# Key Considerations for Initiating and Planning a New Data System or Major Data System Enhancement

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Planning for the development of a new data system or a major data system enhancement, but don't know where to start? This document presents key considerations in the form of questions to help you clarify your program needs before moving into the action phases of development or enhancement. These key considerations can be treated as items suited for group discussion or as a template to guide group planning. The key considerations will be useful for Part C/619 data managers and coordinators who participate on project teams to develop or enhance a Part C/619 data system. In particular, data managers often play crucial roles on project teams and might find this a useful reference.

Figure 1. Phases of the SDLC
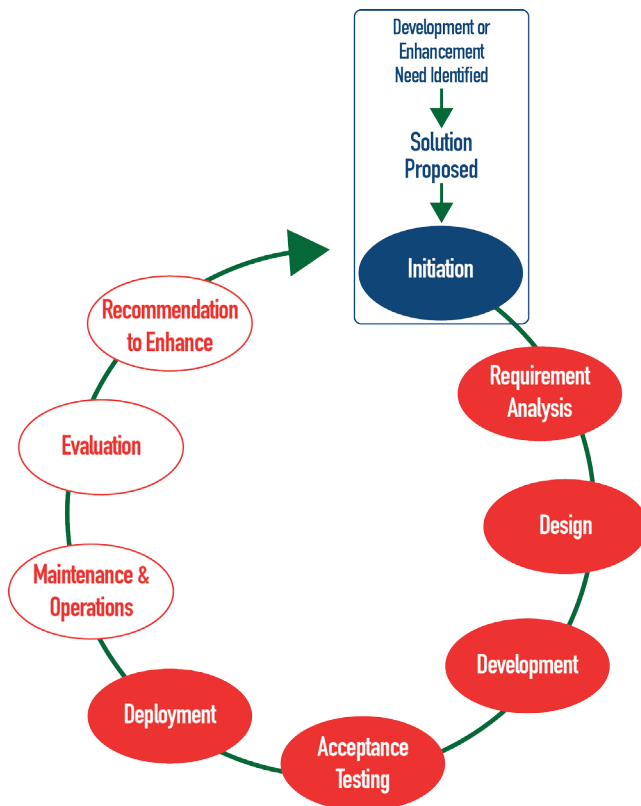
The phases of developing a new system or enhancing an existing one can be viewed as a life cycle. This document draws on the *system development life cycle* (SDLC) described in detail in New York State's *Project Management Guidebook* and outlined in the DaSy Center data system framework. The SDLC begins with *initiation*, the SDLC phase covered in this brief, after the need for change has been identified and the initial plans have been laid. Initiation creates a strong foundation for the phases that come later: *requirement analysis*, *design*, *development*, *acceptance testing*, and finally *deployment*.

Framework connection: Each section of the **System Design and Development** subcomponent corresponds with and provides more information on the phases of the SDLC. Section 1, "Initiation of New System/Enhancement and Requirements Analysis," provides information specifically on the initiation phase. (http://dasycenter.org/resources/dasy-framework/system-design/)

Getting started

This document assumes that the need to develop a new data system or do a major enhancement of an existing system has been identified and that a solution has already been proposed. Starting the system initiation phase requires intelligence gathering, planning, and creation of a team that has the expertise and knowledge to validate the fit of the proposed solution.

Framework connection: The **Sustainability** subcomponent quality indicator SU1 provides information about systematic processes for identifying data system enhancements. (http://dasycenter.org/resources/dasy-framework/sustainability/)

To begin the initiation phase, ***determine what resources are available*** for the development or enhancement.

* How will the agency fund the cost of the development or enhancement?
* What is the budget range allocated for the development or enhancement?
* Has an overall budget or resource allocation plan that effectively funds the development or enhancement effort been prepared and approved?
* Does the internal staff have capacity for managing the development or enhancement through the phases of the SDLC?
* What are the long-term costs of the proposed solution such as for support and maintenance?

Identify a project team to be responsible for planning, managing, and executing the system development or enhancement. Although the exact expertise of team members will vary depending on program needs and the nature of the development or enhancement, every project team should consider having representation of the following roles. In some cases, one person may act in more than one role.

* **Project sponsor**—An individual with the authority to make decisions about the development or enhancement and enact the changes necessary to move the effort forward. This person typically is able to commit resources to a project, in terms of both budget and people. Often, the project sponsor is at the director, commissioner, or secretary level in agencies.

* **Project manager**—An individual responsible for attending to the overall timeline and assisting with the day-to-day supervision of tasks relating to the development or enhancement. He or she may carry other responsibilities, but this person should have the authority to make day-to-day decisions for the development or enhancement and have access to the project sponsor in the event that higher level decisions or investments are needed. This person may serve as a "client-side" project manager if an outside vendor is used for the development or enhancement.

* **Business analyst**—This team member is often charged with gathering documentation of the system needs, and tasks may include leading user groups through design and brainstorming sessions, documenting policy and procedural issues, and leading efforts to document any current system tools.

* **Data manager**—This key person, who may have other roles, serves as the primary "reporter" of the data. The individual does not need to be a technical user but should understand the data schema, encourage the project team to include all needed data collection elements, and drive the "business side" of reporting needs. The data manager can also be a key resource in user acceptance testing to ensure that a system does what is needed or required.

* **Developer/programmer**—This team member is the software engineer or coder building the development or enhancement.

* **Information technology lead**—Representing the information technology department, this person can provide technical support and knowledge relating to existing data systems and the development or enhancement.
* **Procurement officer**—This person can assist with the procurement of vendor services and/or the purchase of off-the-shelf solutions.

Other personnel who may supplement the project team are:

* **Accountability coordinator/monitoring coordinator**—Much like the data manager, this person uses data produced by a system and can offer input on features and reports important to the development or enhancement.
* **Internal testers and end users**—User acceptance testing often includes various types of end users who can be called on to provide periodic input to the design, deployment, testing, and acceptance of the development or enhancement.

When selecting the project team, consider the following:

* Does the team leader have sufficient authority to make decisions and lead implementation of the development or enhancement?
* When considering the project team's other responsibilities, does the team have sufficient time to plan and execute the development or enhancement if it is developed in house or work with a vendor if it is procured?
* Does the team include both program staff and IT staff?

Review documents and research that originally indicated the need for the development or enhancement. Documents to consider are:

* Proposals
* Data dictionaries
* Performance statistics
* Data system end user comments and requests
* Functional business requirements, both current and desired
* Purpose and vision of the data system.

Validating proposed system enhancement or development

Once a project team has been established and the proper documents have been gathered and reviewed, the team should confirm that the proposed development or enhancement is the right fit considering the current needs of the program and users, the state context, and the specific features of the proposed solution.

Assess and confirm the feasibility of the solution in view of the wider program, agency, and state context.

* How well does the proposed development or enhancement
  * Meet the needs of end users?
  * Address essential reporting requirements and other desired reporting needs?
  * Match the technology direction of the program, agency, or state, including privacy and confidentiality needs?
  * Respond to constraints in the program, agency, or state?
  * Make use of state of the art technology?

> *Framework connection:* The **Purpose and Vision** subcomponent provides information about purpose and vision statements that articulate the data system's mission, usage, and goals. (http://dasycenter.org/resources/dasy-framework/purpose/)

* To what extent does the proposed development or enhancement align with the program's purpose and vision and strategic plan?
* What will end users need to know or learn about the development or enhancement to make use of it?
* How will the program support use by the end users?
* Have any recent changes occurred in the needs of data system users or consumers that affect the proposed development or enhancement?
* How does the proposed development or enhancement fit into the agency's existing or proposed system(s)?
* How will the new development or enhancement make use of or add to existing data stores?
* How will the development or enhancement interface with other data systems?
* Have any recent changes occurred to the data, data system, or use of data (e.g., program or reporting requirements) that affect the ability of the proposed development or enhancement to effectively support the program?
* Have recent advancements in technology occurred that would be better suited to address needs?

If the proposed development or enhancement is no longer feasible (e.g., it is no longer the best approach, funding and resources are not available, the timing is not conducive to the originally proposed solution), the project team may **propose an alternative**. When this occurs, the system initiation phase will need to start again. The project team may also suggest that the development or enhancement be revisited at a later date when resources or timing are more opportune.

Reviewing business needs and the proposed system development or enhancement

Once the proposed solution has been validated, more in depth planning can begin. One major decision is whether the solution will be developed in house or acquired through a procurement process. If the solution will be procured, there are additional considerations to be managed with the program's procurement office. Information and experiences from other programs and agencies in your state and other states may be helpful in discussions with the procurement office.

Determine whether the development or enhancement will be developed in house or acquired through a procurement process.

* Can the development or enhancement be addressed with an off-the-shelf solution, or will it require custom building or customization of an off-the-shelf solution?
* Have similar development or enhancement efforts been completed within your state or agency? If so, were they developed in-house or procured?
* Are in-house expertise and capacity sufficient to implement the proposed development or enhancement using internal agency staff or external state agency staff through an interagency agreement?
* Are in-house expertise and capacity sufficient to host and maintain the proposed development or enhancement in the long term?
* How have recently developed in-house data systems performed? Are they being maintained successfully?

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* How are the working relationships between departments or divisions with data systems developed and/or supported in house?
* If your state has previously worked with outside vendors, was the vendors' service satisfactory?
* How have recently procured data systems performed? Are they being maintained successfully?
* What are the long-term hosting (e.g., on site, off site, cloud) and maintenance needs for the development or enhancement?
* What are your needs for a vendor? Will your program:
  * Use a contract amendment to work with an existing vendor?
  * Use a sole-source contract to work with an existing or new vendor?
  * Search for a new vendor through a competitive request for proposals (RFP), request for information (RFI)/RFP, or intent to negotiate (ITN) process?

If the project team determines that the work will be completed with a vendor, *contact the procurement office* to begin the procurement process. This is an important step because procurement procedures can take a considerable amount of time and affect the project timeline.

* How closely does the high-level timeline for the development or enhancement match the process of the procurement office?
* What processes and practices does the procurement office use to
  * Develop RFIs and RFPs?
  * Release RFIs and RFPs?
  * Score and select vendors?

Consider the future needs of the system and program and how the development or enhancement might be responsive to changing needs.

* How have the needs of the program changed in the recent past? How are they expected to change in the future?
* How will the system be maintained long term?

> *Framework connection*: The **Sustainability** subcomponent provides information about ongoing support for maintaining and enhancing a data system. (http://dasycenter.org/resources/dasy-framework/sustainability/)

Creating a system development or enhancement strategy and schedule

Once a solution has been validated and the business needs have been reviewed, the project team can prepare for the next phase of the SDLC: requirements analysis, during which the system specifications are mapped to the needs of the data system end users.

Create a system schedule that provides a high-level overview of the entire development or enhancement process and a detailed timeline for the next SDLC phase.

* What are the major milestones for each SDLC phase and how much time can be expected for each?
  * What are the tasks and deliverables in each phase?
  * What resources are required for each phase?
  * Which project team personnel need to be involved in each phase?
* What are the detailed tasks required to complete the next phase of the SDLC, requirements analysis?

Need Assistance?

If your state is planning to undertake a data system development or enhancement, DaSy offers technical assistance that might be of use during the development or enhancement of a data system. You can reach DaSy to schedule technical assistance by calling 650-859-3881 or visiting our contact page.

Framework connection: The framework **self-assessment** is available to help your state understand and prioritize data system needs including, but not limited to, system design and development. (http://dasycenter.org/self-assessment-for-ecta-and-dasy-frameworks/)

Resources

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Reform Support Network. (2013). *Request for proposals evaluation guide*. Washington, DC: Author. Retrieved from https://www2.ed.gov/about/inits/ed/implementation-support-unit/tech-assist/request-proposals-evaluation-guide.pdf

Suggested Citation

About Us

The DaSy Center is a national technical assistance center funded by the U.S. Department of Education, Office of Special Education Programs. The DaSy Center works with states to support IDEA early intervention and early childhood special education state programs in the development or enhancement of coordinated early childhood longitudinal data systems.

To learn more about the DaSy Center, go to http://www.dasycenter.org/.