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SUBJECT: Child Nutrition Information Technology Solutions: Guidance for the Initial Phase of Child Nutrition Programs System Replacement and Upgrade Projects

TO: Regional Directors
Special Nutrition Programs
All Regions

State Directors
Child Nutrition Programs
All States

This memorandum is the first in a series of guidance memoranda to support State agencies administering the Child Nutrition Programs as they enhance or build Information Technology (IT) solutions for their State agency (SA) operations. The memorandum discusses the evaluation of a State's current IT solution, factors to consider when selecting an IT solution, and available IT solution options. The guidance series will provide State agencies with best practices and practical direction on Child Nutrition IT system planning, procurement, project management, data ownership and intellectual property, and testing.

The attached guidance 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 this guidance 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

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Assessing Child Nutrition Information Technology Projects

Information Technology (IT) projects can entail significant investments for a State agency. These projects can range in scope from enhancements to specific system components (e.g. increased reporting and monitoring capabilities), to complete system replacements. Regardless of scope, initiating this process can be intimidating.

To assist State agency staff with these important efforts, FNS will breakdown the decision-making process to utilize when thinking about your State's next IT system project. We will cover:

- Part I: How to evaluate your State's current IT system when determining the need for improvements or replacement;
- Part II: The factors to consider in selecting an IT system solution that best fits your State's IT needs; and
- Part III: Information about a variety of IT solution options.

Part I: Evaluating an Existing State IT System

The initial step in determining the need for system enhancements and/or total system replacement should be to review the current IT system functionality (i.e. how the system operates to support the State's program administration) and to determine what aspects of the system may need to be improved or replaced. Your current IT system should be evaluated to determine its short-term and long-term viability, and the expected advantages and disadvantages of its continued use. Start by considering the following:

- Could the current IT system have its "life" extended through upgrades to the software applications/systems? For instance, perhaps the current system needs to be upgraded to capture new or more data elements to enhance its reporting function.
- Are there elements that do not exist in the current IT system, but that if added, would enhance the efficiency or effectiveness of program administration? For example, maybe the current IT system does not have an automated Administrative Review process and adding this functionality to the existing system would increase the efficiency and effectiveness of this administrative process. Adding functionality to an existing IT system could also extend the "life" of an existing system.
- Is the current IT system so outdated that it presents risks to program operations? If so, you may consider pursuing a new IT system. As an example, perhaps the State's current IT system was developed over 10 years ago and the software format no longer supports the IT security measures required by the State.

Once you have completed the audit of the current system, and before moving to potential IT options in Part III, it is important to think through a number of factors that influence which option best fits your specific situation.

Part II: Factors to Consider in Selecting an IT Solution

Determining the best IT solution for your State can be complicated due to the variety of options available. Similar to purchasing a car, the IT solution needs to meet the specific needs, preferences, and functionality of your State agency. In order to determine the best solution to address your State's IT system needs, start by considering the following factors:

- Available resources;
- Ownership versus licensing;
- Customized, configured, or “as-is” IT systems;
- Risk;
- Data security; and
- IT system standards.

Available Resources:

State agencies should begin any decision-making process by assessing the resources that will be available for each phase of the project. Depending on the need, the phases of an IT system project may include: planning, procurement, design of implementation, monitoring, testing, deployment (or closing), maintenance and operations. Potential resources include: funding, staffing (e.g., program department staff, other departmental staff, and external stakeholders), equipment, facilities, and external contractor support.

In assessing the available resources for your IT project, consider asking the following questions:

- What were the results of the current IT systems evaluation (Part I above)? The more specific you can be, the better you can assess the needed resources.
- Are there other offices or departments within the State that need to be involved in the decision or throughout the various phases of the IT project? For example, State procurement offices, other Child Nutrition State agencies, State IT offices, and State legal offices may need to be consulted.
- Are there other IT systems employed at the State that will interact with the IT solution being considered? If so, are there resource requirements associated with this interaction (e.g., staff, equipment, facilities, reports, data matching)?
- What kind of staffing will be needed for the IT project? Consider that an IT project often requires a variety of skillsets, such as project management, programming, Child Nutrition Program expertise, system design, business analysis, and testing. A State agency may have some or all of these skills

available in-house, or may need to acquire external support for some or all. Note: A State agency may employ a combination of in-house personnel and contracted services.

- What funding is available to support the project? Are there grant opportunities that could support the project (e.g. FNS' Administrative Review and Training (ART) Grants, Direct Certification Improvement Grants, Child Nutrition Technology Innovation Grants (TIG))? Can other State agency developed systems or modules be used?
- How much time are you, your staff, and other resources able to commit to each phase of the project?
- What type of equipment or facilities will be needed to support the IT solution? This includes servers, cold rooms to house equipment, etc. Consider the equipment and/or facility needs of third-party contractors as well.
- Where will the IT solution being considered be housed/stored? Would this involve resources such as staff, equipment, or facilities?

You should also consider your ability to support the ongoing operational costs of this and all of your IT systems. Depending on the project, the ongoing costs may be burdensome or could be insignificant. Questions to consider with regard to maintenance and operations should include:

- Do you have the staff resources to support the existing IT system while a new system is being developed or enhanced?
- Do you have the staff to support the maintenance and operations of the new IT system, once operational?
- Do you have the staff to support the training on the new IT system, once operational?
- Do you have the funding to support the maintenance and operations of the new IT system? Depending on the project, the potential fees or costs could be ongoing.

System Ownership versus Licensing:

Another important consideration is whether to own or to license your IT system or software. There is a big distinction between owning an application in its entirety, and simply paying for the right to use it. Ownership means that State agencies own the system and immediate access to the data collected within it. Alternatively, a software license grants the user permission to use the software with certain rights and responsibilities. Whether you own or license an IT system can affect cost, system flexibility, and your ability to change vendors in the future. Note that some State agencies have policies that encourage, or even require IT system software ownership or licensing (e.g., State rules that require a State to own, rather than license a system, or require that

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all data be hosted on a state-controlled cloud server, etc.). Additionally in some situations, Federal rules and regulations about ownership may also apply.

The decision whether to own or license your IT system or software will determine some important limitations of the project. It is important to note that regardless of ownership or licensing, all data associated with the State's IT system is owned by the State agency. Nonetheless, the State's ability to access, use, or share the data may be impacted by the ownership or licensing conditions of the vendor's contract.

For example, in a scenario where the State agency has a licensed IT system (meaning the software is owned and protected by the vendor) and collects data from local agencies, the data is accessible to the State; however, the State agency may not have immediate access to the data and the vendor may provide the data only in an extract format (e.g., Microsoft Excel) unless contractually specified otherwise. Also the proprietary IT solution may or may not be able to be accessed by other vendors or local agency IT systems. This would depend on the IT system design and the State agency's contract with the vendor.

NOTE: For more information, see FNS Handbook 901: [Link to FNS Handbook 901 Chapter 4 Procurement](#), in particular, *sections 4.776 and 4.777*, as well as, ***Appendix A17: Ownership Rights***.

Customized, Configured, or As-Is IT Systems:

Another factor to consider is whether an IT system solution can be customized, configured, or must be used "as is." IT systems can be:

- Customized: IT systems may be designed and built specifically for a State or may be transferred from another State agency that owns the source code and altered to meet a State's needs.
- Configured: A commercial off-the-shelf (COTS) product may offer a limited range of "configuration" options, where you can select from pre-programmed design choices.
- As is: A strictly licensed or hosted solution may require the State agency to use the system "as is." This means that nothing about the system can be modified.

You should consider how much customization is required to meet your current and future IT needs. Customization will add functionality and may extend the life of a system, but it can also be a major cost driver.

Some considerations when deciding between configuration and customization include:

- The ability to alter the source code –

- An IT system that is customized, or was transferred from another State agency and has the ability to be customized, allows the State agency flexibility to alter the source code throughout the life of the IT system.
- A COTS software solution generally does not allow the State agency the right to customize the source code to meet its specific needs. Customization may be available for some COTS solutions; however, this should be determined in advance and included in any vendor contract.
- The capability to manage other low-level technical components –
 - The State agency should understand whether they have the ability to manage low-level technical components. Low-level technical components include developing reports, notices, and even system administration rights. Without this access, you may have to procure these services separately through the contractor or a third party vendor.

Risk:

Risk in IT system solutions includes areas where both predictable and/or unpredictable factors could impact the success or failure of an IT system project. Potential risks could include:

- Unpredictable funding sources for IT solution costs (e.g. annual budget determined by legislature, development, and maintenance and operations);
- Changes in State agency leadership and staff turnover;
- Duration of the State procurement and hiring process, if applicable;
- Natural or manmade disasters;
- Staff capacity to support an IT project during development, testing, training and implementation;
- Security breaches;
- Supplier no longer supports system; and
- End user's ability to accept and implement a new IT system.

It is critical to assess the risks for your project and then determine how you can best mitigate, accept, transfer, or avoid these risks. The FNS PartnerWeb offers a webinar on project risk management as a resource (*Risk Management Webinar from May 8, 2015*). When assessing risk, you should investigate which system options or staffing structure can best manage the risks. Here are some examples:

- A State agency lacks stable funding to support an IT project. The State decides to procure an IT solution with a consistent fee structure that can be more easily built into their annual budget, rather than a custom-built system with big upfront costs.
- A State agency has limited staff resources to support an IT system project. The State agency decides to hire contractors to provide consistent staffing support.

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Managing risk, whether the risk is accepted, avoided, transferred, or mitigated, is usually a trade-off between risk and cost. As an example, selecting an IT system solution that would lower the staff time needed to manage project tasks may mean higher vendor contract costs.

State agencies should consider writing their vendor contracts in a way that holds the contractor responsible for mitigating or eliminating risk. For example, a contract may include a clause that outlines the consequences and required actions in the event of a system crash due to a disaster. Again, contract provisions that transfer risk from the State to a contractor will typically add cost.

Data Security:

Incidents which affect the consistency and availability of data can cripple your operations. States also have legal obligations and standards that must be met to ensure that data is protected.

When evaluating IT solutions, you should ensure that data security is a factor in your decision-making process. Different system types allow for varying degrees of security control and shifting of responsibilities to different parties. Therefore, you will need to assess whether you have the proper in-house staff and infrastructure to fulfill the pertinent security responsibilities. State agencies can consider outsourcing these functions to a trustworthy external entity, depending on the applicable legal and operational constraints.

Other things to consider with regard to data security and IT systems include: data management functions, interfaces between data sources, redundancy of data (i.e. whether data stored in more than one place, and if so, how far apart are the locations), varying security levels for accessibility to data, and frequency of data back-up systems.

IT System Standards:

IT System standards are an important consideration that can have lasting impacts on the operation and life expectancy of a system. A system standard is a rule that is designed to provide consistency to IT services. It is important that you are aware of the standards a system is based upon, especially if it involves cloud-based elements (which is discussed further in Part III). IT system standards exist for every functional level and component of a system. There are standards for the architecture of a system, data storage, and all of the interfaces in between.

There are two basic types of standards:

- An open standard is developed by many people from many organizations working collaboratively to produce a standard that is freely available and transparent. An example of an open standard is the ability to plug an electric appliance (e.g., a lamp) into any socket in the country. You don't need a license or proprietary information to build a lamp that will plug into an electrical socket.

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- A proprietary standard is generally developed by a single organization that crafts the system architecture or tools so that they can only be used by the developing organization, or those who agree to adhere to their standards. An example of a closed standard is an Apple iPhone, which can only run applications from the Apple store. In order to have an application in the Apple store, developers have to adhere to Apple's standards.

It is important to understand the nature of standards underlying any IT system solution, particularly to avoid “vendor lock-in,” where you are dependent on a vendor with proprietary standards and unable to use another vendor or IT system without incurring substantial cost.

When investigating a specific standard, you should research how the standard was developed, how widely it is used in the industry, and what the future plans are for it. A standard with very limited or no development plans could either indicate a mature stable standard (e.g., electric sockets) or could be a warning sign of impending uselessness (e.g., video cassette recorders).

Part III: IT Solution Options

Once you have evaluated your current system (Part I) and considered the factors for selecting an IT solution (Part II), you can then analyze which IT solution option(s) is the most suitable for your project. Questions to ask at this stage include:

- Would upgrading or adding functionality to the State's current IT system address the State's needs for enhancement?
- Is there an IT system (or application, module, etc.) that may be available to transfer from another State agency?
- Is it practical to consider a custom built system? A custom-built system is designed and developed from the ground-up and is tailored to meet your State agency's specifications.
- Is there a COTS product that may meet your needs through licensing? A COTS option is an already-developed product with built-in options and settings.
- Is “cloud computing” a good fit for the needs of the State?

Option 1: Upgrade or Add Functionality to an Existing IT System

If you already have a functional system that largely meets your needs, the most cost effective option may be to maintain the current system. Using internal resources or hiring third-party contractors to write updates and upgrades for the system or install new hardware may be more economical than acquiring a new IT system, especially if the existing system was written using open standards and you have a choice of vendors to make the necessary upgrades or additions.

Option 2: Transfer between States

Transferring an IT system refers to an instance where another State agency owns a system or application that can be copied and distributed to another State agency. In an IT system transfer,

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a State agency consents to their system being duplicated, modified, and distributed to another State for their use. The transfer system is often considered a stable and capable system that meets program requirements. This option may require an intergovernmental agreement, which is typically less cumbersome than a procuring a vendor contract.

Transferring an IT system may be a good choice if you know another State agency already has a system that meets most or all of your requirements. Here are some key points to consider:

- Transferring an IT system can provide cost savings because you do not have to “reinvent” the system. However, you should evaluate the total cost of transferring the IT system, as configuration of the system to your State and specific State customization could ultimately be comparable in costs to a custom build.
- In order to reduce the number of changes required to a transfer and IT system, you may consider changing/updating your State agency’s business processes to accommodate the system.
- If infrastructure and other operating resources are a concern, you may consider obtaining an IT transfer and deploying it to the “cloud,” instead of internally to the State’s internal processes and system. See discussion in Option 5: Cloud Computing.

Option 3: Custom Built System

A custom-built solution allows for the highest degree of matching between business process requirements and technology. Custom-built systems will provide you with the opportunity to consider the most up-to-date and innovative IT solutions while designing a system that can provide all features and functionality required by the State. This could mean the system will be more sustainable in the future. However, this is often the most expensive route.

Option 4: Purchase Commercial off-the-Shelf (COTS) Products

In general, COTS products are software or hardware products that are ready-made and licensed to the general public at published prices (e.g., Microsoft Office). COTS products may include a broad range of functionality for specific domains (e.g., financial management, case management, etc.). COTS do not require customization. Rather, they are configured using built-in options and settings to implement a specific function or business solution, and can be installed by more than one vendor. Customization may be available for some COTS solutions, but this should be determined in advance and included in any vendor contract.

Additionally, COTS products are a viable solution if you require an internally supported IT system, but do not have resources available to support the system development, maintenance, or upgrades. On one hand, COTS solutions mean the vendor bears the cost of these functions; however you do not have ownership or control over enhancements or changes.

Option 5: Cloud Computing

Cloud computing is a broad term used to describe the delivery of computing needs and data storage to a varied community of end users primarily delivered through the internet. It essentially means your data and systems are stored elsewhere – usually a server farm. Cloud computing is not mutually exclusive with any of the other options described above. For example, a State agency may decide to have custom software developed, but then have the system hosted by a vendor in a cloud environment. In this situation, the State agency owns the software, but the vendor is responsible for maintenance and operations. Or a State agency may decide to contract with a vendor who provides both the hosting environment and software operation. In this scenario, the State agency pays a license or subscription fee to use the whole set of products and services, and the State agency owns only its own data.

Cloud computing uses a collection of services, applications, and infrastructure. Each of these components is comprised of pools of computing, network, and storage resources. Cloud computing components are often more flexible than the same resources owned and managed by a single entity, like a department, and can be:

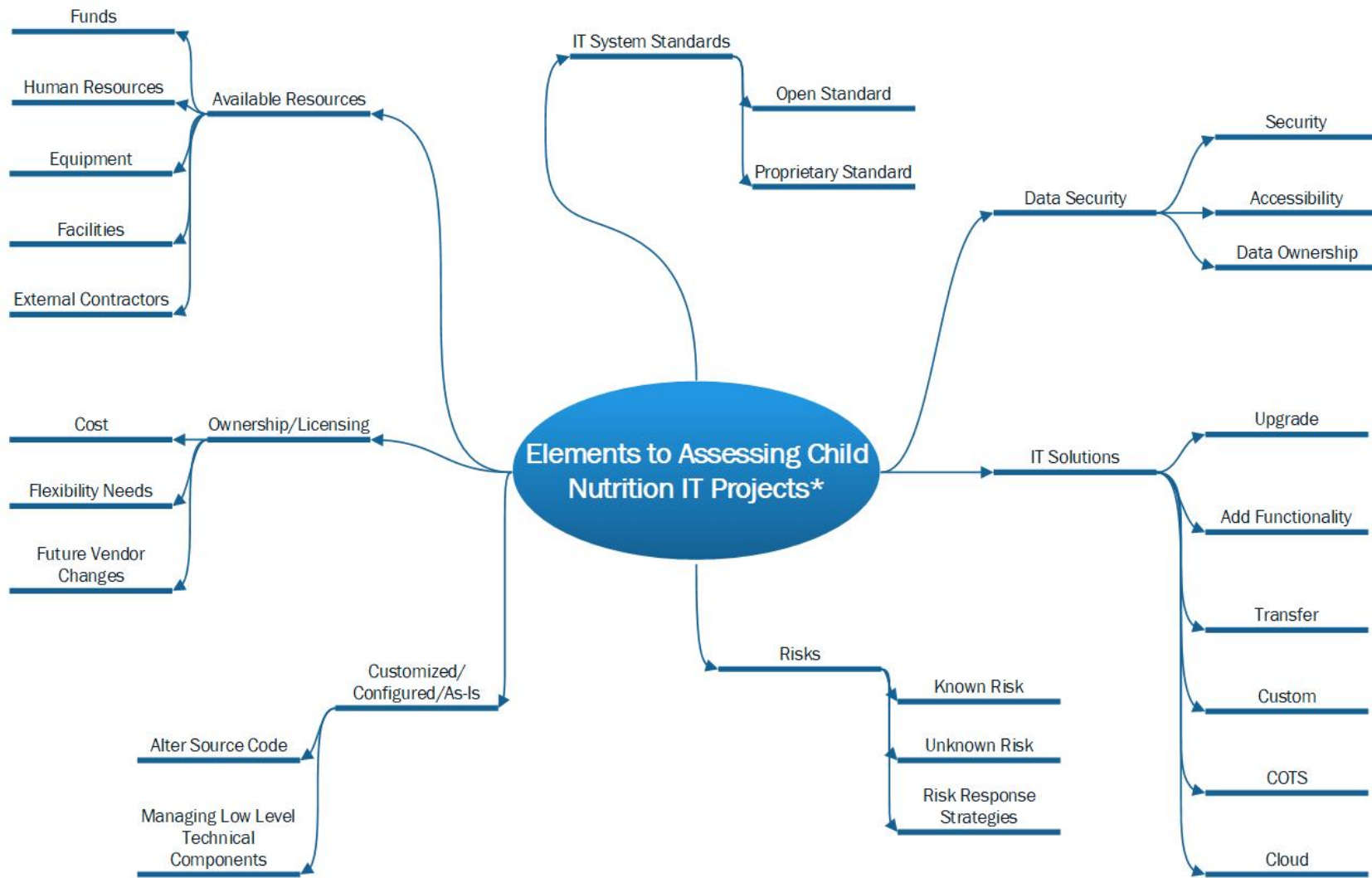
- Arranged rapidly,
- Provisioned on demand,
- Implemented and decommissioned, and,
- Scaled up or down.

Cloud computing provides for an on-demand, utility-like model of allocation and consumption. For example, it would not make sense for every city to own and operate its own electricity production facilities. Shared use of utility services allows each user to use more when they need it, and pay less when they do not. Cloud services work much the same way, and are especially appealing when current or future capacity needs are difficult to predict. Cloud computing is a scalable solution which can provide a complete system from hardware to application or just portions of a solution. This flexibility may provide tight control of resources and costs, without sacrificing operations. At minimum, cloud computing can provide stability to costs and other resource utilization.

Each option described above has strengths and weaknesses to weigh as you consider how best to meet your State's IT system needs.

More information on these and many other topics can be found in the *FNS Handbook 901* at [Link to FNS Handbook 901](#). In particular, State agency staff should review *Chapter 5 System Planning* for more information on how to develop a needs assessment, business analysis, and feasibility study. *Appendix 4: System Type and Acquisition Selection Tool* provides more information on deciding upon the right system for the State agency's IT project.

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*Once it is determined that the current information technology (IT) system's functionality needs improvement in order to administer the Child Nutrition Programs (CNPs), the following elements should be considered to determine a solution. Each element contains sub-categories, strengths and weaknesses to weigh when deciding how best to meet the IT system needs. This list is not an all inclusive list of elements that may be necessary for your decision making process.