

Guides: The Foundations

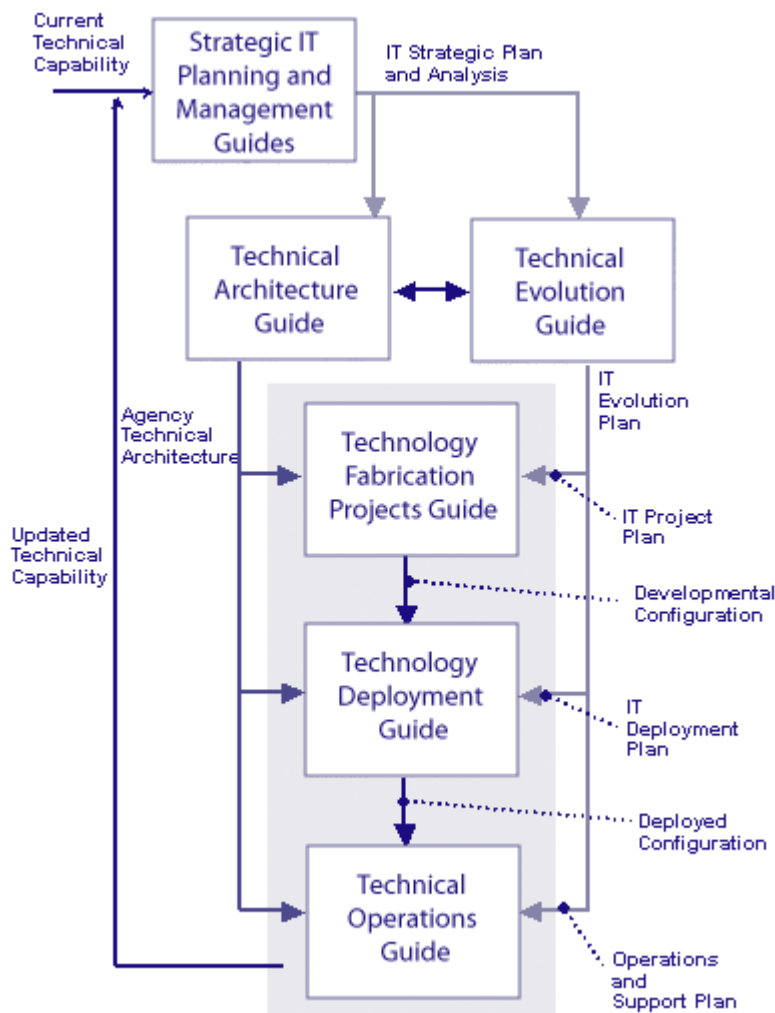
Foundations establish the context for understanding, using, and applying the [IT Planning and Management Guides](#) consistently in different situations.

Included are:

- [Organization of the Guides](#) - Describes the structure of the IT Planning and Management Guides and their interrelationships.
- [Key Principles and Concepts](#) - Describes the essential elements of the guides and associated resources. Principles and Concepts explain the reasons that certain approaches are suggested.
- [Application Guidelines](#) - There is no single path to success in developing a system. Each situation has its own unique challenges. Application Guidelines help you use the IT Planning and Management Guides in your environment.

Organization of the IT Planning and Management Guides

The IT Planning and Management Guides are composed of a set of hyperlinked documents. Each document describes critical IT management or engineering activities that should be mastered. The individual guides and their relationships are shown in the diagram. Each guide can be applied separately, or used with the other guides as the basis of a life-cycle process. Together, the guides will assist the IT Division in improving the capability of the technology used by the HS Agency. The guides are designed to incorporate key principles essential to survival in a changing IT world.



- [The Guide for the Strategic IT Planning and Management](#) describes the key activities involved in developing a [HS IT Strategic Plan](#). This plan

allows the [HS IT Division](#) to effectively respond to the needs of the HS Agency, within its dynamic business and technological environments.

- [The Guide to Develop and Maintain the Technical Architecture](#) describes the key activities that establish the [HS Agency Technical Architecture](#). This is an HS Agency-wide blueprint and accompanying technical guidelines to manage integration and interoperability of the HS Agency IT. This architecture guides the technical management and engineering practices to fabricate, deploy, and operate IT within the HS Agency.
- [The Guide for Planning and Managing the Technical Evolution](#) describes the key activities that create and maintain an [IT Evolution Plan](#) for [HS IT projects](#). This integrated plan defines and coordinates IT projects that fabricate, deploy, and operate the IT within the HS Agency.
- [The Guide for Technology Fabrication Projects](#) describes the key activities for constructing needed technology solutions. These projects may create new solutions or modify and adapt existing solutions to meet HS Agency-specific requirements. A project may custom develop or use off-the-shelf solutions. Projects also include maintenance activities and migrate existing IT assets, when necessary. Project management decisions are coordinated across projects by the IT Evolution Plan. Technical decisions are coordinated through the HS Agency Technical Architecture.
- [The Guide for Technology Deployment](#) describes the key activities for performing the orderly transition of the fabricated solutions to use. Deployment activities include the installation and configuration of the applications on new or existing technology platforms, as well as the movement of operational data to a new technology base. Like the fabrication projects, these activities are coordinated through the appropriate portion of the IT Evolution Plan and the HS Agency Technical Architecture.
- [The Guide for Technical Operations](#) describes the key activities that are necessary to keep deployed applications and platforms operating efficiently. These activities include: gathering information on the state of the existing IT; administering to the operational needs of the technology (e.g., data, user, security, application); and collecting and analyzing data on defects, performance, use, and improvement opportunities. This information can guide further strategic management, Technical Architecture, planning and management decisions. Like the fabrication projects, the activities are coordinated through the appropriate portion of the IT Evolution Plan and the HS Agency Technical Architecture.

IT Planning and Management Guides Web Structure

Each Guide is organized as a *virtual document*, a set of web pages, as shown in the [diagram](#). Each guide is based on a *process framework* - a

set of interconnected activities, roles, and artifacts. Each guide corresponds to a highest-level function.

- Activities - Key development or management tasks that must be accomplished. They are decomposed to describe appropriate levels of work. The lowest level contains a description of the fundamental activities to be performed, the individuals or groups that perform them, and the artifacts to be used and produced. The number of levels needed to decompose processes to an elementary level varies,
- Artifacts - General categories of information and specific work products that individuals performing activities in the guides use or produce. Their definitions are consolidated on the [Consolidated Artifact Definitions](#) page,
- Roles - Individuals or groups that have responsibility for participating in the activities described in the guides. Role definitions are consolidated on the [Consolidated Role Definitions](#) page.

Each guide addresses a different function within the overall IT life cycle. When necessary, additional guidance and background information are provided within each guide. This helps the user of the guide understand the guide-specific principles or concepts, and complements the overarching foundations that apply across the guides.

The guides describe what needs to be done, who does it, and what they use or produce. The guides build background knowledge, as necessary, to perform the key activities described in each guide. To perform activities, [resources](#) are made available. These resources represent “how” - a way to acquire further knowledge or useful tools, methods, templates, examples, and other items to perform the activities described in the guides. Resources can be used across the guides or be specific to a guide. Resources are meant to be shared across the States, organized according to the process framework in the guides. This approach provides the ability to share lessons learned and leverage experiences. Resources are virtual documents; they can reside anywhere on the Web, such as a State's Web server.

Migration and Long-Lived Systems: The Key Principles

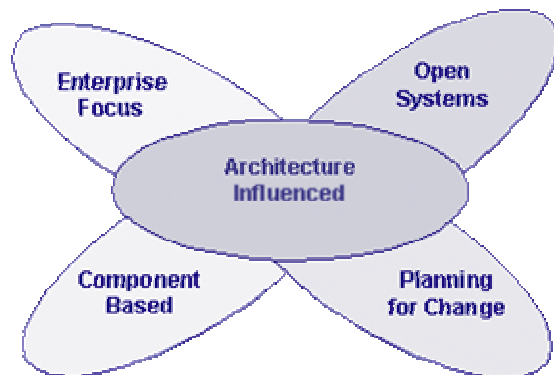
Achieving the ability to continually meet business needs means mastering the ability to *migrate*.

In the IT world, migration is the movement of an application system to a new environment, motivated by a need to serve the business of the Enterprise more effectively. Migration helps protect the current investment in critical data and functionality and establishes a path for growth. When carefully managed, migration provides an opportunity for the Enterprise to better position itself for the future, not just to react to a crisis of obsolescence.

An Enterprise can accomplish a migration in one or more steps. The size and number of steps depend on the amount of change the Enterprise's business and automated systems must undergo and the need to rest and recover along the way. As in nature, this movement is never-ending. Migration is [adaptive](#) maintenance, sometimes chosen as a path of last resort when there is a large gap between what the business needs and what IT can deliver. This happens when maintenance actions to remove defects ([corrective](#) maintenance) or improve performance ([perfective](#) maintenance) are no longer effective in meeting business needs.

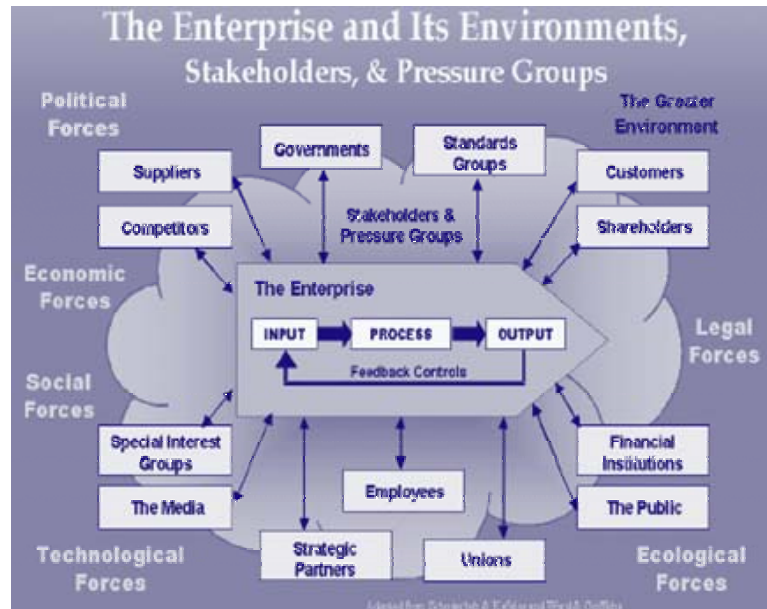
To facilitate the decisions that need to be made, the IT Planning and Management Guides are based on a [process framework](#). This framework is intended to allow the HS Agency to achieve two objectives:

- Reinvigorate and extend the useful life span of existing [AIS's](#). This allows the HS Agency to retain the business value of existing IT investments and recast them into more flexible and adaptable structures.
- Establish a basis upon which to address the larger, more compelling challenge: co-evolution. The new and existing IT applications and supporting infrastructure change in harmony with the rapidly changing business and technology environments, a constant mix of the old with the new.



To address these objectives, the framework includes the following five principles:

- [Enterprise Focus](#)
- [Open-System, Standards-Based Development](#)
- [Component-Based, Distributed Computing Environment](#)
- [Planning for Change](#)
- [Architecture-Influenced Decisions](#)



Enterprise Focus

Long-lived systems require that IT design and implementation decisions be made in a broad context, considering the entire [Enterprise](#). Consequences of decisions must be assessed against long-term goals, special interests, and currently available resources. Appropriate tradeoffs are made within this context. For flexibility in making these tradeoffs and minimization of imposed constraints, the scope should be as large as possible.

The Enterprise figure depicts the notion of an Enterprise and its boundaries. This Enterprise scope establishes the boundary where the Enterprise has control over its technology and business decisions. This is reflected in the Enterprise's business and IT delivery and support processes. The boundary helps to identify the immediate and wider environments of interest in which the Enterprise participates. The boundary is used to identify the [roles](#) that participate directly or indirectly in the Enterprise processes. Within the Enterprise, alignment

is necessary between the Enterprise's overall business strategy and the IT strategy. The IT Planning and Management Guides assume the HS Agency as the Enterprise scope, which may include several programs (e.g., TANF, CSE, Food Stamps, Medicaid, Child Welfare, and Child Care) and their respective IT Divisions. The individuals and groups associated with the environments are described in the [role model](#).

Open-System, Standards-Based Development

An [Open system](#) approach unifies technical and business strategy to establish a rational structure in which to make key AIS design and product purchasing decisions. The primary goal is to promote [interoperability](#) and [integration](#) of technology within and external to the HS Agency. [Portability](#) may also be a significant design goal, particularly for portions of the applications that interact with the user. This may be driven by innovation in the types of user interface devices, such as [information appliances](#), and wireless or mobile computing.

Open system concepts guide long-term evolution of technology in use by the HS Agency. Nonproprietary, commercially supported specifications and standards with broad industry support are the basis of defining each HS Agency's unique technology interfaces, formats, protocols, products, practices, and tools.

The principle of Enterprise standardization is similar to that stated in [RFC 2026 Bradner 1996](#)). Standardization is not a set of absolute constraints. It represents guidelines that can be adapted by [IT projects](#), under control of the HS Agency architects, to manage project IT life-cycle costs, deployment schedule, and performance tradeoffs. Standards are usually selected (see [profile](#)) to implement a [TRM](#) appropriate for the HS Agency's business-technology environment.

Component-Based, Distributed Computing Environment

Monolithic applications, statically configured and linked, are giving way to highly distributed, loosely-coupled applications based on technologies such as [COM+](#), [J2EE](#), and [CORBA](#) Applications and their constituent parts are considered reusable resources that, once introduced into the run-time environment, can be used in novel ways to compose additional applications.

AIS's built with these techniques are capable of exhibiting the [scalability](#) and malleability needed to adapt in a rapidly changing world. [Components](#) may provide general services, be application-specific, or support specific vertical markets. They can be developed in-house, purchased, or leased as a [Web service](#).

Planning for Change

A rapid rate of change in the business and technology environments is a compelling reason to consider not only satisfying current needs as quickly as possible but anticipating future needs and changes. IT planning decisions must be influenced by an understanding of trends in the HS Agency business and technological environments. Uncertainty related to future business and technology factors will influence approaches used to select, adapt, develop, and use technology. Technology decisions made today should not severely limit future choices.

Planning for change affects and interacts with the other principles. For example, the architects may establish interfaces to isolate and abstract applications on some computer systems, allowing them to be replaced in the future with limited impact (e.g., wrappers). The scope of integration and interoperability can likewise be established to give the HS Agency influence over decisions before they become levied as constraints, such as working with [partner organizations](#) on common network protocols or message formats. The considerations and barriers described in the WRIT report ([ACF 2000](#) provide information on common risks and aversion strategies for the TANF program.

Architecture-Influenced Decisions

HS Agency strategic direction provides the basis for the technology vision. Decisions on the future use of existing IT resources provide the context. Those decisions reflect the need to keep, discard, revamp, or reengineer the existing IT inventory, as well as to add new or modified applications and capabilities. This combination of the technology vision and resource decisions is used to identify the basic technology elements that the HS Agency must include in its inventory. These elements and their relationship to one another constitute the Agency's Technical Architecture. Documentation to describe the elements and the processes by which they are produced and used then guides the individual project and application system technical decisions - throughout their complete life cycle. The four foundational principles

then guide the generation of this *technical blueprint*, which controls the evolution of the technology and technology-related entities.

Application of the IT Planning and Management Guides

The [IT Planning and Management Guides](#) establish a framework for an integrated IT planning and delivery process for a typical State HS Agency (see figure below). The framework describes the essential activities, artifacts, and roles that are necessary to evolve automated systems that are in service for a long time. Because each State's situation is unique, the framework can be adjusted to fit each context in which it is applied. The organization of information contained in the guides can be found under [Organization of the IT Planning and Management Guides](#).

Evolving the capability of the existing systems is an iterative and continuous process, where HS Agency technical infrastructure and supported applications co-evolve with HS Agency needs. The strategic management, architecture definition, and IT planning areas focus on HS Agency-wide management and technical decision making, coordination, and control practices. The technology fabrication and deployment areas address the creation and fielding of specific technology solutions within the context established by the first three process areas. Technical operations considers those practices that allow for effective operation of the IT infrastructure and applications.

Usage Model

The model figure depicts the overall approach to apply and improve the process framework. The process descriptions and [resources](#) that make up the IT Planning and Management Guides, along with other [NHSITRC](#) assets (e.g., promising practices and State System Profiles) are used to define a state-specific process. The state-specific process will address each State's unique environment, technology, organization, and other factors. The State-specific (i.e., customized) descriptions become the basis for training and use within each State. State-specific work products and job aids, as well as lessons learned from both the customization and use of the framework-derived processes, can be fed back into the IT Planning and Management Guide resources. This feedback is used to improve the framework and add additional resources to be further shared among the States.

Customization

The guides are not meant to replace well-established management and engineering practices, but rather to augment them. Care is necessary to integrate the approach from the guides with existing HS Agency

culture and conventions. Consider the following for each context in which the IT Planning and Management Guides are applied:

- [Interpreting the concepts and principles](#)
- [Customizing the roles](#)
- [Customizing the artifacts](#)
- [Customizing the activities](#)

Interpreting the concepts and principles

The integrated approach presented in the IT Planning and Management Guides is based on a fundamental set of concepts and accompanying [principles](#). Before considering any customization of the process descriptions, the concepts and principles should be reviewed by those intending to apply the process (e.g., the [Strategy Team](#) or the [Architecture Team](#)). Some of the concepts and principles are fundamental and apply to all of the guides. Others are basic to specific guidance (e.g., see [Background - Strategic IT Planning and Management](#)). Those customizing the guidance should consider the following issues:

- What does the concept or principle mean within the expected usage context and how important is it? For example, the need for interoperability embodied in the Open Systems principle may be essential when dealing with systems with which the HS Agency interacts.
- What systemic, automated system planning, development, delivery, or maintenance issues seem to be the most significant to address in the HS Agency? How would the customized process help identify and address these issues? For example, component-based design and development approaches can help make applications modular and more easily modified. This may reduce cycle time for changes, if that is a high-priority issue the HS Agency must address.
- Who will have responsibility to customize the approach, tailoring it to the specific organizational culture? Individuals assuming key roles in the process are initial candidates.
- Who will support and have oversight of the state-specific processes, supporting process training, and application and use?

Customizing the roles

Roles represent the individuals or groups that directly or indirectly perform the activities identified in the processes (see [Role Models](#)) . Each State will have to associate these generic roles with one or more individuals in their context. Consider the following items when performing this mapping:

- Clearly identify the boundary for application of the guidance. This is necessary to establish the context for environmental scanning during the the [Plan Course of Action](#) activities .
- Review the role descriptions and their responsibilities. Identify individuals in the State who have similar responsibilities to the role model. Map the roles to those individuals.
- When a responsibility in the role model does not translate to an individual or group in the current organization, you may need to create a new organizational role. For example, if no one has explicit responsibility for the Technical Architecture, then assign that responsibility to an individual.
- Each role and associated responsibilities can be mapped to one or more individuals.
- An individual can have more than one role.
- For some key roles, such as the Architecture Team or [IT Project Manager](#), a mechanism to formally grant authority and responsibilities may be necessary, such as a charter.
- Add individuals to the role model if they are key to the way the organization plans and manages IT resources.
- Remove roles only after careful consideration that the responsibility is not needed in a particular context. For example, if you determine that contractors will not be used, then you can remove the role representing contractors.
- Consult the activity descriptions in the process framework for details on how the roles interact and what individuals taking on those roles are expected to know and do.
- Training or orientation may be necessary to ensure that individuals understand their roles and have the prerequisite skills and knowledge.

Customizing the artifacts

The IT Planning and Management Guides describe two types of information [artifacts](#): formal products that have suggested content (e.g., the [HS IT Strategic Plan](#) and placeholders for general categories of information that are usually context-dependent (e.g., [External Conditions](#))). Consider these types of artifacts when customizing the guides.

Formal products represent key work items that individuals produce or use. Activities in the technical guide describe how the work product and its content are used or manipulated. Templates or examples provide the suggested content. These templates can be adapted to the needs of the states.

General categories of information will vary for each context in which the processes are executed. This information is usually embodied in items found in the HS internal or external environment. These items can be recorded in any physical form such as memos, informal meeting notes, conversations, presentations, plans, laws or mandates, or formal documentation. Those items should be collected and identified as inputs into the activities that use them.

Customizing the activities

The activities described in the process framework describe the key actions that should be performed. Roles and artifacts interact within these activities, which include:

- **Creating** or **transforming** a product, such as producing or updating a plan.
- **Analyzing** a situation to provide information for a subsequent activity, such as an analysis of the external operating environment.
- **Reviewing** and **approving** the result of an activity, such as reviewing and endorsing the Technical Architecture implemented by an IT project.
- **Monitoring** activity results and making decisions, exercising control over a set of activities. Activities such as formal or in-process reviews can be used.
- **Providing** resources to the activities, such as training individuals, providing automated tools, and office facilities.

You should customize the activity descriptions to reflect how the activities are to be performed within each context. When customizing each set of activities, consider the following:

- The activities described in the guides represent “key” actions. It may be necessary to add, modify, or drop an activity from the list, depending on the circumstances.
- Reference the resources cataloged for the activities and compare them against current organizational practices. Determine how to best use the resources, or substitute another means of achieving the activity's purpose.
- Identify the required skill levels and/or training needs of individuals fulfilling the roles based on the role descriptions provided.
- If the artifacts used or produced by the activities are customized, you may need to adjust the dependencies between the activities (i.e., inputs and outputs).
- To help with managing the activities, identify objective criteria to determine when activities should begin and whether activities are completed.