Communicating Early Childhood Integrated Data System (ECIDS) Design: Developing Presentation and Conceptual Diagrams

System design is essential to an early childhood integrated data system (ECIDS) because it is the means by which the operational needs of the data contributors and the intended users[1] are translated into a technical infrastructure that will meet those needs. Yet once the work begins, it is often challenging to communicate how user needs informed the design of the ECIDS and to describe the design to technical and nontechnical audiences. Effective communication can present a variety of challenges. The term *system design* itself typically triggers technical thoughts, but most people will not need information about the system presented in a technical way. If there is too much technical jargon or if it is too complex, a stakeholder may not clearly understand the design, its implications, or how it meets their needs. A stakeholder who does not understand the system design may be hesitant to participate in the ECIDS, or may not be able to contribute knowledgeably to its development and implementation.

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The design of an ECIDS should always be communicated in a way that is pertinent and useful to the intended audience. One effective way of communicating the ECIDS design is through a system design diagram, which provides a graphical representation of the data system so that audiences can visualize it more easily. This brief presents two types of diagrams that can be used for communicating a state's ECIDS design: a **presentation diagram** and a **conceptual diagram**.
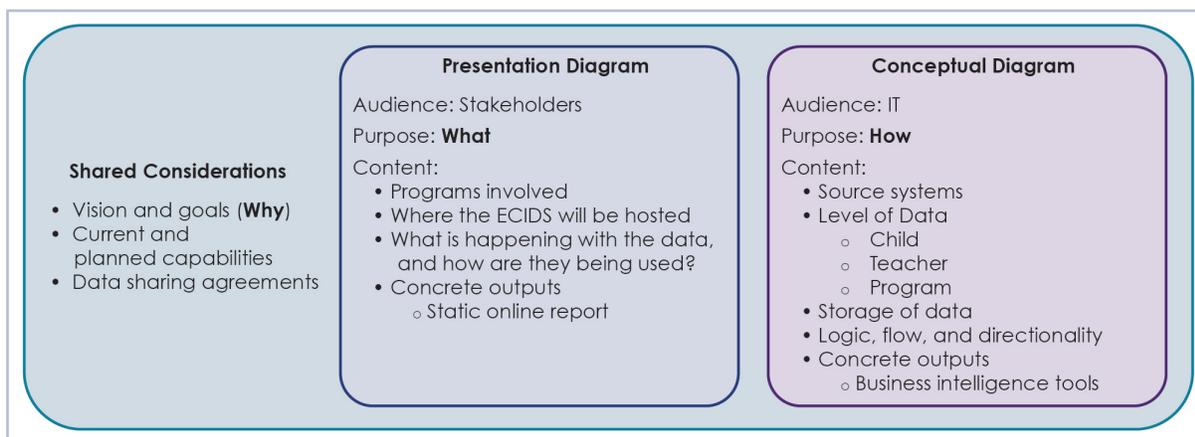

Figure 1. Considerations and content for ECIDS design diagrams

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[1] For more information about identifying users, see the SLDS brief *Identifying SLDS Users and Their Information Needs.*
https://slds.grads360.org/#communities/pdc/documents/2753

The Presentation Diagram

A presentation diagram is an effective means of communicating to stakeholders how the system is capturing what they envision. This type of diagram offers a high-level view intended more for the general public than for technical audiences. It addresses how the data will be used to create reports and tools to inform the activities of the agencies contributing to the ECIDS as well as statewide early childhood policy priorities. Specifically, the presentation diagram identifies the high-level goals and policies the ECIDS will inform (Purpose & Vision) and illustrates how the ECIDS model will collect data from contributors (State Programs & Agencies), match those data (System Design), and generate useful products such as reports to address those goals (Intended Outcomes). Figure 1 is a template showing key components of a presentation diagram.
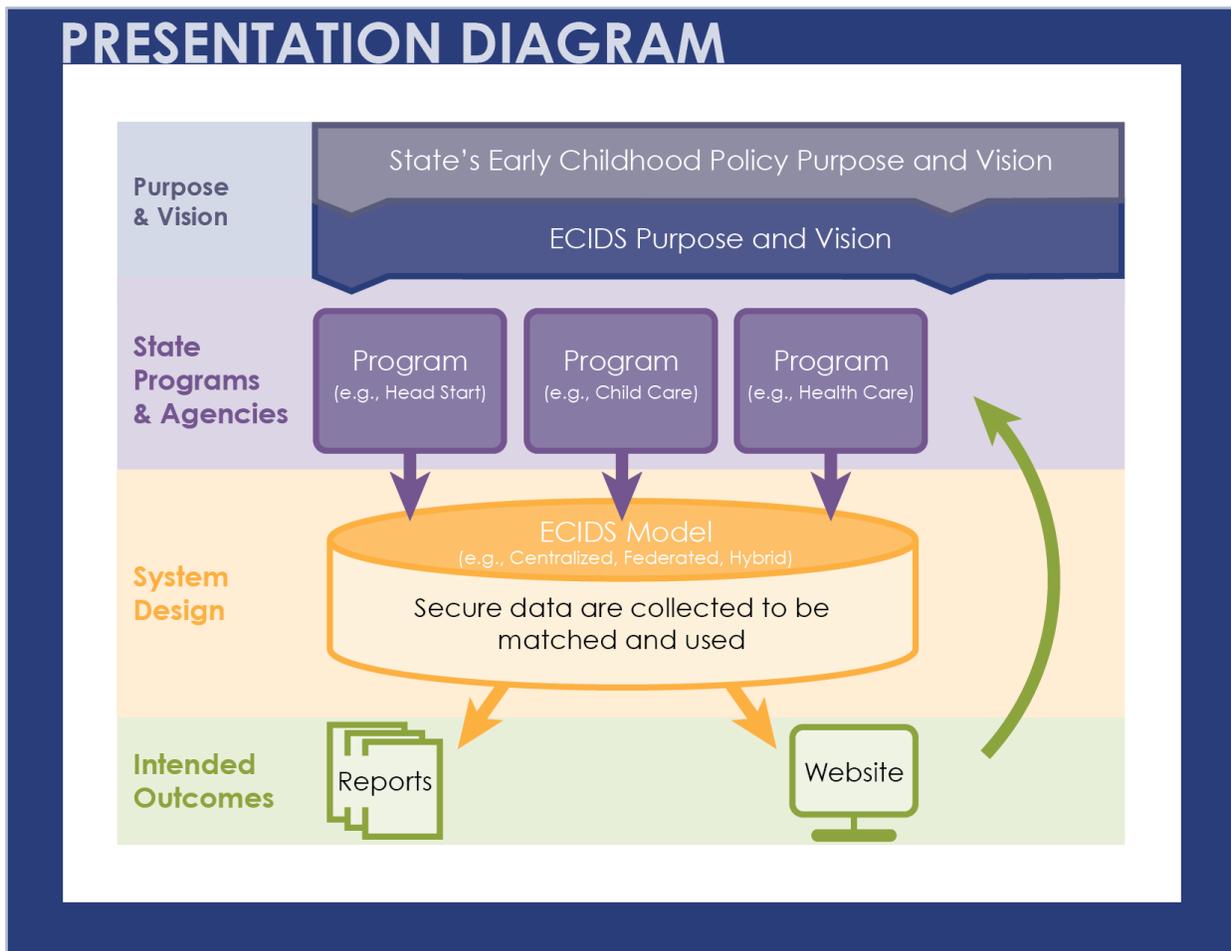

Figure 2. Template for an ECIDS presentation diagram

The presentation diagram is useful for generating buy-in from stakeholders because it demonstrates the value of the system in helping them improve their operations and meet their organizational goals. By including feedback loops and directionality, the diagram can also show stakeholders how their input is being used to inform and improve the system. Furthermore, the diagram increases people's understanding of the system—including, if applicable, how it fits into the state's greater P-20W+ (early childhood through workforce) landscape—by presenting information in a clear, nontechnical way. This transparency helps to dispel myths and keep expectations for the system realistic.

Scenario: Using a Presentation Diagram to Demonstrate the Value of an ECIDS

A state's Head Start programs, Department of Health, and State Department of Early Education are all participating in the ECIDS. All three agencies agree on common data standards, which allow children's records to be shared across the programs.

Challenge: When a child who is currently enrolled in Head Start requires a referral for mental health services, the child's information is provided to a behavior health services agency. Once services are provided, the child's information is recorded and progress is tracked. But what happens when that child leaves Head Start and moves to an area where state preschool is the only early childhood program available? Currently there is no way for that child's record and assessment to be accessed by the preschool to ensure that he or she is provided with the proper services. The preschool might ask for a new assessment and referral, and the process will have to be repeated.

Solution: In an ECIDS, this child's data will be accessible by all three agencies, immediately identifying all services provided to the child and reducing redundancy in services. The child can continue receiving the appropriate services without interruption. Additionally, this family will only be **counted once** across all three agencies.

The Conceptual Diagram

The presentation diagram can give information technology (IT) professionals direction for building the ECIDS, but technical staff members then use another type of diagram to show exactly *how* the ECIDS will meet the needs of the state. This diagram is commonly referred to as a conceptual diagram, and it provides a more detailed view of specific technical aspects of the system. The conceptual diagram identifies the specific data elements and tables from each contributing state program and agency that will be integrated into the ECIDS. It also includes the business intelligence tools that might create the reports where the presentation diagram would have the expected reporting, such as a dashboard or standard reports (see figure 3, next page).

While the presentation and conceptual diagrams serve different audiences, it is important to remember that they are not completely separate tools. Together, they show where and how the ECIDS will meet the intended users' needs and how the essential questions will be answered.
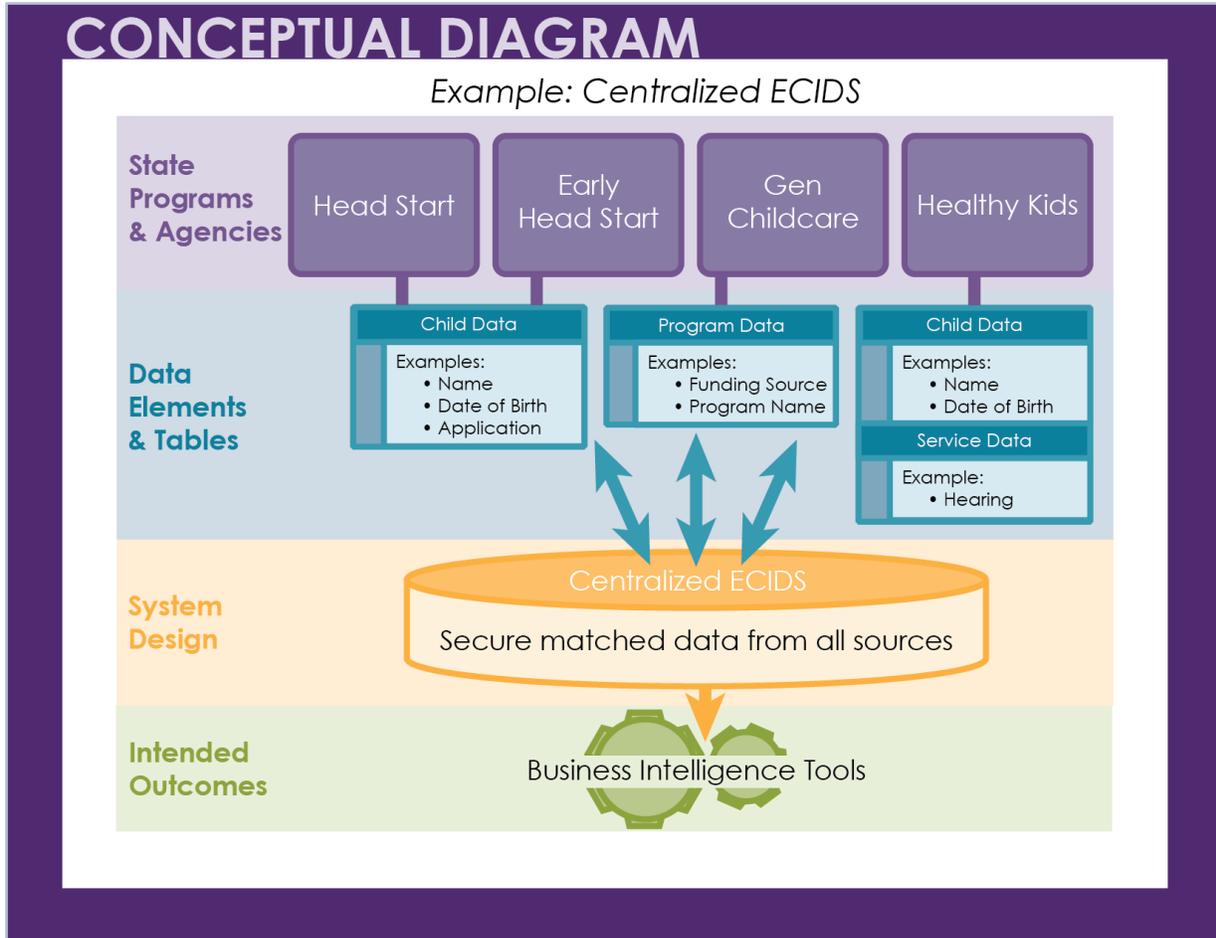
Figure 3. Template for an ECIDS conceptual diagram

Selecting the Appropriate Diagram

There are a few considerations when determining which type of diagram will be most helpful for specific audiences or circumstances. The questions below illustrate the key differences between the two diagrams and can help identify which will be most useful in a given context.

What are you trying to communicate?

While both types of diagrams are intended to help states communicate about their ECIDSs, each portrays information intended for different audiences. The table below highlights a few of the messages communicated through each diagram.

Presentation Diagram	Conceptual Diagram
• What will the ECIDS allow users to do that they cannot do now? • Where and how will the essential questions will be answered?	• How does the ECIDS design plan align to expectations? • What are the limitations of the system? • Where will data be reported? • Where and how will the essential questions be answered?

Table 1. Key messages conveyed by presentation and conceptual diagrams

With whom are you trying to communicate?

When articulating how a system model aligns with the needs, it is important to be sensitive to the intended audience as defined by the state. Consider who you are trying to share this information with, and for what purpose.

Presentation Diagram	Conceptual Diagram

Early childhood stakeholders:
  • Policymakers
  • Program staff
  • Educators
  • Researchers
  • Parents and students
  • General public
	IT and data governance committees

Table 2. Target audiences for presentation and conceptual diagrams

Getting Started: Recommendations for Creating Diagrams

Do not combine the diagrams

Using the information above, decide which diagram will be most effective for your purpose by determining what and to whom you are trying to communicate. If you blend the diagrams together, you can lose both audiences. Be clear about which diagram you choose for a particular audience and why it is the best choice.

Figure 4 shows the key types of information included in presentation and conceptual diagrams.

		PRESENTATION	CONCEPTUAL
Purpose & Vision	The purpose and vision for the state's early childhood policy and for the ECIDS are clearly articulated and documented.	✓	
State Programs & Agencies	Include all *current* programs that are part of the ECIDS. Any other programs planned for future stages can be included, but ensure that it is clear they are not part of the current plan/integration.	✓	✓
Data Elements & Tables	Include as much detail as necessary on data elements, tables, etc.		✓
System Design	Clearly state for the intended audience how the data system is designed.	✓	✓
Intended Outcomes	Clearly state for the intended audience how the data will be used.	✓	✓

Figure 4. Basic Elements of ECIDS Diagrams

Engage data governance groups

It is critical for governance groups to be involved throughout development of system design diagrams as they are important pieces of documentation that can be used to inform decisions about the ECIDS. The process of creating a diagram encourages states to reflect on governance-related topics such as the purpose and intended outcomes of the ECIDS, the prioritization of the users it can and should serve, and the system's capacity to support the identified uses. Since the diagram shows system inputs and outputs—both planned and current—it may reveal issues that require leadership involvement, such as data linkages and the need for data sharing agreements.

Regardless of which type of diagram you are creating, **ensure that the diagram is clear to your data governance committees.** These committees are made up of individuals from both IT and broader early childhood audiences and therefore should be able to understand both types of diagrams.

Review and update the diagrams regularly

Documenting presentation and conceptual diagrams as part of a strategy for periodic review of the ECIDS process and design to ensure that the state's long-term purpose and vision are being met continuously. These diagrams are living documents that should be frequently revisited and modified as needs change. They should be appropriately shared and communicated to those who need to be aware of plans, decision, or changes throughout the lifecycle of the ECIDS.

Additional Resources

SLDS Early Childhood Integrated Data System Toolkit: System Design
https://slds.grads360.org/#program/ecids-toolkit:-system-design

SLDS Early Childhood Integrated Data System Self-Assessment – Component E: System Design
https://slds.grads360.org/api/ApplicationMedia/GetDownload/23112

Maine's ECIDS Presentation Diagram
https://slds.grads360.org/services/PDCService.svc/GetPDCDocumentFile?fileId=4949

Maine's ECIDS Concept Diagram
https://slds.grads360.org/services/PDCService.svc/GetPDCDocumentFile?fileId=4950