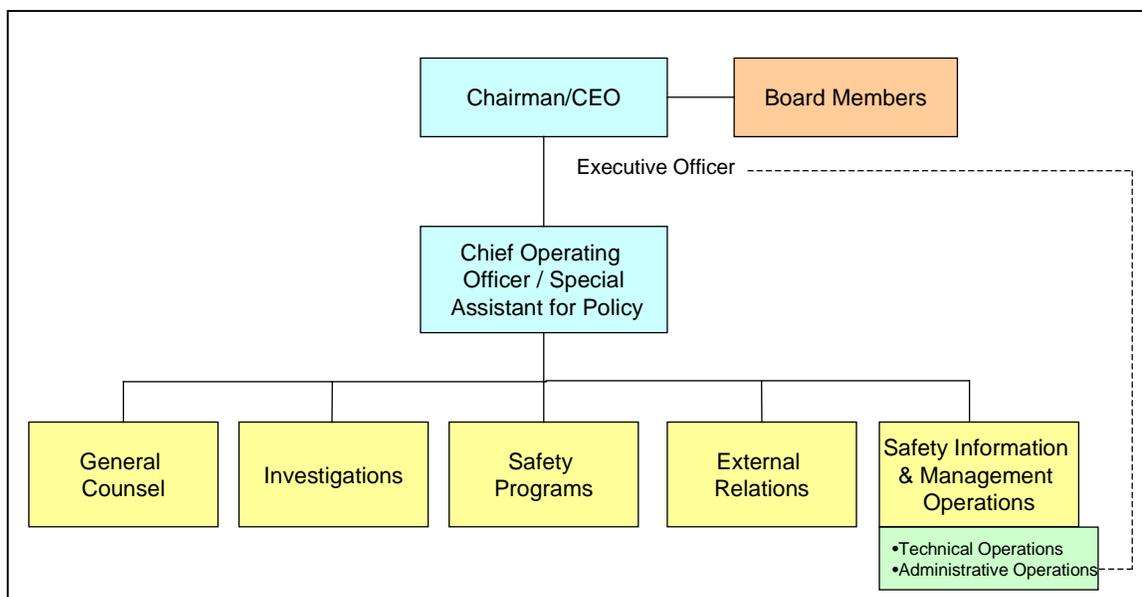


Figure 2-1. CSB organization chart.

Each of the five programmatic offices given in Table 2-1 reports to the Office of the Chief Operating Officer, who, in turn, reports to the Chief Executive Officer position that includes the responsibilities of Chairman of the Board. Table 2-1 summarizes the associated responsibilities of the Office of the Chief Operating Officer and five programmatic offices.

Table 2-1. Summary of Responsibilities for CSB Offices

Office	Responsibilities
Chief Operating Officer	All executive management, daily program supervision and ongoing operational planning and evaluation of CSB functions, and development of CSB’s executive policies and program priorities, strategic and business plans, and resource allocations.
General Counsel	Administrative and programmatic legal services including support of incident investigations, Freedom of Information Act matters, and all operations associated with administrative hearings.
Investigations	Conduct of incident investigations and preparation of resulting reports; acquisition, use, and assessment of laboratory and special services to support investigations; management of the incident investigation corps; assess/monitor external regulations for impact on chemical safety; and conduct of trends and patterns analyses on incidents.
Safety Programs	Regulatory review and oversight of EPA and OSHA, development of proposed rules and orders for EPA and OSHA’s consideration, analysis of safety information to determine implications for safety programs, conduct of safety studies and management of event reporting programs, and safety technology evaluation and transfer.
External Relations	Public and media information, dissemination of electronic and print publications, liaison with business and academia, conduct of government relations, preparation of Annual Report (AR) to Congress, and coordination of international activities.
Safety Information and Management Operations <ul style="list-style-type: none"> • Technical Operations • Administrative Operations 	Information technology systems and operational programs; assessment of technology proposals and associated risk and potential return; providing technical support for investigations; and conduct of administrative operations including budget, finance, acquisition, human resource management, and logistics.

The specific informational needs, products, and processes for each of the CSB business units (programmatic offices, Executive Management, and the Board Members) are discussed in Section 3.

2.5 THE IT VISION AND IT STRATEGIC PLAN

The CSB's goal is to serve as a dynamic repository of chemical safety information and as a key source of expertise on the subject. In order to accomplish its objectives, the CSB must bring together in a single location and make sense of a vast amount of public and private sector information that, historically, has been difficult to obtain, comprehend, and utilize. The role of information technology is critical to the CSB's achieving its mission. The IT vision is:

“Prevent chemical accidents through the application and management of knowledge using the right technology.”

This IT Strategic Plan translates the CSB's IT vision into action. It establishes the CSB's initial IT infrastructure and architecture that supports CSB customers and stakeholders using selected information technology and automated tools. To achieve this vision, the CSB has identified the following IT-related initiatives:

- Data Warehouse
- Administrative Business Systems
- Technical Infrastructure

Within each of the initiatives, a set of activities has been identified and prioritized. Figure 2-2 depicts the transition from the definition of CSB business needs through the definition of functional area initiatives and systems to the identification of specific IT modules within each system. The business needs of CSB are addressed in Section 3. The initiatives, systems, and modules are discussed in Section 4 and Appendix C.

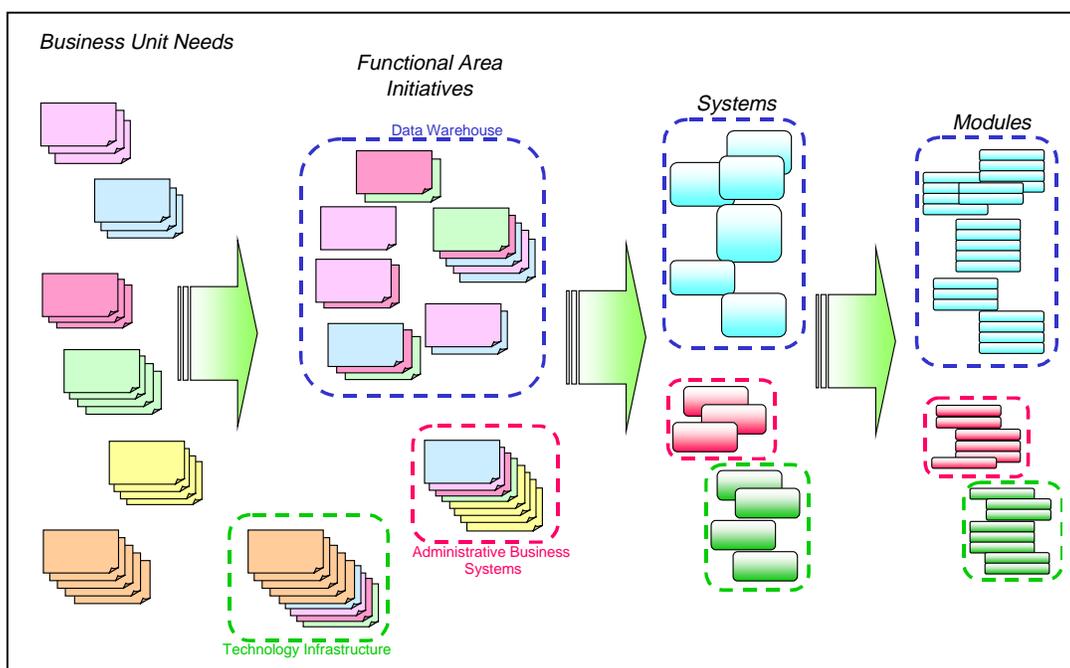


Figure 2-2. Evolution from Business Needs to IT Initiatives.

3 INFORMATION ARCHITECTURE

3.1 INTRODUCTION

The methodology for modeling the CSB IT needs and migrating from conceptual requirements to physical hardware and software systems involves developing the three information management architectures—the Information Architecture, the Business Systems Architecture, and the Technical Architecture. The Information Architecture, presented in this section, contains the conceptual, functional, and information requirements of the CSB. The process of constructing the Information Architecture for the CSB involved analyzing the business units, their responsibilities, and interactions.

3.2 INFORMATION NEEDS BY BUSINESS UNIT

The definition of the business units of the CSB generally follows the organization chart shown in Section 2.4. For the purposes of IT modeling and planning, the business units of the CSB are the Board Members, Executive Management (Chief Executive Officer and Chief Operating Officer), Technical (IT) Operations, Administrative Operations, Investigations, Safety Programs, General Counsel, and External Relations. In this business unit structure, the two major units of the Office of Safety Information and Management Systems are addressed separately as Technical Operations and Administrative Operations. It was necessary to capture the information needs and interactions of Technical Operations and Administrative Operations separately because of the unique needs these two organizations have and the support they provide to the other CSB business units.

The responsibilities and internal and external information needs of each of the CSB business units are given in Sections 3.2.1–3.2.8.

3.2.1 Board Members

The responsibilities of the Board Members are to participate in investigations and approve investigation reports, establish Board governance policy, conduct public meetings, promote CSB's relationship with Congress and the public, and establish credibility of the CSB with strategic interest groups and stakeholders. The information needs of the Board Members are:

- investigation reports and supporting documentation (prior reports and incident history),
- contacts, including subject matter experts, consultants, target audiences and special interest groups, officials, media, and trade group representatives,
- status of major CSB activities,
- CSB administrative guidelines,
- incident information from external organizations (company procedures and safety documentation, drawings, equipment and systems specifications, regulatory compliance history),

- external databases [Department of Defense (DoD) accidents, industry databases, enforcement databases, failure data, EPA Risk Management Programs (RMPs), chemical safety data, media, legal proceedings],
- current industry developments and events (trade journals/media, chemical industry, technology, meetings and conferences, studies, and lessons learned),
- federal, state, local, and international regulations, and
- industry codes and standards.

3.2.2 Executive Management

The Executive Management business unit includes the functions of the Chief Executive Officer and the Chief Operating Officer. Executive Management of CSB is responsible for all executive management, daily program supervision, and ongoing operational planning and evaluation of CSB functions. Specifically, the responsibilities include development of strategic and business plans, development and implementation of operating policy, allocation of resources, program evaluation and priority setting, and decisions on investigatory actions. The information needs of Executive Management are:

- incident notification,
- investigation reports and supporting documentation,
- contacts, including subject matter experts, consultants, target audiences and special interest groups, officials, media, and trade group representatives,
- budget needs,
- professional development needs,
- status of CSB activities,
- CSB administrative guidelines,
- draft contents of the Annual Report to Congress and the President,
- external databases (DoD accidents, industry databases, enforcement databases, failure data, EPA RMPs, chemical safety data, databases of other agencies, media, legal proceedings),
- current industry developments and events (trade journals/media, chemical industry, technology, meetings and conferences, studies, and lessons learned),
- federal appropriation for CSB,
- federal, state, local, and international regulations, and
- industry codes and standards.

3.2.3 Technical Operations

The Technical Operations business unit is responsible for IT planning and implementation. Technical Operations develops and maintains IT infrastructure and tools, manages the CSB web site, performs systems analysis and design, manages the CSB reference library, and provides training and help desk support. The information needed by Technical Operations includes:

- investigation reports and supporting documentation,
- contacts, including subject matter experts, consultants, target audiences and special interest groups, officials, media, and trade group representatives,
- IT training needs,
- CSB IT and research needs,
- status of major CSB activities,
- CSB administrative guidelines,
- external databases (DoD accidents, industry databases, enforcement databases, failure data, EPA RMPs, chemical safety data, databases of other agencies, media, legal proceedings),
- current industry developments and events (trade journals/media, chemical industry, technology, meetings and conferences, studies, and lessons learned),
- federal, state, local, and international regulations, and
- IT codes and standards.

3.2.4 Administrative Operations

The Administrative Operations business unit supports CSB by providing basic business functions and services. The responsibilities of Administrative Operations are to communicate administrative policies and guidelines, provide facilities and logistics support, manage the cost accounting system, procure materials and services, maintain personnel records, and travel management. The information needed by Administrative Operations in meeting its responsibilities is:

- facilities and telecommunications needs,
- procurement requirements,
- personal time management information (vacation, overtime, absences),
- travel requirements,
- contract information,
- financial information (budget and cost tracking, accounts receivable and payable),
- status of major CSB activities,
- CSB administrative guidelines,
- federal administrative operations requirements,
- government forms,
- federal appropriation for CSB,
- GSA vendor list and requirements, and
- federal personnel and administrative regulations.

3.2.5 Investigations

The Investigations business unit investigates chemical-related incidents, coordinates investigation reports, and manages the investigation teams. In its role of leading investigations, the Office of Investigations also acquires, as necessary, laboratory and special services to support investigations, and collects and preserves evidence. Other responsibilities for this business unit are establishing an incident notification system and process and conducting international investigations. Investigations requires the following information:

- incident notification and CSB action (field investigation or review),
- investigation reports and supporting documentation,
- contacts, including subject matter experts, consultants, target audiences and special interest groups, officials, media, and trade group representatives,
- status of major CSB activities,
- CSB administrative guidelines,
- external databases (DoD accidents, industry databases, enforcement databases, equipment failure data, EPA RMPs, chemical safety data, databases of other agencies, media, legal proceedings),
- regulatory agency and industry reports for incidents investigated by review,
- current industry developments and events (trade journals/media, chemical industry, technology, meetings and conferences, studies, and lessons learned),
- federal, state, local, and international regulations, and
- industry codes and standards.

3.2.6 Safety Programs

The Safety Programs business unit is responsible for conducting chemical safety research and producing special studies and analyses of safety data for preventing or minimizing chemical-related incidents. Safety Programs evaluates the impact of proposed recommendations and conducts regulatory review and oversight of EPA and OSHA. Safety Programs is also responsible for development of a voluntary incident reporting system. The information needed by Safety Programs is:

- investigation reports and supporting documentation,
- contacts, including subject matter experts, consultants, target audiences and special interest groups, officials, media, and trade group representatives,
- status of major CSB activities,
- CSB administrative guidelines,
- external databases (DoD accidents, industry databases, enforcement databases, failure data, EPA RMPs, chemical safety data, databases of other agencies, media, legal proceedings),
- current industry developments and events (trade journals/media, chemical industry, technology, meetings and conferences, studies, and lessons learned),

- federal, state, local, and international regulations, and
- industry codes and standards.

3.2.7 General Counsel

The General Counsel provides legal guidance and services, domestic and international, for the CSB. The General Counsel manages rulemaking and regulatory development, makes Freedom of Information Act (FOIA) determinations, rules on jurisdictional issues, and represents the Board in proceedings with the Department of Justice. The information needed by General Counsel is:

- investigation reports and supporting documentation,
- contacts, including subject matter experts, consultants, target audiences and special interest groups, officials, media, and trade group representatives,
- status of major CSB activities,
- CSB administrative guidelines,
- external databases (DoD accidents, industry databases, enforcement databases, failure data, EPA RMPs, chemical safety data, databases of other agencies, media, legal proceedings),
- legal references and databases,
- FOIA requests,
- docket information,
- current industry developments and events (trade journals/media, chemical industry, technology, meetings and conferences, studies, and lessons learned),
- federal, state, local, and international regulations (information protection and safety oversight), and
- industry codes and standards.

3.2.8 External Relations

The External Relations business unit conducts communications and outreach programs for CSB, and serves as the first contact with the CSB for any chemical-related incident. External Relations is also responsible for establishing international relations, representing the Board with other agencies, preparing the Annual Report with input from the other business areas and distributing the Annual Report to Congress and the President, and serving as liaison to Congress, industry, and the public for the CSB. The information needed by External Relations is:

- incident notification,
- investigation reports and supporting documentation,
- contacts, including subject matter experts, consultants, target audiences and special interest groups, officials, media, and trade group representatives,
- status of major CSB activities,
- CSB administrative guidelines,

- external databases (DoD accidents, industry databases, enforcement databases, failure data, EPA RMPs, chemical safety data, databases of other agencies, contacts databases, media, legal proceedings),
- current industry developments and events (trade journals/media, chemical industry, technology, meetings and conferences, studies, and lessons learned),
- federal, state, local, and international regulations, and
- industry codes and standards.

3.2.9 Summary of CSB Information Needs

The functional and information requirements of the business units were reviewed to identify the requirements common to more than one business unit and the requirements that are unique to individual business units. A summary of that analysis is given in Table 3-1.

Table 3-1. Summary of CSB Information Needs

Internal Information Needs		
Information	Source	CSB Customer
Incident notification	ER	EM, IN
Investigation data	IN	SP, ER, B, EM, GC
Contacts	various	all
Status	all	EM; all
Administrative guidelines	EM, AD	all
Business systems (finance, procurement, facilities)	AD	all
IT infrastructure and support	IT	all
External Information Needs		
Incident information	industry	IN, SP, B, GC
Agency reports	EPA, OSHA, other	IN, SP, B, GC, EM
External databases	DoD, EPA, OSHA	IN, SP, B, EM, ER, GC
Legal references	Westlaw	GC
Government regulations	Cognizant entity	all
Codes and standards	Cognizant entity	IN, SP, GC, ER, EM, B, IT
Incident notification	National Response Center	ER, EM, IN
Industry developments and event data	Associated Press, media, trade groups	ER, EM, B, IT, IN, SP, GC

AD=Administrative Operations EM=Executive Management
 B=Board ER=External Relations
 GC=General Counsel IN=Investigations
 IT=Technical Operations SP=Safety Programs

3.3 BUSINESS UNITS AND THEIR INTERACTIONS

Based on analysis of interviews with CSB, the interactions of the business units were captured in diagrams. The interactions of Technical Operations with the other CSB business units are presented in Figure 3-1. The functions and responsibilities of Technical Operations are given in the central box. Information flows between Technical Operations and each of the other units are

defined on the directional arrows. External data requirements are listed in the bottom box. A similar diagram for each business unit is given in Appendix B.

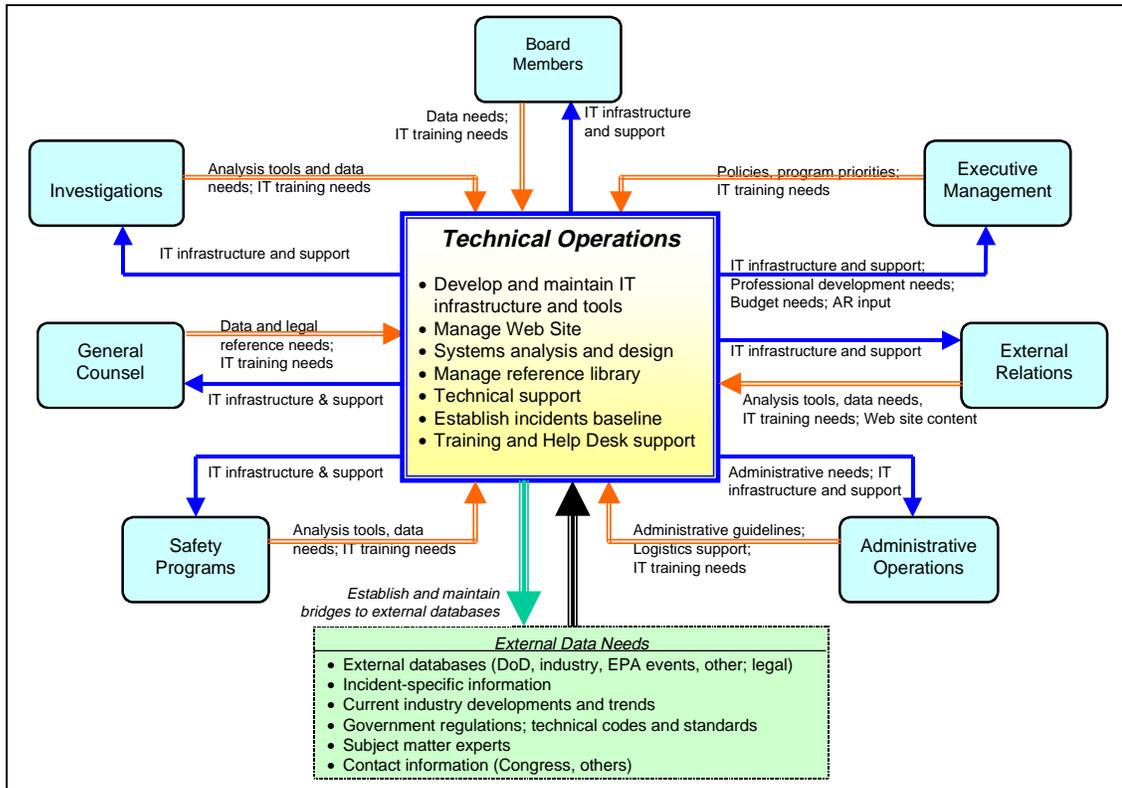


Figure 3-1. Technical Operations interactions.

4 BUSINESS SYSTEMS ARCHITECTURE

4.1 INTRODUCTION

The Business Systems Architecture is a logical model of the systems and data stores that support the organization and its Information Architecture. As stated in the *Information Engineering Methodology* by James Martin & Associates, the objectives of the Business Systems Architecture are to

- show the possible future environment of applications systems and databases that will meet the overall needs of the organization (CSB);
- provide a baseline for planning of future analysis and systems development, which helps to ensure compatibility between systems and with databases; and
- provide a baseline for reviewing the Technical Architecture.

The Business Systems Architecture defines the applications systems and databases that need to be built or improved to meet the information needs of the CSB. Without a Business Systems Architecture, applications systems and databases are frequently built in isolation, which causes redundancy and makes data flow impossible to control. The Business Systems Architecture defines the expected systems, the expected data stores, and the interdependencies between them.

4.2 DESCRIPTION OF CURRENT INFORMATION MANAGEMENT ENVIRONMENT

During the first three quarters of the year that the CSB has been in business, the staff of Technical Operations has focused on establishing the technical infrastructure to include a flexible network, standard desktop, and portable desktop environments. The present IT infrastructure meets the existing CSB requirements while allowing for an expected staff growth to 100 by FY 2000. Due to the predicted growth, the CSB will move to a larger office space within the next two years. Technical Operations has implemented an IT infrastructure that will accommodate this rapid growth while minimizing any permanent additions to the present office space.

The following is a list of the existing CSB IT infrastructure:

- In-house network:
 - NT Server v 4.0
 - Lantronix Communication LRS16
 - NT FW1 Firewall Server
 - NT Microsoft Structured Query Language (SQL) Database Server 6.5
 - NT Web Server—Microsoft Internet Information Server 3.0 and Microsoft Internet Information Server 4.0
 - Microsoft Exchange 5.5
- CD-ROM Server:
 - Procomm 14 CD
- Document scanner:
 - HP 6250 CXI (25 sheet document feeder)
- 31 personal computers:
 - 7 Gateway Pentium MMX 266 MHz
 - 15 Gateway Pentium II 266 MHz
 - 9 Gateway Pentium II 333 MHz
- 8 lap top computers:

- 1 Gateway Pentium MMX 166 MHz
- 7 Toshiba Pentium MMX 266 MHz
- 4 HP 4000TN and 1 Color Epson 1520 Network Printers
- Desktop standard consisting of:
 - Microsoft Office 97,
 - Microsoft Outlook 98 for mail and contacts management,
 - Microsoft Internet Explorer 4.0 for Web access,
 - Nico Mak Computing Inc. Winzip 6.3,
 - Adobe Acrobat Reader 3.0
- Web site using the Federal Emergency Management Agency (FEMA) IT services provider
- Electronic mail capability via FEMA
 - National Fire Protection Association Codes and Standards database
 - External databases:
 - News Edge Corporation News Edge
 - West Group Westlaw
 - Software packages:
 - JetForm Formflow Filler version 2.15 with government forms options
 - Capital Hill Software GR PRO and PR Office
 - Microsoft Front Page 98 for Web design
 - Allaire Cold Fusion
 - WebTrends
 - Checkpoint Firewall
 - Internet Security System - Security Scanner Suite
 - Microsoft Technet

Due to the short time (less than one year) that the CSB has been operating, there are currently no CSB-specific software systems. The administrative functions such as payroll, accounting, and disbursements are currently contracted through the GSA. A high-level view of the current information management environment is presented in Figure 4-1.

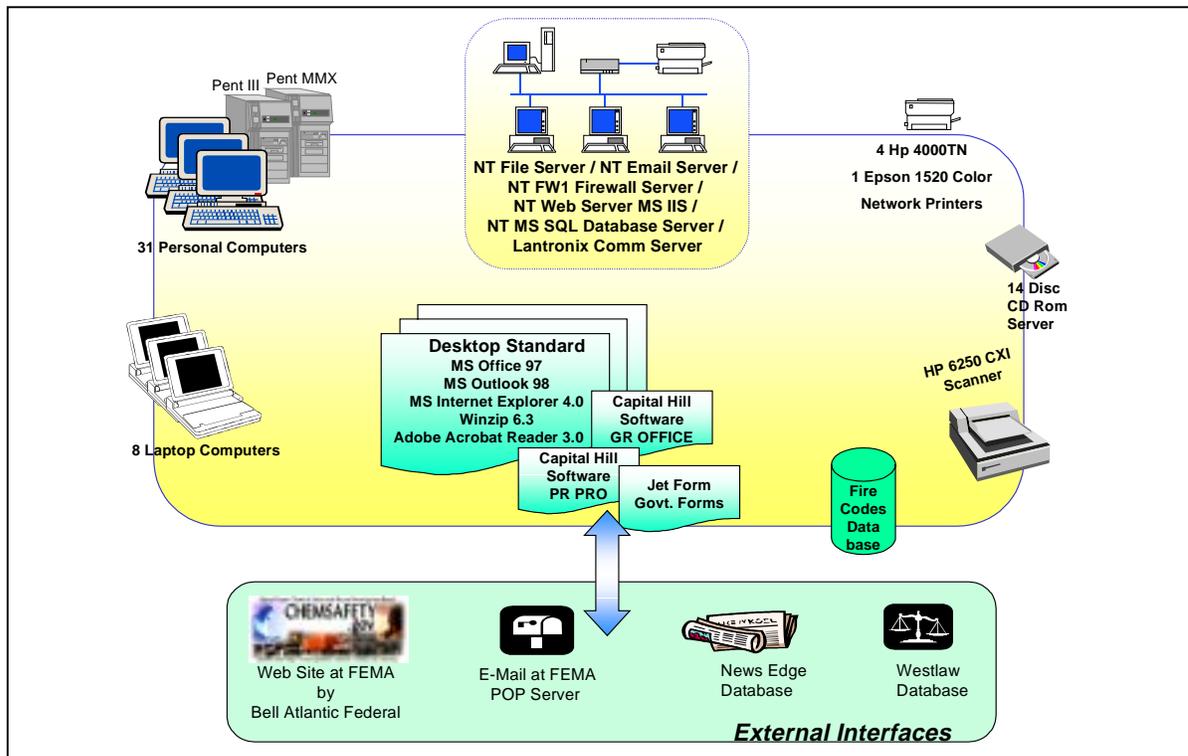


Figure 4-1. Current information technology environment.

4.3 INFORMATION REQUIREMENTS BY FUNCTIONAL AREA

The Information Architecture (Section 3) details information needs by business unit. The Business Systems Architecture uses this information to understand the processes of the CSB and the dependencies between them, independent of organizational (business unit) structure. By looking across all of the business unit information needs, key functional areas can be defined.

In information engineering, a functional area consists of a group of processes which together completely support one aspect of furthering the mission of the enterprise. Some examples of functional areas are administration, incident identification, investigation reports, studies, analysis, and alerts. Figure 4-2 depicts the CSB functional areas. The central object in the figure represents the core CSB business functional areas. The underpinning support functions of Administrative Business Systems and Technical Infrastructure are located under the core business functional areas. The Works in Progress circle is part of the Internet functional area but is called out in the figure because of its importance to the CSB work flow. Some items may not be functional, but, for the purposes of this document, they are being treated as such because of their significance to CSB operations. Each functional area is described below.

- Investigation Reports consists of the processes that support the collection of information, the investigation docket, FOIA review, and the production of the investigation report.
- Incident Identification includes the processes necessary to identify and classify incidents. It includes the establishment of the incident baseline, determination of the incident universe or boundaries, and voluntary reporting of chemical safety information and near misses.
- Studies, Analysis, and Alerts includes tracking recommendations and the repackaging of CSB products for distribution to interested parties.
- Internet serves as a key bi-directional communication vehicle for CSB. It also includes communication of information within CSB via Works in Progress.
- Works in Progress is an internal CSB Internet layer that includes any draft CSB documents, docket information, and investigation data that has not been reviewed for FOIA compliance.
- Contacts/SMEs/Interested Parties/Congress includes the mechanisms CSB will implement to increase awareness of activities, identify critical subject matter experts (SMEs), stay abreast of pertinent congressional and industry activities, and measure impact of CSB outreach activities.
- Reference Information Gathering involves the gathering of industry publications and access to databases external to CSB; to other federal agency information; and to industry standards, analysis data and statistics, and references used to perform CSB technical functions.
- Administrative is composed of the core administrative activities of CSB including personnel payroll and tracking, property management, budget control, travel, accounting, and disbursements.

- **Technical Infrastructure** includes the tools and processes needed to support CSB such as electronic mail, faxes, network administration, databases, computer security, video conferencing, desktop support, and IT training.

The functional areas described above each have specific information needs. Figure 4-3 provides a high level overview of the information needs by functional area. Section 4.4 describes the proposed business systems to support the functional information needs.

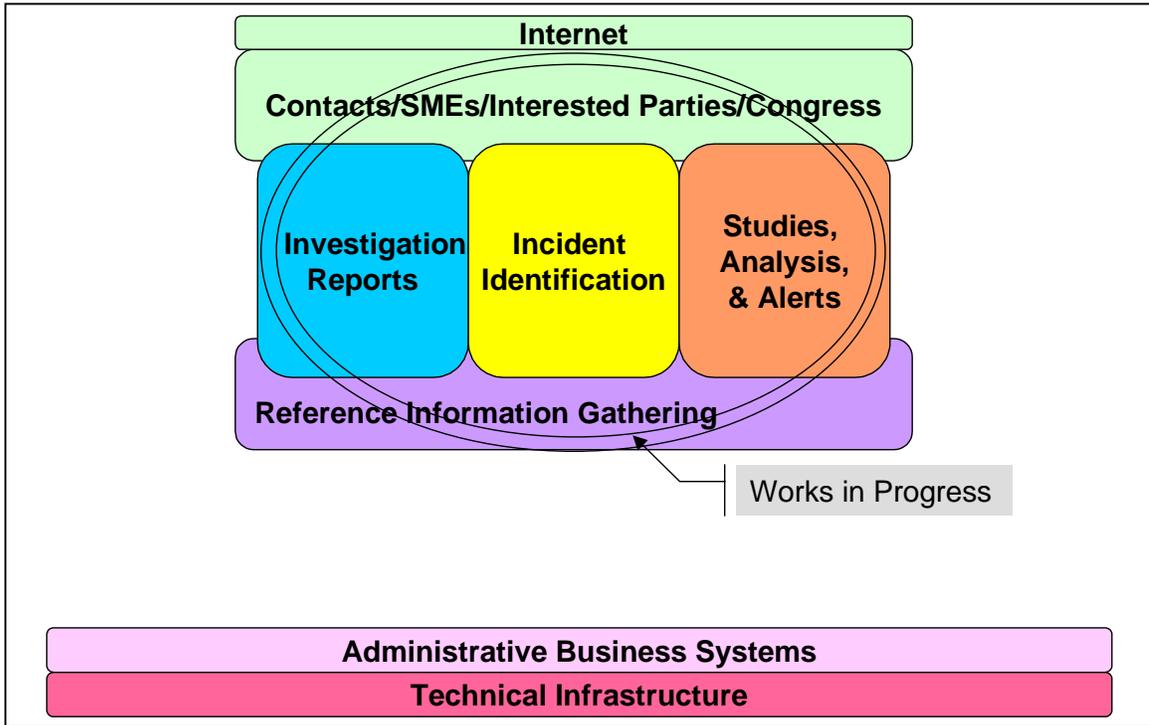


Figure 4-2. CSB functional areas.

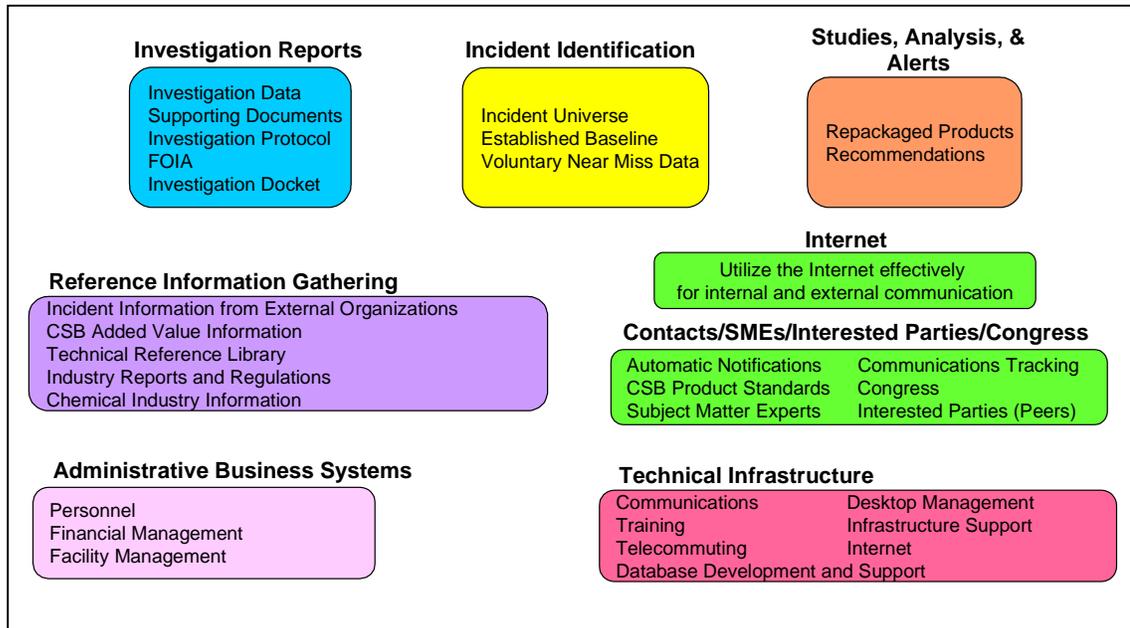


Figure 4-3. Overview of the information needs by functional area.

4.4 PROPOSED SYSTEMS

The systems needed to support the specific functional areas are grouped into three broad functional initiatives: Data Warehouse, Administrative Business Systems, and Technical Infrastructure. As described in Section 2.5, each of the initiatives has been broken into systems, and the systems are divided into smaller components called modules. A module is a functioning component of a larger system that provides the end user with a requested IT capability.

The approach of implementing modules versus one large IT initiative lessens the impact of technology changes, makes it easier to plan and budget business systems that assist the highest priority needs, and reduces the time that users have to wait before some level of IT capability is realized. As modules are released for use, subsequent modules are able to take advantage of existing features to provide enhanced IT capabilities to CSB on a regular basis.

Each initiative is described below.

- **Data Warehouse:** provides direct support to every CSB business unit and, consequently, every functional area. The importance of easy access to accurate, up-to-date chemical safety information for a variety of uses was consistently stressed during interviews with CSB staff. The data warehouse includes:
 - information to support identification of incidents,
 - investigations,
 - studies and analysis,

- reference information gathering, an electronic and hard copy library with sophisticated search capabilities, and
- methods for communicating this information
 - Contacts/SMEs/Interested Parties/Congress
 - Internet
- Administrative Business Systems: personnel, facility management, and financial management systems to support general business operations.
- Technical Infrastructure: provides the underpinnings for CSB information technology to include Internet access, communications, desktop management, training, infrastructure support, personnel backup, and telecommuting. The importance of providing a stable, reliable infrastructure is magnified when the systems are being utilized as a “force multiplier” to augment a compact central staff.

The three initiatives with their respective systems are shown in Figure 4-4. These are prioritized by year in Figure 4-5. Appendix C provides a description of each of the initiatives, systems, and modules.

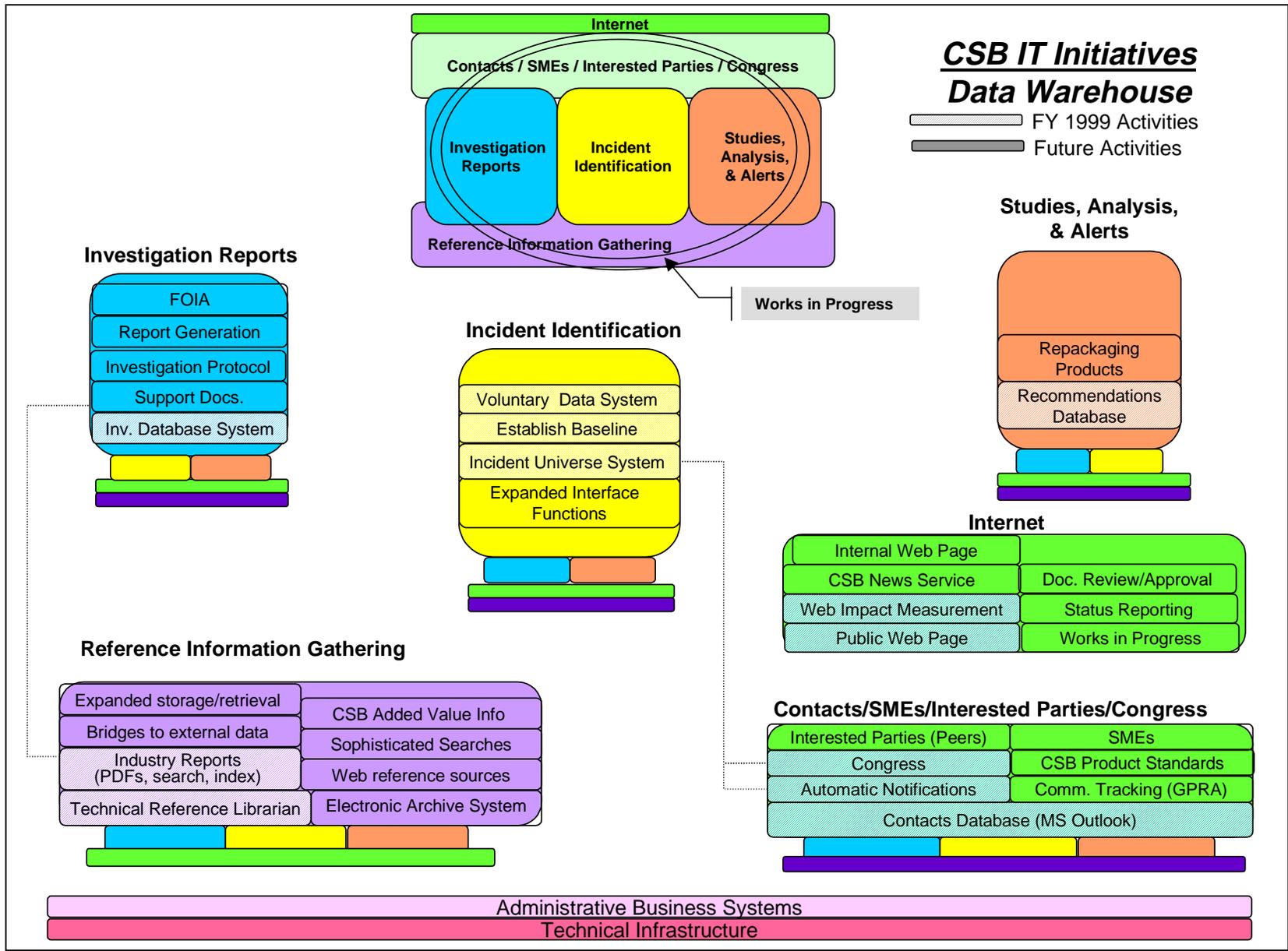


Figure 4-4. Initiatives with their respective systems: Data Warehouse.

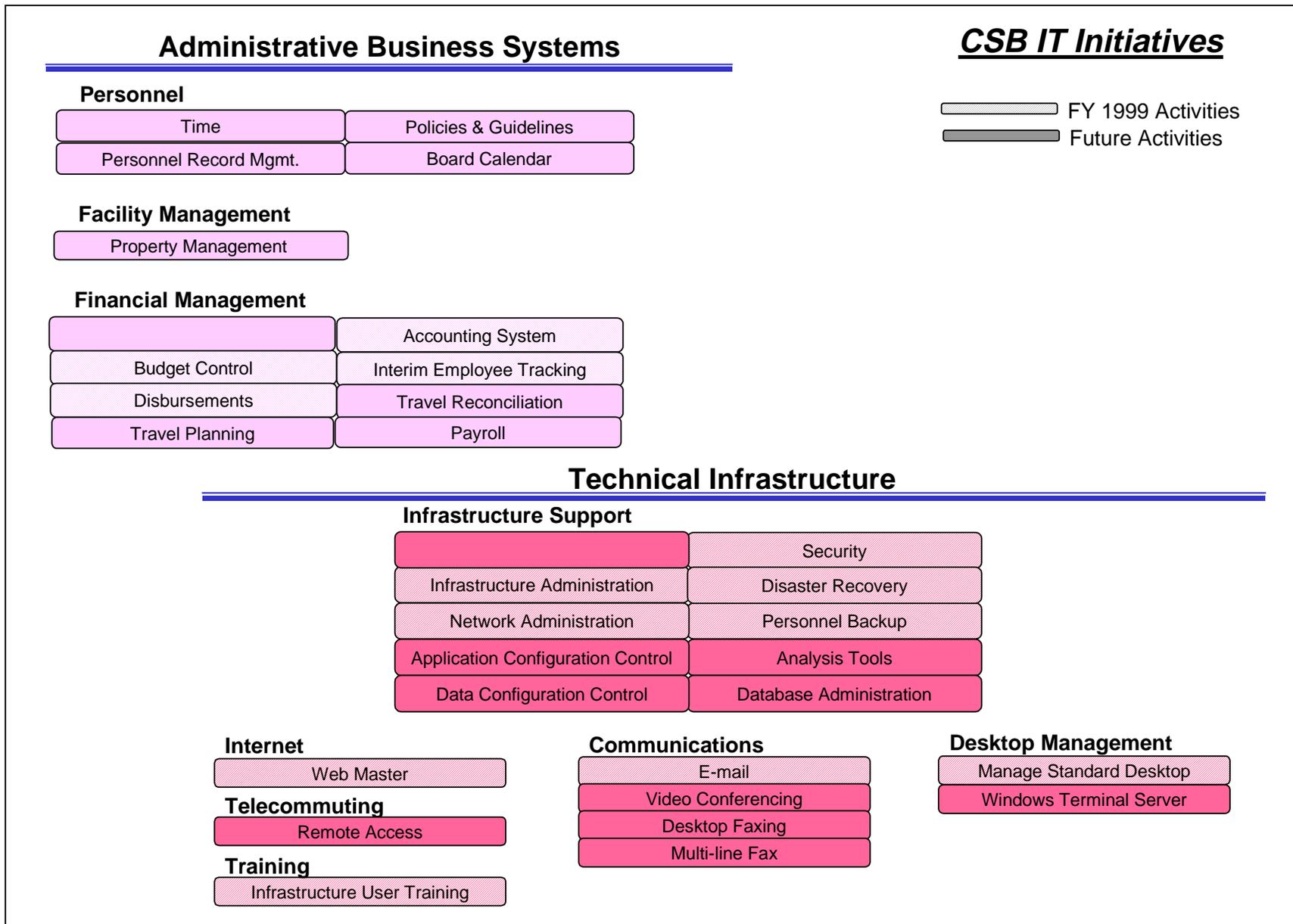


Figure 4-4 (cont.). Initiatives with their respective systems: Administrative Business Systems and Technical Infrastructure.

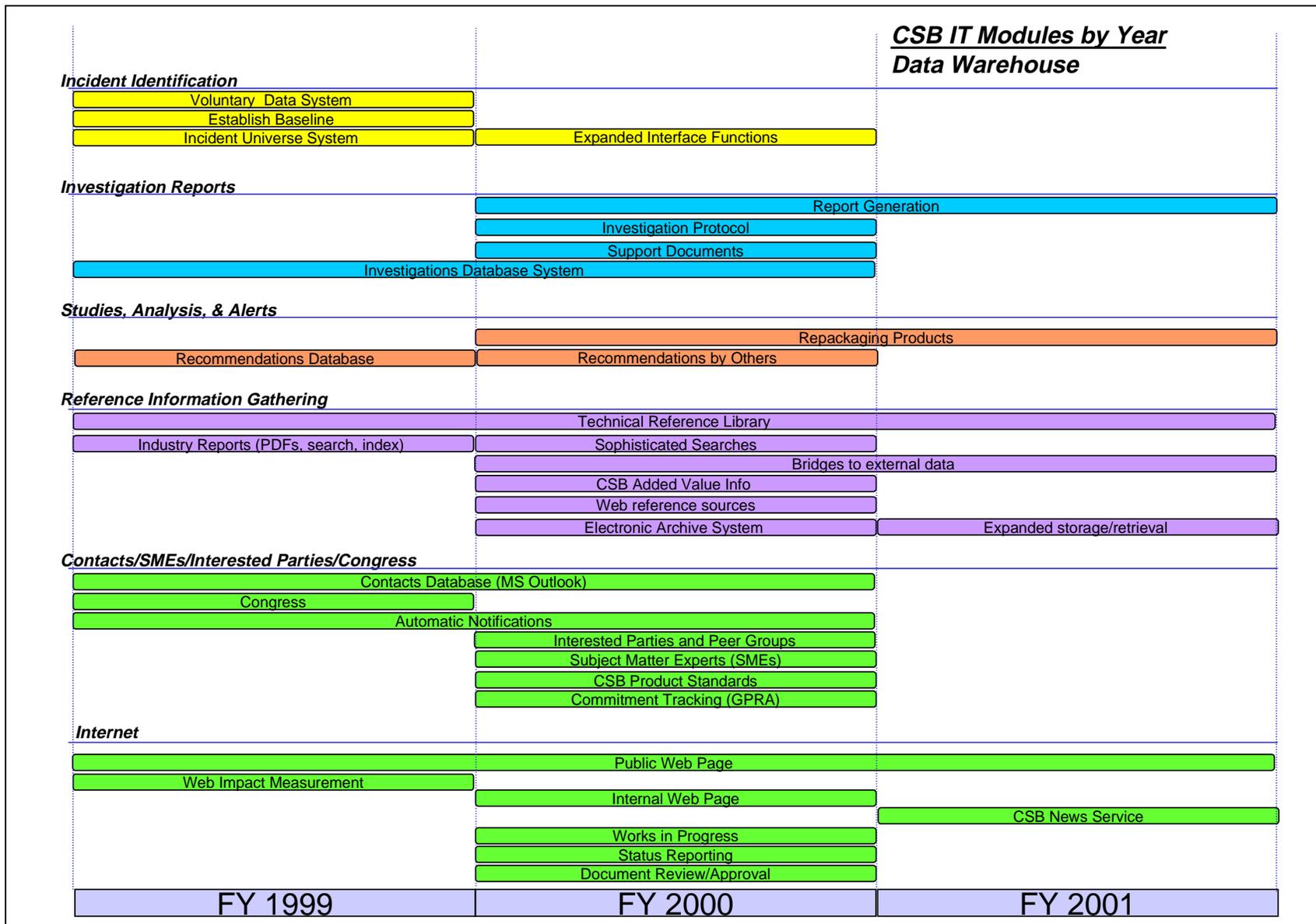


Figure 4-5. IT Initiatives implementation by year—Data Warehouse.

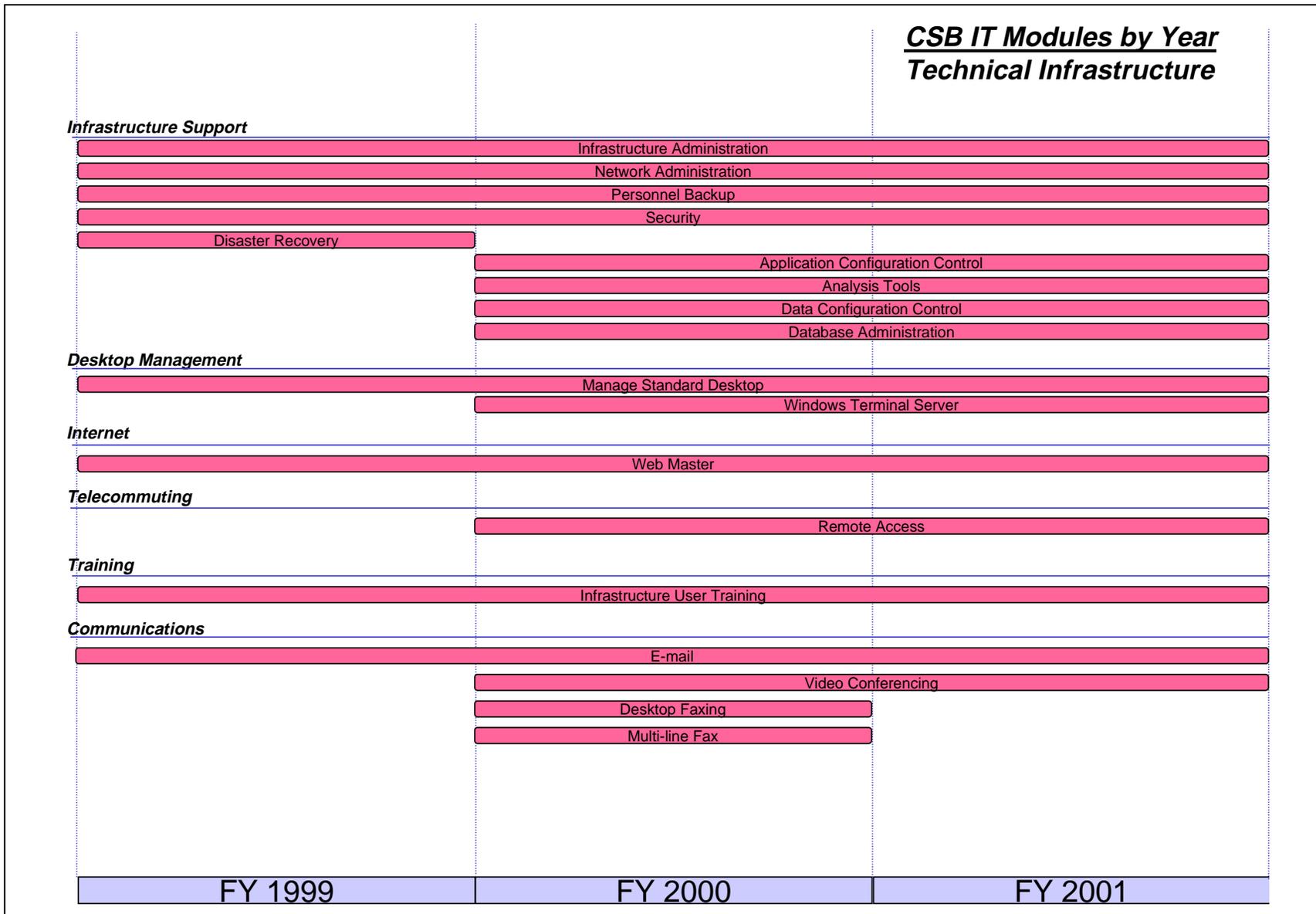


Figure 4-5 (cont.). IT Initiatives implementation by year—Technical Infrastructure.

5 TECHNOLOGY ARCHITECTURE

5.1 INTRODUCTION

The Technology Architecture identifies those key factors (standards) by which the CSB will acquire hardware, software, communications, and network services to ensure compatibility and interoperability between and among CSB databases and data systems.

The Technology Architecture can be thought of as a structure that summarizes the combination of hardware, software, and communications facilities, which supports or will support the business systems and other parts of the information technology environment within the CSB.

The Technology Architecture is to be applied equally to purchased technology and technology developed by CSB or under subcontract.

5.2 INFORMATION MANAGEMENT GOALS AND OBJECTIVES

In order to help CSB meet its business plan vision and goals, several information management goals and objectives must be defined and implemented. These goals and objectives will ensure that information management directly adds value to CSB activities.

- Accessibility—Users will be provided with easy access to timely information in a useful format.
 - A highly responsive CSB-wide information infrastructure will be established and maintained that will allow people to locate and collect information quickly and easily, have assurance that the information is accurate, and be able to quickly communicate answers and information to others, both internally and externally.
 - Shared information resources will be available at the desktop with the Web as the primary delivery mechanism.
 - All of CSB will have a common document management and workflow capability.
 - Data files will be exchanged via e-mail attachments, shared server directories, or through network access with an ability to convert files to the CSB's preferred format.
 - Availability of electronic information resources will be maximized to support CSB's daily business operations.
- Connectivity—CSB will have an information technology infrastructure that seamlessly links CSB offices and any other organizations needed to support the CSB.
 - CSB will have state-of-the-art, high-speed network connectivity, both internally and externally.
 - CSB staff will have the capability to access all of their desktop functionality from any geographic location.

- Ownership and Stewardship—Ownership and stewardship of information resources will be established to ensure that these resources are appropriately managed and shared.
 - Information owners/stewards will be clearly identified and have responsibility for the accuracy, timeliness, and sharability of their information resources.
- User Focus—Information products and services will be user-focused and accepted by the user as an effective way to accomplish work.
 - Improved user productivity will be a prime consideration in the development, selection, and implementation of IT products and services.
 - Systems within CSB’s control will have a common look and feel and useful help facilities.
 - A robust user help-desk function will provide customer-oriented support to ensure customer satisfaction.
- Education—Effective education will be provided to inform users of availability/usage of information resources.
 - The CSB-user community will be educated on emerging technology advances and of the potential application to CSB business practices.
 - CSB staff will be educated in the most effective means of finding information resources and utilizing them.
 - Effective education will be provided to help users gain maximum productivity from desktop applications.
- Security—Information security will be designed into all IT components, balancing accessibility and ease of use with protection of data.
 - CSB information owners/stewards will be responsible for defining requirements for the integrity, availability, and confidentiality of information resources within their area of responsibility sufficient to meet government policy and legal requirements.
- Paper Reduction Environment—CSB will minimize the use of paper through the application of automation and technologies.
 - CSB will aggressively pursue the use of automation to eliminate paper documents.
 - CSB will endorse the use of electronic documents, making CSB as paperless as possible.
- New Methods and Technologies—CSB will use state-of-the-art IT methods and technologies.
 - State-of-the-art methods and tools for application to CSB business requirements will be identified by surveying and analyzing new vendor products.
 - New methods and technologies will be implemented to enhance the productivity of CSB staff.
 - Desktop machines will be replaced on a standard cycle.

- Process—CSB will develop and implement comprehensive IT processes, including planning, configuration management, and disaster recovery planning.
 - IT planning will be an integral part of the CSB business planning process.
 - Comprehensive disaster recovery and configuration management plans will be created and implemented for the IT function.
 - Changes to the CSB IT environment will be appropriately planned to minimize impact on CSB staff.
 - Use of redundant information systems and supporting databases will be minimized.
 - CSB information resources will be clearly identified and inventoried.

5.3 DATA MANAGEMENT STANDARDS

The Information Architecture shows that the majority of CSB data is shared across business units. It also identifies the need to access many external data sources, which may be in any number of formats from databases, Web pages, or Portable Document Format (PDF) files, to journal articles. The IT Strategic Plan interviews also indicated that high-quality data must be the core of CSB products.

Data Management standards apply to the data in the data warehouse, data dictionaries, and databases. A data dictionary is a collection of descriptions of database tables. It can also include data models describing the relationships of tables and data items to each other. With data management technologies, standards, and products, data can be

- defined independent of the processes that create or use it,
- shared among many processes, and
- maintained indefinitely.

Current Environment

A database standard of Microsoft SQL Server has been established. Microsoft SQL Server Version 6.5 was selected because it includes data analysis, data warehouse, and data mining capabilities. Data mining is the analysis of existing data to identify potential new uses.

IT Plan Recommendation

- Develop an Electronic Data Warehouse/Library

The commonality of data use and the need for (a) access to accurate, up-to-date information and (b) a consistent “look and feel” to CSB products merits that the data warehouse become a strategic infrastructure component. The warehouse capabilities will make it possible to examine data from external sources remotely and to reduce the possibility of using out-of-date information in developing CSB products.

A data warehouse is a capability that provides comprehensive and high-integrity data in forms suitable for decision support to end users and decision-makers throughout the

organization. It provides consistent data quality so that the user receives the same answer no matter what the view of the data.

- Establish a CSB Library

Employ a Technical Reference Librarian to establish a hardcopy and electronic library. This position will be instrumental in populating the data warehouse. The position will also facilitate CSB research capabilities and support investigation staff in the field.

- Limit the number of copies of databases brought into CSB from external databases.

Limit the number of copies of databases brought into CSB by building bridges to external data sources. The use of copies of databases can result in flawed recommendations. When operating from copied databases, there is always the risk the data will be updated or additional information added to the original/source databases after the copy is made. Building bridges to external data will enable the addition of value-added information in the data warehouse for use in any CSB product. Value-added information is information that is added by CSB to data obtained from an external data source. The external data source is not updated directly, but logical data links are created and maintained in the CSB warehouse to combine the value-added information with the external data source.

- Develop and maintain metadata for key CSB data sources

As part of adding value to data external to CSB, it is important that the metadata (data about data) description of external data and the baseline databases include an indication of whether or not the data are Year 2000 compliant. Metadata should include reliability indicators, documentation on the source of the data, and an information owner or steward.

- Establish PDF as the “standard” electronic format for documents

To support the collection and electronic usability of incident-related documents for investigations and the long-term goal to have an electronic library of chemical information, PDF files should be used as the standard electronic document format. The PDF files can be a first step to developing the electronic library/data warehouse.

PDF is a file format that contains all the elements of a printed document as an electronic image that can be viewed, navigated, printed, or sent electronically. PDF files are especially useful for documents such as magazine articles, product brochures, or flyers in which the user wants to preserve the original graphic appearance online. PDF files are created using the Adobe Exchange or Acrobat Capture product.

To view and use the PDF files, the user needs a program called Adobe Acrobat Reader, which can be obtained at no cost from the Adobe Web site.

- Ensure all data management products, whether developed in-house, by a subcontractor, or procured, are Year 2000 compliant.

All subcontract statements of work should include a provision for Year 2000 compliance. Software test plans for CSB and subcontracted products should include proof of Year 2000 compliance.

- Subcontract database administration support, when the SQL Server database is implemented.

Subcontracting database administration will bolster the CSB goal to remain a flat organization while extending the services offered by Technical Operations. Subcontracting database administration can also provide the means to obtain a high level of expertise in support for CSB databases.

5.4 STRATEGY FOR APPLICATION DEVELOPMENT

As described in Section 4.4, Proposed Systems, the IT Strategic Plan is being developed with a modular approach to application development. Complex software systems must be developed by using a modular strategy that breaks large projects into separate developmental segments that can stand on their own. This strategy makes it easier to prioritize software development and to be responsive to changing user needs and priorities. It also maintains flexibility in the tools used for software development so that as new technologies become available, they can be incorporated into the process.

Current Environment

CSB is currently using commercial off-the-shelf (COTS) software; there are now no application development activities.

IT Plan Recommendation

All applications development will be Year 2000 compliant. All subcontract statements of work should include a provision for Year 2000 compliance. Test plans for CSB and subcontracted products should include proof of Year 2000 compliance.

Application development will be subcontracted where feasible to help CSB maintain its flat organization goals and to extend the existing Technical Operations staff.

5.5 ELECTRONIC MAIL SERVICES

Electronic mail (or the more general term e-mail) describes a service that facilitates communications by providing computer users with the capability to manage messages electronically.

Current Environment

CSB e-mail is currently managed by FEMA.

IT Plan Recommendation

Technical Operations is in the process of bringing the e-mail service in-house to increase reliability and responsiveness to CSB user needs. Consideration should be given to adequate backup for the administrative support of the e-mail service to ensure Technical Operations is able to provide better infrastructure support than the contracted e-mail system.

5.6 DESKTOP TOOLS

Desktop tools consist of the desktop hardware and personal productivity software—such as word processing, spreadsheets, presentations graphics, Web browsers, and e-mail service. Technical Operations has established a Microsoft-compatible products desktop standard.

Current Environment

Each desktop consists of a personal computer with a Pentium MMX or Pentium II processor. The laptop computers have Pentium MMX processors. Technical Operations has established a desktop standard consisting of Microsoft Office 97, Microsoft Outlook 98 for e-mail and contacts management, Microsoft Internet Explorer 4.0 for Web access, Winzip 6.3 for file compression, and Adobe Acrobat Reader 3.0 for viewing PDF files.

Printing from the desktop is handled via network printers. Five network printers are available.

Technical Operations is planning to simplify the management of desktops by using Microsoft Terminal Server Software when it becomes available. No automated backups of desktops are currently performed. Users are encouraged to use network disk space for storage of information to ensure files are automatically backed up on a regular basis.

IT Plan Recommendation

Train an existing support person in Technical Operations to provide backup to the lead technical person in installation, troubleshooting, and maintenance of desktops. This will help expand the technical knowledge within the Operations group, while permitting the more senior technical person to focus on other critical infrastructure areas.

Include an evaluation of current and future in-house demands plus remote investigation printing and document scanning needs as part of evaluating the infrastructure impact of CSB growth.

5.7 DATA ANALYSIS FUNCTIONALITY

Data analysis tools are used to analyze event-related data in support of investigations and special studies. Several types of tools are needed including fault tree, barrier, and statistical analysis.

Current Environment

When someone needs an analysis tool, the user investigates and obtains a COTS software package to meet a specific function.

IT Plan Recommendation

In the future, all software procurements will come through Technical Operations to ensure compatibility with other products and to provide cost-effective support for analysis capabilities when feasible.

Technical Operations will work with CSB users to develop the requirements for analysis software. Based on the analysis, tools will be procured, and users will be trained.

Technical Operations has established a database standard of Microsoft SQL Server Version 6.5. This database supports on-line analytical processing (OLAP) and real-time decision support. The evaluation of analysis tools should include compatibility with the SQL Server database.

5.8 WEB SERVICES

CSB has come into operation at a time when the use of the Internet (i.e., Web) as both an information source and information gatherer has matured enough to be a cost-effective business technology tool. CSB has the unique opportunity to establish its IT infrastructure with the Web as its primary data and communications interface.

The Web will be used as the primary interface for both internal and external CSB information flows. It will also be an interface for revenue-generating communications.

Current Environment

The CSB Web pages are currently managed on a FEMA server under a subcontract with Bell Atlantic Federal. When changes or updates to the Web site are needed, a file is sent via file transfer protocol to Bell Atlantic Federal who then performs the updates.

Technical Operations is in the process of bringing the Web pages in-house. This will give CSB the access needed to directly manage its Web site.

The Software products Microsoft FrontPage 98 and Allaire's Cold Fusion are used to develop the Web pages.

IT Plan Recommendation

Employ a Web Master to fully realize the ability of the Web to be a communication mechanism both internally and externally. A Web Master is a person who creates and manages the information content (words and pictures) and organization of a Web site and may handle some of the technical programming aspects of the site. This role may initially be subcontracted with Technical Operations providing oversight, but longer term should be a CSB employee.

Establish a three tier Web: an Intranet for CSB use with access to administrative functions, a Works in Progress layer for investigation documents and draft CSB products, and an external or Extranet for users outside of CSB.

The main purpose of an Intranet is to share company information and computing resources among employees. An Intranet facilitates working in groups and teleconferences. A branch of the Intranet should be the Works in Progress layer for review of documents before release. This is where redaction, editorial comment, reviews, and final approval for release will occur.

The external or Extranet is the public view (via the Web) of CSB data. It securely shares part of CSB's information or operations with Congress, vendors, or interested parties.

Begin using push technology to send information to CSB desktops. Push technology is the delivery of information on the Web that appears to be initiated by the information server rather than by the information user. The best known examples of the practice of "pushing" information rather than having it "pulled" as the result of requests for Web pages is employed by

<http://www.pointcast.com>, a Web site that provides up-to-date news and other information tailored to a previously defined user profile. This will enhance Technical Operations' information management resource goals for accessibility, education, and new methods and technologies.

5.9 COMPUTER SERVER AND NETWORK ADMINISTRATION

The management of computer servers and networks are tightly coupled. Server and network management includes the following functions.

- Capacity planning, including budgeting for upgrades and maintenance.
- Configuration management, including the procurement and installation of upgrades, software procurement, and licensing management.
- Security management, including physical access control, electronic access control, and authorization management.
- Maintenance, including planning for reliability, maintainability and availability, fault detection, diagnosis and correction, preventative maintenance, and management of maintenance contracts.
- Performance management, including routine monitoring of system performance, system tuning, and interaction with capacity planning functions.
- Output device operation, including operation of any attached output devices such as plotters or printers.
- Data backup and restoration services, including routine backups of both system and user data, as well as data recovery, in the case of media or system failure.
- Contingency planning, including the creation and routine testing of required disaster recover plans and identification of backup systems.

A computer network connects computers with each other, as well as the peripheral devices such as printers, and with other networks. A network allows computer resources such as applications, data files, and printers and disk space to be shared. Network administration provides support services, ensures the network is used efficiently, and ensures prescribed service-quality objectives are met.

A server is a computer or device on a network that manages network resources. For example, a file server is a computer and storage device dedicated to storing files. Any user on the network can store files on the server. A print server is a computer that manages one or more printers, and a network server is a computer that manages network traffic. A database server is a computer system that processes database queries. Servers are often "dedicated," meaning that they perform no other tasks.

With the advent of the Internet and higher bandwidth data transmission, programs and data that are part of the same overall project can be distributed over a network.

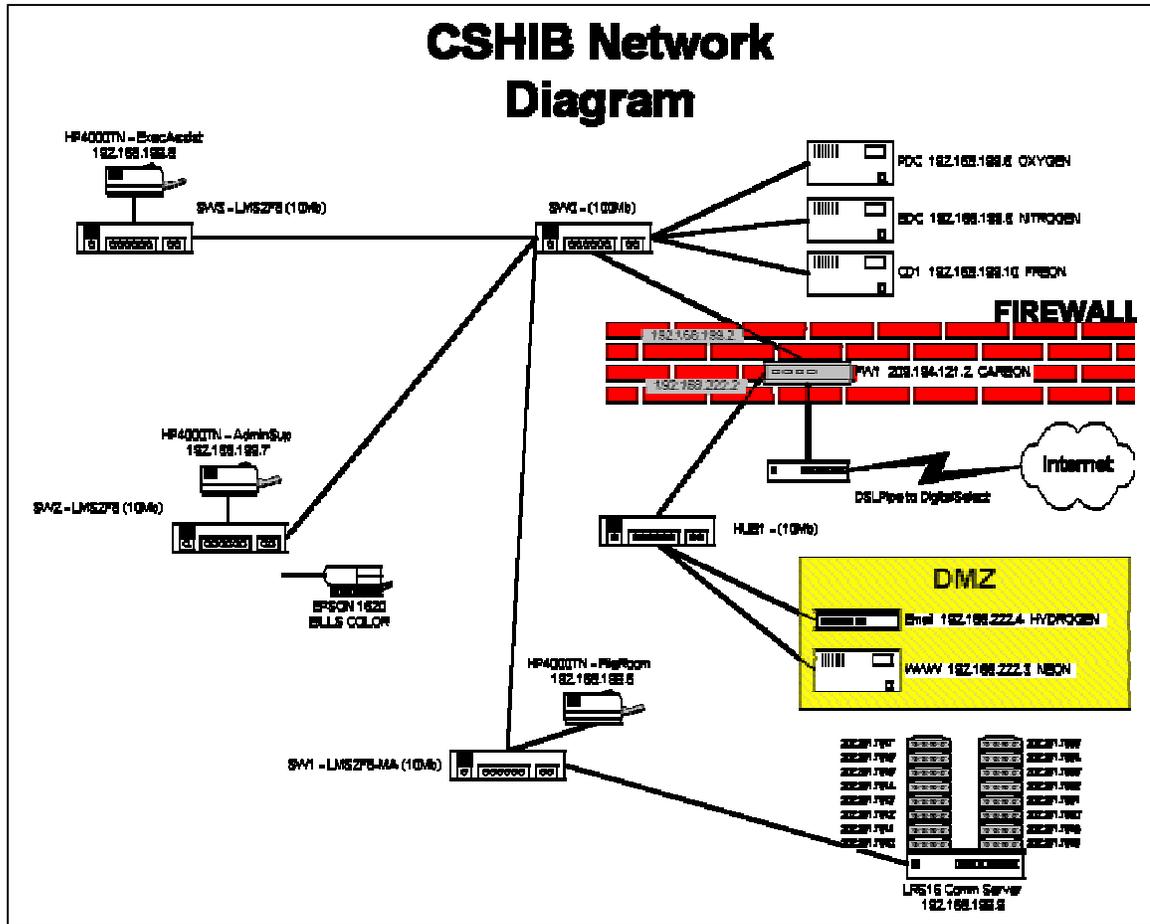


Figure 5-1. CSB Network.

Current Environment

The CSB IT infrastructure is currently being established, thereby making it difficult to establish a static snap shot of the environment.

- Servers

Microsoft NT File Server – Compaq 3000 333 MHz Pentium II with 572 gigabytes of RAM and 2x4.3 gigabytes of mirrored hard drives.

Exchange 5.5 Server – Compaq 1600 300 MHz Pentium II with 572 megabytes of RAM and 2x4.3 gigabytes of mirrored hard drives.

Microsoft NT Firewall – Compaq 1600 300 MHz Pentium II with 1 gigabyte of RAM and 2x9.1 gigabytes of mirrored hard drives.

Microsoft NT SQL Server – Compaq 3000 333 MHz Pentium II with 1 gigabyte RAM and 2x9.1 gigabytes of mirrored hard drives.

CD-ROM Server and Lantronix LRS16 Communication Server

- Network

The CSB network is depicted in Figure 5.1. One person in Technical Operations handles the administration of the network. A subcontractor is available to provide back-up when the CSB administrator is out of the office. Technical Operations has to enable access for the subcontractor to provide support.

IT Plan Recommendation

CSB is expected to grow to 100 employees by the end of FY 2000. The rapid growth of the organization will place ever-increasing demands on Technical Operations staff to provide a reliable, responsive infrastructure. To ensure the requirements for a responsive infrastructure continue to be met, plans should be developed that encompass the functions (capacity planning, configuration management, and security management).

In support of day-to-day operations, a plan should be developed that describes operational infrastructure tasks, including assignment of staff (primary and back-up) to activities, and schedules.

A plan and schedule for Technical Operations staff growth and training should be developed to ensure Technical Operations staff are able to provide back-up support to each other.

For the longer term, investigate the following items to enhance the data warehouse and technical library, to facilitate high-quality document storage and retrieval, and to reduce the number of hardcopy documents

- writable CD-ROMs,
- large-scale CD-ROM storage and retrieval capabilities, and
- electronic document scanning.

5.10 COMPUTER SECURITY SERVICES

Computer security includes those services that provide user and process authentication, authorization, and data protection throughout the computing infrastructure. The key areas to consider in defining the target environment for secure open systems applications are authentication, authorization, auditing, security network management, and system administration.

- Authentication is the mechanism by which network entities (i.e., users and services) establish their identity to one another.
- Authorization includes approval for access to the computing system and establishing the managing the accounts.
- Auditing is the ability to log attempted access to computer resources. This is necessary to document whether protection measures are being enforced.
- Security network management involves controlling the access, the performance, and the quality of service on all local area networks (LAN), bridges, routers, and gateways.
- System administration ensures computers are accessible with the proper security configuration.

Current Environment

Technical Operations is in the process of setting up its security and database environment.

A firewall has been established. A firewall is a set of related programs, located at a network, which protects the resources of a private network from users from other networks. The term also implies the security policy that is used with the programs. An enterprise with an Intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources.

Remote access to CSB is accomplished via dial-up access through the LRS16 modem communication server. This server is located behind a firewall.

Database security has not been addressed because the SQL Server database has not been installed.

Intranet security has not been addressed because the CSB Web is currently maintained by FEMA.

Network virus protection is provided by Computer Associates InnocuLAN antivirus software.

Attempts to log into the CSB network are reviewed on a regular basis.

IT Plan Recommendation

Develop and implement a computer security plan. There is sufficient infrastructure in place to warrant the development of a plan. The plan will ensure that appropriate levels of protection are implemented and tested to protect sensitive CSB data and to ensure systems are not accessed with malicious intent. It will also provide remote employees with secure access to CSB resources. Computer security will become even more important as CSB grows, especially as part of the management of access to CSB by temporary and remote employees.

5.11 USER TRAINING

To ensure users are informed of the availability and functionality of information resources, Technical Operations is developing a training program. Due to the continuing evolution of technology, this will be an on-going effort for the organization. By taking advantage of training opportunities, CSB staff will be able to increase productivity by effectively using the resources available to them.

Current Environment

A training program has been developed and several classes have been taught. The CSB staff is very receptive to the training program. The need for a help desk was identified in the IT Strategic Plan interviews, and ways to address this are being reviewed.

Technical Operations will continue to investigate different forms of training materials such as obtaining videos for common training activities. Long term, a cost-effective means for providing help desk support is also being investigated. The requirement for a help desk will be greater as the number of CSB employees increases.

IT Plan Recommendation

Periodically survey users to determine their current training needs.

5.12 VIDEO CONFERENCING

Video conferencing is being explored as a means to reduce the cost of investigations. Video conferencing may be used in the future to reduce the number of people sent to an investigation site, to facilitate discussions with subject matter experts from various locations, and for discussions that may be enhanced with video conferencing in support of CSB outreach activities.

Current Environment

Technical Operations is exploring cost-effective options for video conferencing.

IT Plan Recommendation

For long-term planning, satellite technology will also be researched.

6 INFORMATION TECHNOLOGY MEASURES

6.1 ASSOCIATION OF IT INITIATIVES TO CSB OBJECTIVES

The mission of the CSB is to prevent or reduce the severity of chemical-related incidents. CSB objectives related to achieving this mission are as follows.

- Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.
- Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.
- Evaluate the effectiveness of other federal agencies in preventing chemical accidents.
- Coordinate the efforts to eliminate duplicate activities across federal agencies related to the oversight of chemical industry operations and the investigation of chemical industry events.
- Incorporate best practices from the private and public sectors to promote efficient CSB business operations.

The function of the IT program is to support directly the CSB's efforts to achieve its objectives by providing cost-effective and IT-intensive capabilities and technology solutions. The IT vision is: "Prevent chemical accidents through the application and management of knowledge using the right technology." IT customers include CSB staff and Board Members; Congress; the chemical industry; federal, state, and local governments; and the public, both in the United States and internationally.

To emphasize how the IT program directly supports the overall goals of the CSB, the table in Appendix C identifies the CSB objectives that each IT activity supports.

6.2 GOVERNMENT PERFORMANCE AND RESULTS ACT MEASUREMENT

The Government Performance and Results Act (GPRA) of 1993 requires the executive management of government agencies to focus on defining missions, setting goals, measuring performance, and reporting accomplishments. Performance-based and results-oriented decision-making is required for all major investments in IT. The need to identify GPRA measures was considered during the development of the CSB IT Strategic Plan. An initial set of IT-related GPRA measures, dealing with the data warehouse, administrative business systems, and technical infrastructure initiatives, is given in Table 6-1 and discussed in Sections 6.2.1–6.2.14. As CSB grows, additional IT-related measures will be identified.

These initial GPRA measures focus on developing and establishing the IT infrastructure that will support the CSB mission and programmatic needs. Thus, as contrasted with a more mature organization, it is important to provide the IT tools first and then develop more appropriate measures later once the tools are in place and are being used. At this point in the start-up phase, measures can be developed to address questions such as:

- Is IT meeting the needs of individual customers?
- Is IT supporting CSB's business operations effectively?
- Is IT enhancing the organization's ability to innovate and learn?

Table 6-1. CSB IT GPRA Measures

Measure	Description	Target Year
Incident Identification– Incident Universe Database	Develop the Incident Universe Database, which will contain data relating to chemical incidents.	1999
Incident Identification– Voluntary Data System	Develop the Voluntary Data System, which will contain information about avoided incidents.	1999
Investigation Reports– Investigations Database	Develop the Investigations Database, which will contain information relevant to individual investigations.	1999
Studies, Analysis, and Alerts– CSB Recommendations Database	Develop the Recommendations Database, which will contain CSB recommendations to industry and other federal agencies.	1999
Studies, Analysis, and Alerts– Recommendations by Others	Develop a database that contains recommendations for improved chemical safety made by other federal agencies and organizations.	2000
Reference Information Gathering– CSB Technical Reference Library	Establish an electronic and hardcopy library of chemical safety related materials for CSB use. Employ a technical reference librarian to manage the library and assist CSB members in research activities.	1999
Reference Information Gathering– Standard Electronic Format for Documents	Establish PDF as standard electronic format for documents to support the collection and ease of use of incident-related documents for investigations and the CSB technical reference library. Convert CSB-generated documents to PDF for distribution and storage.	1999
Contacts/Communication Tracking–Direct with CSB	Track the number of direct contacts stakeholders make with CSB.	2000
Contacts/Communication Tracking–Congressional Outreach	Track the number of contacts with Congress made by CSB staff.	2000
Contacts/Communication Tracking–Media Effectiveness	Track the number of times CSB is in the news (resulting from press releases, media contacts, and articles about CSB).	2000
Internet– Web Impact Measurement	Track the number of sites that list CSB as a link and the number of inquiries via the CSB Web page.	1999
Administrative Business Systems– Financial Management	Obtain a budget control system to track expenditures; an accounting system to manage accounts payable, accounts receivable, and reimbursements; and a direct check-writing system.	1999
Technical Infrastructure–Training on Desktop Tools	Develop and implement a training program on CSB-available desktop tools such as word processing, presentation graphics, and scheduling.	1999
Technical Infrastructure– Performance Management Plans for CSB Servers and Network Operations	Develop and implement performance management plans including maintenance schedules, security management, configuration management, capacity planning, and disaster recovery.	2000

NOTE: Funding constraints may impact timetable.

These 14 measures can be grouped as follows: (1) measures as described in Sections 6.2.1–6.2.8 address delivering the needed IT systems as CSB is getting under way, (2) measures as described in Sections 6.2.9–6.2.11 focus on providing feedback on the effectiveness as to the awareness of and impact of CSB in relationship to its stakeholders, and (3) measures as described in Sections 6.2.12–6.2.14 support internal IT-related needs to support efficient CSB business operations.

6.2.1 Incident Identification—Incident Universe System

Develop the Incident Universe Database, which will contain data relating to chemical incidents.

Define the system requirements and develop, test, and implement the Incident Universe System. This database will contain incident information and the source of the information. Provide training to the CSB staff in the use of the database. The Incident Universe System supports the CSB objective to conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.

Output Measure: System requirements for the Incident Universe System defined.
Incident Universe System developed, tested, and implemented.
CSB staff trained in use.

Target: FY 1999

6.2.2 Incident Identification—Voluntary Data System

Develop the Voluntary Data System, which will contain information about avoided incidents.

Define the system requirements and develop, test, and implement the Voluntary Data System. This database will contain incident near-miss events reported by industry on a voluntary basis. Provide training to the CSB staff in the use of this database. The Voluntary Data System supports the CSB objective to be a nationally recognized organization the public and industry come to for chemical safety information and to provide informational products to the chemical industry to assist in enhancing operational safety.

Output Measure: System requirements for the Voluntary Data System defined.
Voluntary Data System developed, tested, and implemented. CSB
staff trained in use.

Target: FY 1999

6.2.3 Investigation Reports—Investigations Database

Develop the Investigations Database, which will contain information relevant to CSB investigations and reviews.

Define the system requirements and develop, test, and implement the Investigations Database. This database will contain information including event description, location, and activities relevant to individual investigations and reviews conducted by CSB. Provide training to CSB staff in the use of the database. The Investigations Database directly supports the CSB objective to conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.

Output Measure: System requirements for the Investigations Database defined.
Investigations Database developed, tested, and implemented. CSB
staff trained in use of the database.

Target: FY 1999

6.2.4 Studies, Analysis, and Alerts—CSB Recommendations Database

Develop the Recommendations Database, which will contain CSB recommendations to industry and other federal agencies.

Define the system requirements and develop the Recommendations Database that will contain CSB recommendations to industry and to other federal agencies. Provide training to CSB staff in the use of the database. The Recommendations Database directly supports the CSB objective to conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.

Output Measure: System requirements for the CSB Recommendations Database defined. CSB Recommendations Database developed, tested, and implemented. CSB staff trained in the use of the database.

Target: FY 1999

6.2.5 Studies, Analysis, and Alerts—Recommendations by Others Database

Develop a database that contains recommendations for improved chemical safety made by other federal agencies and organizations.

Define the system requirements and develop, test, and implement a database containing recommendations pertinent to improved chemical safety made by other federal agencies and organizations. This database will include recommendations, their sources, and actions taken. CSB staff needs to be cognizant of recommendations being made by federal agencies, chemical industry groups, and other organizations and the status of the recommendations. The Recommendations by Others Database supports the CSB objective to conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents by maintaining information important to CSB staff.

Output Measure: System requirements for Recommendations by Others Database defined. Recommendations by Others Database developed, tested, and implemented. CSB staff trained in the use of the database.

Target: FY 2000

6.2.6 Reference Information Gathering—CSB Technical Reference Library

Establish an electronic and hardcopy library of chemical safety related materials for CSB use. Employ a technical reference librarian to manage the library and assist CSB members in research activities.

Establish an electronic and hardcopy library of chemical safety related materials for CSB use. The reference library will include in-house documentation used for investigations and reviews, appropriate industry codes and standards, and in-house documentation in support of the CSB General Counsel (e.g., FOIA and docket). Employ a technical reference librarian to manage the library and assist CSB members in research activities. The electronic library directly supports the CSB objective to become a nationally recognized organization the public and industry come to for chemical safety information.

Output Measure: Technical reference librarian hired, CSB library established, and electronic indexing and retrieval system implemented.

Target: FY 1999

6.2.7 Reference Information Gathering—Standard Electronic Format for Documents

Establish PDF as standard electronic format for documents to support the collection and ease of use of incident-related documents for investigations and the CSB technical reference library. Convert CSB-generated documents to PDF for distribution and storage.

A standard electronic format for documents supports the information management goal to provide users with easy access to timely information in a useful format.

Output Measure: Documents generated by CSB available in PDF. Documents stored in the electronic library in PDF.
Target: FY 1999

6.2.8 Contacts/Communication Tracking—Direct with CSB

Track the number of direct contacts stakeholders make with CSB.

In FY 1999 External Relations is piloting a system to track communications with CSB. This system will be evaluated during FY 1999 for its suitability in meeting CSB's contacts and communications identification and tracking requirements. If the outcome of the evaluation is a decision that a more robust and integrated contacts system is required, Technical Operations will support establishing and tracking contacts and communications by defining the systems requirements and developing the Contacts Data System. The Contacts Data System would consist of a Contacts Database, automatic notifications, and communications tracking capability. Communications Tracking—Direct with CSB is a module of the Contacts System. Tracking communication direct with CSB supports the CSB's mission to be a nationally recognized organization the public and industry come to for chemical safety information that provides informational products to the chemical industry to assist in enhancing operational safety.

Output Measure: Direct contacts with CSB tracked.
Target: FY 2000

6.2.9 Contacts/Communication Tracking—Congressional Outreach

Track the number of contacts with Congress made by CSB staff.

In FY 1999 External Relations is piloting a system to track communications with CSB. This system will be evaluated during FY 1999 for its suitability in meeting CSB's contacts and communications identification and tracking requirements. If the outcome of the evaluation is a decision that a more robust and integrated contacts system is required, Technical Operations will support establishing and tracking contacts and communications by defining the systems requirements and developing the Contacts Data System. The Contacts Data System would consist of a Contacts Database, automatic notifications, and communications tracking capability. Communications Tracking—Congressional Outreach is a module of the Contacts Data System. Tracking Congressional outreach supports the CSB mission to be a nationally recognized organization the public and industry come to for chemical safety information that provides informational products to the chemical industry to assist in enhancing operational safety.

Output Measure: Congressional outreach activities tracked.
Target: FY 2000

6.2.10 Contacts/Communication Tracking—Media Effectiveness

Track the number of times CSB is in the news (resulting from press releases, media contacts, and articles about CSB).

Develop the capability to track citations of CSB in the media, including press releases, media contacts, and articles in print and electronic media that mention CSB. Tracking media effectiveness supports the CSB mission to be a nationally recognized organization the public and industry come to for chemical safety information that provides informational products to the chemical industry to assist in enhancing operational safety.

Output Measure: Number of times CSB is in the news tracked.
Target: FY 2000

6.2.11 Internet—Web Impact Measurement

Track the number of sites that list CSB as a link and the number of inquiries via the CSB Web page.

Develop and implement a process to track (1) sites that list the CSB Web site as a link and (2) the number of inquiries to CSB via its Web page. Measuring CSB's Web impact supports the CSB mission to be a nationally recognized organization the public and industry come to for chemical safety information that provides informational products to the chemical industry to assist in enhancing operational safety.

Output Measure: Number of inquiries to the CSB Web page tracked monthly; a method to identify the Web sites that list CSB's Web page as a link developed and implemented.
Target: FY 1999

6.2.12 Administrative Business Systems—Financial Management

Obtain a budget control system to track expenditures; an accounting system to manage accounts payable, accounts receivable, and reimbursements; and a direct check-writing system.

These capabilities will enable CSB to rely less on other government agencies to perform core business functions. It also supports the CSB objective to incorporate best practices from the private and public sectors to promote efficient CSB business operations.

Output Measure: Budget control, accounts receivable and reimbursements, and direct check-writing systems procured and implemented. Ability to track expenditures by CSB-defined codes, to maintain accounts receivable and payable, and to write checks available.
Target: FY 1999

6.2.13 Technical Infrastructure—Training on Desktop Tools

Develop and implement a training program on CSB-available desktop tools such as word processing, presentation graphics, and scheduling.

User training will promote efficient CSB business operations by ensuring users are aware and trained on the availability and functionality of tools.

Output Measure: Training program for Microsoft Word and Microsoft PowerPoint established and CSB employees trained.
Target: FY 1999

6.2.14 Technical Infrastructure—Performance Management Plans for CSB Servers and Network Operations

Develop and implement performance management plans including maintenance schedules, security management, configuration management, capacity planning, and disaster recovery.

These plans support the information management goal to establish comprehensive IT processes, including planning, configuration management, and disaster recovery.

Output Measure: Plans written and implemented.
Target: FY 2000

APPENDIX A. GLOSSARY

Business Units	Board Members, executive management (Chief Executive Officer and Chief Operating Officer), and the five programmatic offices— Investigations, Safety Programs, General Counsel, External Relations, and Safety Information and Management Operations (Technical Operations and Administrative Operations addressed separately).
Data Dictionary	A collection of descriptions of database tables. A dictionary can also include data models describing the relationships of tables and data items to each other.
Data Mining	The analysis of existing data to identify potential new uses.
Data Store	A repository of data (e.g., database, clerical file) which can be read repeatedly.
Data Warehouse	A capability that provides comprehensive and high-integrity data in forms suitable for decision support to end users and decision-makers throughout the organization. It provides consistent data quality so that the user receives the same answer no matter what the view of the data. It provides for object and multidimensional data analysis.
Desktop	A user's desktop refers to the computer workstation (usually an IBM-compatible PC), its associated peripherals (like an attached printer), and the user interface (like Windows 95, Microsoft Internet Explorer) on the workstation that enables the user to access applications, files, and other information resources stored on the workstation or available through the CSB network.
Firewall	A set of related programs, located at a network, that protects the resources of a private network from users from other networks. The term also implies the security policy that is used with the programs. An enterprise with an Intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources.
Functional Area	A group of processes which together completely support one aspect of furthering the mission of the enterprise.
HTML	An acronym for Hypertext Markup Language, the language used to design Web pages.
Information	Any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms.
Information Resources (IR)	The data, information collections, software, computers, communications networks, and other information technologies that support the organization.
Metadata	Data describing data that is stored along with the data (e.g., how and when and by whom a particular set of data was collected, and how the data is formatted.) Metadata is essential for understanding information stored in data warehouses.

Module	A functioning component of a larger system that provides the end user with a requested IT capability.
Network	Connects computers with each other, as well as with peripheral devices such as printers, and with other networks. A network allows computer resources, such as applications, data files, and printers and disk space, to be shared.
Network Administration	Provides support services, ensures the network is used efficiently, and ensures prescribed service-quality objectives are met.
Portable Document Format	A file format (commonly abbreviated as PDF) that has captured all the elements of a printed document as an electronic image that can be viewed, navigated, printed, or sent electronically. PDF files are created using the Adobe Acrobat or Acrobat Capture product.
Push Technology	The delivery of information on the Web that appears to be initiated by the information server rather than by the information user. The best known examples of the practice of “pushing” information rather than having it “pulled” as the result of requests for Web pages is employed by http://www.pointcast.com , a site that provides up-to-date news and other information tailored to a previously defined user profile.
Server	A computer or device on a network that manages network resources. For example, a file server is a computer and storage device dedicated to storing files. Any user on the network can store files on the server. A print server is a computer that manages one or more printers, and a network server is a computer that manages network traffic. A database server is a computer system that processes database queries. Servers are often dedicated, meaning that they perform no other. A server in this case could refer to the program that is managing resources rather than the entire computer.
URL	An acronym for Uniform Resource Locator; it is the Internet address or pathname to a web page, for example: http://www.chemsafety.gov .
Value-Added Information	Information that is added by CSB to data obtained from an external data source. The external data source is not updated directly, but logical data links are created and maintained in the CSB warehouse to match the value-added information with the external data source.
Web Browser	Software used to navigate on the Internet and access web servers such as Internet Explorer or Netscape Navigator.
Web Server	Software used to make a Web site available for Web browsers.

APPENDIX B. CSB BUSINESS UNIT INTERACTIONS

The interactions of the CSB business units are described in Section 3. Presented in this appendix are the interaction and information needs diagrams supporting the analysis of the business units.

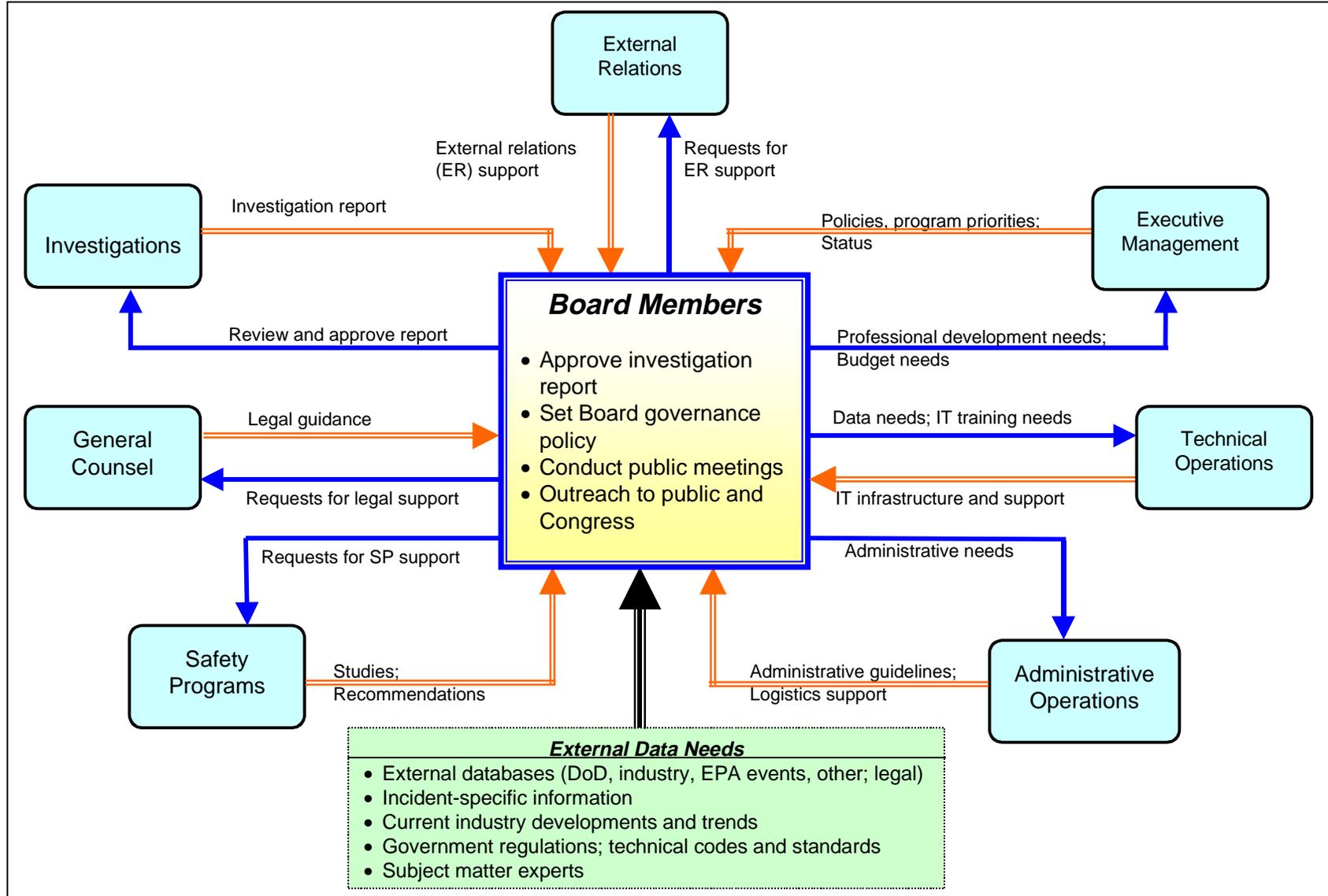


Figure B-1. Board Members interactions.

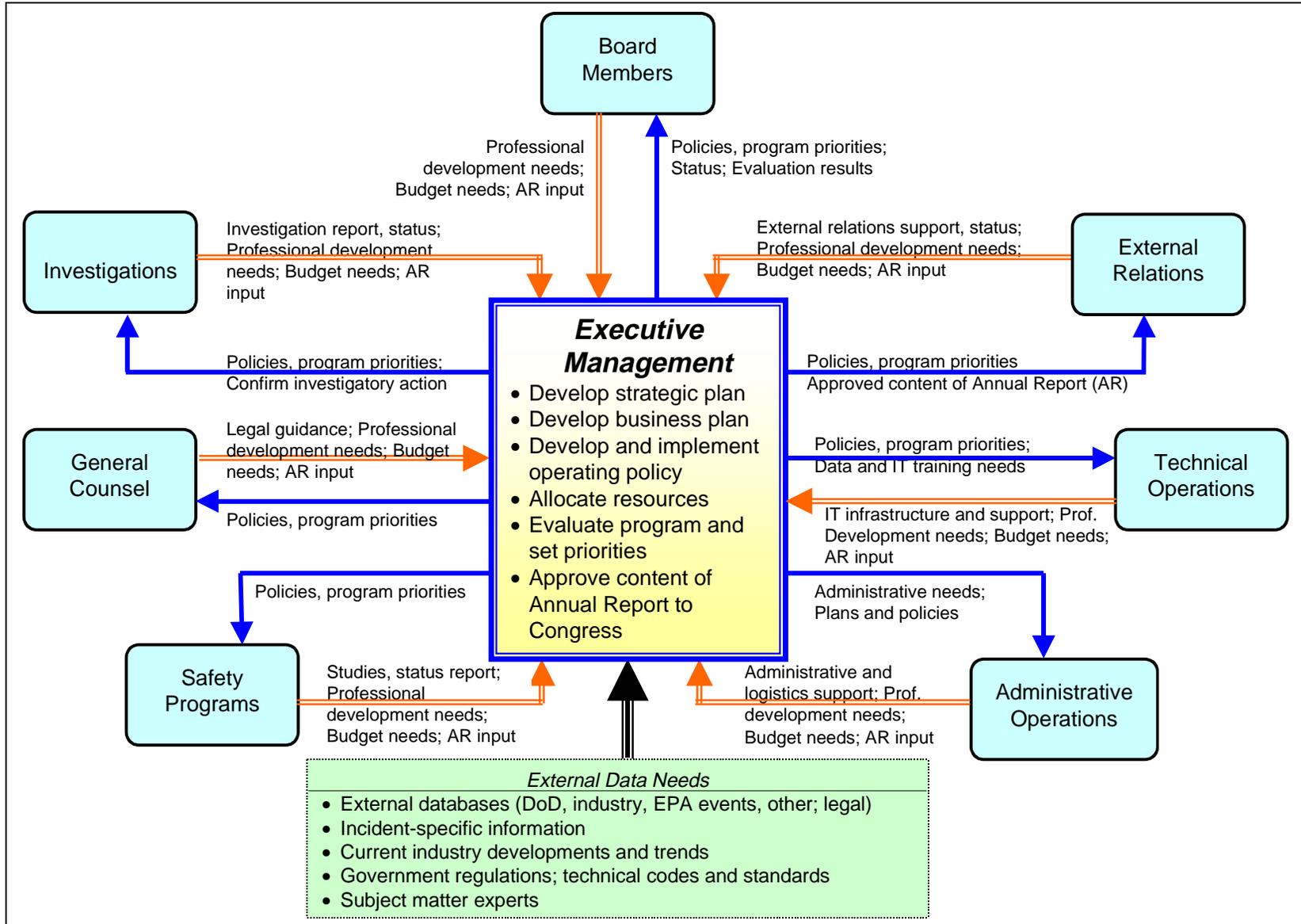


Figure B-2. Executive Management interactions.

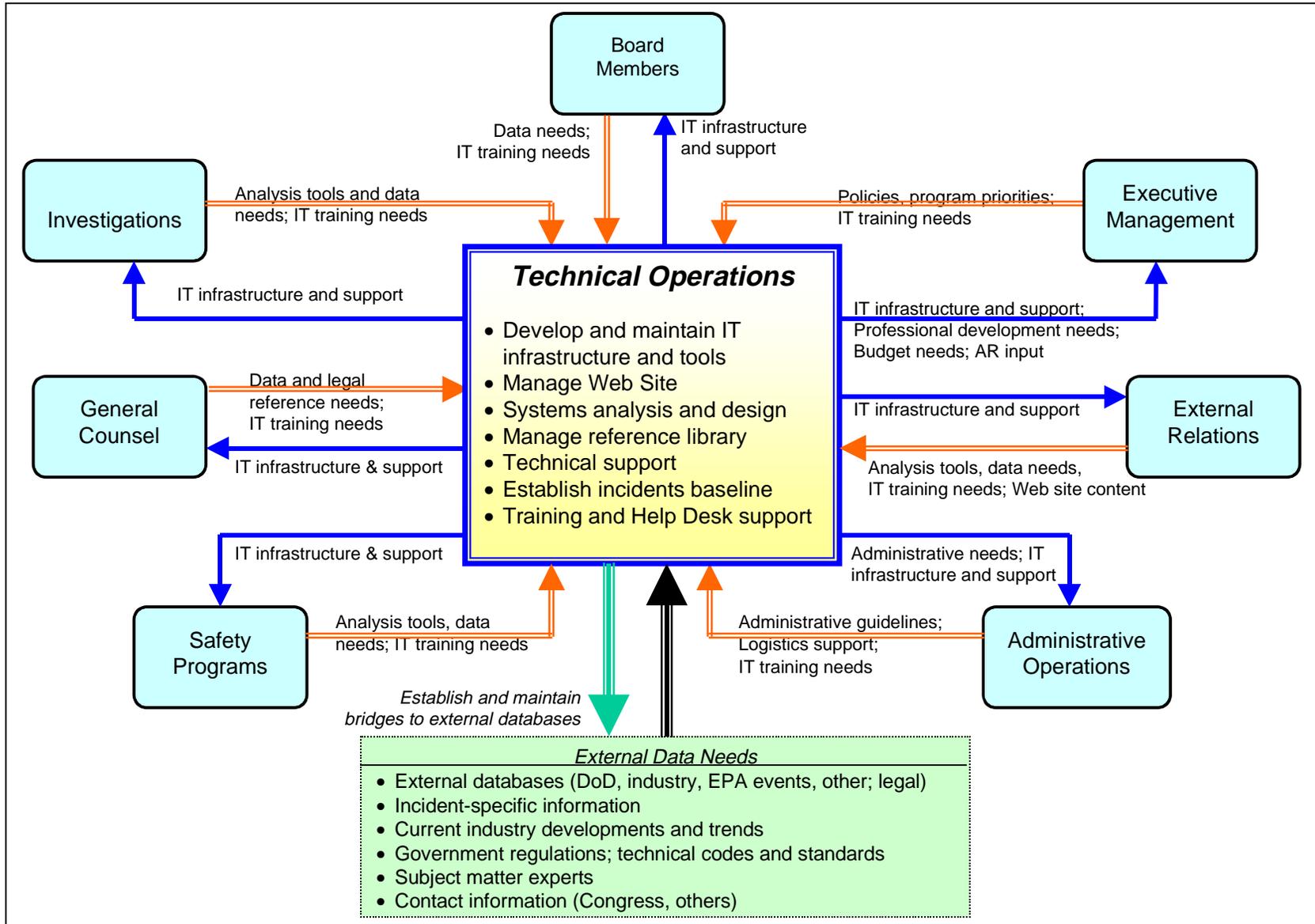


Figure B-3. Technical Operations interactions.

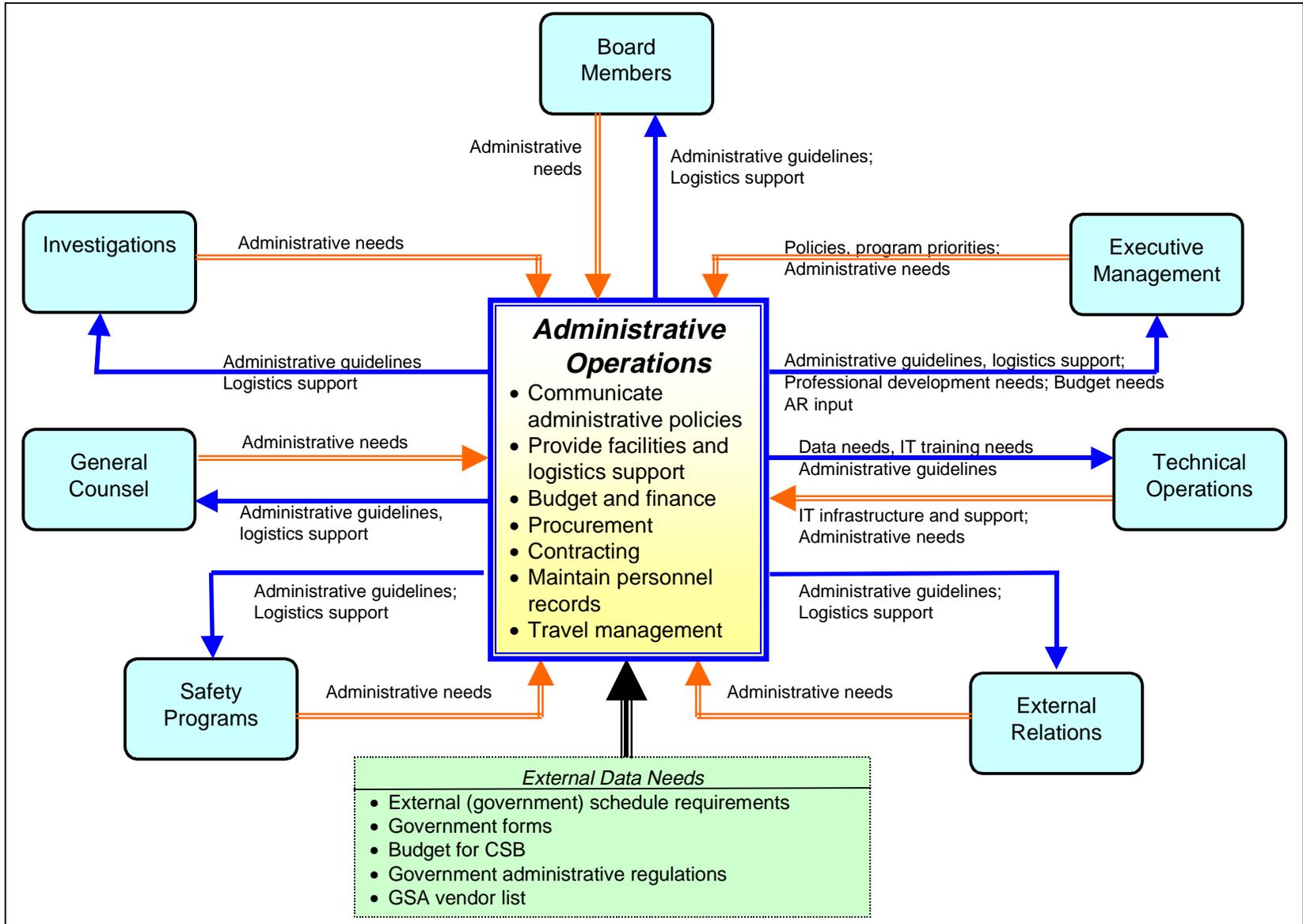


Figure B-4. Administrative Operations interactions.

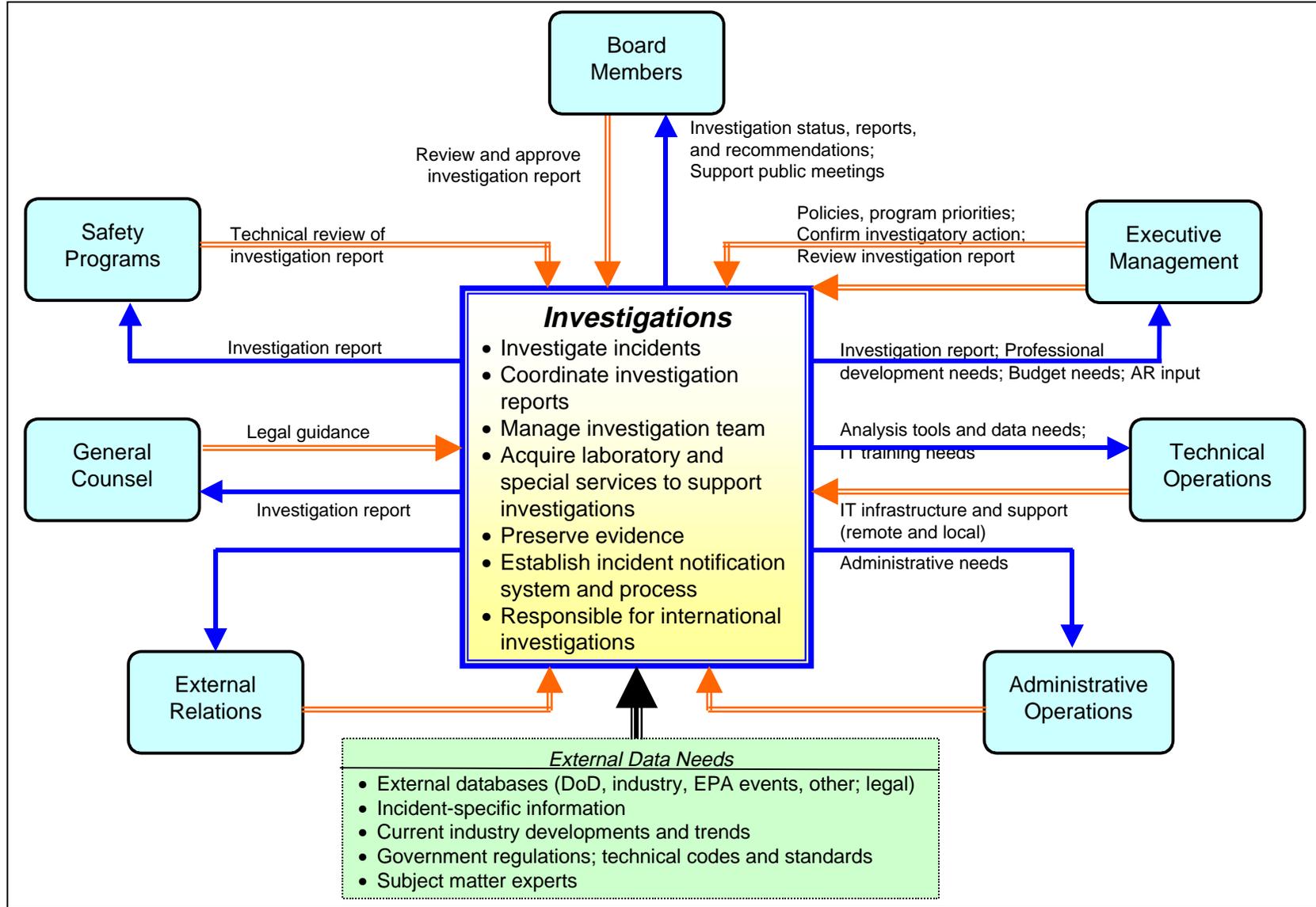


Figure B-5. Investigations interactions.

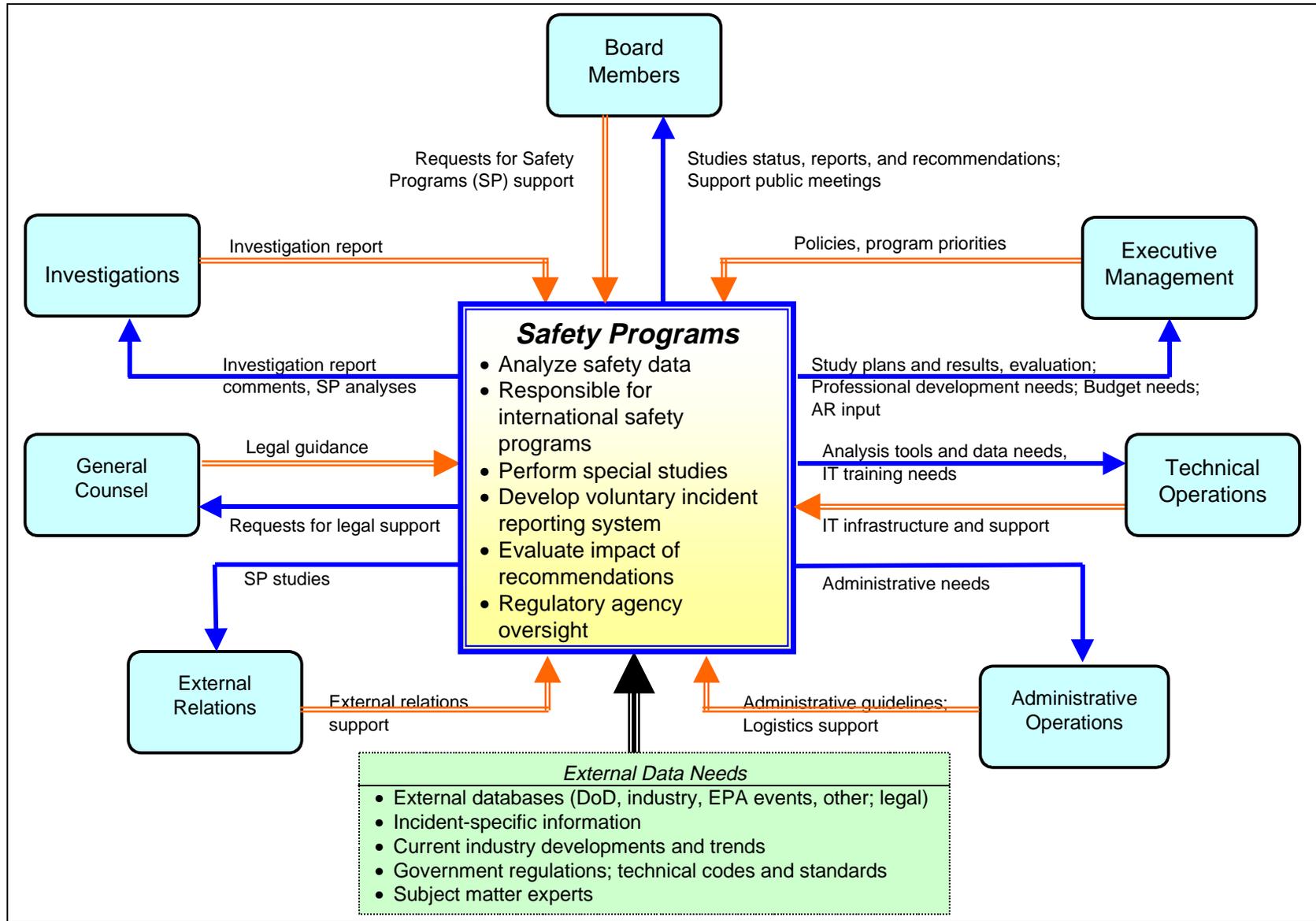


Figure B-6. Safety Programs interactions.

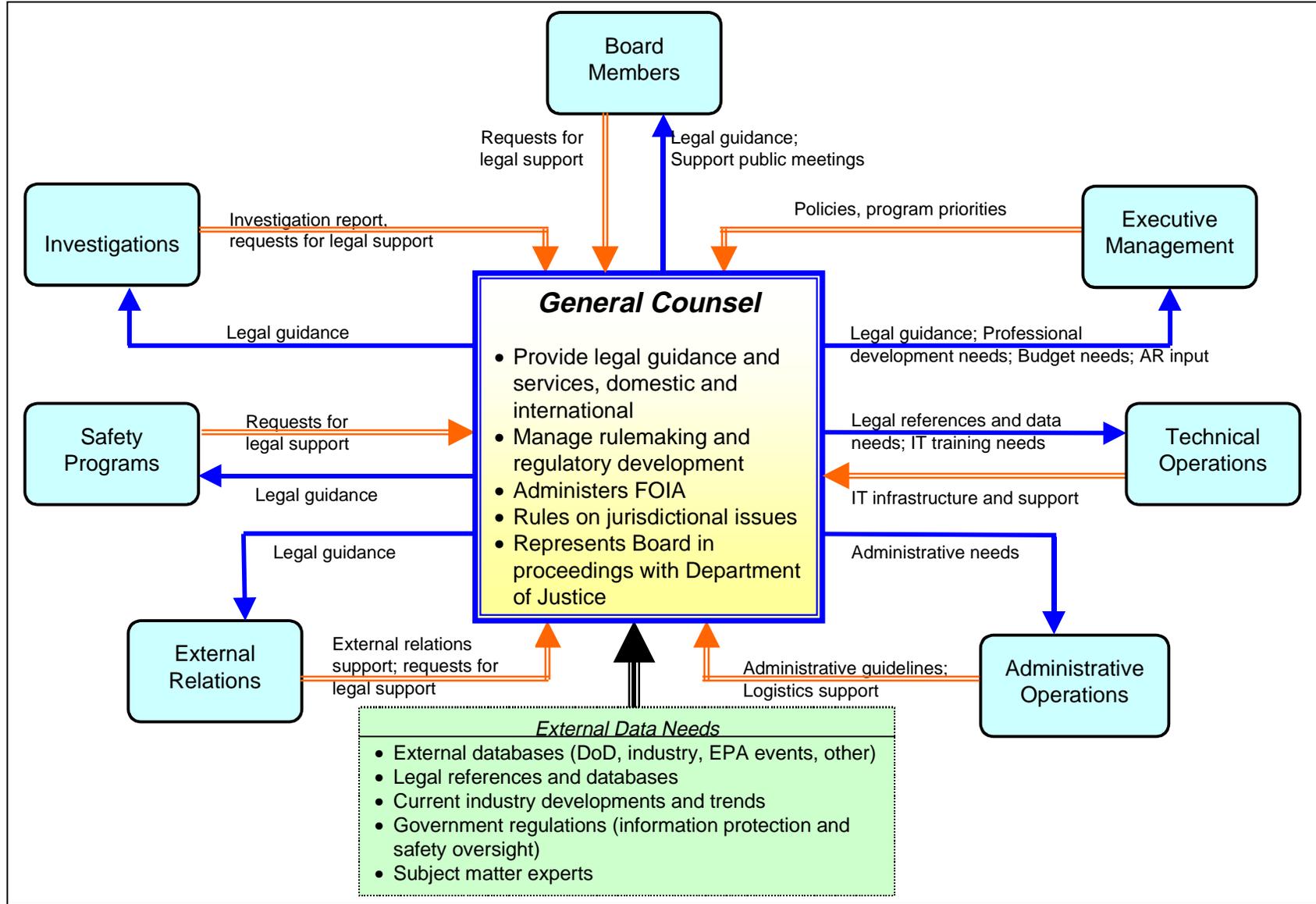


Figure B-7. General Counsel interactions.

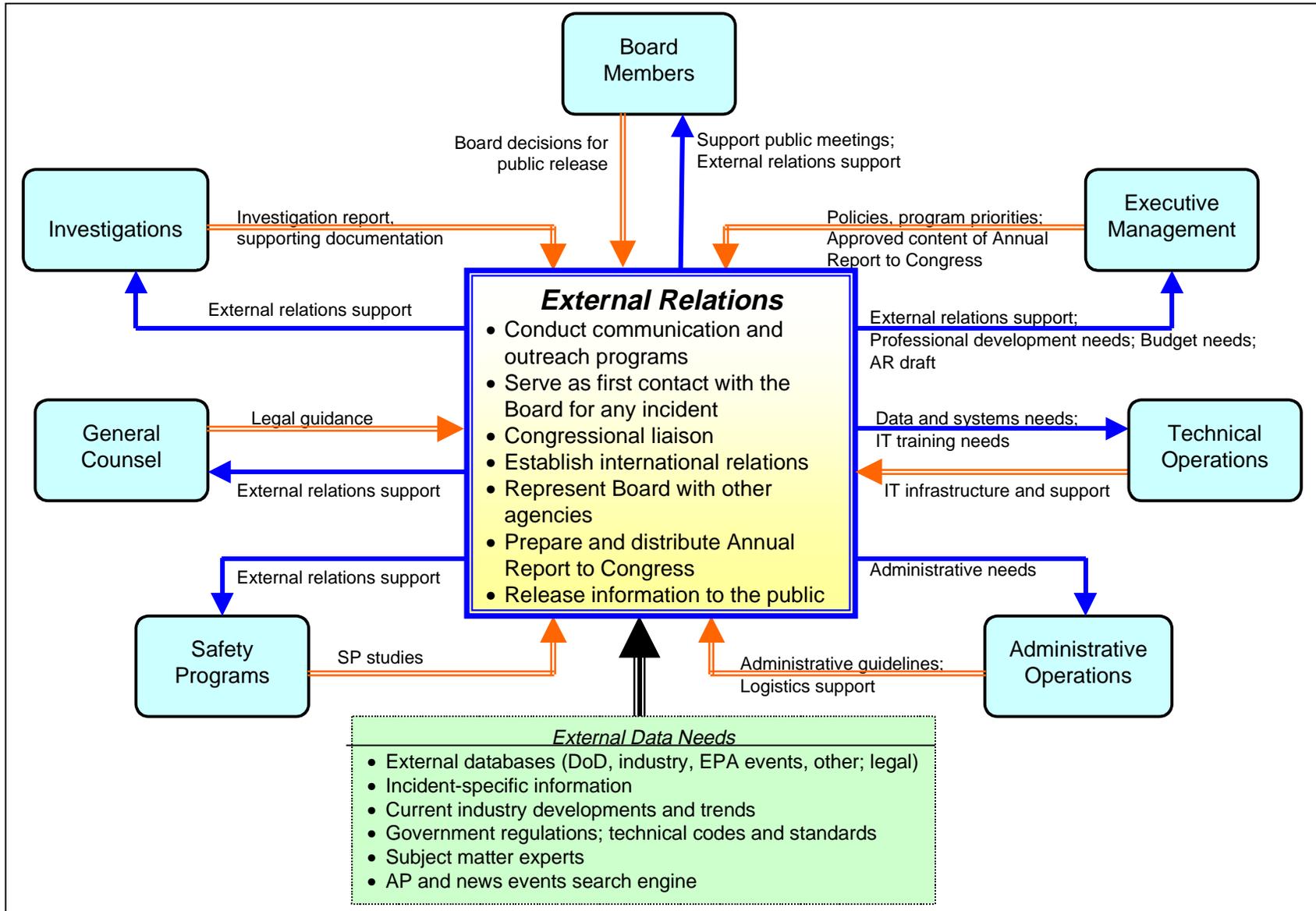


Figure B-8. External Relations interactions.

APPENDIX C. INITIATIVES AND CORRESPONDING CSB OBJECTIVES

Key Assumptions Used to Develop the Summary of IT Systems

- * Estimates beyond the current year should be used with caution since the program is in the early stages of development. The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities. It is expected that new CSB needs will be identified for FY 2000 and FY 2001, potentially increasing the IT budget requirements.
- Overall functional requirements are identified at the beginning of each section.
- CSB staffing levels are assumed to be ~30 people through FY 1999, ~100 people at the end of FY 2000.
- Modules are broken out to indicate capability that can be phased in over time to reduce cost in any particular year and to ensure IT capabilities are increasing on a regular (every three months) basis. Modules can be combined, but it will increase the amount of time it takes to release a capability.
- Estimates include setting up the system module. Costs to populate the data are not included, since this effort could be done over time after the modules are put into service.
- Modules are recommended as high priority, either due to their contribution to critical CSB activities or because they will require significantly less resources if done early in the organization's development.
- The business unit supported by the modules is identified in the Notes column. The business units are abbreviated in the notes as follows:
 - IN - Investigations
 - GC - General Counsel
 - B - Board Members
 - ER - External Relations
 - SP - Safety Programs
 - IT - Technical Operations
 - AD - Administrative Operations
 - EM - Executive Management (Chief Executive Officer, Chief Operating Officer)

IT Initiative: Data Warehouse

(documents, data sets, knowledge, references)

Estimates beyond the current year should be used with caution since the program is in the early stages of development. The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities.

Data Warehouse

Functional Area: Incident Identification						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
1	Incident Identification	Establish Baseline	Review 5 chemical data systems to assist in establishing the magnitude of the incident problem by industry, chemical, and location.	Work currently in progress. FY 1999 effort focuses on follow-up of FY 1998 work. Supports needs of IN, GC, B, ER, SP, IT, EM.	Evaluate the effectiveness of other federal agencies in preventing chemical accidents. Coordinate the efforts to eliminate duplicate activities across federal agencies related to the oversight of chemical industry operations and the investigation of chemical industry events.	1. Prepare and issue summary report.
2	Incident Identification	Incident Notification - Incident Universe System	Incident Universe Database (identify incidents and related information, including source of information). Incident Universe, Congress Contacts, and Automatic Notifications combine to make up the Incident Notification system.	Recommend developing the system functional specifications for both the Voluntary/Near Miss system and the Incident Universe system at the same time. Supports needs of ER (increase awareness of Congress and others of magnitude of incident problem), SP (trend analysis, accident prevention) and IN (investigations).	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database functional spec, application, access, & data entry via intranet. 2. Staff training on use. Phase 2 (later): Expand output capabilities and automatic ties to other data systems.
3	Incident Identification	Voluntary Data System (Near-Miss Reporting)	Voluntary/Near-Miss Database (who, what, where, when, industry sector, source of information).	Involves business confidentiality issues to encourage participation. Recommend developing the system functional specifications for both the Voluntary/Near Miss system and the Incident Universe system at the same time. If system is developed in parallel with the Incident Universe system, effort could be reduced due to the common functions. Supports needs of SP.	Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Database functional spec, application, access, & data entry via intranet. 2. Industry awareness campaign. 3. Staff training on use. Phase 2 (later): Expand output capabilities.

Functional Area: Investigation Reports						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
4	Investigation Reports	Investigation Database System	Investigations Database organizing information relevant to individual investigations and access to past investigations. Access to the investigation protocol.	Integrated with Incident Universe Database, Contacts, Recommendations, and Work in Progress Intranet. Supports IN need to efficiently manage investigations also supports SP, GC, ER, B, EM and CSB Business Plan.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database application, access, & data entry via intranet. 2. Staff training on use. Phase 2: Automatic ties to other data systems.
5	Investigation Reports	Report Generation Investigation Protocol	Access to the protocol, templates, document preparation, revision control, review, comment resolution, finalize document.	Work in Progress Intranet. Combine off-the-shelf products with specialized information. Supports needs of IN, SP (studies), EM - investigation protocol, report template, report generation, review, and comment of reports.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Investigation protocol. 2. Document electronic templates. 3. Access via intranet. 4. Written plan for configuration control. 5. Staff training on use.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
6	Investigation Reports	Support Docs - Investigation Docket	Collection point for the official investigation documentation and FOIA review eventually released to the public.	Starts in the Works in Progress Intranet and moves to the Public Web Page. Supports GC need to set up public docket for investigations and to review materials as soon as possible for release to public.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Segregated area with Intranet access 2. Written plan for config. control and document labeling 3. Staff training on use
7	Investigation Reports	Support Docs - Redaction	On-line marking of documents for public release.	Off the shelf products available. Integrate with Report/Study Supporting Documentation module and Investigation Docket. Supports GC need for redaction with search capability.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Detailed functional requirements 2. Identify & purchase software/hardware 3. Staff training on use

Functional Area: Studies, Analysis, & Alerts						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
8	Studies, Analysis, & Alerts	Recommendations Database - CSB Recommendations	Maintaining database of CSB recommendations (recommendation, actions taken, follow-up, assessment of impact).	Board Intranet Supports SP need to measure the impact of Board recommendations and IN's investigation research.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database functional requirements and application, access, & data entry via intranet. 2. Staff training on use Phase 2: Automatic ties to other data systems
9	Studies, Analysis, & Alerts	Recommendations Database - Recommendations By Others	Maintaining database of recommendations by other organizations (identify sources, recommendations, actions taken).	Supports SP analysis needs.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database functional requirements and application, access, & data entry via intranet. 2. Staff training on use Phase 2: Automatic ties to other data systems
10	Studies, Analysis, & Alerts	Repackaging Products	Investigate, identify and develop CSB potential products.	Supports CSB needs.	Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Collaborate with other CSB groups to identify potential products. 2. Use technology to add value to the products.

Functional Area: Reference Information Gathering						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
11	Reference Information Gathering	Industry Reports Sophisticated Searches	Means for collecting (scanning, obtaining documents electronically, creating PDF files), cataloging, intelligent search and retrieval, identify source of information, ability to handle documents in various file formats.	Common place to organize pre-final documents (Work in Progress Intranet space) Scanner, PDF file creation capabilities already exist The Technical Reference Librarian can provide a support service for this. Supports needs of GC, IN, SP, EM, ER	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Functioning space on intranet where germane documents can be segregated. 2. PDF generating capability (Adobe Acrobat installed and available) Phase 2: PDF sophisticated searching program installed and available.
12	Reference Information Gathering	Technical Reference Library Web Reference Sources	Technical library reference function (regs, codes, requirements, external databases, company & industry information, and related incidents). Includes setting up an index/retrieval system for onsite hardcopy CSB library (may include official records, supporting references, and journals). Some documents may require special handling due to confidentiality.	Combines an individual (1 FTE) with specialized expertise with key electronic tools. This is a first step in building the Data Warehouse capabilities. Supports needs of IN, SP, ER, GC (set up library & reference material, company and industry information in an organized way from the beginning, search of external databases, identify codes and standards, legal precedents).	Be a nationally recognized organization the public and industry come to for chemical safety information.	1. Hire qualified staff member. 2. Index/retrieval system for hardcopy archive. 3. Compiled source list for commonly requested information and where to get it.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
13	Reference Information Gathering	CSB Added Value Info	Capability to associate and maintain CSB-added information with data obtained from external sources (could be via indexing). Examples include judgements, identification of peer groups, and cross-reference flags.	Supports the ability to maintain and link CSB added information to external data accessed from the CSB. Used by: IN, ER, SP	Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Database application, access, & data entry via intranet. 2. Staff training on use. Phase 2: Automatic ties to other data systems.
14	Reference Information Gathering	Bridges to External Data	Electronic bridges to external data sources, with consistent user interface for access and intelligent searching (to reduce training requirements).	Building the bridges should have first priority. User interface is longer term. Focus on method of access with a goal of reducing the amount of information copied and placed in the CSB systems to reduce the possibility of using out of date or inaccurate information for decision making. Supports needs of IN, GC, B, ER, SP to access external data sources.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Prioritized list of bridges to build. 2. Tested connections to external data systems. Phase 2: Consistent user interface and searching.
15	Reference Information Gathering	Electronic Archive System Expanded Storage/Retrieval	CD-ROM library with intranet access via intelligent search and retrieval (public and private electronic documents, reports, articles, trade information, and press articles). PDF searching. This is the electronic organized file cabinet for the CSB.	Equipment Needed: Writable CD-ROM. Builds on Electronic Archive System and Industry Reports. Supports need of IN, SP, ER, GC, EM for an electronic reference library, the ability to repackage information, the ability to store record incident copies electronically, and ability to distribute CSB reports via CD-ROM.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Detailed functional requirements. 2. System structure/organization plan. 3. Staff training on use. Phase 2: Expand storage and retrieval capabilities.

Functional Area: Contacts/ SMEs/ Interested Parties/ Congress						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
16	Contacts/ SMEs/ Interested Parties/ Congress	Contacts Database - Congress, SMEs, Others	Name, address, expertise, areas of interest, (subject matter experts, potential consultants, people involved specific incidents, media, elected officials, special interest groups). Focus on Congressional contacts first. Incident Universe, Congress Contacts, and Automatic Notifications combine to make up the Incident Notification system.	Supports needs of IN, SP, GC, ER, B for consultant database, incident-related contacts, state and local officials, local media. Identify anyone contacting the CSB or that the CSB contacts.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Database application, access, & data entry via intranet (may use enhanced MS Outlook). 2. Staff training on use. Phase 2: 1. Automatic ties. 2. SMEs and others capabilities.
17	Contacts/ SMEs/ Interested Parties/ Congress	Automatic Notifications	Automatic notification to targeted audiences (legislative, special interest, and media). Focus on automatic notifications to Congress first. Incident Universe, Congress Contacts, and Automatic Notifications combine to make up the Incident Notification system.	Must be integrated with Contacts and the Data Warehouse (e.g., Incident Universe Database). Supports needs of ER for automatic weekly notification to Congress.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system. Focus on notifications to Congress. Phase 2: Directed notifications to other interested parties or industry sectors (later).
18	Contacts/ SMEs/ Interested Parties/ Congress	Interested Parties & Peer Grouping	Identification of peer groups	Need: ER - Repackaging of products to targeted audiences. Sector identification.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system.
19	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Direct with CSB	Communications to/from CSB (who, what, when, where, follow-up required & taken, incident-related notifications).	Possible GPRA - people contacting CSB for information or assistance. Supports needs of IN, ER - Consistent message from the CSB.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
20	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking- General	Legislative history, tenor of media statements or articles published, level of cooperation, consequences/results of communications.	Supports need of ER for awareness of impact.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system.
21	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Congressional Outreach	Track CSB name recognition, inquiries for CSB information, positive statements to the press.	Integrate with Contacts Supports need of ER to measure congressional awareness. Possible GPRA measure.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Function in Contacts to track Congressional inquiries.
22	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Distribution	Distribution tracking and mechanics of sending out products (faxes, Internet, email, hardcopy mailings).	Integrated with Contacts, Internet. Multiyear, automate as you progress. Supports need of ER for tracking products provided by the CSB.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Database application to track product distributions. 2. Available via intranet.
23	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Media Effectiveness	CSB in the news (actions resulting from press releases and media contacts, articles that mention CSB, Internet contacts).	Integrate with Contacts, news services. Need: ER - Measuring effectiveness to determine best use of resources. Possible GPRA measure.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. System to track CSB citations.
24	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Public Outreach	Surveys, track national and international name recognition, track inquiries for CSB information, other Web sites that list your Web site as a link, Internet contacts.	Surveys probably should be contracted service. Integrate with Contacts, news services. Supports need for ER. Possible GPRA measure.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. System to track inquiries (tied to Contacts Mgmt system). 2. System to track links to CSB web site.
25	Contacts/ SMEs/ Interested Parties/ Congress	CSB Product Standards	Establish a consistent "look and feel" for CSB products, guidelines for how products are released, provide templates, graphics, guidelines.	Supports need for ER for repackaging products for sale by the CSB. Used by IN, SP, B (reports, presentations).	...Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Guidelines for product quality and consistency. 2. Available via intranet.

Functional Area: Internet						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
26	Internet	Public Web Page	Migrate from external server. Apply lessons learned from the FEMA Web site and others (operation and content).	Supports need of IT to control Web for CSB and to provide responsive service to CSB.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. CSB managed public web page with plan for configuration control and content guidelines.
27	Internet	Web Impact Measurement	Track sites that list CSB as a link, inquiries via the Web page.	Possible GPRA measure of awareness. Supports needs of ER, IT to measure CSB impact and awareness.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. GPRA measure.
28	Internet	Internal Web Page	Content should include any information that more than one person needs to know or access.	Supports needs of ER, EM, AD to increase CSB awareness, simplify work processes, use push technology, and use technology as a force multiplier. Used by IN, B, GC, SP.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Establish and maintain internal Web page.
29	Internet	CSB News Service	Identify appropriate information and distribute as filtered current events (internal and external).	Integrate with Calendar, Policies & Guidelines, Training, Travel, Time, Web Edge, Contacts, and Status Reporting. Supports need of ER for automatic distribution to increase awareness, internal "point cast." Used by IN, GC, B, ER, SP, IT.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Determine sources for information and establish links. 2. Develop interface to enable peer group distribution.
30	Internet	Document Review/Approval	Configuration control, review, comment resolution, electronic signature/approval.	Supports need for IN, GC, SP, EM, B to support report generation and Work in Progress Intranet.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. System for on-line document review and configuration control.
31	Internet	Status Reporting	Identify key CSB activities to be tracked and routinely update progress, distribute selected info to interested parties (internal and external).	Integrated with Intranet, Internet, and Contacts modules. Supports need for ER to increase CSB and others awareness. Used by IN, GC, B, ER, SP, EM, IT	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Critical, high-level weekly status report.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
32	Internet	Works in Progress	Work that has not been released, segregated by project or investigation, limited access, document preparation, revision control.	Integrate with Data Warehouse (templates, references, and Investigation Database). Supports needs of IN, GC, B, ER, SP for a common place to organize pre-final documents.	Conduct accident investigations and special studies and provide recommendations... Incorporate best practices from the private and public sectors...	1. Organized area on server to segregate information. 2. Staff training on use.

IT Initiative: Administrative Business Systems

(personnel records, facility management, financial management)

Estimates beyond the current year should be used with caution since the program is in the early stages of development.

The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities.

Administrative Business Systems

Functional Area: Administrative Business Systems						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
1	Financial Management	Budget Control	Track expenditures by CSB-defined codes (e.g., OMB class, unique incident code, contracts).	This is available off the shelf. Supports needs of AD, EM.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Budget control system . 2. Staff training on use.
2	Financial Management	Accounting System	Accounts payable, accounts receivable, reimbursements.	This is available off the shelf. May be available via GSA. Needs to comply with govt. accounting regulations. Will require definition of accounting codes. Supports needs of AD, EM.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Accounting system. 2. Staff training on use.
3	Financial Management	Disbursements	Check writing, "bank account."	May be available via GSA. Supports needs of AD, EM.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Direct check writing system. 2. Staff training on use.
4	Financial Management	Interim Employee Tracking	Track temporary employees (like FEMA's employees called when an emergency arises).	There may be unique requirements because individuals are temporary employees of a federal agency (e.g., insurance indemnification, taxes). Design to be consistent with the Contacts system and future plans for personnel records management. Supports needs of AD, EM, IN	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Functional spec, tracking system for temporary employees personnel information. 2. Staff training on use.
5	Financial Management	Travel Planning	Identify needs, obtain tickets & reservations, tracking travel.	Use a travel agency with internet connection. Supports needs of AD, IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Travel planning system. 2. Staff training on use.
6	Financial Management	Travel Reconciliation	Expense reports – on-line input and approval.	This is available off-the-shelf. Needs to comply with government travel regulations. Travel Manager currently in place. Supports needs of AD, IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Travel expense reporting system. 2. Staff training on use.
7	Personnel	Time	Timekeeping, vacation, pension. Intranet interface (input and output).	Some capabilities are available off the shelf. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Time management system. 2. Staff training on use.
8	Personnel	Personnel Record Management	Track employment statistics [hiring dates, type of employee (temp, subcontractor, fulltime, and part time), emergency contacts, performance reviews, required training].	Type of employee has accounting and tax implications. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Personnel record management system. 2. Staff training on use.
9	Personnel	Policies & Guidelines	Templates & forms. Word documents, configuration control, access to required forms (insurance, travel, and performance reviews).	Examples could be obtained from similar organizations. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Templates, forms, configuration control plan. 2. Access to guidelines as PDF files via Intranet.

Functional Area: Administrative Business Systems						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
10	Personnel	CSB Calendar	Key CSB activities. Intranet interface (input and output). Notification of training.	Supports needs of AD, IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Group calendar system. 2. Key CSB activities and CSB Staff schedules on calendar.
11	Personnel	Payroll	CSB employee payroll			1. Provide CSB payroll
12	Facility Management	Property Management	Office space, fixtures, telephones, equipment, remote office needs ("Go Kits"), telecommuting, bar code management system.	Office space, fixtures, telephones, equipment, remote office needs ("Go Kits"), telecommuting, bar code management system.	Priority to investigations equipment. May be available off-the-shelf. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	1. Property management system. 2. Staff training on use.

IT Initiative: Technical Infrastructure

(network, tools, backups, disaster recovery, system maintenance, people backup, archival, performance tracking (system, network, web), training)

Estimates beyond the current year should be used with caution since the program is in the early stages of development. The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities.

Technical Infrastructure

Functional Area: Technical Infrastructure						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
1	Communication	Desktop Faxing	Internet faxing software to send and receive faxes.	Supports IT need to support flat CSB organization and telecommuting. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Investigate available products. 2. Procure and implement.
2	Communication	E-mail	E-mail communications capability	MS Exchange, NT Mail Supports IT need to provide responsive e-mail support. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	Implement and maintain e-mail system.
3	Communication	Multi-Line Fax	Capability to send broadcast faxes via multiple phone lines with automatic distribution from the Contacts System.	Internet provider may have this service. Supports ER need to quickly distribute CSB information.	...Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Investigate available products. 2. Procure and implement.
4	Communication	Video Conferencing	Video conferencing from investigation sites and remote work locations.	Equipment: cameras. Possible use for outreach and public meetings. Supports needs of IN, B, ER, EM - Work smart, use technology to reduce cost of supporting investigations and public meetings.	...Provide informational products to the chemical industry to assist in enhancing operational safety. Conduct accident investigations...	1. Investigate available products. 2. Procure and implement.
5	Desktop Management	Manage Standard Desktop	Backups, product upgrades, troubleshooting, remote desktops, "go kit" laptops.	Supports IT need to reduce desktop maintenance. Support flat CSB organization and telecommuting.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	This task has a dependency on the Windows Terminal Server.
6	Desktop Management	Windows Terminal Server	Remote desktop access and maintenance.	Supports IT need to reduce desktop maintenance. Support flat CSB organization and telecommuting. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	When Windows Terminal Server is available, implement.
7	Infrastructure Support	Analysis Tools	Commonly used tools (barrier, fault tree, change, cause determination).	Many are available off the shelf. Training in their use is required. May need to consider multi-user licenses. Expect needs to be specified by IN & SP. Supports needs of IN, SP - Fault Tree, Barrier, change and trend analysis (Conger & Elsea Software Company).	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Identify and obtain tools. 2. Train key individuals on use.
8	Infrastructure Support	Analysis Tools - Incident Simulation	Incident simulation has dual use to investigators in determining cause and in explaining events and recommendations in public hearings.	Supports IN need for incident simulation to depict event. To be used at CSB of Inquiry hearings, to help non-chemical related people understand the incident, and for accident prevention in the future. "Money well spent."	...Provide informational products to the chemical industry to assist in enhancing operational safety. Conduct accident investigations...	1. Detailed functional requirements. 2. Identify & purchase software/hardware. 3. Staff training on use.
9	Infrastructure Support	Application Configuration Control	Develop applications configuration control plan.	Supports IT need - Standard application development practice.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Develop plan. 2. Implement plan.
10	Infrastructure Support	Data Configuration Control	Develop data configuration control plan.	Supports IT need - Standard data integrity practice	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Develop plan. 2. Implement plan.

Functional Area: Technical Infrastructure						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
11	Infrastructure Support	Database Administration	Database documentation, version control.	Protect the integrity of CSB databases, maintain and administer databases	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Plan for administering databases 2. Implement plan
12	Infrastructure Support	Disaster Recovery	Recovery from loss of any IT components (hardware, software, networks, data, the internet, key personnel).	Supports need of IT to provide disaster recovery plan and support.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Disaster recovery plan 2. Implement plan
13	Infrastructure Support	Infrastructure Administrator	Identify, acquire, manage, administer CSB infrastructure	Supports need to provide support for CSB's technical infrastructure needs.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Designated individual qualified to perform functions
14	Infrastructure Support	Network Administration	Automated to the extent possible, system availability, backup, upgrade, administrator guidebook.	Assumes web master/personnel backup performs most of this function.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Designated individual qualified to perform system administrator and web master functions
15	Infrastructure Support	Personnel Backup	A backup administrator.	Gain efficiency by having 1 person serve as personnel backup, network administrator, and web master. This would evolve into a full-time position in FY 2000. Strategically, it should be a CSB staff member. Supports need of IT to provide support when primary administrator is unavailable.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Designated individual qualified to perform system administrator and web master functions
16	Infrastructure Support	Security	Access for staff, temporary employees, contractors, consultants, application developers, password maintenance, data access levels, virus protection, firewalls.	Supports IT need to support flat Board organization and telecommuting. Protect integrity of Board products.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Develop plan for remote security needs. 2. Implement plan.
17	Internet	Web Master	Design "look and feel" of the web pages, determine web page content guidelines (Board-generated information and links to other sources). Anticipate that in FY 2000, the amount of Web work will increase as the Web becomes an integral of CSB communication and investigation support.	Gain efficiency by having 1 person serve as personnel backup and web master. This would evolve into a full-time position in FY 2000. Strategically, it should be a CSB staff member. Supports need for B, ER - Ties to strategic goal of creating a strong web presence.	...Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Designated individual qualified to perform system administrator and web master functions 2. Content Guidelines
17	Telecommuting	Remote Access	Develop a plan for physical, electronic security, synchronizing remote and office desktops (PC Anywhere, Timbuktu, etc.), wireless LAN, digital cameras, Interactive Pictures 360-degree navigable photo images.	Focus first on Investigation support. Supports need to support flat Board organization and telecommuting. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient Board business operations. Conduct accident investigations...	1. Develop a plan 2. Implement plan - focus on investigations needs first.
18	Training	Infrastructure User Training	Develop training plan. Evaluate products and product effectiveness. Classes, computer based, and video. Help Desk, user awareness sessions to inform of new features and capabilities, set up specialized applications toolbars.	Subcontract services are available for commonly used products. Supports IT need to provide up front training to reduce level of Help line support needed and to increase awareness of infrastructure capabilities. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Identify needs and develop plan 2. Implement plan

APPENDIX C. INITIATIVES AND CORRESPONDING CSB OBJECTIVES

Key Assumptions Used to Develop the Summary of IT Systems

- * Estimates beyond the current year should be used with caution since the program is in the early stages of development. The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities. It is expected that new CSB needs will be identified for FY 2000 and FY 2001, potentially increasing the IT budget requirements.
- Overall functional requirements are identified at the beginning of each section.
- CSB staffing levels are assumed to be ~30 people through FY 1999, ~100 people at the end of FY 2000.
- Modules are broken out to indicate capability that can be phased in over time to reduce cost in any particular year and to ensure IT capabilities are increasing on a regular (every three months) basis. Modules can be combined, but it will increase the amount of time it takes to release a capability.
- Estimates include setting up the system module. Costs to populate the data are not included, since this effort could be done over time after the modules are put into service.
- Modules are recommended as high priority, either due to their contribution to critical CSB activities or because they will require significantly less resources if done early in the organization's development.
- The business unit supported by the modules is identified in the Notes column. The business units are abbreviated in the notes as follows:
 - IN - Investigations
 - GC - General Counsel
 - B - Board Members
 - ER - External Relations
 - SP - Safety Programs
 - IT - Technical Operations
 - AD - Administrative Operations
 - EM - Executive Management (Chief Executive Officer, Chief Operating Officer)

IT Initiative: Data Warehouse

(documents, data sets, knowledge, references)

Estimates beyond the current year should be used with caution since the program is in the early stages of development. The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities.

Data Warehouse

Functional Area: Incident Identification						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
1	Incident Identification	Establish Baseline	Review 5 chemical data systems to assist in establishing the magnitude of the incident problem by industry, chemical, and location.	Work currently in progress. FY 1999 effort focuses on follow-up of FY 1998 work. Supports needs of IN, GC, B, ER, SP, IT, EM.	Evaluate the effectiveness of other federal agencies in preventing chemical accidents. Coordinate the efforts to eliminate duplicate activities across federal agencies related to the oversight of chemical industry operations and the investigation of chemical industry events.	1. Prepare and issue summary report.
2	Incident Identification	Incident Notification - Incident Universe System	Incident Universe Database (identify incidents and related information, including source of information). Incident Universe, Congress Contacts, and Automatic Notifications combine to make up the Incident Notification system.	Recommend developing the system functional specifications for both the Voluntary/Near Miss system and the Incident Universe system at the same time. Supports needs of ER (increase awareness of Congress and others of magnitude of incident problem), SP (trend analysis, accident prevention) and IN (investigations).	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database functional spec, application, access, & data entry via intranet. 2. Staff training on use. Phase 2 (later): Expand output capabilities and automatic ties to other data systems.
3	Incident Identification	Voluntary Data System (Near-Miss Reporting)	Voluntary/Near-Miss Database (who, what, where, when, industry sector, source of information).	Involves business confidentiality issues to encourage participation. Recommend developing the system functional specifications for both the Voluntary/Near Miss system and the Incident Universe system at the same time. If system is developed in parallel with the Incident Universe system, effort could be reduced due to the common functions. Supports needs of SP.	Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Database functional spec, application, access, & data entry via intranet. 2. Industry awareness campaign. 3. Staff training on use. Phase 2 (later): Expand output capabilities.

Functional Area: Investigation Reports						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
4	Investigation Reports	Investigation Database System	Investigations Database organizing information relevant to individual investigations and access to past investigations. Access to the investigation protocol.	Integrated with Incident Universe Database, Contacts, Recommendations, and Work in Progress Intranet. Supports IN need to efficiently manage investigations also supports SP, GC, ER, B, EM and CSB Business Plan.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database application, access, & data entry via intranet. 2. Staff training on use. Phase 2: Automatic ties to other data systems.
5	Investigation Reports	Report Generation Investigation Protocol	Access to the protocol, templates, document preparation, revision control, review, comment resolution, finalize document.	Work in Progress Intranet. Combine off-the-shelf products with specialized information. Supports needs of IN, SP (studies), EM - investigation protocol, report template, report generation, review, and comment of reports.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Investigation protocol. 2. Document electronic templates. 3. Access via intranet. 4. Written plan for configuration control. 5. Staff training on use.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
6	Investigation Reports	Support Docs - Investigation Docket	Collection point for the official investigation documentation and FOIA review eventually released to the public.	Starts in the Works in Progress Intranet and moves to the Public Web Page. Supports GC need to set up public docket for investigations and to review materials as soon as possible for release to public.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Segregated area with Intranet access 2. Written plan for config. control and document labeling 3. Staff training on use
7	Investigation Reports	Support Docs - Redaction	On-line marking of documents for public release.	Off the shelf products available. Integrate with Report/Study Supporting Documentation module and Investigation Docket. Supports GC need for redaction with search capability.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Detailed functional requirements 2. Identify & purchase software/hardware 3. Staff training on use

Functional Area: Studies, Analysis, & Alerts						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
8	Studies, Analysis, & Alerts	Recommendations Database - CSB Recommendations	Maintaining database of CSB recommendations (recommendation, actions taken, follow-up, assessment of impact).	Board Intranet Supports SP need to measure the impact of Board recommendations and IN's investigation research.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database functional requirements and application, access, & data entry via intranet. 2. Staff training on use Phase 2: Automatic ties to other data systems
9	Studies, Analysis, & Alerts	Recommendations Database - Recommendations By Others	Maintaining database of recommendations by other organizations (identify sources, recommendations, actions taken).	Supports SP analysis needs.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Database functional requirements and application, access, & data entry via intranet. 2. Staff training on use Phase 2: Automatic ties to other data systems
10	Studies, Analysis, & Alerts	Repackaging Products	Investigate, identify and develop CSB potential products.	Supports CSB needs.	Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Collaborate with other CSB groups to identify potential products. 2. Use technology to add value to the products.

Functional Area: Reference Information Gathering						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
11	Reference Information Gathering	Industry Reports Sophisticated Searches	Means for collecting (scanning, obtaining documents electronically, creating PDF files), cataloging, intelligent search and retrieval, identify source of information, ability to handle documents in various file formats.	Common place to organize pre-final documents (Work in Progress Intranet space) Scanner, PDF file creation capabilities already exist The Technical Reference Librarian can provide a support service for this. Supports needs of GC, IN, SP, EM, ER	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Functioning space on intranet where germane documents can be segregated. 2. PDF generating capability (Adobe Acrobat installed and available) Phase 2: PDF sophisticated searching program installed and available.
12	Reference Information Gathering	Technical Reference Library Web Reference Sources	Technical library reference function (regs, codes, requirements, external databases, company & industry information, and related incidents). Includes setting up an index/retrieval system for onsite hardcopy CSB library (may include official records, supporting references, and journals). Some documents may require special handling due to confidentiality.	Combines an individual (1 FTE) with specialized expertise with key electronic tools. This is a first step in building the Data Warehouse capabilities. Supports needs of IN, SP, ER, GC (set up library & reference material, company and industry information in an organized way from the beginning, search of external databases, identify codes and standards, legal precedents).	Be a nationally recognized organization the public and industry come to for chemical safety information.	1. Hire qualified staff member. 2. Index/retrieval system for hardcopy archive. 3. Compiled source list for commonly requested information and where to get it.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
13	Reference Information Gathering	CSB Added Value Info	Capability to associate and maintain CSB-added information with data obtained from external sources (could be via indexing). Examples include judgements, identification of peer groups, and cross-reference flags.	Supports the ability to maintain and link CSB added information to external data accessed from the CSB. Used by: IN, ER, SP	Be a nationally recognized organization the public and industry come to for chemical safety information. Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Database application, access, & data entry via intranet. 2. Staff training on use. Phase 2: Automatic ties to other data systems.
14	Reference Information Gathering	Bridges to External Data	Electronic bridges to external data sources, with consistent user interface for access and intelligent searching (to reduce training requirements).	Building the bridges should have first priority. User interface is longer term. Focus on method of access with a goal of reducing the amount of information copied and placed in the CSB systems to reduce the possibility of using out of date or inaccurate information for decision making. Supports needs of IN, GC, B, ER, SP to access external data sources.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Prioritized list of bridges to build. 2. Tested connections to external data systems. Phase 2: Consistent user interface and searching.
15	Reference Information Gathering	Electronic Archive System Expanded Storage/Retrieval	CD-ROM library with intranet access via intelligent search and retrieval (public and private electronic documents, reports, articles, trade information, and press articles). PDF searching. This is the electronic organized file cabinet for the CSB.	Equipment Needed: Writable CD-ROM. Builds on Electronic Archive System and Industry Reports. Supports need of IN, SP, ER, GC, EM for an electronic reference library, the ability to repackage information, the ability to store record incident copies electronically, and ability to distribute CSB reports via CD-ROM.	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Detailed functional requirements. 2. System structure/organization plan. 3. Staff training on use. Phase 2: Expand storage and retrieval capabilities.

Functional Area: Contacts/ SMEs/ Interested Parties/ Congress						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
16	Contacts/ SMEs/ Interested Parties/ Congress	Contacts Database - Congress, SMEs, Others	Name, address, expertise, areas of interest, (subject matter experts, potential consultants, people involved specific incidents, media, elected officials, special interest groups). Focus on Congressional contacts first. Incident Universe, Congress Contacts, and Automatic Notifications combine to make up the Incident Notification system.	Supports needs of IN, SP, GC, ER, B for consultant database, incident-related contacts, state and local officials, local media. Identify anyone contacting the CSB or that the CSB contacts.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Database application, access, & data entry via intranet (may use enhanced MS Outlook). 2. Staff training on use. Phase 2: 1. Automatic ties. 2. SMEs and others capabilities.
17	Contacts/ SMEs/ Interested Parties/ Congress	Automatic Notifications	Automatic notification to targeted audiences (legislative, special interest, and media). Focus on automatic notifications to Congress first. Incident Universe, Congress Contacts, and Automatic Notifications combine to make up the Incident Notification system.	Must be integrated with Contacts and the Data Warehouse (e.g., Incident Universe Database). Supports needs of ER for automatic weekly notification to Congress.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system. Focus on notifications to Congress. Phase 2: Directed notifications to other interested parties or industry sectors (later).
18	Contacts/ SMEs/ Interested Parties/ Congress	Interested Parties & Peer Grouping	Identification of peer groups	Need: ER - Repackaging of products to targeted audiences. Sector identification.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system.
19	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Direct with CSB	Communications to/from CSB (who, what, when, where, follow-up required & taken, incident-related notifications).	Possible GPRA - people contacting CSB for information or assistance. Supports needs of IN, ER - Consistent message from the CSB.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
20	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - General	Legislative history, tenor of media statements or articles published, level of cooperation, consequences/results of communications.	Supports need of ER for awareness of impact.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Functional module of Contacts system.
21	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Congressional Outreach	Track CSB name recognition, inquiries for CSB information, positive statements to the press.	Integrate with Contacts Supports need of ER to measure congressional awareness. Possible GPRA measure.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Function in Contacts to track Congressional inquiries.
22	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Distribution	Distribution tracking and mechanics of sending out products (faxes, Internet, email, hardcopy mailings).	Integrated with Contacts, Internet. Multiyear, automate as you progress. Supports need of ER for tracking products provided by the CSB.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. Database application to track product distributions. 2. Available via intranet.
23	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Media Effectiveness	CSB in the news (actions resulting from press releases and media contacts, articles that mention CSB, Internet contacts).	Integrate with Contacts, news services. Need: ER - Measuring effectiveness to determine best use of resources. Possible GPRA measure.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. System to track CSB citations.
24	Contacts/ SMEs/ Interested Parties/ Congress	Communication Tracking - Public Outreach	Surveys, track national and international name recognition, track inquiries for CSB information, other Web sites that list your Web site as a link, Internet contacts.	Surveys probably should be contracted service. Integrate with Contacts, news services. Supports need for ER. Possible GPRA measure.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. System to track inquiries (tied to Contacts Mgmt system). 2. System to track links to CSB web site.
25	Contacts/ SMEs/ Interested Parties/ Congress	CSB Product Standards	Establish a consistent "look and feel" for CSB products, guidelines for how products are released, provide templates, graphics, guidelines.	Supports need for ER for repackaging products for sale by the CSB. Used by IN, SP, B (reports, presentations).	...Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Guidelines for product quality and consistency. 2. Available via intranet.

Functional Area: Internet						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
26	Internet	Public Web Page	Migrate from external server. Apply lessons learned from the FEMA Web site and others (operation and content).	Supports need of IT to control Web for CSB and to provide responsive service to CSB.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. CSB managed public web page with plan for configuration control and content guidelines.
27	Internet	Web Impact Measurement	Track sites that list CSB as a link, inquiries via the Web page.	Possible GPRA measure of awareness. Supports needs of ER, IT to measure CSB impact and awareness.	Be a nationally recognized organization the public and industry come to for chemical safety information...	1. GPRA measure.
28	Internet	Internal Web Page	Content should include any information that more than one person needs to know or access.	Supports needs of ER, EM, AD to increase CSB awareness, simplify work processes, use push technology, and use technology as a force multiplier. Used by IN, B, GC, SP.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Establish and maintain internal Web page.
29	Internet	CSB News Service	Identify appropriate information and distribute as filtered current events (internal and external).	Integrate with Calendar, Policies & Guidelines, Training, Travel, Time, Web Edge, Contacts, and Status Reporting. Supports need of ER for automatic distribution to increase awareness, internal "point cast." Used by IN, GC, B, ER, SP, IT.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Determine sources for information and establish links. 2. Develop interface to enable peer group distribution.
30	Internet	Document Review/Approval	Configuration control, review, comment resolution, electronic signature/approval.	Supports need for IN, GC, SP, EM, B to support report generation and Work in Progress Intranet.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. System for on-line document review and configuration control.
31	Internet	Status Reporting	Identify key CSB activities to be tracked and routinely update progress, distribute selected info to interested parties (internal and external).	Integrated with Intranet, Internet, and Contacts modules. Supports need for ER to increase CSB and others awareness. Used by IN, GC, B, ER, SP, EM, IT	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Critical, high-level weekly status report.

	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
32	Internet	Works in Progress	Work that has not been released, segregated by project or investigation, limited access, document preparation, revision control.	Integrate with Data Warehouse (templates, references, and Investigation Database). Supports needs of IN, GC, B, ER, SP for a common place to organize pre-final documents.	Conduct accident investigations and special studies and provide recommendations... Incorporate best practices from the private and public sectors...	1. Organized area on server to segregate information. 2. Staff training on use.

IT Initiative: Administrative Business Systems

(personnel records, facility management, financial management)

Estimates beyond the current year should be used with caution since the program is in the early stages of development.

The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities.

Administrative Business Systems

Functional Area: Administrative Business Systems						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
1	Financial Management	Budget Control	Track expenditures by CSB-defined codes (e.g., OMB class, unique incident code, contracts).	This is available off the shelf. Supports needs of AD, EM.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Budget control system . 2. Staff training on use.
2	Financial Management	Accounting System	Accounts payable, accounts receivable, reimbursements.	This is available off the shelf. May be available via GSA. Needs to comply with govt. accounting regulations. Will require definition of accounting codes. Supports needs of AD, EM.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Accounting system. 2. Staff training on use.
3	Financial Management	Disbursements	Check writing, "bank account."	May be available via GSA. Supports needs of AD, EM.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Direct check writing system. 2. Staff training on use.
4	Financial Management	Interim Employee Tracking	Track temporary employees (like FEMA's employees called when an emergency arises).	There may be unique requirements because individuals are temporary employees of a federal agency (e.g., insurance indemnification, taxes). Design to be consistent with the Contacts system and future plans for personnel records management. Supports needs of AD, EM, IN	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Functional spec, tracking system for temporary employees personnel information. 2. Staff training on use.
5	Financial Management	Travel Planning	Identify needs, obtain tickets & reservations, tracking travel.	Use a travel agency with internet connection. Supports needs of AD, IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Travel planning system. 2. Staff training on use.
6	Financial Management	Travel Reconciliation	Expense reports – on-line input and approval.	This is available off-the-shelf. Needs to comply with government travel regulations. Travel Manager currently in place. Supports needs of AD, IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Travel expense reporting system. 2. Staff training on use.
7	Personnel	Time	Timekeeping, vacation, pension. Intranet interface (input and output).	Some capabilities are available off the shelf. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Time management system. 2. Staff training on use.
8	Personnel	Personnel Record Management	Track employment statistics [hiring dates, type of employee (temp, subcontractor, fulltime, and part time), emergency contacts, performance reviews, required training].	Type of employee has accounting and tax implications. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Personnel record management system. 2. Staff training on use.
9	Personnel	Policies & Guidelines	Templates & forms. Word documents, configuration control, access to required forms (insurance, travel, and performance reviews).	Examples could be obtained from similar organizations. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Templates, forms, configuration control plan. 2. Access to guidelines as PDF files via Intranet.

Functional Area: Administrative Business Systems						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
10	Personnel	CSB Calendar	Key CSB activities. Intranet interface (input and output). Notification of training.	Supports needs of AD, IN, GC, B, ER, SP, IT, EM	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Group calendar system. 2. Key CSB activities and CSB Staff schedules on calendar.
11	Personnel	Payroll	CSB employee payroll			1. Provide CSB payroll
12	Facility Management	Property Management	Office space, fixtures, telephones, equipment, remote office needs ("Go Kits"), telecommuting, bar code management system.	Office space, fixtures, telephones, equipment, remote office needs ("Go Kits"), telecommuting, bar code management system.	Priority to investigations equipment. May be available off-the-shelf. Supports AD needs. Used by IN, GC, B, ER, SP, IT, EM	1. Property management system. 2. Staff training on use.

IT Initiative: Technical Infrastructure

(network, tools, backups, disaster recovery, system maintenance, people backup, archival, performance tracking (system, network, web), training)

Estimates beyond the current year should be used with caution since the program is in the early stages of development. The IT plans will be reexamined during the year to factor in new developments and changing CSB priorities.

Technical Infrastructure

Functional Area: Technical Infrastructure						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
1	Communication	Desktop Faxing	Internet faxing software to send and receive faxes.	Supports IT need to support flat CSB organization and telecommuting. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Investigate available products. 2. Procure and implement.
2	Communication	E-mail	E-mail communications capability	MS Exchange, NT Mail Supports IT need to provide responsive e-mail support. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	Implement and maintain e-mail system.
3	Communication	Multi-Line Fax	Capability to send broadcast faxes via multiple phone lines with automatic distribution from the Contacts System.	Internet provider may have this service. Supports ER need to quickly distribute CSB information.	...Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Investigate available products. 2. Procure and implement.
4	Communication	Video Conferencing	Video conferencing from investigation sites and remote work locations.	Equipment: cameras. Possible use for outreach and public meetings. Supports needs of IN, B, ER, EM - Work smart, use technology to reduce cost of supporting investigations and public meetings.	...Provide informational products to the chemical industry to assist in enhancing operational safety. Conduct accident investigations...	1. Investigate available products. 2. Procure and implement.
5	Desktop Management	Manage Standard Desktop	Backups, product upgrades, troubleshooting, remote desktops, "go kit" laptops.	Supports IT need to reduce desktop maintenance. Support flat CSB organization and telecommuting.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	This task has a dependency on the Windows Terminal Server.
6	Desktop Management	Windows Terminal Server	Remote desktop access and maintenance.	Supports IT need to reduce desktop maintenance. Support flat CSB organization and telecommuting. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	When Windows Terminal Server is available, implement.
7	Infrastructure Support	Analysis Tools	Commonly used tools (barrier, fault tree, change, cause determination).	Many are available off the shelf. Training in their use is required. May need to consider multi-user licenses. Expect needs to be specified by IN & SP. Supports needs of IN, SP - Fault Tree, Barrier, change and trend analysis (Conger & Elsea Software Company).	Conduct accident investigations and special studies and provide recommendations aimed at preventing or reducing the severity of chemical incidents.	1. Identify and obtain tools. 2. Train key individuals on use.
8	Infrastructure Support	Analysis Tools - Incident Simulation	Incident simulation has dual use to investigators in determining cause and in explaining events and recommendations in public hearings.	Supports IN need for incident simulation to depict event. To be used at CSB of Inquiry hearings, to help non-chemical related people understand the incident, and for accident prevention in the future. "Money well spent."	...Provide informational products to the chemical industry to assist in enhancing operational safety. Conduct accident investigations...	1. Detailed functional requirements. 2. Identify & purchase software/hardware. 3. Staff training on use.
9	Infrastructure Support	Application Configuration Control	Develop applications configuration control plan.	Supports IT need - Standard application development practice.	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Develop plan. 2. Implement plan.
10	Infrastructure Support	Data Configuration Control	Develop data configuration control plan.	Supports IT need - Standard data integrity practice	Incorporate best practices from the private and public sectors to promote efficient CSB business operations.	1. Develop plan. 2. Implement plan.

Functional Area: Technical Infrastructure						
	System	Module	Description/Capabilities	Notes	CSB Objective Supported	Major Tasks/Products
11	Infrastructure Support	Database Administration	Database documentation, version control.	Protect the integrity of CSB databases, maintain and administer databases	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Plan for administering databases 2. Implement plan
12	Infrastructure Support	Disaster Recovery	Recovery from loss of any IT components (hardware, software, networks, data, the internet, key personnel).	Supports need of IT to provide disaster recovery plan and support.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Disaster recovery plan 2. Implement plan
13	Infrastructure Support	Infrastructure Administrator	Identify, acquire, manage, administer CSB infrastructure	Supports need to provide support for CSB's technical infrastructure needs.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Designated individual qualified to perform functions
14	Infrastructure Support	Network Administration	Automated to the extent possible, system availability, backup, upgrade, administrator guidebook.	Assumes web master/personnel backup performs most of this function.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Designated individual qualified to perform system administrator and web master functions
15	Infrastructure Support	Personnel Backup	A backup administrator.	Gain efficiency by having 1 person serve as personnel backup, network administrator, and web master. This would evolve into a full-time position in FY 2000. Strategically, it should be a CSB staff member. Supports need of IT to provide support when primary administrator is unavailable.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Designated individual qualified to perform system administrator and web master functions
16	Infrastructure Support	Security	Access for staff, temporary employees, contractors, consultants, application developers, password maintenance, data access levels, virus protection, firewalls.	Supports IT need to support flat Board organization and telecommuting. Protect integrity of Board products.	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Develop plan for remote security needs. 2. Implement plan.
17	Internet	Web Master	Design "look and feel" of the web pages, determine web page content guidelines (Board-generated information and links to other sources). Anticipate that in FY 2000, the amount of Web work will increase as the Web becomes an integral of CSB communication and investigation support.	Gain efficiency by having 1 person serve as personnel backup and web master. This would evolve into a full-time position in FY 2000. Strategically, it should be a CSB staff member. Supports need for B, ER - Ties to strategic goal of creating a strong web presence.	...Provide informational products to the chemical industry to assist in enhancing operational safety.	1. Designated individual qualified to perform system administrator and web master functions 2. Content Guidelines
17	Telecommuting	Remote Access	Develop a plan for physical, electronic security, synchronizing remote and office desktops (PC Anywhere, Timbuktu, etc.), wireless LAN, digital cameras, Interactive Pictures 360-degree navigable photo images.	Focus first on Investigation support. Supports need to support flat Board organization and telecommuting. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient Board business operations. Conduct accident investigations...	1. Develop a plan 2. Implement plan - focus on investigations needs first.
18	Training	Infrastructure User Training	Develop training plan. Evaluate products and product effectiveness. Classes, computer based, and video. Help Desk, user awareness sessions to inform of new features and capabilities, set up specialized applications toolbars.	Subcontract services are available for commonly used products. Supports IT need to provide up front training to reduce level of Help line support needed and to increase awareness of infrastructure capabilities. Used by : IT, IN, SP, ER, B, GC, EM, AD	Incorporate best practices from the private and public sectors to promote efficient Board business operations.	1. Identify needs and develop plan 2. Implement plan