# Contents

- **Introduction** .................................................................................................................. 2
- **Exploring Your Ecosystem** .............................................................................................. 3
  - Application Mapping ........................................................................................................... 3
  - Use Case Identification ..................................................................................................... 5
- **The MOST Used “Adapter”** ............................................................................................. 6
- **Initiative Linkages** ........................................................................................................... 8
  - CEDS ................................................................................................................................. 8
  - Project Unicorn .................................................................................................................. 8
- **Linking Interoperability to Privacy** ................................................................................ 10
- **Decision Time** ................................................................................................................ 11
  - Vendor Homework ............................................................................................................ 12
    - Vendor Marketplace ......................................................................................................... 12
    - SDPC Resource Registry .................................................................................................. 12
    - Integrator Questions ........................................................................................................ 12
    - Vendor Readiness Scoring .............................................................................................. 12
- **RFP Wording** .................................................................................................................. 13
  - Request for Information (RFI) Basic Components ............................................................ 13
  - Request for Proposals (RFP) Basic Components ............................................................... 13
- **How Did You Do?** ......................................................................................................... 14
- **Resources** ....................................................................................................................... 14
  - Interoperability ................................................................................................................ 14
  - Privacy .............................................................................................................................. 14
Introduction

This guide has been developed with input from dozens of school CIO/CTOs as a tool to help you address two of the major concern’s schools face each day – data management and data privacy! It is been developed to be a “tactical” guide that is immediately useful for your work, not some theoretical “you should” seen by many publications out there.

Maybe the best way to show you how to be better empowered to take control of YOUR digital ecosystem is to show you. A picture – or in this case a PowToon – is worth a thousand words. Grab a coffee and see if this helps your thinking on the topic.

Video available on YouTube: https://youtu.be/0UfVXDkAko
Exploring Your Ecosystem

Now that you have seen how the use of standards can help “connect” your ecosystem parts and ways their usage can put you in charge – it’s time to roll up our sleeves and get to work!

Application Mapping

One of the important steps in getting across the interoperable finish line is “knowing where you are now”. Knowing your major applications and how they are connected allows you to better understand the processes, technical strategy and identify targeted need areas. An example of how Washington School Information Processing Cooperative (WSIPC) integrate their applications.
Now your turn! Using the previous example, use this downloadable template to create your own implementation mapping...

* Not currently implemented, planned for future development
Use Case Identification

Now that you know where your “stuff” is, what are you trying to do or what “pain point” are you trying to address? Is it rostering the various applications in use in your ecosystem? Is it linking sending assessment data to a LMS? Maybe ensuring you have the right applications talking to each other like an IEP app to a SIS? **These are all “Use Cases”**

Check out some of the current Use Cases here: [https://www.a4l.org/page/UseCases](https://www.a4l.org/page/UseCases)

But… we’d love to hear about how your organization is utilizing open standards like the SIF Specifications. You can submit your Use Cases online here: [https://www.a4l.org/page/UseCase_Online](https://www.a4l.org/page/UseCase_Online)
The MOST Used “Adapter”

Some in the educational marketplace attempt to dismiss SIF utilization in the attempts to promote their own work but the fact is:

*Since 1997, the SIF Specification is the #1 used technical blueprint for interoperability… and still is BY FAR!*

In 2016, and again in 2019, the Community developed a brief usage survey which was sent to marketplace software integrators who must support all technical standards when serving their LEA/SEA customers. Even with a short timeframe (2 weeks) and low response rate (7 survey responses) the impact numbers depict the continued usage and growth of SIF usage. Care was taken to not “double count” applications in use in districts. This means that confirmed numbers are substantiated and expected to be well under actual values.

**Survey Summary results:**

- SIF-Enabled applications are in place and operating in every US state: This represents over 55 million students/3.9 million teachers
- There are at least 11 statewide implementations utilizing SIF interoperability: This represents over 11 million students in 6,000 school districts with 810,000 teachers
- Non-statewide implementations utilizing SIF interoperability: This represents over 2.5 million students in 1,000 school districts.

The A4L Community has taken the best of the best from 20 years of data adaptor development (i.e. interoperability specifications), addressing school and state agency needs in a new Specification – **code named “Unity”**.

[Link to SIF Usage Survey](https://www.A4L.org/page/SIF_Useage)
“Unity” is a volunteer developed blueprint created using open, non-proprietary and transparent processes – and 20 years of success! It contains the most comprehensive K12 data model and modern transport technologies to securely move data to the right person at the right time under local data privacy policies.

The Unity interoperability blueprint:

- ...supports greater privacy and security controls including the work of the Student Data Privacy Consortium (SDPC).
- ...is designed to support API development and standardization.
- ...is an implementation blueprint that works with other technical standards, to NOT replicate them, but let you take advantage of 'best of breed' standards (i.e. CEDS, PESC, LTI, Caliper, Ed-Fi).
- ...allows you to expect that what you build today will be used tomorrow.
- ...allows for easy maturation to a more powerful infra-structure while keeping your data layer investments intact.

The original A4L document can be found here.
### Initiative Linkages

Two major national interoperability projects have A4L and the SIF Specifications in their origins and ongoing development.

#### CEDS

The Common Education Data Standards (CEDS) is a national collaborative of the National Center for Education Statistics (NCES) to develop voluntary, common data standards for a key set of education data elements to streamline the use and understanding of data within and across P-20W institutions and sectors.

- The starting point for the CEDS data model was the SIF Specifications. Besides being the most comprehensive model in use, it also was the model of choice for many states to do their school district to state data reporting. The SIF Team has been at the development table for each CEDS release and has been promoting its usage since the project began.

- The A4L leadership has committed the organizations technical work will align to the CEDS allowing for the implementation of CEDS “on the ground”. In addition to this enabling, the A4L Board has made a formal part of their tech development processes and publicly has endorsed its ongoing alignment to CEDS. This was very evident as the CEDS Team was involved and then incorporated the A4L IEP standardization into the latest version of CEDS.

- With the Unity release, the A4L Community has focused on a tight CEDS to allow for EdFACTS (state to federal) reporting of data. The culmination of this work will be the first CEDS Certification Program.

- Adding to this CEDS alignment is the current Unity-CEDS NDS Connector Project which will allow seamless reporting from schools to states to federal government and the CEDS Generate Project.

#### Project Unicorn

Project Unicorn is an effort to improve data interoperability within K-12 education. The Foundation funded project brings together a community of innovators who make the broader case for secure interoperability by determining shared priorities, working in partnership with school systems and vendors to understand its importance and benefits, creating a demand side push for interoperability through partnerships, and educating buyers to consider the total cost of ownership through informed comparison of vendors.

The A4L Community is a member of the Unicorn Steering Community and has been promoting the great interoperability awareness strides the Project has made include usage of their “Interoperability Rubric”. You can see that usage of the Unity Specification puts those users in the driver seat for the highest level (level 4) of interoperability.
### Based on the Project Unicorn Interoperability Rubric 2018

<table>
<thead>
<tr>
<th>Level 4 recap</th>
<th>How SIF Specifications can help you achieve Level 4!</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Quality</strong></td>
<td><strong>Level 4 accomplished</strong></td>
</tr>
<tr>
<td>Integrate or import unique numeric student identifiers used by schools and other tools (e.g. SIS ID)</td>
<td>✓ When it comes to student identifiers, SIF has you covered at the application, local, and state level. Add to that our student locator (state ID lookup) services and all the parts are present to align your integration to levels 1, 2, 3, 4, and more.</td>
</tr>
<tr>
<td><strong>Data Granularity</strong></td>
<td>4 or more units of data (e.g. section, school, district, student) available for immediate export or import</td>
</tr>
<tr>
<td><strong>Export Process</strong></td>
<td>Industry standard aligned API with certification of APIs from appropriate industry standards body (e.g. Ed-Fi, Access 4 Learning, or IMS)</td>
</tr>
<tr>
<td><strong>Export Security</strong></td>
<td>Encrypted transfer with data restrictions and procedural safeguards (e.g. VPN, authentication)</td>
</tr>
<tr>
<td><strong>Export Frequency</strong></td>
<td>Real time</td>
</tr>
<tr>
<td><strong>Export Format</strong></td>
<td>Industry standard file format (e.g. QTL, Ed-Fi, OneRoster, xPress Roster, SIF) with certification of APIs from appropriate industry standards body (e.g. Ed-Fi, Access 4 Learning, or IMS)</td>
</tr>
<tr>
<td><strong>Import Process</strong></td>
<td>Industry standard aligned API with certification of data formats from appropriate industry standards body (e.g. Ed-Fi, Access 4 Learning, or IMS)</td>
</tr>
<tr>
<td><strong>Import Security</strong></td>
<td>Encrypted transfer with data restrictions and procedural safeguards (e.g. VPN, authentication)</td>
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<td>Industry standard file format (e.g. QTL, Ed-Fi, xPress Roster and IEP, OneRoster) with certification of data formats from appropriate industry standards body (e.g. Ed-Fi, Access 4 Learning, or IMS)</td>
</tr>
<tr>
<td><strong>Technical Descriptions and Examples</strong></td>
<td>Data is exchanged using standards-based formats and APIs in real-time. Example: Using LTI gradebook and assignment services or Ed-Fi formative assessment outcome composite and/or SIF specification for K-12 application ecosystem</td>
</tr>
</tbody>
</table>

*The original A4L document can be found [here](#).*
Linking Interoperability to Privacy

As the data steward for your ecosystem, thinking about how your various pieces fit together is not enough. You also have to consider who has access to what data – student data privacy. In 2015 the A4L Community established a special interest group entitled the Student Data Privacy Consortium (SDPC). The SDPC has its own governance and membership infrastructure and is made up, like A4L, of schools, states/territories, federal governments and marketplace providers addressing “tactical” student privacy issues seen each day. Some of these issues are being addressed within the Unity Specification – balancing interoperability with privacy!

Much of this work is being done across the globe with the establishment of “Alliances” that work together within states/countries to identify collective work to be done including streamlining and in some cases automating the contracting process of bringing applications into your ecosystem. There are 26 states with Alliances with many now sharing the same privacy contract language between them – and now a developing National Privacy Clause Set. All of this work has put schools in charge of their ecosystems applications and setting expectations with vendors.

The impact? HUGE! Thousands of districts now have common wording with thousands of applications. You can go to the SDPC site right now and check if your state has an Alliance, signed contract agreements with vendor products in your ecosystem, the sharing of effective practices in privacy and ideally become a part of this continuously growing collaborative!

The new Unity release is supporting the work of the SDPC by carrying, in a machine-readable format, the meta-data around privacy agreements that will allow more rapid incorporation in your ecosystem and enable vendors to show “proof” they are adhering to your data privacy expectations.

Visit the SDPC Resource Registry:
https://sdpc.A4L.org

Privacy – By The Numbers...
the Student Data Privacy Consortium (SDPC)

- 26 State-wide Alliances
- 32 million Students supported by Tools
- 8700+ School Districts represented
- 5332 Signed Vendor Agreements
- 2603 Applications in Database
- 4108 Countries Collaborating on Privacy Issues
- "Tactical" Privacy Information – contract to implementation

No One Gets It!

Everyone Gets It!

Its Not “One or the Other”!

It’s Not “One or the Other”!
Decision Time

With Unity combining an established and proven scalable REST infrastructure with familiar data model components, building a SIF adaptor has never been easier or more affordable. Here is how to get start writing or migrating your adaptor to this supported North American standard.

Follow the decision tree below to help determine the right path for you! However, keep in mind that the REST based infrastructure empowers consumers to do much more than before; only concern yourself with building a provider if your system will be the ‘source of truth’ for at least one object.

**PROVIDER AND/OR CONSUMER ADAPTOR**

Start by choosing your preferred programming language:

- **Java**
  - REVIEW: Java Framework functionality
  - Build Adaptor
    - Generate Data Classes
    - Code to persist data in your Database
    - Example Workshop
  - TEST
    - **Unity Compliance Test Suite coming to our members soon!**
  - Hook to other SIF Compliant Apps
    - OR
    - Build another Adapter

- **.NET**
  - REVIEW: .NET framework functionality
  - Build Adaptor
    - Generate Data Classes
    - Code to persist data in your Database
    - Example Workshop
  - TEST
    - **Unity Compliance Test Suite coming to our members soon!**
  - Hook to other SIF Compliant Apps
    - OR
    - Build another Adapter

- **other**
  - REVIEW: SIF Infrastructure Specification
  - REVIEW: SIF Data Model Specification
  - Build Adaptor
    - Your Database
    - Your Language
    - Your Framework and Libraries
  - TEST
    - **Unity Compliance Test Suite coming to our members soon!**
  - Hook to other SIF Compliant Apps
    - OR
    - Build another Adapter

* This above table assumes you are seeking to create your own SIF Adaptor. Those looking for a partner to SIF enable their software should check out our integrator members [here](https://www.A4L.org/page/DIY_Guidance_technical).
Vendor Homework

Do your homework! Does your vendor, or prospective one, commit to interoperability and privacy concerns you might have? Two very quick places to check:

**Vendor Marketplace**

- [A4L Marketplace](https://marketplace.a4l.org/A4LDirectory/)

**SDPC Resource Registry**

- [SDPC Resource Registry](https://sdpc.a4l.org)

> Whether they are or are not – this might be your chance to push them to empower your controls over your ecosystem now and in the future!

Integrator Questions

There are great partners out there who can help you – it is the business they are in!

- What software platform is your broker based on?
  - Java, .NET, Others...

- Where does your software run?
  - Locally, Cloud (Amazon, Google), Microsoft, IBM, Oracle...

- Do I need to keep my data in my state/country?
  - Yes, Not, Both...

- Does your broker support encrypted payloads?
  - Yes, No...

- What privacy controls does your software support?
  - POLS, Privacy, None...

**Vendor Readiness Scoring**

The [Unity Specification](https://marketplace.a4l.org/A4LDirectory/) is new, your marketplace providers and potential new vendors may not have created an adapter for it yet, so you will need to work with your partners to get them ready. The following questions will help you understand your commitment to unity-enabled standards usage. The results of your market scoring will help you gauge how likely they are to meet your needs quickly and reliably.

If you have already identified your workflows and specific needs (possible from an existing SIF deployment), then you can add your own specific concerns to the above. Keep in mind that as Unity is new, its high level of backward compatibility with the SIF 2.1 specification opens up many new ingestion opportunities for existing deployments.

**Question:** What is your current level of engagement with the SIF Unity release?

- A. We have a working Unity adapter in production: 10 points
- B. We have created a Unity adapter and are looking for a pilot site: 5 points
- C. We are in the process of creating a Unity adapter: 2 points
- D. We have reviewed the documentation and are planning Unity on our roadmap: 1 point
- E. We are interested in learning more about Unity in order to support you: 2 points
- F. We have expressed Unity and decide not to support it: 0 points

**CLICK HERE >>**
RFP Wording

Request for Information (RFI) Basic Components

Every institution goes about identifying, integrating and validating the use of educational technologies in their own way. One of the first steps is to frame, for both vendors and end users, the basics of the needs of the organization through the development and release of a Request for Information (RFI). The RFI is a more informal information gathering on both the vendor’s capabilities and their thoughts on the proposed work ahead. They tend to be very short turn in nature and help you in the development of the more formal Request for Proposal (RFP). Schools/districts/states may or may not use this “framing” step to support their upcoming project but if used, RFI’s look very different between institutions. Most include:

- Organizational Background – a snapshot of the institution asking for information
- Project Purpose and Goals – outlining the specifics on the use case(s) to be addressed and desired outcomes
- Responding Organizations Experience in Technical Standards Usage – this might mean in various data/transport standards such as SIF, IMS, PESC, Ed-Fi Model, etc.) or security standards (IEEE, NIST, ISO, etc.).
- Responding Organization’s Experience and References – both to this specific use case and other customers in general.

For “In Use” Examples of RFI wording you can use that are specific to SIF Unity, see Appendix A: SIF RFP Language 2019

Request for Proposals (RFP) Basic Components

As with RFI’s, every institution goes about identifying, integrating and validating the use of educational technologies in their own way. A Request for Proposals (RFP) is developed to announce to companies to place bids to complete the project. This is the more formal process as the RFP outlines the bidding process, contract terms, and provides guidance on how the bid should be formatted and presented. Schools/districts/states may or may not use this “framing” step to support their upcoming project but if used, RFP’s look very different between institutions. Most include:

- Project Scope
- Deliverables
  - Project Plan / Design and Architecture / User Acceptance Methodology
- Integration Plan
- Data Quality Assurance
- Validation
  - User Access / Training / Tech Support
- Costs and Delineation of Roles

For “In Use” Examples of RFP wording you can use that are specific to SIF Unity, see Appendix B: SIF RFP Language 2019
How Did You Do?

Please let us know if this document worked for you in becoming more empowered in developing, managing and growing your digital ecosystem.

Drop us a line at staff@A4L.org. We want this Guide to continue to grow and are asking for you to let us know what type of support and/or information could support your work.

Resources

Interoperability
- Introducing Unity: https://www.A4L.org/page/Unity
- SIF Usage: https://www.A4L.org/page/SIF_Usage

Privacy
- Student Data Privacy Consortium (SDPC) website: https://privacy.A4L.org
- Student Data Privacy Consortium (SDPC) Resource Registry: https://sdpc.A4L.org