

Ecosystem Empowerment Guide



data.A4L.org

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Introduction

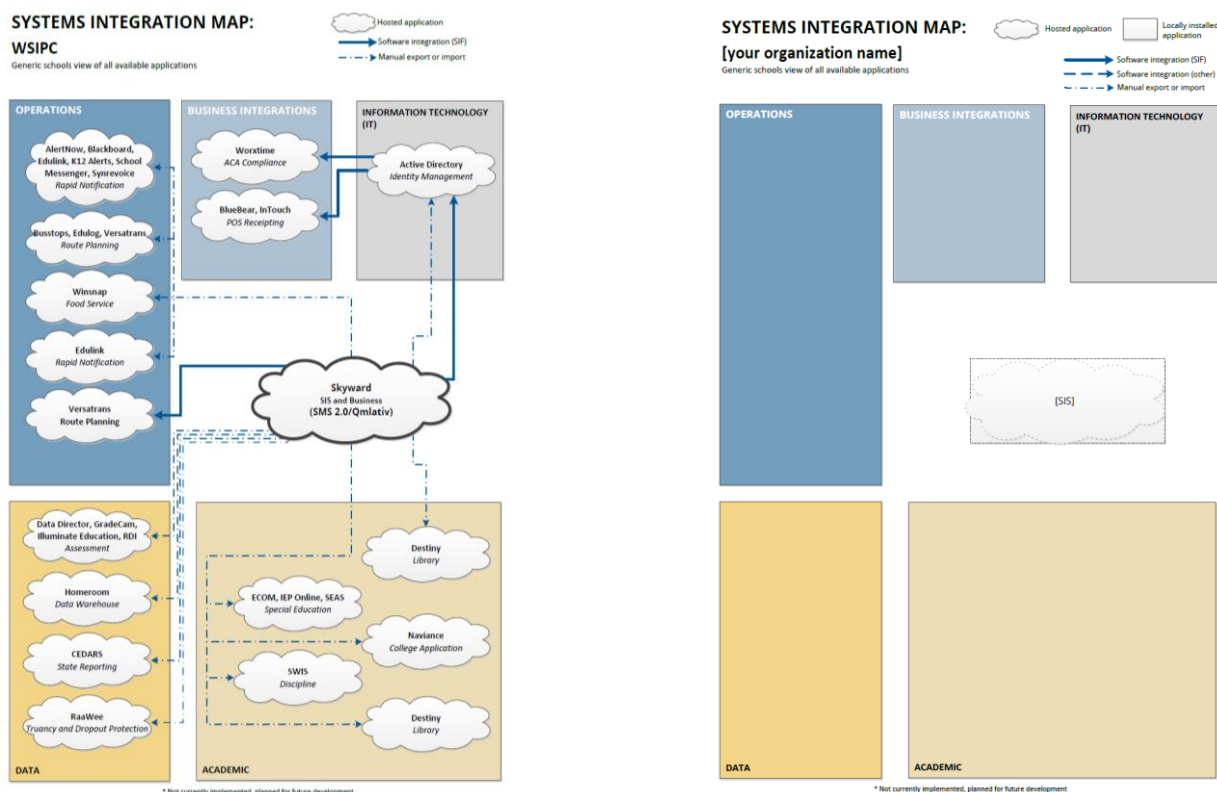
This *Ecosystem Empowerment Guide* has been developed with input from dozens of school CIO/CTOs as a tool to help you address two of the major concern's schools face each day – data management and data privacy! It has been developed to be a “tactical” guide that is immediately useful for your work, not some theoretical “you should be at this level...” – but never tell you how, as seen in many publications out there.

Starting Point: Exploring Your Ecosystem

This Guide can help you “connect” your ecosystem parts by streamlining how you can add applications simply, safely, and securely. So, 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 WSIPC example, use this [downloadable template](#) to create your own implementation mapping!



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”.**

Implementation Planning Questions

So, you are tired of the time and energy in moving CSV files between your applications or dependent on a vendor solution “hooks”? These questions are designed to help you consider facets of any true interoperable data integration project before engaging with ANY vendors. These can help you create a framework to understand the value gained and the many requirements that must be met for your ecosystem’s success.

General Planning:

- What is the scope of this integration project?
- What efficiencies do you want to gain through integration?
- What data needs to move and to where?
- What are the changes you expect?

Personnel:

- What activities will you be responsible for internally, what will you outsource?
- Who will lead and who will coordinate the project internally? Externally? For each vendor?
- Do you have adequate technical staff resources?
- What kind of technical & human support will be necessary and who will provide?

Communication:

- How will progress & decisions be documented?
- What process will you use to communicate?
- How will you set and manage expectations?
- Are there legal and/or confidentiality requirements to consider?

Political:

- Who are the stakeholders in your school/district? What roles do they need to play?
- Who are the thought leaders and gatekeepers that need to be brought on board?
- Who owns the data today?
- What are the existing rules/processes for data management today?
- Are there any role-based security policies in place today?
- How will current data owners' jobs change with integration?
- Are there Union or work rule issues involved?

Technical:

- What is your existing security model?
- What remote support methodologies will you utilize?
- What impacts on connectivity & network load are expected?
- What are your hardware requirements? What do you have and what will you need to purchase?
- What are your security needs?
- Are there technical issues that will necessitate staff training or consultants? (e.g., certificates)
- Are there other application updates or service updates to accommodate?
- What standards do existing systems support? (list by system)
- How will existing site “rules” impact the integration? (e.g., “inactivate” vs. “no show” attendance)
- Are there custom data mapping needs?

Things to do:

- Formal analysis of existing work and data flow.
- Create impact statements.
- Retrain staff on integrated systems.
- Be aware of internal politics.
- Plan bi-monthly status meetings.
- Define process for error reporting.
- Keep an open mind about problems.

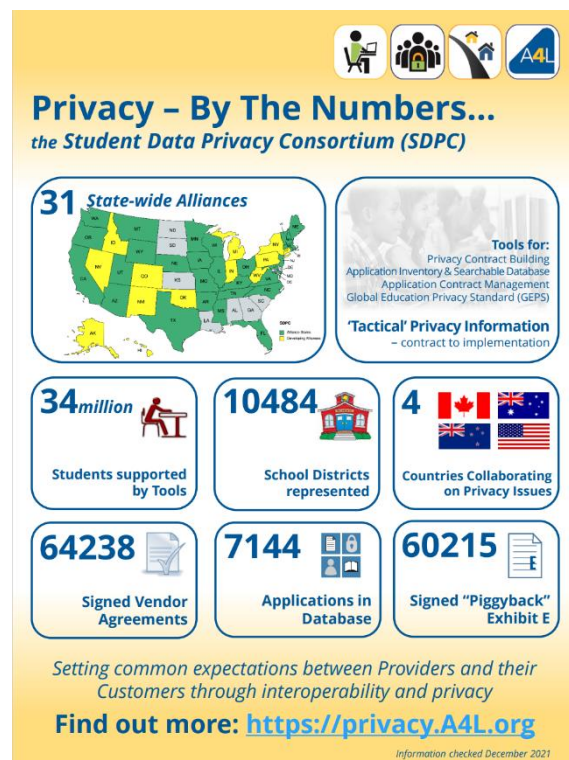
Linking Interoperability to Privacy

**Increased interoperability without the inclusion of privacy requirements = increased RISK.
Both data sharing and privacy parameters must be identified and communicated!**

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.

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. These Alliances now sharing the same student data privacy vendor expectations via the [National Data Privacy Agreement](#) (NDPA). All of this work has put schools in charge of their ecosystems applications and setting privacy expectations with vendors.

The impact? HUGE! Thousands of districts now have common wording with thousands of applications. Check out the [SDPC Resource Registry](#) right now to see if your state has an Alliance, examples of 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!



Its Not “One or the Other”!



Many of the “privacy on the wire” issues are being addressed within the new [A4L Unity Specification](#) – balancing interoperability with privacy! This community developed and freely available technical blueprint 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 o your ecosystem and enable vendors to show “proof” they are adhering to your data privacy expectations.

The MOST Used Technical Blueprint

Since 1997, the Schools Interoperability Framework (SIF) Association – now called Access 4 Learning (A4L) Community – has developed collaboratively built, freely available and marketplace supported technical blueprints for data exchanges. Some in the educational marketplace, perhaps your vendors, attempt to dismiss SIF Specification utilization in the attempts to promote their own proprietary work but the fact is:

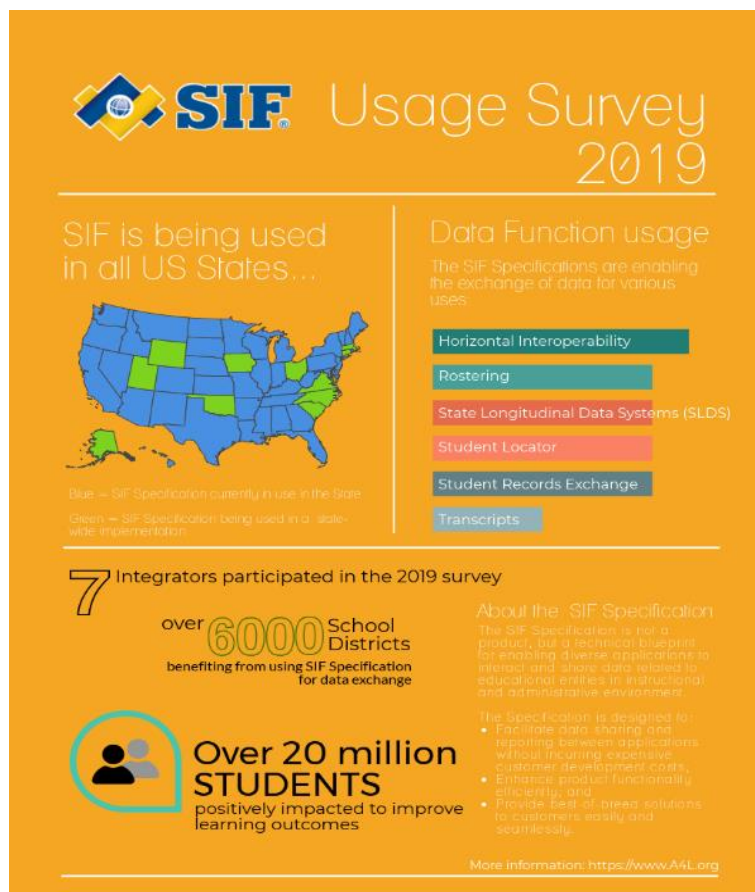
Since 1997, the SIF Specification is the #1 used technical blueprint for interoperability... and still is BY FAR!

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 N number, the impact numbers depict the continued usage of SIF interoperability. No “district double counts here so actual 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 development (i.e. interoperability specifications), addressing school and state agency needs in a new SIF Specification – ***code named “Unity”***.



Introducing Unity!



Maybe the best way to show you how Unity better empowers YOU 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.

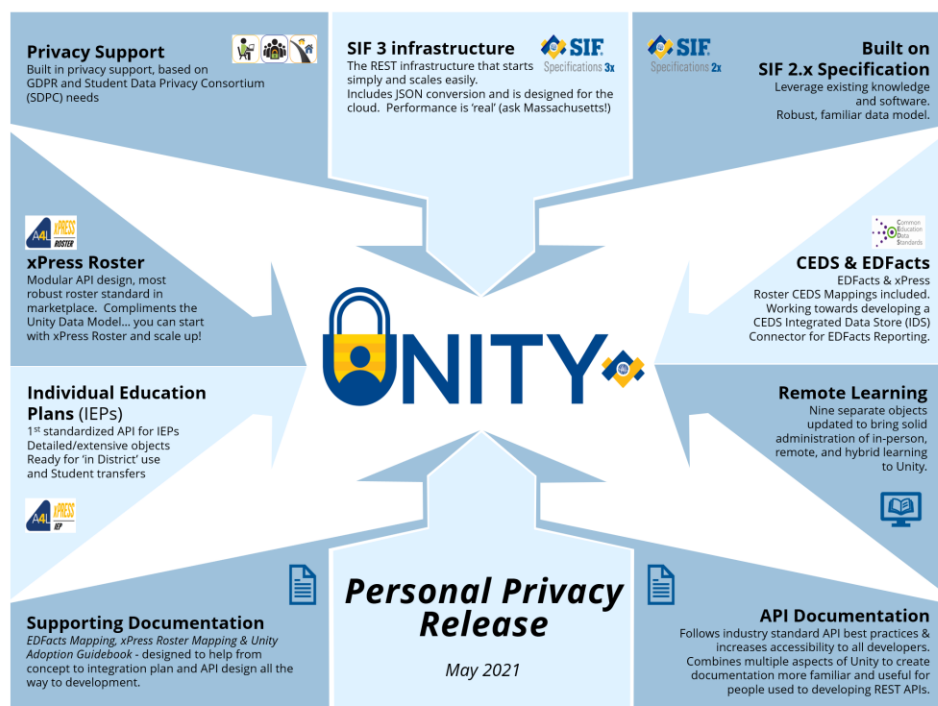
Video available on YouTube:

<https://youtu.be/oIVpPd5DD5g>

“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:

- reduces risks by supporting the work of the Student Data Privacy Consortium (SDPC).
- controls where data goes, placing it in systems ready to use, keeping sensitive files out of other hands.
- communicates how data may be used, withing and beyond your organization.
- saves time by automating the tasks that pull your front-line workers away from the public and students.
- saves money by giving you an implementation blueprint, to avoid reinventing the wheel.
- is the supported North American release from the Access 4 Learning Community.
- can be changed through membership and participation in the Access 4 Learning Community.



Vendor Engagement Support

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.

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 RFI/RFP wording you can use that are specific to SIF Unity, see [Appendix A: SIF RFP Language 2019](#)

Vendor Readiness Scoring

Unity Marketplace Provider Readiness Score Sheet
 Dated: June 2019

The *Unity Specification* is new, your marketplace providers and potential new vendors may have not created an adaptor for it yet, so you will need to work with your partners to get them moving. The following questions will help them understand your commitment to openly developed standards usage. The results of your metric scoring will help you gauge how likely they are to meet your needs quickly and efficiently.

If you have already identified your workflows and specific needs (possible from an existing SIF deployment) feel free to add your own specific concerns to the below. Keep in mind that while Unity is new, its high level of backwards compatibility with the SIF 2 Data Model opens up many new migration opportunities for existing deployments.

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

A. We have a working Unity adaptor in production	10 points
B. We have created a Unity adaptor and are looking for a pilot site	8 points
C. We are in the process of creating a Unity adaptor	6 points
D. We have reviewed the documentation and are placing Unity on our roadmap	4 points
E. We are interested in learning more about Unity in order to support you	2 points
F. We have assessed Unity and decide to not pursue it	0 points

[CLICK HERE >>](#)

These tools can help you evaluate possible marketplace partners for your project.

Integrator Questions

Integrator Questions

There are great partners out there who can help you - it is the business they are in! Check out the "Integrators" on the [Adi Vendor Marketplace](#) and use this set of questions as part of your "interview" process!

Q: What software platform is your broker based on?
 Java, .NET, Other...

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

Q: Do I need to keep my data in my state/country?
 Yes (and how), No...

Q: Does your broker support encrypted payloads?
 Yes, No...

Q: What privacy controls does your software supports.
 PII, Filtering, None...

[CLICK HERE >>](#)

Vendor Homework

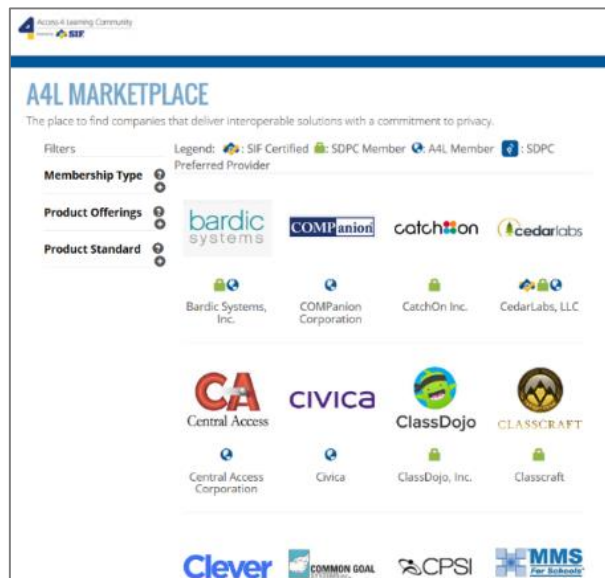
Do your homework! Does your vendor, or prospective one, commit to interoperability and privacy concerns you might have? Two very quick places to check:

Vendor Marketplace *

The Vendor Marketplace is the place to find companies that deliver interoperable solutions with a commitment to privacy.

You can quickly search for vendors who are a part of the A4L/SDPC Community, their product offerings, certification and badges and other company information.

<https://marketplace.a4l.org/A4LDirectory/>



SDPC Resource Registry

The SDPC Resource Registry has been developed to provide a framework for identifying solutions that have on-the-ground and real-world impact on student data privacy enabling schools, districts, state, and vendors find resources, adapt them to their unique context and implement needed protections.

The Registry contains thousands of product offerings across the globe, where and how they are in use, and their actual signed privacy agreements.

<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!*

Putting the Pieces Together...

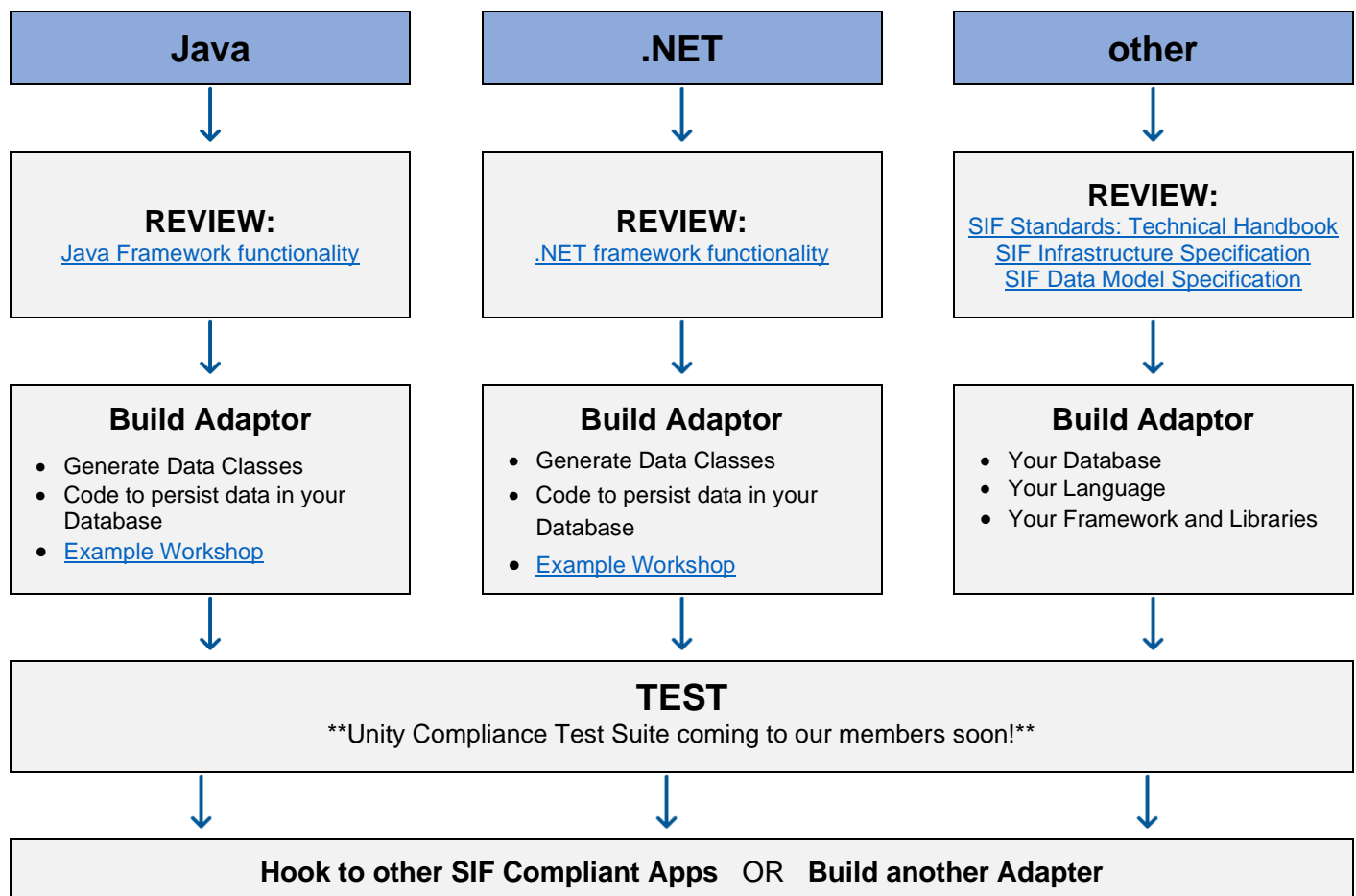
As Vendors respond to your RFIs/RFPs and provide you with Unity enabled software, the key component in enabling Unity is known as an ‘adaptor’. These come in various flavors but fit together like interlocking blocks. While you may not need to know this level of detail, the following illustrates the various paths that lead to solid building blocks for your data integration.

With [Unity](#) combining an established and proven scalable REST infrastructure with familiar data model components, building a SIF adaptor¹ has never been easier or more affordable. Here is how to get start writing or migrating your adaptor to utilize the power of Unity.*

Follow the decision tree below to help determine the right path for you (or your Marketplace Provider)! However, keep in mind that the REST based infrastructure empowers you to do much more than before.

PROVIDER AND/OR CONSUMER ADAPTOR

Start by choosing your preferred programming language:



* 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](#).

¹ SIF Adaptor: The SIF-specific component which provides the RESTful interface between the application and its partners.

Appendix A: Resources

Interoperability

- Access 4 Learning (A4L) Community website: <https://www.A4L.org>
- Introducing Unity: <http://data.a4l.org/introducing-unity/>
- Getting Started with Unity: <http://data.a4l.org/getting-started-with-unity/>
- Vendor Marketplace: <https://marketplace.a4l.org/A4LDirectory/>
- Do It Yourself Guidance: <http://data.a4l.org/getting-started-with-unity/>

Documents:

- [SIF RFP Language 2019: Appendix A](#)
- [Vendor Readiness Scoresheet](#)
- [Integrator Questions](#)

Privacy

- Student Data Privacy Consortium (SDPC) website: <https://privacy.A4L.org>
- Student Data Privacy Consortium (SDPC) Resource Registry: <https://sdpc.A4L.org>
- Vendor Marketplace: <https://marketplace.a4l.org/A4LDirectory/>

Resources for Vendors

- [Unity Adoption Guidebook](#)
- [Unity Release](#)
- [Infrastructure Release](#)
- [API Documentation](#) (preview)

Appendix B: Initiative Linkages

Several 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.



<https://ceds.ed.gov/>

- 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 ED Facts (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.

Data Standards United

The goal of Data Standards United is to establish a "common ground" mechanism to coordinate and align disparate global data standards while respecting each organization's independence across systems, platforms, networks, sectors, and industries, produced, or supported by the respective standards bodies.

Vision: Collaborate and align standards to support the global education and workforce digital ecosystem.

Mission: Establish a sustainable collaborative of Data Standards Development Organizations (SDO) and their stakeholders across education, employment, and training sectors.



<https://datastandardsunited.org/>

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.



<https://www.projectunicorn.org/>

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

STUDENT DATA		
	Level 4 recap	How SIF Specifications can help you achieve Level 4!
Data Quality	Integrate or import unique numeric student identifiers used by schools and other tools (e.g. SIS ID)	✓ 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.
Data Granularity	4 or more units of data (e.g. section, school, district, student) available for immediate export or import	✓ With the SIF Unity Data Model objects: section, school, district, and student are supported and ready for export. Levels 1 through 4 are easily attainable here with the SIF Standards.
Export Process	Industry standard aligned API with certification of APIs from appropriate industry standards body (e.g. Ed-Fi, Access 4 Learning, or IMS)	✓ By combining SIF Infrastructure and Data Model we provide a set of industry standard APIs. It will be hard for your integration to be anything but the highest level (4) in this area.
Export Security	Encrypted transfer with data restrictions and procedural safeguards (e.g. VPN, authentication)	✓ The SIF infrastructure can: use nothing, utilizes the standard encryption and authentication methods used to power Internet commerce, apply filters, and we even have members encrypting payloads to create secure cloud solutions. We will be happy to help you use these pieces to hit any level (1, 2, 3, or 4) in this area.
Export Frequency	Real time	✓ From on request to real time, the SIF Standards have the pieces and parts to design your integration the way you want. Feel free to power real time back office synchronization (4) to on demand (1) interfaces with the same set of standards.
Export Format	Industry standard file format (e.g. QTI, Ed-Fi, OneRoster, xPress Roster, SIF) with certification of APIs from appropriate industry standards body (e.g. Ed-Fi, Access 4 Learning, or IMS)	✓ SIF has a mature on the wire data model that covers all of these within our standards. Need something more? Consider becoming a member and helping us make that happen.
Import Process	Industry standard aligned API with certification of data formats from appropriate industry standards body (e.g. Ed-Fi, Access 4 Learning, or IMS)	✓ By combining SIF Infrastructure and Data Model we provide a set of industry standard APIs. It will be hard for your integration to be anything but the highest level (4) in this area.
Import Security	Encrypted transfer with data restrictions and procedural safeguards (e.g. VPN, authentication)	✓ The SIF infrastructure can: use nothing, utilizes the standard encryption and authentication methods used to power Internet commerce, apply filters, and we even have members encrypting payloads to create secure cloud solutions. We will be happy to help you use these pieces to hit any level (1, 2, 3, or 4) in this area.
Import Frequency	Real time	✓ From on request to real time, the SIF Standards have the pieces and parts to design your integration the way you want. Feel free to power real time back office synchronization (4) to on demand (1) interfaces with the same set of standards.
Import Format	Industry standard file format (e.g. QTI, 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)	✓ SIF has a mature on the wire data model that covers all of these within our standards. Need something more? Consider becoming a member and helping us make that happen.
Technical Descriptions and Examples	Data is exchanged using standards-based formats and APIs in real-time. Example: Using LTI gradebook and assignment services or Ed-Fi formative Assessment Outcomes composite and/or SIF specification for K12 application ecosystem)	✓ SIF has a mature on the wire data model that covers all of these within the standards. Need something more? Consider becoming a member and helping us make that happen.

The original A4L document can be found [here](#)