State Support Team

SLDS Early Childhood Integrated Data System Guide

STATE SUPPORT TEAM

ACKNOWLEDGEMENTS

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INTRODUCTION

The *Early Childhood Integrated Data System Guide* is one part of the *SLDS Early Childhood Integrated Data System Toolkit,* which was originally created in 2011 to support states working to create an Early Childhood Integrated Data System (ECIDS). Since then, states have used the Toolkit for purposes beyond the initial intent, including state planning for the ECIDS; education for other sectors (e.g., K12, workforce, and university partners); support for state conversations as a communication tool/resource; and identification of strengths to promote within the state and potential weaknesses requiring additional support.

The revised *SLDS Early Childhood Integrated Data System Toolkit* now takes a broader focus beyond initial planning for an ECIDS to include implementation and continuous improvement. Based on seven components of ECIDS planning and development, the Toolkit was designed for use by any state regardless of where it is in the process of developing an ECIDS. The seven components are

A. Purpose and Vision;
B. Planning and Management;
C. Stakeholder Engagement;
D. Data Governance;
E. System Design;
F. Data Use; and
G. Sustainability.

As depicted in figure 1, these components are not linear. States often start where they have current capacity and resources. In addition, each component has content related to aligning early childhood to P-20W+ (early childhood through workforce and beyond) statewide longitudinal data system (SLDS) efforts in the state.

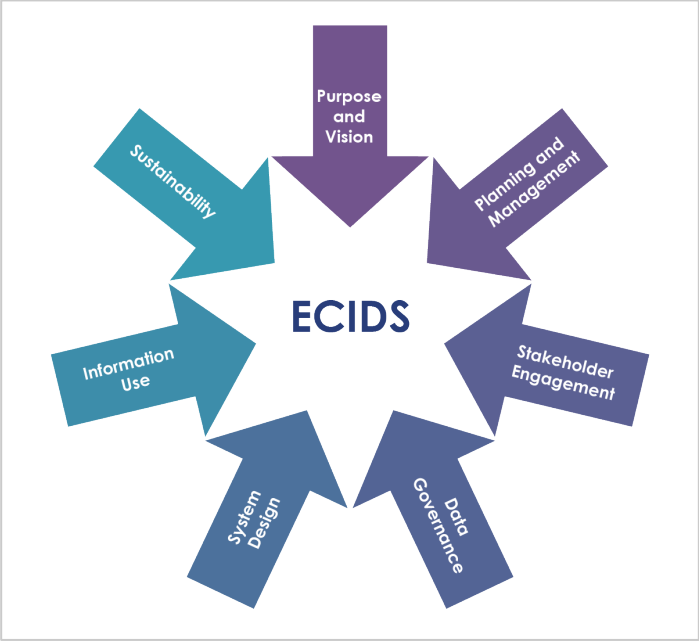

Figure 1. The Seven Components of ECIDS Development

This guide offers practical suggestions and resources for each step in the overall process of integrating data across early childhood and connecting the data to a P-20W+ SLDS.

In addition to this guide, the supplemental S*LDS Early Childhood Integrated Data System Self-Assessment* was created to help states assess their needs as they integrate early childhood data into an early childhood data system and the P-20W+ SLDS.

Component A: Purpose and Vision for the ECIDS

An effective purpose statement succinctly describes the reason(s) for which the ECIDS is being built and the tangible, intended short- and mid-term results of the system; this includes the scope of the system and how it is expected to be used by key stakeholders.

The vision statement is an aspirational description of how the ECIDS will help support the mid- and long-term early childhood goals of the state. The vision statement should not focus on the data system, but on how the use of information will improve the educational and other outcomes of young children in the state.

> The **purpose and vision** statements communicate the ECIDS's reason for being, what it aims to produce, and how it contributes to the long-term early childhood policy and program goals of the state.

Together, the purpose and vision statements communicate the ECIDS's reason for being, what it aims to produce, and how it contributes to the long-term early childhood policy and program goals in the state.

Purpose and vision are foundational to an ECIDS or any data system. A state's purpose and vision for its ECIDS serve as anchors that guide its direction at every phase of the work, from planning and implementation to use and continuous improvement. In addition to providing direction for development and use by key stakeholders, a well-articulated purpose and vision enables states to maintain the intended scope of work while planning for expansion and use of the ECIDS over time. States must be able to communicate what the ECIDS will be as well as what it will not be.

Key Indicator 1: A defined purpose and vision for the ECIDS that describe how it contributes to the long-term early childhood policy and program goals in the state

Defining the purpose and vision of the ECIDS sets the tone for the work and helps determine the scope of the effort. This includes identifying the audiences who will be served and defining what early childhood data (e.g., program, health, or assessment data) are to be included. While establishing a common purpose and vision among participating partners can be challenging, doing this work upfront will help ensure that subsequent decisions are strategic and coordinated, and that the ECIDS is sustainable as a statewide resource.

To facilitate this process, state executive leadership could consider using the framework of its Early Childhood Advisory Council (ECAC), the membership of which is both diverse and comprehensive. Alternatively, some states develop a data governance group that includes leadership representation from participating agencies and organizations. This group may be a committee of the state's ECAC, or it may be a separate group designed to provide leadership to the planning process. The leadership team provides its input, but the work of documenting the purpose and vision and obtaining stakeholder feedback is typically conducted by the ECIDS Core Team. The involvement of the stakeholders in developing the purpose and vision helps to ensure that everyone has the same expectations for what the system will help the state to do. Stakeholders will also be able to provide valuable feedback both on the content and how the purpose and

vision may be generally received by the public. For more information on stakeholder engagement, please see Component C: Stakeholder Engagement.

To support effective purpose and vision statements, a state should take the time early on to identify the specific populations it intends to serve with an ECIDS.

The purpose and vision for the ECIDS should address the following:

- What value will the ECIDS bring to the state? What will the ECIDS provide that that state does not currently have the capacity to do?
- How will the ECIDS support the use of data to inform decisions?
- Which decisions, critical policy questions, or program questions are the ECIDS intended to support?
- Whom is the ECIDS intended to serve?

Establishing Essential Questions

Using the purpose and vision statements, the Early Childhood Executive Leadership should establish the essential questions it hopes to answer using the ECIDS. These essential questions usually fall into four general categories:

1. Policy
2. Program/Operational
3. Research
4. Instructional

A state may focus on one category or multiple categories as needed to align with the purpose and meet the needs of the intended end users. If questions are created in multiple categories, consider a phased planning approach to meet the needs of each user group over time and demonstrate value during each phase.

The process of developing these essential questions takes time and participation from a diverse group of potential end users. A great resource that is often overlooked is the contribution of researchers; their involvement during this process will help the state ensure that its questions are answerable, relevant, and aligned with the intended outcomes. For examples of states' essential questions by audience, see the resource *Answering Key Questions with an Early Childhood Data System*. As the state's focus and users' needs evolve over time, these questions will likely change and should be developed in such a way that they can be updated and added to as the ECIDS is enhanced over time. Please note that some states call these questions "policy questions," but for the purpose of ECIDS planning, states are encouraged to use the term "essential questions," as there are more than just policy questions to consider.

Key Indicator 2: A well-communicated purpose and vision for the ECIDS

Having clear purpose and vision statements that describe the reason for integrating early childhood data is fundamental to the project's success. These statements are the pivot point for all future discussions and serve as reminders to the internal team and stakeholders of the reason the work is being done. These statements should be reiterated during meetings and events to remind everyone of the reason for the work.

It should be made clear very early on in the ECIDS planning process what exactly the ECIDS will provide, its significance, and how this system will support young children and families. This value should be communicated in terms of the many users who will benefit (e.g., parents, children, program staff, state administrators, and researchers). In addition, it may be helpful to craft the purpose and vision messaging for specific audiences so they see how it will affect them directly. To do this effectively, the purpose and vision statements need to be informed by what matters to each audience (i.e., what the ECIDS can do for them) and communicate the system's significance accordingly.

These purpose and vision statements will contribute to a communication plan tailored to the needs of a state's audiences and help clarify the benefit of an ECIDS. The statements can also help manage expectations among stakeholders.

Key Indicator 3: The purpose and vision guide decisions and direction for linkage to P-20W+

If a state is developing or has a P-20W+ SLDS, the P-20W+ core team should document the purpose and vision of integrating early childhood data into the SLDS in addition to determining the overarching ECIDS purpose and vision. This is typically a different set of statements, but they should be complimentary to the ECIDS statements. Early childhood representatives should participate in the development of these P-20W+ statements. The early childhood representatives will need to be able to articulate which early childhood users the P-20W+ will serve and how the P-20W+ will allow those users to make decisions or behave differently as a result of the information it provides. As when developing the purpose and vision for the ECIDS, determining the desired purpose and vision for P-20W+ integration needs to take into account the interests of the audience(s) the system will serve.

SST and State Resources

- SLDS Early Childhood Integrated Data System Self-Assessment – Component A: Purpose and Vision for the ECIDS
  https://slds.grads360.org/#program/ecids-toolkit:-purpose-and-vision
- Template: Early Childhood Integrated Data System – One-Page Overview for External Audiences
  https://slds.grads360.org/#communities/pdc/documents/5823
- SLDS Issue Brief: What is an Early Childhood Integrated Data System?
  https://slds.grads360.org/#communities/pdc/documents/4441
- SLDS Issue Brief: Answering Key Questions with an Early Childhood Data System
  https://slds.grads360.org/#communities/pdc/documents/4798
- SLDS Brief: Identifying SLDS Users and Uses
  https://slds.grads360.org/#communities/pdc/documents/2753
- Early Childhood Data Collaborative Policy Questions
  http://www.ecedata.org/
- SLDS Target Team: Stakeholder Engagement – State Desired Outcomes and Determine Purpose Statement: An In-Depth Look
  https://slds.grads360.org/#communities/pdc/documents/5244

- Developing P-20 Questions: Characteristics and Outcomes (Washington State)
  http://www.erdc.wa.gov/arraslds2009/misc/pdf/characteristics_outcomes.pdf
- Traveling through Time: The Forum Guide to Longitudinal Data Systems – Planning and Developing an LDS
  https://slds.grads360.org/#communities/pdc/documents/3071
- SLDS Webinar: Prioritizing Early Childhood Data
  https://slds.grads360.org/#communities/pdc/documents/2725
- OSSE's Automated Data Transfer (ADT) Brochure
  https://slds.grads360.org/#communities/pdc/documents/5077 (login required)

Component B: Planning and Management

Planning is deciding in advance what is to be done, when, where, how, and by whom to achieve the purpose and vision. It includes establishing strategies, objectives, policies, and procedures. ECIDS planning outlines the tasks and activities that will support the development, implementation, use, and ongoing maintenance of the data system. This includes—but is not limited to—the project plan, communication plan, and evaluation plan.

Planning and management are critical because they establish a course of action to achieve the goals of the effort.

Management is the oversight of the execution of a plan, including necessary adjustments over time to reflect changes in context, needs, and resources.

Planning and management are critical to the ECIDS because they establish a course of action to achieve the goals of the effort, including defining key roles and responsibilities for executing the work. Because most ECIDS efforts encompass multiple agencies and other organizations, establishing a clear, common plan is essential to ensure that everyone understands the overall approach, when and how the work will be done, and their role in it. Good management of the ECIDS plan is equally important to respond to multiple internal and external stakeholders and navigate the complex early childhood environment.

Key Indicator 1: Management and resources are in place to develop and implement an ECIDS Core Team to lead the ECIDS effort

It is not always clear who should lead the planning process or what early childhood programs should be a part of the planning. Deciding who is leading the effort, determining how the end user might use early childhood data to inform decisions or change behaviors, gaining support from key leadership, and developing coordination across and between agencies, programs, data systems, and multiple funding streams is the key role of the ECIDS project plan. Some states have been guided by state legislation in their planning, some have relied on precedents or practices from other states, and some have conducted state inventories or held data roundtables with early childhood programs to identify existing early childhood data system practices. Regardless of the approach to planning, diverse representation is essential. As planning moves forward, it will become clear which agencies and programs will be most actively engaged and when, so representation will be dynamic. Changing representation also demonstrates the flexible nature of the ECIDS, and that adjustments can be made over time as new requirements are established.

The Early Childhood Executive Leadership should decide who is going to lead the effort. This guide refers to the team leading the ECIDS work as the ECIDS Core Team. Early Childhood Executive Leadership should also determine and document the criteria for membership in the ECIDS Core Team, along with the team's roles and responsibilities in case there is staff turnover within any of the partner agencies. In addition to the staff capacity to develop and manage the project plan, it is the Early Childhood Executive Leadership's responsibility to allocate the resources necessary to ensure the project's success. These resources take different forms and range from financial support to meeting room space and conference lines. It should also

be clear who is overseeing the work of the ECIDS Core Team; it is typically the responsibility of the Early Childhood Executive Leadership to ensure that the ECIDS work is aligned to the state's initiatives.

This ECIDS Core Team is typically responsible for coordinating and communicating the ECIDS project plan with those involved in the system's development. Groups involved often include the Early Childhood Executive Leadership, partner program administrators, and the IT team supporting the ECIDS. The process of developing and managing the project plan will help strengthen the ECIDS Core Team as various roles contribute their expertise to different stages of the project. Additionally, communicating the project plan to all groups involved in the project ensures that everyone has the same expectations, understands their roles as well as the role of others, and can help to represent the project. Communication with all parties is essential to coordinate the work effectively. Members of the ECIDS Core Team will be focused on system work throughout the project. However, the ECIDS may not always be a top priority for others who are contributing to the work at a certain time. Having the ECIDS Core Team responsible for the coordination and communication of the project plan ensures that the time and resources available for the project are used in a way that aligns to the purpose and vision for the ECIDS. The ECIDS Core Team should also be able to determine how to leverage existing resources in the state, as the team will have time dedicated to identifying additional resources needed to support the project plan.

In addition, processes for identifying and involving stakeholders throughout the design and implementation of the ECIDS should be discussed alongside management and resources to ensure that there is enough staff support to keep the stakeholders engaged as well as resources to gain their feedback. Staff time and resources may be needed to support roundtable meetings, webinars, and other methods to ensure all stakeholders can be involved in the process.

Key Indicator 2: There is a project management plan that clearly articulates the scope of work, outcomes, timeline, and responsibilities for development and implementation of the ECIDS

The project plan should be developed early in the planning process and should be flexible enough to meet unexpected challenges. It is not necessary to have a perfect project plan, or to know every step, but it is essential to allow for changes as needed throughout the development of the ECIDS. At a minimum, the project plan should include goals, objectives, key deliverables, timeline, resources needed, and who is accountable for each piece of the plan. A solid project plan will also address the "Why," "What," "Who," and "When" of the ECIDS (see figure 2, next page).

Why?	What?	Who?	When?
The purpose and vision statements identified earlier, as well as more specific objectives for elements of the project.	The outlined steps needed to accomplish the purpose and vision.	Leadership, agencies/programs, or individuals held accountable for accomplishing project goals and deliverables.	Dates for major milestones. Dates for minor milestones for the leadership to verify as the project moves forward. When stakeholders will be engaged. Provide a specific timeline, and be very clear about who is responsible for the project and who is assisting.

Figure 2. Key considerations for an ECIDS project plan

Communication is central to the success of any project. All project stakeholders need to be informed about the project plan and receive regular updates on its progress. The project plan should include the person or agency responsible for reporting on the project's progress to each key stakeholder group. For more information about identifying stakeholders, please see Component C: Stakeholder Engagement.

Building Out the Project Plan

The ECIDS Core Team should do the following when developing the project plan:

- Determine the key deliverables aligned to the purpose and vision, then identify the milestones needed to reach the deliverable
    - Include vendor deliverables and tasks as they will impact other activities in the project plan; these tasks are commonly referred to as dependencies
- Outline tasks and activities to achieve each milestone
- Describe who will be responsible for each task and activity
- Establish timelines for tasks and activities
- Capture the status of each task and activity

One lesson learned from states undertaking ECIDS planning is that the project plan needs to include milestones and associated tasks for the development and approval of data sharing agreements. This process can take a long time, so it is essential to include this step early in the project plan. More information about data sharing agreements is included throughout the Toolkit.

As the project plan is developed, a few related resources should be included or attached as appendices to the document. These attachments might include the following:

- **Risk Log** tracking of risks and issues with vendors and defining the issue escalation and resolution process
- **Budget** that aligns to the project plan. When developing the project plan, the ECIDS Core Team needs to consider the funding that will be needed to support the work of the project plan, keeping in mind the purpose and vision of the ECIDS. The ECIDS Core Team may also determine that funding streams beyond federal and state dollars—such as those offered by philanthropic organizations in connection with data collections—may be worth pursuing.
- **Revisions** to the project plan and budget as the ECIDS transitions from project to a sustainable program.

Communicating the project plan is a key function of the ECIDS Core Team. It is important to identify communications strategies that can be tailored for various stakeholders depending on their needs and will support the communication needs within the state. A few ways to communicate about the project plan might include

- providing regular updates about the project plan;
- establishing regular status update meetings with the vendor(s); and
- communicating milestones to stakeholders as they occur.

The ECIDS Core Team may consider including tasks in the project plan to review legal and procedural requirements that might affect the project and to gather information about similar projects that might inform the plan. Many states have legislation impacting how data can be collected, where it can be stored, and who can access it. Reviewing all possible legislation that could impact the integration effort will help ensure that the project does not encounter unforeseen obstacles in the future. In addition, compiling information and lessons learned from previous work data system work, similar initiatives in other states, and any current state requirements for data system may influence the project plan.

Legislative staff can be an important resource during planning. They can assist the ECIDS Core Team in understanding and defining the impact of early childhood legislation and promoting legislative changes when needed. They can also become important partners in sustaining the ECIDS and the P-20W+ SLDS. When legislators and their staff are on board with the goals and direction of the state's early childhood community, they are more likely to support its initiatives when state budget appropriations are needed.

Similarly, if the project is hindered by a lack of state legislation related to the ECIDS, the ECIDS Core Team can develop relationships through these channels to begin crafting legislation that will support this project. Even when the lack of legislation is an opportunity to develop the system as needed, policymakers should be involved from the beginning so that there is buy-in for the project and it can be sustained in the future.

Key Indicator 3: The ECIDS project plan and the P-20W+ project plan are aligned, and the two project teams communicate regularly

If a state is developing or has a P-20W+ SLDS, the ECIDS Core Team should reach out to the early childhood representative on the P-20W+ planning groups to ensure coordination between the two planning and management efforts. As part of its broader communications approach, the ECIDS Core Team should

determine how it will communicate its project plan, how the plan may impact the P-20W+ system, and how it will ask the P-20W+ planning groups to communicate progress that may impact the ECIDS. Often the two projects will have different project plans, but some states have connected the two plans. The decision whether to plan the two systems separately or jointly should be made by the state, but the goal is for them to be aligned and coordinated efforts. The project plans should reflect this alignment and show where each project is leveraging resources from the other to ensure that there are no duplicated efforts and that both are meeting their intended purpose and vision.

SST and State Resources

- SLDS Early Childhood Integrated Data System Self-Assessment – Component B: Planning and Management
  https://slds.grads360.org/#program/ecids-toolkit:-planning-and-management
- SLDS Issue Brief: Effective Project Planning and Managing Change
  https://slds.grads360.org/#communities/pdc/documents/5245
- Race to the Top Early Learning Challenge Scopes of Work for the ECIDS Projects: RTT applications
  http://www2.ed.gov/programs/racetothetop-earlylearningchallenge/awards.html
- Traveling through Time: The Forum Guide to Longitudinal Data Systems – Planning and Developing an LDS
  https://slds.grads360.org/#communities/pdc/documents/3071
- Report of the Oklahoma Data Roundtable
  https://slds.grads360.org/#communities/pdc/documents/5158 (login required)
- Kansas State Department of Education (KSDE) High Level Project Outline Template
  https://slds.grads360.org/#communities/pdc/documents/2697 (login required)
- KSDE's Project Start Checklist Template
  https://slds.grads360.org/#communities/pdc/documents/2699 (login required)
- KSDE Project Charter Template
  https://slds.grads360.org/#communities/pdc/documents/2700 (login required)
- Memorandum of Agreement between Head Start Agencies and the Missouri Department of Elementary and Secondary Education
  https://slds.grads360.org/services/PDCService.svc/GetPDCDocumentFile?fileId=2824
- SLDS Webinar: Creative Solutions to Defining the 'P' in 'P-20'
  https://slds.grads360.org/#communities/pdc/documents/2763
- Washington's MOU for Responsibilities and Principles for Sharing and Using P-20 and Workforce Data
  http://www.erdc.wa.gov/P20W_DG/research/mou_final_201109.pdf

COMPONENT C: STAKEHOLDER ENGAGEMENT

Stakeholder engagement is the process by which an organization or collection of organizations systematically involves its stakeholders in its work. ECIDS stakeholders are individuals or groups who are directly or indirectly affected by the decisions made about the data system, including its design, development, implementation, and use.

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Stakeholder engagement is essential to a successful ECIDS because it is the means by which the effort makes certain its goals, approach, and execution are in line with the expectations and needs of those it intends to serve. By doing so, stakeholder engagement helps mitigate risks, increases perceived and actual value to the users, and subsequently drives long-term sustainability. Given the numerous types of early childhood programs, data contributors, and stakeholders for an ECIDS, it is especially critical to have a well-established and -communicated stakeholder engagement plan to ensure the ECIDS involves all the key players in a purposeful way.

This section outlines critical indicators and elements for identifying and engaging stakeholders.

Key Indicator 1: Key stakeholders are identified and selected for inclusion in the ECIDS to ensure prioritization of the state's needs

Planning for ECIDS development cannot be accomplished without the right stakeholders engaged in the work. However, with so many different types of early childhood programs and so many different funding streams and sources for early childhood data, identifying the right stakeholders can be a real challenge.

To begin this process, the ECIDS Core Team should use the state's inventory of early childhood programs and the resources of the state's Early Childhood Advisory Council (ECAC) to identify those stakeholders who are essential to the project. Researchers, who are often overlooked stakeholders, may also offer excellent support when creating the essential questions to be answered by the ECIDS. Their feedback helps ensure that the essential questions are answerable in the ways that the various end users need them to be answered.

The ECIDS Core Team will need to determine the key leaders whose involvement is critical to the project and ensure that they fully understand the purpose of the project and can serve as spokespeople to communicate the vision, mission, and purpose of the ECIDS. The team will also need to identify the necessary agencies whose partnership is essential, as well as the staff who are equipped and trained to do the implementation work. The involvement of policymakers and representatives from funding sources should also be considered.

Documenting the stakeholder-identification process provides transparency and justification for the involvement of certain stakeholders and articulates the value of their participation. Additionally, the documentation helps formalize the process for adding stakeholders, allowing the project to move forward without interruptions when new stakeholders need to be added to the stakeholder group. As the ECIDS Core

Team develops its plan for stakeholder engagement, it needs to consider other stakeholders who are not currently engaged but who should be and take steps to secure their involvement.

Due to its diverse representation, the state ECAC can provide a ready-made stakeholder group. Many ECACs were designed to serve as centralized coordinating bodies for strategic planning and early childhood data analysis, and many have already developed or are in the process of developing a data workgroup or committee to look specifically at how data can be coordinated among early childhood programs. The federal legislation governing ECACs lists questions the groups are accountable for answering to the state's governor each year, along with recommendations for future state investments in early childhood.

Regardless of how they are identified, all stakeholders need to know and trust that the stakeholder engagement process is fair, transparent, and free from political gain, and that the well being of the state's young children is central to the decisions made by the ECIDS Core Team. Transparency regarding how the ECIDS Core Team was established, how the state's list of prioritized needs was developed, and how decisions about the ECIDS are made will serve the project well in the long run. Without this trust, the necessary buy-in for continued work and for full implementation of the project may be limited. As the list of prioritized needs is established, the ECIDS Core Team also needs to consider also how key decisionmakers can be more fully informed about the complexity of broader cross-system analysis, which may necessitate more intentional collaboration and the elimination of "silos" between programs and organizations.

Figure 3 illustrates potential ECIDS stakeholders.

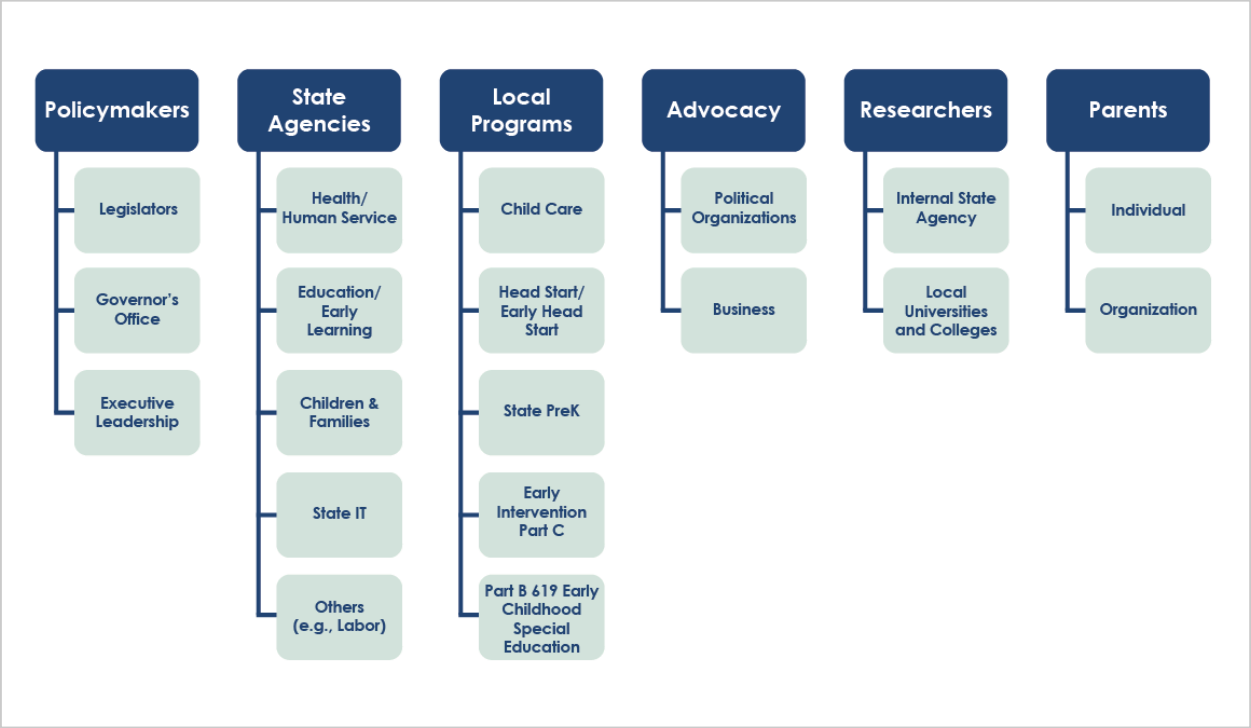

Figure 3. Potential ECIDS Stakeholders

Key Indicator 2: The roles and expectations of the stakeholders are clearly articulated to ensure prioritization of the state's needs.

In addition to identifying stakeholders, the ECIDS Core Team needs to clarify stakeholder roles and responsibilities as well as develop strategies to gain buy-in. This is not to say that all stakeholders need to contribute to every phase of the ECIDS project; the ability to manage and limit stakeholder unnecessary involvement is as important as ensuring diverse representation and knowing when to bring in the right people. Figure 4 lists questions the ECIDS Core Team should ask when considering how to involve different stakeholders in the project.

Questions to Guide Decisions about Stakeholder Involvement
Do they contribute data?
Are they users of data?
What is their function and role?
Is there a cross section of state and program stakeholders?
Are they stakeholders or partners? Be aware of the difference. A partner is a person or organization associated with another in some action or endeavor and who shares in both the risks and rewards of the joint effort. A stakeholder is a person or group having an investment or interest in an enterprise.

Figure 4. Questions to Guide Decisions about Stakeholder Involvement

Most importantly, the ECIDS Core Team must be clear about its expectations for stakeholders and what it will provide them in return for their engagement.

Devising a stakeholder engagement plan is as important as developing the overall vision. A stakeholder engagement plan is a formal document delineating what stakeholders will be involved, why, how, and what that involvement will look like. More specifically, the plan will clearly describe the value stakeholders bring to the project, the purpose of including the stakeholders, the roles and responsibilities of the stakeholders, the processes that will be followed, when meetings will be held, how communications will occur, and how stakeholder input will be used.

Throughout the planning process, communication will occur both formally and informally among many different types of stakeholders. A plan for both formal and informal communications is important to include in the stakeholder engagement plan. The ECIDS Core Team cannot rely solely on committees and meetings to communicate; building relationships with stakeholders is an essential part of success for the ECIDS. Stakeholders need to be educated and engaged in determining how data will be used to serve the goals outlined in the purpose and vision. Additionally, the ECIDS Core Team should ensure that there are frequent opportunities for stakeholders to discuss and respond to any project challenges that may arise.

Steps for creating a stakeholder engagement plan include

- identifying the stakeholders with whom the ECIDS Core Team will need to communicate;
- identifying the means of communication;
- identifying what information should be communicated;
- identifying resources needed, including fiscal and human resources; and
- identifying responsible parties, timelines, and accountability measures.

Much like the project plan, the stakeholder engagement plan should be detailed and include timelines. The plan should also identify steps to be taken to brand the ECIDS and develop materials such as signature slides, presentation materials, and other products that will clearly convey the purpose and vision statements.

Key Indicator 3: Stakeholders inform the development, implementation, and use of the ECIDS

The success of the ECIDS is contingent upon how well stakeholders are engaged in the development process. The ECIDS Core Team needs to ensure that those responsible for implementing the stakeholder engagement plan have full access to the plan, and the team should receive regular updates regarding its progress. These responsibilities should be delineated in the plan.

Responsiveness and timeliness are essential to developing stakeholder trust in the project; the ECIDS Core Team needs to build trust among stakeholders by sticking to the project plan and facilitating ongoing communication. Technology such as webinars, webpages, conference calls, electronic communication methods, and document servers can assist with collaborative planning. Stakeholders should be given specific dates and times when ECIDS materials and publications will be delivered. Above all, listening and prompt follow up are key. When asking stakeholders for input, advice or other feedback, the ECIDS Core Team should make clear how such input will be gathered, compiled, considered, and ultimately used or not. Transparency is critical in all stakeholder engagement activities and decisions. If stakeholder feedback is used to make decisions or changes, ensure that stakeholders are notified of such changes.

While it is necessary to include a variety of stakeholders in the ECIDS development process, keeping them engaged—and engaged *at the right time*—can be a challenge. One way the ECIDS Core Team might maximize productivity and keep the work moving forward is to consider how stakeholders will interact with one another and involve them accordingly. For example, separating stakeholders into policy-focused and data-focused groups may help streamline decisionmaking. Keeping stakeholders with different roles and expertise together throughout the ECIDS development process sometimes elicits frustration as their priorities and areas of concern are different. At the same time, the groups may need to be brought back together for more general project planning.

New stakeholder may need to be brought into the project unexpectedly, such as when a program is undergoing a leadership transition. The ECIDS Core Team should consider how it will handle organizational change and develop resources such as signature slides and elevator speeches that quickly and concisely speak to the purpose and vision of the project. Training materials for new staff or leadership will also need to be developed. The ECIDS Core Team should keep in tune with changes in staff and leadership and quickly familiarize new stakeholders with the project plan.

Key Indicator 4: Early childhood data system representatives actively engage in the P-20W+ data system stakeholder group

If a state is developing or has a P-20W+ SLDS and related stakeholder engagement team, the ECIDS team should reach out to the early childhood representative(s) on the P-20W+ stakeholder engagement committee to ensure coordination between the two efforts. If a state has a P-20W+ stakeholder engagement team with no early childhood representation, the ECIDS Core Team should work through the appropriate channels to ensure that early childhood stakeholders are included in the P-20W+ group, with the same roles and responsibilities as other P-20W+ representatives. As part of its broader communications approach, the ECIDS Core Team should determine how it will communicate decisions that may impact the P-20W+ work to the P-20W+ groups, and how it will ask the P-20W+ stakeholders to communicate decisions that may impact the ECIDS.

SST and State Resources

- SLDS Early Childhood Integrated Data System Self-Assessment – Component C: Stakeholder Engagement
  https://slds.grads360.org/#program/ecids-toolkit:-stakeholder-engagement
- SLDS Best Practices Brief: Stakeholder Communication
  https://slds.grads360.org/#communities/pdc/documents/2729
- Traveling through Time: The Forum Guide to Longitudinal Data Systems – Planning and Developing an LDS
  https://slds.grads360.org/#communities/pdc/documents/3071
- Stakeholder Engagement Plan Guide & Template
  https://slds.grads360.org/#communities/pdc/documents/3083
- Stakeholder Engagement Toolkit: Traversing "Stakeholder Land"
  https://slds.grads360.org/#communities/pdc/documents/2639
- Communications Plan Template
  https://slds.grads360.org/#communities/pdc/documents/2785
- Strategies for Engaging Early Learning Stakeholders
  https://slds.grads360.org/#communities/pdc/documents/5908
- Getting Started: Incorporating Head Start Data into an SLDS
  https://slds.grads360.org/#communities/pdc/documents/2633
- Moving Right Along: Incorporating Head Start Data into an SLDS
  https://slds.grads360.org/#communities/pdc/documents/3421

COMPONENT D: DATA GOVERNANCE

At its core, data governance is the means by which organizations (or groups of organizations) make decisions about their collective information assets. It is both an organizational process and a structure. Data governance establishes responsibility for data, organizing program area staff to collaboratively and continuously improve data quality through the systematic creation and enforcement of policies, roles, responsibilities, and procedures.[1]

Data governance refers to the overall management of the availability, usability, integrity, quality, and security of data. It is both an organizational process and a structure.

Data governance is essential to the successful planning, implementation, and use of an ECIDS because it ensures that all participating entities are represented in the decision-making process at both the strategic and implementation levels. When creating a new system that requires the collaboration of organizations that may not have worked together before, clear roles, responsibilities, and processes for how the work will be done are critical. In addition, integrating data from multiple sources requires ongoing decisions about how data will be defined, matched, stored, updated, reported, and protected. It is important to make these decisions consistently, from an early childhood sector-wide perspective, and with the input and buy-in from all participating entities. Data governance provides the mechanism to do this and to ensure accountability for the ECIDS information assets.

This section of the guide provides states with an overview of data governance, including the structure, key roles and responsibilities, the initial steps to establish and implement it, and the core processes established and overseen by data governance bodies.

Key Indicator 1: There is a formal, documented early childhood data governance structure for the ECIDS to support the work across partner agencies and/or programs and to meet the intended outcomes

Many states are trying to create both an ECIDS and a P-20W+ SLDS. If a state already has a P-20W+ data governance group, the ECIDS team should meet with the group's coordinator for insight into its process, roles, and membership. Developing a partnership with the P-20W+ coordinator will allow the ECIDS Core Team to learn from and leverage work and resources already in place. See Key Indicator 3, below, for more information about collaborating with P-20W+ groups.

Next, the ECIDS Core Team should convene stakeholders from participating agencies and programs to discuss what data governance is and why it is important to the ECIDS effort. Often states and agencies include key executive-level leadership, director-level representatives from each program area, the program data stewards, and IT staff who are involved in the project. The key is to design a data governance committee structure that meets the needs of the state and includes representation from all agencies and programs contributing data to the ECIDS.

[1] National Forum on Education Statistics. (2011). *Traveling Through Time: The Forum Guide to Longitudinal Data Systems. Book Three of Four: Effectively Managing LDS Data* (NFES 2011-805). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Generally, there are two levels of data governance committees: 1) executive/policy and 2) data management. The executive/policy committee is composed of the Early Childhood Executive Leadership in the state. These individuals can be agency directors, governor's advisors, and program directors. They are responsible for establishing the vision of the project, developing the key policy, research, and programmatic questions that will guide the work of the ECIDS, and ensuring adequate resources are allocated to the effort. The data management committee is composed of the program area data stewards who are responsible for the data and IT representatives who are responsible for the technology infrastructure that collects, stores, and reports the data. The data management committee does much of the daily work of defining data policies and associated processes for managing ECIDS data from collection through to reporting.

Identifying a data governance coordinator to direct and manage the work of the committees is crucial to ensuring that critical issues are prioritized and resolved and that there is collaboration among the groups. Figure 5 shows a typical ECIDS data governance structure.

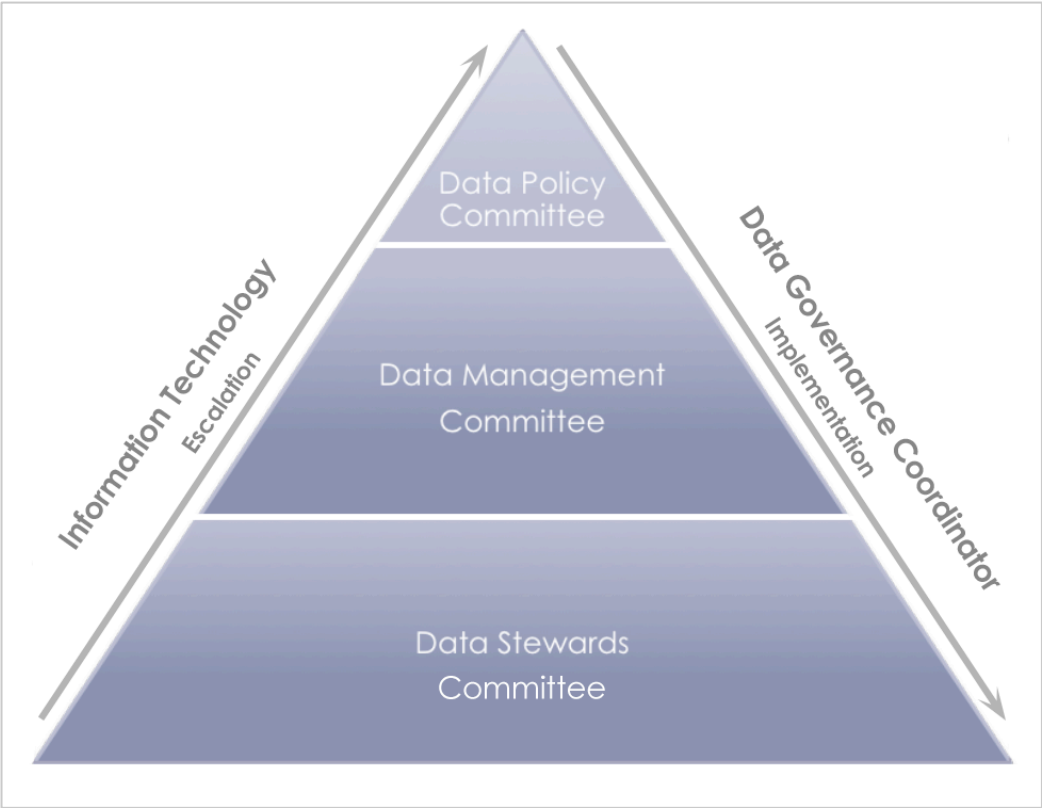

Figure 5. ECIDS Data Governance Structure[2]

Developing a data governance policy or charter is another critical early step in establishing data governance. The policy or charter demonstrates state and agency leadership's acknowledgement that data is a critical resource, as well as a commitment that it will be managed and used as such in support of the state's early

[2] Figure from *Early Childhood Data Governance in Action! Initial Steps to Establish Data Governance* (March 2014) *https://slds.grads360.org/#communities/pdc/documents/4565*

childhood vision and goals. It provides strategic direction by creating a framework for decisionmaking about and accountability for how data will be managed across the early childhood sector. It also assigns stewardship responsibilities for participating agencies' data included in the ECIDS and empowers the data management committee to establish more detailed interagency standards and processes. A typical data governance policy or charter usually includes

- a policy statement;
- a description of the scope of the effort;
- definitions of key terms;
- high-level governance roles and responsibilities;
- a list of the processes that will be defined and managed under data governance; and
- executive leadership signatures from the agencies and programs contributing data to the ECIDS.

As the ECIDS work progresses, the policy or charter can provide a clear framework for the data governance groups as they move into more detailed planning. It can also help orient new leadership and manage expectations across the participating groups and members, as well as explain the intent of the groups to external stakeholders.

Key Indicator 2: There are formal, documented early childhood data governance processes in place to make decisions about the ECIDS data

Once a data governance policy is created, the data governance committees begin defining in more detail the data governance roles and responsibilities and policies and processes for managing ECIDS data, from collection through to use. All these decisions should be codified in a data governance manual, which further expands upon the data governance policy. The manual is an important resource for orienting and training staff who are new to data governance and for ensuring that all members understand the expectations of their roles. The data governance coordinator takes a lead role in drafting the data governance manual, but it is important that all members of the data governance committees take ownership of it to ensure that it truly reflects the work and that all parties adhere to it. A data governance manual should include

- the goals and objectives of each committee in support of the broader ECIDS purpose and vision;
- the scope and responsibilities of each group's members;
- the decisionmaking process for each group (e.g., consensus, majority vote, attendance required to make a decision, etc.);
- the escalation and resolution path for issues that span more than one data governance group; and
- an appendix with the established policies and associated processes overseen by data governance, or links to where these policies and processes can be found.

The types of data policies, processes, and decisions made and overseen by data governance include

- a data access and use policy;
- a data request policy/process;
- a master source for data elements contributed by more than one agency or program;
- a collection and refresh schedule for all sources of the ECIDS; and
- a process for adding new elements or sources to the ECIDS.

In addition to the manual, a critical data issues log is a helpful tool for identifying, describing, assigning responsibility for, and tracking progress toward resolving important issues under the purview of data governance. A set of criteria for determining what constitutes a critical data issue (i.e., how to prioritize issues that are critical and need to be addressed next) should be established, and updating the critical data issues log should be a standing agenda item for the data management committee.

Key Indicator 3: There is coordination between the P-20W+ and the ECIDS data governance efforts

If a state is developing or has a P-20W+ SLDS and related data governance, the ECIDS data governance groups should reach out to the early childhood representative on the P-20W+ data governance committee to ensure coordination between the two data governance efforts. If a state has a P-20W+ data governance committee that does not have early childhood representation, the ECIDS groups should work through the appropriate channels to help ensure each P-20W+ data governance group has an early childhood representative with voting rights. As part of its broader communications approach, the ECIDS data governance groups should determine how they will communicate decisions that may impact the P-20W+ work to the P-20W+ groups, and how the P-20W+ data governance groups will communicate decisions that may impact the ECIDS.

SST and State Resources

- SLDS Early Childhood Integrated Data System Self-Assessment – Component D: Data Governance
  https://slds.grads360.org/#program/ecids-toolkit:-data-governance
- Traveling through Time: The Forum Guide to Longitudinal Data Systems – Book III: Effectively Managing LDS Data
  https://slds.grads360.org/#communities/pdc/documents/3074
- Maine's Early Childhood Data Governance Policy Template
  https://slds.grads360.org/#communities/pdc/documents/5106 (login required)
- Maine's Early Childhood Data Governance Manual
  https://slds.grads360.org/#communities/pdc/documents/5107 (login required)
- Maine's ECIDS One-Pager
  https://slds.grads360.org/#communities/pdc/documents/5126 (login required)
- Virgin Islands' ECIDS One-Pager
  https://slds.grads360.org/#communities/pdc/documents/5042 (login required)
- Findings from the National School Readiness Indicators Initiative: A 17 State Partnership
  http://www.gettingready.org/matriarch/DisplayLinksPage.asp_Q_PageID_E_303_A_PageName_E_pdfhold_A_LinksPageID_E_442
- Early Childhood Data Governance in Action! An Introduction
  https://slds.grads360.org/#communities/pdc/documents/4533
- Early Childhood Data Governance in Action! Initial Steps to Establish Data Governance.
  https://slds.grads360.org/#communities/pdc/documents/4565
- Issue Brief: Data Governance and Stewardship
  http://ptac.ed.gov/sites/default/files/issue-brief-data-governance-and-stewardship.pdf

- Early Childhood Data Governance Coordinator Role Description
  https://slds.grads360.org/#communities/pdc/documents/5115 (login required)
- Critical Data Issues Log Template
  https://slds.grads360.org/#communities/pdc/documents/5116 (login required)
- Confidentiality Issues: Addressing Questions about Sharing Data among Organizations
  https://slds.grads360.org/#communities/pdc/documents/5101 (login required)

Component E: System Design

The purpose of system design is to create a technical solution that satisfies the functional requirements and aligns with the overarching purpose and vision for the system. It is the process of defining the technical architecture, components, modules, interfaces, and data for a system to fulfill specified requirements. This includes the implementation and ongoing maintenance of those processes.

System design is the means by which the operational needs of the data contributors and data users are translated into a technical infrastructure.

System design is essential to an ECIDS because it is the means by which the operational needs of the data contributors and data users are translated into a technical infrastructure that will meet those needs. Given the complexity and changing nature of the early childhood sector, the ECIDS system design must be flexible enough to cross and expand into additional domains, but fixed enough to achieve stakeholder requirements.

This section of the guide addresses the most critical and common elements involved in designing an ECIDS: design requirements, data models (e.g., federated or centralized), documentation, unique identifiers, privacy and access controls, and procurement process.

Key Indicator 1: The established ECIDS design meets the requirements aligned with the state's long-term purpose and vision

System design begins with a review of the state's long-term purpose and vision. The ECIDS data governance manual is a starting point to help steer the direction of the system design. It is from this and other resources that the ECIDS Core Team will develop a needs assessment plan outlining the methods by which business requirements will be met and the essential questions developed by the state will be answered.

Everyone involved in the ECIDS must be kept informed throughout the process, as this will minimize miscommunication and mitigate any challenges. Committees and governing bodies need to be composed of both technical and program staff, to ensure that communication among the groups is free flowing. Communications—including any decisions, plans, and changes—must be published and accessible to everyone who needs to know the current state of the ECIDS. This will help to keep expectations realistic, while staying on target with the original intent of the ECIDS.

To support the business requirements process, the ECIDS Core Team and ECIDS Technical Team can start by creating an inventory of current data from each contributing early childhood partner. Assessing what early childhood programs exist in the state and what kind of data are being collected can be a lengthy process, so a partnership with the state's ECAC, if applicable, is a great help. In fact, the ECAC might have already completed such an inventory as part of its responsibilities outlined in federal legislation.

Many federal and state early childhood programs collect and report data that could potentially be used in the ECIDS to answer the state's essential questions. Figure 6 lists a number of programs that provide or administer early childhood services that may have data that would be useful to the ECIDS.

Early Childhood Programs and Agencies	
State Preschool or Pre-Kindergarten programs	Head Start or Early Head Start
Part C - Early Intervention	Part B - Preschool Special Education
Center-Based Child Care	Family Child Care
Private Early Childhood Programs	Home Visitation
Early Literacy Programs	Family Support Programs
Early Childhood Professional Development Systems	Licensing or Accreditation Systems
Community-Based Early Childhood Networks *(such as the Smart Start North Carolina Model)*	

Figure 6. Early Childhood Programs and Agencies

The ECIDS Core Team and ECIDS Technical Team should consider the current ways that data are collected and used, and how the ECIDS could reduce burden and redundancies among data collectors. Identifying challenges up front also allows the teams to begin working toward solutions early in the process. It is important to engage stakeholders in discussions of both opportunities and challenges as they will often have ideas for solutions. Opportunities for partnerships with agencies or programs with resources that would benefit the project should also be considered.

It is important to remember that not all data need to be included in the ECIDS or the P-20W+ SLDS; there should be specific reasons and processes for adding elements that will help to narrow the scope of the data system and, ideally, the funding needed to support it. The needs of the audiences the ECIDS intends to serve will drive its design and implementation. For example, a system tailored to serve teachers will look different from one tailored to serve researchers. The SLDS brief *Identifying SLDS Users and Uses* can help initiate a discussion about whom the data system will serve. Also, the ECIDS teams need to ensure that the content, accessibility, and timeliness of the data available to include in the ECIDS is applicable and useful to the audiences they want to serve.

Once the business requirements have been established, it is critical to consider the amount of time and resources they will require as well as the overall value they bring to both data owners and data users. Prioritization is necessary, as time and resources will be limited; but taking the right approach and adopting a phased development strategy will help make the system design work manageable if there are concerns about time and resources. There should be no expectation that the ECIDS will meet all of its requirements at its initial release; the system will most likely evolve based on current and future requirements. For this reason, the ECIDS Core Team and ECIDS Technical Team should evaluate the system methodology approach currently in place in the state. If no specific methodology is being used, the teams should consider adopting one that best suits the ECIDS's evolving needs. For example adopting an agile methodology can help streamline the process of dealing with a multitude of system requirement changes. A phased approach would include building a proof of concept, which would help garner and solidify support for the ECIDS. Apart

from the value of gaining support for the ECIDS, the proof of concept will allow the ECIDS teams to get a better understanding of actual costs and technical challenges associated with a certain approach. Allowing time to evaluate approaches prior to making a final commitment is highly beneficial for the project teams. Following the proof of concept, the ECIDS Technical Team can start to deliver prototypes and even small-scale capabilities that high-priority users can begin using immediately. Allowing users with the highest need or the best-equipped users to make immediate use of the system can be a very effective approach as they will help to pave the way to achieve the state's long-term purpose and vision. The goal for the ECIDS teams should be to deliver tools as quickly as possible and start showing good results.

At this stage, there should also be a well-established documentation process to ensure that both the IT processes and system design are captured. Documentation is just as important as any other process; it should not be dismissed or put it off until the end of the project. Instead, it should be adopted as a regular—and evolving—exercise to ensure that the system design is on target to meet the long-term vision and purpose.

Key Indicator 2: The system design reflects the current and continued needs for the ECIDS

Once it has been established that the system design meets the states' business requirements, the ECIDS system model can be considered. When planning the system model, it is imperative that the model aligns to the needs of the state. If possible, it may be helpful to build off of current systems and leverage existing technology. Some states have found that building upon what already exists can be efficient, effective, and timely, both from a technology and infrastructure perspective and an organizational change-management perspective. Efficiency is key when thinking about systems, as it takes time to develop a new system and train the necessary staff.

If the existing IT infrastructure is not be sufficient to meet the ECIDS project's goals, a new system will need to be designed. There are three prominent models for integrating early childhood data into an ECIDS or into the P-20W+ SLDS: centralized, federated and hybrid.

Centralized Model

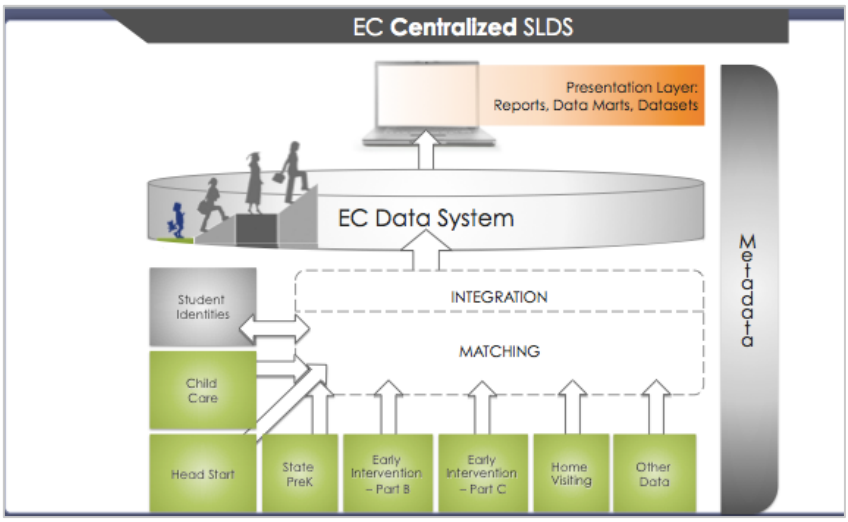

Figure 7. Centralized Model for an Early Childhood Data System

Under a centralized data system model, early childhood data from across all participating programs and agencies is generally consolidated into one database or data warehouse from the beginning. Once the data are incorporated into a centralized ECIDS, the state can then feed appropriate data into the P-20W+ SLDS, if needed.

Strengths of a centralized model include

- queries and reports can be run easily and in a timely manner;
- the system produces consistent data; and
- a wider range of short-term and long-term report categories are possible.

Weaknesses of a centralized model include

- the consolidated database requires extensive support, including a database administrator, storage, server, etc.; and
- public concern about all child and personally identifiable information being stored in one place or misused.

Federated Model

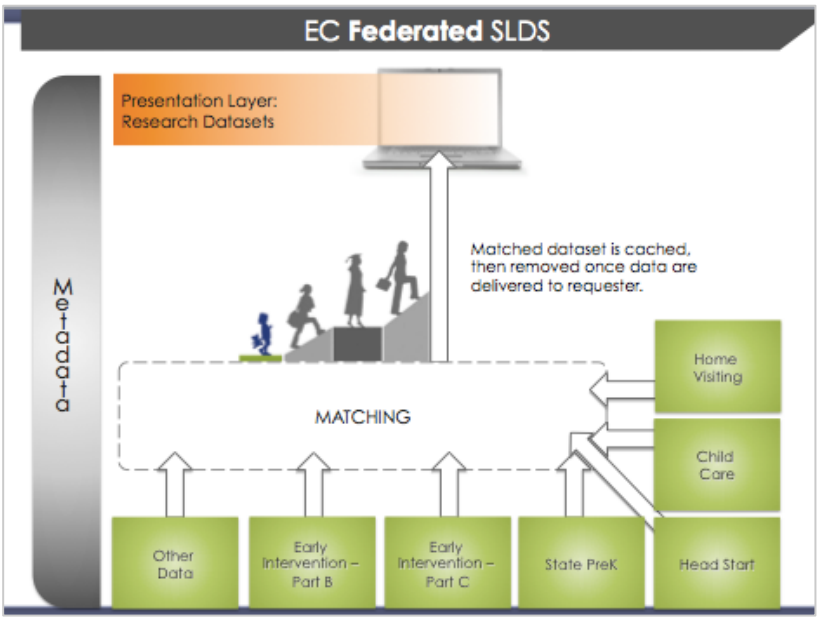

Figure 8. Federated Model for an Early Childhood Data System

In a federated data system model, early childhood data generally is not consolidated from across all participating programs and agencies; rather, each program or agency feeds appropriate data into the ECIDS—and potentially the P-20W+ SLDS—directly from their own data sources. Linkages used to match data from different sources do not persist under a federated model.

Strengths of a federated model include

- there is no costly, centralized database to support;
- fewer resources are needed; and
- there are fewer concerns about storing all child-level data in a central location.

Weaknesses of a federated model include

- the challenge of determining longitudinal cohorts across data systems;
- the system can only produce data files—long-term and stored data sets are not available; and
- the system is unable to produce reports that persistent data linkages.

Hybrid Model

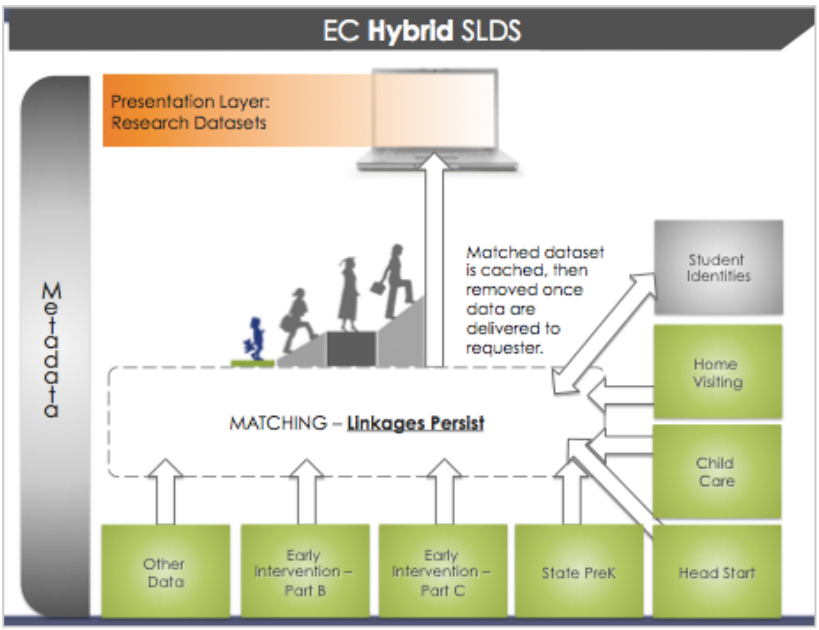

Figure 9. Hybrid Model for an Early Childhood Data System

In a hybrid data system model, early childhood data is generally not consolidated from across all participating programs and agencies. As in a federated model, each program or agency feeds appropriate data into the ECIDS or potentially into the P-20W+ SLDS directly from its own data source. The key difference from a federated model is that matching linkages persist in a hybrid model.

Strengths of a hybrid model include

- the matching process is done only once;
- persisting linkages cut down on processing time; and
- there no need for a large central database, and limited support is needed for the match database.

The primary weakness of a hybrid model is that it faces similar reporting and cohort-defining challenges as a federated model.

States are currently developing ways to protect personally identifiable information across all three types of data models. As part of that approach, some states are choosing to include only de-identified data in the ECIDS. There are advantages and possible limitations with this approach, and ECIDS teams need to evaluate any approach or ECIDS model based on the outcomes they hope to achieve.

Once the system model has been determined, its time to conduct an inventory of relevant data elements from each contributing data system to ensure accurate data mapping and a common language across systems and

contributing agencies. As part of this process, the ECIDS Technical Team should review data-retention policies for each program from which data will be gathered. Retention policies will vary widely among the programs. If data will be needed for longitudinal purposes, then it will be necessary to consider possible solutions to ensure data is available for the required time period. In addition, the ECIDS Technical Team should refer to the data sharing agreement destruction of data requirement under FERPA at the conclusion of an agreement. In general, the education agency can retain data indefinitely subject to state and local laws.

Taking a phased approach by prioritizing the data that will be incorporated into the ECIDS and identifying the most critical data is an essential part of the initial development phase first, both to achieve short-term successes and to incorporate other data elements at a later date. Waiting for the "complete" solution to be ready before allowing the system design to move forward can be costly. The system development process should be continuous, and teams should not wait for all intended outcomes to be met in one initial solution.

An ECIDS can draw from several data sources at various degrees and levels of integration from within one or multiple agencies' systems. These data sources can vary in sophistication and complexity from system to system. Data mapping can also prove to be a challenge as some data sources may not be well documented. For this reason the ECIDS teams must strongly consider limiting the amount of data incorporated from each contributing agency or program as well as the ECIDS features that will be developed initially until better documentation is available. Adopting an incremental approach to introducing data sources or system features will be key to the long-term success of the ECIDS. This phased approach allows for the state to take small but valuable steps toward achieving its long-term purpose and vision. It also gives stakeholders and users confidence that measureable progress is being made. Each new release of data or system features will help prove the value of the ECIDS. As each feature is used and evaluated, the ECIDS teams will gain knowledge from previous experiences and be able to refine the development process and accelerate the rate of delivery while also building the necessary capacity to sustain the system. For this reason, it is important to evaluate the system's short-term goals without losing sight of the ECIDS model's ability to sustain the long-term purpose and vision.

Key Indicator 3: The ECIDS design is articulated in a way that stakeholders, researchers, or any other nontechnical (i.e., program) team members can clearly understand the system design and its implications

Documentation should not begin at the system design stage; the ECIDS Core Team should have already established a sound documentation process.

Expectations for the ECIDS can vary widely, and it is therefore important to document the system design process and to clearly articulate the difference between current and planned capabilities. While states can adopt a phased approach to building the ECIDS, it is equally as important to ensure that all stakeholders are clear on the plan to increase capacity and data availability over time. Documentation must clearly identify all current and future data sources as planned or currently available. Providing a road map that outlines current and future plans helps clarify expectations for short-term versus long-term capabilities.

At a minimum, the documentation process should involve consideration of who will create and maintain documents, where they will be stored, and who will have access to them. The ECIDS Technical Team might

find it useful to review the data governance documents and continuing to follow the established format and layout of the data governance manual for its additional documentation.

States should maintain documents that capture the following items related to the system design:

- An outline of the system/state requirements
- Data dictionaries
- Stakeholder feedback and comments,
- System diagrams, including visuals
- User needs
- Development processes
- Key decisions
- Process enhancements
- Other critical steps and decisions

A system design diagram is a key item to include in documentation as it will be used often to articulate the system design and its implications to any audience. This diagram provides a graphical representation for anyone wanting to visualize the ECIDS. There is a difference between a presentation diagram and conceptual diagram, so it is important to consider the intended audience. A presentation diagram is a high-level view intended for the general public, while a conceptual diagram includes more technical details, such as where data are coming from and who owns the data.

The ECIDS Technical Team also needs to document expected outputs, user interfaces, and user expectations in terms of reports, dashboards, query results, or other features. These documents should be referred to as much as possible during system design discussions and progress reports; they provide validation that all efforts are aligned to achieve the goals of the ECIDS.

The importance of documentation cannot be emphasized enough; it is essential to ensure that all sources, systems, and key requirements are outlined and captured. The more detailed the documentation, the easier change management will become, and the easier future enhancements can be implemented. Considering the amount of staff turnover many states experience, as well as other factors, the success of the ECIDS will most likely depend on how well documented the process was throughout its lifecycle. Most importantly, it is never to early to start documenting, and documentation will be continuous.

Key Indicator 4: There is a unique identifier(s) (UID) or established matching process to ensure an accurate, unduplicated count of children, staff, and programs across the state

When designing a system, one of the early critical issues to address is the assignment of unique IDs. It is essential for states to think about how to identify a child and match that child longitudinally through other sectors, such as K12 and postsecondary. Some states use the existing K12 identifier and assign it to children in all participating early childhood programs; others use a separate early childhood identifier and create a temporary linkage via an external match routine so that the privacy and confidentiality of the data are preserved and any state confidentiality requirements are met. For more on early childhood UIDs, see the SLDS resource *Unique Identifiers: Beyond K12*.

Unlike K12 data, which are usually housed in one agency with multiple program areas, early childhood data may be contributed from multiple agencies and multiple programs within each agency, as well as some stand-alone programs depending on the vision of the project. As the ECIDS Core Team and ECIDS Technical Team begin to think about which data system model best fits their needs, they should be aware that the needs for the state's P-20W+ data system may be different from the needs of the ECIDS. These differing needs may require the use of two different models. In any case, when designing the ECIDS, it is beneficial to have a representative from a P-20W+ sector contribute to the discussion about how the ECIDS design will align with the P-20W+ system.

Key Indicator 5: There are appropriate access and privacy business rules in place to ensure that all federal and state laws are followed

A priority for any ECIDS, regardless of its data model, will be to ensure that the integrity, privacy, and confidentiality of data meet all regulatory laws at both the federal and state level. The ECIDS Technical Team must ensure that data cannot be compromised and that there are no lapses in security. Special attention should be placed on emphasizing to stakeholders how the data are kept anonymous. Implementing strong and clear business rules in this area can help addresses concerns over individual privacy. Use of personally identifiable information (PII), in particular, should be limited to linkage purposes only. If a strong case is made to use datasets that include PII, access must be strictly limited only to those users who have been granted access. ECIDS teams should review the Privacy Technical Assistance Center's resources on data privacy and ensure that they address the most common security concerns related to big data systems. Teams must also strongly consider using de-identified datasets as a standard. Any individual laws, regulations, or specific legislation should be addressed by reviewing internal controls and standard operating procedures. Any business rules must always follow the terms of the executed data sharing agreements among the programs.

ECIDS data governance groups can vet the business rules and work with the ECIDS Technical Team to ensure that the appropriate levels of access are granted to the correct users.

Once the established business rules, data sharing agreements, and access controls are in place, communications plans and documentation will need to be developed to ensure that all operators and administrators understand and comply with federal and state confidentiality laws as well as program policies.

Key Indicator 6: There is an established procurement process that has been reviewed and used to develop the ECIDS project plan

Securing all internal and external resources needed to build the ECIDS can be challenging and time consuming. The ECIDS Core Team needs to ensure there is a process in place to manage vendors, contractors, and any agreements among the agencies involved in the project. In order to minimize any interruption in the execution of the project plan, the project manager must have a comprehensive list of all resources and dependencies defined in the plan. This will help ensure that the project team knows which resources to draw on at which point in the project. There is no need to have everyone hearing the same updates at every status report meeting while waiting for agreements to be signed; it is better to have a clear plan that accounts for the availability of stakeholders, business process owners, and other key individuals, and that includes a realistic timeframe to secure licenses and other products as necessary.

The ECIDS Core Team should seek as much information as possible from other states about their experiences with using certain products and vendors, and review SLDS resources.

Key Indicator 7: The system design reflects the longitudinal (i.e., linkage to P-20W+) needs identified by the state

If a state is developing or has a P-20W+ SLDS, the purpose for including early childhood data into the P-20W+ data system should drive the design of the data system model. Careful consideration has been given to the P-20W+ system design, and because the data in the SLDS needs to be longitudinal, considering how ECIDS data will be used in the P-20W+ system is especially important. In a centralized ECIDS model, early childhood data from across all participating programs and agencies is initially consolidated into one database or data warehouse and then fed into the P-20W+ system. Using a centralized model facilitates the process of storing and housing the data, which would more easily serve the needs of the P-20W+ system than a federated ECIDS. The biggest question the ECIDS Core Team and ECIDS Technical Team must answer when feeding data into the P-20W+ system is whether linkages need to be maintained and data identified over the long term. The teams need to carefully evaluate the goals and ultimate vision for connecting the ECIDS and P-20W+ SLDS. The choice of data system model—particular as it affects data retention—might prove to be an important factor in the state's ability to achieve its long-term goals for both data systems.

SST and State Resources

- SLDS Early Childhood Integrated Data System Self-Assessment – Component E: System Design
  https://slds.grads360.org/#program/ecids-toolkit:-system-design
- Maine's ECIDS Presentation Diagram
  https://slds.grads360.org/#communities/pdc/documents/5113 (login required)
- Maine's ECIDS Concept Diagram
  https://slds.grads360.org/#communities/pdc/documents/5114 (login required)
- SLDS Brief: Identifying SLDS Users and Uses
  https://slds.grads360.org/#communities/pdc/documents/2753
- Evergreen State P-20 Data Warehouse Implementation Study RFP No. 11-1400
  https://slds.grads360.org/#communities/pdc/documents/2765 (login required)
- CEDS Align Tool and CEDS Data Model
  https://ceds.ed.gov/
- Centralized vs. Federated: State Approaches to P-20 Data Systems
  https://slds.grads360.org/#communities/pdc/documents/2632
- Unique Identifiers: Beyond K12
  https://slds.grads360.org/#communities/pdc/documents/4564
- Integrated Data System Person Identification: Accuracy Requirements and Methods
  http://www.jacob-france-institute.org/documents/MD-WDQI-Person-Identification-Report.pdf
- Checklist: Data Security
  http://ptac.ed.gov/sites/default/files/ptac-data-security-checklist.pdf
- SLDS Webinar: Introduction to ECIDS System Design – The Basics 101
  https://slds.grads360.org/#communities/pdc/documents/5834

COMPONENT F: DATA USE[3]

Data use is the process by which people examine and make sense of data to inform decisions and actions. In short, it is the means of moving from *knowing more* to *doing something* with that knowledge.

Data use is the process by which people examine and make sense of data to inform decisions and actions.

As with any data system, data use is the ultimate litmus test of success for an ECIDS because it is the means to achieve the purpose and vision. Stakeholders' use of information to improve their individual work, the effectiveness of the program of which they are a part, or the policies that govern early childhood in the state is crucial to the success of an ECIDS because it is how the system makes an impact on the broader early childhood field. In addition, clarifying the data use priorities of the ECIDS can help guard against unproductive scope creep by establishing clear, realistic expectations for what the system will be able to do in support of instructional, programmatic, or policy goals.

This section of the guide is intended to help states begin creating a data use strategy to ensure that the ECIDS is responsive to users' data needs and that there is effective, widespread use of the ECIDS in support of the purpose and vision established in Component A.

Figure 10 depicts a framework for supporting effective, widespread data use.

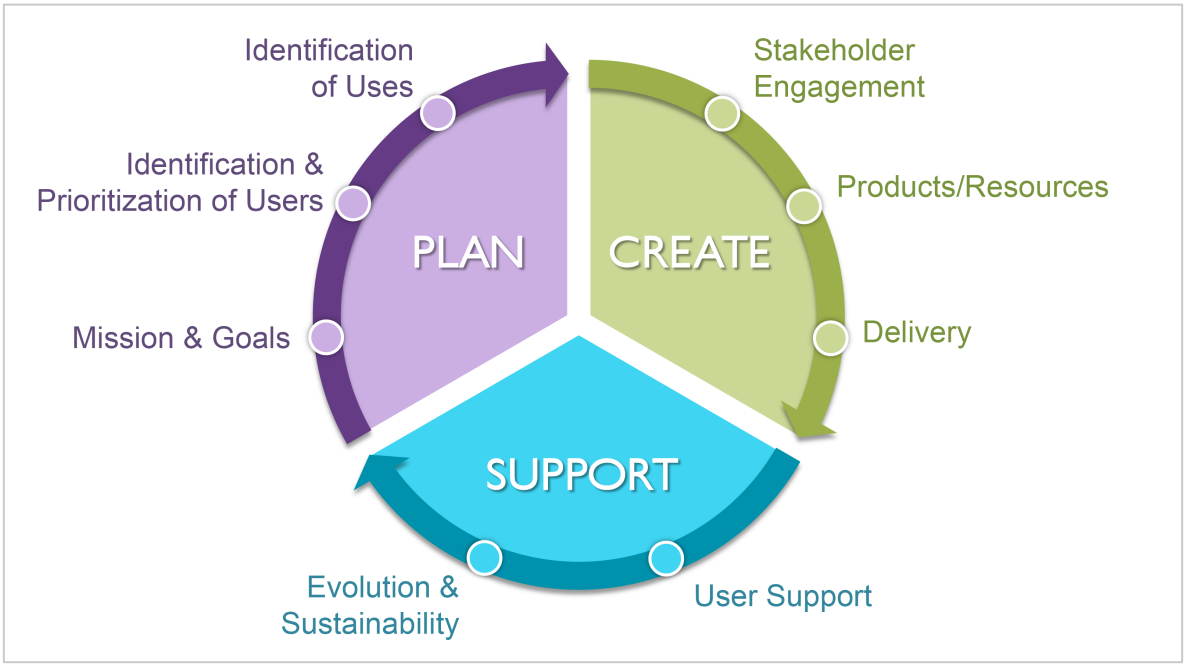

Figure 10. Data Use Framework

[3] Significant portions of this section were adapted from the SLDS SST Resource *SLDS Workshop Summary: Data Use, Developing a Data Use Strategy* (2013). https://slds.grads360.org/#communities/pdc/documents/3846

Key Indicator 1: The intended users and uses of the ECIDS have been identified and prioritized in support of the purpose and vision

The ECIDS purpose and vision should serve as the starting point for identifying and prioritizing the users of the system. To begin identifying user roles, the ECIDS Core Team should listing all current and potential early childhood data users, including policymakers, program staff, providers, teachers, parents, and the general public. Then, it should refer back to the purpose, vision, and associated essential questions to consider which roles must be served to achieve them. If data use by a particular role is not critical to achieving the ECIDS's goals, that role can be deprioritized or excluded from the data use strategy. Once user roles have been identified, the team can begin prioritizing the list by considering the following questions:

- What types of decisions does each user role make or inform that have an impact on the purpose and vision?
- Will the ECIDS have the data that are relevant and appropriate to serve those roles?

The team will use the answers to these questions to identify the top-priority user roles. Prioritizing roles ensures that limited resources are used to serve and support the highest-impact users throughout the data use strategy, and it increases the likelihood of achieving the purpose and vision.

Once the top-priority user roles are identified, the ECIDS Core Team needs to clarify the types of decisions and actions associated with each role that the ECIDS data can inform, as well as how those decisions align with the broader purpose, vision, and essential questions. Conducting interviews with representative groups of high-priority users can help identify what data will get them excited, help them to improve their work, and/or reduce their burden. After potential data uses are collected by role, the team should evaluate whether the ECIDS will have the data that will be appropriate and relevant to those uses. Note that usability includes the granularity, frequency, and quality of data required to appropriately inform the identified decisions. The team must also consider the users' daily, monthly, and yearly cycles of work to determine whether the ECIDS will be able to provide data when users need it. Table 1 shows examples of potential ECIDS users, their particular interests and needs, and examples of their specific needs.

If the state also has, or has planned, a P-20W+ data system that contains early childhood data, it is important to clarify—and have leadership be able to articulate—both the differences between the ECIDS and the early childhood components of the P-20W+ system and how they relate to one another. Doing so will help convey the distinct value proposition of each system, as well as the complementary nature of the two efforts. In addition, if there are potential user roles that will be served by both systems, communicating the distinction will help them understand for what purposes they would use the ECIDS versus the P-20W+ system.

Documentation is important so that all parties involved understand the decisions being made. It also allows the group to go back and see why a particular decision was made and how it impacted the project. While it is possible to move forward without documenting decisions, the ECIDS Core Team should consider what would happen if a key participant left or if new leadership came in during the middle of the project. Documentation of the process ensures that the project maintains momentum, even during transitions or sudden changes.

User	Interest/Need	Example(s)
Policymakers & Legislators	Inform policy development, revision, and funding decisions	Resource allocation, program evaluation, legislative actions
Program Leaders	Improve program effectiveness and efficiency	Program evaluation, resource allocation, staffing needs, community needs, program development, program planning
Educators	Inform decisions to improve local-level learning environments	Resource allocation, staffing needs, instructional approaches, student placement, curriculum development
Researchers	Assess the impact of policies and programs on students and education entities	Research questions, program evaluation, policy evaluation
Parents & Students	Support learning and inform decisions about placement in available schools/programs/ courses	Which schools/program to send their child to, which classes to take to be ready for college, resources available

Table 1. Potential ECIDS Users[4]

Key Indicator 2: Stakeholders inform the identification and development of data products (e.g., reports, dashboards, etc.) from the ECIDS that align with the intended users and uses

Engaging those whom the ECIDS intend to serve in the process of identifying and developing the data products that the system will produce is essential to ensure that the products meet users' needs. Identifying existing stakeholders or creating a new representative group(s) of stakeholders is an important initial step. To avoid undue burden on stakeholders, the ECIDS Core Team should determine whether a group already exists that includes representatives of high-priority ECIDS user roles and, if so, explore whether it can get on the group's agenda rather than convening a new group. Representatives of each high-priority user role also need to be included in the project's stakeholder engagement plan to ensure that role-specific needs and feedback are addressed. For more information about stakeholders and stakeholder engagement plans, see Component C: Stakeholder Engagement.

[4] This table is adapted from the SLDS Brief *Identifying SLDS Users and Uses* (2011). *https://slds.grads360.org/#communities/pdc/documents/2753*

To make the most of stakeholders' limited time, the ECIDS Core Team needs to establish and document the process for when and how it will convene stakeholders and garner feedback throughout the data product identification and development phase. The process should begin by helping stakeholders identify the critical questions they would like data to inform, as well as how they would need the data provided to them so they can use the data easily as part of their work. Often, users are not sure what data they would like or need, so it is helpful to provide examples of essential questions and associated data reports or displays to which they can react.

Based on the team's decisions about who the end users of the data will be, it is important to consider how members of each user role will need the data presented to them to use the data effectively. When selecting the data reporting, presentation, and other tools, the team should keep in mind the targeted users' technology skill levels and population size. For example, business intelligence tools might be beneficial to power users but can overwhelm others. To address the range of expertise among user groups, most states implement a limited suite of data reporting and analysis tools.

It is also necessary to consider the users' preference for the degree of user-driven inquiry. Some users prefer to drive the inquiry process and want to be able to slice, dice, and dig down into many levels of data across several domains, while other users prefer to access a predefined dashboard with key metrics visually displayed. The ways in which the data are displayed and interacted with should align with the types of questions the data are meant to address. In other words, straightforward, simple questions are best addressed with simple graphical displays, while more nuanced questions—such as those requiring longitudinal analysis across multiple domains—necessitate a more dynamic presentation of data.

Once draft versions of data products from the ECIDS are in place, the ECIDS Core Team must ensure that it builds in time and a clear follow-up process with stakeholder groups to vet the products before they are released. Vetting should encompass both checks for data quality and feedback on whether the format, granularity, drill-down options, and visual depictions (as applicable) meet user needs. In addition, before the products are released, the ECIDS data governance groups should check them for compliance with the ECIDS data sharing agreements.

As the ECIDS Core Team garners and responds to stakeholder feedback on the draft ECIDS data products, it needs to establish a rollout and release process to ensure that the information resources are delivered to users at a time when they can use them to inform their work. For example, if one of the reports being created is intended to inform program funding allocation decisions, the team should determine when those decisions are made and ensure that the report is available in advance of that time. Information about the users' current work context can be gathered from user interviews and other stakeholder engagement activities, and it can be used to develop a rollout plan that helps ensure that the resources created from the ECIDS are actually received by the intended users in a way that is low burden and intuitive to them.

Conducting a pilot rollout is an underused and highly effective means of gauging how well the resources will meet the intended users' needs before a full release. It is a way of soliciting targeted, valuable feedback that, if used well, greatly increases the success of the full implementation.

Communication is another key aspect of the rollout approach. The goal for the ECIDS Core Team is to ensure that the largest possible percentage of intended users know about the ECIDS, what it will produce,

where to access the data products, and when the products will be available. Ongoing, consistent communication is much more effective than one-time announcements.

After the initial rollout, the ECIDS Core Team needs to identify the hooks that prompt usage by assessing what makes users first access the resources or tools and then continue to come back to them. The team should consider conducting targeted feedback sessions with stakeholder groups to capture how they use the resources, and then disseminate these use cases among peers.

Key Indicator 3: Supports—tailored to priority roles and by skill level—are provided to users to ensure that they know how to use the information from the ECIDS effectively

Developing users' capacity to access and use the ECIDS, understand the data from it, and use the data to inform and improve their work is essential to fulfilling the broader vision of improving early childhood services and child outcomes in the state. A training plan should be established that encompasses all of the supports that will be provided to high-priority users. This plan should include training on data privacy and security best practices, including all relevant laws (e.g., FERPA and HIPAA). Training should be tailored to meet the specific needs of various stakeholders.

Users need to be trained on how to use the data system and its resources.[5] Delivery methods may include in-person presentations, webinars, online recordings, and written publications. Best practices suggest that, participants should have access to their own data during system training, if available. Combining system training and data use training allows the data to become a motivation for learning the system.

Data use training is essential to help users—especially those with limited prior experience in using data—to understand and use the ECIDS resources appropriately and safeguard data privacy. Training should encourage users to see the data as the start of the investigation, not the endpoint. In other words, answering one question with evidence should lead them to ask additional questions to more fully understand the issue. This approach can also help to prevent premature jumps to causation. Data use training is an opportunity for members of the ECIDS Core Team to partner with those in other agencies—or in programs within their own agencies—who oversee the policies or programs with which ECIDS data use is aligned. Best practices suggest that content experts should lead the data use training in order to model the idea that data use is about improving policy and practice, and that data use is not just for the sake of using data.

Documentation is another critical resource for user support. Ensure that all system documentation is written with the intended user in mind, and vetted by representatives of that user group to ensure that it is clear and accessible. Thorough documentation will also reduce the user support burden on ECIDS staff.

The ultimate purpose of data use should not be simply to inform, but also to spur users to move from information to action—that is, to do their work differently as a result of having evidence to inform it. However, using data to change behavior is a cultural transformation for many, and therefore it requires significant support. Data use trainings should help users consider what they are going to do once they know

[5] In some states, users will not access the ECIDS directly but will be provided with ECIDS data via static reports or other products. In this case, system training is not needed.

more and include access to resources for improving their practice (e.g., quality, targeted professional development; mentoring opportunities with peers; and research on best practices). The ECIDS purpose and vision should be shared with users to help them understand how their roles fit into the broader goals of the ECIDS effort.

The ECIDS Core Team is unlikely to have the resources or expertise to support this type of training on its own. To increase capacity, it should pursue partnerships with other agencies or organizations that already work with ECIDS users and share the project's end goals, such as higher education institutions, nonprofits, provider preparation programs, and other state agencies. It should also consider partnerships with other program areas within the lead agency, such as professional development. Partners should be able to help users understand the data, transform information into knowledge, and put the knowledge into action. Those leading the training must be able to speak the language of the users receiving the training.

Key Indicator 4: Processes are in place to ensure that the ECIDS meets users' needs over time

In addition to identifying and responding to users' needs during the initial rollout of the ECIDS, it is equally critical to ensure that processes are in place to meet users' needs as they change and grow over time. Ideally, the initial rollout will help increase demand from users. To leveraging the groups and processes established during the initial rollout, the ECIDS Core Team should design an approach for garnering ongoing feedback from each of its high-priority user roles. It should ask users how, and whether, the system is supporting their needs, as well as what information they anticipate they will find useful in the near future. As part of this process, the team must determine how to prioritize requested changes and additions to the ECIDS from users and communicate what changes and additions are planned and when they will be available.

Because policies and programs are constantly evolving, the information that informs them also needs to evolve. The ECIDS team must also stay up to date and anticipate emerging issues and policies to ensure that the ECIDS is established and maintained as an invaluable resource.

The ECIDS Core Team must consider how it will capture who is using the system or the products from it, when, and for what purposes. Along with anecdotal feedback, it should take into account usage metric reports on the data and the system. Metrics such as the percentage of the user population engaging with the system, the frequency and timing of their use, the length of their use, and the impact of their use can help the ECIDS Core Team determine how the system has helped them move toward and achieve their goals. The usage metrics reports can offer insight into the highest-demand resources and can be used to communicate the value proposition of the ECIDS. The team can employ the user feedback and usage metrics to identify the data that key user roles consider essential and how they are using them in support of the broader goals. This will ultimately help with sustainability (for more information about sustainability, see Component G: Sustainability). The team can capture user explanations of how the ECIDS supports them in their work and disseminate these vignettes as part of the outreach and training effort.

Key Indicator 5: There is coordination between the ECIDS and early childhood components of the P-20W+ strategies and processes to support effective data use

If the state is developing or has a P-20W+ system that produces resources that include early childhood data, coordination between the ECIDS and early childhood components of the P-20W+ system are important to ensure that (1) users served by both systems understand why they would use or make requests of one system versus the other, and (2) limited state resources are used efficiently. The P-20W+ data governance group and the ECIDS data governance groups should collaboratively establish criteria and a process for determining whether a data request or identified data use need will be fulfilled by the ECIDS, the P-20W+, or not at all. This will help codify and establish the distinct yet complementary roles of the two systems when it comes to serving early childhood data users.

Early Childhood Executive Leadership should provide input to the P-20W+ data governance group regarding the top priority early childhood user roles of the P-20W+ system and the types of decisions they expect the P-20W+ system could inform for those roles. Note that these P-20W+ uses should focus on questions that require linkages beyond the early childhood sector. This distinction will help create a clear demarcation in scope between the two systems (i.e., the ECIDS serves data uses within early childhood, and the P-20W+ system serves data uses requiring early childhood data to be linked to other sectors). Since the early childhood representative on the P-20W+ data governance group will have the most in-depth understanding of early childhood users and uses, he or she should inform the data products for early childhood users that are identified and produced from the P-20W+ system. Once draft early childhood data products are available via the P-20W+ system, the ECIDS data governance groups should have a process for vetting them with the intended users and providing feedback to the P-20W+ team. Similarly, the ECIDS data governance groups should have a means of prioritizing requested changes and additions to the early childhood data products from the P-20W+ system and communicating them to the P-20W+ data governance group.

SST and State Resources

- SLDS Early Childhood Integrated Data System Self-Assessment – Component F: Data Use
  https://slds.grads360.org/#program/ecids-toolkit:-data-use
- SLDS Data Use Standards: Knowledge, Skills, and Professional Behaviors for Effective Data Use
  https://slds.grads360.org/#communities/pdc/documents/5204
- Traveling through Time: The Forum Guide to Longitudinal Data Systems – Advanced LDS Usage
  http://nces.ed.gov/pubs2011/2011802.pdf
- SLDS Webinar: Planning for Early Childhood Data Use
  https://slds.grads360.org/#communities/pdc/documents/2635
- SLDS Webinar: Early Childhood Data Use – Create Phase
  https://slds.grads360.org/#communities/pdc/documents/5899
- SLDS Webinar: Early Childhood Data Use – Support Phase
  https://slds.grads360.org/#communities/pdc/documents/5901
- SLDS Webinar: Oregon's Data Training for Teachers and Administrators
  https://slds.grads360.org/#communities/pdc/documents/6509

- SLDS Webinar: Using SLDS Data – Working with Researchers
  https://slds.grads360.org/#communities/pdc/documents/6526
- SLDS Webinar: Legalities of Data Sharing and the Issue of Commonality
  https://slds.grads360.org/#communities/pdc/documents/2762
- SLDS Webinar: Innovative and Effective Utilization of Early Childhood Data
  https://slds.grads360.org/#communities/pdc/documents/2733
- State of Washington Education Research & Data Center (ERDC) Reports
  http://erdcdata.wa.gov/
- SLDS Workshop Summary: Data Use – Developing a Data Use Strategy
  https://slds.grads360.org/#communities/pdc/documents/3846
- Joint FERPA Letter by the Department of Education, Office of Elementary and Secondary Education and the Department of Health and Human Services, Administration for Children and Families
  http://ptac.ed.gov/sites/default/files/Joint_FERPA_Letter_with_ED_OESE__HHS_ACF_4_24_2013.pdf

COMPONENT G: SUSTAINABILITY

Sustainability is the capacity to support a system or program over time with sufficient financial and human resources to meet current and future needs. As illustrated in figure 11, ECIDS sustainability is comprised of four foundational aspects: (1) broad and deep stakeholder support; (2) widespread data use; (3) long-term commitments of fiscal and human resources; and (4) demonstrated return on investment.

Sustainability is the capacity to support a system or program over time with sufficient financial and human resources to meet current and future needs.

Figure 11. Sustainability Framework[6]

Sustainability is crucial to an ECIDS because the grant funds that are often the financial source for initially creating it are non-recurring and the system must exist for a period of several years to realize its purpose and vision. Producing an enduring, efficient, effective, and sustainable ECIDS is not a start-and-finish endeavor; there will always be more work to do to ensure that it remains current and relevant. Sustainability can take many forms, the most important of which may often be showing the value of the data in informing decisions.

This section of the guide helps states assess their ability to sustain their ECIDS and offers practical suggestions and resources for each step in the overall process of creating and maintaining a sustainable ECIDS.

[6] Figure from *SLDS Sustainability Planning Guide* (April 2013). *https://slds.grads360.org/#communities/pdc/documents/2640*

Overview of a Sustainability Plan

A sustainability plan is a key resource for ensuring ECIDS sustainability. As seen through all the following key indicators, the sustainability plan clearly and effectively communicates the purpose of the ECIDS and how it aligns with the state's purpose and vision for early childhood. It also describes the components of the ECIDS and the funding and personnel needed to support those components. It contains suggestions, recommendations, or statements of funding sources and what is needed to obtain the funds if they have not already been acquired. The funds need to cover the long-term support and maintenance of the ECIDS as well as future enhancements.

In addition, the sustainability plan should outline how information about the ECIDS will be communicated to stakeholders and the public. This section of the plan will include consideration for marketing and soliciting ongoing support and engagement by the stakeholders. Transparency is an important part of communicating about the ECIDS; it is critical that the business processes that support the purpose and use of the ECIDS be open and understandable. Transparency is about being open about how the ECIDS is used, who has access to it, and how it is governed; that openness does not extend to the specific data housed within the ECIDS.

Key Indicator 1: The ECIDS quantifies the analytic use by intended users to demonstrate the ongoing need for the system

As the ECIDS is implemented, it is important to put in place mechanisms such as analytics or reports that track system usage. These mechanisms will help the ECIDS Core Team and ECIDS Technical Team quantify the use and need for the ECIDS. It will also inform where additional needs may exist as the use of the ECIDS grows. All agencies participating in the ECIDS should be included in discussions about evolving needs as the ECIDS develops and grows over time. In this way, all the partner agencies will be engaged and invested in the ECIDS.

In addition, an intentional effort should be made to message and market the ECIDS. The system usage statistics can be a good source of content for a marketing campaign. Through this process, the ECIDS Core Team can educate current and potential stakeholders about the use and purpose of the ECIDS.

States have taken different approaches to system training. Some have created self-service modules, while others put on a "road show" by going out and working hands-on with the stakeholders to use the data. This approach keeps stakeholders in the loop and has them using the data from the nascent phases of ECIDS development. If end users are properly trained to collect and enter data at the outset, quality data will be the result. Along with training, adequate access to the system needs to be maintained. As data or technical specifications change, users' continued access must be accounted for via appropriate authentication or upgrades in computing or network infrastructure so that processing speed and access do not diminish.

Key Indicator 2: The ECIDS demonstrates success in meeting its purpose and vision

As the use of the ECIDS expands and grows, it will be important to measure the value the ECIDS brings the state and how it aligns and supports the stated purpose and vision. This value can be measured in many ways,

such as additional capabilities that were not present before the ECIDS was established, or efficiencies that are introduced because of the processes the ECIDS brings. Value can also be calculated by means of return on investment, presenting the ECIDS as a tool to measure the success of broader early childhood policies in the state.

By measuring and documenting the value of the ECIDS, Early Childhood Executive Leadership must also be able to engage a myriad of audiences with this information. Documenting and communicating how the early childhood data is providing value from the beginning allows leadership to show the need for the data. Communicating openly about the system in terms of small, incremental mile markers is a good way to show progress and garner continued support from the public.

Additionally, the ECIDS Core Team should brainstorm how to create more demand for the system and its products. It is important to think strategically about creating use for all stakeholders, as they can be important allies when budget cuts or political pressures emerge. The intent of outreach to stakeholders is to help increase broader understanding of the ECIDS and its purpose, as well as to foster continued support for its use.

Key Indicator 3: The costs of maintaining and enhancing the ECIDS (e.g., hardware, software, and staff) are identified and documented

State agencies are often asked to justify budget figures, and it is necessary to have a clear understanding of how much the system and its data integration cost. Lead ECIDS agencies are often asked for three- to five-year cost plans that include a breakdown of the various components within the ECIDS and the cost of each. Having a current inventory of system components will help give an accurate picture of the system's expenses. Components should be identified as being related to hardware, software, or human resources. Many times, expenses, licensing, and the 'financial bucket' that is used to pay for these items are handled differently.

Additionally, as the cost plan is developed, it is important to ensure that the scope for the ECIDS has been clearly defined and endorsed by the Early Childhood Executive Leadership. This will help ensure that the plan encompasses the entirety of the ECIDS and all that it intends to accomplish. The plan should cover the current scope as well as account for future modifications and enhancements.

It is also necessary to have detailed cost information on hand to prioritize expenses in the event that difficult decisions about the system need to be made. Similarly, the ECIDS teams should not become too comfortable with the system in its current state—it is important to be creative and think about ways to maintain the data and provide the data more efficiently across agencies. Tracking modifications and enhancements that are made to the ECIDS, as well as changes to licensing agreements, are essential to keeping accurate records of changing costs and keeping the ECIDS inventory up to date.

Key Indicator 4: Sufficient financial support for ongoing maintenance and ECIDS enhancements has been secured through the legislature, state education or other agency budgets, or additional sources

To maintain awareness of the ECIDS, the ECIDS Core Team should continue to message and market the system on a regular basis. These communication efforts help maintain support for and recognition of the

ECIDS, which can help the team secure sufficient funding for its continuation. These funds might be secured via state budget line items or through partner agency budgets. The amount of the funds will be determined by the three- to five-year cost plan developed by the ECIDS Core Team. The team needs to be aware of funding options outside the federal arena. For example, some state agencies have asked their states to match federal funding. Others have separated the design and the maintenance of the system into different funding streams in order to maintain the system even if a freeze was put upon the design work. Regardless of the funding sources, it will be important for the Early Childhood Executive Leadership to actively engage the heads of partner agencies as well as and legislators to maintain awareness and foster support and funding.

Key Indicator 5: There is adequate staffing to support, maintain, and enhance the ECIDS

As the ECIDS is developed and implemented, additional staffing is often needed and new skills are required to adequately support the system. As part of the ECIDS development process, the ECIDS Core Team should conduct an evaluation of the staff and skills needed to support it. The result of this evaluation can be used to adequately staff the ECIDS both with sufficient full-time equivalent (FTE) positions to fulfill the needed tasks and with adequately training to ensure that staff members have the appropriate experience and skills.

Maintaining appropriate documentation of the ECIDS processes and procedures will also help support staff. Documentation will help equip new staff members with the knowledge they need as they step into their roles as well as educating or informing existing staff when their current duties change as a result of the ECIDS implementation. Cross training staff and familiarizing them with others' roles will also help ensure adequate depth of knowledge and limited dependence on a single individual for each given role or task.

Key Indicator 6: The integration between the ECIDS and the P-20W+ data system supports ongoing state initiatives across sectors

If the state is developing or has a P-20W+ system that produces resources that include early childhood data, coordination between the ECIDS and early childhood components of the P-20W+ system is important to ensure that (1) users served by both systems understand why they would use or make requests of one system versus the other, and (2) limited state resources are used efficiently. The role of early childhood programs and agencies shifts from being drivers of ECIDS development to being one of many stakeholders and partners who are working to produce the state's P-20W+ SLDS. Many times, the expertise brought by early childhood representatives can help inform and educate the other P-20W+ partners as the data are integrated into the SLDS. To do this, Early Childhood Executive Leadership should have a clear idea of how early childhood fits into the larger education picture within the state, and how early childhood data can support that picture. This clarity can be accomplished by leaders who understand the use of the ECIDS and the benefit its data brings to the broader P-20W+ state policies.

It will be important for Early Childhood Executive Leadership to track the costs associated with the process of integrating early childhood data into the P-20W+ SLDS. As when securing funds to support the ECIDS, costs must be identified when securing funds to support early childhood programs' participation in the P-20W+ efforts as well. Early childhood programs may not be responsible for securing the funds, but they will play an important role in informing those who are of the costs of integrating early childhood data into the P-20W+ SLDS. They can also assist in the process of securing those funds.

SST and State Resources

- SLDS Early Childhood Integrated Data System Self-Assessment – Component G: Sustainability
  https://slds.grads360.org/#program/ecids-toolkit:-sustainability
- Maine's SLDS Sustainability Plan
  https://slds.grads360.org/#communities/pdc/documents/5110 (login required)
- Traveling through Time: The Forum Guide to Longitudinal Data Systems – Planning and Developing an LDS
  https://slds.grads360.org/#communities/pdc/documents/3071
- SLDS Best Practices Brief: Alternative Sources of Support for SLDS Work
  https://slds.grads360.org/#communities/pdc/documents/2764
- SLDS Sustainability Planning Guide
  https://slds.grads360.org/#communities/pdc/documents/2640
- SLDS Sustainability Toolkit
  https://slds.grads360.org/#communities/pdc/documents/3831
- Stakeholder Engagement and Sustainability: Helping Stakeholders Get the Most from an SLDS
  https://slds.grads360.org/#communities/pdc/documents/5903
- Data Use and Sustainability: Helping Stakeholders Get the Most from an SLDS
  https://slds.grads360.org/#communities/pdc/documents/5905
- SLDS Webinar: Planning for a Sustainable ECIDS
  https://slds.grads360.org/#communities/pdc/documents/5184

APPENDIX 1: GLOSSARY

The following terms are common to discussions of early childhood integrated data systems and are defined according to their use in that context. This glossary does not include project-specific terms or documents.

Term	Definition
Access	The privilege or assigned permission to use computer data or resources in some manner. It restricts the use and distribution of information, settings, and the general use of a system. *Source: http://www.techopedia.com/it-dictionary*
Accuracy	The closeness of computations or estimates to the exact or true values that the statistics were intended to measure. *Source: https://stats.oecd.org/glossary/index.htm*
Analysis	The process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate data. *Source: http://ori.hhs.gov/education/products/n_illinois_u/datamanagement/datopic.html*
Anonymization	The process of data de-identification which produces de-identified data, where individual records cannot be linked back to an original student record system or to other individual records from the same source, because they do not include a record code needed to link the records. *Source: http://ptac.ed.gov/sites/default/files/data_deidentification_terms.pdf*
Anonymized	Anonymized data are data that have been de-identified and do not include a re-identification code. In an anonymized data file, the student case numbers in the data records cannot be linked back to the original student record system. *Source: http://ptac.ed.gov/glossary/anonymized-anonymization*
Application	The software designed to perform a specific function directly for the user or, in some cases, for another application program. It may also be referenced as "application program." *Source: http://searchsoftwarequality.techtarget.com/definition/application*
Audit	A personal or computerized review process that accounts for the adequacy, effectiveness, security, and overall functionality of a data activity. *Note: This use of "audit" varies from the audit and evaluation exception under FERPA.* *Source:* http://www.math.utah.edu/~wisnia/glossary.html

Authorization	The permission to access non-public information or use equipment that is either fully or partially restricted, and the process of establishing actions the authorized user is permitted to perform. *Source: http://www.math.utah.edu/~wisnia/glossary.html*
Business Intelligence	An umbrella term that includes the applications, infrastructure and tools, and best practices that enable access to and analysis of information to improve and optimize decisions and performance. *Source: http://www.gartner.com/it-glossary/business-intelligence-bi/*
Business Logic	Custom rules or algorithms that handle the exchange of information between a database and user interface. Business logic essentially consists of business rules, which are policies that govern various aspects of a business, and workflows, which are sequences of steps that specify in detail the flow of information or data. Also known as business rules or domain logic. An example of business logic is how average attendance is calculated from attendance sheets. *Source: http://www.investopedia.com/terms/b/businesslogic.asp*
Business Requirements	Constraints, demands, necessities, needs, or parameters—defined by the business community or customers—that must be met or satisfied, usually within a certain timeframe. *Source: http://www.businessdictionary.com/definition/requirements.html*
Business Rules	Statements that impose constraints on the selection, relationships, and structure of the data elements in a database. *Source: http://www.businessdictionary.com/definition/business-rules.html*
Centralized System	In a centralized data system, all participating source systems copy their data to a single, centrally located data repository where they are organized, integrated, and stored using a common data standard. Data in a P-20W centralized SLDS are periodically matched, integrated, and loaded into a central repository. Users query the system and can access the data which they have been authorized to view and use. *Source:* Centralized vs. Federated: State Approaches to P-20W Data Systems *(http://nces.ed.gov/programs/slds/pdf/federated_centralized_print.pdf)*
Code (or option) set	The list of codes in an option set defining the limited set of value options allowed for a data element. The code set contains numeric or alphanumeric "codes" without spaces or special characters for machine readability. CEDS option sets provide a list of codes (code set) and corresponding human-readable descriptions/definitions. “Code set” and “option set” are used interchangeably by some education agency IT professionals. *Source: http://ceds.ed.gov*

Common Education Data Standards (CEDS)	A national collaborative effort to develop voluntary, common data standards for a key set of education data elements to streamline the exchange, comparison, and understanding of data within and across P-20W institutions and sectors. *Source: https://ceds.ed.gov*
Dashboard	A visual representation of data that helps users identify correlations, trends, outliers (anomalies), patterns, and business conditions. A dashboard is a visual display of the most important information needed to achieve one or more objectives, consolidated and arranged on a single screen so the information can be monitored at a glance. *Source: http://www.dashboardinsight.com*
Data Audit	The reviewing of data to assess its quality or utility for a specific purpose. Auditing data, unlike auditing finances, involves looking at key metrics other than quantity to create conclusions about the properties of a dataset. *Source: Derived from http://www.techopedia.com/it-dictionary*
Data Breach	Any instance in which there is an unauthorized release or access of personally identifiable information or other information not suitable for public release. *Source: http://ptac.ed.gov/sites/default/files/checklist_data_breach_response_092012.pdf*
Data Cleansing	The process of amending or removing data in a database that is incorrect, incomplete, improperly formatted, or duplicated. Also known as "data scrubbing." *Source: http://whatis.techtarget.com/glossary/Glossaries*
Data Dictionary	An agreed-upon set of clearly and consistently defined elements, definitions, and attributes. A data dictionary helps an organization maintain consistency in its information systems. Database users and managers refer to a data dictionary to find out where specific data are located, whether they were reported correctly, how to use them appropriately, and what their values mean. *Source:* Forum Guide to Metadata: The Meaning Behind Education Data *(http://nces.ed.gov/pubs2009/2009805.pdf)*
Data Element	An atomic unit of data that has precise meaning or precise semantics that can be defined and measured. *Source: https://ceds.ed.gov/Glossary.aspx*

Data Governance	The overall management of the availability, usability, integrity, quality, and security of data. Data governance is both an organizational process and a structure. It establishes responsibility for data, organizing program area/agency staff to collaboratively and continuously improve data quality through the systematic creation and enforcement of policies, roles, responsibilities, and procedures. *Sources:* SLDS Best Practices Brief: P-20W Data Governance *(http://nces.ed.gov/programs/slds/pdf/brief4_P_20W_DG.pdf)* Traveling through Time: The Forum Guide to Longitudinal Data Systems *(http://nces.ed.gov/pubs2011/2011805.pdf)*
Data Integration	The combination of technical and business processes used to combine data from disparate sources into meaningful and valuable information. A complete data integration solution encompasses discovery, cleansing, monitoring, transforming, and delivery of data from a variety of sources. *Source: www.ibm.com/software/data/integration/*
Data Linkage	A merging that brings together information from two or more sources of data with the object of consolidating facts concerning an individual or an event that are not available in any separate record. *Source:* Handbook of Vital Statistics Systems and Methods, Volume 1: Legal, Organisational and Technical Aspects*, United Nations Studies in Methods, Glossary, Series F, No. 35, United Nations, New York 1991*.
Data Matching	A process of comparing information in two or more datasets in order to determine the likelihood of elements in each dataset representing the same entity. *Source: Derived from www.businessdictionary.com*
Data Model	A conceptual, logical, or physical representation of the data elements, entities, and relationships. *Source: https://ceds.ed.gov/Glossary.aspx*
Data Products	Any representation that depicts or summarizes data and analyses (e.g., charts, graphs, tables, documents, reports, briefs, data dashboards).
Data Quality	A multi-dimensional measurement of the adequacy of a particular datum or datasets based on a number of dimensions including, but not limited to, accuracy, completeness, consistency, and timeliness. *Source: www.businessintelligence.com/dictionary*
Data Security	Protection of data from unauthorized (accidental or intentional) modification, destruction, or disclosure. See also "Information Security." *Source: Committee on National Security Systems, National Information Assurance Glossary (http://www.ncix.gov/publications/policy/docs/CNSSI_4009.pdf)*

Data Standard	A documented agreement on representations, formats, and definitions of common data. Data standards are intended to improve the quality and share-ability of education data. *Source:* Traveling through Time: A Forum Guide to Longitudinal Data Systems *(http://nces.ed.gov/pubs2011/2011805.pdf)*
Data Store	A repository for storing, managing, and distributing datasets on an enterprise level. It is a broad term that incorporates all types of data that are produced, stored, and used by an organization. The term references data that are at rest and used by one or more data-driven applications, services, or individuals. *Source: http://www.techopedia.com/definition/23343/datastore*
Data System Architecture	Models, policies, rules, or standards that govern which data are collected and how they are stored, arranged, and put to use in a database system and/or organization. *Source: http://www.businessdictionary.com/definition/data-architecture.html*
Data System Enhancement	A noteworthy improvement included in a new version of a product. The term is also sometimes used to distinguish an improvement (enhancement) of some existing product capability from a totally new capability. *Source: http://whatis.techtarget.com/glossary/Glossaries*
Data Use	The process by which people examine and make sense of data to inform decisions and actions. *Source: ECIDS Toolkit (https://slds.grads360.org/#program/ecids-toolkit)*
Data Validation	The inspection of data for completeness and reasonableness, and the correction of errors (e.g., incorrect values).
Data Visualization	A general term that describes any effort to help people understand the significance of data by placing it in a visual context. Data visualization tools include standard charts and graphs and displaying data in more sophisticated ways such as infographics; dials and gauges; geographic maps; sparklines; heat maps; and detailed bar, pie, and fever charts. *Source: http://searchbusinessanalytics.techtarget.com/definition/data-visualization*
Data Warehouse	A subject-oriented, integrated, time-variant, and non-volatile collection of data in support of management's decisionmaking process. *Source:* What is a Data Warehouse? *W.H. Inmon, Prism, Volume 1, Number 1, 1995*

Database	A data structure that stores organized information. *Source: www.techterms.com*
De-Identified Data	Records that have a re-identification code and have enough personally identifiable information removed or obscured so that the remaining information does not identify an individual and there is no reasonable basis to believe that the information can be used to identify an individual. The re-identification code may allow the recipient to match information received from the same source. *Source: http://ptac.ed.gov/glossary/de-identified-data*
Disclosure	Under FERPA, disclosure means to permit access to or release, transfer, or otherwise communicate personally identifiable information contained in education records by any means, including oral, written, or electronic, to any party except the party identified as the party that provided or created the record. *Source: http://ptac.ed.gov/glossary/disclosure*
Disclosure Avoidance	The efforts made to de-identify data in order to reduce the risk of disclosure of personally identifiable information. A choice of the appropriate de-identification strategy (also referred to as a disclosure-limitation method) depends on the nature of the data release, the level of protection offered by a specific method, and the usefulness of the resulting data product. *Source: http://dasycenter.org/downloads/DaSy_papers/DaSyDeidentificationGlossary.pdf*
Early Childhood Integrated Data System (ECIDS)	An ECIDS collects, integrates, maintains, stores, and reports information from early childhood programs across multiple agencies within a state that serve children and families from birth to age 8. Typically, the data included in an ECIDS are related to the individual child, the child's family, the classroom, the program/providers, and other services that provide comprehensive care and education for young children. *Source: "What is an ECIDS?" (http://nces.ed.gov/programs/slds/pdf/WhatisanECIDS.pdf)*
Early Head Start	A federal program that serves pregnant women, infants, and toddlers. Early Head Start programs are available to the family until the child turns 3 years old and is ready to transition into Head Start or another prekindergarten program. Early Head Start helps families care for their infants and toddlers through early, continuous, intensive, and comprehensive services. *Source: Office of Head Start Website: http://eclkc.ohs.acf.hhs.gov/hslc/hs/about*

Enterprise Architecture	A conceptual tool that assists organizations with understanding their own structure and the way they work. Enterprise architecture provides a map of the enterprise and is a route planner for business and technology change. *Source:* Traveling through Time: The Forum Guide to Longitudinal Data Systems *(http://nces.ed.gov/pubs2011/2011804.pdf)*
Family Educational Rights and Privacy Act (FERPA)	A federal law that affords parents the right to have access to their children's education records, the right to seek to have the records amended, and the right to consent to the disclosure of personally identifiable information from education records, except as provided by law. *Source: http://www.dasycenter.org/downloads/DaSy_presentations/2014/CurrentStateAnalysis_on_FERPAandHIPPA_22014.pdf*
Federated System	In a federated data system, individual source systems maintain control over their own data but agree to share some or all of this information with other participating systems upon request. System users submit queries via a shared intermediary interface that then searches the independent source systems. Data are queried from source systems and records are matched to fulfill a data requestor's information needs. The linked data are not stored by the system, but rather are removed once cached and delivered. The individual sources of data store and secure their data, and provide them to the system only upon request. *Source:* Centralized vs. Federated: State Approaches to P-20W Data Systems *(http://nces.ed.gov/programs/slds/pdf/federated_centralized_print.pdf)*
Head Start	A federal program that promotes the school readiness of children ages birth to age 5 from low-income families by enhancing their cognitive, social, and emotional development. *Source: http://www.acf.hhs.gov/programs/ohs*
Health Insurance Portability and Accountability Act (HIPAA)	The 1996 law that sets requirements for electronic health transactions (billing and payment) and establishes the basis for the HIPAA Privacy Rule. HIPAA requirements are set through a suite of regulations, collectively known as HIPAA Administrative Simplification. They include rules on Privacy, Enforcement, Security and Transactions, and Code Sets. *Source: Update from Confidentiality work group*
Information Security	The protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability. *Source: Committee on National Security Systems, National Information Assurance Glossary (http://www.ncix.gov/publications/policy/docs/CNSSI_4009.pdf)*

Interoperability	A set of rules, definitions, and transport processes which enable different software systems to share information and work together. *Source: https://ceds.ed.gov/Glossary.aspx*
Memorandum of Understanding (MOU)	A formal agreement between two or more parties. *Note: Many times an MOU is required under FERPA when linking data.* *Source: http://whatis.techtarget.com/definition/memorandum-of-understanding-MOU-or-MoU*
P-20W+	P-20W+ refers to data from prekindergarten (early childhood), K12, and postsecondary through post-graduate education, along with workforce and other outcomes data (e.g., public assistance and corrections data). The specific agencies and other organizations that participate in the P-20W+ initiative vary from state to state. *Source:* SLDS Best Practice Brief: P-20W Data Governance *(http://nces.ed.gov/programs/slds/pdf/brief4_P_20W_DG.pdf)*
Part B 619	Serves children ages 3 to 5 by providing special services to children diagnosed with developmental delays and disabilities who are eligible under the Individuals with Disabilities Education Act. *Source: http://idea.ed.gov/explore/view/p/%2Croot%2Cstatute%2Cl%2CB%2C619%2C*
Part C	A $436 million program administered by states that serves infants and toddlers through age 2 with developmental delays or who have diagnosed physical or mental conditions with high probabilities of resulting in developmental delays. *Source: http://idea.ed.gov/part-c/search/new*
Personally Identifiable Information (PII)	Personally identifiable information—as defined in FERPA—includes, but is not limited to 1. a student's name; 2. the name of the student's parent or other family members; 3. the address of the student or student's family; 4. a personal identifier, such as the student's Social Security number, student number, or biometric record; 5. other indirect identifiers, such as the student's date of birth, place of birth, and mother's maiden name; 6. other information that, alone or in combination, is linked or linkable to a specific student that would allow a reasonable person in the school community, who does not have personal knowledge of the relevant circumstances, to identify the student with reasonable certainty; and 7. information requested by a person who the educational agency or institution reasonably believes knows the identity of the student to whom the education record relates. *Source: http://ptac.ed.gov/glossary/personally-identifiable-information-pii*

Planning and Management	Planning is deciding in advance what is to be done, when, where, how, and by whom to achieve the purpose and vision for the ECIDS. It includes establishing strategies, objectives, policies, and procedures. Management is the oversight of the execution of a plan, including necessary adjustments over time to reflect changes in context, needs, and resources. *Source: ECIDS Toolkit (https://slds.grads360.org/#program/ecids-toolkit)*
Portability	In relation to software, a measure of how easily an application can be transferred from one computer environment to another with few or no modifications. *Source: www.techopedia.com*
Portal	A web-based site that serves as a single point of access to information online by offering a collection of links to a diverse range of resources on a single topic. *Source: Derived from http://dataqualitycampaign.org/files/DFA2012_Survey_Glossary.pdf*
Purpose and Vision	The purpose and vision statements communicate the ECIDS's reason for being, what it aims to produce, and how it contributes to the long-term early childhood policy and program goals of the state. *Source: ECIDS Toolkit (https://slds.grads360.org/#program/ecids-toolkit)*
Redaction	The process of expunging (striking out or deleting) sensitive data from education and early intervention records prior to disclosure in a way that meets established disclosure requirements applicable to the specific data disclosure occurrence (e.g., removing or obscuring personally identifiable information from published reports to meet federal, state, and local privacy laws, as well as organizational data disclosure policies). *Source: http://dasycenter.org/downloads/DaSy_papers/DaSyDeidentificationGlossary.pdf*
Reliability	The accuracy and completeness of data, given the uses for which they are intended.
Return on Investment (ROI)	A measure of the value that a project yields to its stakeholders. *Source:* Total Cost of Ownership: An Important Piece of Any Sustainability Plan *(http://nces.ed.gov/programs/slds/pdf/TotalCostofOwnership.pdf)*
Stakeholder Engagement	The process by which an organization or collection of organizations systematically involves its stakeholders in its work. *Source: ECIDS Toolkit (https://slds.grads360.org/#program/ecids-toolkit)*

Stakeholders	Individuals and groups directly or indirectly affected by an SLDS beginning with the design, development, and implementation of the system. The groups include a wide range of individuals—from local education agencies (including administrators, teachers, parents, and students), to the state and federal levels (including legislators, legislative staff, governors, etc.), to the public arena and business community. *Source:* Stakeholder Engagement Plan for SLDS Guide and Template *(https://slds.grads360.org/#communities/stakeholder-engagement/publications/3083)*
Statewide Longitudinal Data System (SLDS)	The unit-level data systems designed for collection, management, analysis, and reporting of statewide education data over time and across programs. *Source: Derived from https://ceds.ed.gov/Glossary.aspx*
Suppression	Suppression involves removing data (e.g., from a cell or a row in a table) to prevent the identification of individuals in small groups or those with unique characteristics. This method may often result in very little data being produced for small populations, and it usually requires additional suppression of non-sensitive data to ensure adequate protection of personally identifiable information. *Source: http://ptac.ed.gov/sites/default/files/FAQs_disclosure_avoidance.pdf*
Sustainability	The capacity to support a system or program over time with sufficient financial and human resources to meet current and future needs. *Source: ECIDS Toolkit (https://slds.grads360.org/#program/ecids-toolkit)*
System Acceptance Testing	A phase in the software development lifecycle designed to ensure that the functionality and quality of the system are acceptable to end users. *Source: Derived from www.businessdictionary.com*
System Deployment	Delivery, installation, and testing of a computer or system to put it in a state of operational readiness. *Source: www.businessdictionary.com*
System Design	The means by which the operational needs of the data contributors and data users are translated into a technical infrastructure. *Source: ECIDS Toolkit (https://slds.grads360.org/#program/ecids-toolkit)*
System Development	An iterative logical process that aims to create computer-coded or programmed software to address a unique business or personal objective, goal, or process. Software development is generally a planned initiative that consists of various steps or stages that result in the creation of operational software. *Source: www.techopedia.com*

System Initiation/ Planning	A phase in the data system lifecycle that includes documentation of the system's goals and the process that will be used to create and implement a technical solution to meet those goals. *Source: Derived from DaSy definition*
System Requirements Analysis	A phase in the data system lifecycle in which the detailed specifications for the system are examined to determine whether they meet the stated end user needs and goals for the system. *Source: Derived from DaSy definition*
Technology Platform	The computer operating environment on which a data system will run. *Source: Derived from http://www.techterms.com/definition/platform*
Transactional Processing System	A data system in which there is continuous updating of information through entries, deletions, and updates of data. In transactional processing, the data activities are processed one at a time. This is in contrast to batch processing, in which a group of activities are processed at one time. *Source: www.pcmag.com/encyclopedia*
Transformation Rules	The rules for converting a set of data values from the data format of the source data system into the data format of a different destination data system.
Transparency or Transparent Process	The essential condition for a free and open exchange whereby the rules and reasons behind business processes are clear and understood by all stakeholders. Transparency involves a lack of hidden agendas and conditions, accompanied by the availability of full information required for collaboration, cooperation, and collective decisionmaking. It is characterized by visibility or accessibility of information, especially concerning business practices, as well as the assurance that data being reported are accurate and are coming from the official source. *Sources: http://www.computerlanguage.com/ydict.html, http://www.merriam-webster.com/dictionary/transparent, http://www.businessdictionary.com/definition/transparency.html#ixzz37pZIO7Nc*
Unique Identifier	A numeric or alphanumeric string that is associated with a single entity (e.g., a child, service provider, teacher, or local program) within a given system. *Source: http://whatis.techtarget.com/definition/unique-identifier-UID*
User	A person who accesses, analyzes, reports, and/or uses data.
User Interface	The visual part of a computer application or operating system through which a user interacts with a computer or software. The interface determines how commands are given to the computer or program and how information is displayed on the screen. *Source: http://www.businessdictionary.com/definition/user-interface.html*

Validity	The extent to which data represent what they are intended to represent.
Vision Statement (for a data system)	An aspirational description of how the system will help support the mid- and long-term education goals of the state. It should be heavily informed by the needs of a broad range of stakeholders. *Source: ECIDS Toolkit (https://slds.grads360.org/#program/ecids-toolkit)*
Web Portal	A website that serves as a gateway or a main entry point ("cyber door") on the Internet to a specific field of interest or an industry. A portal provides at least four essential services: (1) search engine(s), (2) email, (3) links to other related sites, and (4) personalized content. It may also provide facilities such as chat, a members list, or free downloads. Source: http*://www.businessdictionary.com/definition/portal.html#ixzz34RhGjeSj*
Workflow	A term used to describe the tasks, procedural steps, organizations or people involved, required input and output information, and tools needed for each step in a business process. *Source: http://searchcio.techtarget.com/definition/workflow*

APPENDIX 2: ECIDS ROLES

The table below identifies key Early Childhood Integrated Data System (ECIDS) roles as used in the Toolkit and their responsibilities in the process of integrating early childhood data.

ECIDS Roles	Potential Responsibilities*	Potential Member(s)
ECIDS Lead(s) *(Alias: Data Policy Manager for Early Childhood, Early Childhood Coordinator, Early Childhood Data Coordinator, Early Childhood Data Program Manager)*	• Manage the ECIDS work plan • Lead the ECIDS Core Team	Not applicable
Early Childhood Executive Leadership *(Alias: Early childhood governing bodies, Early Childhood Advisory Council)*	• Provides the vision for the ECIDS • Represents the needs of members' respective agencies • Assigns staff to work on the ECIDS	Executive leadership of each early childhood agency, the state CIO, governor's office staff
ECIDS Core Team *(Alias: Project Team/ Management Team/Steering Committee)*	• Designs the ECIDS work plan • Implements the ECIDS work plan • Represents the needs of members' respective agencies based on leadership • Communicates progress back to the Early Childhood Executive Leadership • Provides communication resources to identified audiences about the work of the ECIDS	Representatives from the key entities, communications staff (e.g., CPIO or information officer), legal representation as needed
ECIDS Data Governance Group(s)	• Establish a structure and policies for integrated data that will be shared in the ECIDS • Ensure that the ECIDS is developed and used in accordance with all federal and state laws	Early Childhood Executive Leadership, program managers, directors, data stewards, IT staff from all data contributing agencies
ECIDS Technical Team	• Designs and develops the technical solution for the ECIDS • Works with program staff to identify the technical needs • Develops requirements	Developers, database administrators, network administrators, CIO, IT managers, business analysts

P-20W+ Partners *(Alias: Data Integration Group)*	• Develop and implement of a P-20W+ data system	State education agency (usually the lead), workforce agencies, higher education institutions, other relevant partners
P-20W+ Data Governance	• Establishes a structure and policies for integrated data that will be shared in a P-20W+ data system	Executive leadership, program managers, directors, data stewards, IT from all data-contributing agencies for the P-20W+ system
ECIDS Researchers	• Help ensure that the ECIDS essential questions can be answered and the data and analysis needed to do it well are available	University partners, nonprofits providing research support, advocacy organizations with research capacity
ECIDS Stakeholders	• Inform the process, intended outcomes, communication, and uses of the ECIDS	Parents, advocacy organizations (including critics), universities, partner entities such as public and private program providers, nonprofit organizations, legislators and other policymakers, mental health and health organizations, professional development providers, broad community groups
ECIDS Users	• Provide feedback on the user-friendly nature of the ECIDS • Use the ECIDS to inform decisions	Parents, researchers, program providers, policymakers, state agency staff, legislative analysts, teachers, professional development providers

* In some cases there is not a single group responsible for a task, or responsibility varies significantly across states. In these cases the term "state" is used broadly in the Self-Assessment.