INTRODUCTION

The Portfolio Report itemizes individual IT action plans and forecasts operating and investment dollars for Fiscal Year (FY) 2003-2007. IT action plans are derived from the support requirements of the missions of the Idaho National Engineering and Environmental Laboratory (INEEL) and the Idaho Completion Project (ICP). The IT (IT) Portfolio Report is ancillary to the *2003-2007 IT Strategic Plan,* which sets IT goals, strategies, and strategic indicators.

The action plans encompass the full spectrum of information technology hardware, software, data management, maintenance, communications, and connectivity. The plans discuss the purpose, scope, benefits, and budget in each area. In addition, the plans validate alignment with INEEL, ICP, and IT strategies. Data from the action plans are used for the DOE Headquarters Field Budget Call and planning integration.

The IT Portfolio Report contains two sections:

- *IT Environment*. Describes the overall computing environment of the INEEL and ICP infrastructure, hardware, software, and program support.

- *Action Plan Summary.* Introduces action plans contained in the portfolio database.

1. IT ENVIRONMENT

IT and data resources are assets that must be managed efficiently for the benefit of the corporation. The Information Management Resources Directorate provides the framework for managing and controlling IT investments (IT, data management, and user services), and validates that those investments support INEEL and ICP missions. IT functions cover telecommunications, operations, system design, cyber security, software support, and end-user support, providing common as well as specific program support. Roles are to:

- Maintain balanced enterprise architecture, company data management, and IT planning program.

- Manage information and technology assets by providing tools and processes that control redundancy while maximizing interoperability, maintainability, and stability.

- Develop, test, demonstrate, and deploy advanced computing for all aspects of the modern scientific/engineering high-performance computing and visualization capabilities.

- Perform research, development, and deployment of advanced computer and network technology to improve work processes for the INEEL, DOE, other security-related government agencies, and industrial customers.

- Provide the INEEL telecommunications infrastructure to support voice, video, and data.

- Perform system integration, design, installation, maintenance, and management of telecom-related electronic systems, structures, and components.

- Operate a consolidated IT Operations Center as a single point of contact for customer requests for assistance.

- Provide life-cycle support for enterprise-class servers, including requirements gathering, design, testing, implementation, maintenance, operations, optimization, and decommissioning.

- Develop and deploy software to a wide variety of scientific, engineering, and business customers.

- Deliver cyber security solutions to support business objectives and collaboration initiatives while ensuring prevention of malicious and inadvertent cyber security disruptions.

1.1 Infrastructure and Hardware

The IT environment spans basic communications and business processing to high-speed, high-performance computational modeling. Included in the environment are:

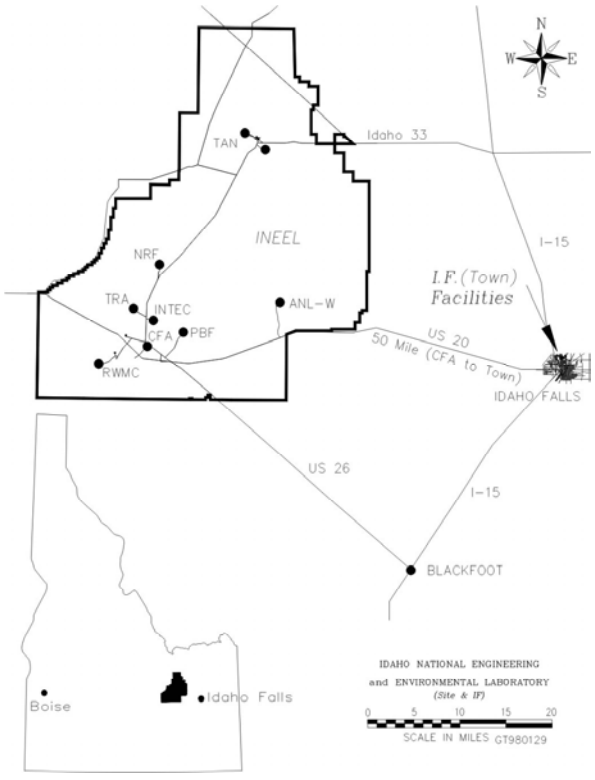


Figure 1. The vast geographic scope of the INEEL requires a complex IT.

- **8,000 network accounts, with 13,000 unique user IDs due to multiple IDs and Bechtel corporate IDs.**

- **10,000 personal computers.**

- **400 data systems, i.e., network devices such as routers, switches, and hubs.**

- **300 servers.**

- **13,000 active telephone lines, with 10,000 telephones (6,400 digital and 3,700 analog).**

- **170 miles of OC-12 and FD 565 TDM fiber backbone and 8,000 miles of copper wiring, inter- and intra-campus, used to transport data and voice between facilities.**

- **300 different software applications.**

- **700,000 electronic documents under management.**

- **7 million scanned pages.**

- **5,000 geographically dispersed end users as well as remote users in Washington DC, San Francisco, Boise, universities and other laboratories.**

IT equipment is valued at $94 million, making up a large portion of the company's fixed assets. Managing these assets over their life cycle requires planning for acquiring, maintaining, and disposing of the equipment. Figure 2 shows a breakdown of IT assets.

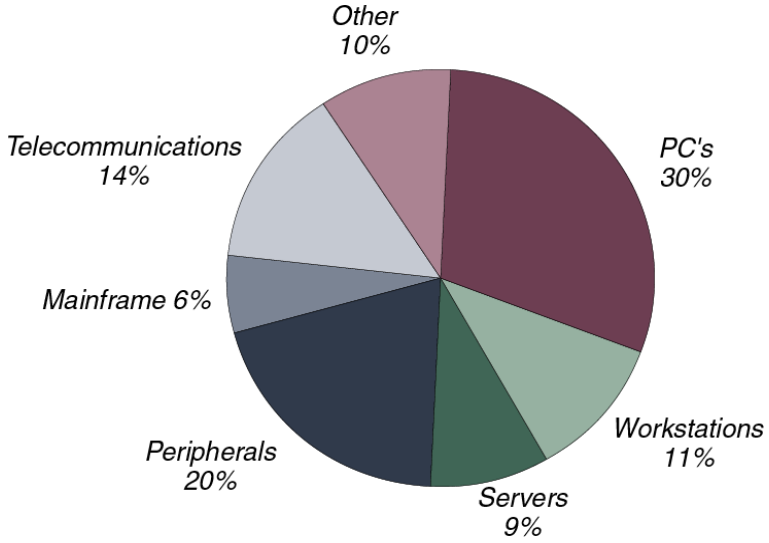


Figure 2. IT Assets.

Approximately 20% of the total IT assets are workstations (11%, $10.5M) and servers (9%, $8.3M). Workstations are generally UNIX-based computer systems providing computing capabilities not available in personal computer (PC) systems. These systems are used for high-volume computing, computer-aided design, computer-aided engineering, file servers, network servers, print servers, etc.

About 20% of the Automated Data Processing (ADP) resources ($18.3M) are composed of peripheral hardware such as printers, external disk drive units, mainframe disk subsystems, tape drives, docking stations, and X-terminals.

PCs make up the largest part of IT assets. The PC hardware is valued at $28.4M (30%), which consists of central processing units (CPUs), monitors, and laptop PCs.

Telecommunications hardware comprising network analyzers, bridges, communications servers, hubs, network interfaces, modems, routers, and switches account for approximately 14% ($13M) of the total assets.

Mainframe-based business systems account for 6% ($5.4M).

"Other" assets consist of items identified as computer hardware that cannot be associated with other categories such as bar coding hardware, computer chassis containing back planes, converters, and UPS units. This category accounts for approximately 10% ($9.9M) of the total computer assets.

Approximately 99% of procurements for PC hardware are for standard resources, while 70-75% of software procurements are for standard software.

1.2 Software

Software investment is characterized by the database management systems used to store and manage data, as depicted in Figure 3.

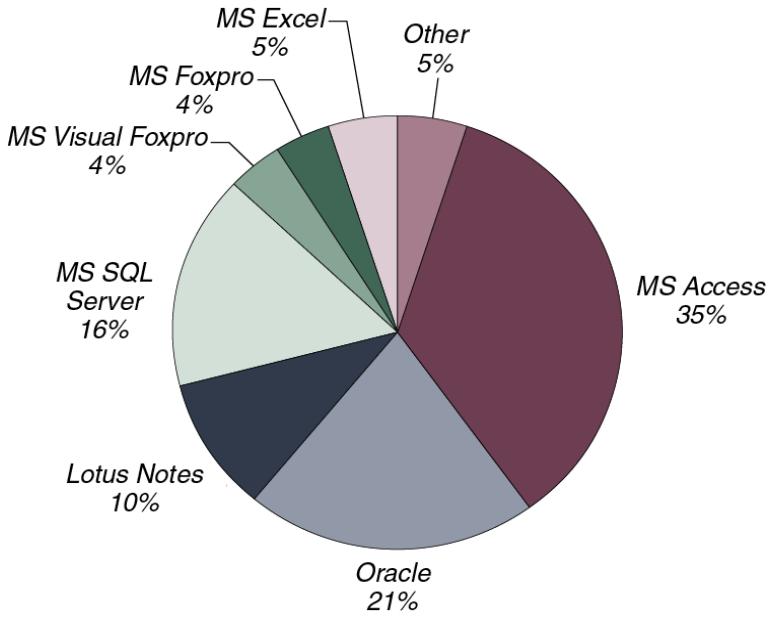


Figure 3. Database management systems.

The database management systems serve various applications:

- Oracle, Lotus Notes, and MS SQL Server are used for enterprise and group applications.
- MS Access is used for single user and some small group applications.
- FoxPro is no longer a supported toolset. As upgrades are needed for specific applications, new technology will be evaluated and applied as appropriate.
- Excel and "other" are applied for limited-use applications.

1.3 Program Support

1.3.1 Scientific and Engineering Computing

INEEL scientists and engineers conduct basic and applied research, solving problems in such diverse areas as groundwater pollution; electric vehicle efficiency; detection, identification, and disposal of unexploded ordnance; welding efficiency in industrial processes; spray forming of tools and dies; and agricultural efficiency. New mission thrusts for the Office of Nuclear Energy (NE), Science, and Technology will establish new programs in advanced nuclear energy systems, advanced fuel-cycle systems, critical infrastructure protection, and subsurface science that will require state-of-the-art data transfer, storage, and manipulation, plus collaboration with international and national partners.

Facing diverse problems, scientists and engineers require numerical modeling to help identify solutions and to evaluate cost and effectiveness. Numerical modeling complements large-scale experiments. Thus, demand for computing cycles continues to grow.

1.3.1.1 High-Performance Computing

High-performance computing is also growing discipline at the INEEL. It provides scientists and engineers with the capability to solve increasingly complex scientific and technological problems. The INEEL intends to use high-performance computing capabilities to:

- Provide simplified access to DOE's aggregate high-performance computing infrastructure and capabilities.
- Provide collaborative tools—videoconferencing, shared electronic notebooks, shared whiteboards, shared document creation, shared data-viewing, and analysis tools—for scientists and engineers.
- Connect unique INEEL research facilities to the Internet for remote collaboration, experimentation, production, or measurement.
- Enable scientists and engineers to perform cutting-edge research and development.

1.3.1.2 Advanced Engineering

Each year, the site creates or modifies approximately 13,000 electronic engineering drawings: architectural, civil, electrical, security alarms, life safety systems, telecommunications, instrumentation, heating/cooling, piping, and structural. A collaborative, advanced engineering environment enables the site to create, manage, and assess computer-generated data; to present relevant data to operators clearly and efficiently; to maintain configuration management records for products, processes, and resources; and to store appropriate data on a long-term basis. The site intends to integrate its engineering environment and scientific environments to:

- Accelerate the development and dissemination of knowledge.
- Optimize the use of instruments and facilities.
- Minimize time between discovery and application of knowledge.
- Fulfill both operational and research functions.

For further details regarding scientific and engineering computing, see the *Scientific and Engineering Infrastructure Plan,* February 2001.

1.3.2 Business Computing

Business management systems support accounts payable and receivable; property/inventory accounting; direct/indirect funds management; payroll, travel, and benefits accounting; funds authorization and management; coordination and financial oversight of work-for-others contracts; internal/external financial monitoring reporting and forecasting; and general business systems.

The major enterprise computing applications (Passport, Oracle Financials, and PeopleSoft) are housed on a Sun Microsystems Enterprise 10,000 (E10k) system. The Sun system has provided common system knowledge between the high-performance-computing environment of

the scientific and engineering community, the network infrastructure, and the business computing community. The common operating environment enables multiple organizations to identify compatible hardware and software solutions.

IT needs identified by business sections include:

- Ensuring up-to-date versions and required support of commercial off-the-shelf software.
- Expanding use of the Business Decision Support Information System warehouse.
- Upgrading/enhancing supply chain software.
- Supporting the implementation of E-commerce applications.
- Implementing PeopleSoft e-business modules to increase productivity, reduce staffing, and support the President's Management Agenda.
- Providing and maintaining adequate IT infrastructure to support effective business operations.

1.3.3 Programmatic Computing Support

In addition to scientific, engineering, and business computing, IT enables individual technical programs to fulfill their missions. Highlighted below are examples of IT systems supporting unique programmatic computing needs.

1.3.3.1 Environmental Management

Environmental Management has several software applications, majority of which are used to monitor and track the generation, transportation, storage, treatment, or disposal of wastes. These systems include:

- Integrated Waste Tracking System.
- INEEL Environmental System.
- INEEL Nonradiological Waste Management Information System.
- Integrated Environmental Data Management System.
- Environmental Restoration Information System.
- Environmental Monitoring Information System.
- Transuranic Reporting and Inventory Process System.

1.3.3.2 Energy Resources

Several applications support Advanced Test Reactor (ATR) operations. ATR requires very specialized computerized systems to provide control mechanisms for specific missions. These systems include:

- Reactor Console Display System.
- Distributed Control System.

- Digital Radiation Monitoring System.
- Reactor Data Acquisition System.
- Surveillance and Test System.
- Warm Waste Treatment Facility.
- ATR Simulator.
- Maintenance Control and Reporting System.

1.3.3.3 National Security

National Security computing is supported on various UNIX-, Linux-, Mac-, and Intel-based platforms. The National Security Division at the INEEL also manages the Visualization Laboratory (also known as the Numerical Simulation Laboratory) that supplies video creation, presentation services, virtual reality capabilities, and two massively parallel processing servers. Computing using Beowulf clusters and a Linux operating system represents a parallel path to the massively parallel systems.

The National Security Division's software and electronics business focuses on five major areas of research and development: electronics; process automation and security systems; modeling, simulation, and visualization; computer systems integration; and database and Web applications.

The primary objective for the security system is to protect special nuclear material, classified material, and government property. Two applications support security at the site. These software systems have an annual operating cost of approximately $500,000. These systems include:

- Security Alarm Control Systems.
- Security Information Management System.

2. ACTION PLAN SUMMARY

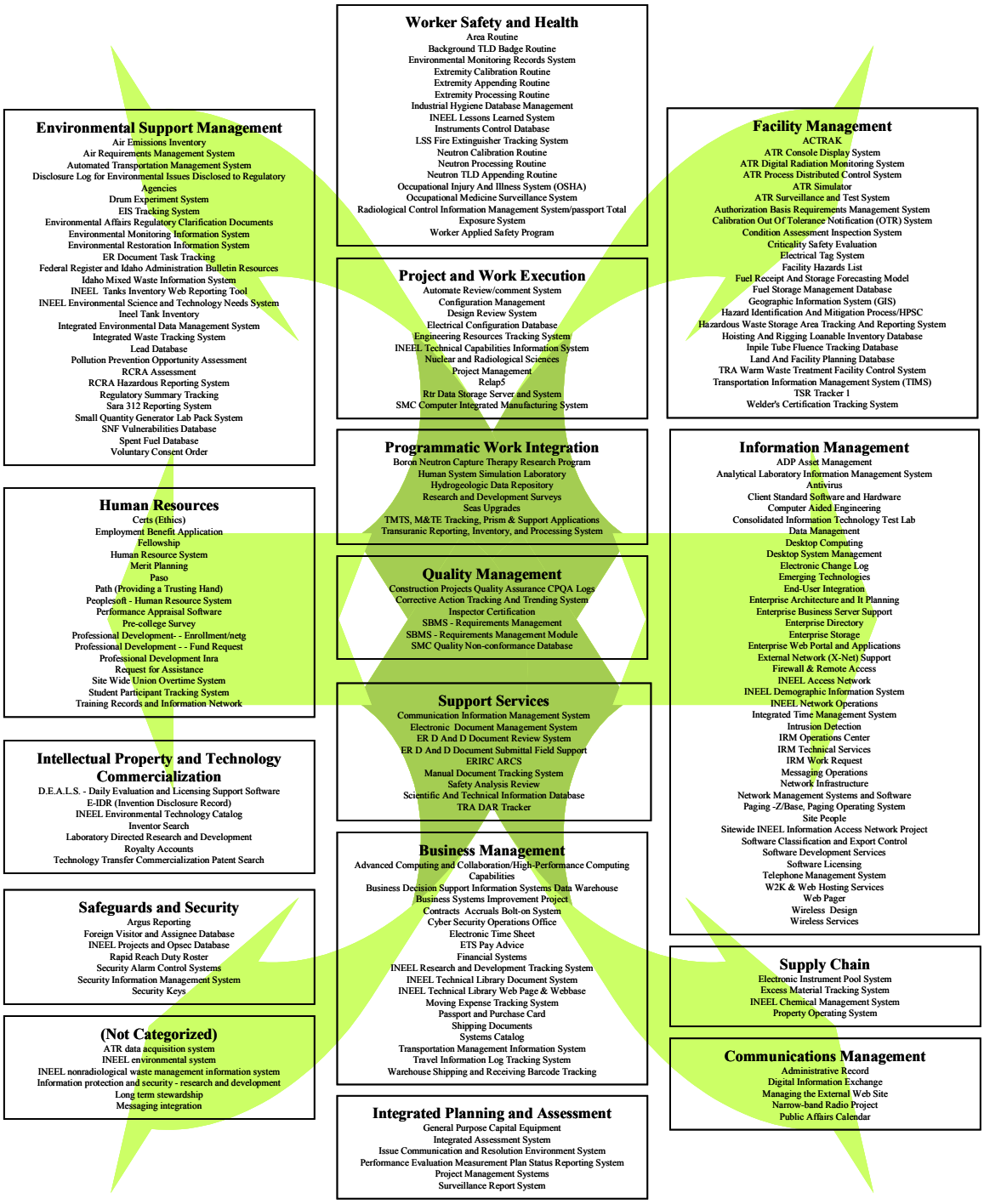
Currently, 85 IT Portfolio action plans are included in the projections for FY 2003-2007. These action plans detail IT investments, which support INEEL and ICP missions, as well as the common infrastructure required to transact business at the site.

Table 1 presents the estimated costs associated with implementing the scope of IT work addressed in the action plans. The projected costs are time-phased and further delineated by operating, funded, and unfunded investments. The unfunded portion represents costs primarily associated with infrastructure upgrades, advanced scientific and engineering computing and collaboration, and computational research and development. Funding resolutions are multisourced and ongoing.

Summary of All Categories	FY03	FY04	FY05	FY06	FY07
Labor	24873	24374	25394	26299	27047
Nonlabor	11849	13518	14643	15898	17231
Operating	36722	37892	40037	42197	44278
Investment	10735	6481	6879	4229	1876
Total Budget Allocated	47457	44373	46916	46426	46154
* Unfunded	18550	32581	26668	11187	1816

Table 1. Action plan funding estimates for FY 2003-FY 2007 in thousands.

Figures 4-9 characterize the action plans in terms of Standards-Based Management Function, operating dollars versus investment, funded allocations versus unfounded, essentiality, and scope of use.



Information Technology Projects proliferate throughout the programs; understanding their criticality and relationships is vital to future missions .

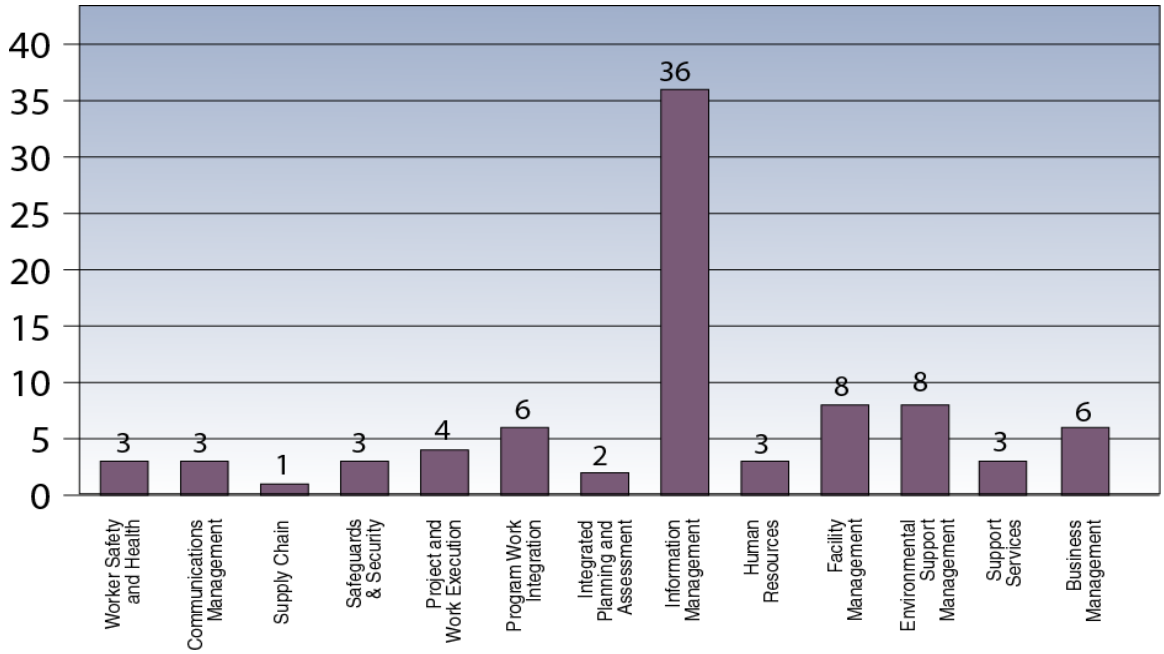


Figure 5. Action plans by Standards-Based Management Systems.

Embodied in Standards-Based Management Systems are the following definitions:

Business Management establishes, maintains, and controls accounts payable and receivable; property/inventory accounting; direct/indirect funds management; payroll, travel, and benefits accounting; funds authorization and management; coordination and financial oversight of work-for-others contracts; internal/external financial monitoring reporting and forecasting; and business computing systems capability.

Communications Management advances INEEL and ICP interests by building awareness, understanding, and advocacy of INEEL science and engineering expertise and its role in support of DOE and its mission.

Environmental Support Management manages activities related to environmental protection and compliance, packaging and transportation, waste generator services, waste storage, treatment, and disposal operations. Manages INEEL and ICP Cultural Resources Program, Environmental Monitoring Program, Voluntary Consent Order Program, High-Level Waste Program, and Spent Nuclear Fuel Program.

Facility Management implements Integrated Safety Management to ensure that each facility is effectively and efficiently operated and maintained within an established safety authorization envelope. Develops and executes the Long-Range Infrastructure Plan.

Human Resources develops and implements programs, processes, and products that allow INEEL and ICP to attract, hire, develop, train, qualify, compensate, and reward highly qualified and diverse employees within the guidelines of applicable labor agreements.

Information Management provides the framework for managing and controlling IT investments and ensures that those investments support INEEL and ICP missions.

Integrated Planning and Assessment provides processes, tools, and analyses that support the strategic planning, business and performance assessment planning, and performance assurance.

Programmatic Work Integration provides the management framework to enable all supporting management systems to provide efficient, effective, integrated processes and products to better accomplish the INEEL and ICP missions, support its strategic direction, and meet stakeholder commitments. Defines the process used by all other INEEL and ICP management systems to plan, control, and execute work, and provides oversight and performance expectations. Identifies and establishes core competencies necessary to provide products and services committed to the customer, and develops, maintains, and continuously advances key capabilities.

Project and Work Execution provides the processes and tools for managing INEEL and ICP work.

Safeguards and Security provides processes and tools to protect personnel, sensitive unclassified and classified information, and applicable national and contractor assets such as special nuclear material, operational facilities, and equipment from risks and threats.

Supply Chain provides integrated processes, tools, and resources for planning, acquiring, and life-cycle control of material and services needed to meet contract requirements.

Support Services consolidates interrelated information functions into a central system that provides administrative support, technical publications, and printing services; document and records management services; and INEEL and ICP-wide mail pickup and delivery. Manages a technical library for use by DOE-ID, the INEEL, ICP, and the general public.

Worker Safety and Health provides processes and tools to ensure that all INEEL and ICP employees, visitors, vendors, and subcontractors have a safe and healthy workplace. Provides direct technical assistance to control exposure and prevent work-related accidents, injuries, and illnesses.

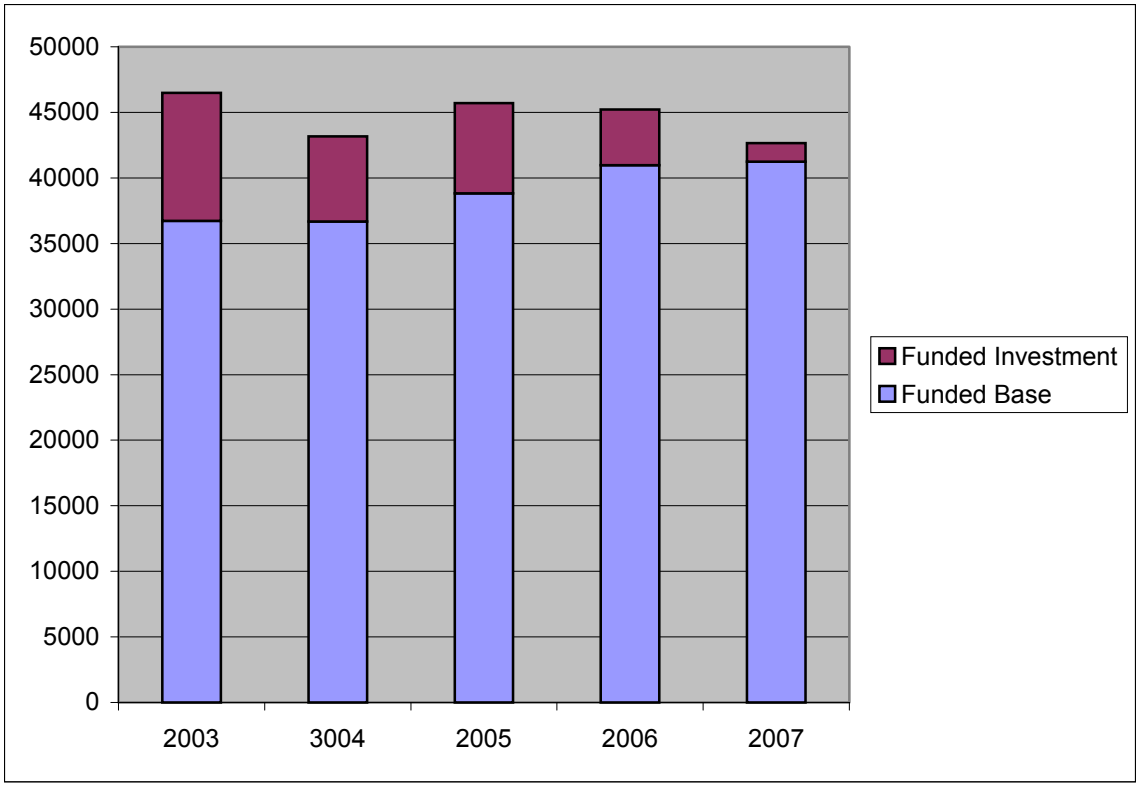


Figure 5. Funded base allocations versus projected investments.

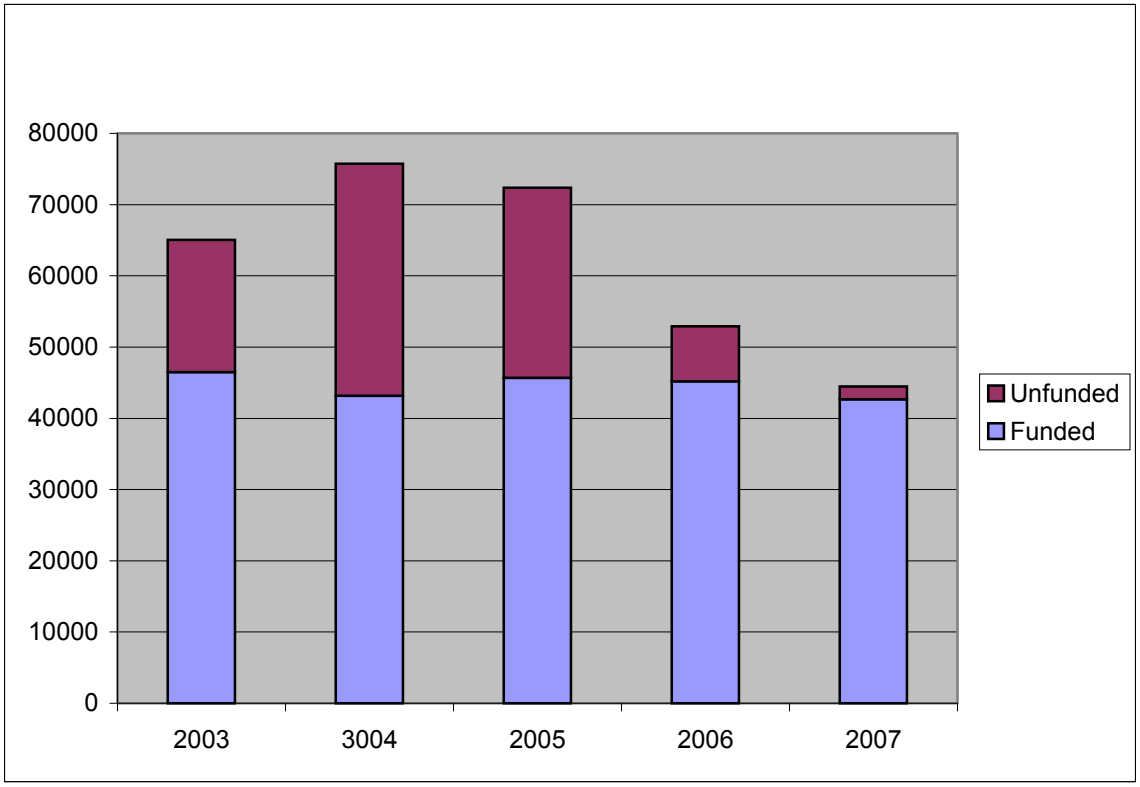


Figure 6. Funded versus unfunded projections.

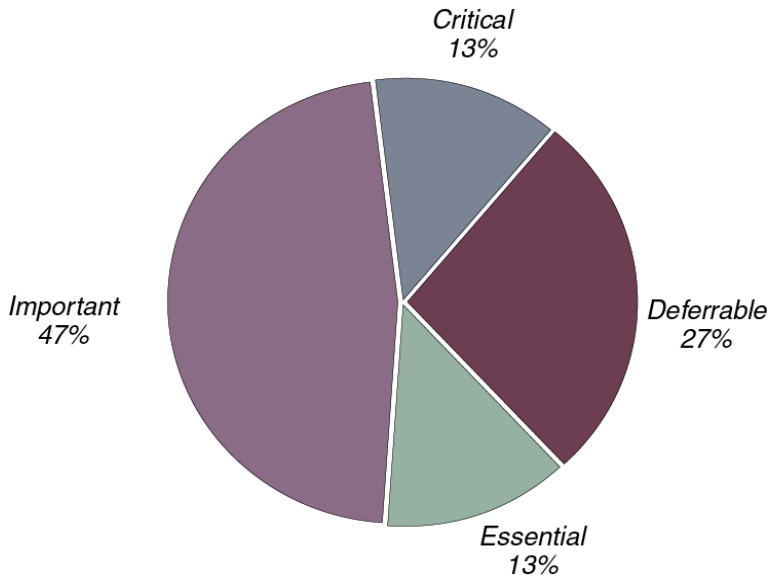


Figure 7. Action plans by essentiality rating.

Each action has been categorized by essentiality. Below are applicable definitions:

Essential: Provides support to a function that cannot be stopped, such as one whose failure would place INEEL or ICP employees or the public in immediate, life-threatening danger. An item is also essential if it provides primary support to such a function.

Critical: Provides support to a capability that must be back online within 5 days should it be halted.

Important: Provides support to a function that must be back online within a 30-day period.

Deferrable: Provides support to a function for which there are no identified minimum delay or impact criteria.

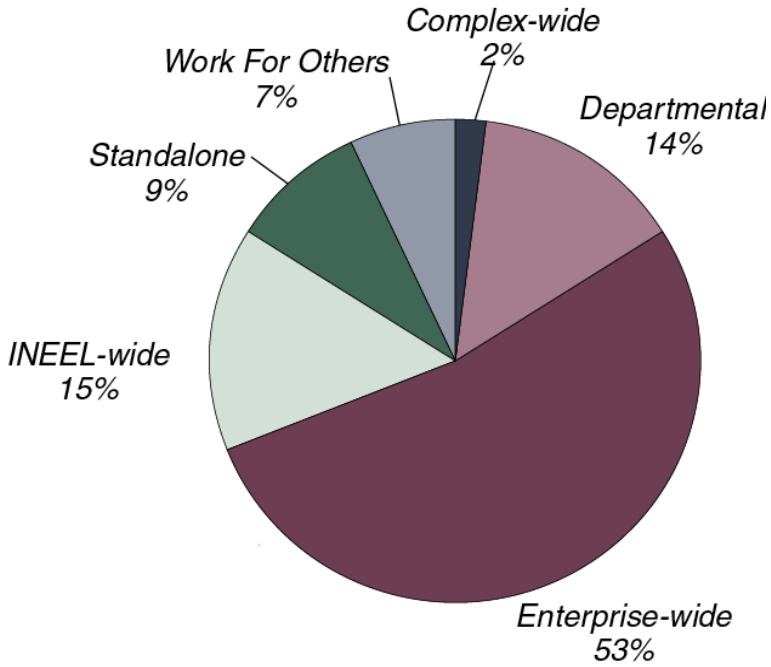


Figure 8. Scope of use.

The following definitions were used to define the scope of use for the action plans:

Enterprise wide: A collection of user software and/or technical components used by multiple directorate-level organizations across the INEEL and ICP. An enterprise designation for an initiative/system/application is determined by assessing how broadly it is used or made available, not by its importance or risk-based priority.

Departmental: Multiple employees in a department use the system/application, data, or hardware.

Stand-alone: Primarily one employee uses the system/application, data, or hardware.

I**NEEL-wide:** Any site contractor uses the system/application, data, or hardware throughout the INEEL.

Complex wide: Multiple DOE sites use the system/application, data, or hardware.