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Park Office
Center

3101 Park
Center Drive
Alexandria
VA 22302

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SUBJECT: Child Nutrition Information Technology Solutions: Best Practices for
                    Defining the Child Nutrition Programs System Replacement or Upgrade

TO: Regional Directors
                    Special Nutrition Programs
                    All Regions

                    State Directors
                    Child Nutrition Programs
                    All States

This memorandum is the second in a series of memoranda to support State agencies administering the Child Nutrition Programs as they enhance or build Information Technology (IT) solutions for their State agency operations. The best practices series will provide State agencies with practical direction on Child Nutrition IT system planning, procurement, project management, data ownership and intellectual property, and testing.

In FNS memorandum SP 18-2019; CACFP 06-2019; SFSP 05-2019, *Child Nutrition Information Technology Solutions: Guidance for the Initial Phase of Child Nutrition Programs System Replacement and Upgrade Projects*, FNS provided best practices on evaluation factors of a State's current Child Nutrition (CN) IT solution, factors to consider when selecting an IT solution, and available IT solution options for the State's CN IT system. This memorandum will provide best practices on conducting a feasibility study and features to consider when developing a proposed IT system project plan.

The attached document relies heavily on information incorporated in *FNS Handbook 901: The Advance Planning Document Process: A State Systems Guide to America's Food Programs* which was developed to assist SAs administering the Supplemental Nutrition Assistance Program (SNAP) and Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) navigate through a formal, mandatory planning process for IT projects. Although the information contained in this document is not mandatory for Child Nutrition Programs, the Handbook 901 contains a multitude of best practices and procurement information that is also applicable to Child Nutrition agencies.

For more in-depth information, you are encouraged to reference the Handbook 901 at: [Link to FNS Handbook 901](#).

State agencies with questions may contact the appropriate FNS Regional Office.

Original Signed

Sarah E. Smith-Holmes
Director
Program Monitoring and Operational Support Division

Attachments

<u>**Defining the Child Nutrition Information Technology Project**</u>

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Introduction

Once it has been identified that a need exists to build or enhance your State's Child Nutrition (CN) information technology (IT) system it is time to consider the feasibility of a CN IT system project and put pen to paper in defining the project. In defining the project, you are setting the framework for a successful project that aligns the State's CN Programs current and future business needs with your IT system solution.

With any project, a CN IT system project has the best chance of successful implementation when thorough planning is conducted. Comprehensive planning helps to identify the State's CN IT system project's purpose, goals, and constraints while staying aligned with the determined budget, scope, and timeline during the life of the project.

In this document we will discuss aspects of a feasibility study (Part I), as well as features to consider in a proposed IT system project plan (Part II).

Part I: Feasibility Study

When considering the feasibility of a CN IT system project, it's a good idea to conduct a feasibility study. A feasibility study helps the State agency analyze, compare, and make sound

decisions on whether or not the proposed solution is realistic or practical. It is a preliminary study that determines whether the project being considered is technically, financially, and operationally viable. Using the current system as a baseline, a feasibility study provides a comparative analysis of the alternatives for hardware, software, and program functionality that best meets the State's needs. In addition, the feasibility study can be used to provide senior State leadership in-depth information about the selected option and assists in garnering support for the project to progress.

Some states may have the ability to conduct a very comprehensive/in-depth feasibility study, while others may not. Regardless, making the feasibility study scalable to the State's available resources will assist in gaining a clearer picture of what the State is hoping to achieve with their IT system project. To assist CN State agencies, FNS offers planning grants via the Administrative Review and Training (ART) Grants and CN Technology Innovation Grants (TIGs), which can be used to conduct a feasibility study.

A feasibility study includes the following activities:
- Business analysis;
- Requirements analysis;
- Alternatives analysis; and
- Cost benefit analysis.

A feasibility study identifies the approaches that can be used to meet the project's objectives. The purpose of the feasibility study is to determine whether it is feasible to build or purchase the State's future CN IT system based on the specific State agency's circumstances such as budget and schedule. The outcome of the feasibility study should identify what system(s) might be functionally, technically, and operationally feasible for the State based on current circumstances and needs. Based on the analysis, there may be more than one feasible solution. It may also be possible that none of the options are feasible, at which point the State agency should halt the process and reevaluate the project's direction. Section 5.3 of the FNS Handbook 901 provides more information on conducting a feasibility study and the analyses described below.

To begin a feasibility study, State agencies should develop a brief description of the present system. You can begin by asking the project team:
- How does the current system meet and not meet the functional and operational requirements of the program(s) (i.e., is the system compliant with FNS regulations and policies)?
- Is the present system integrated with another larger State system?
- What Federal, State, and local programs will the new system service?
- Who uses the system? What outputs are expected?
- What are the roles of other offices that will be involved in the development of the technology project (e.g., IT, finance, State Attorney General's office, other health or human service programs)?

After setting the baseline for the present system, the project team may build a management summary of what is needed for their new system. This summary will identify the primary project objectives. Some examples of these type of objectives may include:

- Accessibility to an on-line, regulatory compliant, Local agency's annual CN application;
- Ability to track professional development training and certifications;
- Increase in State agency staffs' productivity and efficiency through streamlined business processes;
- Improvement of IT services through automation of State agency data reporting to FNS; and/or
- Improvement in tracking Program compliance.

Before considering the best system option for the State, the State agency must know what capabilities and functions the system needs to provide; a great way to start defining these functions is with a business analysis.

Business Analysis

Completing a business analysis prior to determining the requirements analysis ensures the system design is not based on outdated, inefficient, ineffective, or inappropriate business processes. A business analysis involves assessing the business needs of the State agency (or gaps between the current state of operations and its goals), and will serve as the basis for determining and arriving at a solution that best meets the State's needs. Conducting a business analysis is the process of breaking down the State agency's structure, policies, and operations, to clearly define solutions that enable the State agency to achieve its goals. It involves understanding how the State's functions to accomplish their purposes and defining the capabilities required to provide products and services to external stakeholders. In most cases, however, business analysis is performed to define and validate solutions.

A business analysis includes:
- The definition of the State agency's organizational goals and how those goals connect to specific objectives;
- Determining the courses of action that a State agency has to undertake to achieve those goals and objectives; and
- Defining how the various State agency departments and stakeholders within and outside of the State agency interact.

All of these focus on understanding the business in order to identify needs, problems, or issues. A business analysis is performed by business analysts who must analyze and synthesize information provided by a large number of people that interact with the business such as customers, staff, IT professionals, and executives. The business analyst is responsible for eliciting the actual needs of stakeholders, not simply their expressed desires. In many cases, the business analyst will also work to facilitate communication between different entities that will benefit from the chosen solution (i.e. program department to the financial department, local agency to state agency, etc.). In particular, business analysts often play a central role in aligning the needs of business units with the capabilities delivered by IT and may serve as a "translator" between those groups. Although there are external business analysts that can be contracted with, State agencies can also work internally and identify individual(s) staff members to conduct an analysis within their IT, procurement, and program departments.

Business analysts use various methods or processes to achieve the overarching purpose of business analysis. Some of these may include:

- **Business Needs Assessment –** evaluates doctrine, policies, organization, leadership, personnel, training, leadership, personnel, and facilities within the State agency to assess how each of these constraints, supports or promotes the needed capability for both the "as-is" and the "to-be" conditions.

- **Business Process Analysis –** captures various business operations classified into processes, or series of related tasks, where observation revolves around the specific ways in which these processes happen along a lifecycle from beginning to end. It determines how a business process works and how individuals from different groups work together to achieve a business goal.

- **Business Process Reengineering and Improvement –** involves the redesign of core business processes to achieve dramatic improvements in productivity, time to complete activities, and quality. It is ideally about improving business processes by making them more effective, efficient, and economical.

Business analysis will address how State agency operations are being conducted and assist the State in identifying the most efficient and effective ways to make improvements. The State agency can use this information to build the project requirements, which we discuss next.

Requirements Analysis

After the initial status of the current CN IT system is assessed and the primary project objectives are defined for the new solution, the project team should carefully define the criteria or requirements for the new CN IT system. Including input from various stakeholders (e.g., the end user, project sponsor, subject matter experts, local agencies) on how the new CN IT system solution should operate will help in developing the system's requirements. Well-defined functional requirements defines the scope of the technical capabilities and offers a clear vision of the features and performance required for the new CN IT system. It is these functional requirements that will be used to measure the "fit" and feasibility of each of the alternative solutions. The functional requirements are a list of commands with inputs, outputs, and processes for the required functionality. Defining functional requirements also provides a measure for the project team to test, and assess the quality and acceptance of the deliverables. State agencies are urged to ensure functional requirements are kept up to date as the project progresses, noting decisions or changes to requirements.

FNS released two separate documents offering model functional requirements for the school meal programs. The *Model Functional Requirements for State and Local School Meal Programs Information System*, which can be found on the FNS website at: https://www.fns.usda.gov/school-meals/guidance-and-resources.

As described in FNS' *Model Functional Requirements for State and Local School Meal Programs Information Systems*, the purpose of defining functional requirements is to specify "what" the system should do without specifying "how" the functionalities will be performed. The IT design (or system design requirements) is what typically addresses the "how" and any other detail regarding what software, hardware, or other technical specification might be required as part of a State CN IT system.

The project team's defined functional requirements can be incorporated into the development of a Request for Proposal and/or serve as guidance to inform IT staff in the development or modification of a CN IT system. Functional requirements include:

- **Mandatory** – absolute – functionality encompassing Federal and State requirements. This list should not take short-cuts, but be realistic about what is mandatory; and

- A list of "**nice to have**" functionality that may be used as trade-offs when it comes to selecting a best-fit alternative. Or, this list can become the enhancement list for future projects. In FNS' *Model Functional Requirements for State and Local School Meal Programs Information Systems* documents these are known as "best practices."

Functional requirements would include:
- Functional Requirement
- Inputs
- Outputs
- Processes

For example:

Functional Requirement	Inputs	Outputs	Processes
System shall track net cash resources of each SFA's nonprofit school food service account to ensure net cash resources do not exceed three months' average expenditures.	- Net cash resources of each SFA's nonprofit food service account - Average monthly expenditures of each SFA	Flag if net cash resource exceed three month's average expenditures	Comparison of net cash resources to three month's average expenditures

Again, the *Model Functional Requirements for State and Local School Meal Programs Information Systems* can be found on the FNS website at: https://www.fns.usda.gov/school-meals/guidance-and-resources. You can access this document for more examples on mandatory and best practice functional requirements for an IT system.

Alternatives Analysis

The alternatives analysis, of a feasibility study, identifies the most likely candidates that can satisfy the requirements for the solution. Once a list of alternatives has been established that meet the functional requirements, they must be evaluated for technical, operational, and functional

suitability. Alternatives that do not satisfy these needs are eliminated. Finally, the remaining alternatives are compared based on the cost to decide which alternatives provide the most benefits.

What are the alternatives? They can be anything the State agency believes is practical for meeting their needs. Comparisons can be made on the range of potential solutions. Examples can include: enhancing or modifying the current systems; transferring and modifying another State's system or a component of the other State's system; incorporating COTS solutions; and/or initiating custom development when more cost-effective and timely solutions do not exist.

Gap analysis is the central activity of completing the comparison of alternatives. Each alternative needs to have a gap analysis performed to compare its existing functionality with the State's required functionality. Viable alternatives should be those that best fit the scope and requirements of the desired outcome. Cost control is always a key objective. When considering COTS or a system transfer, minimizing the number of changes or customizations will reduce costs. This can dictate the best fit for the State, the budget, and the schedule. The gap analysis is extremely helpful to determine missing or weak functionality in any solutions being considered. This also goes for the technical requirements of the system.

Please go to the end of this memo for a template that can be used for the alternatives analysis. For more tips to assist a State agency in developing a thorough alternatives analysis, review Chapter 5 of Handbook 901, in particular, section 5.3.2.

Cost-Benefit Analysis

If a State agency is planning a large-scale software development project, conducting a cost-benefit analysis is a valuable exercise in finding the best system for the State's needs and finances. A cost-benefit analysis determines which system alternative, as discussed above, will provide the greatest benefits relative to its costs. This analysis provides, by funding source, the estimated cost of developing and operating each alternative found to be viable in the feasibility study.

The cost-benefit analysis should:
- Describe cost factors that may influence the development, design, implementation and continued operation and maintenance of the proposed system(s);
- Estimate the total developmental cost and annual operating costs;
- Identify funding sources for these expenses; and
- Determine which alternative will provide the greatest benefits relative to costs.

The cost-benefit analysis identifies the tangible and intangible benefits, costs, and the return on investment. This decision-making tool helps to further narrow the possibilities and arrive at the best solution for the State's needs, budget, and circumstances. Please reference the end of this memorandum for a template that can be used for a cost-benefit analysis. For additional information about cost-benefit analysis, FNS encourages State agencies to review Chapter 5 of Handbook 901, in particular, section 5.3.3.

Part II: Proposed IT System Project Plan

After conducting a feasibility study, which includes business, requirements, alternatives, and cost-benefit analyses, the project team should develop a proposed CN IT system project plan. This proposed CN IT plan will eventually transform into a Project Management Plan once the plan is approved by the project sponsor, project manager, and project team. A Project Management Plan should describe how the project will be accomplished, monitored and controlled. More on the Project Management Plan will be discussed in subsequent documents in this series of memoranda.

When developing the proposed IT system project plan, the project team should consider the following organizational, technical and resource features within the State agency:

Organizational Considerations

- **Organizational Effects**: Describe any organizational, personnel, and skill requirements that will change and how those changes will be implemented in the State agency (i.e. change in business process, training, etc.). This should include any potential program changes that need to be considered for CN Programs. An example would be ensuring that the State agency staff have the proper skills to create CN-related reports using a new database system. In addition, as the new system is being built, considerations about staff and equipment resources required to develop, convert, implement, and test the new system(s) should be included. Do not forget, the plan should also identify the continued support for current system operations.

- **Operational Impacts**: The State agency should identify how this particular IT development process will take into account the impact on operations, this may include considerations for the following:
  o User operating procedures – State agency and local agency;
  o Data retention requirements and information storage and retrieval procedures;
  o System failure consequences and recovery procedures; and/or
  o Plans for system support throughout the system's life. What potential upgrades will be needed (e.g., due to regulations changes, updates to FNS or State report forms and/or data requirements)? Will there be different software versions that will need to be purchased annually?

- **Fiscal Impacts**: Describe cost factors that may influence the development, design, and continued operation of the proposed system(s). Identify the estimated total developmental cost and estimated annual operating costs and how the State agency intends to pay for these expenses.

<u>Technical Considerations</u>

- **Equipment Effects:** Describe how new equipment requirements and changes to currently available equipment will be met. For example, describe how the current hardware, telecommunications, and/or network services have the capacity to meet new system requirements.

- **Software Effects**: Describe any required additions or modifications needed to existing applications and support software to adapt them to the proposed system(s) and explain how such needs will be met.

- **Technical Approach:** There are a variety of approaches to system development methodology (e.g., waterfall, iterative, spiral, agile, etc.). The State agency should describe the technical approach the project intends to use when building their system and which system development methodology it prefers or used as a State agency standard. The technical approach might be based on vendor proposals if the project is going to be contracted, or it may be based on other factors, such as existing State technical standards. Technical approach planning is primarily a decision-making process based on the information accumulated during the feasibility study.

- **Data Conversion and Migration:** Describe any data conversion activities that will be necessitated by the adoption of the proposed new system. Data conversion is the transformation of computer data from one format to another. Data migration is the process of transferring data between storage types, formats, or computer systems. It is a key consideration for any system implementation, upgrade, or consolidation.

  Data conversion and migration are a vital part of systems planning. Often this activity is not given the attention it needs, leading to an oversimplified and underfunded approach. Likewise, many new systems fail to meet expectations due to flaws in the conversion and migration processes because the data was not adequately validated for the intended task. Data conversion and migration should be planned with the same diligence as other systems planning activities like requirements definition and cost-benefit analysis. Understanding the hidden challenges during systems planning is more likely to deliver accurate data for supporting business needs. It also mitigates risks of delays, budget overruns, and poor data integrity.

- **System Capacity**: Capacity planning for the proposed CN IT system solution determines the overall size, performance, and resilience of an information system. It relates the State agency's organizational needs to the system's configurations, to establish a computer installation that adequately meets projections for growth. Because technology and programs are changing so rapidly, capacity planning is not an exact science. However, various methodologies can be applied to help determine the workload, performance, and costs of the system. Additional information on capacity planning can be found in Chapter 5 of the Handbook 901.

Resource Considerations

While defining your IT project plan, the State agency may consider seeking both informational and financial resources to assist with the planning process and refining project goals and deliverables. Remember, depending on the State agency IT capabilities, there are considerations that need to be made not only for the design, development, and implementation phase of the project; but also for maintenance and operations going forward.

Informational resources may include:
- Seeking feedback from and discussing the project parameters with peers in other State agencies that have developed a similar system and/or have similar demographics;
- Reviewing summaries of previous State grantees of the Administrative Review and Training (ART) Grants and CN Technology Innovation Grants (TIGs) are available on the FNS public website. Link to ART Grant summaries is https://www.fns.usda.gov/school-meals/method-ii-art-grants. Link to TIG summaries is https://www.fns.usda.gov/school-meals/fy-2017-technology-innovation-grant-summaries.
- Attending an industry conference (e.g., FNS' Child Nutrition Access & Accountability through Technology, or CNAAT, meetings) and/or reading materials about project management of IT systems;
- Reviewing the numerous resources materials for State agencies on project management of IT systems for the CN Programs via the FNS PartnerWeb.
- Discussing the project with end-users, whether State or local staff and talking about what aspects of their work would be impacted and/or enhanced by an improved system;
- Consulting FNS about program or policy feedback and the States' proposed IT system solution(s); and,
- Consulting with the State agency procurement staff about contracting constraints, guidelines, recommendations, and timelines impacting the proposed IT system solution(s). For example, does the State procurement office have a blanket IT contract that the CN IT project could take advantage of to procure for resources in a more expedited manner?

Financial resources may include:
- State Administrative Expense (SAE) funding: For CN State agencies, project expenses and ongoing operational expenses may be incorporated into the State's SAE budget. State agencies should assess their current SAE budget to determine how those funds could be allotted to the new system solution or project development and, as well as maintenance and operations expenses.
- Assessing FNS funding sources available for the proposed CN IT system solution. For example, the State agency Expense fund or grant funding opportunities such as:
  - Administrative Review and Training (ART) Grants;
  - CN Technology Innovation Grants (TIGs); and
  - Direct Certification Improvement Grants.
- Assessing other funding opportunities available to the State agency. For example:
  - Grant opportunities through non-profit organizations; and
  - State agency-specific funding opportunities for IT projects.

The two accompanying attachments to this document include:
- Attachment I – Alternative Analysis Template; and
- Attachment II – Cost Benefit Analysis Template.

The next memorandum in this series will focus specifically on project management principals.

Attachment I – Alternative Analysis Template

Justification: Based on your comparison and your evaluation criteria, how do the systems compare? Which one(s) merit further consideration of their costs and benefits? Why?

Requirement	SYSTEM NAME			
	Current System	Alternative 1	Alternative 2	Alternative 3
Objectives				
Requirements				
Assumptions and constraints				
Technical maturity of solution				
Compatibility of this system with state standards for hardware, architecture or environment				
Compatibility of this system with other necessary software or applications				

| Requirement | SYSTEM NAME | | | |
	Current System	Alternative 1	Alternative 2	Alternative 3
Organizational impacts of this system				
Facility/site impacts				
Operational impacts*				
Fiscal impacts**				
*(e.g., user operating procedures, data center procedures, source data management, data entry procedures, data retention requirements, plans for system support, archiving, etc.)				
**(e.g., cost factors related to the design, development, or transfer and operation of this system)				

Reference: A5 – Feasibility Study Worksheet in FNS Handbook 901

Attachment II – Cost Benefit Analysis Template

Part I: Costs

Directions: Use the following tables to identify and outline the nonrecurring (e.g., design, development, and implementation) and recurring (e.g., operations and maintenance) costs for the current system. Add a similar detailed narrative for each alternative system being considered before starting the Cost Benefit Analysis.

Nonrecurring Costs (Design, Development, Implementation)

Costs	Current System	Alternative 1	Alternate 2	Alternate 3
Capital Investment Costs				
Site And Facility				
IT Equipment				
Data Communications Equipment				
Environmental Conditioning Equipment (Central Processing Site)				
Security and Privacy Equipment				
Capital Investment Costs				
Database				

Nonrecurring Costs (Design, Development, Implementation)

Costs	Current System	Alternative 1	Alternate 2	Alternate 3
Other Nonrecurring Costs				
Database Preparation				
Data Conversion				
Training, Travel, And Other Personnel-Related Costs Of Development And Installation				
Contractual, Interagency, Or Other Direct Support Services				

Recurring Costs (M&O)

Costs	Current System	Proposed System	Alternate 1	Alternate 2
Software, Lease, Rentals, And Maintenance				
Data Communications Lease, Rentals, And Maintenance				

Recurring Costs (M&O)

Costs	Current System	Proposed System	Alternate 1	Alternate 2
Personnel Salaries And Fringe Benefits				
Equipment, Lease, Rentals, And Maintenance				
Personnel Salaries And Fringe Benefits				
Direct Support Services*				
Travel And Training				
Space Occupancy				
Supplies And Utilities				
Security And Privacy				

Recurring Costs (M&O)

Costs	Current System	Proposed System	Alternate 1	Alternate 2
Other Costs That Are Unique To Current System Or Alternative				
*(e.g., Help Desk, Central Processing Site Operations)				

Part II: Benefits

Directions: Similar to assessing costs, use the following table to identify the quantifiable and non-quantifiable benefits that could be attained through the development of each proposed alternative. Only 'Cost Reduction' and 'Value Enhancement' are categories of benefit. The rest are just costs as listed above.

Quantifiable Benefits

Benefits	Current System	Alternative 1	Alternate 2	Alternate 3
Cost Reduction*				
Value Enhancement**				
Equipment Lease, Rentals, and Maintenance				

Quantifiable Benefits

Benefits	Current System	Alternative 1	Alternate 2	Alternate 3
Software Lease, Rentals, and Maintenance				
Data Communications Lease, Rentals, and Maintenance				
Personnel Salaries and Fringe Benefits				
Direct Support Services				
Travel and Training				
Space Occupancy				
Security and Privacy				
Contractual and Interagency Services				

Quantifiable Benefits

Benefits	Current System	Alternative 1	Alternate 2	Alternate 3
Cost Avoidance of Future Costs that Would be Incurred if the Best Alternative were Chosen				
*(e.g., resulting from improved data entry, storage, and retrieval techniques)				
**(e.g., improved resources use, reduced error rates)				

Reference: A6 – Cost Benefit Analysis Worksheet in FNS Handbook 901